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PATENTS

February 5, 1985

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PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty (PCT) Information

For information concerning the PCT member countries see the notice appearing in the *Official Gazette* at 1050 O.G. 330 on Jan. 15, 1985.

For use of the European Patent Office as a Searching Authority for PCT applications filed in the United States Receiving Office, see the notice appearing in the *Official Gazette* at 1022 O.G. 52 on Sept. 28, 1982.

Domestic PCT fees were increased on Oct. 1, 1982 by a rule change to 37 CFR 1.445 that was published in the *Official Gazette* at 1021 O.G. 11 on Aug. 10, 1982.

The Search fee for the European Patent Office was changed as of Jan. 3, 1985 and was announced in the *PCT Gazette* at No. 26/1984 page 3241 on Nov. 8, 1984.

International PCT fees were changed by the PCT Assembly effective Jan. 1, 1985 and were announced in the *Official Gazette* at 1050 O.G. 330 on Jan. 15, 1985.

The current schedule of PCT fees is as follows:

Transmittal fee	$ 125.00
Search fee	
U.S. Patent and Trademark Office as Searching Authority	
· No corresponding prior U.S. national application filed	500.00
· Corresponding prior U.S. national application filed	250.00
European Patent Office as Searching Authority	
· All cases	690.00
International fees	
Basic fee (first 30 pages)	265.00
Basic Supplemental fee (for each page over 30)	5.00
Designation fee (for each national or regional office)	64.00
Designation fee for 11th and subsequent designations	no charge

GERALD J. MOSSINGHOFF,
Commissioner of Patents and Trademarks.

Dec. 24, 1984.

Notice of Maintenance Fees Payable

Title 37, Code of Federal Regulations, Section 1.362(d), effective Nov. 1, 1984, provides that maintenance fees may be paid without surcharge for a six-month period beginning 3, 7, and 11 years after the date of issue of patents based on applications filed on or after Dec. 12, 1980. An additional six-month grace period is provided by 35 U.S.C. 41(b) and 37 CFR 1.362(e) for payment of the maintenance fee with the surcharge set forth in 37 CFR 1.20(k) or (l), effective Nov. 1, 1984. If the maintenance fee is not paid in a patent requiring such payment, the patent will expire on the 4th, 8th or 12th anniversary of the grant.

Attention is drawn to the patents which were issued on Feb. 2, 1982 for which maintenance fees due at 3 years and six months may now be paid. The patents have patent numbers within the following ranges:

Plant Patents	None
Utility Patents	4,313,229 through 4,314,378

Reissue Patents based on the above identified patents.

No maintenance fees are required for design patents.

Payments of maintenance fees in patents should be directed to "Commissioner of Patents and Trademarks, Box M. Fee, Washington, D.C. 20231."

The current amounts of the maintenance fees due at 3 years and six months are set forth in 37 CFR 1.20(e) and (h), which are reproduced below:

37 CFR §1.20 Post-issuance fees

"(e) For maintaining an original or reissue patent, except a design patent, based on an application filed on or after Dec. 12, 1980 and before Aug. 27, 1982, in force beyond 4 years; the fee is due by three years and six months after the original grant . . . $ 200.00"

"(h) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Aug. 27, 1982, in force beyond 4 years; the fee is due by three years and six months after the original grant:
By a small entity (§1.9(f)) . . . . . $ 200.00
By other than a small entity . . . . . $ 400.00"

The amounts of the surcharges, effective Nov. 1, 1984, are set forth in 37 CFR 1.20(k)-(m), which are reproduced below:

"(k) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Dec. 12, 1980 and before Aug. 27, 1982 . . . . . $ 100.00"

"(l) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Aug. 27, 1982:
By a small entity (§1.9(f)) . . . . . $ 50.00
By other than a small entity . . . . . $ 100.00"

"(m) Surcharge for accepting a maintenance fee after expiration of a patent for non-timely payment of a maintenance fee on a patent based on an application filed on or after Aug. 27, 1982, where the delay in payment is shown to the satisfaction of the Commissioner to have been unavoidable . . . . . $ 500.00"

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.19(a)).

4,269,520, Re. S.N. 673,532, Filed Nov. 20, 1984, Cl. 400/196, CARTRIDGE FOR DYE-IMPREGNATED ENDLESS RIBBON, Gerhard Gabler, Owner of Record: *Precisa AG Rechenmaschinenfabrik, Zurich, Switzerland,* Attorney or Agent: Ernest F. Marmorek, Ex. Gp.: 337

4,292,057, Re. S.N. 534,773, Filed Sept. 22, 1983, Cl. 55/302, TOP REMOVAL SUPPORT FOR DUST COLLECTOR BAGS, Edward A. Ulvestad, et al., Owner of Record: *Flex-Kleen Corp., Chicago, Ill.,* Attorney or Agent: Richard A. Zachard, Ex. Gp.: 177

4,347,988, Re. S.N. 648,811, Filed Sept. 7, 1984, Cl. 241/300, ANVIL ASSEMBLY FOR VERTICAL SHAFT CENTRIFUGAL IMPACT CRUSHING MACHINE, Kenneth D. Warren, et al., Owner of Record: *Portec, Inc., Oak Brook, Ill.,* Attorney or Agent: Richard J. St. John, et al., Ex. Gp.: 326

4,355,769, Re. S.N. 648,812, Filed Sept. 7, 1984, Cl. 241/300, IMPELLER SHOE ASSEMBLY, Kenneth D. Warren, et al., Owner of Record: *Portec, Inc., Oak Brook, Ill.,* Attorney or Agent: Richard J. St. John, et al., Ex. Gp.: 326

4,355,848, Re. S.N. 664,797, Filed Oct. 25, 1984, Cl. 301/37SS, WHEEL COVER FOR A VEHICLE, Takao Ookubo, et al., Owner of Record: *Nissan Motor Co., Ltd., and Hashimoto Forming Kogyo Co., Ltd., Yokohama City, Japan,* Attorney or Agent: Arthur Schwartz, et al., Ex. Gp.: 312

REQUESTS FOR REEXAMINATION FILED

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.19(a)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b)).

3,891,819, Reexam. No. 90/000,695, Requested: Dec. 21, 1984, Cl. 219/69, AUTOMATIC SET-UP ELECTROEROSION MACHINING METHOD, Werner Ullmann, et al., Owner of Record: *AG fur industrielle Elektronik Agie, Losone, Switzerland,* Attorney or Agent: Flynn & Frishauf, Ex. Gp.: 210, Requester: IJR, Inc., Yokohama, Japan

3,951,587, Reexam. No. 90/000,690, Requested: Dec. 18, 1984, Cl. 432/253, SILICON CARBIDE DIFFUSION FURNACE COMPONENTS, Richard A. Alliegro, et al., Owner of Record: *Norton Co., Worcester, Ma.,* Attorney or Agent: Arthur A. Loiselle, Jr., Ex. Gp.: 344, Norton Co., New York, N.Y.

4,102,565, Reexam. No. 90/000,691, Requested: Dec. 19, 1984, Cl. 351/214, SPLIT LAMP MICROSCOPE, Shiro Takizawa, et al., Owner of Record: *Tokyo Kogaku Kikai Kabushiki Kaisha, Tokyo, Japan,* Attorney or Agent: Finnegan, Henderson, et al., Ex. Gp.: 250, Requester: Owner

4,123,961, Reexam. No. 90/000,694, Requested: Dec. 20, 1984, Cl. 85/035, WHEEL NUT WITH WELDED CAP, Albert A. Jadach, Owner of Record: *Mesne Assigns, New York, N.Y.,* Attorney or Agent: Allen M. Krass, Ex. Gp.: 351, Requester: Key International Mftg., Inc., Southfield, Mich.

4,123,961, Reexam. No. 90/000,704, Requested: Jan. 8, 1985, Cl. 85/035, WHEEL NUT WITH WELDED CAP, Albert A. Jadach, Owner of Record: *Mesne Assigns, New York, N.Y.,* Attorney or Agent: Allen M. Krass, Ex. Gp.: 351, Requester: Microdot, Inc., Birmingham, Mich.

4,308,306, Reexam. No. 90/000,699, Requested: Dec. 24, 1984, Cl. 428/41, FABRIC CONDITIONING PRODUCTS, Ernst Stahli, Owner of Record: *Lever Brothers Co., New York, N.Y.,* Attorney or Agent: Philip Sands, Ex. Gp.: 150, Requester: Proctor & Gamble Co., Cincinnati, Ohio

4,322,827, Reexam. No. 90/000,693, Requested: Dec. 20, 1984, Cl. 367/099, RANGE EXPANDER FOR SONAR SYSTEM, Ronald G. Weber, Owner of Record: *Lowrance Electronics, Inc., Tulsa, Okla.,* Attorney or Agent: Head & Johnson, Ex. Gp.: 220, Requester: Techsonic Industries, Inc., Fufaula, Ala.

4,429,808, Reexam. No. 90/000,697, Requested: Dec. 21, 1984, Cl. 221/167, DUAL DRIVE ROTARY FEEDER, Myron I. Doty, Owner of Record: *Moorfeed Corp., Indianapolis, Ind.,* Attorney or Agent: Andrew J. Richardson, Ex. Gp.: 310, Requester: Birch, Stewart, et a l., Falls Church, Va.

4,436,050, Reexam. No. 90/000,702, Requested: Jan. 8, 1985, Cl. 114/265, SEMI-SUBMERSIBLE VESSEL, Hadar Liden, Owner of Record: *Gotaverken Arendal AB, Goteberg, Sweden,* Attorney or Agent: Cantor & Singer, Ex. Gp.: 315, Requester: Gary L. Jordan, Arlington, Va.

Errata

"All reference to Patent No. 4,481,143 to Frank M. Hauser, et al. of Oregon for 'METHOD OF SYNTHESIZING A LATE-STAGE INTERMEDIATE OF 11-DEOXYDAUNORUBI OIN AND 11-DEOXYADRIAMYCIN, AND TWO PRECURSORS TO THE OBJECT INTERMEDIATE' appearing in the Official Gazette of Nov. 6, 1984 should be deleted since no patent was granted."

"All reference to Patent No. 4,484,437 to Peter Dammann, et al. of Germany for 'APPARATUS FOR FALSE TWISTING YARN' appearing in the Official Gazette of Nov. 27, 1984 should be deleted since no patent was granted."

"All reference to Patent No. 4,489,151 to Frederick W. Sanders, et al. of Ohio for 'PHOTOSENSITIVE MATERIAL EMPLOYING ENCAPSULATED RADIATION SENSITIVE COMPOSITION' appearing in the Official Gazette of Dec. 18, 1984, should be deleted since no patent was granted."

"All reference to Patent No. 4,490,367 to Paul Gordon of Ill. for 'BLOODED ANIMALS THEREWITH' appearing in the Official Gazette of Dec. 25, 1984 should be deleted since no patent was granted."

Submission of Corrected Drawings in Allowed Applications

When drawings need to be corrected in an allowed application, the applicant is *required* to submit *acceptable* corrected drawings within a three-month shortened statutory period. Within that three-month period, two weeks should be allowed for review of the correction by the Office. If a correction is determined to be unacceptable by the Office, the applicant must arrange to have an acceptable correction re-submitted within the original three-month period to avoid the necessity of obtaining an extension of time and of paying the extension fee. Therefore, the applicant should file corrected drawings as soon as possible following the setting of the three-month shortened statutory period.

THERESA A. BRELSFORD,
Assistant Commissioner for Administration.

Jan. 14, 1985.

PATENT NOTICES

Certificates of Correction for the Week of Feb. 5, 1985

4,203,206	4,418,522	4,439,992	4,458,158
4,252,760	4,419,272	4,442,109	4,458,475
4,271,582	4,420,997	4,443,079	4,459,288
4,287,188	4,421,729	4,444,193	4,459,979
4,340,481	4,423,524	4,445,033	4,460,869
4,355,646	4,423,982	4,448,094	4,463,029
4,364,419	4,425,775	4,448,590	4,463,717
4,365,999	4,426,845	4,450,134	4,464,699
4,366,074	4,427,460	4,450,894	4,465,636
4,370,485	4,428,661	4,452,227	4,465,637
4,373,836	4,429,415	4,452,751	4,465,750
4,373,966	4,430,355	4,453,118	4,465,806
4,377,685	4,430,710	4,454,169	4,465,915
4,394,736	4,431,614	4,454,190	4,466,129
4,403,770	4,431,779	4,455,081	4,466,262
4,405,898	4,433,859	4,455,266	4,467,496
4,409,211	4,435,256	4,455,592	4,470,513
4,410,518	4,435,368	4,455,593	4,471,324
4,413,950	4,436,715	4,455,651	4,473,627
4,417,052	4,437,836	4,456,584	4,478,565
4,417,131	4,438,162	4,456,727	4,478,692
4,417,268	4,439,933	4,457,570	

Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries

The following libraries, designated as Patent Depository Libraries, receive current issues of U.S. Patents and maintain collections of earlier issued patents. The scope of these collections varies from library to library, ranging from patents of only recent years to all or most of the patents issued since 1790.

These patent collections are open to public use and each of the Patent Depository Libraries, in addition, offers the publications of the U.S. Patent Classification System (e.g. The Manual of Classification, Index to the U.S. Patent Classification, Classification Definitions, etc.) and provides technical staff assistance in their use to aid the public in gaining effective access to information contained in patents. With one exception, as noted in the table following, the collections are organized in patent number sequence.

Facilities for making paper copies from either microfilm in reader-printers or from the bound volumes in paper-to-paper copies are generally provided for a fee.

Owing to variations in the scope of patent collections among the Patent Depository Libraries and in their hours of service to the public, anyone contemplating use of the patents at a particular library is advised to contact that library, in advance, about its collection and hours, so as to avert possible inconvenience.

State	*Name of Library*	*Telephone Contact*
Alabama	Auburn University Libraries	(205) 826-4500 Ext.21
	Birmingham Public Library	(205) 226-3680
Alaska	Anchorage Municipal Libraries	(907) 264-4481
Arizona	Tempe: Science Library, Arizona State University	(602) 965-7607
Arkansas	Little Rock: Arkansas State Library	(501) 371-2090
California	Los Angeles Public Library	(213) 626-7555 Ext. 273
	Sacramento: California State Library	(916) 322-4572
	San Diego Public Library	(619) 236-5813
	Sunnyvale: Patent Information Clearinghouse*	(408) 738-5580
Colorado	Denver Public Library	(303) 571-2122
Delaware	Newark: University of Delaware	(302) 738-2238
Florida	Fort Lauderdale: Broward County Main Library	(305) 357-7444
	Miami–Dade Public Library	(305) 579-5001
Georgia	Atlanta: Price Gilbert Memorial Library, Georgia Institute of Technology	(404) 894-4508
Idaho	Moscow: University of Idaho Library	(208) 885-6235
Illinois	Chicago Public Library	(312) 269-2865
	Springfield: Illinois State Library	(217) 782-5430
Indiana	Indianapolis–Marion County Public Library	(317) 269-1706
Louisiana	Baton Rouge: Troy H. Middleton Library, Louisiana State University	(504) 388-2570
Maryland	College Park: Engineering and Physical Sciences Library, University of Maryland	(301) 454-3037
Massachusetts	Amherst: University of Massachusetts Library	(413) 545-1370
	Boston Public Library	(617) 536-5400 Ext. 265
Michigan	Ann Arbor: Engineering Transportation Library, University of Michigan	(313) 764-7494
	Detroit Public Library	(313) 833-1450
Minnesota	Minneapolis Public Library & Information Center	(612) 372-6570
Missouri	Kansas City: Linda Hall Library	(816) 363-4600
	St. Louis Public Library	(314) 241-2288 Ext. 390, 391
Montana	Butte: Montana College of Mineral Science and Technology Library	(406) 496-4283
Nebraska	Lincoln: University of Nebraska-Lincoln, Engineering Library	(402) 472-3411
Nevada	Reno: University of Nevada Library	(702) 784-6579
New Hampshire	Durham: University of New Hampshire Library	(603) 862-1777
New Jersey	Newark Public Library	(201) 733-7815
New Mexico	Albuquerque: University of New Mexico Library	(505) 277-5441
New York	Albany: New York State Library	(518) 474-5125
	Buffalo and Erie County Public Library	(716) 856-7525 Ext. 267
	New York Public Library (The Research Libraries)	(212) 930-0850
North Carolina	Raleigh: D. H. Hill Library, N.C. State University	(919) 737-3280
Ohio	Cincinnati & Hamilton County, Public Library of	(513) 369-6936
	Cleveland Public Library	(216) 623-2870
	Columbus: Ohio State University Libraries	(614) 422-6286
	Toledo/Lucas County Public Library	(419) 255-7055 Ext. 212
Oklahoma	Stillwater: Oklahoma State University Library	(405) 624-6546
Pennsylvania	Cambridge Springs: Alliance College Library	(814) 398-2098
	Philadelphia: Franklin Institute Library	(215) 448-1227
	Pittsburgh: Carnegie Library of Pittsburgh	(412) 622-3138
	University Park: Pattee Library, Pennsylvania State University	(814) 865-4861
Rhode Island	Providence Public Library	(401) 521-8726
South Carolina	Charleston: Medical University of South Carolina	(803) 792-2372
Tennessee	Memphis & Shelby County Public Library and Information Center	(901) 725-8876
Texas	Austin: McKinney Engineering Library, University of Texas.	(512) 471-1610
	College Station: Sterling C. Evans Library, Texas A & M University	(409) 845-2551
	Dallas Public Library	(214) 749-4176
	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
Utah	Salt Lake City: Marriott Library, University of Utah	(801) 581-8394
Washington	Seattle: Engineering Library, University of Washington	(206) 543-0740
Wisconsin	Madison: Kurt F. Wendt Engineering Library, University of Wisconsin	(608) 262-6845
	Milwaukee Public Library	(414) 278-3043

All of the above-listed libraries offer CASSIS (Classification And Search Support Information System), which provides direct, on-line access to Patent and Trademark Office data.

*Collection organized by subject matter.

PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner

JAMES E. DENNY, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF December 22, 1984

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL METALLURGICAL, INORGANIC, PETROLEUM AND ELECTRICAL CHEMISTRY, AND ENGINEERING, GROUP 110—D. E. TALBERT, Director	8-20-81
ORGANIC CHEMISTRY AND BIOTECHNOLOGY, GROUP 120—C. E. VAN HORN, Director	9-29-82
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 130—R. F. WHITE, Director	8-11-83
HIGH POLYMER CHEMISTRY, PLASTICS, COATING, PHOTOGRAPHY, STOCK MATERIALS AND COMPOSITIONS, GROUP 150—J. O. THOMAS, Director	4-21-83
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—B. R. GRAY, Director	3-28-83
SPECIAL LAWS ADMINISTRATION, GROUP 220—K. L. CAGE, Director	10-06-81
INFORMATION PROCESSING, STORAGE, AND RETRIEVAL, GROUP 230—E. LEVY, Director	3-08-82
RECEPTACLES, CLEANING, WINDING, AND MEASURING, GROUP 240—G. M. FORLENZA, Director	2-18-83
ELECTRONIC AND OPTICAL SYSTEMS AND DEVICES, GROUP 250—S. S. MATTHEWS, Director	2-23-82
COMMUNICATIONS, MEASURING, TESTING AND LAMP/DISCHARGE GROUP, GROUP 260—S. G. KUNIN, Director	9-12-80
DESIGN, GROUP 290—K. L. CAGE, Director	9-17-82
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—(Vacant)	4-17-83
MATERIAL SHAPING, ARTICLE MANUFACTURING AND TOOLS, GROUP 320—S. N. ZAHARNA, Director	12-13-82
MECHANICAL TECHNOLOGIES AND HUSBANDRY PERSONAL TREATMENT INFORMATION, GROUP 330—R. E. AEGERTER, Director	11-1-82
SOLAR, HEAT, POWER, AND FLUID ENGINEERING DEVICES, GROUP 340—D. J. STOCKING, Director	9-02-82
GENERAL CONSTRUCTIONS, PETROLEUM AND MINING ENGINEERING, GROUP 350—A. L. SMITH, Director	12-04-81

Expiration of patents: The patents within the range of numbers indicated below expire during December 1984, except those which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents ..... Numbers 3,355,744 to 3,360,799, inclusive
Plant Patents ..... Numbers 2,781 to 2,783 inclusive

REEXAMINATIONS

FEBRUARY 5, 1985

Matter enclosed in heavy brackets [ ] appears in the patent but forms no part of this reexamination specification; matter printed in italics indicates additions made by reexamination.

B1 4,193,797 (299th)

METHOD FOR MAKING PHOTORESISTS

Abraham B. Cohen, Springfield; Robert B. Heiart, Middletown, both of N.J., assignors to E.I. DuPont de Nemours and Company, Wilmington, Del.

Reexamination Request No. 90/000,234, Jul. 30, 1982.
Reexamination Certificate for Patent No. 4,193,797, issued Mar. 18, 1980, Ser. No. 308,856, Nov. 22, 1972.
Continuation-in-part of Ser. No. 126,925, Mar. 22, 1971, abandoned, which is a continuation-in-part of Ser. No. 833,740, Jun. 16, 1969, abandoned, which is a continuation-in-part of Ser. No. 602,291, Dec. 16, 1966, Pat. No. 3,547,730.
Int. Cl.[3] G03C *5/00, 11/12*; **G03F** *7/26*
U.S. Cl. 430—258

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

That patentability of claims **12–16** is confirmed.

Claim **1** is determined to be patentable as amended.

Claims **2–11** dependent on an amended claim, are determined to be patentable.

New claims **17–21** are added and determined to be patentable.

1. A process for forming a positive photoresist on a surface which comprises:

(1) applying to said surface the surface of a solid, unexposed, positive-working, photosensitive layer *which adheres directly to said surface and which is* comprised of a resist-forming photosoluble or photodesensitizable composition, the other surface of the layer having adhered thereto with low to moderate adherence a thin, flexible, polymeric film support, then in either order,

(2) exposing the layer, imagewise, to actinic radiation to form an image,

(3) stripping the film support from the resulting image-bearing layer; and then,

(4) washing away the exposed areas of the layer to form a positive resist image of thermoplastic material.

Claims **1, 2, 6, 7** and **10** are cancelled.

Claims **3–5, 8, 9** and **11–15** are determined to be patentable as amended.

Claim **16** dependent on an amended claim, is determined to be patentable.

New claims **17–20** is added and determined to be patentable.

11. The apparatus defined in claim [10,] *19*, wherein said base includes an integral means for covering said top means and that portion of said removable bolt means connected to said top means, said integral means being pivotally joined to said base, said integral means enveloping said top means when said top means is in the lowered position, said integral means fairing with said base and forming a contiguous smooth structure thereby obscuring from view said top means and said removable bolt means.

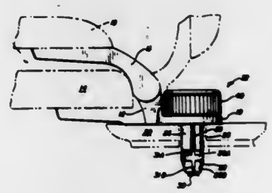
19. An apparatus for attaching a toilet seat to a commode, said commode defining at least one mounting hole, comprising:

(a) a base hingedly carrying said seat for joining said seat to said commode, said base resting on said commode, the upper portion of said base having an integral hinge post for coupling said seat to said base, the lower portion of said base carrying a stem disposed within said mounting hole, said stem having longitudinal bore extending therethrough and defining a slit extending from the lower end thereof to a point intermediate the ends thereof to split the wall of said stem along the length of said slit; and

(b) removable bold means operable from the seat side of said commode for outwardly flaring said stem against the periphery of said mounting hole to snugly engage said stem with said commode and thereby attach said base to said commode;

said apparatus further including top means, carried by said bolt means for holding said base on said commode and operatively engaging and disengaging said bolt means with said commode;

wherein said top means includes a first surface for bearing against the upper portion of said base and a second surface defining a handle graspable by the thumb and forefingers, said top means being pivotally connected to said removable bolt means and rotatable from a raised to a lowered position, said raised position being defined as that position where said second surface is to be manipulated to tighten said removable bolt means and attach said removable bolt means to said commode, said lowered position being defined as that posi-



B1 4,319,365 (300th)

NO TOOL TOILET SEAT HARDWARE

Richard A. Bemis, Sheboygan, and Gordon Kelly, Elm Grove, both of Wis., assignors to Bemis Manufacturing Company, Sheboygan Falls, Wis.

Reexamination Request No. 90/000,310, Dec. 23, 1982.
Reexamination Certificate for Patent No. 4,319,365, issued Mar. 16, 1982, Ser. No. 120,133, Feb. 11, 1980.
Int. Cl.[3] A47K *13/12*
U.S. Cl. 4—236

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

tion with said second surface folded against the upper portion of said base.

B1 4,438,584 (301st)

TRAP FOR RATS, MICE AND OTHER VERMIN

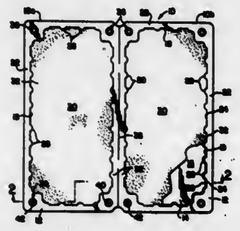
Stanley Z. Baker, Mayfield Heights, and Benjamin H. Baker, Chesterland, both of Ohio, assignors to J. T. Eaton & Company, Inc., Twinsburg, Ohio

Reexamination Request No. 90/000,558, May 18, 1984.
Reexamination Certificate for Patent No. 4,438,584, issued Mar. 27, 1984, Ser. No. 338,621, Jan. 11, 1982.
Continuation of Ser. No. 53,381, Jun. 29, 1979, abandoned.
Int. Cl.[3] A01M *23/00*
U.S. Cl. 43—53

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1–4** is confirmed.

1. A trap for vermin comprised of a generally flat support formed of a non-porous, thin sheet material, said support having at least one positioning surface, at least one indented portion having a given depth below said positioning surface, and



a relatively thick layer of pressure sensitive adhesive material contained within said indented portion having a thickness of at least 1/16 inch, a plastic flow temperature above 120° F. and an upper surface; said indented portion having a greater depth than the thickness of said layer of adhesive and said positioning surface being spaced above said adhesive layer upper surface.

DEFENSIVE PUBLICATIONS

PUBLISHED FEBRUARY 5, 1985

Published at the request of the applicant or owner in accordance with the Notice of Dec. 16, 1969, 869 O.G. 687. The abstracts of Defensive Publication applications are identified by distinctly numbered series and are arranged chronologically. The heading of each abstract indicates the number of pages of specification, including claims and sheets of drawings contained in the application as originally filed. The files of these applications are available to the public for inspection and reproduction may be purchased for 30 cents a sheet.

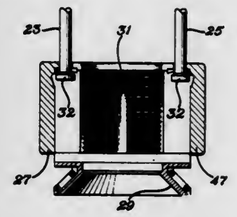
Defensive Publication applications have not been examined as to the merits of alleged invention. The Patent and Trademark Office makes no assertion as to the novelty of the disclosed subject matter.

T105,101

CASING HANDLING EQUIPMENT

William R. Hamilton, 5914 W. Airport Blvd., Houston, Tex. 77035

Filed Jun. 9, 1983, Ser. No. 502,849
Int. Cl.[3] E21B *19/02;* B66C *1/42*
U.S. Cl. 294—90
1 Sheets Drawing. 9 Pages Specification



An apparatus, for use with a traveling block and a drilling hook, for handling large diameter casing. A pair of links (**23**) (**25**) are suspended from link ears on the drilling hook. At the lower end of each link is a link connector (**32**), which preferably has a flat bottom surface and a spherical upper surface. The spherical upper surface mates with a similarly shaped surface on a removeable plate, forming a ball-and-socket type connection. Each plate has a flat upper surface which fits into a slot in an elevator (**27**). The slots for the connectors and plates are located within the circumference of the cylindrical body of the elevator, thus keeping the links oriented vertically even with large diameter elevator.

REISSUES

FEBRUARY 5, 1985

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 31,821
VARIABLE FUNCTION GENERATOR

Shimaji Okamoto, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Shizuoka, Japan

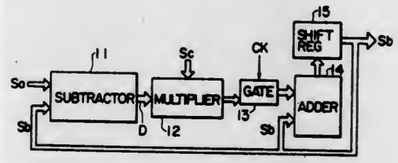
Original No. 4,135,424, dated Jan. 23, 1979, Ser. No. 769,303, Feb. 16, 1977. Continuation of Ser. No. 34,925, Apr. 25, 1979, abandoned. Application for reissue Oct. 16, 1980, Ser. No. 197,615

Claims priority, application Japan, Feb. 25, 1976, 51-19743

Int. Cl.³ G10H *1/02*

U.S. Cl. 84—1.13

11 Claims



15. An electronic musical instrument comprising:

an envelope generator which is composed of a cyclic digital filer whose transfer characteristic changes with the amount of feedback thereto;

an envelope level memory for storing its input level to control the waveshape level in accordance with the attack, decay, sustain and release of an envelope waveshape; and

an envelope speed memory for storing the filter constant of the digital filter to control the envelope speed in accordance with the attack, decay, sustain and release of the envelope waveshape,

wherein the transfer characteristic of the cyclic digital filter is controlled by changing the amount of feedback thereto with the output data of the envelope speed memory to generate a required envelope waveshape.

Re. 31,822
ABSORBENT FILMS AND LAMINATES

Robert E. Erickson, Midland, and Richard M. Krajewski, St. Louis, both of Mich., assignors to The Dow Chemical Company, Midland, Mich.

Original No. 4,117,184, dated Sep. 26, 1978, Ser. No. 809,501, Jun. 23, 1977. Continuation-in-part of Ser. No. 693,260, Jun. 7, 1976, abandoned. Application for reissue Mar. 24, 1980, Ser. No. 132,928

Int. Cl.³ A61F *13/18*

U.S. Cl. 128—156

32 Claims

26. The method of making a disposable liquid absorbent pad for use as a diaper, sanitary napkin and the like comprising the steps of:

forming a film of polymeric material capable of forming a gel upon application of liquid thereto providing a crinkled absorbent sheet having apex portions for receiving said film there across; and

producing a controlled amount of gel on said film forming a limited bond with said sheet at the apex portions facilitating wicking of liquid applied to the pad thus formed through voids between apex portions of said crinkled absorbent sheet.

Re. 31,823
CHEMICAL MILLING OF HIGH TUNGSTEN CONTENT SUPERALLOYS

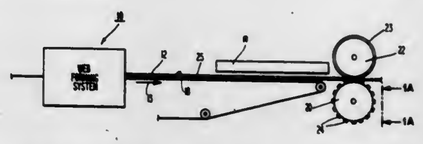
Robert E. Fishter, Boca Raton; Henry Lada, and Brian A. Manty, both of Lake Park, all of Fla., assignors to United Technologies Corporation, Hartford, Conn.

Original No. 4,353,780, dated Oct. 12, 1982, Ser. No. 192,667, Oct. 1, 1980. Application for reissue Oct. 11, 1983, Ser. No. 540,933

Int. Cl.³ C23F *1/00*; C09K *13/08*

U.S. Cl. 156—664

5 Claims



1. The method of chemical milling a superalloy having a base metal selected from the group consisting of nickel and cobalt, and a tungsten content of greater than 6 weight percent, which comprises the use of the etchant consisting essentially by volume percent of 40–60 concentrated HNO_3, [0.3–0.8] *0.6–0.8* concentrated HF, and [30] *40–70* H_2O, together with at least 0.008 moles/liter $CuSO_4$ and 0.0016–0.025 moles/liter $FeCl_3$.

Re. 31,824
SEPARATOR MEMBRANES FOR ELECTROCHEMICAL CELLS

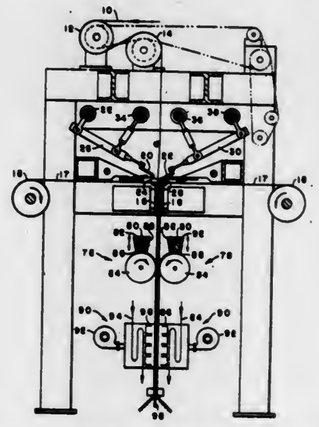
Vincent F. D'Agostino, Huntington Station; Joseph Y. Lee, Lake Grove, and Joseph C. Sentisi, Ozone Park, all of N.Y., assignors to RAI Research Corporation, Hauppauge, N.Y.

Original No. 4,230,549, dated Oct. 28, 1980, Ser. No. 802,035, May 31, 1977. Application for reissue Sep. 30, 1982, Ser. No. 431,172

Int. Cl.³ C08F *259/08, 255/02, 2/46*

U.S. Cl. 204—159.17

30 Claims



1. An improved process for the preparation of a membrane suitable for use in electrochemical cells comprising:

(a) forming a grafting solution comprising a hydrophilic monomer, and [an organic] *a* solvent *selected from the*

group consisting of an organic solvent which incorporates a transfer agent, and a chlorinated hydrocarbon;

(b) placing said solution in contact with an inert polymeric film;

(c) irradiating said contacted film to graft polymerize said hydrophilic monomer onto the film, while inhibiting homopolymerization of said graft monomer; and

(d) contacting said irradiation grafted film with an emulsifier to reduce the electrolytic resistance of said membrane.

Re. 31,825

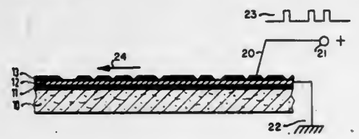
METHOD OF MAKING NONWOVEN FABRIC AND PRODUCT MADE THEREBY HAVING BOTH STICK BONDS AND MOLTEN BONDS

Charles R. Mason, Hammonton; David K. Osteen, Williamstown, and Lawrence Vaalburg, Vineland, all of N.J., assignors to Scott Paper Company, Philadelphia, Pa.

Original No. 4,315,965, dated Feb. 16, 1982, Ser. No. 161,270, Jun. 20, 1980. Application for reissue Jan. 3, 1984, Ser. No. 567,809

Int. Cl.³ D04H *1/54, 3/14*

U.S. Cl. 428—198 **27 Claims**



1. A method of autogenously bonding a nonwoven web formed predominantly of thermoplastic fibers, characterized by the steps of directing heat into the web from only one surface thereof to preheat the web, and then directing the preheated web through a bonding nip formed between opposed rolls, one of said rolls being hotter than the other roll, being capable of heating the web surface it engages to a temperature above the melt point of the thermoplastic fibers and being positioned to engage the surface of the web opposite the one into which heat was directed during the preheating operation; said web being preheated by means completely independent of the opposed rolls that form the bonding nip.

14. A nonwoven web made according to the method of claim 1.

Re. 31,826

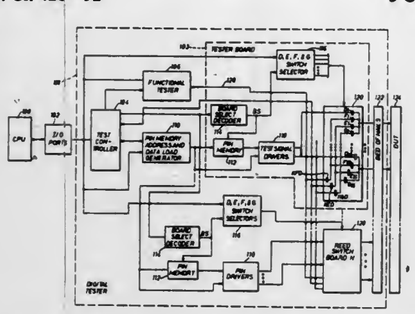
HOT MELT ADHESIVE BONDED PILE FABRICS

Greville Machell, Spartanburg, S.C., assignor to Milliken Research Corporation, Spartanburg, S.C.

Original No. 4,371,576, dated Feb. 1, 1983, Ser. No. 304,486, Sep. 22, 1981. Application for reissue Jun. 10, 1983, Ser. No. 503,206

Int. Cl.³ D04H *11/08*

U.S. Cl. 428—92 **5 Claims**



1. A hot melt adhesive bonded pile fabric which comprises a liquid-permeable base layer, a pile forming yarn adjacent to but not tufted through the base layer in pile forming fashion, the pile forming yarn having been bonded to the base layer by means of a hot melt adhesive applied to the back of said base layer and forced through the base layer into contact with said pile forming yarn.

Re. 31,827

METALIZED RECORDING CARRIER FOR RECORDING INSTRUMENTS, AND METHOD OF ITS MANUFACTURE

Richard Höhn, Stuttgart; Werner Jung, Waiblingen; Gerhard Winter, Remshalden, and Siegfried Woerner, Stuttgart, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Original No. 4,371,879, dated Feb. 1, 1983, Ser. No. 261,611, May 7, 1981. Application for reissue Nov. 25, 1983, Ser. No. 555,295

Claims priority, application Fed. Rep. of Germany, May 7, 1980, 3017450

Int. Cl.³ G01D *15/24*

U.S. Cl. 346—135.1 **19 Claims**

1. Metalized recording medium for recording instruments of the burn-out recording type upon being subjected to an electrical discharge from an electrode (20) having a contacting surface which is being passed over the surface of the medium, comprising

a substrate carrier (10);

a metal layer (12) supported by the carrier and of a thickness permitting burning-off of the metal layer when positioned beneath an energized electrode (20);

and a low-friction surface layer applied over said metal layer,

wherein, in accordance with the invention,

the low-friction slide surface layer (13) is formed, prior to contact with an energized electrode, of discontinuous islands [smaller than the contacting surface of the electrode (20)] to permit easy gliding of the electrode (20) over the surface of the carrier without marring or scratching or leaving tracks on the carrier upon relative movement between the carrier and the electrode while providing for electrical connection of the electrode with said metal layer (12).

Re. 31,828

IN-CIRCUIT DIGITAL TESTER

Douglas W. Raymond, Orinda, and Thomas C. Garrett, Walnut Creek, both of Calif., assignors to Zehntel, Inc., Concord, Calif.

Original No. 4,216,539, dated Aug. 5, 1980, Ser. No. 903,160, May 5, 1978. Application for reissue Aug. 2, 1982, Ser. No. 403,973

Int. Cl.³ G01R *31/28*

U.S. Cl. 371—20 **82 Claims**

61. Apparatus adapted for use with a central processor for the in-circuit testing during test cycles of the electrical properties of components interconnected at electrical nodes of a circuit under test, the components being responsive to test signals having first, second and disconnect logic states, said apparatus having a response signal line for monitoring a response signal from the circuit under test during a test cycle, the apparatus comprising:

(a) a plurality of programmable digital test-signal generators, each including addressable memory locations for storing digital signals representative of a test signal to be applied to the circuit under test,

(i) each of said test signals comprising an independent, selectively variable, uninterrupted sequence of said first, second and disconnect logic states,

(ii) each test signal being applied to selected nodes of the circuit under test independently of processor control during the test cycle; and

(b) a test controller operatively coupled to the central processor, for generating a test cycle wherein selected ones of said digital test-signal generators supply test signals to said circuit, thereby to cause the circuit under test to produce a response signal on a response signal line.

PLANT PATENTS

GRANTED FEBRUARY 5, 1985

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

5,400

CHRYSANTHEMUM PLANT NAMED CAVALCADE

William E. Duffett, Salinas, Calif., assignor to Yoder Brothers, Inc., Barberton, Ohio

Filed Sep. 16, 1982, Ser. No. 419,006

Int. Cl.³ A01H *5/00*

U.S. Cl. Plt.—78 **1 Claim**

1. A new and distinct plant of *Chrysanthemum morifolium,* Ramat., known by the cultivar name of Cavalcade, as described and illustrated, and particularly characterized as to uniqueness by the combined characteristics of incurved capitulum form; standard capitulum type; yellow ray floret color; diameter across face of capitulum ranging from 130 to 150 mm. at maturity; uniform nine (9) week flowering response; medium (55 to 70 cm.) plant height when grown single stem; with no long days and a low temperature tolerance of 13° C. (55° F.) for initiation and development under controlled short days with a continuous dark period of 12 to 14 hours.

5,401

CHRYSANTHEMUM PLANT NAMED VENTURE

William E. Duffett, Salinas, Calif., assignor to Yoder Brothers, Inc., Barberton, Ohio

Filed Feb. 4, 1983, Ser. No. 463,922

Int. Cl.³ A01H *5/00*

U.S. Cl. Plt.—78 **1 Claim**

1. A new and distinct plant of *Chrysanthemum morifolium,* Ramat., named Venture, as described and illustrated, and particularly characterized as to uniqueness by the combined characteristics of flat capitulum form; decorative capitulum type; deep yellow ray floret color; diameter across face of capitulum ranging from 65 to 75 mm. at maturity; uniform nine week flowering response; tall plant height when grown single stem; 12 to 15 cm. peduncles on open, normally terminal sprays, and 13° C. minimum temperature tolerance for initiation and development of flowering buds.

5,402

CHRYSANTHEMUM PLANT NAMED ECLIPSE

William E. Duffett, Salinas, Calif., assignor to Yoder Brothers, Inc., Barberton, Ohio

Filed Jun. 21, 1983, Ser. No. 506,504

Int. Cl.³ A01H *5/00*

U.S. Cl. Plt.—78 **1 Claim**

1. A new and distinct cultivar of *Chrysanthemum morifolium,* Ramat., named Eclipse, as described and illustrated, and particularly characterized as to uniqueness by the combined characteristics of semi-incurved capitulum form; decorative capitulum type; deep lemon yellow ray floret color; diameter across face of capitulum ranging from 100 to b 120 mm. at maturity; uniform nine week flowering response; medium plant height and spreading branching pattern.

5,403

CHRYSANTHEMUM PLANT NAMED RIOT

William E. Duffett, Salinas, Calif., assignor to Yoder Brothers, Inc., Barberton, Ohio

Filed Feb. 4, 1983, Ser. No. 463,923

Int. Cl.³ A01H *5/00*

U.S. Cl. Plt.—82 **1 Claim**

1. A new and distinct plant of *Chrysanthemum morifolium,* Ramat., named Riot, as described and illustrated, and particularly characterized as to uniqueness by the combined characteristics of flat capitulum form; decorative capitulum type; red bronze ray floret color; diameter across face of capitulum ranging from 60 to 75 mm. at maturity; uniform nine week flowering response; medium plant height when grown single stem; 10 to 12 cm. peduncles on open, normally terminal sprays, and 13° C. minimum temperature tolerance for initiation and development of flowering buds.

PATENTS

GRANTED FEB. 5, 1985

ERRATA

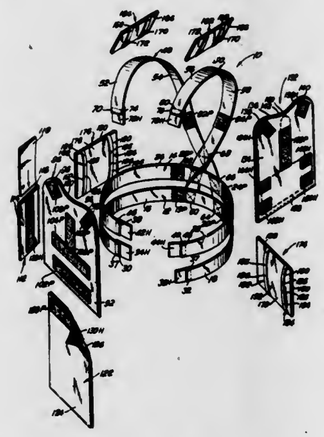
For CLASS	See PATENT NO.
126–242	4,497,308
180–335	4,497,503
384–615	4,497,523
350–425	4,497,617
534–695	4,497,734
534–603	4,497,735
534–855	4,497,736
514–009	4,497,799
514–002	4,497,800
514–015	4,497,801
514–008	4,497,802
514–450	4,497,803
514–092	4,497,804
514–179	4,497,805
514–189	4,497,806
514–222	4,497,807
514–222	4,497,808
514–206	4,497,809
514–222	4,497,810
514–231	4,497,811
514–211	4,497,812
514–166	4,497,813
514–258	4,497,814
514–274	4,497,815
514–300	4,497,816
548–150	4,497,817
514–397	4,497,818
514–397	4,497,819
514–432	4,497,820
514–302	4,497,821
514–592	4,497,822
514–512	4,497,823
514–166	4,497,824
514–556	4,497,825
514–567	4,497,826
514–381	4,497,827
514–603	4,497,828
514–672	4,497,829
514–277	4,497,830
514–717	4,497,831
383–126	4,498,192
375–091	4,498,198

PATENTS

GRANTED FEBRUARY 5, 1985

GENERAL AND MECHANICAL

4,497,069
UNIVERSALLY FITTING, MODULAR BALLISTIC GARMENT
Harold N. Braunhut, 200 Fifth Avenue, New York, N.Y. 10010
Filed Jan. 20, 1983, Ser. No. 459,369
Int. Cl.³ F41H *1/02*
U.S. Cl. 2—2.5 **13 Claims**



1. A universally fitting, modular ballistic garment comprising:
a chest protector fabricated from flexible ballistic material;
harness means for fitting said chest protector onto body torsos of varied sizes, said harness means including at least one side belt and a pair of shoulder straps;
first securing means for removably securing said side belt and shoulder straps to said chest protector so that said chest protector can be suitably positioned on a wearer's body;
said first securing means including first Velcro-type fasteners provided on inwardly facing surfaces at ends of said side belt and at ends of said shoulder straps, and mating second upper and lower Velcro-type fasteners provided on outwardly facing surfaces of said chest protector for receiving in engagement thereon, respectively, said first Velcro-type fasteners of said shoulder straps and said side belt;
plate means to reduce an impact effect of a bullet as the bullet hits a central section of said chest protector;
said plate means including a pouch fabricated from flexible ballistic material, and a trauma plate of ballistic steel material secured within said pouch, said pouch having a smaller surface than outer surface area of said chest protector;
second securing means removably securing said pouch to a central portion of said outer surface area of said chest protector in a position to protect particular parts of the wearer's body; and
said second securing means including a third Velcro-type fastener provided on an inwardly facing surface of said pouch, and a mating fourth Velcro-type fastener provided on an outwardly facing surface of said central portion of said chest protector;
said fourth Velcro-type fastener being disposed between said second upper and lower Velcro-type fasteners, and said fourth Velcro-type fastener being disposed perpendicular to said second lower Velcro-type fastener which receives said first Velcro-type fasteners of said side belt so that said pouch can be properly positioned to protect said particular parts of the wearer's body when fitted onto body torsos of varied sizes.

4,497,070
UNITARY LEG AND FOOT PROTECTIVE DEVICE
Soo S. Cho, Miami, Fla., assignor to Macho Products, Inc., Palm Bay, Fla.
Filed Dec. 16, 1982, Ser. No. 450,403
Int. Cl.³ A43B *5/00*; A41D *13/08*
U.S. Cl. 2—22 **19 Claims**

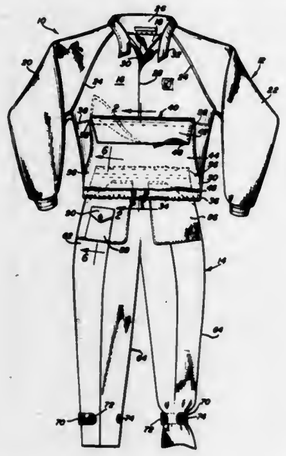


1. An integral leg and foot protective device of soft energy absorbing material to be worn by a human comprising
a lower portion having a concave configuration for covering the top and sides of the foot of the wearer;
a middle portion having a concave configuration for covering the front and sides of the ankle of the wearer;
an upper portion covering the shin of the wearer;
first strap means secured adjacent one end of said lower portion;
mating securing means attached to opposite ends of said first strap means, said first strap means being of a length so as to cross over the top of said lower portion, underneath said lower portion, and across the top of said lower portion including a section of said first strap means, with the free end of said first strap means being secured to said one end of said first strap means;
second strap means secured at one end to said upper portion;
mating securing means attached to opposite ends of said second strap means, said second strap means being of a length to pass about said upper portion with the free end of said second strap means being secured to said one end of said second strap means;
a plurality of perforations through said lower portion; and
a lace of sufficient length to pass through said perforations and under said first portion with the ends of said lace being tied together below the inner surface of said lower portion.

4,497,071
EXERCISE GARMENT
Richard S. Bell, Gloucester, Mass., assignor to Mighty-Mac, Inc., Gloucester, Mass.
Filed Feb. 18, 1982, Ser. No. 350,321
Int. Cl.³ A41D *1/00*
U.S. Cl. 2—94 **7 Claims**

1. A garment comprising a jacket including a front panel, a combined vertically opening pouch and double side entry pocket secured to said front panel, said combined pouch and pocket including inner and outer panels secured peripherally together except for top edge portions, zipper closure means extending along the top edge portions of the inner and outer panels to provide access to the interior of the pouch, means securing the bottom edge portion of the pouch to the front

panel and means securing the inner panel to the front panel of the jacket in vertically spaced relation to the bottom portion of the pouch with the side edges of the pouch being free of the



front panel thereby providing a pair of side entrances into a pocket defined by the front panel of the jacket and the inner panel of the pouch.

4,497,072
POROUS COATED GLOVE

Hiroshi Watanabe, Kurume, Japan, assignor to Towa Glove Co., Ltd., Kurume, Japan

Filed Nov. 17, 1982, Ser. No. 442,374
Claims priority, application Japan, Nov. 24, 1981, 56-189480
Int. Cl.³ A41D *19/00*
U.S. Cl. 2—161 A 11 Claims



1. A porous hand covering comprising a fabric glove base and a rubber or resin coating layer thereon, said coating layer including gripping projections projecting outward from said glove base and a plurality of depressions in said coating layer wherein said depressions form coating layer-free areas on said glove base whereby the portions of said glove base containing said depressions permit air penetration and ventilation to the inside of said glove and provide said glove with flexibility.

4,497,073
LACROSSE GLOVE

Warren D. Deutsch, 33 Mill Dam Rd., Smithtown, N.Y. 11787

Filed Jun. 29, 1983, Ser. No. 508,866
Int. Cl.³ A41D *13/08, 19/00*
U.S. Cl. 2—161 A 3 Claims

1. A lacrosse glove comprising:

(1) a hand receiving portion adapted to receive the user's hand and to substantially envelope the hand from the ends of the fingers and thumb to the edge of said hand receiving portion horizontally encircling the wrist of the user, the hand receiving portion including a palm area which envelopes the hand proper of the user, finger stalls which open into the palm area and receive the user's fingers, a thumb stall which opens into the palm area and receives the user's thumb, and padding means overlying and securely attached to the back and sides of the hand receiving portion and extending uninterrupted from the ends of the fingers and thumb to the edge encircling the user's wrist;

(2) a cuff portion extending generally around at least the lower part of the user's forearm, having a lower horizontal edge adjacent the user's wrist, an upper horizontal edge defining the upper extent of the cuff portion around the user's forearm and two vertical edges adjacent the inside of the user's forearm adjustably connected with removable lacings, padding means overlying and securely attached to essentially the entire outer surface of the cuff portion; and



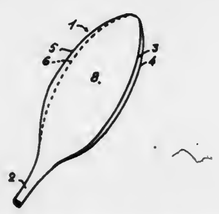
(3) a flexible connecting means attaching the hand portion to the cuff portion, said flexible connecting means comprising:

a padded portion underlying the opening adjacent the wrist of the user and protecting the wrist area between the edge of the hand receiving portion and the lower horizontal edge of the cuff portion, said padded portion having a lower horizontal edge securely attached to the inside of the hand receiving portion below the edge of the hand receiving portion encircling the wrist and an upper horizontal edge underlying the cuff portion adjacent its lower horizontal edge, said upper horizontal edge being securely attached to the lower horizontal edge of an elastic portion having an upper horizontal edge securely attached to the inside of the cuff portion generally on a line horizontally between the lower and upper horizontal edges of the cuff portion.

4,497,074
ORGAN PROSTHESES

Pierre Rey, Thorigny; Jacqueline Leandri, Paris, and Clément Abbou, Fontenay-sous-Bois, all of France, assignors to Agence National de Valorisation de la Recherche (ANVAR), Seine, France

Division of Ser. No. 784,377, Apr. 4, 1977, abandoned. This application May 30, 1979, Ser. No. 43,677
Claims priority, application France, Apr. 5, 1976, 76 09794; Mar. 10, 1977, 77 07091
Int. Cl.³ A61F *1/00, 1/24*
U.S. Cl. 3—1 44 Claims

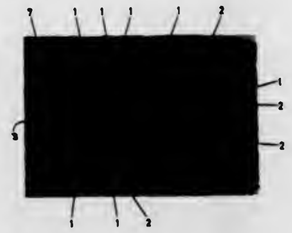


1. An organ prosthesis, having an internal surface adapted to be in contact with body fluids, formed of a flexible material having an internal surface state devoid of roughness, whereby formation of concretions and deposits, fibrinous coagulum and calculi or lithiasis, during use of the organ prosthesis, due to the roughness, is avoided, and obtained by molding, said organ prosthesis being formed by forming, on a preformed support in the shape of the prosthesis, a coating of a sol selected from the group consisting of gelose and gelatin giving, on cooling, a gel having a surface state approximately the same as the liquid-air interface of gelose or gelatin in solution at its surface not adjacent the support, said coating being formed by dipping, spraying, coating, varnishing or lacquering the sol on the support, forming said gel from said sol, then forming a hardenable flexible material coating of silicon elastomer compatible with the body liquids and tissues on the gel, the flexible material coating being formed by dipping, flowing or spraying, the flexible material coating taking the shape of the preformed support in the shape of the prosthesis, then hardening the hardenable flexible material, the hardened flexible material having a surface state adjacent said gel that is devoid of roughness, and separating the hardened flexible material and the preformed support, the hardened flexible material being the organ prosthesis, wherein the preformed support is in the shape of a ureter prosthesis, a urethra prosthesis, a vascular prosthesis, a valvular prosthesis, a cardiac prosthesis, or a bladder prosthesis, whereby the organ prosthesis of the hardened flexible material is, respectively, a ureter prosethesis, a urethra prosthesis, a vascular prosthesis, a valvular prosthesis, a cardiac prosthesis or a bladder prosthesis.

4,497,075
FILLER FOR FILLING IN DEFECTS OR HOLLOW PORTIONS OF BONES

Shigeo Niwa; Kazuhiko Sawai; Shinobu Takahashi, all of Aichi; Mikiya Ono, Saitama; Yoshiaki Fukuda, Saitama; Hiroyasu Takeuchi, Saitama, and Hideo Tagai, Tokyo, all of Japan, assignors to Mitsubishi Mining & Cement Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 191,894, Sep. 29, 1980, abandoned. This application Mar. 1, 1982, Ser. No. 353,765
Claims priority, application Japan, Oct. 8, 1979, 54-128821
Int. Cl.³ A61F *1/24;* C01B *25/32*
U.S. Cl. 3—1.9 12 Claims



1. A filler for filling in defects or hollow portions of bones to coalesce with the bone tissues wherein said filler is fluidized or plasticized by the addition of one selected from the group consisting of water and an isotonic sodium chloride solution, consisting essentially of powders of a calcium phosphate compound having the apatite crystalline structure of each crystallite size of 400 Å or larger and of each crystal grain size of 3 microns or smaller, said calcium phosphate compound being represented by the following general formula of

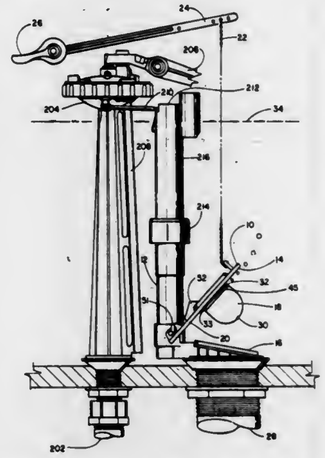
$$Ca_m(PO_4)_nOH \quad (1.33 \leqq m/n \leqq 1.95);$$

said calcium phosphate compound being prepared by baking at a temperature of from 700° C. to 1250° C., and said calcium phosphate compound having a calcium ion concentration of from 3 to 5 ppm and a phosphoric ion concentration of from 1 to 4 ppm when dissolved into an isotonic sodium chloride solution and measured after 1 to 72 hours.

4,497,076
DUAL FLUSH SYSTEM FOR CONTROLLING FLUSH WATER IN WATER CLOSET

Donald E. Sullivan, 1493 Fahlander Dr. S., Columbus, Ohio 43229

Filed Feb. 24, 1983, Ser. No. 469,256
Int. Cl.³ E03D *1/34*
U.S. Cl. 4—392 7 Claims



1. An improved adjustable discharge valve closure of the type providing a reduced water volume flush for the tank of a water closet, said discharge valve closure including a sealing portion and a buoyancy chamber portion attached to a mounting arm member which in turn is mounted in the tank for pivotal movement of the valve closure into and out of sealing engagement with the discharge valve seat, said buoyancy chamber portion, in the closed operable position of the valve closure, including a relatively lower drain hole and a relatively higher bleeder port formed through a wall of the buoyancy chamber portion below the area of said sealing engagement when said closure is in its closed position

wherein the improvement permits improved manual adjustment and control of the water volume of a flush and comprises a water inlet port formed through a wall of said buoyancy chamber and in said closed position of the closure positioned below the area of said sealing engagement and above said drain hole and, in the opened position of said valve closure, positioned lower than said bleeder port.

4,497,077
PORTABLE BASIN APPARATUS

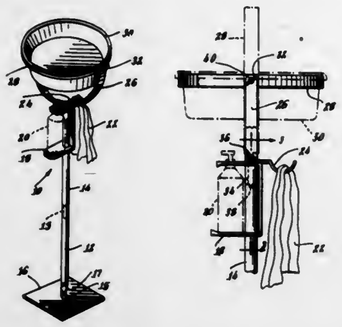
Alfred M. Provost, Feeding Hills, Mass., assignor to Anthony J. Izzo, Westport, Conn. and Orlin Sutter, West Springfield, Mass.

Filed May 20, 1983, Ser. No. 496,419
Int. Cl.³ A47K *5/00, 5/702*
U.S. Cl. 4—628 10 Claims

1. A portable wash stand device comprising a vertical support having at least one constituent member and a base means adapted to impart positional stability to said device on, and removeable affixation of it to, the surface of which it is to be used,

and a basin support means which is adapted for removeable affixation to the top of said vertical support in the form of a substantially semi-circular upward facing yoke oriented

with the pivot line described by its top-most ends passing through and normal to the axis of said vertical support and has a circular basin support member whose outside diameter is slightly less than the inside diameter of said semi circle and is pivotally affixed to the topmost ends of said



yoke with said pivot line passing through the center of the points of said pivotal affixation and describing a diameter of said circle,

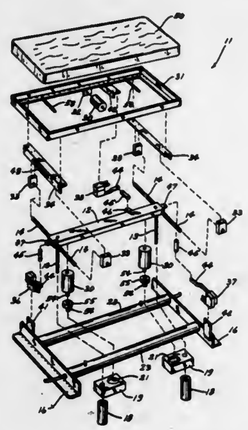
and means for pivotally affixing the position of said basin support member with respect to said yoke.

4,497,078

APPARATUS FOR PREVENTING THE TRANSMISSION OF VIBRATIONS

Jerald M. Vogel, R.R. 4; Steven J. Hooper, 4329 L-Swing #20, and Jerry L. Hand, R. R. 3, all of Ames, Iowa 50010

Filed Feb. 14, 1983, Ser. No. 466,089
Int. Cl.³ A47C *19/16*
U.S. Cl. 5—118 **15 Claims**



1. Apparatus for preventing the transmission of vibrations from one object to another comprising:

a first frame;

a second frame;

a rod attached to one of said first frame and said second frame;

bushing means for slideably receiving said rod, said bushing means being adapted to be attached to the other of said frames;

fluid supply means for supplying a compressible, nonhydraulic fluid under pressure;

force transmitting means attached at one end thereof to one of said frames for sealingly receiving said fluid under pressure;

abutment means associated with said other frame for contacting the other end of said force transmitting means for causing said frames to be pushed apart when fluid under pressure is allowed to enter said force transmitting means;

means for causing said frames to move closer together when fluid pressure is relieved in said transmitting means;

valve means connected between said fluid supply means and said force transmitting means for selectively allowing the fluid to flow selectively from said fluid supply means to said force transmitting means in one position thereof, from said force transmitting means to atmosphere in a second position thereof or to allow no flow at all to or from said force transmitting means in a third position of said valve means;

means operatively connected to said valve means for causing said valve means to be at said third position thereof when said frames are a predetermined distance apart, at said first position thereof when said frames are closer together than said predetermined distance and at said second position when said frames are farther apart than said predetermined distance;

a third frame;

a second rod operatively attached to one of said first and third frames, said second rod being disposed transversely with respect to the first said rod;

second force transmitting means operatively attached at one end thereof to said frame at one end thereof and to said third frame at the other end thereof;

second bushing means operatively attached to the one of said first and third frames which does not have a second rod attached thereto for slideably receiving said second rod;

means for causing said first and third frames to move closer together when fluid pressure is relieved in said second force transmitting means;

second valve means for selectively connecting said second force transmitting means to said fluid supply means in a first position thereof, from said second force transmitting means to atmosphere in a second position thereof or to allow no flow at all to or from said second force transmitting means in a third position thereof; and

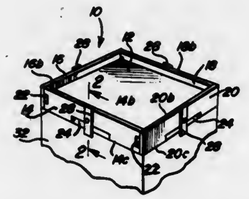
means connected to said second valve means for causing said second valve means to be at said third position thereof when said first and third frames are a predetermined distance apart, at said first position thereof when said first and third frames are closer together than said predetermined distance thereof and at said second position thereof when said first and third frames are farther apart than said predetermined distance thereof.

4,497,079

BEEHIVE AERATOR

Henry G. Kettl, 3930 Inez St., Beaumont, Tex. 77706

Filed Oct. 12, 1983, Ser. No. 542,253
Int. Cl.³ A01K *47/06*
U.S. Cl. 6—1 **10 Claims**



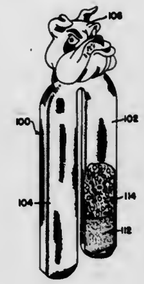
9. In combination with a beehive, a cover for support on the top super of the hive, the cover being capable of being supported on the top super in alternative mutually inverted positions, the cover including means for providing aeration at the top of the when supported in one of said positions and substantially no aeration at the top of the hive when supported in the other of said positions, wherein the cover comprises a peripheral frame and a cover sheet filling the frame and located intermediate top and bottom edges of the frame on one or the other of which edges the cover is supported on the top super of the hive in the respective alternative positions, the means for providing ventilation comprising ventilating openings in the frame between the cover sheet and one of said edges only.

4,497,080

BOOT TREE

Elizabeth Inspector, 14 Saint Malo, Pine Brook, N.J. 07058

Filed Mar. 10, 1983, Ser. No. 473,780
Int. Cl.³ A43D *03/14*
U.S. Cl. 12—128 R **8 Claims**



1. An ornamental article for maintaining, when in use, a pair of footwear in adjacent relationship, said article comprising a pair of tubular members arranged adjacent each other and joined together at one common end thereof, an ornamental head portion attached said one common end of said pair of tubular members, means within a portion of said tubular members at an end opposite the common end thereof for lowering the center of gravity of said article whereby said article can be maintained in a vertical orientation when not in use, said means for lowering the center of gravity of said article comprising a flowable material, and means within the remainder of said tubular members for maintaining the tubular shape of said tubular members whereby said tubular members can be inserted into a portion of the interior of said pair of footwear for maintaining said pair of footwear in adjacent relationship.

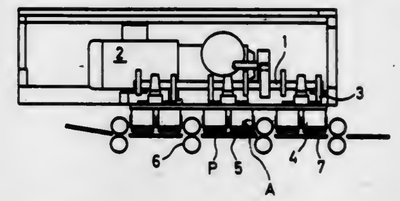
4,497,081

APPARATUS FOR TREATING PRINTING PLATES

Paul Hecke; Arnulf Bürger, both of Ludwigshafen, and Heinz-Ulrich Werther, Wachenheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed May 31, 1983, Ser. No. 499,264
Claims priority, application Fed. Rep. of Germany, Jun. 4, 1982, 3221257
Int. Cl.³ G03D *13/00*
U.S. Cl. 15—102 **3 Claims**

1. An improved apparatus for treating a printing plate produced by a photochemical process, in particular a printing plate produced from photopolymerizable substances and exposed to actinic light, in which the plate to be treated is transported from a loading station, via a washout station, a cleaning station and a drying station, to an unloading station by means of a system of driven rollers covered with velour or textile fabrics, and in which, during transportation through the washout and cleaning station, the exposed side of the plate faces upwards and the plate is below the level of the washout liquid, said improvement comprising: at least one flat washout element is arranged facing the exposed side of the plate passing through the apparatus, said washout element being reciprocable to and fro at right angles to the direction of transport of the plate and having an underside and sidewalls extending at right



angles to said direction; a groove in each of said sidewalls; and a long-fibered fabric stretched across the underside of said washout element facing the plate and fastened in said grooves by means of clamping members.

4,497,082

CLEANING CLOTH FOR GUN AND CANNON BORES

Fukubei Kogasaka, 8-4 Chugencho, Fukushima-shi, Fukushima-ken 960, Japan

PCT No. PCT/JP81/00032, § 371 Date Sep. 29, 1982, § 102(e) Date Sep. 29, 1982, PCT Pub. No. WO82/02942, PCT Pub. Date Sep. 2, 1982
PCT Filed Feb. 19, 1981, Ser. No. 433,211
Int. Cl.³ B08B *9/02*; F41C *31/00*
U.S. Cl. 15—104.165 **4 Claims**



1. A cleaning cloth body for cleaning the inside of a barrel of a firearm, said cleaning cloth body comprising:

two boards of foamed urethane resin, said two boards being molded in a substantially rectangular configuration, a reinforcing means interposed between said two boards, said two boards being secured to said reinforcing means on opposite sides of said reinforcing means, an opening defined by said two boards and said reinforcing means located at the center of said two boards and said reinforcing means, said opening being adapted to receive and be held at one end of a cleaning utensil, said cleaning utensil being threaded through the barrel of a firearm to be cleaned to pull said two boards and said reinforcing means through the barrel of the firearm for removing foreign particles adhering to the inside of the barrel after discharge of the firearm, and the combined thickness of said two boards and said reinforcing means being greater than the diameter of the barrel of the firearm to be cleaned when said two boards and said reinforcing means are folded over onto themselves at said opening.

4,497,083

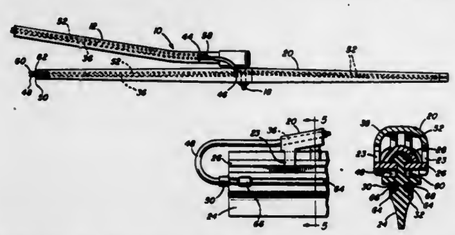
HEATED WINDSHIELD WIPER

Edward M. Nielsen, Jr., P.O. Box 992, and Walter T. Caffrey, 2170 23rd Ave., both of Columbus, Nebr. 68601

Filed Sep. 14, 1983, Ser. No. 532,061
Int. Cl.³ B60S *1/04*
U.S. Cl. 15—250.06 **6 Claims**

1. A windshield wiper structure comprising a wiper arm having means at one end for attaching the arm to a wiper terminal of a vehicle, a wiper blade carrier on the other end of

the wiper arm, a wiper blade carried by the blade carrier, and resistance wiring extending along the length of the wiper arm, through the blade carrier and along the length of the wiper blade, the wiring having a connector adjacent said one end of the wiper arm for connection into a vehicle electrical system, whereby electrical energy from said system may be supplied to the wiring to heat the wiper blade, the resistance wiring extending as a loop from said connector along the length of the wiper arm to a central part of the blade carrier, along the blade



carrier to one end thereof, back along the length of the blade carrier to the other end thereof, to one end of the blade, along the length of the blade to the other end thereof, back along the length of the blade to said one end of the blade, back to said other end of the blade carrier, back to said central part of the blade carrier, and back along the wiper arm to the other end of the loop formed as a ground connection, and wherein the loop includes wiring connectors at said one end of the blade for providing detachment and replacement of the blade.

4,497,084

WINDSCREEN-WIPER ELEMENT COMPRISING A WINDSCREEN-WIPER ARM SUBJECTED TO THE ACTION OF A COMPRESSION SPRING BY MEANS OF A STOP BRACKET

Jean Auzolat, Paris, France, assignor to Equipements Automobiles Marchal, Issy-les-Moulineaux, France

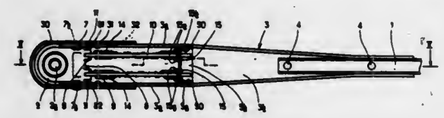
PCT No. PCT/FR82/00206, § 371 Date Mar. 31, 1983, § 102(e) Date Mar. 31, 1983, PCT Pub. No. WO83/02094, PCT Pub. Date Jun. 23, 1983

PCT Filed Dec. 9, 1982, Ser. No. 482,996

Claims priority, application France, Dec. 11, 1981, 81 23200

Int. Cl.³ B60S *1/40*

U.S. Cl. 15—250.34 **20 Claims**



1. A windshield wiper arm for connection between the output shaft of a wiper drive mechanism and a windshield wiper, said wiper arm comprising, a head adapted to be fixed on the output shaft, a U-shaped casing pivotally connected to said head for pivotal movement about an axis transverse to the drive shaft so that said casing can pivot toward and away from a windshield to be wiped by the windshield wiper, said U-shaped casing comprising a web and side flanges projecting from the web, a bracket extending between said flanges, compression means between said bracket and said head, means pivotally connecting one end of the compression means to said head for pivotal movement about an axis parallel to said transverse axis, said compression means engaging said bracket and exerting a force on the casing in a direction to cause the casing to pivot toward the windshield, said bracket being generally perpendicular to the direction of the force exerted by the compression means, and abutment means for preventing movement of the bracket under the action of the compression means, and for transmitting the force of the compression means to the casing, said abutment means comprising projections deformed inwardly of the casing from said flanges, said projections engaging opposite sides of said bracket.

4,497,085

APPARATUS FOR FEEDING MODULES OF SEED COTTON INTO DISPERSER APPARATUS

Donald W. Van Doorn; James B. Hawkins; Tommy W. Webb, and William A. Harmon, Jr., all of Columbus, Ga., assignors to Lummus Industries, Inc., Columbus, Ga.

Filed Oct. 12, 1982, Ser. No. 433,687

Int. Cl.³ D01G *7/08*; D01B *1/38*; B02C *9/04*

U.S. Cl. 19—80 R **16 Claims**



1. Apparatus for substantially uninterruptedly dispersing discrete modules of seed cotton or the like comprising:

(a) a receiving station having a supporting surface for modules,

(b) a disperser mounted in position to engage the ends of said modules and disperse the same,

(c) a low profile shuttle vehicle adapted for reciprocable travel along said receiving station toward and away from said disperser, and

(d) a reversible conveyor carried by said vehicle and adapted for reciprocable movement relative thereto in the direction of travel of said vehicle with said vehicle and its conveyor being of a height and constructed and arranged to travel under, lift for transport, and transport said modules sequentially endwise into said disperser and to pick-up and discharge each of said modules from either end of said conveyor.

4,497,086

REGULATING METHOD AND SYSTEM FOR PRODUCING A UNIFORM SLIVER IN A CARDING MACHINE

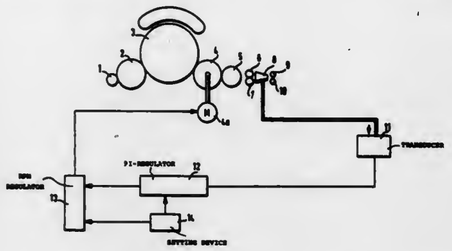
Rolf Guse, Reutlingen, and Norbert Tauber, Eningen, both of Fed. Rep. of Germany, assignors to Trützschler GmbH & Co. KG, Monchen-Gladbach, Fed. Rep. of Germany

Filed Oct. 27, 1982, Ser. No. 437,163

Claims priority, application Fed. Rep. of Germany, Oct. 31, 1981, 3143285

Int. Cl.³ D01G *15/40, 15/48*; D01H *5/42*

U.S. Cl. 19—105 **14 Claims**



1. A regulating method for obtaining a uniform sliver delivered by a carding machine having a drive, comprising the following steps:

(a) generating a signal representing a deviation of actual properties of the sliver from desired properties thereof;

(b) applying said signal by a PI-regulator to said drive for regulating said drive as a function of said deviation; said PI-regulator having a regulating time constant; and

(c) varying the regulating time constant of said PI-regulator as a function of a traveling speed of fiber material in said carding machine.

4,497,087

APPARATUS FOR CUTTING A FIBER SLIVER

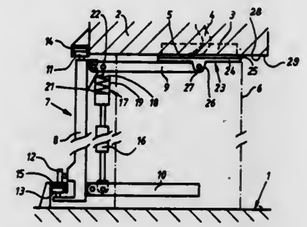
Peter Oeky, Winterthur, Switzerland, assignor to Rieter Machine Works, Winterthur, Switzerland

Filed Jun. 3, 1983, Ser. No. 500,994

Claims priority, application Switzerland, Jun. 8, 1982, 3519/82

Int. Cl.³ B65H *54/80*

U.S. Cl. 19—159 A **17 Claims**



1. In combination,

a coiler guide wheel having a fiber sliver channel for delivering a continuous length of fiber sliver into a can in a can filling station;

means for moving the can from said filling station; and

a cutting apparatus including a sliver separator, and means for moving said sliver separator below and across said fiber sliver channel while in contact with an underside of said coiler guide wheel to cut a fiber sliver extending from said channel within a length of movement from said channel corresponding to at least double the length of the longest fiber in the sliver; the movement of said sliver separator being synchronized with the movement of the can from said filling station.

4,497,088

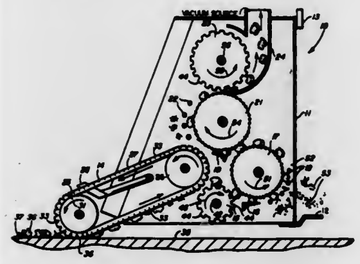
GROUND COTTON RETRIEVER WITH DUAL CLEANING MEANS

Lawrence A. Lehman, Buckeye, Ariz., assignor to Ultra Harvesters, Inc., Phoenix, Ariz.

Filed Dec. 27, 1983, Ser. No. 566,046

Int. Cl.³ D01B *3/00, 1/08*

U.S. Cl. 19—202 **8 Claims**



1. An apparatus for removing dirt and debris from clumps of cotton, said apparatus comprising in combination:

a first rotatable transfer means positioned for catching clumps of cotton from a source,

a first saw-tooth drum means having saw-teeth on its outer surface mounted for rotation about a first axis,

a second saw-tooth drum means having saw-teeth on its outer surface mounted for rotation about a second axis,

said first and second axes positioned relative to each other to define a feed space between the peripheries of said first and second drum means for receiving clumps of cotton,

said first and second drum means rotating about their respective axes with the peripheral velocity of said first drum means being less than and in the same direction as the peripheral velocity of said second drum means to enable the saw-teeth of said second drum means to engage in said feed space said clumps of cotton held by the saw-teeth of said first drum means and to carry said clumps of cotton away from said feed space,

a first grid means fixedly positioned to extend in an arcuate configuration adjacent the surface of said first drum means at a point spaced therefrom,

a second grid means fixedly positioned to extend in an arcuate configuration adjacent the surface of said second drum means at a point spaced therefrom,

the saw-teeth of said first drum means upon rotation of said first drum means holding said clumps of cotton and rubbing an exposed first surface thereof over said first grid means for cleaning thereof,

the saw-teeth of said second drum means upon rotation of said second drum means grasping in said feed space the cleaned first surface of said clumps of cotton held by the saw-teeth of said first drum means, thereby exposing a second surface of said clumps of cotton and sequentially, while holding onto said clumps of cotton, rubbing the exposed second surfaces of said clumps of cotton over said second grid means for cleaning thereof,

a doffing means rotatably positioned for removing the clumps of cotton cleaned by said second grid means from the saw-teeth of said second drum means, and

means for forcing the cleaned clumps of cotton from said doffing means into a cotton removal conduit.

4,497,089

FIBER DRAFTING ARRANGEMENT

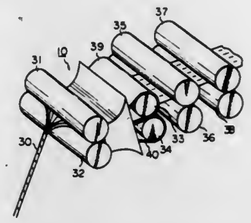
Meiji Anahara, Kariya, and Yoshihisa Suzuki, Chiryu, both of Japan, assignors to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Aichi, Japan

Filed Sep. 9, 1982, Ser. No. 416,316

Claims priority, application Japan, Sep. 16, 1981, 56-136273[U]

Int. Cl.³ D01H *5/72, 5/86*

U.S. Cl. 19—288 **4 Claims**



1. A fiber drafting arrangement comprising:

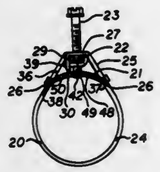
a pair of top and bottom rollers for drawing fibers between said rollers;

a pair of top and bottom aprons disposed upstream of said rollers for guiding fibers along a path toward said rollers; and

collector means disposed between said rollers and said aprons, said collector means having top and bottom walls and side walls with a hollow funnel-like space within said walls, said funnel-like space receiving adjacent portions of

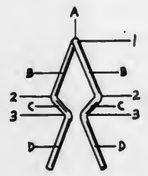
said aprons with a predetermined clearance, external wall surfaces of said collector means confronting adjacent surface portions of said rollers with a predetermined clearance, so that fibers traversing said aprons and rollers are subjected to minimal air disturbance.

4,497,090
WIRE GRIP CLAMP WITH RADIALLY-DIRECTED SCREW TAKE-UP
Robert H. Proctor, Cockeysville, Md., assignor to Murray Corporation, Cockeysville, Md.
Filed Mar. 21, 1983, Ser. No. 476,987
Int. Cl.³ B65D *63/02*
U.S. Cl. 24—20 R **13 Claims**



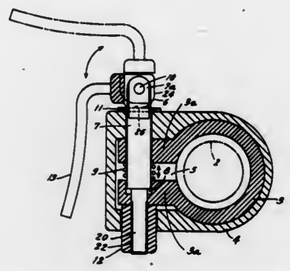
1. An adjustable wire grip hose clamp, comprising:
a wire body providing a pair of circular clamping loops in axially-spaced relationship to each other, a common seat element having means at each end for receiving therethrough a first portion of each of said loops for attachment of said seat element to said loops and for maintaining said loops in said axially-spaced relationship, each of said loops having a deformed first portion thereof traversing said seat element,
said first portion being sequentially deformable by said seat element in response to constricting movement of said loop, a threaded nut proximate to and radially spaced from said seat element,
said first portion extending from said seat element to said nut, a second portion of said wire body extending from said first portion and bent into securement with said nut, and a radially-extending adjusting screw threadedly engaging and traversing said nut and seating on said seat element, whereby screw-induced elevation of said nut relatively to said seat element progressively tensions said loops simultaneously to create sequential re-formation of said deformed first portions relatively to said seat element and constriction of said loops into clamping engagement with a hose embraced thereby.

4,497,091
TWIST CLIP
Jon S. Elliott, 305 Windsor, Park Forest, Ill. 60466
Filed Mar. 18, 1983, Ser. No. 476,429
Int. Cl.³ B42F *1/02*
U.S. Cl. 24—67.9 **5 Claims**



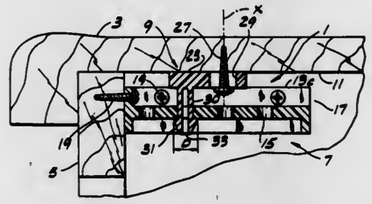
1. A clip formed of a rod of resilient material and having:
a top having opposed ends;
two legs, one at each end, depending from said top; each said leg having (a) an upper section joined to said top at a respective one of said ends, (b) a cross member connected to said upper section oppositely of said top and extending from said upper section at a first angle thereto; and (c) a foot joined to said cross member oppositely of said upper section and extending from said cross member at a second angle thereto;
said upper sections extending away from each other in a direction transverse to said top and towards each other in the direction of elongation of said top,
said cross members extending from their respective upper section towards each other; and
said feet being spaced and generally diverging away from each other; and being adapted to grasp an object disposed between said feet when said top is rotated approximately 180° relative to the object.

4,497,092
DEVICE FOR FIXING RODS IN SELECTED RELATIVE POSITION
Yoshihiro Hoshino, Hagoya, Japan, assignor to Hoshino Gakki Company, Ltd., Japan
Filed Dec. 2, 1982, Ser. No. 446,067
Claims priority, application Japan, Jul. 12, 1982, 57-105269[U]
Int. Cl.³ F16B *7/10*; F16L *37/00*
U.S. Cl. 24—514 **3 Claims**



1. Clamping means for securing coaxial, axially telescoping rods together, the clamping means comprising:
a first part for attachment to the end of one of the rods adjacent the other rod;
an annular bushing supported to the first part and extending around the other rod; the bushing being open along one circumferential side for defining an axial gap through the bushing; the bushing including first and second terminal portions on opposite sides of the gap in the bushing, such that drawing the terminal portions together reduces the gap and tightens the bushing around the other rod, and permitting the terminal portions to move apart loosens the bushing from around the other rod;
a shaft extending from the second terminal portion past the first terminal portion;
a clamp connected with the shaft for drawing the second terminal portion toward the first terminal portion; the first part blocking the first terminal portion from moving away from the second terminal portion as the second terminal portion is drawn toward the first terminal portion, whereby operation of the clamp draws the terminal portions together to clamp the bushing on the other rod;
said clamp comprising a cam connected with the shaft; the cam being movable between a clamping position at which the clamp draws the shaft to move the second terminal portion toward the first terminal portion and a releasing position at which the cam permits the shaft to shift to move the second terminal portion away from the first terminal portion to release the bushing from securing the other rod;
said first part comprising a case extending around the bushing; the shaft extending from the second terminal portion past the first terminal portion and out of the case past the first terminal portion; the cam being located outside the case beyond the first terminal portion; the cam engaging the case beyond the first terminal portion upon movement of the cam between the clamping and released positions thereof; the cam being shaped for moving the shaft for moving the second terminal portion with respect to the first terminal portion as the cam moves between the clamped and released positions;
the case being shaped for being engaged by the first terminal portion as the shaft draws the second terminal portion toward the first terminal portion; and
said cam being journaled to the shaft at a pivot axis across the shaft; the cam including a first cam surface which is at a relatively greater distance from the pivot axis and a second cam surface which is at a relatively lesser distance from the pivot axis; wherein with the first cam surface engaging the case, the shaft being drawn to move the second terminal portion toward the first terminal portion, and with the second cam surface engaging the case, the shaft being permitted to shift to permit the first and second terminal portions to separate.

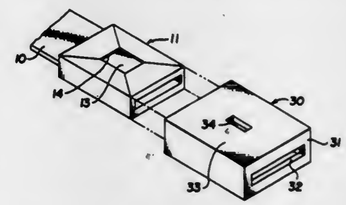
4,497,093
TWO-PART FASTENER
Jerome R. Haberkorn, 316 Arnold Ave., East Peoria, Ill. 61611
Filed Dec. 27, 1982, Ser. No. 453,630
Int. Cl.³ A44B *17/00*
U.S. Cl. 24—586 **20 Claims**



1. A two-part fastener for fastening two objects together comprising a first fastener part in the form of a bracket having a plurality of relatively closely spaced openings therein adapted to be mounted on one of the objects, and a second fastener part adapted to be mounted on the other of the objects, said second fastener part having a contractible and expansible locking member thereon adapted to contract for insertion of the member through an opening in the bracket and to expand after insertion through said opening for fastening the two fastener parts together, said locking member being independently movable with respect to said other object when the second fastener part is mounted thereon for enabling the locking member to move without substantial movement of said other object to a position in which the locking member is aligned with an opening in the bracket for insertion therethrough thereby to fasten said two objects together.

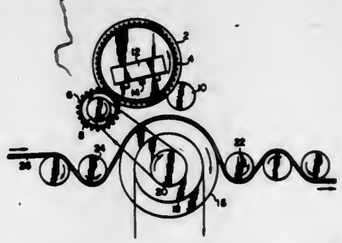
4,497,094
CHILD PROOF SEAT BELT
Roy E. Morris, Route 2, Box 149, Cedar Creek, Tex. 78612
Filed Nov. 26, 1982, Ser. No. 444,674
Int. Cl.³ A44B *17/00*
U.S. Cl. 24—633 **20 Claims**

1. For use with a seat belt which includes a latch housing and a coacting latch tongue fixed to respective seat belt segments; said latch tongue being insertable in said latch housing to fasten said seat belt, and said latch housing having an end opening to pass said latch tongue; said latch housing having a release button exposed to one face thereof, dimensioned to be depressed by a thumb or finger to release said latch tongue from said latch housing;
a safety cover for enclosing said release button in said one housing face; said cover having a release aperture dis-



posed to overlie only a small portion of said release button; said release aperture enabling depression of said release button only by an instrument dimensioned to pass through said release aperture.

4,497,095
APPARATUS FOR PREPARING A SUEDE-LIKE RAISED WOVEN OR KNITTED FABRIC
Norihiro Minemura; Takeo Kimura, and Yoshiaki Mitsui, all of Osaka, Japan, assignors to Teijin Limited, Osaka, Japan
PCT No. PCT/JP79/00074, § 371 Date Dec. 13, 1979, § 102(e) Date Nov. 29, 1979, PCT Pub. No. WO79/00926, PCT Pub. Date Nov. 15, 1979
PCT Filed Mar. 26, 1979, Ser. No. 179,396
Claims priority, application Japan, Apr. 13, 1978, 53-42643; Apr. 13, 1978, 53-42844
Int. Cl.³ D06C *23/00*
U.S. Cl. 26—2 R **1 Claim**



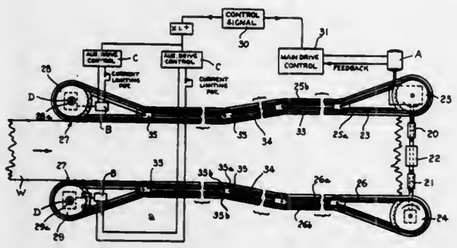
1. An apparatus for preparing a suede-like raised fabric comprising a rotatable cylindrical fabric supporter having an imperforate surface with a pattern of random contour variations thereon for supporting a travelling length of said fabric on a portion of the surface thereof, a hollow rotatable cylinder disposed in parallel spaced relation to said fabric supporter and having a liquid passable perforate surface comprised of a 5–300 mesh wire gauze whose meshes are partially and randomly closed so as to provide an open surface area constituting 10–80% of the total surface area, jet nozzles disposed inside said hollow rotatable cylinder with the nozzles directed toward said fabric supporter for randomly directing jets of liquid through said wire gauze onto the fabric and means for rotating said fabric supporter and said cylinder simultaneously to provide a random surface effect on said fabric.

4,497,096

TENTER FRAME DRIVE AND METHOD

Hans H. Richter, Warwick, R.I., assignor to Marshall and Williams Company, Greenville, S.C.

Filed Nov. 9, 1981, Ser. No. 319,703
Int. Cl.³ D06C 3/04
U.S. Cl. 26—74 **2 Claims**



2. The method of driving a pair of vertical tenter clip carrying chains for supporting a web in open width between chains with adjacent horizontal pull side runs and remote return side runs, a sprocket at each end of each chain and rails supporting said clips extending inwardly in opposed relation, comprising the steps of:

driving both chains through a mechanical drive connection at a delivery end between adjacent sprockets such that opposed tenter clips carried by respective chains are maintained in registry during a web carrying process;

separately driving each sprocket at an entrance end of said chains through separate drive means;

generating a signal responsive to conditions prevalent at the delivery end of the tenter frame and indicative of a desired torque in said chains;

controlling both of said separate drive means in response to said signal to deliver a torque to the respective chains at the entrance end to exert tension sufficient to substantially remove slack in said return side runs while permitting sufficient tension in the pull side runs of said chains; and

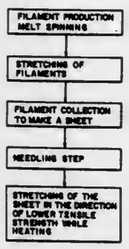
controlling said separate drive means causing sufficient and substantially equal torque to be delivered by each of said separate drive means to each of the respective chains to positively position respective chains avoiding chattering.

4,497,097

PREPARATION OF IMPROVED THERMOPLASTIC SPUN FLEECES

Heinrich Schneider, Dornach, and Johann Hammerschmidt, Linz-Plesching, both of Austria, assignors to Chemie Linz Aktiengesellschaft, Linz, Austria

Filed Jan. 8, 1980, Ser. No. 110,320
Claims priority, application Fed. Rep. of Germany, Jan. 11, 1979, 2900888; Jun. 19, 1979, 2924652
Int. Cl.³ D04H 3/10
U.S. Cl. 28—112 **4 Claims**



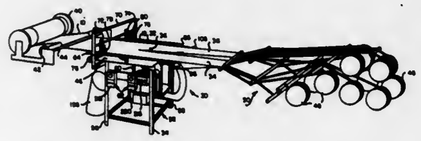
1. A process for improving the tensile characteristics of a spun fleece made from virtually continuous filaments of thermoplastics in approximately random arrangement, which fleece initially has a higher tensile strength in one direction than in the direction at right angles thereto, and which has been consolidated by needle-punching, which comprises stretching by 20 to 200% of the original length, in the direction of the lower tensile strength, at a temperature which is 85° to 25° C. below the crystalline melting point, while maintaining the length in the direction at right angles to the stretching direction by an amount within the range of ±10% of the original length.

4,497,098

FILL YARN REMOVAL APPARATUS

Khin M. Lay, Gardena, and Stephen E. Palguta, Redondo Beach, both of Calif., assignors to HITCO, Newport Beach, Calif.

Filed Sep. 7, 1982, Ser. No. 415,526
Int. Cl.³ D02G 3/00
U.S. Cl. 28—171 **19 Claims**



1. Apparatus for removing fill yarn from a web, the fill yarn extending across the width of the web between opposite edges of the web along the length of the web, comprising the combination of:

means for advancing the web through a work area;

means within the work area for cutting the fill yarn adjacent the opposite edges of the web as the web is advanced through the work area, the cutting of the fill yarn adjacent the different opposite edges of the web forming different lengths of the fill yarn extending across the width of the web; and

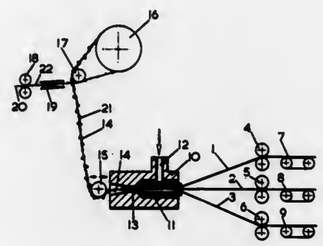
means within the work area for removing the lengths of the fill yarn from the web, the means for removing including a hook and means for providing reciprocating movement of the hook into and out of the work area.

4,497,099

METHOD FOR PRODUCTION OF SYNTHETIC YARN AND YARN-LIKE STRUCTURES

Alexander Scott, Paisley, Scotland, assignor to J & P Coats, Limited, Glasgow, Scotland

Filed Jan. 18, 1982, Ser. No. 339,888
Claims priority, application United Kingdom, Feb. 4, 1981, 8103461
Int. Cl.³ D02G 1/16, 1/18
U.S. Cl. 28—220 **6 Claims**



1. A method of producing a substantially twistless intermingled composite yarn from at least two separate strands of

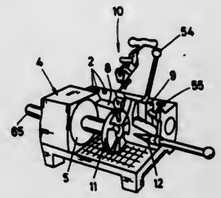
thermoplastic strand material comprising drawing at least one strand by an amount such that the ratio of draw and hence the shrinkage ratio are increased to relatively high values for the particular material of which the strand is made, subjecting the strands to a turbulent stream of fluid while feeding them forwardly at different rates of overfeed so that loops form on the strands, thus creating an intermingled textured yarn, and then heating the intermingled yarn, which heating step incorporates the steps of holding successive quanta of the yarn to a predetermined length while the yarn is being heated thus causing the loops to pull tight into the form of bud-like projections and the strands to collapse on one another so that the previously textured form of the yarn is eliminated and the bud-like projections on the different strands entangle with one another and restrict relative movement of the strands, then continuing to hold the now untextured yarn against shrinkage and at the same time cooling it to a temperature below that at which the yarn ceases all attempt to shrink further and the yarn remains completely stable as an untextured yarn.

4,497,100

APPARATUS FOR WORKING PIPES

Rudolf Wagner, Stuttgart, Fed. Rep. of Germany, assignor to Rems-Werk Christian Föll und Söhne GmbH & Co., Waiblingen, Fed. Rep. of Germany

Continuation of Ser. No. 125,696, Feb. 28, 1980, Pat. No. 4,353,154. This application Jun. 30, 1982, Ser. No. 393,777
Claims priority, application Fed. Rep. of Germany, Aug. 30, 1978, 2837737
The portion of the term of this patent subsequent to Oct. 12, 1999, has been disclaimed.
Int. Cl.³ B27C 9/02; B23P 23/00
U.S. Cl. 29—27A **4 Claims**



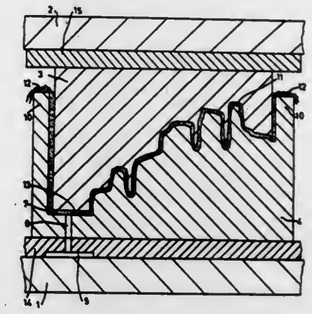
1. An apparatus with electromotor drive, comprising in combination a drive machine as a basic machine having a housing including at least one bearing opening therein as well as a clamping device installed in the housing and a motor including a turning-mechanism that drives workpieces and working devices rigidly connected therewith selectively for carrying out machining operations including cutting as well as chip removal, including means for performing the machining operations, as least one guide rod detachably and fixedly journalled in the bearing opening of the housing for said drive machine for receiving a tool-carrier provided with at least one continuous bore with which said tool-carrier is mounted to be displaceably journalled on said at least one guide rod, said at least one guide rod being interchangeable relative thereto, and a chip tray provided in a region below said at least one guide rod, said chip tray structurally being integrally connected in one piece and unitary with said housing, said tool-carrier also being capable of being fixed upon said guide rod when installed as well as disassembled simply as a unit easily releasable with respect to the drive machine through remaining shiftable upon said guide rod, a swivel head and clamping device for driving workpieces and devices for rotational machining operations, means providing a thread-cutting head and means to make it connectible with said swivel head, manual circular saw machine on a guide rod, said thread-cutting head being rotatably journalled and being provided with a tube-shaped flange gripped by said connectible means including clamping jaws, said saw machine being pivotally arranged on said at least one guide rod, being provided with a bearing eye for receiving said guide rod, and being arranged before said thread-cutting head, a cutting-off head and means to make it connectible with said swivel head of said drive machine, said cutting-off head being provided with means including a tube-shaped flange, and a vise secured on a guide rod arranged before said cutting-off head, the latter being arranged on that side of said drive machine opposite said thread-cutting head.

4,497,101

METHOD AND APPARATUS FOR THE MANUFACTURE OF A THREE-DIMENSIONAL, SHAPED GRAPHITE ELECTRODE UTILIZING A THREE-DIMENSIONAL, SHAPED FILE

Rolf Schrader, Braunschweig, Fed. Rep. of Germany, assignor to Grafon AG, Oreseline, Switzerland

PCT No. PCT/CH82/00081, § 371 Date Jan. 17, 1983, § 102(e) Date Jan. 17, 1983, PCT Pub. No. WO83/00111, PCT Pub. Date Jan. 20, 1983
PCT Filed Jun. 21, 1982, Ser. No. 459,538
Claims priority, application Fed. Rep. of Germany, Jun. 27, 1981, 3125316
Int. Cl.³ B23D 67/00, 71/00
U.S. Cl. 29—76 R **12 Claims**



1. Apparatus for the manufacture of a three-dimensional, shaped graphite electrode from a graphite electrode block or blank (3) having

a three-dimensional shaped file formed with an abrasive surface, in which the file (4) and the three-dimensional block or blank (3) are moved translationally toward one another and carry out a filing stroke, while executing planetary relative orbital movement in a plane between the shaped file and the three-dimensional electrode block or blank until the contour of the electrode block or blank is three-dimensional, shaped to correspond, with tolerance, to a negative copy of the contour of the shaped file;

a support plate (1), the three-dimensional, shaped file being secured to the support plate;

wherein the shaped file and the three-dimensional, shaped electrode additionally, periodically, execute a reciprocating movement toward and away from one another,

the space between the file and the electrode during said reciprocating movement defining a working gap;

a flushing fluid is provided, for flushing out electrode material filed away by the shaped file from the working gap between the shaped file and the three-dimensional, shaped electrode block or blank (3);

and wherein at least one flushing conduit is formed in the shaped file, terminating in the working gap, to permit introduction of the flushing fluid thereinto,

wherein, in accordance with the invention,

the shaped electrode blank is disposed above the shaped file (4);

and the shaped file, below or beneath the electrode block or blank, includes an outer wall (10) extending upwardly,

with respect to the support plate, and surrounding the electrode block in pan-like fashion, the upper rim (12) of the wall (10) of the shaped file being at a higher level than the highest point (11) of the contour of the shaped file (4) with respect to the support plate.

8. A method for the manufacture of a three-dimensional, shaped graphite electrode from a graphite electrode blank or block (3) comprising

moving a three-dimensional, shaped file with an abrasive surface translationally toward the block to carry out a filing stroke, while executing a planetary relative orbital movement in a plane, between the shaped file and the electrode block or blank until the contour of the electrode block or blank is three-dimensionally shaped to correspond, with tolerance, to a negative copy of the contour of the shaped file;

additionally periodically moving the shaped file and the three-dimensional, shaped block toward and away from one another, the space between the file and the electrode block, during said reciprocating movement, defining a working gap;

introducing a flushing fluid for flushing out material filed away by the shaped file from the working gap between the shaped file and the three-dimensional shaped electrode block,

wherein said step of introducing the flushing fluid into the gap comprises

introducing the flushing fluid into the working gap (7) at least approximately at the lowest point (13) of the contour of the shaped file;

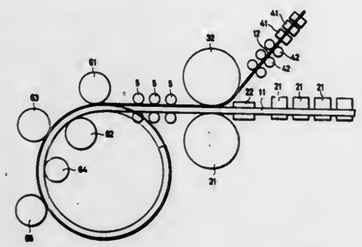
and removing the flushing fluid from the gap at a level which is higher than the highest point of the contour of the shaped file.

4,497,102

PROCESS FOR MANUFACTURING A PISTON RING

Hiroshi Ikutake, Saitama, Japan, assignor to Nippon Piston Ring Co., Ltd., Tokyo, Japan

Filed Jul. 1, 1983, Ser. No. 510,135
Int. Cl.³ B23P *15/08*
U.S. Cl. 29—156.6 **4 Claims**



1. In a process for manufacturing a piston ring for an internal combustion engine having an outer peripheral surface to which a different material is joined to define a sliding surface, said process including preparing a base piston ring material in the form of a wire rod and a thinner second wire rod used to form said outer peripheral surface, the improvement which comprises:

the first step of feeding by ralls both said base material and said second wire rod with said second wire rod being fed separately from said base material;

the second step of supplying said base material and said second wire rod to a pair of rotary disk electrodes to bring said base material and said second wire rod into intimate contact with each other between said electrodes;

the third step of supplying an electric current to said electrodes to weld said base material and said second wire rod together;

the fourth step of curling said welded base material and said second wire rod to form a piston ring with said second wire rod positioned on the outer peripheral surface of said piston ring;

the fifth step of cutting away said piston ring from said welded base material and said second wire rod; and

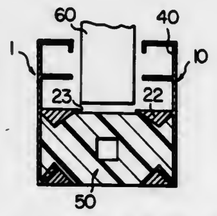
the sixth step of heat treating said piston ring.

4,497,103

METHOD FOR MANUFACTURING A HEAT INSULATION SASH BAR

Shuuichi Hosooka; Tetsuji Imai, and Haruo Hori, all of Toyama, Japan, assignors to Yoshida Kogyo K.K., Tokyo, Japan

Filed May 10, 1982, Ser. No. 376,783
Claims priority, application Japan, May 22, 1981, 56-76721
Int. Cl.³ B23P *17/00*
U.S. Cl. 29—418 **3 Claims**



1. A method for manufacturing a heat insulating sash bar comprising two oppositely positioned face members of the sash bar, one facing inside of a room and the other facing outside of the room, connecting with a connecting member made of a heat insulating material which comprises the steps of:

inserting the connecting member made of a substantially rigid dimensionally strong heat insulating material into the groove-like channel of a metal-made integral bar material having an approximately H-wise or U-shaped cross section as a whole formed by connecting two oppositely positioned face members with a connecting part to form at least one groove-like channel on one side thereof;

securely fixing the connecting member made of a heat insulating material to both of the face members by deforming projections on the face members into mating depressions in the connecting member;

removing longitudinally at least partly the connecting part of the bar material having an approximately H-wise or U-shaped cross section over whole length thereof whereby to thermally isolate the face members from each other by not being connected with the metal-made connecting part;

forming a longitudinally extending hollow space and a groove-like channel within the bar material; and filling the thus formed groove-like channel with a heat insulating material.

4,497,104

SEPARATION DEVICE MANUFACTURE

Tom A. Fowles, McHenry, Ill.; Robert Lee, Plymouth, Minn.; Frank M. Richmond, Harvard, Ill., and Henry Tobiasz, Arlington Hts., Ill., assignors to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Filed Dec. 20, 1982, Ser. No. 451,113
Int. Cl.³ B23P *17/00*
U.S. Cl. 29—419 R **11 Claims**

1. In a method for making a hollow fiber separation device, the improvement comprising:

forming an integral structure which comprises at least one tubular housing portion having a closed end and a pair of closed-end, laterally extending ports, and an elongated chamber portion extending in longitudinal relation to the tubular housing portion and communicating with the housing portion adjacent to opposed ends thereof;

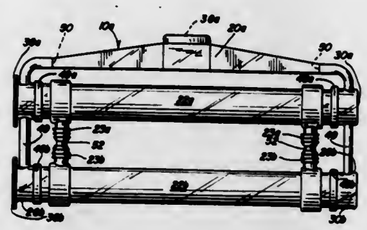
providing an aperture in the central area of said elongated chamber;

inserting hollow fibers for diffusion into said housing portion through the housing end opposed to the closed end;

closing the opposed end of said housing portion;

spinning said structure about an axis between said ends;

adding potting compound to said chamber portion through



the aperture, whereby the potting compound migrates radially outwardly through the chamber to the closed ends of the housing portion to encase the ends of the hollow fibers in potting compound; and

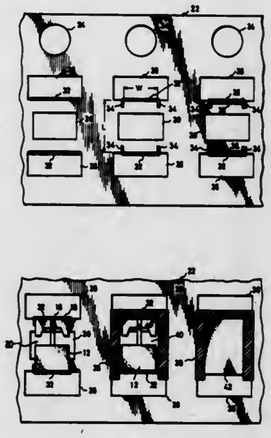
curing the potting compound.

4,497,105

METHOD OF MANUFACTURING SOLID ELECTROLYTE CHIP CAPACITORS

Toshihiko Uemura, Kyoto, Japan, assignor to Matsuo Electric Company, Ltd., Toyonaka, Japan

Filed Aug. 18, 1983, Ser. No. 524,320
Claims priority, application Japan, Aug. 20, 1982, 57-145126
Int. Cl.³ H01L *21/64*; H01G *4/00, 9/08*
U.S. Cl. 29—570 **3 Claims**



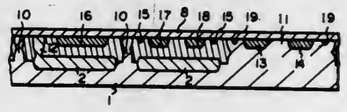
1. A method of manufacturing solid electrolyte chip capacitors comprising steps of preparing capacitor elements each having a substantially rectangular cross-section and including a cathode layer formed on the outer surface thereof, punching and press-shaping a single conductive metal strip to form successive pairs of terminal members each having a vertical portion standing erect from the plane of said strip, forming openings in said strip between said pairs of terminal members each having a width less than the distance between said terminal members and a length greater than the length of said terminal members so that each terminal member has an L-shaped cross section, the distance between the vertical portions of each pair of terminal members being substantially equal to the overall length of the capacitor elements inclusive of the anode conductor, folding end portions of each vertical portion inwardly at a right angle to form side wings with the distance therebetween being substantially equal to the width of the capacitor element placing one of said capacitor elements between each pair of said terminal members and electrically connecting each pair of said terminal members to said cathode layer and said anode conductor, respectively, of the capacitor disposed therebetween, encapsulating said capacitor elements with synthetic resin and then separating each of encapsulated capacitor elements from the remainder of said strip.

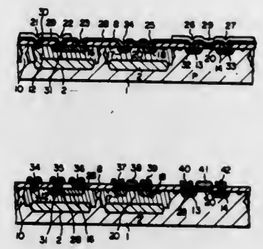
4,497,106

SEMICONDUCTOR DEVICE AND A METHOD OF MANUFACTURING THE SAME

Yoshinobu Momma, Sagamihara; Tsuneo Funatsu, Kawasaki, and Atusi Sasaki, Aizuwakamatsu, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Oct. 28, 1981, Ser. No. 315,903
Claims priority, application Japan, Oct. 29, 1980, 55-151557
Int. Cl.³ H01L *29/78, 21/225*
U.S. Cl. 29—571 **4 Claims**





1. A method of manufacturing a semiconductor device having at least one bipolar transistor and at least one MIS FET integrated in a single semiconductor substrate, comprising the steps of:

(a) forming a base region of the bipolar transistor and source and drain regions of the MIS FET in the semiconductor substrate, the base region having a first conductivity type, the source and drain regions having a second conductivity type which is the opposite of the first conductivity type;

(b) forming a gate insulating film of the MIS FET on the semiconductor substrate;

(c) forming a window for forming an emitter region of the bipolar transistor;

(d) forming a polycrystal semiconductor layer covering at least the emitter window of the bipolar transistor and the gate insulating film; and

(e) introducing an impurity through the emitter window into the semiconductor substrate to form the emitter region of the bipolar transistor in the semiconductor substrate.

4,497,107

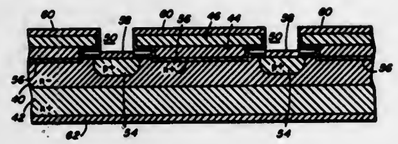
METHOD OF MAKING SELF-ALIGNED HIGH-FREQUENCY STATIC INDUCTION TRANSISTOR

Adrian I. Cogan, Waltham, Mass., assignor to GTE Laboratories Incorporated, Waltham, Mass.

Division of Ser. No. 320,240, Nov. 12, 1981, Pat. No. 4,468,682. This application Sep. 12, 1983, Ser. No. 531,524

Int. Cl.³ H01L *21/82, 21/225, 21/20*

U.S. Cl. 29—571 3 Claims



1. A method for forming a gate-source structure for a static induction transistor, said method comprising the steps of:

growing a high resistivity expitaxial layer on a surface of a semiconductor substrate;

depositing a highly doped layer of polycrystalline silicon on said expitaxial layer;

depositing a lightly doped layer of polycrystalline silicon on said highly doped layer;

forming a mask on said lightly doped layer with openings in said mask at predetermined gate window locations;

etching by anistropic plasma at said window locations through said lightly doped layer and partially through said highly doped layer;

etching by wet etching mix at said window locations through said highly doped region to the surface of said epitaxial layer, said wet etching mix having a higher etching rate in said highly doped layer than in said lightly doped layer;

growing a silicon dioxide layer on the exposed surfaces of said epitaxial, highly doped and lightly doped layers;

etching by reactive ions to remove said silicon dioxide layer from the horizontal surface of said lightly doped layer and from the unmasked surface of said epitaxial layer as defined by said window locations;

implanting gate region impurities;

annealing to form gate and source regions in said epitaxial layer by diffusion of dopant from said highly doped layer of polycrystalline silicon;

etching to remove silicon dioxide formed during said annealing; and

depositing metal over the entire surface to form gate and source electrodes without the need of a mask.

4,497,108

METHOD FOR MANUFACTURING SEMICONDUCTOR DEVICE BY CONTROLLING THICKNESS OF INSULATING FILM AT PERIPHERAL PORTION OF ELEMENT FORMATION REGION

Kei Kurosawa, Tokyo, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed May 17, 1983, Ser. No. 495,483

Claims priority, application Japan, May 21, 1982, 57-85726

Int. Cl.³ H01L *21/76*

U.S. Cl. 29—576 W 4 Claims

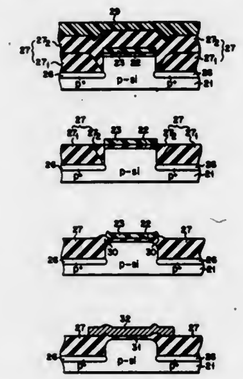
1. A method for manufacturing a semiconductor device wherein a thickness of an insulating film at a pheripheral portion of an element formation region is controlled, which comprises the steps of:

forming an antietching mask on a semiconductor substrate through an antioxidant film, said antietching mask being formed except at a prospective field region;

selectively etching a prospective field region to form a groove;

depositing a field insulating film in said groove so as to have a flat surface; and then

exposing said semiconductor substrate in an oxygen atmosphere while said antioxidant film is left thereon, thereby



locally oxidizing a surface portion of said semiconductor substrate surrounding said element formation region; and forming a desired element in said element formation region isolated by said field insulating film.

4,497,109

METHOD OF FABRICATING LIGHT-CONTROLLED THYRISTOR UTILIZING SELECTIVE ETCHING AND ION-IMPLANTATION

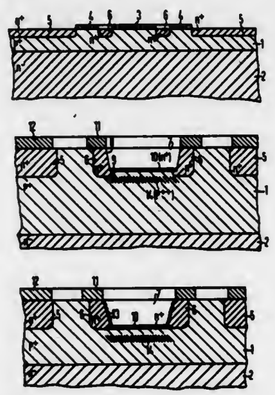
Peter Huber; Jens P. Stengl, and Jenö Tihanyi, all of Munich, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Division of Ser. No. 212,505, Dec. 3, 1980, abandoned. This application Mar. 12, 1984, Ser. No. 587,839

Claims priority, application Fed. Rep. of Germany, Dec. 21, 1979, 2951916

Int. Cl.³ H01L *21/302, 21/38*

U.S. Cl. 29—578 5 Claims



1. Process for construction of a light-controllable thyristor having a semiconductor body of a first conductivity type, said body having an upper surface, said process comprising the steps:

diffusing a first zone of a second conductivity type into said upper surface of said semiconductor body; masking of said first zone, said masking having unmasked areas;

diffusing a second and a third zone of said first conductivity type into said unmasked areas; creating a depression in said upper surface of said semiconductor body in said first zone, said depression shaped such that a step is created in the bottom of said depression by material left from said second zone; creating by ion implantation a further heavily doped layer of said second conductivity type near the bottom of said depression;

creating by means of ion implantation at the bottom of said depression in said first zone and on said step of said second zone, a layer of said first conductivity type, said layer electrically conductively connected with said first subzone of said second zone, said ion implantation creating diffusion of a doping concentration that is at least as concentrated as the doping concentration of said second zone; and

attaching an electrode to each of said second and said third zones.

4,497,110

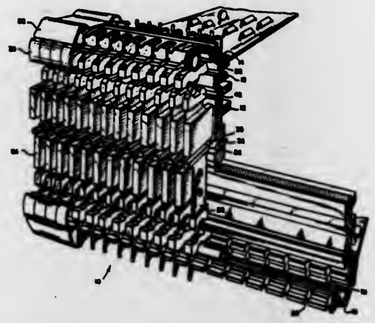
METHOD OF MAKING A HAMMER BANK ASSEMBLY

Val K. Jezbera, Thousand Oaks, Calif., assignor to Dataproducts Corporation, Woodland Hills, Calif.

Division of Ser. No. 299,043, Sep. 3, 1981, Pat. No. 4,373,440, which is a division of Ser. No. 65,766, Aug. 13, 1979, Pat. No. 4,395,945. This application May 20, 1983, Ser. No. 496,420

Int. Cl.³ H01F *7/06;* H01S *4/00*

U.S. Cl. 29—602 R 1 Claim



1. A method of manufacturing a hammer bank assembly, said assembly using hammers having a flat coil structure supported by a pair of crossed spring wires which extend through a generally rectangular foot member, comprising the steps of:

providing an elongated frame assembly having a rear vertical portion and a forwardly extending horizontal portion;

positioning the foot members of said hammers in said frame assembly above said horizontal portion;

securing said foot members to said frame assembly by placing a plurality of clips over the front of said horizontal portion and the front of the foot members, said clips being connected to a common strip member so as to facilitate one step installation of said clips; and

removing the common strip, thereby resulting in a plurality of individually removable clips.

4,497,111

COIL INSERTING APPARATUS

Tokuhito Hamane; Masaaki Tasai, both of Hirakata, and Tadashi Kubota, Katano, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Nov. 12, 1982, Ser. No. 441,361

Claims priority, application Japan, Nov. 20, 1981, 56-187533

Int. Cl.³ H02K *15/06*

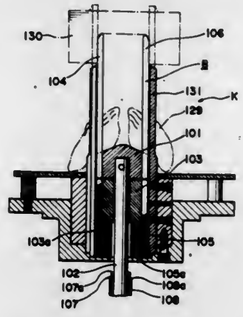
U.S. Cl. 29—734 2 Claims

1. A coil inserting apparatus for inserting coils into slots of a stator core of a rotary electric machine, comprising:

a plurality of blade members arranged in an annular configuration and spaced at predetermined intervals for guiding a coil into the slots in the core of the rotary electric machine, the blade members being divided into a plurality of groups of blade members;

a coil pusher within said annular configuration and vertically reciprocable in the axial direction of said blade members for inserting the coil into the slots under pressure by utilizing said blade members as guides;

separate blade holders, one for each group of blade members, and to which the blade members of the respective groups are attached, said blade holders being within said annular configuration one below the other beneath said coil pusher and being movable in the axial direction of said blade members independently of each other, the successive blade holders having successively larger bores through the centers thereof in the downward direction;



a pusher driving shaft extending through said bores to and on which said coil pusher is mounted;

a plurality of concentric hollow driving shafts, one for each blade holder, around said pusher driving shaft, the diameters of the shafts having a size to permit the respective hollow driving shafts to pass through the bores in the blade holders below the corresponding blade holder, whereby when a particular hollow shaft is raised, it will raise only the corresponding blade holder and the blade holders above it and the coil pusher;

rotary driving means for each of said shafts operable independently of each other; and

motion converting means for each shaft and connected between the respective shafts and the corresponding rotary driving mechanisms for converting the rotary motion of the driving means to linear motion for linearly moving the respective shafts.

4,497,112

METHOD FOR MAKING DOUBLE L-SHAPED ELECTRODE

Hiep D. Dang, Lake Jackson; Richard N. Beaver, Angleton; Frank W. Spillers, and Mark J. Hazelrigg, Jr., both of Lake Jackson, all of Tex., assignors to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 395,404, Jul. 6, 1982, Pat. No. 4,448,663. This application Dec. 12, 1983, Ser. No. 560,293

Int. Cl.³ H01R *43/00*

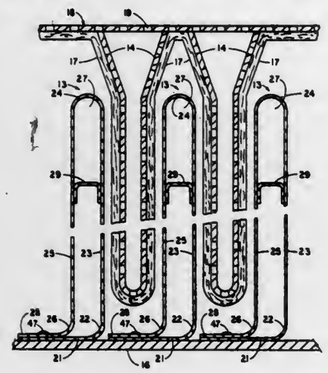
U.S. Cl. 29—825 3 Claims

1. A method for making an anode element capable of being used in a brine electrolysis cell wherein substantially vertically oriented, spaced anode elements are mechanically attached to a substantially vertically oriented anode backplate and interleaved among correspondingly spaced cathode elements, which cathode elements are also substantially vertically oriented, said method comprising;

(a) bending a single sheet of a planar surface foraminous metal in a fashion such that it has the shape of an elongated

"U" or "V" as viewed from the edge of the sheet, said bend being located sufficiently close to the center of the sheet so as to be able to form a flange and a working face in each of the two planar surfaces which extend away from the bend and which form the legs of the "U" or "V" of the bend;

(b) simultaneously bending each of the two planar surfaces which form the legs of the elongated "U" or "V"-shaped bend formed in Step (a) above into a working face section and a flange section, each working face section and flange section being a substantially planar surface which is substantially vertically oriented, each working face section being located between the "U" or "V"-shaped bend and



the flange section of its respective leg, each flange section pointing in the same direction and being parallel to the other flange section, the two working face sections being spaced from each other to define an anolyte circulation chamber thereinbetween them,

the bending of said two planar surfaces being such that the two flange sections formed partially overlap one another in a surface-to-surface contact without having to distort the planar surface of the working face sections to make such contact, and being bent so that the flange sections are of sufficient length to allow the anode element to be mechanically connected to an anode backplate at a site external to its working faces and anolyte circulation chamber.

4,497,113
ASPARAGUS CUTTER
Spencer K. Haws, P.O. Box 315, Mesa, Wash. 99343
Filed Aug. 17, 1983, Ser. No. 524,184
Int. Cl.³ B26B *27/00*; B26D *5/10*
U.S. Cl. 30—124 **7 Claims**

1. An apparatus for harvesting a ground crop having a stalk, such as asparagus spears, said apparatus comprising:

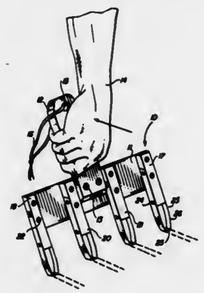
means for cutting said stalk at ground level, said cutting means consisting of a sharpened leading edge formed of a substantially flat metal plate; and

means for holding said stalk in a queue, said stalk holding means consisting of metal plate materials defining a slot adjacent said cutting means for holding said stalk queue, said slot defining means having a stalk entry end forward of said sharpened leading edge, a stalk exit end rearward of said cutting means and a path between said entry end and said exit end of approximately the width of a stalk, said entry end being substantially wider than a stalk width for capturing said stalk in said queue prior to cutting of said stalk, said exit end being open to permit rearward withdrawal of a collection of each said stalk through said queue, said slot defining means being fixedly positioned relative to said cutting means to receive and hold each



said stalk in said queue upon cutting of said stalk by said cutting means.

4,497,114
APPARATUS FOR APPLYING DESIGNS TO WALL STRUCTURE
Joe D. Belcher, 6232 Christiana Ct., Orlando, Fla. 32810
Filed Apr. 20, 1983, Ser. No. 486,918
Int. Cl.³ B43L *13/02*; E04G *21/20*
U.S. Cl. 33—41 D **6 Claims**



1. An apparatus for applying brick designs to a wall surface comprising in combination:

a handle;

a frame having the handle attached thereto;

a plurality of blade holders removably attached to the frame by threaded fasteners; and

a plurality of U-shaped blades having arcuate sides and flat bottoms, each blade being removably attached to one blade holder by a threaded fastener, whereby brick designs can be applied to stucco, cement, plaster or mortar walls, or the like.

4,497,115
WELDER'S MISMATCH GAUGE
Timothy C. Dearman, P.O. Box 937, Pearland, Tex. 77581
Filed Mar. 9, 1983, Ser. No. 473,687
Int. Cl.³ G01B *3/20*
U.S. Cl. 33—174 R **12 Claims**

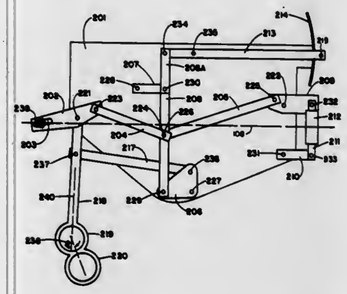
1. A gauge for use with two sections to be welded together and having confronting ends spaced by a gap, said gauge comprising a pair of elongate, side-by-side members confronting one another; means coupling said members to one another for relative axial movement; locking means for releasably locking said members in a selected one of a number of axially adjusted

positions; restraining means acting on said members and restraining relative axial movement thereof independently of said locking means; a gauge leg for each of said members; and means separably securing said legs to the respective members, each of said legs having a thickness less than that of its associated member and being flush with that side of its associated member which confronts the other of said members, said legs extending adjacent and parallel to one another from corresponding ends of the respective members and terminating in outwardly turned feet projecting in opposite directions, said legs and feet being of such thickness as to pass through said gap when said feet are positioned parallel to said gap and the combined length of said feet being greater than the width of said gap to enable said feet to span and project beyond both sides of said gap when said feet are positioned transverse to said gap.



7. A gauge for use with two sections to be welded together and having confronting ends spaced by a gap, said gauge comprising a pair of elongate members; means coupling said members side-by-side for relative axial movement thereof; a pair of elongate gauge feelers; and means removably securing said feelers to respective ones of said members in prolongation thereof and parallel to one another, said securing means comprising a transverse socket in the respective members between the ends thereof and in which the associated feeler is removably accommodated, each of said feelers terminating at its end remote from its associated member in a laterally turned foot, the foot of one of said members extending in a direction away from the foot of the other of said members, the combined lengths of the respective feet being greater than the width of said gap.

4,497,116
COMPOUND LEVER BOW SIGHT
Brian Hawkins, 59 N. Paquatuch Ave., E. Moriches, N.Y. 11940
Filed Apr. 11, 1983, Ser. No. 483,816
Int. Cl.³ F41G *1/00*
U.S. Cl. 33—265 **11 Claims**



1. A sight for archery bow of the type used to propel an arrow and which is actuated by an operator who is positioned rearward of the bow, the bow having a central region about which the arrow passes and which includes a grip used by the operator as a means for holding the bow, the bow being considered for reference purposes as positioned generally vertically and an arrow on the bow being positioned generally horizontally, the bow and arrow in these positions defining a vertical reference plane, while the direction of the arrow as indicated by the location of the arrow tip with respect to the bow when the arow is placed in its conventional position across the bow in preparation for propelling the arrow from the bow defining a forward direction, with the opposite direction from the forward direction being defined as the rearward direction, said sight comprising:

(a) a frame positioned generally in the vertical reference plane and secured to the bow about the bow's central region,

(b) a forward sighting element movably mounted to the frame, the forward sighting element being positioned generally orthogonal to the vertical reference plane, and its movement is generally in a vertical plane orthogonal to the vertical reference plane,

(c) a rear sighting element movably mounted to the frame, the rear sighting element being positioned generally orthogonal to the vertical reference plane and its movement is in a plane generally orthogonal to the vertical reference plane, the rear sighting element being positioned closer to the operator's eye than the forward sighting element, and

(d) means for simultaneously positioning the forward and rear sighting elements along any one of a plurality of sighting lines generally in the vertical reference plane, each sighting line originating at the operator's sighting eye and making a different angle with the horizontal to enable the operator to maintain his sighting eye at one position while aiming the bow at a target located at any one of a plurality of ranges, each range corresponding to one of said sighting lines,

and said sight further comprising a range indicating means linked to said forward and rear sighting elements to indicate a range corresponding to a particular sighting line to which the forward and rear sighting elements are aligned,

said sight still further comprising a range adjustment means linked to said sighting elements to provide a means by which the operator may move said range adjustment means and align the forward and rear sighting elements along any selected one of said sight lines, and wherein said means for positioning said forward and rear sighting elements comprises: a drive linkage, a forward sighting element crank comprising a first lever arm, a rear sighting element crank comprising a second lever arm, and a first and second pivot, the lever arms having two ends and being positioned in and constrained to more generally in the vertical plane, the first lever arm being connected at one end to the forward sighting element and at the other end to the drive linkage, the first pivot rotatably connecting the first lever to the frame at a point between its ends, the second lever arm being connected at one end to the rear sighting element and at the other to the drive linkage, and the second pivot rotatably connecting the second lever arm to the frame at a point between its ends, the distance from the forward sighting element to the first pivot divided by the distance from the first pivot to the connection of the drive linkage to the first lever arm being greater than the distance from the rear sighting element to the second pivot divided by the distance from the second pivot to the connection of the drive linkage to the second lever arm to provide for movement of the forward sighting element which is greater than that of the rear sighting element for the same movement of the drive linkage, enabling the forward and rear sighting elements to be aligned along any one of said plurality of lines.

4,497,117

SLOPE COMPENSATING ANGLE GAUGE

A. Ray Wrobley, and James H. Sullivan, both of P.O. Box 1471, Sedona, Ariz. 86336

Filed Sep. 12, 1983, Ser. No. 531,076
Int. Cl.³ G01C 3/00
U.S. Cl. 33—276 **4 Claims**



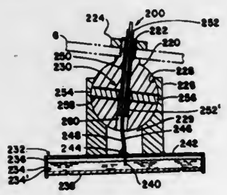
1. A slope-compensating basal area angle gauge for forest inventory procedure comprising a (slope-conpensated) sighting scale piece which comprises an elongated, longitudinally tapered strip of material with calibrations thereon which, together with the degree of taper of the scale piece, constitute trigonometric functions of the slope percentage of the terrain over which the observation is being made, said scale piece having attached thereto a flexible cord or thong provided with spaced indicator elements for determining the spacing of the scale from the observer's eye, whereby the sighting scale can be held a fixed predetermined distance from the observer's eye while sighting on a tree, the dimension of which is to be determined.

4,497,118

MOTION AND ORIENTATION SENSOR

Barney L. Byrum, 7706 Tomlinson Ave., Bethesda, Md. 20034

Division of Ser. No. 936,386, Aug. 24, 1978, Pat. No. 4,365,421.
This application Sep. 30, 1982, Ser. No. 429,492
Int. Cl.³ G01C 9/06
U.S. Cl. 33—366 **15 Claims**



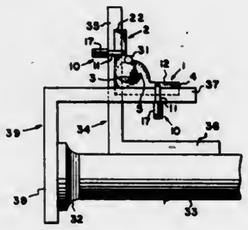
1. A device for determining orientation with respect to the vertical of an arbitrary plane called the object plane, said plane a portion of which represents an arbitrary object is fixed with respect to both the object and the device, comprising a first rod having cylinder geometry fixed to a plane of attachment at a suitable place thereon, said plane of attachment comprising the tangent plane to an arbitrary portion of the object's surface or that of a bracket or housing supporting the device; a reference plane at known orientation to the object plane and intersecting the axis of the first rod at known angle; a second rod having circular cylinder geometry the axis of which intersects the axis of the first rod at the pivot point of a pivot located at the end of the first rod distance L' measured along the axis of the first rod from its intersection with the reference plane; means for aligning the second rod with the vertical by rotating the second rod about the pivot point; means for fixing the second rod relative to the first rod; a datum plane a portion of which comprises either of the flat surfaces of a disk having right circular cylinder geometry, a portion of said flat surface being fixed to the second rod and intersecting the axis of the second rod at known distance c from the pivot point; and means for measuring y, the shortest line segment between said reference and datum planes of the generatrix of a cylindrical surface with its directrix a circle or ellipse in the reference plane and its generatrix parallel to the axis of the first rod, said surface intersecting the datum plane in a circle or ellipse; the angle B' between the axes of the first and second rods being ascertainable from y and other known quantities, and the orientation of the reference plane with respect to the vertical being ascertainable from B'.

4,497,119

PIPEFITTER'S PROTRACTOR

Timothy C. Dearman, 3002 S. Main St., Pearland, Tex. 77581

Filed Apr. 16, 1983, Ser. No. 486,103
Int. Cl.³ B43L 7/06
U.S. Cl. 33—464 **7 Claims**



1. A protractor for use with a welder's square or the like comprising a first body having along a linear side edge thereof a reduced thickness portion extending from said side edge inwardly of said body to form a planar ledge terminating inwardly of said side edge in a linear abutment parallel to said side edge; a second body in overlying relation with said first body and having along a linear side edge thereof a reduced thickness portion extending from said side edge of said second body inwardly thereof to form a second planar ledge terminating inwardly of said side edge of said second body in a second linear abutment parallel to said side edge of said second body, each of said ledges forming a flat seat for the removable accommodation of a leg of such square, said seats lying in parallel, spaced planes; clamp means carried by each of said bodies for forcibly urging against the abutment of the associated body a leg of such square seated on the ledge of the associated body; means coupling said bodies for relative rotation about an axis; and indicia carried by said bodies for indicating the relative angular positions thereof.

4,497,120

PROCEDURE AND APPARATUS FOR CHARGING AND EMPTYING THE DRYING TRAYS IN A DRYING BOX

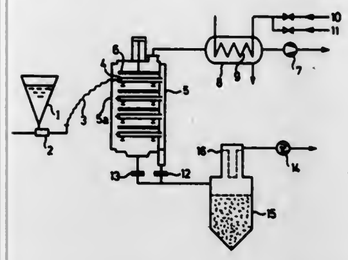
Fritz Laemmermann, Frankenthal; Werner Rindfleisch, Mannheim; Wolfgang Fabian, Wilhelmsfeld, and Rudolf Polster, Frankenthal, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Apr. 27, 1983, Ser. No. 489,213
Claims priority, application Fed. Rep. of Germany, Apr. 28, 1982, 3215753
Int. Cl.³ F26B 5/04
U.S. Cl. 34—15 **10 Claims**

1. An improved process for loading and unloading a drying tray within a drying box wherein a material may be dried by heating and which drying tray is provided with a cover that may be raised and lowered relative to said tray to open and close said tray, said process comprising:

closing said tray;

pumping a pumpable solvent-moist starting material into the closed tray to fill said tray;



opening the filled tray and drying the material therein;

closing the tray upon the material being dried; and

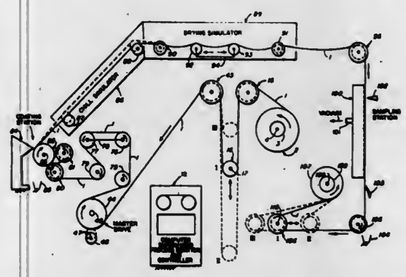
drawing air through the closed tray whereby to pneumatically convey the dried material from said tray.

4,497,121

PROCESS SIMULATOR

Edward J. Choinski, Wayland, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Division of Ser. No. 260,331, May 4, 1981, Pat. No. 4,362,122.
This application Jan. 10, 1983, Ser. No. 456,566
Int. Cl.³ F26B 3/04
U.S. Cl. 34—23 **50 Claims**



23. The process of simulating the drying of a web continuously moving at constant speed in succeeding drying zones of the same or different length with drying air of different quality in each zone, wherein a difference in quality means a difference in at least one of the air quality parameters flow rate, dry bulb temperature and humidity, said process comprising the steps of enclosing a section of an elongated strip of web in an insulating housing, supporting said section on spaced insulated idler rolls, oscillating said rolls back and forth in said housing, producing first and second streams of drying air of selected quality, and alternatively admitting said first and said second streams of drying air to said housing.

4,497,122

ROTARY COAL FEEDER AND DRYER

Jeffrey N. Nelson, and Thomas A. Peters, both of Bethlehem, Pa., assignors to Fuller Company, Bethlehem, Pa.

Filed Feb. 25, 1982, Ser. No. 352,335
Int. Cl.³ F26B 17/20
U.S. Cl. 34—68 **3 Claims**

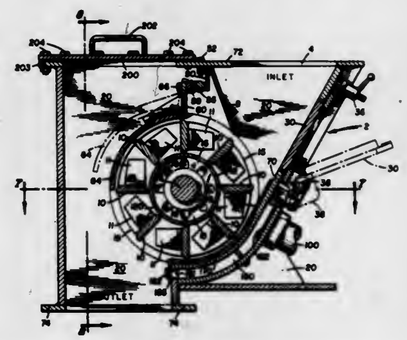
1. A feeder for lump material such as coal comprising:

a casing having a top inlet opening and a bottom discharge opening and first and second end walls;

a substantially hollow core extending between said first and second end walls and having a gas inlet and at least one gas exit communicating with the inside of said casing;

a shaft rotatably mounted inside the core and having a plurality of arms attached thereto and extending radially outward from said core;

a plurality of blades, each attached to one of said arms whereby the blades are mounted for rotation about said core within said casing and defining a plurality of pockets for carrying lump material from said inlet opening through said casing to said discharge opening;



a chamber in heat exchange relation to the bottom of the casing positioned near the discharge opening and having a gas inlet and at least one gas exit, and

first means for supplying hot gas to the gas inlet of the hollow core and second means for supplying hot gas to the gas inlet of said chamber whereby said core and said casing are heated;

said at least one gas exit of the core being positioned to permit hot gas to circulate through said core and be discharged into the casing to heat said blades;

said gas exit of the chamber being positioned to direct gas generally perpendicular to the path of lump material being discharged from said chamber.

4,497,123

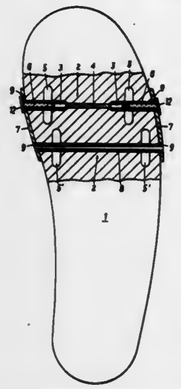
SHOE-SOLE AND METHOD FOR MAKING THE SAME

Johann Ehrlich, Krems, Austria, assignor to Patoflex Corporation, Cave Creek, Ariz.

Filed Mar. 4, 1982, Ser. No. 354,592
Claims priority, application Austria, Mar. 5, 1981, A1028/81
Int. Cl.³ A43B 13/04, 13/28
U.S. Cl. 36—32 R **32 Claims**

1. A shoe sole construction comprising a sole made of a plastic material, and fastening means embedded in said sole for securing a shoe sole upper thereto, said fastening means comprising a die casting made by sprayed die casting from an unfoamed plastic material, and die casting extending substantially transversely across said sole from one side edge thereof to the opposite side edge thereof and having outwardly facing openings therein which communicate with the exterior of said

sole through the opposite side edges thereof for securing said upper thereof so that it abuts said side edges, said die casting



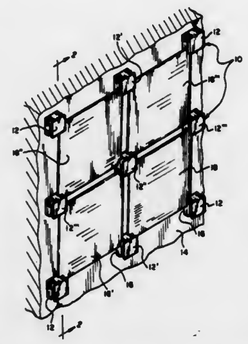
further having anchoring means for anchoring said die casting in said sole.

4,497,124
STETHOSCOPE IDENTIFICATION BADGE
Jerrel W. Olive, Apex, N.C., assignor to The Olive Company, Inc., Raleigh, N.C.
Filed Jun. 23, 1983, Ser. No. 507,042
Int. Cl.³ A44C *3/00*
U.S. Cl. 40—2 R **1 Claim**



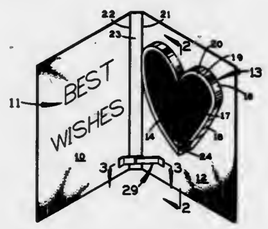
1. A stethoscope apparatus, comprising:
(a) a pair of ear pieces;
(b) a sound pickup piece;
(c) a Y-connector and tubing connecting the ear pieces to the pickup piece through the Y-connector; and
(d) an identification badge comprising:
(i) a structure formed of mated top and bottom cap pieces fitted to the Y-connector on opposite sides thereof with the legs of said Y-connector passing through apertures in sidewall portions of said pieces, each aperture being formed between the mated sidewall portions of said cap pieces;
(ii) securing means comprising portions of said top and bottom cap pieces snap-fitted together in a mating relationship under applied manual pressure to force the pieces together to maintain the pieces in securement on said Y-connector; and
(iii) a selected outer surface portion of at least one of said pieces being adapted to receive name indicia thereon.

4,497,125
WALL DISPLAY DEVICE
Daniel M. Hutchinson, 740 Woodland Ave., Mantua, N.J. 08051
Filed Jul. 27, 1983, Ser. No. 517,669
Int. Cl.³ G09F *3/18*
U.S. Cl. 40—10 R **13 Claims**



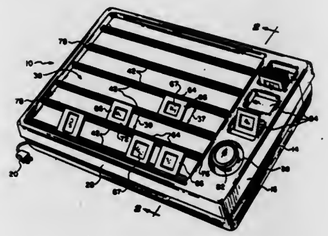
1. A support device for holding on a wall semi-rigid panels at their corners comprising:
a plurality of blocks each having an attachment means for firm attachment of each block to a wall,
wherein each block has a front face, two side faces, a top face and a bottom face, and
wherein each block has two vertical channels each opening on opposite side faces with each channel extending through the bottom face of a width to receive the thickness of the semi-rigid panels to be held, and
wherein each block has two vertical corner channels both opening through the top face and one of them opening through one side face and the other opening through the opposite side face with each corner channel terminating at a bottom stop in the downwardly direction at a depth less than the vertical depth of the vertical channels from the bottom face, the corner channels being of a width to receive a corner of the panels.

4,497,126
GREETING CARD WITH ILLUMINATED MESSAGE AND DESIGN
Rodrigue Dejean, 2220 Fillmore St., Apt. 104, Hollywood, Fla. 33020
Filed Apr. 6, 1984, Ser. No. 597,696
Int. Cl.³ G09F *1/00*
U.S. Cl. 40—124.1 **13 Claims**



1. A greeting card with illuminated design and reflective message comprising:
a folding card having at least a first and a second inside surface joined by at least one fold;
at least one raised design having an interior design space and a window attached to said first inside surface;
a reflective message attached to said second inside surface;
a folding light switch operatively attached to said first and second inside surfaces;
at least one electric light source disposed inside said raised interior design space;
a reflector for reflecting light from said light source onto said reflective message;
an electric battery;
wiring for interconnecting said folding light switch, said light source and said battery, said wiring constituting an electrical circuit;
said folding light switch operating to activate said light source when said card is opened along said fold.

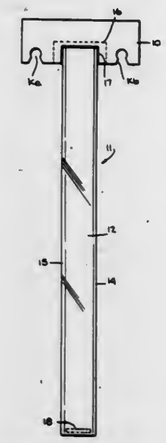
4,497,127
PHOTOGRAPHIC SLIDE SORTER
Steven M. Breslau, Evanston, Ill., assignor to Sima Products Corporation, Chicago, Ill.
Filed Apr. 8, 1983, Ser. No. 483,165
Int. Cl.³ G02B *27/02*
U.S. Cl. 40—367 **6 Claims**



1. A photographic slide sorting and handling device for retaining a plurality of rectangular-shaped slides to be viewed and sorted upon a surface comprising, a sorting surface having a generally rectangular shaped depression formed therein, a plurality of parallel spaced troughs formed in and extending the elongate length of said depression, a plurality of elongate channel shaped slide support members arranged in parallel spaced disposition above said sorting surface and being secured to said sorting surface at the location of said troughs, each said slide support member including a respective slide-receiving slot formed along the elongate length thereof, said slide-receiving slot being of generally C-shaped cross-sectional configuration with a mouth defined by a bottom wall disposed generally parallel to said sorting surface and a top wall disposed in spaced relationship to said bottom wall but at a generally acute angle with respect thereto, a slide resting surface formed on each support member spaced above said slide-receiving slot and extending along the elongate length thereof, said slide resting surface being defined by the top wall of said slide-receiving slot, the slide-receiving slot of each support member being adapted for receipt therein of an edge of a photographic slide with the opposite edge of the slide engaged against the resting surface of the next adjacent support member, the dimensions of the slide-receiving slot of each support member being such as to permit selected slides to be inserted into said slot and freely moved along the support members during sorting of the slides but prevented from falling out of the slide-receiving slot if the device is jostled or otherwise accidentally jarred during use thereof.

4,497,128
SINGLE-CHANNEL MICROFICHE MASTER
Mark O'Connor, Freeport, N.Y., assignor to NB Jackets Co., Chicago, Ill.
Filed Aug. 4, 1980, Ser. No. 174,900
Int. Cl.³ B42F *5/00*
U.S. Cl. 40—405 **7 Claims**

1. A single-channel microfiche master for housing a strip of microfilm having a predetermined width and having a series of image frames thereon, and updating add-on film chips of the same width, said master being reproducible by contact printing to provide reference copies, said master comprising:
a rectangular tab having a pair of notches cut into the lower edge thereof at spaced positions, said tab being bridgeable across a pair of notch-receiving rails; and
a jacket formed by superposed front and rear panels of transparent plastic material interconnected by prallel ribs to define a single channel having a width substantially



equal to said predetermined width for accomodating the microfilm strip and said add-on chips, said front panel being thinner than said rear panel to facilitate contact printing, one end of the jacket being secured to the tab at a position intermediate the notches, whereby the jacket and the tab form a T-shaped structure, one of the panels having a slot therein adjacent the free end of the jacket to permit endwise machine insertion of the strip and the chips into the channel.

4,497,129
FISHERMAN'S ACCESSORY
Billy D. Chestnut, Rte. #1, Box 299, Magnoli, N.C. 28453
Filed Nov. 23, 1982, Ser. No. 443,879
Int. Cl.³ A01K *97/10*
U.S. Cl. 43—21.2 **3 Claims**



1. A fishing device for supporting a fishing rod comprising:

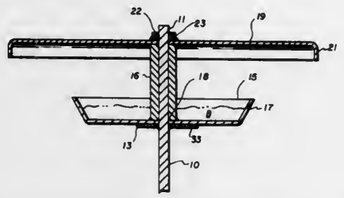
a ground engaging post;
a cylindrical rod holder opened at one end to receive a fishing rod and at least partially closed at the other end to support the fishing rod;
a combined bait box and cutting board integral with said rod holder;
said bait box having four walls forming a square box and a bottom;
said cutting board having a horizontal surface for cutting where said cutting board has a portion forming the bottom of said bait box; and a slot in said fishing device for receiving said ground engaging post,
said cutting board has a pair of support means extended from said rod holder at an angle to a point under the cutting surface, and a third support extending from said rod holder at an angle to a point under said bait box bottom portion.

4,497,130
RODENT TRAP
John P. Fitzgerald, 119 S. Culver St., Baltimore, Md. 21229
Filed Jul. 13, 1983, Ser. No. 513,167
Int. Cl.³ A01M *19/00*
U.S. Cl. 43—98 **2 Claims**



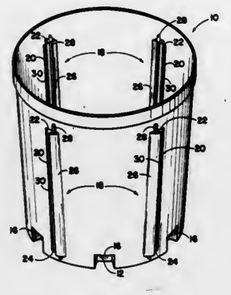
1. A rodent trap, comprising, in combination, a plastic housing and an electrical mechanism in said housing for automatically electrocuting a rodent entering therein; said housing comprising a tube which is open at opposite ends, and having downwardly converging opposite side walls, a bait inside the center of said tube being affixed to the ceiling thereof, and an upwardly arched, elongated, flexible, spring steel ramp upon the floor of said housing; and said electrical mechanism comprising a switch mounted upon said floor and underneath said ramp, for being depressed thereby when a rodent walks thereupon heading for said bait, said switch being in an electrical circuit with a pair of elongated contact strips mounted along lower portions of facing sides of said side walls, and with an exterior electric power source.

4,497,131
SAFETY BAIT DISPENSER
Donald D. Hicks, Geraldine, Mont. 59446
Filed Dec. 8, 1981, Ser. No. 328,485
Int. Cl.³ A01M *1/20*
U.S. Cl. 43—131 **9 Claims**



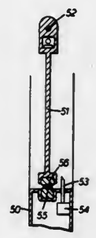
1. An apparatus for safely dispensing poisonous bait or the like comprising in comination:
a centrally disposed anchoring spike around which is disposed a lower bait pan, and an upper cover pan, a spacer therebetween providing a peripheral open area wherein said bait pan has an upwardly and outwardly extending peripheral lip and wherein said cover pan has a vertically downwardly depending peripheral lip wherein said bait pan has a stop means affixed to a bottom surface thereof in a location to abut against a flat washer affixed to said spike whereby said cover pan can only be removed from said spike when said bait pan is still in the ground by grasping said bait pan and rotating said cover pan.

4,497,132
AIR-ROOT-PRUNING CONTAINER
Carl E. Whitcomb, Stillwater, Okla., assignor to Board of Regents for the Oklahoma Agricultural and Mechanical Colleges Acting for and on Behalf of Oklahoma State University, Stillwater, Okla.
Filed Nov. 9, 1981, Ser. No. 309,085
Int. Cl.³ A01G *9/02*
U.S. Cl. 47—66 **11 Claims**



1. A container adapted to contain a growing medium and a plant comprising:
(a) a bottom wall;
(b) a circumferential upwardly extending sidewall attached to the perimeter of said bottom wall thus forming an open-topped container; and
(c) one or more vertical air-root-pruning means displaced in said sidewall forming an air gap offset from said sidewall, to air-prune roots of said plant thus inhibiting the tendency of said roots to grow in a spiral and stimulating additional root branching.

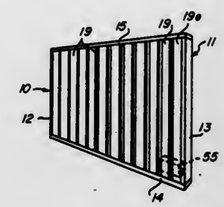
4,497,133
PET DOOR WITH CONTROL CIRCUIT THEREFOR
Philip T. Blenkinsop, 56 Chapel La., Fowlmere, nr. Royston, Hertfordshire, England
Filed Apr. 19, 1983, Ser. No. 486,533
Claims priority, application United Kingdom, Apr. 23, 1982, 8211861
Int. Cl.³ E05F *15/20*
U.S. Cl. 49—31 **6 Claims**



1. A control circuit for unlatching a door and comprising a transmitter coil,

means for pulse energising said transmitter coil,
means connected to said transmitter coil for detecting the frequency of a.c. components produced in the current in said transmitter coil by interaction of said transmitter coil with an outside object and for comparing the detected frequency with a standard frequency, and
means responsive to the detecting and comparing means for operating the latch if said detected frequency is substantially equal to said standard frequency.

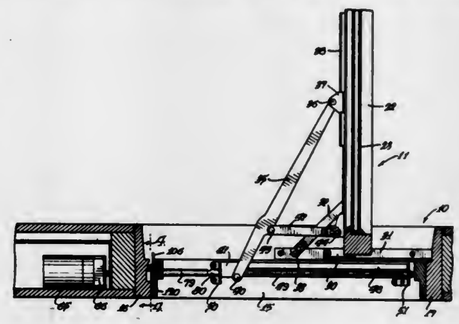
4,497,134
EXTERIOR LOUVER AND LOUVER APPARATUS
Bruce E. Meyer, 5649 E. Greenwood Pl., Denver, Colo. 80222, and John S. McIntosh, 7165 Newton St., Westminster, Colo. 80030
Filed Sep. 13, 1982, Ser. No. 417,354
Int. Cl.³ E06B *7/08*
U.S. Cl. 49—91 **23 Claims**



1. In an exterior louver apparatus, the combination comprising:
a frame including an oblique frame member and another frame member opposite and spaced from said oblique frame member;
a plurality of exterior louvers extending between said frame members, said louvers being movable about a pivotal axis between open and closed positions, each said louver having pivot pins at the opposite ends adjacent one longitudinal edge, said pivot pins being supported in alined holes in said frame members in a bearing means, means including a sleeve bearing and a ball-like bearing which together form a universal-type joint at one end of each louver to provide for a free pivot action of each louver; and
a louver position control means extending between and pivotally connected to each louver for simultaneously rotating said louvers about their pivotal axes between said open and closed positions.

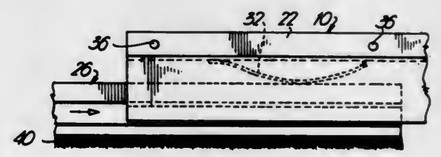
4,497,135
AUTOMATIC OPERATOR AND LOCKING MECHANISM FOR A CLOSURE
Gregory J. Vetter, Owatonna, Minn., assignor to Truth Incorporated, Owatonna, Minn.
Filed Nov. 15, 1982, Ser. No. 441,547
Int. Cl.³ E05F *15/00*
U.S. Cl. 49—280 **16 Claims**

1. An automatic operator and locking mechanism for a closure comprising, means connected between the closure and a closure frame operable to open and close the closure, means releasably connectable between the closure and the closure frame for releasably locking the closure in closed position, a power source, gearing connected between the power source and both of said means and having an input means operatively connected to the power source and a pair of output connections operatively continuously connected one to each of said means, said gearing being operable to continuously apply force to both said means and drive the output connection having the least resistance to movement, and trigger means movable by closure contact and responsive to the open or closed position of the closure for controlling the resistance applied to the



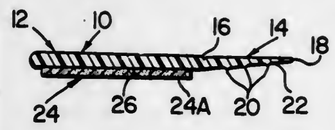
output connection operatively connected to the means for releasably locking the closure.

4,497,136
SELF-ADJUSTING WEATHER STRIP
George Khalil, P.O. Box 481, Kentville, Nova Scotia, Canada
Continuation of Ser. No. 886,411, Mar. 14, 1978,. This application Dec. 9, 1983, Ser. No. 560,252
Claims priority, application Canada, Mar. 15, 1977, 224,043
Int. Cl.³ E06B *7/16*
U.S. Cl. 49—481 **1 Claim**



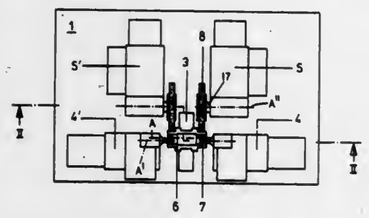
1. A self-adjusting weather strip assembly comprising a main aluminum extrusion having a flat elongate base plate with an integral channel therealong, said channel being rectangular in cross section having a first side wall and a second side wall, said first side wall having a smooth and uninterrupted surface, said second wall having an elongate opening therealong; a second elongate aluminum extrusion configured generally as an I beam in cross section, one cross bar of the I beam being approximately square in cross section and being adapted to be slidably received in the channel of said main extrusion with the stem of the I beam passing through said elongate opening thereof, the other cross bar of said I beam having an elongated slot an elongate weather strip facing member comprising an elongate pile strip and rigid backing said backing being slidable and retained in said slot with said pile extending outwardly therefrom; a plurality of curved bar springs slidable within channel between the first side wall and the square bar of said I beam and movable from one end to the other, each of said spring means having an integral short extension projecting from one end thereof and a curvature to press said square bar against said second side wall, said integral extension biting the surface of said first wall to maintain said spring means and said main and second elongate extrusions in relatively stationary selected positions when so pressed and freely movable relative to each other upon removal of said second elongate extrusion from said first extrusion.

4,497,137
WEATHER STRIP
Jon N. Nelson, Golden, Colo., assignor to Energy Conservation Associates Incorporated, East Lyme, Conn.
Filed Oct. 5, 1982, Ser. No. 432,802
Int. Cl.³ E06B *7/16*
U.S. Cl. 49—496 **4 Claims**



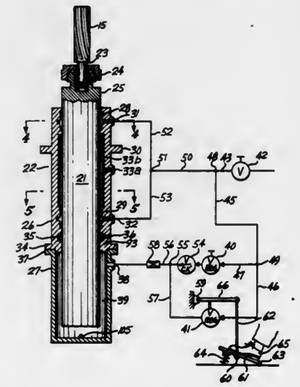
1. A resilient plastic weather strip comprising a semi-rigid, elongated flat attachment body and a relatively flexible extension, the flexible extension being formed in integral relation to the flat attachment body along one side edge thereof and defining a juncture between the flat attachment body and its flexible extension, the juncture defining a longitudinally extending flex axis, the flexible extension being deflectable about said longitudinally extending flex axis between a relaxed nonsealing position and a deflected sealing position, the flexible extension being tapered from said juncture to a free terminal edge and providing a variable pliancy which gradually increases in flexibility laterally across the flexible extension toward said free terminal edge, the flexible extension in its relaxed nonsealing position having one surface extending in its entirety in generally coplanar relation to a corresponding surface of the flat attachment body, the flexible extension in its deflected sealing position assuming a substantially planar condition diverging at an angle relative to the flat attachment body, the flexible extension having a plurality of longitudinally extending ribs formed on a sealing surface of the flexible extension in parallel relation to said longitudinally extending flex axis.

4,497,138
APPARATUS FOR SIMULTANEOUSLY GRINDING INNER AND OUTER WORKPIECE SURFACES
Jürgen Schreiber, Wetzlar, Fed. Rep. of Germany, assignor to Buderus Aktiengesellschaft, Wetzlar, Fed. Rep. of Germany
Continuation of Ser. No. 318,259, Nov. 4, 1981, abandoned. This application Nov. 25, 1983, Ser. No. 555,433
Claims priority, application Fed. Rep. of Germany, Nov. 5, 1980, 3041663
Int. Cl.³ B24B *7/00*
U.S. Cl. 51—3 **3 Claims**



1. A grinding apparatus for simultaneously machining internal and external surfaces of both ends of a tubular workpiece, the apparatus comprising:
a base;
means including a double-membrane hydraulic chuck of the centerless type on said base annularly surrounding said workpiece for supporting said workpiece between its ends for rotation about an axis passing through said ends;
drive means connected through said chuck to said workpiece for rotating same about said axis;
respective first grinder means on said base at each axial end of said chuck means and engaging therein for grinding respective internal surfaces of the ends of said workpiece in said chuck means;
respective second grinder means on said base to each axial side of said chuck means for grinding respective external surfaces of the ends of said workpiece in said chuck means while said first grinder means are grinding said internal surfaces of the ends of said workpiece; and
securing means for retaining both of said grinder means releasably on said base at the respective axial ends of said workpiece adjacent said chuck means.

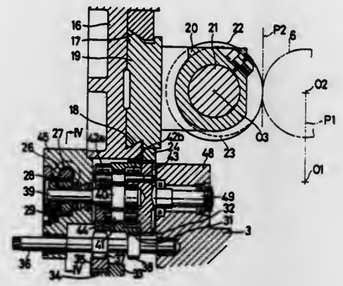
4,497,139
APPARATUS FOR PRECISION GRINDING OF END MOUNTED OBJECTS
Clarence R. Adams, Kirkland, Wash., assignor to The Boeing Company, Seattle, Wash.
Continuation of Ser. No. 374,722, May 4, 1982, abandoned. This application Aug. 9, 1984, Ser. No. 640,202
Int. Cl.³ B24B *3/02*
U.S. Cl. 51—95 LH **25 Claims**



1. Apparatus for supporting an object while it is being dressed and for moving the object relative to dressing means positioned to be contacted by a side portion of the object during axial travel of the object, comprising:
a vertically oriented support assembly that includes a piston member, and a cylinder member having an open end into which the piston member is received; one of said members being movable and having a pressure surface, and the other of said members being fixed; and said members defining a variable volume chamber therebetween, with at least a portion of said chamber being below said pressure surface;
mounting means for securing the object in a vertical position to an outer end portion of said movable member;
supply means for continously supplying pressurized fluid into said chamber and to said pressure surface to exert an upward force on said movable member that is less than the combined weight of said movable member and the object secured thereto by a predetermined amount to thereby counterbalance a portion of said combined weight;
moving means for exerting an additional upward force on said movable member to move said movable member and said object axially upwardly;
leak means for allowing the pressurized fluid supplied to said pressure surface to leak away from said pressure surface to in turn allow the downward force of said combined weight alone, without the application of any other downward force, to move said movable member and said object axially downwardly at a controlled rate upon removal of the additional upward force of the moving means; and

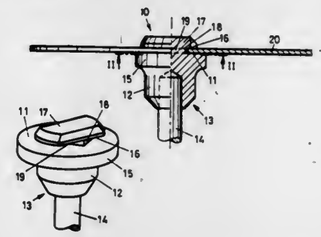
pressurized fluid bearing means between said piston member and said cylinder member.

4,497,140
CAM GRINDING MACHINE
Tsuyoshi Koide, Toyota; Toshio Maruyama, and Toshio Tsujuchi, both of Kariya, all of Japan, assignors to Toyoda Koki Kabushiki Kaisha, Kariya, Japan
PCT No. PCT/JP82/00082, § 371 Date Jul. 12, 1982, § 102(e) Date Jul. 12, 1982, PCT Pub. No. WO82/03592, PCT Pub. Date Oct. 28, 1982
PCT Filed Mar. 27, 1982, Ser. No. 403,509
Claims priority, application Japan, Apr. 20, 1981, 56-58452
Int. Cl.³ B24B *17/02*
U.S. Cl. 51—101 R **7 Claims**



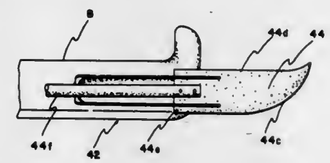
1. A cam grinding machine comprising:
a bed;
a traverse table slidably mounted on said bed for indexing a workpiece to be ground by a grinding wheel;
a swingable support pivotably mounted on said traverse table;
a plurality of master cams mounted on said swingable support and rotatable synchronously and coaxially with said workpiece;
a roller support mounted on said traverse table to be movable in the direction parallel to the axis of said master cams;
a large diameter cam roller and a small diameter cam roller supported on said roller support and spaced from one another by a distance different from a pitch of said master cams in the axial direction of said master cams;
urging means for pivotably urging said swingable support to bring said master cams into contact with one of said cam rollers so as to generate a cam profile on said workpiece during rotation of said master cams; and
cam roller moving means for moving said roller support so as to bring one of said cam rollers into face to face relation with one of said master cams, said cam roller moving means including:
a rack secured to said roller support;
a star gear shaft rotatably mounted on said traverse table and having a star gear fixedly provided thereon;
dogs secured to said bed for selective meshing with said star gear;
a planetary gear mechanism having a sun gear for operably connecting said rack with said star gear; and
driving means composed of a linear motion cylinder device for rotating said sun gear so as to move said roller support by an amount equal to said distance in the axial direction of said master cams when said star gear is prevented from rotating due to the engagement with one of said dogs, and for preventing the rotating of said sun gear so as to move said roller support by an amount equal to said pitch through the engagement of said star gear with one of said dogs when said traverse table is slid for indexing said workpiece.

4,497,141
SMOOTHING, CUTTING AND POLISHING TOOL
Sven Jarby, Riethalde, CH-9658 Wildhaus, Switzerland
Filed May 31, 1983, Ser. No. 499,565
Int. Cl.³ B24B *45/00*
U.S. Cl. 51—168 **20 Claims**



1. A method of mounting and operating a disc as a rotary tool on a disc drive subject to rotation in a first sense and alternatively in an opposite second sense of rotation, comprising in combination the steps of:
providing a disc supporting surface on the disc drive; and
releasably retaining the disc on the disc supporting surface in a first force-transmitting relationship with the disc drive for said first sense of rotation, but providing play between said releasably retained disc and the disc drive for movement of the disc into an alternate second force-transmitting relationship upon reversal of the disc drive to said second sense of rotation.

4,497,142
BUSH AX SHARPENING HOLDER AND METHOD OF RETAINING
L. A. Seasoms, Rte. 1, Box 63-A, Clarkton, N.C. 28433
Filed Jan. 27, 1983, Ser. No. 461,589
Int. Cl.³ B24B *19/00*
U.S. Cl. 51—218 R **2 Claims**



1. A bush ax sharpening blade holder for receiving and supporting a bush ax of the type having an elongated handle and a blade projecting from said handle in a plane that extends parallel to the longitudinal axis of said handle, and wherein said bush ax holder is adapted to be mounted to a support structure such as a vehicle bumper for holding the bush ax during sharpening, said bush ax sharpening holder comprising in combination: an elongated main body in the form of a generally U-shaped channel structure having two laterally spaced upstanding elongated sides disposed in spaced apart relationship with respect to each other, a frame structure interconnecting said elongated sides of said U-shaped channel-like main body, and opposite open ends formed on opposite ends of the generally U-shaped channel structure; an elongated handle receiving area defined between said laterally spaced sides of said elongated main body for receiving said handle of said bush ax; mounting means operatively associated with said main body for securing said bush ax sharpening holder to a support structure such as a vehicle bumper; a pair of elongated slots formed in the upstanding sides of said main body and extending longitudinally along the said elongated sides from an open end of

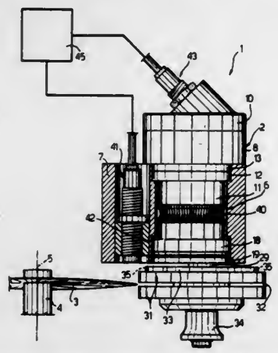
said main body a predetermined distance toward the opposite end where the slots terminate and define a blade stop, said slots being aligned and lying in a plane that extends parallel to the longitudinal axis of said handle when the same is disposed within said handle receiving area and held by said bush ax sharpening blade holder, whereby said bush ax blade can be received within said slots such that the cutting edge thereof will project outwardly from said bush ax sharpening holder wherein the same can be readily sharpened; and a screw type tightener threaded into the elongated main body and operable to be screwed into engagement with the bush ax blade so as to engage and press the blade into a binding relationship within said slots such that the blade is securely held within said elongated main body.

4,497,143

DEVICE FOR SHARPENING ROTATING BLADES

Riccardo Mattei, Bologna, Italy, assignor to G. D Societa' per Azioni, Bologna, Italy

Filed Jul. 8, 1983, Ser. No. 511,987
Claims priority, application Italy, Jul. 14, 1982, 3484 A/82
Int. Cl.³ B24B *3/36*
U.S. Cl. 51—248 **7 Claims**



1. A device for sharpening rotating blades, comprising at least one grindstone (31) keyed onto a shaft (24) rotatable about its axis inclined with respect to an axis (5) of rotation of an associated said driven rotating blade (3), the periphery of this latter being able to come into contact with each said grindstone (31) to carry the said shaft (24) into rotation by friction; a movable support (11) for the said shaft (24), and actuator means (39) to displace the said movable support (11) for the purpose of varying the relative position of the said blade (3) and each said grindstone (31), characterised by the fact that it includes first control means (41) sensitive to the speed of rotation of the said shaft (24), connected to the said actuator means (39) to maintain the said speed above a predetermined value, and second control means (43) for maintaining, in use, the distance between the said axes (5,24) within a predetermined range of values.

4,497,144

METHOD FOR MANUFACTURING QUADRIC SURFACE

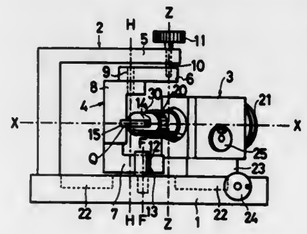
Hiroshi Kobayashi, Kodaira, and Haruhiko Machida, Tokyo, both of Japan, assignors to Machida Endoscope Company Limited, Tokyo, Japan

Continuation of Ser. No. 276,737, Jun. 24, 1981, abandoned. This application Jun. 28, 1982, Ser. No. 625,192
Claims priority, application Japan, Jun. 26, 1980, 55-86964; Feb. 2, 1981, 56-14691
Int. Cl.³ B24B *1/00, 13/00*
U.S. Cl. 51—284 R **15 Claims**

1. A method for manufacturing a quadric surface on a workpiece comprising:

providing a bed for supporting an apparatus for manufacturing said quadric surface, said bed being parallel to an X-Y plane;

securing a working tool having a linear working edge to a tool mounting assembly which comprises a supporting frame mounted on said bed, a tool holding member having a substantially U-shaped side-elevational configuration including an upper arm and a lower arm connected to said upper arm by a middle tool carrying portion, the upper arm being journalled to the supporting frame so as to be rotatable with respect to said frame and being pivotably connected to said middle tool carrying portion by a connecting rod so that said upper arm is pivotable relative to said middle portion, and the lower arm being journalled to said bed by a focus shaft whereby said tool holding member is rotatable about said focus shaft extending in an XZ plane passing through an origin of rectangular coordinates of X, Y and Z axes and being in parallel with the Z axis, said lower arm being slidably connected to said focus shaft so as to be slidable linearly in parallel with the XY plane,



and said connecting rod having an axis which is parallel to the Z axis said working tool being arranged in such a manner that its working edge is faced against an axial line of said focus shaft and lies in the XY plane and that a longitudinal direction of the working edge makes an angle θ with respect to a line which is obtained by projecting a sliding direction of said tool holding arm onto the XY plane; moving a cross point between the working edge and said projected line along a circle having a center at the origin of the XY coordinates;

securing a workpiece to be shaped to a workpiece mounting member, slidably and rotatably mounted on said bed in such a manner that a center axis of the workpiece lies in an X'Z plane formed by the Z axis and an X' axis which is obtained by rotating the X axis by an angle $(\pi/2-\theta)$ about the focus shaft; and

moving the working tool and the workpiece relative to each other to form the workpiece into a quadric surface in accordance with the quadric surface formed by said working edge as an envelope of tangents.

4,497,145

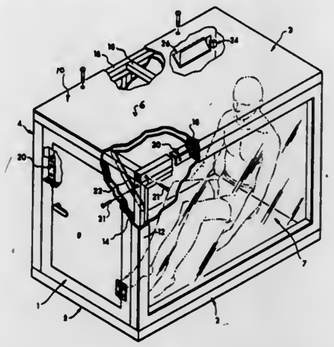
SOLAR WARMING HUT

David W. Louwenaar, 1248 Ironton St., Aurora, Colo. 80010

Filed Mar. 15, 1982, Ser. No. 357,902
Int. Cl.³ E04H *9/00*; A61H *33/06*
U.S. Cl. 52—1 **6 Claims**

1. In a warming hut formed by detachably connected enclosure-forming surfaces, one of which has an entrance, wherein the improvement comprises:

six enclosure-forming surfaces detachably connected at their edges wherein at least five of the six enclosure-forming surfaces each have an outer plywood layer and an inner plywood layer separated by at least four wooden spacers arranged to coincide with the edges of the enclosure-forming surfaces which are constructed in a rectangular shape to form an air space between said outer plywood layer, said inner plywood layer and said spacers and wherein the enclosure-forming surfaces further comprise four vertical walls of equal height, a roof and a floor all of which have a total surface area of from about 100 square feet to about 260 square feet, and wherein a major portion of the inside surface of the inner plywood layers are further provided with an opaque coloring, and wherein at least one of the vertical walls is further provided with a window comprised of a sunlight transmitting surface



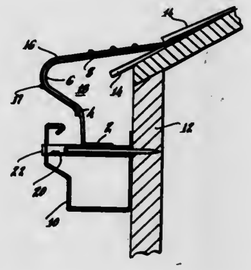
having an area of from about six square feet to about 100 square feet, whereby a significant amount of sunlight passing through the window strikes the opaque coloring on the inside surface of the inner plywood layers and thereby gives up energy which raises warming hut's interior temperature.

4,497,146

HANGERS FOR RAIN GUTTER DEVICES

Robert J. Demartini, 3500 Canter La., Raleigh, N.C. 27604

Filed Jul. 6, 1982, Ser. No. 395,852
Int. Cl.³ E04D *13/06*
U.S. Cl. 52—12 **4 Claims**



1. A device for positionally fixing a rain deflector of the type which utilizes the surface tension of roof run-off rainwater to cause the water to follow the arcuate surface of the device to an associated rain gutter which has a front lip while causing leaves and other debris to be jettisoned away from said gutter comprising

a strip-like continuum having an upper support segment and an arcuate segment adapted to be juxtaposed to the underside of the deflector to be associated therewith, and a riser segment for positioning the height of said upper support segment and said arcuate segment with respect to said gutter, and

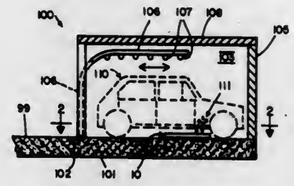
affixation means for positionally affixing said device with respect to said gutter, wherein said affixation means comprises a set back segment and a lip-front segment for affixation to the front lip of said gutter.

4,497,147

DRIPS-CATCHING MATS FOR GARAGE FLOORS AND THE LIKE

David D. Clapper, 1306 Peterson Dr., Omaha, Nebr. 68130, and Thomas E. Talmadge, 4803 N. 80th Ave., Omaha, Nebr. 68134

Continuation-in-part of Ser. No. 219,445, Dec. 23, 1980, abandoned. This application Sep. 28, 1982, Ser. No. 425,725
Int. Cl.³ B32B *7/00*; E04H *6/42*
U.S. Cl. 52—105 **3 Claims**



1. In combination with a motor vehicle garage having a substantially horizontal floor of a finite floor-area defined by a floor-perimeter, the improvement of a drips-catching mat for capturing oleaginous material dripping from a motor vehicle parked upon said garage floor in overlying relationship to said mat, said mat having a finite overall-area defined by a mat-perimeter remotely surrounded by the floor-perimeter, said drips-catching mat comprising the following generally horizontally extending laminar elements:

A. an oleo-resistant and generally non-perforated base member layer having a finite base-area not exceeding said overall-area and defined by a base perimeter, said base member having a pair of opposed broad horizontal surfaces including an upper-surface and a lower-surface, said base member being semi-permanently bonded to the garage floor with high-tenacity means located below said lower-surface;

B. a blotter member layer having a finite blotter-area not exceeding said overall-area and defined by a blotter-perimeter, said blotter member layer comprising two coextensive solid horizontal strata including a thicker lower-stratum comprising porous cellulosic structural material and a thinner oleaginous upper-stratum adhered to the lower-stratum whereby said upper-stratum causes horizontal spreading of oleaginous liquid drippings and thereby decreases the time for such drippings to become fully absorbed by the porous cellulosic lower-stratum, said blotter member lower-stratum being above the base member upper-surface and a finite-elevation above the garage floor and being removably attached to the base member with a lower-tenacity means, said lower-tenacity means being markedly lower in physical strength than the high-tenacity means whereby an upward manual force applied to the blotter-periphery will delaminate the blotter member from the base member without accompanying delamination of the base member from the garage floor; and

C. visual indicator means attached to the blotter member upper-stratum to indicate whenever the blotter member has become substantially fully laden with oleaginous drippings and needs replacement with a substitute blotter member.

4,497,148

PANEL CONNECTOR SYSTEM

José A. Lopez, Miami, Fla., assignor to Camilo Muebles, Inc., Coral Gables, Fla.

Filed Mar. 22, 1982, Ser. No. 360,558
Int. Cl.³ E04B *2/76*
U.S. Cl. 52—126.3 **17 Claims**

1. A panel connector system for coupling a pair of adjacent panels, comprising:

first and second elongated channels having mounting means

for attaching said channels to adjacent portions of adjacent panels, said channels extending substantially the entire height of the panels, each said channel including

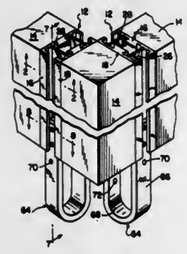
a base,

first and second end flanges extending from opposite ends of said base, and

a central tenon extending from said base in the same direction as said end flanges,

said first channel being spaced from and facing said second channel such that said end flanges and central tenon of said first channel are aligned with and extend toward said end flanges and central tenon of said second channel;

first and second pairs of fittings, said fittings of each pair



having a length significantly less than that of said channels, being coupled by fasteners and connecting said central tenons, each said fitting being generally T-shaped in transverse cross section with a center post extending between said central tenons and laterally extending arms engaging said central tenons, said first pair being spaced from said second pair along the length of said channels, said fitting having outwardly facing surfaces laterally spaced inwardly from said end flanges providing spaces between said end flanges and said outwardly facing surfaces; and

a support member depending from and adjustably coupled to said channels between said end flanges thereof;

whereby said end flanges are accessible and unobstructed for coupling accessory structures.

4,497,149

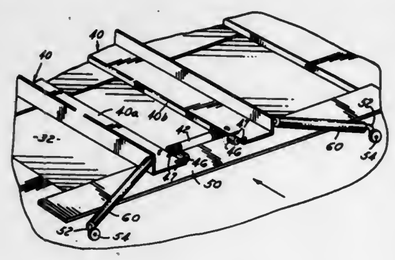
LUBRICATING APPARATUS AND SYSTEM

Lawrence A. Schott, 15940 Warwick Rd., Detroit, Mich. 48223, and Roger A. Schott, 15060 Seminole, Redford, Mich. 48239

Division of Ser. No. 58,117, Jul. 16, 1979, Pat. No. 4,290,462. This application May 18, 1981, Ser. No. 264,788

Int. Cl.³ F16C *3/14*

U.S. Cl. 52—174 **2 Claims**



1. A vehicle support track assembly for supporting a vehicle at a service area which comprises:

(a) a pair of parallel tracks in spaced relation,

(b) means to support said tracks adjacent a service stall for movement transversely in relation to each other,

(c) means responsive to contact with the front wheels of a vehicle to cause said track to move to register with the track width of a particular vehicle, and

(d) a cable response system incorporated with said transversely movable tracks wherein a transverse force on said means responsive to contact with the front wheels at the lead in end of said tracks is transmitted to the other end of said tracks to cause an equal response at said other ends.

4,497,150

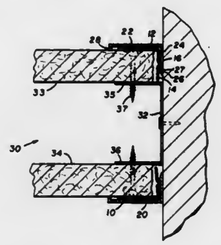
DRIVE-IN TRIM SYSTEM FOR INTERSECTING HOLLOW WALL PARTITIONS

Alan C. Wendt, Barrington, and David Krakowski, Deerfield, both of Ill., assignors to United States Gypsum Company, Chicago, Ill.

Filed Sep. 27, 1982, Ser. No. 423,925

Int. Cl.³ E04F *19/04*

U.S. Cl. 52—242 **5 Claims**



1. A trim system for the intersections of paneled partitions which comprises:

an L-shaped retainer clip comprising a first leg, a second leg substantially perpendicular to and continuous with the first leg, the second leg having a detent formed therein,

the first leg being secured to a first partition and the second leg extending between the edge of the panel in the first partition and the face of the intersecting partition, and

an L-shaped trim piece comprising a face plate and a clinch plate, the clinch plate having a lip on its inner surface distal to the face plate;

the clinch plate being driven between the face of the intersecting partition and the second leg of said retainer clip, the lip of said clinch plate and the detent of the second leg being in frictional engagement.

4,497,151

STANDING SEAM METAL ROOF ASSEMBLY

Harold G. Simpson, Oklahoma City, Okla., and Bert D. Hollman, Saint Joe, Ind., assignors to Nucor Corporation, Charlotte, N.C.

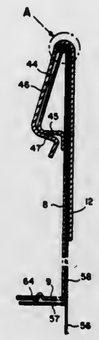
Filed Sep. 28, 1982, Ser. No. 425,477

Int. Cl.³ E04D *1/34, 3/362*

U.S. Cl. 52—520 **7 Claims**

1. In a standing seam floating roof assembly a pair of metal panels, each having elongated side portions and shorter end portions, one of said side portions being formed with an upwardly directed male standing seam section and the other of said side portions being formed with an upwardly directed female standing seam section, said male section having a downwardly directed part and said female section having a downwardly directed part, each of said downwardly directed parts having a substantially horizontal component, the horizontal component of the female portion positioned out of contact with the downwardly directed part of the male portion, adjacent panels positioned with said male and female sections being interlocked with the horizontal component of said female section contacting the horizontal component of said male

section and urging it upwardly, a resilient sealant positioned at the uppermost portion of the standing seam formed by said



male and female sections, the construction being such that said sealant is clamped between said male and female sections by the horizontal component of the female portion.

4,497,152

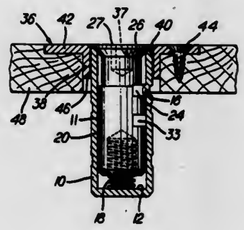
DISAPPEARING ANCHOR

David W. Weissner, Patchogue, N.N.Y., assignor to Meyco Products, Inc., Hicksville, N.Y.

Filed Sep. 1, 1982, Ser. No. 413,674

Int. Cl.³ E04B *1/38*

U.S. Cl. 52—709 **4 Claims**



1. In an anchor device comprising a housing having an axial bore opening externally at its upper end, a substantially cylindrical plunger element forming a part of said anchor device and adapted to fit slidably within said axial bore and to be locked against the force of a spring means within said housing in at least one of a first position in which a top surface of said plunger is flush with a top surface of said cylindrical housing, and a second extended position in which said plunger element is locked so that its top surface is at a distance above said top surface of said cylindrical housing thereby presenting a neck to which an object to be secured by said anchor is fixed, the improvement wherein said anchor device further comprises a means for fixing said anchor in a wooden surface comprising a collar member having an axial sleeve defining a central aperture, and a radially extending flange, wherein an inner surface of said axial sleeve and an outer surface of said cylindrical housing axially coextensive with said inner surface of said axial sleeve are each provided with cooperating means for fixing said collar member to said cylindrical housing so that an upper surface of said radial flange is flush with said top surface of said cylindrical housing.

4,497,153

METHOD AND DEVICE FOR ERECTING BUILDING STRUCTURES SUCH AS BRIDGES, USING PRE-FABRICATED CONCRETE BEAMS

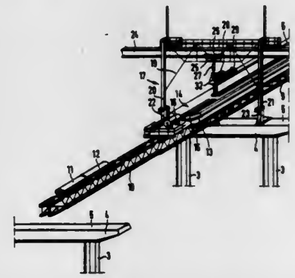
Eberhard Müller, Siegburger Str. 149-151, D-5000 Köln 21, Fed. Rep. of Germany

Filed Jun. 16, 1982, Ser. No. 389,083

Claims priority, application Fed. Rep. of Germany, Jun. 19, 1981, 3124038

Int. Cl.³ E01D *1/00*

U.S. Cl. 52—745 **4 Claims**



1. Method for erection of structures such as bridges, at a site, using pre-fabricated concrete beams, characterized by the fact that the individual, pre-fabricated beams are produced, at the site, on a feed rigging in the associated work area of the structure, in a heated and laterally tiltable form, and then emplaced in their final position in this work area, and that the feed rigging comprises a support scaffolding and flexure of the support scaffolding of the feed rigging is continuously equalized during concretizing of the pre-fabricated beams.

4,497,154

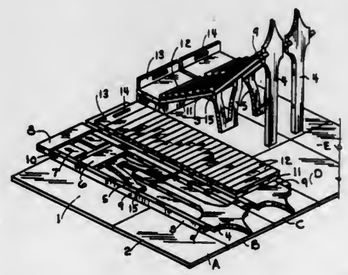
METHOD OF CONSTRUCTING AND ASSEMBLING BUILDING ELEMENTS FOR FOLDABLY CONSTRUCTED STADIUMS

Delp W. Johnson, 240 Oakview Dr., San Carlos, Calif. 94070

Filed Dec. 17, 1982, Ser. No. 437,812

Int. Cl.³ E04G *21/00*; E04H *3/10*

U.S. Cl. 52—745 **20 Claims**



1. Method of constructing and assembling a modular stadium having an inner and an outer perimeter, comprising the steps of constructing in situ a foundation for said stadium; constructing over said foundation a series of modules having side edges and inner and outer ends, each of said modules disposed along the inner perimeter of said stadium, the side edges of each of said modules disposed along lines originating at the center of curvature of said inner perimeter, and the inner end of said module coincident with said inner perimeter, and the outer end of said module a distance away equal to the developed length of said side edges measured along said side edges, and the length of the

outer end of said module equal to the length between said side edges measured at the said outer perimeter of said stadium; and constructing a girder having inner and outer ends along each side of each module, with the inner ends of said girders secured by hinges to the foundation; constructing at least one supportive element between said girders pivotally connected to said girders; length of said supportive element equal to the erected height of the girders at said pivot connection of the supportive element; elevating said outer ends of said girders causing rotation due to gravity of said supportive element to a supportive position; and securing said supportive element on said foundation; whereby, said girders are secured in an inclined position.

4,497,155

PLUG SCREWING-IN DEVICE FOR BARRELS

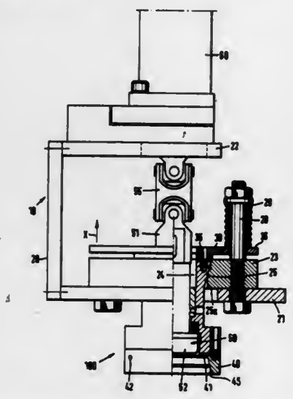
Gerhard Grosskreuz, Hamburg, and Arndt Lässig, Schenefeld bei Hamburg, both of Fed. Rep. of Germany, assignors to Grosskreuz Abfülltechnik GmbH, Schenefeld, Fed. Rep. of Germany

Filed May 12, 1982, Ser. No. 377,567

Claims priority, application Fed. Rep. of Germany, May 14, 1981, 3119286

Int. Cl.³ B65B *7/28*; B67B *1/06*

U.S. Cl. 53—331.5 **3 Claims**



1. A plug screwing-in device for barrels comprising a centering and screw head having a vertical central axis, said centering and screw head comprising an outer centering ring extending around the central axis and forming an inner open space, a screw head positioned within said outer centering ring within the inner open space, spring means biasing said centering ring in the downward direction and said centering ring being displaceable in the central axis direction relative to said screw head against the biasing action of said spring means, drive means for driving said screw head and extending in the central axis direction, said drive means comprises a drive mechanism located upwardly from said centering and screw head, a drive shaft comprising a first shaft portion having a first end and a second end with the first end connected to said screw head and said first shaft portion extending upwardly from said screw head, a second shaft portion having a first end and a second end with the second end connected to said drive mechanism and extending downwardly therefrom and a universal joint interconnecting the second end of said first shaft portion and the first end of said second shaft portion.

4,497,156

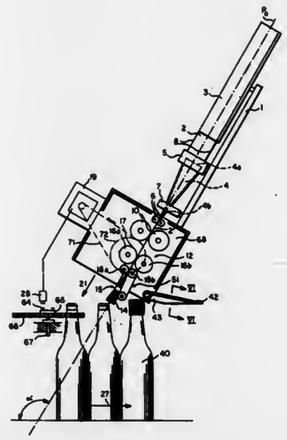
METHOD OF AND APPARATUS FOR ENVELOPING MOVING ARTICLES

Albert Scheidegger, Villeurbanne, France, assignor to ETS Scheidegger W. & Cie, Villeurbanne, France

Filed Sep. 22, 1982, Ser. No. 421,242

Int. Cl.³ B65B *13/00, 53/02*

U.S. Cl. 53—399 **18 Claims**



1. A method of fitting a series of continuously moving support elements with tubular attachments enveloping same at least in part, comprising the steps of:

(a) providing a flattened deformable sheath of indefinite length having two major sides bounded by a pair of longitudinal creases, said sides being separable from each other in a transverse direction;

(b) advancing said sheath along a guidepath descending toward a row of said moving support elements;

(c) cross-cutting the advancing sheath at an intermediate point of said guidepath into successive clippings of predetermined length;

(d) advancing each freshly cut clipping at a higher speed than said sheath along a stretch of said guidepath narrowing in an axial plane including said creases, with resulting progressive separation of said sides from each other until their spacing in said transverse direction substantially equals the distance between said creases at a leading end of the clipping; and

(e) discharging each descending clipping from said guidepath at an obtuse angle to the direction of motion of said support elements at a level at which a remote edge of the leading end thereof is met by an upright part of an oncoming support element with a cross-sectional area smaller than that of said leading end whereby the descending clipping is erected and comes to rest around said upright part.

4,497,157

PROCESS FOR FILLING PHARMACEUTICAL PRODUCTS CONTAINING PHOSPHOLIPIDES AND HIGHLY VISCOUS AT ROOM TEMPERATURE, INTO HARD CAPSULES

Manfred Dürr, Pulheim-Brauweiler, and Hans-Ulrich Fribolin, Neuss, both of Fed. Rep. of Germany, assignors to A. Nattermann & Cie GmbH, Cologne, Fed. Rep. of Germany

Filed Jun. 2, 1981, Ser. No. 269,525

Claims priority, application Fed. Rep. of Germany, Jul. 13, 1980, 3022136

Int. Cl.³ B65B *1/20, 55/14*

U.S. Cl. 53—428 **2 Claims**

1. Process for filling pharmaceutical products which contain 10 to 98% by weight of a phospholipide and which are highly viscous at room temperature into hard gelatin capsules comprising admixing ethylalcohol to the highly viscous product in such an amount that the resulting product at room temperature or slightly elevated temperature has a viscosity just sufficient to allow to transport it by means of pumps, or a slightly lower viscosity, ejecting this resulting product with pressure and with heating prior to ejection from a filler nozzle arranged with its opening opposite to the opening of the hard capsule half to be filled, said heating being sufficient to cause evaporation of ethylalcohol from the resulting product after it is ejected from the filler nozzle, filling the hard capsule half while simultaneously evaporating admixed ethylalcohol as the resulting product is filled into the hard capsule half, and closing the filled hard capsule half with the other hard capsule half, the heating and admixed ethylalcohol content being such that substantially all of the admixed ethylalcohol evaporates between product ejection from the filler nozzle and capsule closing to produce a capsule filling which is substantially solidified and substantially devoid of admixed ethylalcohol.

4,497,158

PROCESS FOR FILLING PHARMACEUTICAL PRODUCTS HIGHLY VISCOUS AT ROOM TEMPERATURE INTO HARD CAPSULES

Manfred Dürr, Pulheim-Brauweiler, and Hans-Ulrich Fribolin, Neuss, both of Fed. Rep. of Germany, assignors to A. Natterman & Cie GmbH, Cologne, Fed. Rep. of Germany

Filed Jun. 2, 1981, Ser. No. 269,627

Claims priority, application Fed. Rep. of Germany, Jul. 13, 1980, 3022137

Int. Cl.³ B65B *1/20, 55/14*

U.S. Cl. 53—428 **2 Claims**

1. Process for filling pharmaceutical products which are highly viscous at room temperature into hard gelatin capsules comprising admixing a solvent volatile at normal pressure or a mixture of several such solvents to the highly viscous product in such an amount that the resulting product at room temperature or slightly elevated temperature has a viscosity just sufficient to allow the transport thereof with pressure, or a slightly lower viscosity, ejecting this resulting product with pressure and heating of the product before ejection from a filler nozzle arranged with its opening opposite to the opening of the hard capsule half to be filled, said heating being sufficient to cause evaporation of admixed solvent or solvent mixture from the resulting product after it is ejected from the filler nozzle, filling the hard capsule half while simultaneously evaporating admixed solvent or solvent mixture as the resulting product is filled into the hard capsule half, and closing the filled hard capsule half with the other hard capsule half, the heating and admixed solvent content being such that substantially all of the admixed solvent evaporates between product ejection from the filler nozzle and capsule closing to produce a capsule filling which is substantially solidified and substantially devoid of admixed solvent.

4,497,159

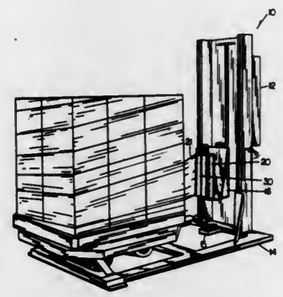
FRICTION DRIVE STRETCH WRAPPING APPARATUS

Patrick R. Lancaster, III, Louisville, Ky., assignor to Lantech, Inc., Louisville, Ky.

Filed Feb. 1, 1982, Ser. No. 344,870

Int. Cl.³ B65B *11/04, 53/00*

U.S. Cl. 53—556 **15 Claims**



1. An apparatus for making a unitary load using a single web of stretchable plastic material to form an overwrap holding the load under a compressive force comprising a frame, a dispenser means, said dispenser means being adapted to hold and dispense a roll of stretchable material, a means for supporting a load, a means for providing relative rotation between the load and dispenser means to pull said material off of said dispenser means, elongation means connected to said dispenser means adapted to receive stretchable material pulled from said dispenser means, said elongation means comprising a downstream roller and an upstream roller closely spaced apart and interconnected by frictionally engageable members, said rollers being driven by engagement of the moving material pulled from the dispenser means by relative rotation of the load and dispenser means so that said frictionally engageable members are driven causing the downstream roller to transport the plastic material faster than said upstream roller elongating the material, thereby causing stretched material to be placed around a load and means to selectively disengage said frictionally engageable members with a sufficient force to overcome the force of the film web against the downstream and upstream rollers pulling the rollers toward each other and force the downstream and upstream rollers apart.

4,497,160

MOWER WITH LATERAL EXTENSION WINGS

David L. Mullet, Hesston; Raymond J. Rilling, Moundridge, and Elmer D. Voth, Newton, all of Kans., assignors to Excel Industries, Inc., Hesston, Kans.

Division of Ser. No. 489,808, Apr. 29, 1983, abandoned. This application Jun. 1, 1984, Ser. No. 616,783

Int. Cl.³ A01D *75/30, 69/08, 35/264*

U.S. Cl. 56—6 **5 Claims**

1. In combination with a tractor, a lawn mower comprising:

a. a main mower deck mounted on said tractor, and having a lateral span extending outwardly beyond the sides of said tractor,

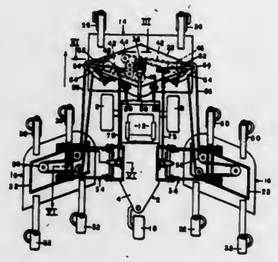
b. a pair of lateral extension mower decks mounted on said tractor respectively at opposite sides thereof, said extension decks being offset longitudinally of the tractor relative to said main deck and extending laterally outwardly beyond the respective lateral limits of said main deck,

c. horizontally rotatable blades carried by each of said mower decks and operable when driven to cut a swath of grass substantially as wide as the deck when the tractor is moved forwardly,

d. a drive train powered by said tractor and operable to drive first the blades of said main mower deck, and then,

through separate branches, the blades of the respective extension decks, said drive train consisting of a belt and pulley system, and

e. a clutch interposed in each of said drive train branches, each of said clutches and its operating means comprising a double idler pulley having two belts trained thereabout, a first belt operably connecting said idler pulley to the next



prior pulley in said drive train branch, and a second belt operably connecting said idler pulley to the next subsequent pulley of said drive train branch, and means operable to move said idler pulley selectively either in a first direction in which it tightens said first and second belts respectively, into driving relation thereto, or in a second direction wherein at least one of said belts is loosened to a non-driving relation thereto.

4,497,161

MOWER

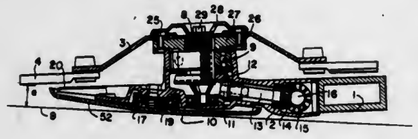
Hermanus H. Vissers, and Hendrikus C. Van Staveren, both of Nieuw-Vennep, Netherlands, assignors to Multinorm, B.V., Nieuw-Vennep, Netherlands

Filed Jul. 6, 1982, Ser. No. 395,665

Claims priority, application Netherlands, Jul. 17, 1981, 8103411

Int. Cl.³ A01D *55/18*

U.S. Cl. 56—13.6 **15 Claims**



1. A mowing device comprising an elongate cutter bar assembly adapted to be traveled along a swath to be cut with the cutter bar assembly extending widthwise of the swath, said assembly including at least a pair of side-by-side rotary cutter discs of inverted generally bowl-shaped configuration and a radially projecting cutter blade on each of said discs which sweep through circular paths which overlap between the cutter discs, said assembly being of narrow height and consisting of frame components which, except for portions lying within the plan view outlines of said paths, lie below said paths, said frame components including an elongate beam lying below said paths, at least two intermediate drive support housings attached to said beam and projecting forwardly therefrom, each housing including an upstanding sleeve portion forwardly of said beam and projecting upwardly through a plane containing the path of an associated cutter blade, an upstanding shaft rotatably journaled in each sleeve portion to define an axis perpendicular to said plane and means for mounting an associated cutter disc to the upper end of each upstanding shaft, intermediate drive means supported by each housing for rotating said shafts in unison, main drive means for driving said intermediate drive means and being located adjacent to and parallel to said beam, said main drive means and said intermediate drive means both being located below said paths, cover plate means lying wholly below said plane for filling in between said housings and said beam and fixed to said housings and said beam so as to form a rigid unit therewith, and with frame components also including ground engaging means for supporting the cutter bar assembly out of contact with the ground with said plane inclined forwardly and downwardly so that said paths sweep into close adjacency to the ground just forwardly of said assembly.

4,497,162

COMBINE HARVESTER

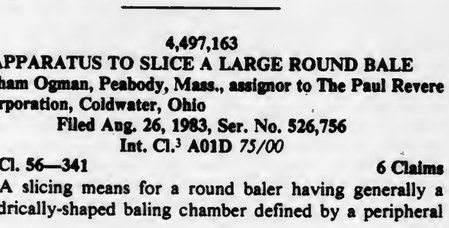
Jyutaro Eguchi; Shinzo Kashino; Tetsuichi Odahara, and Gunzo Sukenari, all of Sakai, Japan, assignors to Kubota, Ltd., Japan

Filed Jan. 18, 1983, Ser. No. 458,871

Claims priority, application Japan, Sep. 3, 1982, 57-154269

Int. Cl.³ A01F *7/04*

U.S. Cl. 56—14.6 **2 Claims**



1. A rotary-type combine harvester comprising traveling means permitting said harvester to travel over ground:

a harvester frame mounted on said traveling means;

reaping and pretreating means carried forwardly by said fame;

threshing and separating means including a threshing drum, beater means and a straw walker, said threshing and separating means mounted at a transversely offset position on said frame;

a driver's section disposed parallel to and in a side-by-side relationship with said threshing and separating means;

an engine attached directly to said frame rearwardly of said driver's section and having a transverse dimension substantially equal to a transverse dimension of said driver's section;

a grain tank disposed above said threshing and separating means and including a grain discharge pipe; wherein

a transverse dimension of said threshing and separating means and the transverse dimension of said driver's section added together substantially equal to a transverse dimension of said reaping and pretreating means; and wherein

said grain tank includes a lower part having a V-shaped section extending into a space between said better means and a straw walker in said threshing and separating means such that a lower end of said grain tank is disposed below tops of said threshing drum of said threshing and separating means and said beater means.

4,497,163

APPARATUS TO SLICE A LARGE ROUND BALE

Abraham Ogman, Peabody, Mass., assignor to The Paul Revere Corporation, Coldwater, Ohio

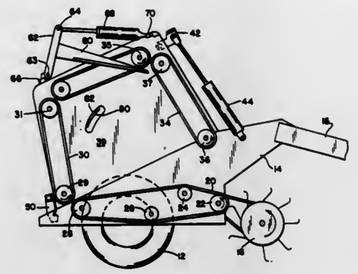
Filed Aug. 26, 1983, Ser. No. 526,756

Int. Cl.³ A01D *75/00*

U.S. Cl. 56—341 **6 Claims**

4. A slicing means for a round baler having generally a cylindrically-shaped baling chamber defined by a peripheral

member joining spaced-apart sidewalls, the invention comprising:



cutting means mounted on a sidewall and projecting into the baling chamber through a sidewall for cutting into a rotating bale thereby producing a core and an essentially ring-shaped member.

4,497,164

APPARATUS FOR MANUFACTURING AN OPTICAL FIBER CABLE WITH OPTICAL FIBERS IN GROOVES IN THE CABLE CORE

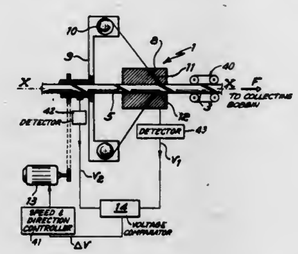
Enrico Dotti, and Beniamino Mariani, both of Milan, Italy, assignors to Societa'Cavi Pirelli S.p.A., Milan, Italy

Filed May 25, 1983, Ser. No. 497,846

Claims priority, application Italy, May 31, 1982, 21585 A/82

Int. Cl.³ G02B *5/16*; H01B *13/02*

U.S. Cl. 57—6 **9 Claims**



1. Apparatus for manufacturing a cable comprising a core having one or more helical grooves, each groove having at least one filament in each groove, said apparatus comprising a rotatable bobbin-carrier cage for carrying the filament or filaments, a rotatable rigid body mounted in spaced relation to said cage and with its axis of rotation aligned with the axis of rotation of said cage, said rigid body being rotatable around said axis with respect to said cage and said rigid body having an opening through which said core may be passed and said rigid body comprising conduits equal in number to the number of grooves for directing each fiber toward said core and into a groove as the core passes through said opening in said rigid body, means adapted to extend into said grooves and engage the walls of said grooves and connected to said rigid body for causing said rigid body to be rotated by said groove walls as said core passes through said opening in said rigid body, a first driving means for advancing said core through said opening in said rigid body, second driving means mechanically separate from said first driving means for rotating said cage, means for comparing the angular position of said cage with the angular position of said rigid body, and control means connected to said comparing means and responsive thereto and connected to said second driving means for reducing any difference between the angular position of said rigid body and the angular position of said cage.

4,497,165

METHOD AND APPARATUS FOR PREPARING AND SPLICING YARN ENDS

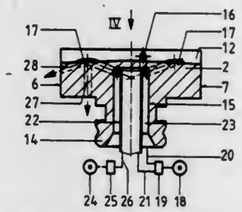
Ernst B. Völlm, Horgen, Switzerland, assignor to Maschinenfabrik Schweiter AG, Horgen, Switzerland

Filed Nov. 9, 1983, Ser. No. 550,185

Claims priority, application Switzerland, Nov. 12, 1982, 6623/82

Int. Cl.³ D01H *15/00*

U.S. Cl. 57—22 **20 Claims**



1. A method for preparing and splicing two yarn ends, comprising the steps of:

inserting the yarn ends in a turbulence chamber;

cutting and holding the yarn ends;

preparing the yarn ends by opening the yarn ends with a first air jet produced by a preparation nozzle and produced by a pressure differential in the turbulence chamber adjacent an end thereof; and

splicing the yarn ends with a second air jet produced by a splicing nozzle separate from said preparation nozzle.

4,497,166

PROCESS AND DEVICE FOR INTERRUPTING AND STARTING THE SPINNING PROCESS AT AN OPEN-END SPINNING POSITION

Peter Artzt, Reutlingen; Heinz Müller, Metzingen; Gerhard Egbers, and Heinz Neher, both of Reutlingen, all of Fed. Rep. of Germany, assignors to Schubert & Salzer Maschinenfabrik Aktiengesellschaft, Ingolstadt, Fed. Rep. of Germany

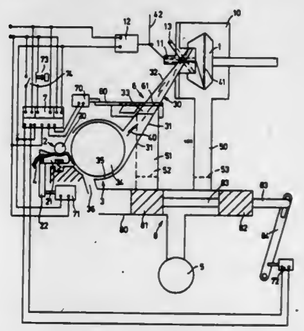
PCT No. PCT/DE82/00081, § 371 Date Dec. 27, 1982, § 102(e) Date Dec. 27, 1982, PCT Pub. No. WO82/04075, PCT Pub. Date Nov. 25, 1982

PCT Filed Dec. 27, 1982, Ser. No. 453,777

Claims priority, application Fed. Rep. of Germany, May 9, 1981, 3118382

Int. Cl.³ D01H *15/00*

U.S. Cl. 57—263 **16 Claims**



1. A process for interrupting and starting the spinning process at an open-end spinning station, in which the flow of fibers is controlled by means of a switching device being adapted to alternately assume one of two working positions, the first of which serving to give access to a duct leading to a spinning element and to block access to a fiber evacuation conduit, and the second of which serving to block access to said duct leading to said spinning element and to give access to said fiber

evacuation conduit wherein, during switching of said switching device from one of said two working positions to the other of these two working positions, the fiber flow is first taken out of the zone to be blocked, and then the zone is blocked.

4,497,167

METHOD FOR PRODUCING SPUN YARNS

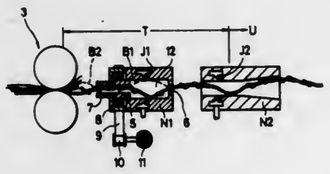
Teiji Nakahara, Kyoto, and Toshifumi Morihashi, Shiga, both of Japan, assignors to Murata Kikai Kabushiki Kaisha, Kyoto, Japan

Filed Feb. 2, 1983, Ser. No. 463,277

Claims priority, application Japan, Feb. 3, 1982, 57-16662; Feb. 8, 1982, 57-19260

Int. Cl.³ D01H *5/28, 7/92*

U.S. Cl. 57—328 **5 Claims**



1. A spun yarn manufacturing method for spinning a spun yarn, comprising the steps of:

a. running a drafted staple fiber bundle from a nip point of a front roller of a spinning maching to and through a first fluid swirling nozzle;

b. twisting the drafted staple fiber bundle by the action of a fluid within the first fluid swirling nozzle;

c. running the drafted staple fiber bundle from the first fluid swirling nozzle to and through a second fluid swirling nozzle capable of swirling a fluid in a direction opposite to the direction of swirling of the fluid in said first fluid swirling nozzle on the drafted staple fiber bundler, the swirling in said first and said second fluid swirling nozzles being so controlled as to produce a greater fiber bundle revolving force within said second fluid swirling nozzle than within said first fluid swirling nozzle;

d. creating, by the greater fiber bundle revolving force of second said fluid swirling nozzle, a false-twist of the drafted staple fiber bundle, which false-twist is enabled to be communicated along the drafted staple fiber bundle through said first fluid swirling nozzle to form a twisting zone between the nip point of said front roller and said second fluid swirling nozzle;

e. concurrently forming, by the action of the first fluid swirling nozzle, a balloon in the drafted staple fiber bundle between the nip point of said front roller and said first fluid swirling nozzle, said balloon causing fibers to be detached from the false-twisted staple fiber bundle between the front roller and said first fluid swirling nozzle;

f. winding, by action of the balloon, the detached fibers positively around the false-twisted staple fiber bundle within the twisting zone between the nip point of said front roller and said second fluid swirling nozzle; and

g. taking a spun yard out of the second fluid swirling nozzle such that the winding of the previously detached fibers around the staple fiber bundle is increased by the natural unwinding of the false-twist of the drafted staple fiber bundle, thereby forming a spun yarn having increased strength, a smooth external appearance, and a reduced fluff content.

4,497,168

METHOD AND APPARATUS FOR OPEN-END SPINNING

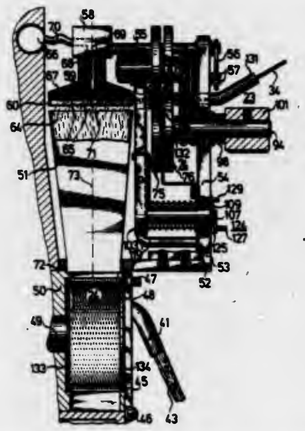
Heinz Kamp, Wegberg, Fed. Rep. of Germany, assignor to W. Schlafhorst & Co., Moenchengladbach, Fed. Rep. of Germany

Filed May 3, 1982, Ser. No. 374,244

Claims priority, application Fed. Rep. of Germany, May 2, 1981, 3117443; Sep. 7, 1981, 3135337

Int. Cl.³ D01H *1/135, 7/898*

U.S. Cl. 57—401 **49 Claims**



6. Open-end spinning device, comprising a body having a stationary elongated fiber-collecting groove formed therein from which fibers are withdrawn to form a thread in a given fiber travel direction, defining ends of said groove and a bottom of said groove having at least one vented perforation formed therein, a fiber-guide canal upstream of said groove in said given fiber travel direction for discharging fibers in front of said fiber-collecting groove, a fiber opener device connected to and downstream of said fiber-guide canal, and a thread-withdrawing device downstream of one of said ends of said fiber-collecting groove.

4,497,169

CHAIN COMPONENTS

Michael J. Millington, Kidderminster, England, assignor to Parsons Controls Limited, Worcestershire, England

PCT No. PCT/GB82/00287, § 371 Date May 19, 1983, § 102(e) Date May 19, 1983, PCT Pub. No. WO83/01285, PCT Pub. Date Apr. 14, 1983

PCT Filed Oct. 7, 1982, Ser. No. 503,148

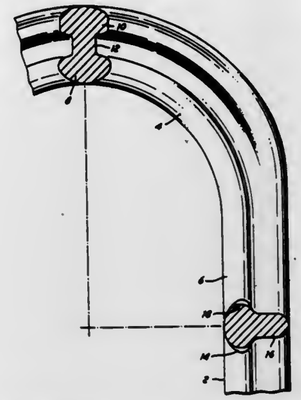
Claims priority, application United Kingdom, Oct. 7, 1981, 8130349

Int. Cl.³ F16G *13/06*

U.S. Cl. 59—84 **2 Claims**

1. A chain and cable sling device comprising an elongate main link, said elongate main link having crown portions of generally semi-circular form and, connecting the crown portions, parallel extending side portions; said crown portions each being formed with an inner circumferentially extending flange, an outer circumferentially extending flange and connecting the inner flange and the outer flange a radially extending web; and said parallel extending side portions each being formed with an inner flange and an outwardly extending web; the inner flanges of the crown portions and the inner flanges of the side portions being of a substantially identical constant cross-section; the webs of the crown portions and the outwardly extending webs of the side portions being of substantially identical constant thickness; the outer flanges of the crown portions being of substantially constant cross-section over central 120° sectors and of progressively decreasing

cross-section thickness over 30° sectors adjoining the side portions, the cross-section thickness of the outer flanges de-



creasing smoothly to merge with the thickness of the outwardly extending webs of the side portions.

4,497,170

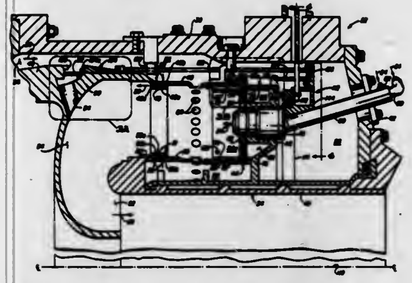
ACTUATION SYSTEM FOR A VARIABLE GEOMETRY COMBUSTOR

Harry A. Elliott, Phoenix, and John T. White, Gilbert, both of Ariz., assignors to The Garrett Corporation, Los Angeles, Calif.

Filed Jul. 22, 1982, Ser. No. 400,578

Int. Cl.³ F02C *70/057*

U.S. Cl. 60—39.03 **6 Claims**



1. An actuation system for selectively varying the air inflow geometry of a gas turbine engine combustor having a liner portion which defines a combustion flow passage, said liner portion having an annular configuration and first and second air inlet openings spaced apart along an axis of said combustor, said actuation system comprising:

(a) sealing means axially movable relative to said combustor across said air inlet openings for selectively and inversely varying air inflow therethrough, said sealing means including first and second generally ring-shaped sealing members adapted to coaxially circumscribe said liner portion for slidable axial movement relative thereto;

(b) a unison ring positionable within said combustor;

(c) means for connecting said unison ring within said combustor for rotation relative thereto about said axis; and

(d) linking means interconnected between said sealing means and unison ring for moving said first and second sealing members in opposite axial directions in response to rotation of said unison ring, said linking means including a circumferentially spaced series of bell crank members pivotally connected to said unison ring, means for connecting said bell crank members to said liner portion for rotation relative thereto about axes generally perpendicular to said combustor axis, a first circumferentially spaced series of actuating rods connected at their opposite ends to one of said sealing rings and to one of said bell crank members, and a second circumferentially spaced series of actuating rods connected at their opposite ends to the other of said sealing rings and to one of said bell crank members, and a control member movably extendable into said combustor to selectively rotate said unison ring.

4,497,171

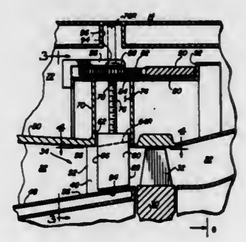
COMBUSTION TURBINE ENGINE

Charles E. Corrigan, Tempe, and Paul R. Dodge, Mesa, both of Ariz., assignors to The Garrett Corporation, Los Angeles, Calif.

Filed Dec. 22, 1981; Ser. No. 333,502

Int. Cl.³ F02C *3/00*

U.S. Cl. 60—39.75 **27 Claims**



1. A combustion turbine engine comprising a gas generator means for producing a supply of motive gas, a flow path for communicating said motive gas to a turbine section of said engine, said turbine section including a turbine wheel rotatable about an axis, and means for selectively varying the area of said flow path which is available for the flow of said motive gas, said area varying means including a multitude of spaced apart stator vanes disposed in said flow path upstream of said turbine wheel, and a multitude of members of determined transverse cross sectional shape within said flow path movably interdigitating with said stator vanes, said members being movable into and out of said flow path, said area varying means further defining a respective multitude of cavities of said determined transverse cross sectional shape matching closely with said multitude of members, said members being receivable into said cavities when moved out of said flow path during operation of said engine, and mechanical actuator means for moving said multitude of members between respective positions within said flow path and within said multitude of cavities during engine operation.

4,497,172

BEARING CHAMBER PRESSURIZATION SYSTEM FOR A MACHINE

Stanley Smith, Gloucestershire, England, assignor to Rolls-Royce Limited, London, England

Filed Nov. 30, 1982, Ser. No. 445,569

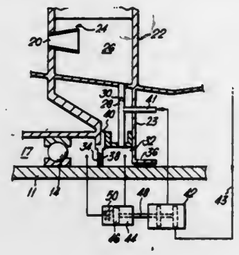
Claims priority, application United Kingdom, Dec. 8, 1981, 8137011

Int. Cl.³ F02K *3/06;* **F02C** *7/06*

U.S. Cl. 60—226.1 **9 Claims**

1. A bearing chamber pressurization system for a machine comprising a bearing chamber, a first air supply means for supplying air at a first, relatively lower pressure, to the bearing chamber for pressurizing the bearing chamber, a second air supply means which is capable of supplying air at a second, relatively higher pressure, to the bearing chamber through a

control valve, and a control means which senses the difference between the pressure in the bearing chamber and the first



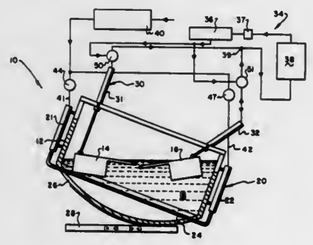
pressure and opens the control valve only when the difference in the two pressures is reduced to a pre-determined level.

4,497,173

POWER TRANSDUCER SYSTEM

James Gillilan, 1807 W. College, Sherman, Tex. 75090

Filed Apr. 4, 1984, Ser. No. 596,649
Int. Cl.³ F03B *13/00*
U.S. Cl. 60—495 **20 Claims**



1. An energy transducer system comprising:
a flotation tank having fluid disposed therein;
means supporting said flotation tank in first and second unbalanced positions;
means for rocking said tank between said first and second positions and shifting said fluid disposed therein;
first and second flotation means disposed within said tank adapted for floating upon said fluid disposed within said tank; and
means coupled to said flotation means for actuation therewith in transducing energy from shifting fluid level within said tank between said first and said second unbalanced positions.

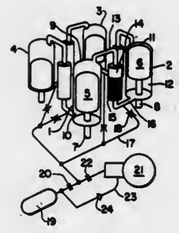
4,497,174

POWER CONTROL DEVICE FOR A DOUBLE-ACTING MULTI-CYLINDER HOT GAS ENGINE

Lennart Lundström, Ättehögsvägen 15, S-230 44 Vintrie, Sweden

Filed Jan. 24, 1983, Ser. No. 460,597
Int. Cl.³ F02G *1/06*
U.S. Cl. 60—521 **3 Claims**

1. A power control device for a double-acting, multi-cylinder hot gas engine of the type in which each cylinder contains a piston dividing the interior of the cylinder into two variable volume chambers containing working gas kept at different temperature levels, the high temperature variable volume chamber in one cylinder being connected to a low temperature variable volume chamber of a neighbouring cylinder via a heater, a regenerator, a cooler, and a cold gas connection connected in series, the device comprising:
a. a gas reservoir;
b. a gas compressor;
c. a check valve connecting said gas reservoir to said gas compressor, said check valve operating to permit gas flow from said gas compressor to said gas reservoir;
d. a plurality of gas conduits corresponding to the number of said cylinders, each of said gas conduits having a first end connected to an individual cold gas connection;
e. a common interconnection connecting the other ends of said gas conduits;



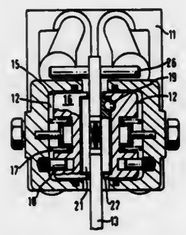
f. a first control valve connecting said common interconnection to said gas reservoir;
g. a second control valve connecting said common interconnection to said gas compressor; and
h. means restricting gas flow through each of said gas conduits for maintaining the pressure in said gas conduits substantially equal to the mean pressure of the working gas in said hot gas engine, said restricting means maintaining continuous gas flow communication between each of said gas conduits and its respective cold gas connection.

4,497,175

HYDRAULIC MASTER CYLINDER

Harry D. Temperley, Leamington Spa, and Brian Joynes, Warwick, both of England, assignors to Automotive Products Limited, Leamington Spa, England

Continuation of Ser. No. 297,561, Aug. 31, 1981, abandoned.
This application Dec. 20, 1983, Ser. No. 563,266
Claims priority, application United Kingdom, Sep. 13, 1980, 8029670
Int. Cl.³ F15B *7/00*
U.S. Cl. 60—581 **6 Claims**



1. A hydraulic master cylinder comprising:
a body;
a pair of fluid chambers within the body each of which is concentric about a common longitudinal axis;
a pair of inlet passages in the body each connecting a respective fluid chamber to a fluidic source;
a pair of outlet passages in the body affording means for connecting each fluid chamber to hydraulically operable devices;
closure valve means between each fluid chamber and the fluidic source;

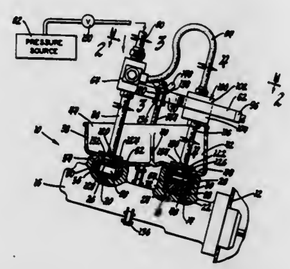
a pair of fluid displacing means, one each for said fluid chambers;
a lever having a pivot axis common with the longitudinal axis of the fluid chambers and supported so as to allow for pivotal movement about the pivot axis and floating lateral movement along the pivot axis; and
expander means responsive to rotational movement of the lever to urge one fluid displacing means in one direction while simultaneously urging the other of said fluid displacing means in the opposite direction along said longitudinl axis, the floating lateral movement of the lever allowing the expander means to apply equal forces to both of said fluid displacing means.

4,497,176

BRAKE SYSTEM PRESSURE BLEED DEVICE

Frank D. Rubin, Mesa, and Roger A. Schumacher, Chandler, both of Ariz., assignors to General Motors Corporation, Detroit, Mich.

Filed May 13, 1983, Ser. No. 494,508
Int. Cl.³ B60T *11/30*; F15B *7/10*
U.S. Cl. 60—554 **2 Claims**



1. A pressure bleed device for bleeding vehicle brake circuits having a master cylinder connected thereto, said device being quickly adapted to various master cylinder configurations having compensation ports accessible for connection of the device to the master cylinder for pressure bleeding the master cylinder and the vehicle brake circuits, which circuits form fluid flow paths, said device comprising:
an elongated base plate having a slide mounting portion and a head end, passage means in said head end including a connector passage, a first port adapted to be selectively connected to a source of brake fluid under pressure, a second port and a third port, all of said ports being in fluid communication with said connector passage, one of said second and third ports having a balance valve for controlling fluid flow therethrough from said connector passage to compensate for differences in fluid flow path restrictions;
a slide head slidably received on said slide mounting portion to be moved toward and away from said third port, said slide head having a fluid passage therethrough;
conduit means flexibly connecting said second port to said slide head fluid passage to provide continuous fluid communication therebetween and permit sliding movements of said slide head on said base plate;
a first tubular brake fluid filler stem having one end removably secured to said base plate to receive brake fluid from said third port;
a second tubular brake fluid filler stem having one end removably secured to said slide head to receive brake fluid from said slide head fluid passage;
said filler stems being adapted to have their other ends operatively sealingly mate with master cylinder ports and to transmit pressurized brake fluid to the master cylinder through the master cylinder compensation ports to pressure bleed the master cylinder and the brake circuits connected thereto;
and means on said base plate for quickly securing said device to the master cylinder in pressure bleed relation and for quickly detaching said device therefrom;
said slide head and said second brake fluid filler stem being slidable before securing action takes place so as to provide for variations in port spacing of various master cylinders to be bled sequentially by use of said device, at least one of said filler stems being interchangeable with filler stems of different lengths so as to provide for variations in relative dimensions of various master cylinders.

4,497,177

WIND GENERATING MEANS

Max F. Anderson, R.R. #1, Stewardson, Ill. 62463

Continuation-in-part of Ser. No. 53,828, Jul. 2, 1979, Pat. No. 4,442,887. This application Oct. 31, 1983, Ser. No. 547,479
The portion of the term of this patent subsequent to Apr. 17, 2001, has been disclaimed.
Int. Cl.³ F03G *7/02*
U.S. Cl. 60—641.12 **11 Claims**



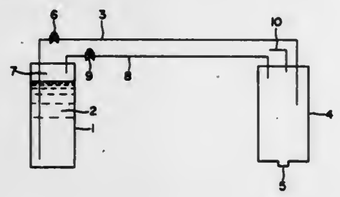
1. In a system for obtaining air movement, the combination comprising,
a basin of water,
a solar energy-transmitting cover over said basin for heating water contained therein,
air inlet means for providing air from a location outside said system to a location beneath said cover above the surface of water in the basin,
surface type heat exchange means adjacent the bottom of said basin for cooling air passing therethrough by cooling water adjacent the bottom of said basin,
vertically extending air inlet passage means having an upper end terminating above the surface of the water beneath said cover in a source of air to be cooled and a lower end connected to said heat exchange means for supplying air thereto, said air inlet passage means providing communication between said heat exchange means and air source beneath said cover above the surface of the water in the basin,
an elongated air outlet passage means extending downwardly from the heat exchange means for unpumped gravity flow of cooled air downwardly from said heat exchange means through said elongated air outlet passage means, and
vane-driven means inside said elongated air outlet passage means for operation by downwardly flowing air therethrough.

4,497,178

METHOD OF PREVENTING ATMOSPHERE FROM ENTERING HEAT-INSULATING CONTAINER

Akira Hongo, Miki; Hideki Ueda, Nagoya; Issei Nakata, Shizuoka; Eiichi Yoshida, Shimizu; Nobuyoshi Aoki, Shimizu, and Toshimitsu Suzuki, Shimizu, all of Japan, assignors to Teisan Kabushiki Kaisha and Daiwa Can Company, Limited, both of Tokyo, Japan

Filed Mar. 28, 1983, Ser. No. 479,368
Claims priority, application Japan, Mar. 26, 1982, 57-47266
Int. Cl.³ F17C *7/02*
U.S. Cl. 62—55 **3 Claims**



1. A method of operating apparatus comprising a supply tank containing low-temperature liquefied gas, a heat insulated container for temporary storage of low-temperature liquefied gas having a normally open outlet from which liquefied gas issues substantially constantly when the apparatus is in operation, and valved conduit means for supplying low-temperature liquefied gas from said supply tank to said container when the apparatus is in operation and whereby flow of liquefied gas from the supply tank to the container can be blocked to render the apparatus inoperative, said method being characterized by:

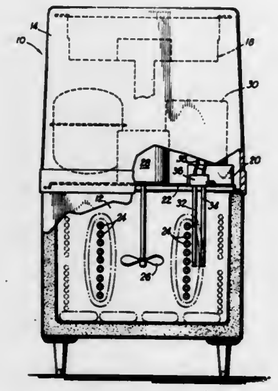
at substantially all times that the flow of liquefied gas to the container is blocked, supplying thereto vaporized gas of the same kind as said liquefied gas, at an above-atmospheric pressure and at a temperature near the boiling point of the liquefied gas, to thus maintain the interior of said container at a low temperature and free from water, carbon dioxide and air.

4,497,179

ICE BANK CONTROL SYSTEM FOR BEVERAGE DISPENSER

Robert C. Iwans, Sinsbury, Conn., assignor to The Coca-Cola Company, Atlanta, Ga.

Filed Feb. 24, 1984, Ser. No. 583,517
Int. Cl.³ F25C *1/00*
U.S. Cl. 62—59 **18 Claims**



1. A method for increasing the draw capacity of a beverage dispenser having at least one dispensing valve and having a mechanical refrigeration unit including cooling coils and an agitator for producing an ice bank in an ice-water bath, comprising the steps of:

(a) sensing when a surface of the ice bank has reached a first location and generating a first electrical signal at that time;

(b) sensing when a surface of the ice bank has reached a second location further from the cooling coils than is said first location and generating a second electrical signal at that time;

(c) maintaining said agitator off prior to receiving said first signal;

(d) operating said agitator in an on-off mode after receiving said first signal;

(e) upon receiving said second signal, operating both said agitator and said mechanical refrigeration unit in an off mode, to prevent further build-up of the ice bank; and

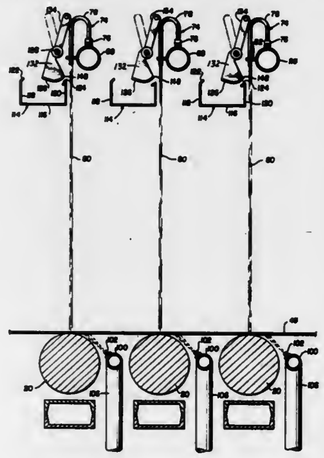
(f) upon subsequently receiving said first signal again, turning on said mechanical refrigeration unit and also initiating said on-off mode of operation of said agitator.

4,497,180

METHOD AND APPARATUS USEFUL IN COOLING HOT STRIP

Howard A. Graham, Belleville, Ill., assignor to National Steel Corporation, Pittsburgh, Pa.

Filed Mar. 29, 1984, Ser. No. 594,817
Int. Cl.³ F25D *13/06*
U.S. Cl. 62—63 **26 Claims**



1. In a hot strip finishing line having a runout table extending between the final mill stand and coiler and a cooling water system for cooling hot strip metal moving on the runout table, the cooling water system including a plurality of water spray bars extending transversely of and above the path of the strip moving over the runout table, a plurality of water discharge nozzles connected in each spray bar for directing cooling water downward onto the top surface of the strip, and means providing water under pressure to the respective spray bars, the improvement comprising,

an elongated water trough having water outlet means,

means mounting said trough above the runout table and in fixed generally parallel relation with one of said spray bars, said trough having an open top located below and in laterally spaced relation to the nozzles connected in said one spray bar,

movable deflector blade means operatively associated with said trough, and

actuator means selectively operable to move said deflector blade means between a first position spaced laterally from the nozzles connected in said one spray bar and a second position extending beneath said nozzles in said one spray bar,

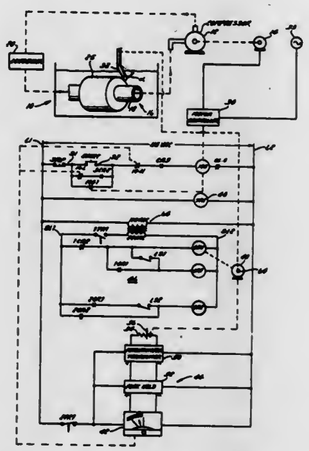
said deflector blade means in said second position deflecting water discharged from the nozzles connected in said one spray bar into said trough for discharge through said outlet means.

4,497,181

MEANS TO MEASURE, INDICATE AND REGULATE THICKNESS OF ICE LAYER IN REFRIGERATION SYSTEM

Erich J. Kocher, and John K. Kopp, both of Milwaukee, Wis., assignors to Vilter Manufacturing Corporation, Milwaukee, Wis.

Filed Jun. 13, 1983, Ser. No. 503,806
Int. Cl.³ F25C *1/00*; G08B *19/02*
U.S. Cl. 62—139 **3 Claims**



1. In a refrigeration system: a compressor; a first electric motor for driving said compressor; an evaporator for receiving refrigerant from said compressor, said evaporator having a portion which is submersible in water in a tank and is susceptible to formation of a layer of ice thereon; a compressor motor controller operable to energize and de-energize said first electric motor; and means for measuring, indicating and regulating the thickness of said layer of ice and comprising:

a movable probe extendible into the water in said tank for contacting said layer of ice, said probe being reciprocably movable during one cycle of operation from a starting position, to an ice contacting position and back to said starting position; a potentiometer responsive to movement of said probe to provide a signal proportional to probe position; a second electric motor energizable to effect movement of said probe; timing means to effect energization of said second electric motor at periodic intervals of time to effect one cycle of operation of said probe for each periodic energization of said second electric motor; an indicator device operable to provide an indication of the thickness of said layer of ice; and

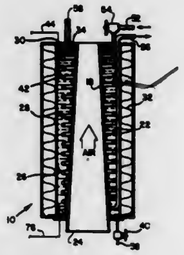
an electrical control circuit comprising a peak hold circuit to derive a peak value signal received from said potentiometer during each cycle of operation of said probe and to maintain said peak value signal for a predetermined interval of time after said each cycle of operation; and for providing a signal to operate said indicator device and to operate said compressor motor controller for said first electric motor.

4,497,182

DEHUMIDIFIER

Thomas H. Youngworth, North Quincy, Mass., assignor to Benson Engineering & Mfg., Inc., Quincy, Mass.

Filed Sep. 27, 1982, Ser. No. 424,523
Int. Cl.³ F25D *21/06*
U.S. Cl. 62—151 **3 Claims**



1. A dehumidifier comprising:

(a) a plenum chamber;

(b) a fan for delivering warm moist air to said plenum chamber;

(c) a dehumidifier chamber mounted adjacent and communicating with said plenum chamber and provided with a condensing surface, said condensing surface being defined by an upwardly tapered passage disposed within said dehumidifier chamber;

(d) a device for supplying a refrigerant to said dehumidifier chamber;

(e) said dehumidifier chamber including means for maintaining said condensing surface below freezing;

(f) means for intermittently delivering short bursts of heat to said condensing surface;

(g) said means for maintaining said condensing surface below freezing including an enclosure, a cooling coil disposed in said enclosure and about said condensing surface, said cooling coil communicating via a pipe with said device for supplying said refrigerant thereto, a cooling liquid contained within said enclosure and surrounding said cooling coil, a surface heater arranged about said condensing surface interspersed between the windings of said cooling coil, and insulating means enveloping said enclosure, a temperature control and, a temperature sensor disposed within said enclosure and in communication with said cooling liquid, said temperature sensor being coupled to said temperature control, a solenoid valve provided in said pipe for supplying said refrigerant to said cooling coil and coupled to said temperature control.

4,497,183

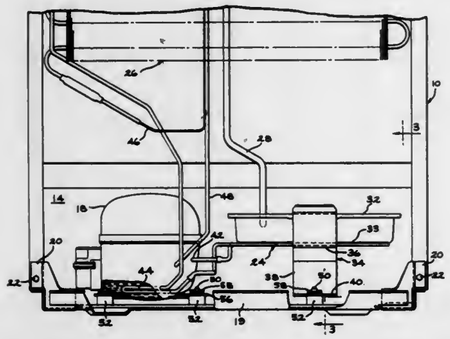
COMPRESSOR AUXILIARY CONDENSER ARRANGEMENT ADAPTED TO BE MOUNTED IN A REFRIGERATOR MACHINERY COMPARTMENT

Robert B. Gelbard; Bernard J. Grimm, and William D. Irish, all of Louisville, Ky., assignors to General Electric Company, Louisville, Ky.

Filed Mar. 23, 1984, Ser. No. 592,830
Int. Cl.³ F25D *19/00*
U.S. Cl. 62—295 **4 Claims**

1. A household refrigerator including a cabinet having a compartment to be refrigerated in the upper portion thereof separated by an insulated partition to include a machinery compartment in the lower portions of and adjacent the rear wall of said cabinet, said compartment extending substantially between the side walls of the cabinet and having an access opening in the rear wall of said cabinet, a unitary refrigerating apparatus adapted to be arranged in said machinery compartment through said access opening, comprising:

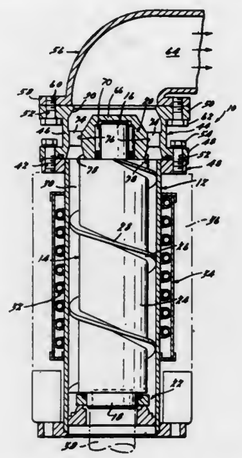
a base member having a substantially horizontal support wall extending substantially between said side walls;
a hermetic compressor mounted on said support wall;
a condensate disposing means and oil cooling arrangement including an auxiliary condenser having a first portion located inside said compressor and a second serpentine tube portion disposed outside said hermetic compressor connected to said compressor and a condensate collection container disposed above said serpentine tube portion;
means securing said container in heat exchange relation with said serpentine tube portion whereby the high thermal conductivity and condensate evaporation rates are insured;



means supporting said condensate disposing means on said support wall including a bracket having leg portions mounted on said support wall and a platform portion spaced from said support wall being dimensioned to receive said container;
locking means being dimensioned to engage said container to securely hold said condensate disposing means relative to said platform;
an elastomer support means disposed between said compressor and said support wall, and between said leg portions and said support wall for resiliently supporting said compressor and said condensate disposing means relative to said support wall so that said compressor and oil cooling arrangement vibrate in unison.

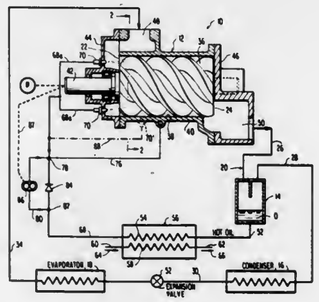
4,497,184
AUGER-TYPE ICE MAKING APPARATUS FOR PRODUCING HIGH QUALITY ICE
Robert P. Utter, and David A. Tandeski, both of Albert Lea, Minn., assignors to King Seeley Thermos Company, Prospect Heights, Ill.
Continuation of Ser. No. 171,356, Jul. 23, 1980, abandoned. This application Nov. 9, 1982, Ser. No. 440,468
Int. Cl.³ F25C *1/14*
U.S. Cl. 62—354 **24 Claims**

1. An apparatus for producing high quality relatively uniform size ice particles or pellets, comprising,
means for producing an ice body comprising a generally hollow cylindrically-shaped ice forming chamber,
said ice body having a generally cylindrical cross-sectional shape and having radially inner and outer sides,
ice auger means within said chamber and cooperable therewith for causing said ice body to move toward and into engagement with an ice discharge element defining a generally axially extending ice discharge opening, said opening being arranged directly above said ice body whereby a section of said body moves through said opening upon upward movement of said body,
said discharge opening having a dimension measured radially of said chamber that is greater than the radial thickness of said ice body, whereby the section of said body moving through said opening has at least one side thereof spaced away from the wall of said opening so as to define a flow passage through which unfrozen water within said



body may flow through said opening back toward said ice producing means.

4,497,185
OIL ATOMIZING COMPRESSOR WORKING FLUID COOLING SYSTEM FOR GAS/VAPOR/HELICAL SCREW ROTARY COMPRESSORS
David N. Shaw, Unionville, Conn., assignor to Dunham-Bush, Inc., West Hartford, Conn.
Filed Sep. 26, 1983, Ser. No. 536,046
Int. Cl.³ F25B *43/02*
U.S. Cl. 62—468 **6 Claims**



1. In a gas or vapor compression system including:
a helical screw compressor for compressing a gas or vapor working fluid, said compressor comprising:
a compressor casing including parallel, side-to-side intersecting bores,
end plates at the ends of said bores closing off the ends of said casing,
intermeshed helical screw rotors mounted for rotation within said bores for rotation about their axes and defining with said casing a compression chamber therebetween,
means defining a low pressure suction port and a high pressure discharge port within said compressor opening to said intermeshed helical screw rotors at opposite ends thereof,
means for feeding a low pressure working fluid suction gas or vapor to said suction port for compression within said compression chamber,

the improvement comprising:
atomizing nozzles carried by said compressor opening to said low pressure working fluid suction gas or vapor prior to compression, and
means for supplying a cooling liquid at a pressure higher than compression suction pressure for atomizing within said nozzles at a flow rate sufficient to produce a cloud type blanket of cool atomized liquid droplets uniformly dispersed within the suction gas or vapor for allowing the highest possible rate of heat transfer to occur between the cooling liquid and the working fluid during the compression process to effect the highest possible isothermal efficiency of the compressor when in a gas compression system or for compression process operation at near vapor saturation value in a vapor compression system while avoiding large hydraulic losses in the compressor.

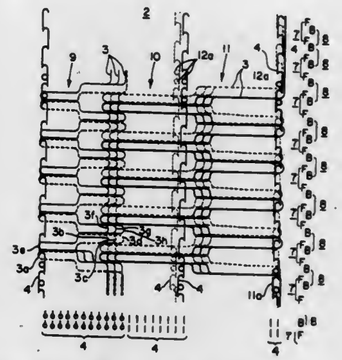
4,497,186
EARRING WITH PENDANT AND CIRCUMJACENT SPIRAL PORTION
Harry N. Mason, 1900 Green St., San Francisco, Calif. 94123
Filed Aug. 25, 1983, Ser. No. 526,395
Int. Cl.³ A44C *7/00*
U.S. Cl. 63—13 **5 Claims**



1. An earring for pierced ears, comprising a central pendant portion adapted to hang down from the ear and which forms one end of the earring, a curved apex portion extending from the top of the pendant portion, and a spiral portion integral with and extending down from the apex portion and having at least one spiral revolution circumjacent the central pendant portion, said spiral portion comprising both a hanger wire for the earring and an ornamental portion of the earring, terminating in a lower end which forms the other end of the earring, said lower end and spiral portion being insertable through the ear, up to the apex portion, for attaching the earring to the ear.

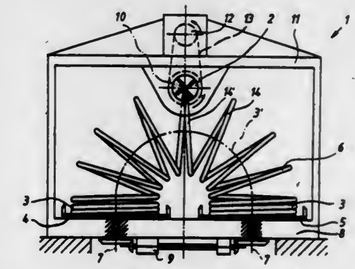
4,497,187
METHOD OF MANUFACTURING A BURNING WICK
Yozo Yamaguchi, Nigata, Japan, assignor to Isaburo Yamaguchi, Nigata, Japan
Continuation-in-part of Ser. No. 197,343, Oct. 15, 1980, abandoned. This application Dec. 3, 1982, Ser. No. 446,581
Int. Cl.³ D04B *23/02*
U.S. Cl. 66—87 **1 Claim**

1. A method of knitting tubular burning wicks by warp knitting two set of warp yarns into a continuous two ply web of back to back, superposed single knit fabrics formed into open ended tubular wicks by a plurality of narrow seam areas in which the warp yarns of one fabric are cross interlooped with the warp yarns of the other fabric to form a single ply in the seam area, comprising
knitting a warp knit fabric having three contiguous sections;
knitting the first section of glass yarns forming at least eight wales of warp stitches and inlaying glass yarns in said wales;
knitting the second contiguous section of at least seven wales of cotton yarn and inlaying cotton weft yarns in the last-named wales;
knitting the third contiguous section with said inlaid yarns of said second section and traversing over a substantial number of needles wherein no warp stitches are formed until an edge portion; and



knitting in said edge portion at least two warp knit cotton yarns to form terminal wales at the edge of the web.

4,497,188
PROCESS AND APPARATUS FOR PEELING WIRE
Wolfgang Lindeman, Grosse Kurfurstenstrasse 15, D-4800 Bielefeld 1, and Hans Lindeman, Zittauerstrasse 15, 4800 Bielefeld 1, both of Fed. Rep. of Germany
Filed Dec. 21, 1982, Ser. No. 451,969
Claims priority, application European Pat. Off., Dec. 22, 1981, 81110696.2
Int. Cl.³ B21C *43/00*
U.S. Cl. 72—40 **23 Claims**

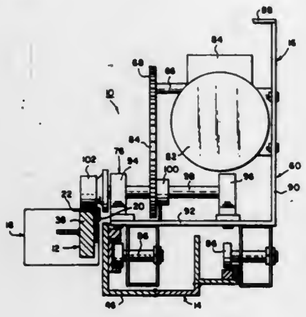


2. An apparatus for the peeling of wire, said wire being in the shape of a loop and being peeled when in the shape of a loop, comprising:
(a) a revolving peeling head;
(b) a rotatable payout device which feeds said wire to said peeling head in the shape of a loop; and
(c) a rotatable takeup device which receives said wire from said peeling head in the form of a loop.

4,497,189
DUCT FINISHING MACHINE
Kenneth E. Larson, 224 Utah Ave. SE., Huron, S. Dak. 57350
Filed Mar. 23, 1983, Ser. No. 477,883
Int. Cl.³ B21D *39/02, 51/28*
U.S. Cl. 72—51 **6 Claims**

1. A duct finishing machine which comprises:
(a) a duct holding frame that engages and holds a duct in a proper position;
(b) a power head carriage that includes means for pivotally

attaching and locking the carriage to the duct holding frame; and



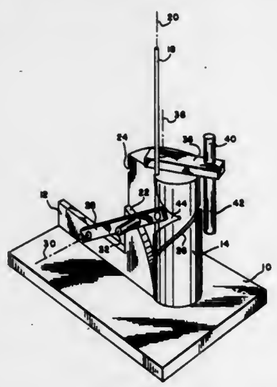
(c) a power head that moves along the power head carriage travelling an entire length of the duct for sealing a formed lock seam of the duct by rolling a flange down tight.

4,497,190

APPARATUS FOR BENDING A ROLLING MILL LAYING PIPE

Harold E. Woodrow, Northboro, Mass., assignor to Morgan Construction Company, Worcester, Mass.

Filed Sep. 12, 1983, Ser. No. 531,234
Int. Cl.³ B21D *7/02, 11/06;* **B21F** *3/02*
U.S. Cl. 72—133 **14 Claims**



1. Apparatus for bending a rolling mill laying pipe, comprising:

a holder for removably retaining one end of a straight pipe section, with the axis of said pipe section being coincident with a reference axis;

first guide means defining a two dimensional first bending path curving away from said reference axis and along which a portion of the thus retained pipe section may be pre-bent and permanently deformed into conformity with said first bending path; and

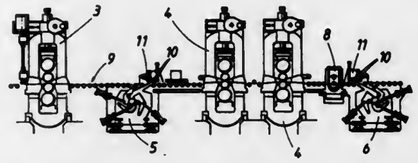
second guide means defining a three-dimensional helical second bending path curving away from said reference axis and along which the thus retained and pre-bent pipe section may be bent and permanently deformed into conformity with said second bending path.

4,497,191

PLANT AND PROCESS FOR HOT-ROLLING STRIP OR PLATE STOCK

Uwe Langer, Leonding, and Franz Brettbacher, Linz, both of Austria, assignors to Voest-Alpine Aktiengesellschaft, Linz, Austria

Filed Feb. 23, 1983, Ser. No. 469,017
Claims priority, application Austria, Mar. 5, 1982, 869/82
Int. Cl.³ B21B *41/02*
U.S. Cl. 72—202 **1 Claim**



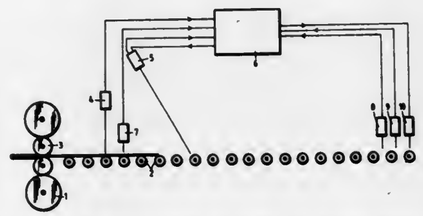
1. A hot-rolling process carried out in a hot-rolling plant comprising a forward reversing coiler, a rear reversing coiler, and a set of two reversing rolling mill finishing stands arranged in direct succession between said forward and rear reversing coilers, wherein stock to be rolled is rolled in a plurality of passes in the roll bites of said reversing stands and is coiled up on one of said coilers after at least one of said passes, wherein the improvement comprises the steps of subjecting said stock to at least one breaking-down pass in a single breaking-down rolling mill stand directly preceding said forward reversing coiler and closely spaced therefrom, maintaining said two reversing rolling mill stands inoperative by opening the roll bites thereof sufficiently while passing said stock freely therethrough during said breaking-down pass, subsequently operating all of said stands simultaneously to subject said stock to at least one combined breaking-down and finishing pass in said breaking-down stand and said reversing stands, respectively, coiling said stock in said rear coiler after at least one of said combined breaking-down and finishing passes, and subjecting said stock to at least one finishing pass in said two reversing stands after said combined breaking down and finishing pass, and coiling said stock in the other one of said coilers while maintaining said breaking down stand inoperative.

4,497,192

PROCESS FOR CROPPING THE HEAD OF SELF-LUMINOUS ROLLED MATERIAL, ESPECIALLY METAL STRIPS AND SYSTEM FOR CROPPING THE HEAD

Hans-Jürgen Reizig, Duisburg; Friedrich Meuters, Mönchen-Gladbach, and Hans-Richard Louen, Friedrichsfeld, all of Fed. Rep. of Germany, assignors to Thyssen Aktiengesellschaft vorm. August Thyssen-Hutte, Duisburg, Fed. Rep. of Germany

Filed Dec. 20, 1982, Ser. No. 451,700
Claims priority, application Fed. Rep. of Germany, Dec. 24, 1981, 3151384
Int. Cl.³ B21B *1/00;* **B23D** *36/00;* **B26D** *5/34*
U.S. Cl. 72—203 **9 Claims**



1. In a process for cropping the head of the self-luminous rolled material emerging from a roughing stand which comprises:

(A) measuring the width of the head of said rolled material upstream of a set of cropping shears along a measuring line which runs at right angles to the direction in which the rolled material runs;

(B) controlling the shears in accordance with measured values according to step A,

the improvement which comprises:

(C) measuring the intensity of radiation from said rolled material in the direction in which the rolled material runs in advance of a measuring line of a line scanning camera downstream thereof;

(D) adjusting the exposure time of said line scanning camera to obtain optimum exposure with respect to the edges of said rolled material;

(E) detecting the shape of said head by said line scanning camera by repeatedly generating optical images of the rolled material running below said camera;

(F) said images being generated along the measuring line which runs immediately downstream of said roughing stand;

(G) determining the distance of the cutting line from the leading edge of said head;

(H) determining the speed at which said head moves immediately upstream of said shears while;

(I) determining the position of the leading edge of said head by means of a sensor which measures transversally across the width of said rolled material;

(J) forming a control signal from:

1. the distance separating the cutting line from the leading edge of said head;

2. the speed at which the rolled material moves immediately upstream of said shears;

3. the position of the leading edge of said head; and

(K) actuating said shears in response to said control signal.

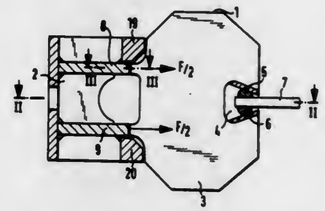
8. System for cropping the head of self-luminous rolled material, especially metal strips in a rolling train having a set of shears which are controlled by a controlling device arranged upstream the shears and including a width-measuring device for measuring the width of the rolled material, characterized in that the controlling device including a computer receives both signals from the width-measuring device designed as a line scanning camera, especially a diode-type line camera, and arranged immediately downstream of the last roughing stand of the rolling train and measuring repeatedly the width along a measuring line running transversely across the rolled material and signals from a speed-measuring device measuring the speed of the rolled material at the measuring line and signals from a barrier, especially a further line scanning camera, especially a diode-type line camera, arranged immediately upstream the shears and detecting the beginning of the head of the rolled material along a measuring line running transversely across the rolled material and signals from a further speed-measuring device measuring the speed of the rolled material upstream the shears and characterized in that the computer determines the distance separating the cutting line from the beginning of the head in accordance with the received signals for the width of the rolled material and its speed measured by a first speed-measuring device, whereby the determined distance together with the signals for the beginning of the head and its speed upstream of the shears are used to generate a control signal for the shears (10), said system further comprising a radiation intensity meter positioned in advance of the measuring line of said line scanning camera and connected to said line scanning camera to control the exposure time of said line scanning camera, arrange immediately downstream of the last roughing stand, to obtain optimum exposure with respect to the edges of said rolled material.

4,497,193

GRIPPING HEAD OF AN HYDRAULIC SHEET STRETCHER

Heinrich Kutz, Neuss; Dietrich Grube, Ratingen-Tiefenbroich; Georg Eggert, Hilchenbach-Dahlbruch, and Rolf Stein, Hilchenbach, all of Fed. Rep. of Germany, assignors to SMS Schloemann-Siemag Aktiengesellschaft, Dusseldorf, Fed. Rep. of Germany

Filed Mar. 22, 1982, Ser. No. 360,466
Claims priority, application Fed. Rep. of Germany, Mar. 26, 1981, 3111880
Int. Cl.³ B21D *25/04*
U.S. Cl. 72—302 **6 Claims**



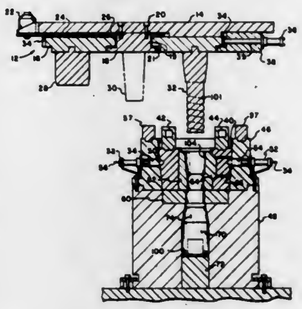
1. A gripping head of an hydraulic sheet stretcher comprising a cross member, at least one flange on said cross member, a plurality of spaced laminae extending substantially perpendicular to each flange defining a gripping opening at one edge thereof for gripping the sheet and positioned at the opposite edge thereof adjacent each flange to define spaces between adjacent laminae adjacent said opposite edge thereof, a butt weld seam connecting the laminae to each flange and extending between the spaced laminae at said spaces defined between adjacent laminae adjacent said opposite edge and concave circular curved surfaces within the butt weld seam extending at least between the adjacent laminae at said defined spaces and facing said defined spaces, said curved surfaces serving to remove cracks and notches adjacent said defined spaces.

4,497,194

METHOD AND APPARATUS FOR PERFORMING MULTIPLE CLOSED AND SEMI-CLOSED OPERATIONS ON AN OPEN DIE PRESS

Wayne A. Martin, Wilkins Township, Allegheny County, and Justin G. Modic, Richland Township, Allegheny County, both of Pa., assignors to United States Steel Corporation, Pittsburgh, Pa.

Filed Jun. 14, 1982, Ser. No. 387,999
Int. Cl.³ B21D *22/00*
U.S. Cl. 72—356 **5 Claims**



1. An apparatus for performing multiple operations on an open die press, said apparatus comprising:

a top punch assembly which includes a mounting fixture

adapted to be secured on the underside of a crosshead of said press, a horizontally elongated punch holder plate rotatably mounted about a vertical axis thereof on the underside of said fixture, a plurality of punches extending downwardly from said holder plate at spaced locations along the periphery of a circle, the center of which is located at the axis of rotation of said holder plate, and motor means connected to said holder plate for the axial rotation thereof, and

a bottom die assembly adapted to be mounted in stationary position under said crosshead of the press, for receiving respective of said punches as the crosshead is lowered, said punches being sequentially indexable into forging position with respect to said die assembly,

said bottom die assembly including a split die having a generally vertical cavity extending therethrough, said split die having a bottom surface for supporting a workpiece placed in said die and an opening in communication with the cavity in said die,

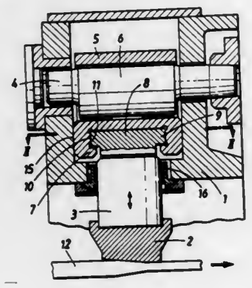
said bottom riser including a bottom upset member assembly, said assembly including a base, a member mounted on said base for closing the bottom opening of said cavity in said split die, and means on said base for selectively raising said member in a vertical direction to a stationary upper position for closing the bottom opening in said split die during an upset operation, and lowering said member, exposing the opening in said die during a punching operation.

4,497,195

SWAGING MACHINE

Bruno Kralowetz, Steyr, Austria, assignor to Firma GFM Gesellschaft fur Fertigungstechnik und Maschinenbau Gesellschaft m.b.H., Steyr, Austria

Filed Nov. 9, 1982, Ser. No. 440,338
Claims priority, application Austria, Nov. 16, 1981, 4921/81
Int. Cl.³ B21P *41/00*
U.S. Cl. 72—402 **3 Claims**



1. In a swaging machine comprising

a frame,

a plurality of generally radially extending, angularly spaced and longitudinally reciprocable swaging rams a respective one of said rams being mounted in a respective slide track of said frame, each swaging ram having radially inner and outer ends,

a plurality of ram-operating mechanisms for longitudinally reciprocating respective ones of said rams, each of said ram-operating mechanisms comprising a slide block arranged to be guided by said slide track of the respective ram and an eccentric mounted in said slide block for rotation on an axis of rotation which is transverse to the longitudinal direction of said ram, said slide track extending transversely to said axis of rotation,

the improvement residing in that each of said blocks comprises a guide rail extending transversely to said axis of rotation and to the longitudinal direction of the respective ram, and

each of said rams comprises at its radially outer end a head portion extending into said guide rail and coupled thereto for common movement in the longitudinal direction of said ram along said slide track, the head portion being in slidable engagement with, and slidable along, said guide rail and said head portion of each of said rams has in cross-section the configuration of a parallelogram having two pairs of mutually opposite sides,

one of said pairs of opposite sides constitutes said oblique surfaces, and

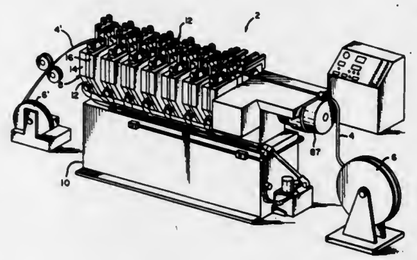
the other of said pairs of opposite sides constitutes slide faces in slidable engagement with one of said slide tracks adapted to guide the head portion along said path.

4,497,196

APPARATUS FOR PERFORMING OPERATIONS ON STRIP MATERIAL

Johannes C. W. Bakermans, Harrisburg, Pa., and Dimitry G. Grabbe, Lisbon Falls, Me., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Feb. 7, 1983, Ser. No. 464,439
Int. Cl.³ B21J *71/00, 9/18*
U.S. Cl. 72—405 **11 Claims**



1. A machine module for performing operations on strip material, the machine module comprising a strip feeder for feeding the material intermittently along a strip feed path, an operating zone on the strip feed path, first and second tool holders in the operating zone, the tool holders being aligned with each other on opposite sides of the strip feed path and being movable towards and away from the strip feed path between retracted positions, in which the tool holders are spaced from the feed path, and closed positions, in which the tool holders are substantially against strip material on the strip feed path, and actuating means for actuating the strip feeder and for moving the tool holders between their retracted and closed positions in timed sequence with the strip feeder so that the tool holders are against the strip material during dwell of the strip, the machine being characterized in that:

the actuating means comprises a continuously rotatable power shaft, first and second actuator levers, and first and second connecting links, the power shaft extending parallel to, and being spaced from, the strip feed path, the actuator levers being on opposite sides of the strip feed path, the connecting links being eccentrically coupled to the power shaft and extending to the actuator levers,

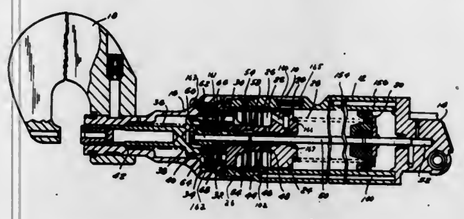
the actuating levers each having a force applying end and a pivoted end, the force applying ends being coupled to the tool holders, the pivoted ends being pivotally mounted on parallel pivotal axes which extend parallel to the main power shaft, and the conecting links being pivotally connected to the actuating levers at fixed locations intermediate the force applying and pivoted ends of the actuating levers.

4,497,197

PNEUMATIC HYDRAULIC HAND-HELD POWER UNIT

David A. Giardino, Deerfield; Joseph R. Groshans, and Kenneth A. McHenry, both of Clinton, all of N.Y., assignors to Chicago Pneumatic Tool Company, New York, N.Y.

Filed Feb. 18, 1983, Ser. No. 467,652
Int. Cl.³ B21J *15/34*
U.S. Cl. 72—453.17 **7 Claims**



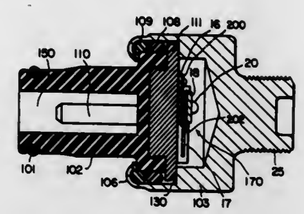
1. A pneumatic hydraulic tool having a cylindrical housing, a backhead affixed at one end of the cylindrical housing, a hydraulic cylinder affixed to the other end of the cylindrical housing, a work engaging means secured to the hydraulic cylinder, a reservoir element enclosed in the cylindrical housing, a flexible bladder arranged in the reservoir element which bladder encloses hydraulic medium and may be exposed to pressurized pneumatic medium on the exterior thereof, a piston enclosed in the hydraulic cylinder which piston may be hydraulically driven toward the work engaging means, a piston driven ram in the cylindrical housing, said backhead enclosing a throttle valve and a cycling valve, said throttle valve being movable from non-operative position to two operative positions the first of which results in exposure of the bladder to pressurized air to force hydraulic medium from the reservoir element to cause movement of the piston toward the work engaging means, the second of which results in operation of the cycling valve to direct pressurized pneumatic medium to the cylindrical housing to cause movement of the piston driven ram whereby pressurized hydraulic medium is directed to the piston in the hydraulic cylinder so that a work operation is effected.

4,497,198

KNOCKING SENSOR

Juhei Takahashi; Kenzo Miura; Shogo Asano; Kunio Sugiyama, all of Yokohama; Kiyokane Kaji, Toyota, and Jun Ohta, Aichi, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka and Toyota Jidosha Kabushiki Kaisha, Aichi, both of, Japan

Continuation-in-part of Ser. No. 276,859, Jun. 24, 1981, abandoned. This application Jul. 18, 1983, Ser. No. 514,853
Int. Cl.³ G01L *23/22*
U.S. Cl. 73—35 **11 Claims**



1. A knocking sensor for converting engine vibrations into an electrical signal, comprising:

(a) a conductive casing having at its one end a threaded portion engageable with a screw hole of said engine, a nut-like outer portion so that said casing can be readily rotated, and a generally cylindrical bore having an open end at the other end;

(b) a connector having an insulating hollow cylinder with one end telescopically received in the bore of said casing, said connector having a pin-like conductor with a first portion received within said insulating hollow cylinder so that said first portion of said pin-like conductor is substantially parallel to said insulating hollow cylinder, said pin-like conductor having a second portion extending in a direction opposite to said first portion, said insulating hollow cylinder having an open end at its one end and a closed end at the other side, said closed end having a recess at its outside, said pin-like conductor being partially embedded in said closed end of said insulating hollow cylinder so that said second portion projects into said recess, said connector engaging with said open end of said casing at said closed end;

(c) a pickup assembly having:

a conductive base partially received in said recess of said cylinder of said connector so that said base is in contact with said casing, said base having a throughhole, the diameter of which is larger than the diameter of said second portion of said pin-like conductor;

a nonconductive substrate placed on said base;

a piezoelectric element having first and second electrodes at both sides thereof, said piezoelectric element being placed on said nonconductive substrate so that said first electrode is in contact with said nonconductive substrate; a conductive pressing plate placed on said second electrode; and at least one screw which secures said piezoelectric element interposed between said nonconductive substrate and said pressing plate onto said conductive base, said screw being screwed into a screw hole made in said base so that said second electrode of said piezoelectric element is electrically connected to said conductive casing via said pressing plate, screw, and base, said first electrode being electrically connected to said pin-like conductor via a first conductor connected between a second conductor, which is electrically connected to said first electrode, and said second portion of said pin-like conductor, which penetrates said base through said through-hole without coming into contact therewith; and

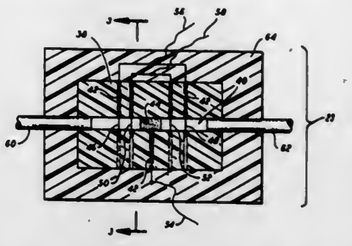
(d) means for fastening said connector to said casing.

4,497,199

LIQUID CHROMATOGRAPHY

Wayne R. Matson, Ayer, Mass., assignor to ESA, Inc., Bedford, Mass.

Division of Ser. No. 241,945, Mar. 9, 1981, Pat. No. 4,413,505. This application Feb. 10, 1983, Ser. No. 465,786
Int. Cl.³ G01N *31/06*
U.S. Cl. 73—61.1 C **7 Claims**



1. In a method of chromatographically analyzing a sample material wherein a sample is dissolved in a carrier fluid to form a mobile phase which then is passed through a chromatography column, electrochemically screening said carrier fluid so as to selectively remove electroactive materials therein prior to injecting said sample material into said carrier fluid by passing

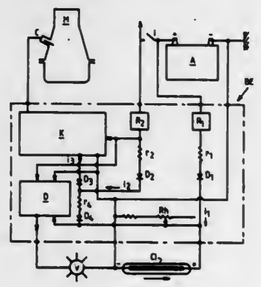
said carrier fluid through a flow cell having at least one active testing electrode, at least one reference electrode and at least one counter electrode, and applying controlled testing potentials to said active testing electrodes, a reference potential to said reference electrodes, and a counter potential to said counter electrodes.

4,497,200

METHOD AND DEVICE FOR EVALUATION AND INDICATION OF WEAR CONDITION OF MOTOR LUBRICATION

Michel Touraier, Mont Saint Aignan, France, assignor to Esso Societe Anonyme Francaise, Courbevoie, France

Filed Apr. 11, 1983, Ser. No. 484,078
Claims priority, application France, Apr. 13, 1982, 82 06331
Int. Cl.³ G01M *15/00*
U.S. Cl. 73—64 **6 Claims**



1. A method of evaluating and indicating the wear condition of the lubrication oil in a motor comprising the steps of

integrating an electric current representing the sensed values of a temperature variable, consisting of variables used as a criterion characterizing several different fatigue conditions of the oil, said variable being then specific to the period of presence of said oil in said motor, to the working time of said motor and the time periods during which the oil being too hot or too cold wears abnormally,

and signalling the reaching of the fatigue condition of the oil based on said integrating.

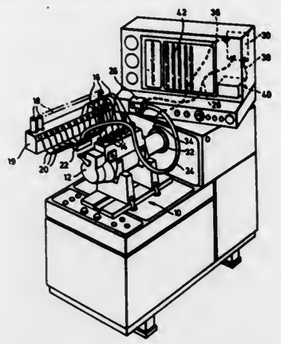
4,497,201

PHASE-ANGLE CHECKING APPARATUS

Ralph Allen, Brackley; David A. Moore, Buckingham, and Edward F. Quinton, Oxford, all of England, assignors to Leslie Hartridge Limited, Buckingham, England

Filed Jan. 25, 1983, Ser. No. 460,820
Claims priority, application United Kingdom, Feb. 1, 1982, 8202827
Int. Cl.³ G01M *19/00*
U.S. Cl. 73—119 A **11 Claims**

1. Apparatus for detecting instants of injection of fuel or test fluid through an injector of a fuel injection pump system for an internal combustion engine, comprising (a) a part defining at least one cavity which serves, when the apparatus is in use, to receive a nozzle end of such an injector, (b) a separate adaptor positioned at least at a mouth of said cavity to provide a fit between said part and such an injector when the apparatus is in use, and (c) a pressure sensor arranged, in relation to said cavity, to detect a change in pressure transmitted through the



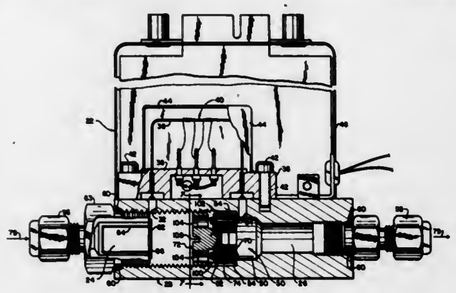
cavity interior following injection of fuel or test fluid through such an injector.

4,497,202

LAMINAR FLOWMETER

Seymour Mermelstein, Newton, Mass., assignor to Dresser Industries, Inc., Dallas, Tex.

Filed May 31, 1983, Ser. No. 499,481
Int. Cl.³ G01F *5/00*; F15D *1/02*
U.S. Cl. 73—202 **16 Claims**



1. For use in a fluid flowmeter, an improved flow control member comprising in combination:

a pair of plates, each having an outer periphery and a substantially central aperture defining an inner periphery, each plate having a pair of parallel side surfaces extending between said in inner and outer peripheries;

a first of said plates having at least one slotted opening forming a passage through said first plate and through said side surfaces thereof and extending from said inner periphery to a first termination position disposed intermediate said inner and outer peripheries;

the second of said plates having at least one slotted opening forming a passage through said second plate and through said side surfaces thereof and extending from said outer periphery to a second termination position disposed intermediate said inner and outer peripheries;

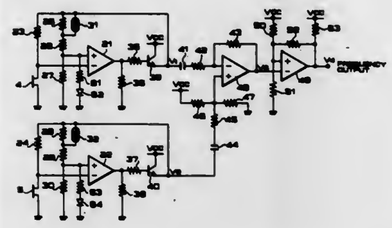
said plates being in contact with one another along respective facing side surfaces in registered relation wherein said central apertures are substantially aligned with one another and said first termination position is coincident with said second termination position so that said slotted openings constitute a fluid conduit extending between said inner and outer peripheries.

4,497,203

APPARATUS FOR MEASURING FLOW VELOCITY

Shunichi Wada, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 14, 1982, Ser. No. 449,618
Claims priority, application Japan, Mar. 15, 1982, 57-43556; Mar. 15, 1982, 57-43558
Int. Cl.³ G01F *1/32*
U.S. Cl. 73—204 **5 Claims**



1. An apparatus for measuring flow velocity comprising:

(a) a vortex generator disposed in a fluid to be measured;

(b) at least one heat-sensitive element disposed in the fluid for detecting the flow velocity or flow rate of the fluid in the form of change of fluid caused by said vortex generator and producing detection signals representative of a change in frequency of electric signals, said heat-sensitive element comprising a heating wire;

(c) an operational amplifier for amplifying the detection signals;

(d) a bridge circuit comprising a circuit network including said heating wire as one side thereof;

(e) the output of said operational amplifier being fed back to said bridge circuit.

(f) means including a feedback circuit for feeding the output of said operational amplifier back to said heat-sensitive element for changing the temperature of said heat-sensitive element in response to the output of said operational amplifier; and

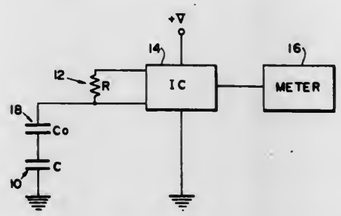
(g) means for applying an offset voltage to at least one side of said bridge circuit.

4,497,204

LIQUID GAUGE

Hiroshi Kobayashi, Yokohama, Japan, assignor to Nissan Motor Company, Limited, Japan

Filed Jan. 8, 1982, Ser. No. 338,111
Claims priority, application Japan, Jan. 9, 1981, 56-1047
Int. Cl.³ G01F *23/00*
U.S. Cl. 73—304 C **18 Claims**



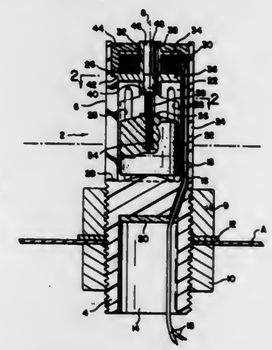
4. A liquid gauge comprising continuously oscillating oscillation means including a frequency generator **14**, a first capacitor **10** and a resistor **12** which is connected in series with said first capacitor, an indicating means **16** for visually or acoustically indicating the quantity of the liquid by processing a signal generated by said oscillation means, said first capacitor including a pair of spaced electrode plates which are submersible in a liquid the quantity of which is to be measured, which is characterized in that a second capacitor **18** is interposed in series between said first capacitor and said resistor, the capacitance of said second capacitor is determined greater than that of said first capacitor which is established by said electrode plates being substantially fully submerged in the liquid, said oscillating means is connected for continuously oscillating so long as the electrode plates are submerged in the liquid.

4,497,205

METHOD AND APPARATUS FOR AUTOMATICALLY SENSING THE LEVEL OF A LIQUID IN A RESERVOIR

Gary B. Zulauf, Pinckney, and Ben J. Charboneau, Wixom, both of Mich., assignors to Gulf & Western Manufacturing Company, Southfield, Mich.

Filed Dec. 17, 1982, Ser. No. 450,648
Int. Cl.³ G01F *23/12*
U.S. Cl. 73—313 **30 Claims**



1. A liquid level sensor adaptable for use in the oil reservior of an internal combustion engine comprising:

a housing adapted to be removably mounted in a bottom wall of the liquid reservior and allowing the liquid of said reservior to flow therethrough;

said housing having a top and bottom end, said bottom end being closer to said bottom wall than said top end;

a magnetic coil flux generator fixedly sercured to the top end of said housing;

a float mounted for reciprocal movement with respect to said flux generator along a predetermined path between first and second positions within said housing as a function of the level of liquid in the reservior;

a magnetic material within said housing and movable with said float and being in closer proximity to the flux generator when the float is at the first of said positions than when the float is at second of said positions, and being in sufficiently close proximity to said flux generator at said first position to significantly affect the flux generated by said flux generator as a function of the level of said generator;

monitoring means responsive to variations in the operating characteristics of said flux generator;

guide means to keep said float movable in said predetermined path, said guide means mounted coaxially with said magnetic coil flux generator, and extending from said flux generator downwardly through said housing, and

said float having a guide receiving cavity coaxial with said guide means whereby said guide means coacts with said guide receiving cavity maintains said float movably in said predetermined path.

4,497,206

GRAVIMETER

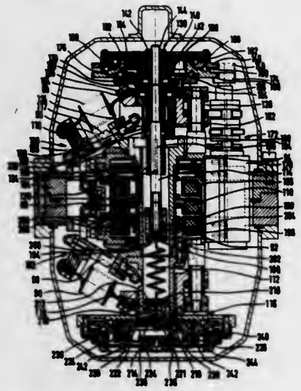
Hans Scheurenbrand, Stetten, Fed. Rep. of Germany, assignor to Bodenseewerk Geratetchnik GmbH, Uberlingen, Fed. Rep. of Germany

Filed Mar. 14, 1983, Ser. No. 474,765

Claims priority, application Fed. Rep. of Germany, Mar. 17, 1982, 3209590

Int. Cl.³ G01V *7/00*

U.S. Cl. 73—382 R **20 Claims**



1. Gravimeter, comprising

(a) a measuring mass (86) held in a housing (104) for rectilinear, vertical movement,

(b) prestressed spring means (88,90. . .) for weakly supporting said measuring mass (86) in a state of equilibrium,

(c) a sensor (94) arranged to respond to deviations of said measuring mass (86) from said state of equilibrium,

(d) restoring force generator means (92) controlled by said sensor (94) and operatively connected to said measuring mass (86) for exerting a restoring force on said measuring mass (86) in accordance with a restoring force-versus-deviation characteristic, when said measuring mass (86) deviates from said state of equilibrium,

characterized in that

(e) said spring means comprise springs (80,90 . . .) which

(e_1) are arranged in regular array around said measuring mass (86), and

(e_2) are arranged to exert pressing forces on said measuring mass (86) along respective lines of action (96,98) which are inclined with respect to the horizontal,

(f) said state of equilibrium coincides with a value of minimum, substantially zero slope of said resultant restoring force-versus-deviation characteristic of said spring means.

4,497,207

SPIN-CHECK DEVICE FOR ARROWS

Bruce M. Schaaf, 2629 Woodlawn Ave., Erie, Pa. 16510

Filed Oct. 6, 1983, Ser. No. 539,702

Int. Cl.³ G01M *19/00*

U.S. Cl. 73—432 R **10 Claims**

1. A device for testing arrows for nock alignment and straightness comprising,

a base,

a staff supported on said base and extending upwardly therefrom, a shaft support on said staff spaced from said base and a motor on said base having a shaft extending upwardly therefrom and an arrow tip support on said motor shaft,

said shaft support on said staff having a v-shaped notch therein adapted to engage an arrow shaft whereby said



arrow can be rotated by said motor to rotate said arrow shaft in said notch.

4,497,208

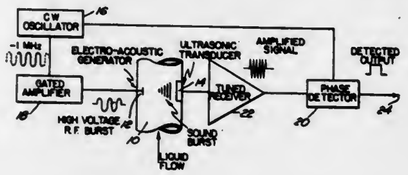
MEASUREMENT OF ELECTRO-KINETIC PROPERTIES OF A SOLUTION

Tonis Oja, Scarsdale, N.Y.; Gary L. Petersen, Kingstown, R.I., and David W. Cannon, Attleboro Falls, Mass., assignors to Matec, Inc., Warwick, R.I.

Filed Jun. 23, 1983, Ser. No. 507,111

Int. Cl.³ G01N *29/00*

U.S. Cl. 73—584 **9 Claims**



1. A method of measuring electro-kinetic properties of charged particles dispersed in a liquid medium which method comprises the steps of positioning two electrodes to contact the liquid medium, energizing the electrodes with an alternating electrical potential to cause a charge separation between the surfaces of the dispersed particles and the charge layers that surround the particles in the liquid medium and thereby to generate an acoustic signal, spacing an acoustic transducer from the electrodes for detecting the acoustic signal, and measuring the amplitude of the detected signal, the amplitude of the detected signal being a function of the electro-kinetic properties of the particles present in the liquid medium, the number of particles per unit volume and the amplitude of the excitation potential on the electrodes.

4,497,209

NONDESTRUCTIVE TESTING OF STRESS IN A FERROMAGNETIC STRUCTURAL MATERIAL UTILIZING MAGNETICALLY INDUCED VELOCITY CHANGE MEASUREMENTS

Hegeon Kwun, and Cecil M. Teller, II, both of San Antonio, Tex., assignors to Southwest Research Institute, San Antonio, Tex.

Filed Jul. 12, 1983, Ser. No. 513,059

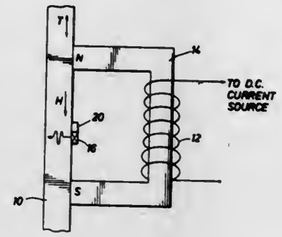
Int. Cl.³ G01N *22/00*

U.S. Cl. 73—601 **16 Claims**

1. A method of determining the stress in a ferromagnetic material specimen comprising the steps of:

(a) propagating an ultrasonic wave of suitable frequency and mode in a given direction through the specimen and detecting such a propagated wave;

(b) applying a magnetic field to the specimen of a specified strength; and



(c) measuring the change in velocity of the propagated ultrasonic wave in the specimen having the applied magnetic field to obtain an indication of stress in the specimen.

4,497,210

PHASED ARRAY ULTRASONIC TESTING APPARATUS AND TESTING METHOD THEREFOR

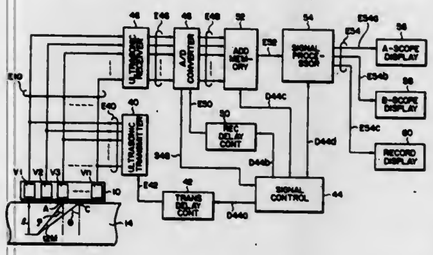
Kuniharu Uchida, Fujisawa; Satoshi Nagai, Yokohama; Ichiroh Komura, Yokohama, and Taiji Hirasawa, Yokohama, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Jul. 5, 1983, Ser. No. 510,834

Claims priority, application Japan, Jul. 5, 1982, 57-116435; Dec. 16, 1982, 57-220443

Int. Cl.³ G01N *29/04*

U.S. Cl. 73—602 **29 Claims**



1. A phased array ultrasonic testing apparatus comprising:

(a) array probe means having a plurality of ultrasonic transducers for transmitting an ultrasonic wave into a body to be tested and for receiving an ultrasonic echo wave;

(b) transmitting means coupled to said probe means, for driving said transducers to transmit an ultrasonic main beam in a predetermined direction within said body;

(c) synthesizing means coupled to said probe means, for synthesizing reception echo signals corresponding to ultrasonic echoes received by said transducers and generating synthesized reception echo signals as a composite reception signal; and

(d) signal processing means coupled to said synthesizing means, for generating an image signal synchronous with said composite reception signal in accordance with a beam index point of said ultrasonic main beam and a steered angle thereof.

4,497,211

CIRCUIT FOR GENERATING SAWTOOTH SHAPED PULSES FOR ULTRASONIC INSTRUMENTS

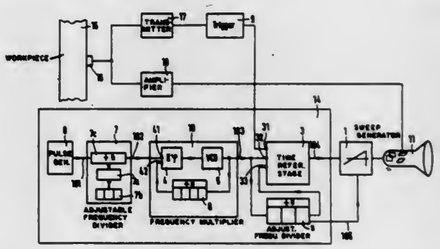
Max Rutloh, Erftstadt, Fed. Rep. of Germany, assignor to Krautkramer-Branson, Inc., Lewistown, Pa.

Filed May 9, 1983, Ser. No. 492,748

Claims priority, application European Pat. Off., Jul. 17, 1982, 82106466.4

Int. Cl.³ G01N *29/04*

U.S. Cl. 73—606 **7 Claims**



1. An ultrasonic test instrument for testing workpieces having a cathode ray tube for displaying ultrasonic signals and including a sweep generator for producing sawtooth signals for the time axis of said ultrasonic signals; the sweep time of said sawtooth signals being adjustable by a voltage controlled constant current source, and said sweep generator being responsive to trigger signals from a trigger generator, the improvement comprising:

a time reference stage for producing rectangularly shaped pulses, the duration of which is commensurate with the sweep time of said sawtooth signals, coupled to the input of said sweep generator;

an input of said time reference stage coupled for receiving said trigger signals from said trigger generator for causing the start of said rectangularly shaped pulses to be responsive to the receipt of said trigger signals, and

a frequency stabilized pulse generator coupled serially with a frequency transforming means to another input of said time reference stage for providing signals which, except for a constant factor, terminate said rectangularly shaped pulses.

4,497,212

FLANGELESS ELECTROMAGNETIC FLOWMETER

Roy F. Schmoock, Yardley, Pa., assignor to Fischer & Porter Company, Warminster, Pa.

Division of Ser. No. 398,809, Jul. 16, 1982, Pat. No. 4,420,982, which is a division of Ser. No. 174,609, Aug. 1, 1980, Pat. No. 4,358,963, which is a continuation-in-part of Ser. No. 75,037, Sep. 12, 1979, Pat. No. 4,253,340, which is a continuation-in-part of Ser. No. 811,276, Jun. 29, 1977, Pat. No. 4,181,018, which is a division of Ser. No. 771,420, Feb. 23, 1977, Pat. No. 4,098,118.

This application Sep. 27, 1983, Ser. No. 536,275

The portion of the term of this patent subsequent to Dec. 20, 2000, has been disclaimed.

Int. Cl.³ G01F *1/58*

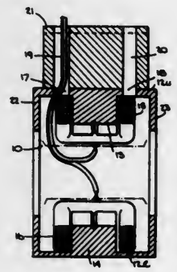
U.S. Cl. 73—861.12 **2 Claims**

1. A flangeless electromagnetic flowmeter unit interposable between the end flanges of the upstream and downstream pipes of a line conducting a fluid whose flow rate is to be metered, the end flanges of the pipes having a predetermined diameter and a circle of bolt holes, said unit comprising:

A. a cylindrical housing having a predetermined length and an external diameter which is uniform throughout its length and is smaller than that of the circle whereby when the unit is interposed between the end flanges of the pipes with the ends of the housing abutting these end flanges, the housing lies within the circle and the flanges are

bridged by bolts passing through the holes to encage the unit and subject it to a compressive force effecting a fluid seal;

B. a non-magnetic spool having substantially the same length coaxially supported within said housing and provided with end faces which abut the end flanges of the pipes to define with said housing an internal cavity, said spool forming a fluid conduit having a longitudinal flow axis which joins the upstream and downstream pipes, said spool having a strength sufficient to withstand the pressure of fluid flowing in the conduit;



C. a pair of electromagnet coils disposed at diametrically-opposed sides of said spool to create a magnetic field whose lines of flux extend across the conduit, said coils lying on a coil axis which is normal to said flow axis;

D. a pair of electrodes mounted on said spool at diametrically-opposed positions along an electrode axis perpendicular both to the coil axis and to the flow axis whereby the fluid which flows through the conduit intersects said lines of flux to induce a signal in said electrodes which is a function of flow rate; and

E. a strap of ferromagnetic material joining the electromagnetic coils to define a magnetic circuit therewith.

4,497,213

GYROSCOPIC FORCE MEASURING CELL

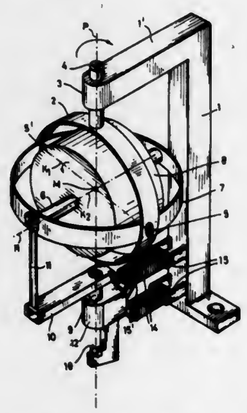
Hans W. Häfner, Aichach, Fed. Rep. of Germany, assignor to Pfister GmbH, Fed. Rep. of Germany

Filed Jun. 17, 1983, Ser. No. 505,469

Claims priority, application Fed. Rep. of Germany, Jun. 23, 1982, 3223403

Int. Cl.³ G01L *1/00, 1/26*

U.S. Cl. 73—862.38 **10 Claims**



1. A gyroscopic force measuring cell comprising:

a frame;

a gyroscope suspended force-free from said frame by an inner gimbal and an outer gimbal, said gyroscope having a rotational axis;

a pivot bearing housing connected to a non-co-precessing load pickup at which a force to be measured is present;

a guide means coaxially movable relative to the precessional axis of said gyroscope interconnected between said pivot bearing housing and said frame; and

a co-precessing transmission means interconnected between the pivot bearing housing and said inner gimbal including a shaft seated in a pivot bearing in said pivot bearing housing, said shaft having a substantially radially extending load arm and a force transmission element interconnected between said load arm and said inner gimbal,

whereby a force incident at said load pickup acting at said rotational axis of said gyroscope generates a torque producing precessional motion of said gyroscope around said precessional axis having a velocity which is proportional to said force.

4,497,214

APPARATUS FOR TAKING GASEOUS SAMPLES

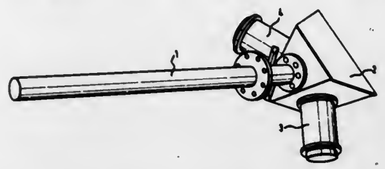
Daniel L. Ramelot, Saint-Nicolas, Belgium, assignor to Centre de Recherches Metallurgiques-Centrum Voor Research in de Metallurgie, Brussels, Belgium

Filed May 26, 1983, Ser. No. 498,410

Claims priority, application Belgium, May 28, 1982, 6/47658

Int. Cl.³ G01N *1/24*

U.S. Cl. 73—863.12 **12 Claims**



1. Apparatus for taking samples of gases, comprising in combination:

(a) at least two sampling probes at each sampling location,

(b) at least one sub-assembly for filtering the gas samples at each sampling location wherein each sub-assembly is fixed to a casing disposed at an outlet end of the sampling probe associated with said sub-assembly, said casing having a general shape of a straight prism of rectangular section whose bases are not perpendicular to the generatices of the prism, and

(c) a unit for processing and analysing the gas samples connected to all the sampling probes and located at the smallest practicable distance form all the sampling locations.

4,497,215

HYDRO-MECHANICAL ACTUATOR

Robert W. Gronbech, and Michael Lister, both of Sheffield, England, assignors to Davy McKee (Sheffield) Limited, Sheffield, England

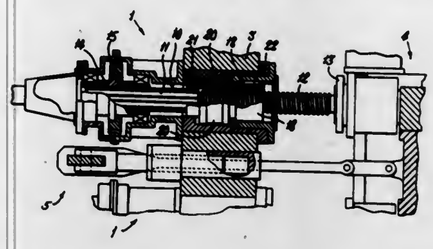
Filed May 2, 1983, Ser. No. 490,323

Claims priority, application United Kingdom, May 5, 1982, 8212896

Int. Cl.³ F16H *25/20*; B21B *31/24, 31/32*

U.S. Cl. 74—89.15 **8 Claims**

1. A hydro-mechanical actuator comprises an actuating member which has a driving end for effecting displacement of a part to be positionally adjusted, and has a threaded portion; mechanical driving means for causing rotation of the actuator member, without restricting its axial displacement; an internally threaded member in which the threaded portion of the actuating member is threaded and which is held against rotation, whereby rotation of the actuating member by the driving means results in axial movement of the actuating member; and a hydraulic mechanism including a piston-cylinder assembly



which abuts the internal threaded member for axially displacing the internally threaded member and hence the actuating member.

4,497,216

GEAR OPERATING MECHANISM OF AN AUTOMOTIVE MANUAL TRANSMISSION

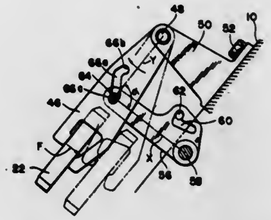
Tamio Kawamoto, Yokohama, Japan, assignor to Nissan Motor Company, Limited, Japan

Filed May 18, 1982, Ser. No. 379,510

Claims priority, application Japan, May 19, 1981, 56-74099

Int. Cl.³ B60K *20/00*; G05G *5/10*

U.S. Cl. 74—475 **4 Claims**



1. In a selected gear sliding type manual transmission having a gear which is axially slidable from a neutral position where it disengages from associated gears to an operating position where it engages with the associated gears, a gear operating mechanism comprising:

a first lever pivotally movable about a first axis relative to a transmission case to move said gear between said neutral position and said operating position;

a second lever pivotally movable about a second axis relative to said transmission case, said second axis being generally parallel with said first axis;

first means for providing a cam-connection between said first lever and said second lever so that pivotal movement of said second lever about the second axis within a predetermined angular range causes pivotal movement of said first lever about said first axis and movement of said gear between said neutral and operating positions, said first means including a guide pin secured to an end of said second lever and a generally S-shaped slot formed in said first lever to slidably receive therein said guide pin, said slot having a generally straight section and first and second end sections extending outward in opposite directions from opposite ends of said main straight section, said first and second end sections thereby being inclined with respect to the main straight section; and

second means for pivotally moving said second lever about said second axis in response to movement of a speed change shift lever of the transmission,

wherein said first lever, said second lever and said first means are arranged so that when said gear assumes the operating position, and an inadvertent disengaging force is applied to urge the gear from the operating position to the neutral position, at least a part of the force is transmitted to said transmission case through said first lever, said second lever and said first means to prevent disengagement of said gear from the operating position.

4,497,217

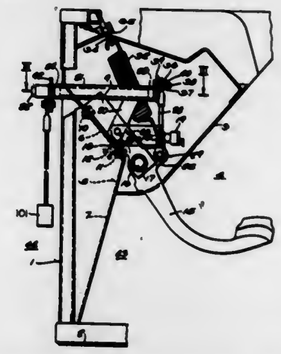
CLUTCH PEDAL OPERATING THROUGH A FORE AND AFT SHAFT IN A FIRE WALL OF A VEHICLE

Kenneth N. Hansen, Waukesha, Wis., assignor to Allis-Chalmers Corp., Milwaukee, Wis.

Division of Ser. No. 292,650, Aug. 13, 1981, Pat. No. 4,426,890, which is a continuation of Ser. No. 73,254, Apr. 7, 1979, abandoned. This application Aug. 29, 1983, Ser. No. 519,143

Int. Cl.³ G05G *1/14*

U.S. Cl. 74—512 **9 Claims**



1. A foot pedal assembly for operation in a vehicle comprising, means defining an operator station including a transverse fire wall between the operator station and an engine compartment, a pendent pedal, support structure on said fire wall pivotally suspending a pivotal end of said pendent pedal on a transverse axis, a return spring normally biasing said pedal to a return position, a pivotal shaft mounted on a pivotal fore and aft axis essentially normal to the transverse axis, a bearing pivotally supporting said shaft on said fire wall and providing sound attenuation around said shaft and reducing sound transmission through said fire wall, said bearing and shaft having corresponding opposite ends disposed in said operator station and said engine compartment, respectively, a link connected to the pivotal end of said pedal and to an eccentric means on said end of said shaft disposed in said operator station to pivot said shaft in response to pivotal movement of said pedal, a motion transmitting means connected to said end of said shaft disposed in said engine compartment, said motion transmitting means being adapted for operating an actuating means.

4,497,218

COMPACT DRIVE ASSEMBLY

Franz X. Zaunberger, Augsburg, Fed. Rep. of Germany, assignor to Zahnraderfabrik Renk A.G., Augsburg, Fed. Rep. of Germany

Filed May 27, 1982, Ser. No. 382,715

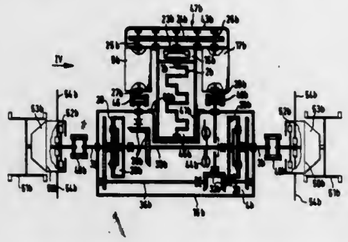
Claims priority, application Fed. Rep. of Germany, Jan. 29, 1982, 3202880

Int. Cl.³ F16H *37/06, 1/42*; B62D *11/00*

U.S. Cl. 74—682 **15 Claims**

1. A drive system for a vehicle having an engine with a drive shaft, the engine extending a distance from end to end in a direction coincident with the drive shaft axis, the drive system including a transmission for both propulsion and steering of the vehicle by control of the rotational speed of vehicle drive wheels, the transmission comprising a propulsion gear and a

steering gear, means for drivingly interconnecting the propulsion gear and the steering gear with the engine drive shaft, a pair of planetary differential gear sets, the planetary gear sets being spaced from one another, a main shaft, means for drivingly interconnecting the main shaft and one segment of each planetary gear set, means for drivingly interconnecting the propulsion gear with the main shaft, a zero shaft, means for drivingly interconnecting the steering gear with the zero shaft, means for drivingly interconnecting the zero shaft with another segment of each planetary gear set, a pair of output shafts for propulsion of the vehicle drive wheels, and means for drivingly interconnecting a further segment of each planetary gear set with one of the output shafts, the main shaft and the zero shaft having axes parallel to one another and perpendicular to the axis of the drive shaft, the propulsion gear being mounted alongside the engine and projecting in a horizontal



direction a distance between the ends of the engine, the steering gear being mounted alongside the engine and extending in a horizontal direction a distance between the ends of the engine, the main shaft being positioned adjacent one end of the engine and being spaced from the one end in a direction away from the engine, the propulsion gear and the steering gear being spaced from the main shaft in a direction toward the engine, the propulsion gear including an input shaft and an output shaft and the steering gear including an input shaft and an output shaft, the output shafts of the propulsion gear and the steering gear being parallel to the drive shaft axis, portions of the planetary gear sets projecting perpendicular to the axis of the main shaft, the drive system further including means forming a space between the projecting planetary gear set portions adjacent one side of the main shaft, the one end of the engine being positioned within the space, whereby an efficient drive system of reduced length is provided.

4,497,219

PLANETARY GEAR CONTROL SYSTEM WITH RETARDER

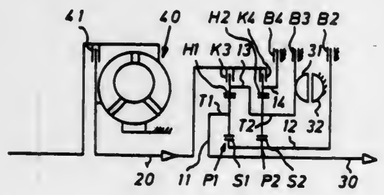
Ernst Elsner, Herbrechtingen, Fed. Rep. of Germany, assignor to J. M. Voith GmbH, Heidenheim, Fed. Rep. of Germany

Filed Aug. 16, 1982, Ser. No. 408,054

Claims priority, application Fed. Rep. of Germany, Aug. 29, 1981, 3134259

Int. Cl.³ F16H *3/44, 57/10*

U.S. Cl. 74—790 **9 Claims**



1. A gear system of the type having a retarder, comprising:

an input shaft;

an output shaft;

at least first, third and fourth gear components between said input shaft and said output shaft;

said output shaft being connected to said first gear component;

said input shaft being connected to said fourth gear component;

means for producing a plurality of different gear ratios in said gear components between said input shaft and said output shaft;

said retarder including a rotor and a stator;

a permanent connection between said rotor and said third gear component;

said means for producing being effective to rotate said rotor in a single direction in all forward gears;

said means for producing being effective to directly connect said third gear component to said input shaft in less than all of said plurality of different gear ratios;

gear ratios between said third gear component and said output shaft being equal and greater than 1 in at least two adjacent gear ratios; and

gear ratios between said input shaft and said output shaft being different and greater than 1 in said at least two adjacent gear ratios;

a second gear component associated with said first, third and fourth gear components, said means for producing including a brake effective to lock said fourth gear component to produce said at least two adjacent gear ratios.

4,497,220

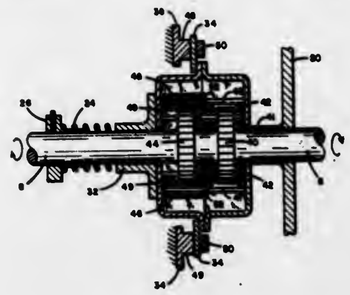
DIFFERENTIAL PLANETARY GEAR SYSTEM FOR PRODUCING COMPLEMENTARY LEVELS OF FORWARD/REVERSE DRIVE

James E. Grinde, Anoka, Minn., assignor to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan

Filed Apr. 25, 1983, Ser. No. 487,970

Int. Cl.³ F16H *3/56, 3/70*

U.S. Cl. 74—792 **6 Claims**



1. A forward/reverse power transfer assembly comprising:

(a) a shaft-mounted rotatable housing operable in a forward free rotating mode or a reverse restrained mode;

(b) a power driven input gear concentrically mounted relative to said shaft;

(c) a coaxial output gear mounted to said shaft and laterally displaced from said input gear;

(d) at least one pair of partially intermeshed primary and secondary planetary gears mounted within said housing relative to said input and output gears; and

(e) mans for controllably engaging said housing between said forward and reverse modes so as to either selectively engage said primary planet gear(s) with said input and output gears and said secondary planet gear(s) with said input gear in said forward mode or engage said primary planet gear with said output gear and said secondary planet gear with said input gear in said reverse mode, forward and reverse rotational drive thereby being imparted to said shaft relative to the rotation of said input gear during said forward and reverse modes.

4,497,221

VARIABLE GEAR TRANSMISSION SYSTEM

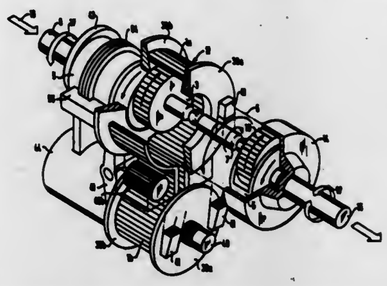
Manfred Koser, Untere Isentalstr. 17, D-8398 Pocking 2-Hartkirchen, Fed. Rep. of Germany

Filed Jun. 9, 1982, Ser. No. 386,643

Claims priority, application Fed. Rep. of Germany, Jun. 4, 1982, 3221236

Int. Cl.³ F16H *3/44, 57/10, 1/28*

U.S. Cl. 74—793 **11 Claims**



1. Clutchless variable tooth gearing with links to be tensioned by a double-sided tapered-disc tensioning device in a selectively full or partial circle of variable diameter ring gear engageable with at least one scanner wheel with control means being provided for controlling introduction as well as removal of links into and from said circle, each link being held at the same distance from the center of said circle.

4,497,222

CLUTCH CONTROL IN A MULTIPLE CLUTCH TYPE GEAR TRANSMISSION FOR AUTOMOBILE

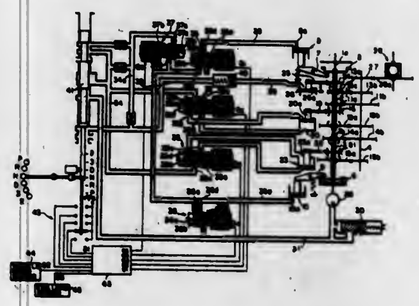
Mitsuru Nagaoka, and Mitsuo Yasuno, both of Hiroshima, Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan

Filed Dec. 30, 1982, Ser. No. 454,570

Claims priority, application Japan, Jan. 5, 1982, 57-763

Int. Cl.³ B60K *41/18, 41/16*

U.S. Cl. 74—866 **10 Claims**



1. In a multiple clutch type transmission including a plurality of input shafts, a plurality of clutch devices for releasably and alternately connecting respective ones of said input shafts with an engine output shaft, each of said input shafts being associated with at least one set of transmission gears for connecting the input shaft associated therewith to an output element of the transmission, means for controlling said clutch devices so that selected one of said input shaft is connected through selected one of said clutch devices with the engine output shaft and through selected set of said transmission gears with the output element, a method of controlling the clutch devices in gear shift down operation, which comprises steps of disengaging the clutch device which has been in engagement for connecting the engine output shaft with one of the input shaft so that all of the clutch devices are maintained in disengaged conditions to allow engine speed to increase, and then engaging other clutch device to connect the other input shaft having the transmission gear set of lower gear stage.

4,497,223

ENGINE SPEED CONTROL SYSTEM FOR A HYDRO-MECHANICAL TRANSMISSION

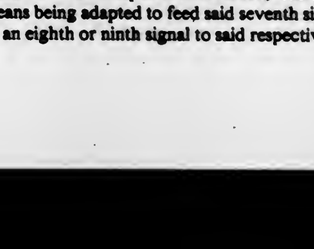
Ryoichi Maruyama; Takayoshi Nishijima; Hideaki Aida, all of Yokohama; Hideyuke Konishi, Kamakura, and Keiji Hatayama, Yokohama, all of Japan, assignors to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

Filed Feb. 10, 1983, Ser. No. 465,664

Claims priority, application Japan, Feb. 17, 1982, 57-22819

Int. Cl.³ B60K *41/18*

U.S. Cl. 74—866 **3 Claims**



1. An engine speed control system for a hydro-mechanical transmission of a vehicle including an engine, mechanical transmission means connected to the engine and having a plurality of speed range change-over clutches, a pair of hydraulic pumps driven by the engine, a pair of hydraulic motors each driven by the respective hydraulic pumps and operatively connected to the mechanical transmission, and a change lever for changing forward and reverse running of the vehicle, said control system comprising:

throttle position detector means for detecting throttling position of the engine and generating a first signal therefrom;

engine speed setter means responsive to the first signal and generating a second signal indicating a target engine speed;

engine speed detector means for detecting actual engine speed and generating a third signal;

comparator means for comparing the second signal with the third signal and generating a fourth signal indicating speed difference between the target and actual engine speeds;

change lever position detector means for detecting change lever positions among neutral, forward and reverse positions and generating a fifth signal;

means for selectively detecting one of the speed range change-over clutches engaged and generating a sixth signal;

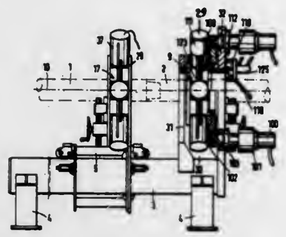
arithmetic unit means for processing the fourth, fifth and sixth signals and generating a seventh signal;

a pair of actuators for controlling displacement volume of the associated hydraulic pumps; and

a pair of adder means each connected with said arithmetic unit means and said respective actuators, each of said adder means being adapted to feed said seventh signal and send out an eighth or ninth signal to said respective actua-

tors, said eighth and ninth signals being such signals which will gradually approximate said fourth signal to zero.

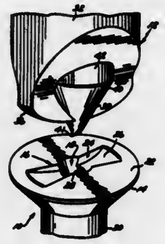
4,497,224
APPARATUS FOR MAKING AND BREAKING SCREW COUPLINGS
Reiner Jürgens, Celle-Osterloh, Fed. Rep. of Germany, assignor to Norton Christensen, Inc., Salt Lake City, Utah
Filed Aug. 11, 1983, Ser. No. 522,123
Int. Cl.³ B25B *17/00*
U.S. Cl. 81—57.34 4 Claims



1. Apparatus for making and breaking screw couplings between pipe members of pipe and drilling strings as well as drilling tools for deep-well drilling, comprising:

a rotatable chuck and a non-rotatable chuck which jointly define a main axis of the apparatus and are actuated by pressure fluid, each chuck adapted for receiving one of two pipe members with threaded regions at their ends adjacent to one another, one chuck being mounted in a bearing block secured at one end of a frame including an elongated supporting beam of the apparatus, the other chuck being disposed on a supporting block which is displaceable towards and away from the stationary bearing block and guided along the frame by the elongated supporting beam which is aligned parallel to the main axis of the apparatus and predetermines the path of movement for the supporting block, each chuck comprising a plurality of gripping units which are uniformly distributed round the main axis of the apparatus and act radially and each of the gripping units comprises a cylinder with a pressure-fluid-actuated piston guided therein and a non-rotatable piston rod which faces the pipe members to be gripped, and wherein the cylinders of the gripping units are constructed in the form of double-acting, separate structural units each of which comprises a grip pressure and a release pressure compartment which can be acted upon from a common pressure-fluid source via pressure-fluid lines, and of a torque producer for rotation of the rotatable chuck relative to the non-rotatable chuck during gripping engagement with the pipe members, and wherein the torque producer comprises at least one motor which is in engagment, via pinion with a rotatable toothed rim disposed on the rotatable chuck, that the grip pressure compartments of the gripping units of the rotatable chuck are connected to a pressure-retaining reservoir disposed on the chuck, there being provided on the rotatable chuck a coupling device by means of which parts of the pressure fluid lines leading to the cylinders can be separated from parts of the pressure fluid lines leading to the pressure fluid source, and which comprises non-return valves for shutting off the ends of separated pressure-fluid lines.

4,497,225
HIGH TORQUE FASTENER AND DRIVING TOOL
John Vaughn, P.O. Box 3368, Granada Hills, Calif. 91344
Filed May 6, 1983, Ser. No. 492,164
Int. Cl.³ B25B *15/00*; F16B *23/00*
U.S. Cl. 81—451 8 Claims

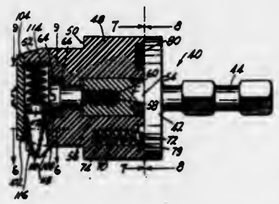


1. A high torque fastener system, comprising:

a high torque fastener having an elongated shank and a head at one end of said shank with a driving face presented in an axially outboard direction, said driving face having formed therein a driving slot of generally bow-tie shaped configuration defined by at least slightly undercut side walls and an arcuately concave bottom wall centered generally on the longitudinal axis of said shank and a generally conical recess centered generally on the driving slot with a base diameter on the order of the width of the driving slot at the opposite ends thereof and an apex disposed within said head at a depth generally twice the maximum depth of said driving slot bottom wall; and

a driving tool including a tool shaft, a driving blade at one end of said tool shaft defined by a pair of blade side walls and an arcuately convex lower surface presented in an axially outboard direction and centered generally on the longitudinal axis of said shaft, said driving blade having a width at least slightly less than the central width of said fastener driving slot and said convex lower surface being formed on a radius for generally matching said driving slot bottom wall, and a generally conical blade tip formed on said driving blade in a position generally centered on said tool shaft longitudinal axis, said blade tip having a base diameter blending relatively smoothly with said blade side walls and a generally pointed end apex projecting axially beyond said blade convex lower surface a substantial distance corresponding generally with the depth of said fastener conical recess apex.

4,497,226
CIGAR LIGHTER SOCKET SHELL DRIVER TOOL
Laurence G. Horwitt, Dania, Fla., assignor to Sun Chemical Corporation, New York, N.Y.
Filed Mar. 25, 1983, Ser. No. 478,793
Int. Cl.³ B25B *21/00*
U.S. Cl. 81—474 32 Claims



1. A tool bit for assembling the socket for a cigar lighter igniting unit to the clamping shell therefor, said cigar lighter socket having an out-turned flange for engagement with an apertured mounting plate in an automobile, comprising in combination:

(a) a driving member having means receivable in the chuck of a power tool to effect a rotary drive of said member,

(b) a plug member carried by the driving member,

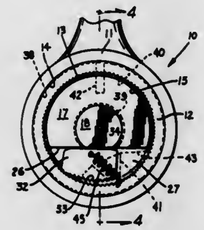
(c) means providing a bearing between said members to enable them to rotate with respect to one another,

(d) said plug member having a portion receivable into said cigar lighter socket, and having a shoulder for engagement with said out-turned flange of the cigar lighter socket to limit the degree of insertion thereof into said socket,

(e) means on the plug member, engageable with the cigar lighter socket to turnably drive the latter while the cigar lighter clamping shell is being positioned thereagainst, and

(f) cooperable drive means on said members, providing a slip clutch made operative to slip in response to application of a predetermined torque thereto for the purpose of assembling the cigar lighter socket to the clamping shell with a predetermined, desired degree of tightness so as to avoid overstressing of either the cigar lighter socket or clamping shell therefor, or undesirable distortion or breakage of the parts.

4,497,227
REVERSIBLE RATCHET MECHANISM
Jan S. Stasiek, Roswell, Ga., assignor to JS Technology, Inc., Atlanta, Ga.
Filed Jan. 27, 1983, Ser. No. 461,438
Int. Cl.³ B25B *13/46*
U.S. Cl. 81—63.1 11 Claims



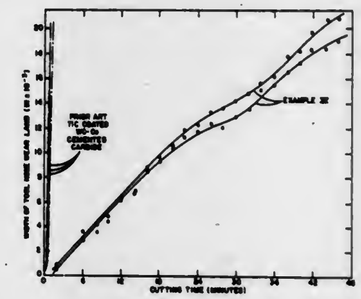
1. In a ratchet mechanism including a housing having a cylindrical bore therethrough defining inwardly facing ratchet teeth on the cylindrical surface of said bore and a work-turning member received for rotation within said bore, an improved ratchet switching means comprising:

a pawl defining pawl teeth for engaging said ratchet teeth of said bore, said pawl being positioned for sliding movement along a recess cut into a portion of one end of said work-turning member;

a switching member rotatably mounted outwardly of said pawl; and

a spring extending in a radial plane mounted in compression above said pawl, one end of said spring engaging said pawl and the other end of said spring engaging said switching member at a location radially outwardly of said engagement with said pawl such that said spring extends only over the segment of said work-turning member defined by said recess in all positions of said pawl.

4,497,228
METHOD OF MACHINING CAST IRON
Vinod K. Sarin, Lexington, Mass.; Robert A. Penty, Cape Elizabeth, Me., and Sergej-Tomislav Buljan, Acton, Mass., assignors to GTE Laboratories Incorporated, Waltham, Mass.
Division of Ser. No. 353,311, Mar. 1, 1982, Pat. No. 4,433,979.
This application Jun. 21, 1983, Ser. No. 506,481
Int. Cl.³ B23B *1/00, 27/14*
U.S. Cl. 82—1 C 2 Claims



1. A method of machining cast iron comprising

turning a cast iron work piece on a lathe at an effective speed of up to 1000 surface feet per minute;

moving a densified composite ceramic cutting tool consisting essentially of particles of hard refractory material uniformly distributed in a two phase matrix, said two phase matrix consisting essentially of a first phase and a second intergranular phase, said particles of hard refractory material being present in an amount from about 1 to about 60 volume percent of said densified composite ceramic cutting tool, said particles of hard refractory material selected from the group consisting of the carbides, nitrides, and mixtures thereof of titanium, vanadium, chromium, zirconium, niobium, molybdenum, hafnium, tantalum, tungsten, and combinations thereof, said particles having an average size of less than about 20 microns, said first phase consisting essentially of crystalline silicon nitride, said second intergranular phase consisting essentially of silicon nitride and a densification aid, said densification aid selected from the group consisting of yttrium oxide, hafnium oxide, the lanthanide rare earth oxides, and mixtures thereof, wherein said densification aid comprises from about 1 to about 25 weight percent of said two phase matrix, said two phase matrix containing less than 3 weight percent aluminum oxide, said densified composite ceramic article having a high density, a high abrasion resistance, a high hardness, a high fracture strength and a resistance to oxidation at temperatures greater than 1200° C. across the face of said cast iron workpiece at a rate of up to 0.020 inches per revolution; and

cutting said cast iron workpiece with said densified composite ceramic cutting tool to effect a depth of cut of up to 0.050 inches per pass.

4,497,229
ROTARY KNIFE CONTROL
Donald P. Carrington, Claremore, and Andrew D. MacKay, Tulsa, both of Okla., assignors to Combustion Engineering, Inc., Windsor, Conn.
Continuation-in-part of Ser. No. 232,943, Feb. 9, 1981, abandoned. This application Sep. 24, 1982, Ser. No. 421,531
Int. Cl.³ B26D *1/62, 5/20*; G06F *15/46*
U.S. Cl. 83—76 5 Claims

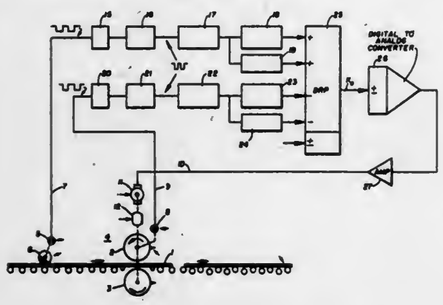
1. A system for cutting an elongated sheet of material, including

a continuous sheet of elongated material with means to advance the sheet in a horizontal plane,

a first electrical pulse generator engaging the sheet to detect the velocity/position of the sheet and establish a first train of pulses representative of the velocity/position of the sheet,

a rotating knife positioned at a point in the path traveled by the sheet to cut the sheet in predetermined lengths,

a motor connected to the knife for rotating the knife in accordance with an electrical analog signal,



a second electrical pulse generator engaging the knife to generate a second train of pulses representative of the angular velocity/position of the knife, and

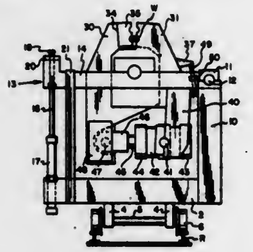
means responsive to the first and second pulse trains for generating a knife motor signal to produce a knife blade rotation having a rotation velocity that is substantially sinusoidal as a function of knife rotary position while the knife is engaged with the sheet which cuts the sheet into predetermined lengths without distortion of the sheet material at the cut.

4,497,230

SHEAR WITH CUTTING HEIGHT ADJUSTMENT

D. Leet Shields, P.O. Box 125, Leetsdale, Pa. 15056

Filed Apr. 21, 1982, Ser. No. 370,206
Int. Cl.³ B26D *5/08*; B23D *25/04*
U.S. Cl. 83—600 **10 Claims**



1. A shear having a main frame including base members and spaced vertical members fixed to said base members and extending upwardly therefrom, a shaft extending between said vertical members, a shear frame located above said base members, said shear frame including parallel spaced members pivotally attached to said shaft, a king pin extending between and rotatably supported on said parallel spaced members of said shear frame, a master shearing arm nonrotatably supported on said king pin, a subordinate shearing arm rotatably supported on said king pin in juxtaposition to said master shearing arm, cutting means on each of said shearing arms and actuating means connecting said master shearing arm and said subordinate shearing arm to move said cutting means on said shearing arms between an open position and a closed position to cut a workpiece passing between said cutting means.

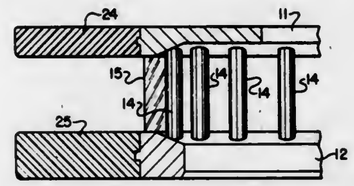
6. A shear as set forth in claim 1 or 2 including tilt means mounted on said main frame and in contact with said shear frame to pivot said shear frame about said shaft, whereby said cutting means on said shearing arms may be tilted out of the pass line of workpieces passing through said shear.

4,497,231

FIBER CUTTER COMPONENT

Van D. Durrett, Shelby, N.C., assignor to D. M. & E. Corporation, Shelby, N.C.

Filed Feb. 9, 1983, Ser. No. 465,165
Int. Cl.³ D01G *1/04*
U.S. Cl. 83—663 **3 Claims**



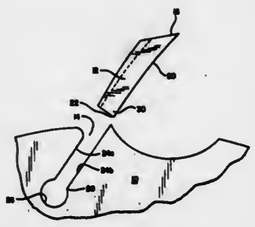
1. A reel assembly for use with a staple cutting apparatus and comprising a cutter reel having a pair of annular reel members spaced axially one from the other with each reel member defining an outwardly facing axial surface having a predetermined diameter and a circumferential mating engagement portion; a plurality of cutter blades mounted in said reel members for engaging and cutting fiber; a cover member encircling and affixed about one of the reel members and having at least two part circular segments each having an inwardly facing axial surface, and a plurality of fasteners for penetrating said segments tangentially to said inwardly facing axial surfaces for joining the segments together for encircling and engaging and gripping said outwardly facing axial surface of said reel member, one of said reel member and said cover member having a circumferential groove and the other of said reel member and said cover member having a circumferential projection, said inwardly facing axial surfaces being shaped to define a circumferential mating engagement portion for securing said cover member about said reel member.

4,497,232

CUTTING TOOL WITH CUTTING TOOTH INSERT

Lewis A. Scott, Lake Oswego; Duane M. Gibson, Milwaukie, and Arthur J. Woodfill, Portland, all of Oreg., assignors to Omark Industries, Portland, Oreg.

Filed Apr. 29, 1983, Ser. No. 489,835
Int. Cl.³ B27B *33/12*, *33/14*
U.S. Cl. 83—831 **6 Claims**



1. A cutting tool comprising; a body portion having an insert-receiving slot formed therein with front and rear sidewalls, and a cutter insert having an inserted portion seated in

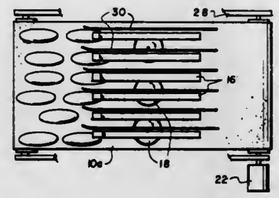
the slot with a front to rear dimension that is substantially continuous throughout its length, and a cutting tooth portion extended outwardly of the slot, the front to rear dimension of the major portion of the slot being continuous and substantially equal to the front to rear dimension of the insert, and a relief opening in the bottom of the slot, said insert being preset and formed of a resilient material, and one of said slot and insert being curved relative to the other whereby forcing the insert into the slot requires a change in the preset configuration of the insert, and whereby full seating of the insert results in a tail section of the insert being spring biased into the relief opening.

4,497,233

HOTDOG ROLL SLICER

Gregory C. Papalexis, Cambridge Way, Alpine, N.J. 07620, and Richard I. Elliott, 103 Pennfield Ave., Croton-on-Hudson, N.J. 10520

Filed Jun. 3, 1983, Ser. No. 500,843
Int. Cl.³ B26D *3/30*
U.S. Cl. 83—873 **1 Claim**



1. A roll-slicer device for slicing elongated rolls, comprising:

an endless belt having an upper horizontal run movable in a feed direction, said belt having a friction surface for frictionally engaging each elongated roll to be sliced;

drive means operatively engaged with said belt for driving said belt upper run in a horizontal feed direction;

a plurality of fixed horizontal skid plates, each having a flat, smooth, horizontal lower surface spaced away from said upper run and each extending in the feed direction, said skid plates being laterally spaced in a direction transverse to the feed direction for each of a plurality of rows of elongated rolls to be sliced, each skid plate having an upturned end in the upstream side thereof in the feed direction and a width transverse to the feed direction which is less than a width of an elongated roll to be sliced, a spacing between each skid plate and said upper run being selected to be slightly less than a height of an elongated roll to be sliced;

a plurality of slicers horizontally movable in the space between said skid plates and said upper run for slicing a roll supplied between a skid plate and said upper run, each slicer comprising a circular blade rotatably mounted in a horizontal plane and a shaft connected to said blade for rotating said blade, each slicer being mounted between two adjacent ones of said skid plates for slicing elongated rolls in two adjacent rows of rolls under said two adjacent skid plates; and

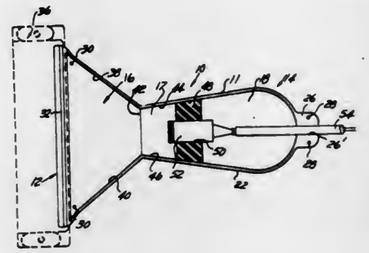
a side fence extending in said feed direction adjacent each skid plate and positioned to define a path for a row of rolls under each skid plate, at least one of said fences having a slot through which at least one of said circular blades is rotatable, each side fence having an outturned upstream end and spacing between adjacent side fences being sufficient to accept a row of rolls to be sliced, each fence having a height extending in the space between said skid plates and said upper run which is less than a total height of the space between said skid plates and upper run.

4,497,234

SOUND ATTACHMENT FOR A REED INSTRUMENT

Frank F. Strnad, 1821 Dakota, Flint, Mich. 48506

Filed Mar. 21, 1983, Ser. No. 476,980
Int. Cl.³ G10H *3/00*
U.S. Cl. 84—1.04 **10 Claims**



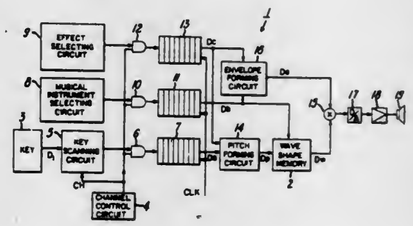
1. A sound attachment for a reed musical instrument such as a harmonica and the like comprising a housing having an open end adapted to be attached to a harmonica and a closed end, a first portion in said housing having symmetrically converging walls defining a sound funnel between said open end and an intermediate relatively narrow area along said housing, a second portion in said housing having symmetrically diverging walls and extending between said intermediate relatively narrow area and said closed end, a sound absorbing collar disposed in said second portion in said housing between said intermediate relatively narrow area and said closed end, said collar having an opening generally centrally thereof, and electronic sound pick up means held in said collar opening, said pick up means being located at a predetermined location such that substantially all sound waves emitting from said instrument are received by said pick up means and air pressure is reduced prior to said sound waves making contact with said pick up means.

4,497,235

ELECTRONIC MUSICAL INSTRUMENT

Yukichi Momoshima; Nobuyuki Nagasaka, and Mamoru Mine, all of Tokyo, Japan, assignors to Kabushiki Kaisha Daini Seikosha, Tokyo, Japan

Filed Feb. 2, 1983, Ser. No. 463,138
Claims priority, application Japan, Feb. 9, 1982, 57-19444
Int. Cl.³ G10H *1/02*
U.S. Cl. 84—1.19 **8 Claims**



1. An electronic musical instrument comprising in combination: a plurality of keys connected to a key scanning circuit; a musical instrument selecting circuit for selecting different musical instrument sounds; an effect sound selecting circuit for selecting different sound effects; a channel control circuit connected to said key scanning circuit; a first AND-gate connected to receive an output signal of said effect sound selecting circuit and an output signal of said channel controlling circuit; a second AND-gate connected to receive an output signal of

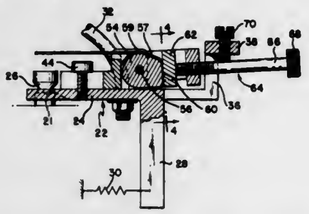
said musical instrument selecting circuit and an output of said channel control circuit; a first shift register having a plurality of channels and being connected to said first AND-gate; a second shift register having a plurality of channels and being connected to said second AND-gate; a third shift register having a plurality of channels and being connected to said third AND-gate; means for applying a clock signal to said first, second and third shift registers to synchronously actuate the channels of said first, second and third shift registers; an envelope forming circuit connected to receive the output signals of said first and second shift registers; a pitch forming circuit connected to receive the output signals of said first and third shift registers; a wave shape memory connected to receive the output signals of said second shift register and said pitch forming circuit; an operating circuit responsive to the output signals of said envelope forming circuit and said wave shape memory for enveloping the wave shape data of the output signal of said wave shape memory; a D/A converter for converting an output signal of said operating circuit to an analogue signal; and an amplifier and speaker for generating a sound from the analogue signal of said D/A converter.

4,497,236

APPARATUS FOR RESTRAINING AND FINE TUNING THE STRINGS OF A MUSICAL INSTRUMENT, PARTICULARLY GUITARS

Floyd D. Rose, 2727 NE. 145th, Seattle, Wash. 98155

Filed Mar. 15, 1982, Ser. No. 358,169
Int. Cl.³ G10D *3/04, 3/14*
U.S. Cl. 84—298 **28 Claims**



1. An apparatus for tuning a stringed musical instrument, wherein each string makes a first critical contact with the instrument at a point on the nut of the instrument and a second critical contact at a point on the bridge of the instrument, the apparatus comprising:

string support means for each string, said string support means including thereon the second critical contact point for each string;

means in the vicinity of said string support means for securely holding each string;

means for moving said string support means so as to change the distance between the first and second critical contact points of said strings, thereby changing the harmonic tuning thereof; and

means for moving said string holding means and also said string support means in such a manner as to change the tension in the string so as to fine tune the strings individually but not change the harmonic tuning thereof, while the string is securely held and essentially without changing the distance between the first and second critical contact points of the string.

16. A tremolo and tuning apparatus for use on a stringed musical instrument, wherein each string makes a first critical contact with the instrument at a point on the nut of the instrument and a second critical contact at a point on the bridge of the instrument, the apparatus comprising:

means for moving the second critical contact point of each string individually so as to change the distance between the first and second critical contact points of said each string, thereby changing the harmonic tuning thereof;

tremolo means for simultaneously changing the pitch of all the strings of the instrument; and

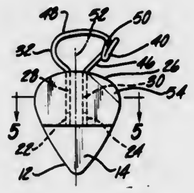
means mounted on said tremolo means, and hence movable therewith, for fine tuning each string individually by changing the tension thereof, essentially without changing the distance between the first and second critical contact points thereof.

4,497,237

GUITAR PICK

Mark A. Beall, 2965 Grouse, Wixom, Mich. 48096

Filed May 19, 1983, Ser. No. 496,132
Int. Cl.³ G10D *3/16*
U.S. Cl. 84—322 **13 Claims**



1. A pick comprising a pick element having an axis and a top edge, and a finger-engageable band attached to said pick element and forming therewith a finger receiving loop, said attachment occurring adjacent said top edge, said band including a projection extending away from said loop, wherein said pick element is rotatable about said finger when pressure is applied to said projection.

4,497,238

REVERSIBLE HIGH-HAT CYMBAL STAND

Barney A. Dasovich, 5214 W. Sunset Hwy., Spokane, Wash. 99204

Filed Apr. 2, 1984, Ser. No. 595,695
Int. Cl.³ G01D *13/00*
U.S. Cl. 84—421 **6 Claims**

1. A cymbal stand for holding first and second cymbals in face-to-face relationship, and for moving the cymbals relative to each other between spaced apart and contacting positions, comprising:

a base framework for contacting a supporting surface;

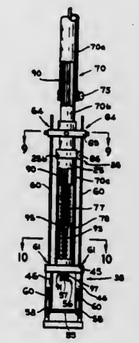
a first cymbal connection means slidably mounted to the base framework for motion between an extended position and a retracted position; the first cymbal connection means being adapted for mounting the first cymbal thereon;

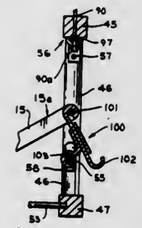
a second cymbal connection means slidably mounted to the base framework for motion approximately parallel to the first cymbal connection means, and between a contacting position and a spaced apart positions; the second cymbal connection means being adapted for mounting the second cymbal thereon;

first biasing means for biasing the first cymbal connecting means into the extended position;

second biasing means for biasing the second cymbal connecting means into the contacting position;

actuator means movably connected to the base framework for actuation of the cymbal stand by a cymbal player; the actuator means being adapted for connection to either the first cymbal connection means or the second cymbal connection means; connection of the actuator means to the first cymbal connection means allowing the first cymbal means to be biased apart from the second cymbal and moved to and from the second cymbal; connection of the actuator means to the second cymbal connection means allowing the second cymbal means to be biased into





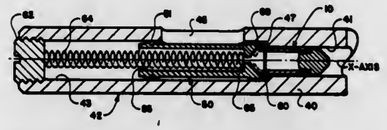
contact with the first cymbal and moved from and to the first cymbal.

4,497,239

MUZZLE EJECTING SABOT CARTRIDGE FIREARM SYSTEM

Hugh R. Curry, P.O. Box 2274, El Cajon, Calif. 92021

Filed Oct. 5, 1981, Ser. No. 308,420
Int. Cl.³ F41D *11/12*; F42B *5/02*
U.S. Cl. 89—198 **7 Claims**



1. A muzzle ejecting sabot cartridge firearm system comprising:

an elongated projectile launching barrel having an axially extending bore and having a muzzle end and a rear end;

an action mechanism afixed to the rear end of the barrel;

a gas expansion chamber defined by the reaction mechanism and in communication with the barrel bore;

a tubular cartridge case closed at a base end;

an annular rim formed by the cartridge case adjacent the base end, the diameter of the rim being suitably larger than the diameter of the barrel bore;

an annular groove internal to the cartridge case and defined by the annular case rim;

a projectile detachably fixed to a front of the cartridge case, the cartridge case and the projectile being disposed projectile first in the barrel bore such that the rim of the case abuts the rear end of the barrel, the case rim preventing further intrusion of the case into the barrel;

a closed chamber defined by the cartridge case and the projectile;

an expanding gas propellant charge disposed within the cartridge chamber; and

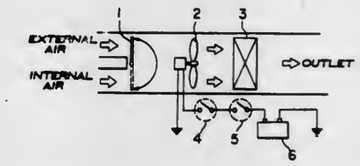
a primer means disposed within the annular groove for igniting the propellant charge, said primer is adapted to be ignited by physical shock from a striking means comprising a moveable rod with a striking face comprising a peripheral rim surrounding a centrally located relieved portion, the striking face rim being adapted to strike the annular rim portion of the cartridge case, the relieved portion being adapted to provide enough space for the base end of the cartridge case to rupture and be reformed by the expanding gases of the ignited propellant charge such that the case rim no longer prevents passage of the cases through the barrel, the resultant pressure in the gas expansion chamber being sufficient to propel the case through the barrel and out the muzzle.

4,497,240

TEMPERATURE CONTROL DEVICE FOR A VEHICLE CABIN

Hideaki Nagatomo; Mitsuo Yasuda, and Seiji Kubo, all of Shizuoka, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 5, 1983, Ser. No. 510,889
Claims priority, application Japan, Aug. 20, 1982, 57-144221
Int. Cl.³ B60H *1/00*; F24F *7/00*
U.S. Cl. 98—2.01 **5 Claims**



1. A temperature control device for controlling the temperature of a vehicle cabin by regulating the operation of an existing vehicular air flow system independent of the operation of the ignition system of said vehicle wherein said existing vehicular air flow system has a duct for connecting the vehicle cabin with external atmosphere, a damper provided within said duct for shutting off flow of air within said duct, a fan to produce air flow within said duct and a fan motor to actuate and drive said fan, said temperature control device comprising;

drive means for driving said damper to open and close;

detecting means to detect temperature changes within said vehicle cabin; and

a power source separately provided from said vehicle power source for supplying power to said fan motor whereby when said detecting means detects a temperature in said vehicle cabin which is higher than a predetermined temperature said detecting means outputs a signal to said separate power source and said separate power source supplies electric power to said fan motor to turn on said fan and also supplies electric power to said drive means for driving said damper and thereby inhibit the rise in temperature within said vehicle cabin.

4,497,241

DEVICE FOR AUTOMATICALLY ADJUSTING ANGLE OF LOUVER

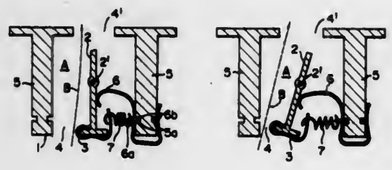
Ichizo Ohkata, Yokohama, Japan, assignor to Katou Hatsujo Kaisha Ltd., Yokohama, Japan

Filed Apr. 25, 1984, Ser. No. 603,752

Claims priority, application Japan, Dec. 7, 1983, 58-189105[U]

Int. Cl.³ F24F 7/00

U.S. Cl. 98—40.25 **8 Claims**



1. A device for automatically adjusting the angle of a louver comprising:

a louver pivotally secured to a body in an air passage formed between side walls for altering the diffusing direction of diffused air,

a shape memory alloy spring for urging rotary force to said louver in one direction for fittings mounted at the side walls of the body and said louver, as required, and

a bias spring for urging rotary force reverse to said louver in such a manner that said shape memory alloy spring and said bias spring are balanced in the air passage,

wherein the balanced state is collapsed by said shape memory alloy spring deformed when chilled air is fed to the passage to tiltably incline said louver, siad louver can be automatically controlled by sensing the temperature of the diffused air by said shape memory alloy spring and said bias spring.

4,497,242

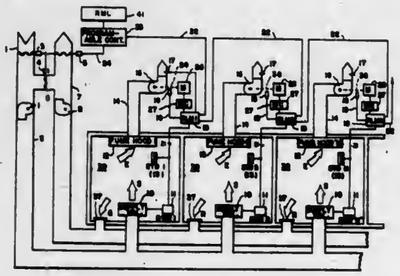
VENTILATION CONTROL SYSTEM

Robert C. Moyer, Rochester, N.Y., assignor to Barber-Colman Company, Rockford, Ill.

Filed Feb. 11, 1982, Ser. No. 347,752

Int. Cl.³ F23J 11/00

U.S. Cl. 98—115.3 **7 Claims**



1. A ventilation control system for a room equipped with a fume hood which enables the exhaust air flow through said hood to be reduced with safety which comprises a motor operated exhaust fan associated with said hood, means for circulating ventilating air through said room, means for selecting different speeds, including stop, of said exhaust fan, means for indicating with human recognizable indication the air flow through said hood produced by said exhaust fan, means responsive to the speed of rotation of said fan and said selecting means for operating said indicating means, said speed responsive means comprising means for detecting the rotations of a shaft drivingly connecting said motor and said exhaust fan, means for providing a control signal representing the rate of said rotations, said selecting means comprising switch means for selecting stop, faster and slow exhaust fan speeds, and said means responsive to the speed of rotation and said selecting means comprising programmable means for providing a plurality of outputs corresponding respectively to said stop, faster and slower speeds, and means for operating said indicating means in response to said outputs and to the rate of shaft rotations signal for indicating a danger condition when stop is selected and when faster and slower speeds are not achieved.

4,497,243

PERCOLATOR ASSEMBLY SUPPORTING STRUCTURE, PARTICULARLY FOR DOMESTIC AUTOMATIC COFFEE PERCOLATORS

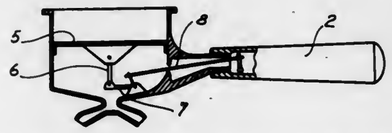
Alfredo Cavalli, Via Galilei, 9, 20060 Pessano Con Bornago (Milano), Italy

Filed Jun. 1, 1983, Ser. No. 499,826

Claims priority, application Italy, Jun. 11, 1982, 21827 A/82

Int. Cl.³ A47J 31/14

U.S. Cl. 99—323 **2 Claims**



1. A percolator assembly supporting structure particularly for domestic automatic coffee percolators, comprising a powder containing body effective to be coupled to the water dispensing unit and provided, at the bottom thereof, with coffee metering spouts, in said containing body a coffee powder holding grille being slidably housed, characterized in that said structure further comprises driving means which may be operated from the outside of said structure for moving said holding grille to at least a first position therein it defines in said body a first space effective to receive a coffee powder amount sufficient for preparing two coffee cups, a second position therein it defines in said body a second space effective to receive a coffee powder amount sufficient for preparing a single coffee cup, as well as a third position position therein said holding grill is substantially located flush with the upper edge of said body, locking means being moreover provided for locking said grille in each said position thereof.

4,497,244

DEVICE FOR COVERING FOODSTUFF WITH GRANULAR AND/OR POWDERY MATERIAL

Wilhelmus F. A. Koppens, Bakel, Netherlands, assignor to Koppens Machinefabriek B.V., Netherlands

Filed Jan. 21, 1983, Ser. No. 459,852

Int. Cl.³ B05C 19/00

U.S. Cl. 99—494 **7 Claims**

1. A device for covering foodstuff with bread-crumbs or the like including granular and powdery material, said device comprising:

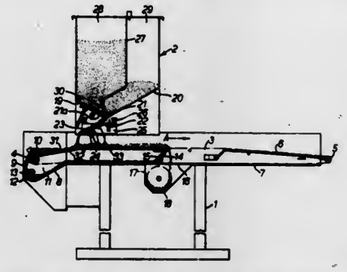
a support frame;

a bunker means mounted on said support frame for containing a supply of the bread-crumbs and including an outlet for the bread-crumbs;

conveyor means for displacing the foodstuff along a path below the outlet of said bunker means;

a sieve plate means for mounting between the outlet and the conveyor means, the sieve plate means defining a plurality of spaced-apart substantially parallel elongate openings lying one behind the other and extending transversely of the direction of displacement of the foodstuff on the conveyor means; and

vibration mounting means for vibrating the sieve plate means independently of said bunker means, in a position downwardly inclined away from the outlet of the bunker means in a direction opposed to the direction of displacement of the foodstuff on the conveyor means to supply the bread-crumbs to the conveyor means whereby substantially larger granular bread-crumbs are supplied to foodstuff on the conveyor means followed by powdery material for the effective coating of the foodstuff.



4,497,245

PINEAPPLE CUTTER

Kashichi Mori, Iwatsuki, Japan, assignor to Kowa Shoji Kabushiki Kaisha, Tokyo, Japan

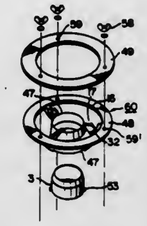
Filed Jul. 14, 1983, Ser. No. 513,594

Claims priority, application Japan, May 26, 1983, 58-78150[U]

The portion of the term of this patent subsequent to Apr. 10, 2001, has been disclaimed.

Int. Cl.³ A23N 4/00, 4/20, 7/08

U.S. Cl. 99—542 **7 Claims**



1. A pineapple cutter comprising:

a pineapple cutter frame having an upper wall;

a cylindrical body rotatably mounted on said cutter frame and having a side peripheral wall and a base disc, said peripheral wall being formed with a slant groove which is provided obliquely in a vertical direction in said peripheral wall;

a smaller-diameter tubular cutter mounted on said base disc for cutting the core of a pineapple;

a larger-diameter tubular cutter situated concentrically around said smaller-diameter tubular cutter for peeling a pineapple, said larger-diameter tubular cutter being engaged with said cylindrical body so that said larger-diameter tubular cutter rotates with said body, is positioned at about the same height as said smaller-diameter tubular cutter, and is detachable from said cylindrical body by upward displacement of said larger-diameter tubular cutter;

a loading table being vertically movable and loosely inserted between said larger-diameter tubular cutter and said smaller-diameter tubular cutter for receiving a pineapple;

a horizontal rod connected to said loading table and passing through said slant groove, said horizontal rod being used to provide a vertical movement to said loading table and rotational movement to said cylindrical body, larger-diameter tubular cutter and smaller-diameter tubular cutter; and

an equipping frame body removably mounted on the upper wall of said cutter frame at a concentric position with said cylindrical body and including a cylindrical guide body dimensioned for frictional engagement with said larger-diameter tubular cutter, an annular frame body for engaging said upper wall of said cutter frame and having a circular window having an inside diameter larger than the outside diameter of the largest pineapple to be cut, and a plurality of fitting frames joining said guide body and said annular frame body, said equipping frame body being coupled to the upper wall of said pineapple cutter frame to prevent relative rotational movement therebetween, whereby when said equipping frame body is detached from the upper wall of said pineapple cutter frame in the upward direction, said larger-diameter tubular cutter will also detach upwardly from said cylindrical body by the frictional engagement with said cylindrical guide body.

4,497,246

METHOD OF AND ARRANGEMENT FOR PROCESSING LENGTHS OF MATERIAL

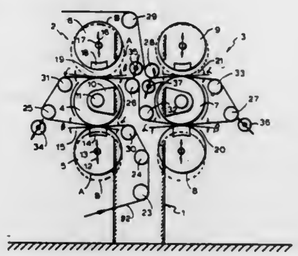
Josef Pav, Krefeld, and Heinz Jaegers, Duisburg, both of Fed. Rep. of Germany, assignors to Kleinewefers GmbH, Krefeld, Fed. Rep. of Germany

Filed Apr. 28, 1983, Ser. No. 489,548

Claims priority, application Fed. Rep. of Germany, Apr. 30, 1982, 3216182

Int. Cl.³ B30B 3/04

U.S. Cl. 100—35 **64 Claims**



1. A method of processing lengths of material comprising the steps of conveying said material along a predetermined path; maintaining a first roller located at the region of a first portion of said path in a first operative position for a predetermined interval to thereby effect processing of said material in said first portion of said path, said first roller being movable from said first operative position to a first inoperative position; rotating said first roller at a predetermined peripheral speed in the course of said maintaining step; maintaining a second roller located in the region of a second portion of said path in a second inoperative position during said predetermined interval, said second roller being movable to a second operative position to thereby effect processing of said material in said second portion of said path; rotating said second roller at a peripheral speed significantly lower than said predetermined speed while said second roller is maintained in said second inoperative position; moving said second roller to said second operative position without interrupting the conveying step; accelerating said second roller to said predetermined speed not later than when said second roller reaches said second operative position; moving said first roller to said first inoperative position without interrupting the conveying step to thereby permit said first roller to be manipulated during performance of the conveying step; and maintaining said second roller in

said second operative position for an interval following movement of said first roller to said first inoperative position.

18. An arrangement for processing lengths of material, comprising means defining a predetermined path for the material and including processing roller means; a first roller movable between a first inoperative position and a first operative position in which said first roller cooperates with said roller means to process the material; a second roller movable between a second inoperative position and a second operative position in which said second roller cooperates with said roller means to process the material, said processing roller means and said first and second rollers respectively defining first and second gaps, said defining means further including a first guide element immediately upstream of each of said gaps and a second guide element immediately downstream of each of said gaps, said first guide elements having substantially the same positions relative to the respective gaps and said second guide elements having substantially the same positions relative to the respective gaps; moving means for moving said first and second rollers between the respective operative and inoperative positions; and drive means for rotating said roller means and said rollers, said drive means being designed to rotate said roller means and said rollers at substantially a predetermined peripheral speed for processing, and said drive means including a drive mechanism for rotating said second roller at another peripheral speed lower than said predetermined speed when said second roller is in said second inoperative position.

4,497,247

BALING PRESS WITH VERTICAL OPERATING DIRECTION

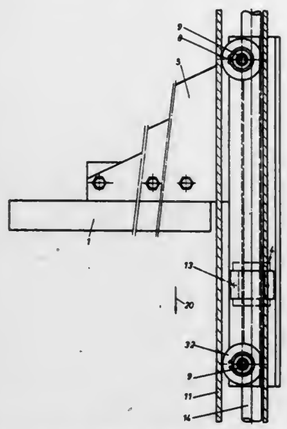
Albert Goldhammer, Überlingen, Fed. Rep. of Germany, assignor to Firma Feinwerktechnik Schleicher & Co., Markdoff, Fed. Rep. of Germany

Filed Mar. 26, 1982, Ser. No. 362,232

Claims priority, application Fed. Rep. of Germany, Mar. 31, 1981, 3112721

Int. Cl.³ B30B *1/18*

U.S. Cl. 100—214 **7 Claims**



1. An improved baling press with a vertical operating direction comprising:

a press case having side walls, a front wall and a rear wall which is substantially closed but provided with two vertical slots:

a carriage means including rollers and guide rails;

a press plate movable up and down in said press case; and two transverse elements connected at the upper side of said press plate and secured to said carriage means, which is vertically guided by said rollers cooperating with said guide rails mounted behind said rear wall;

spindle nuts secured to said carriage means;

two vertical press spindles rotatably mounted behind said rear wall of said press case, spaced from each other in a direction parallel to said rear wall and cooperating with said spindle nuts to move said carriage means and said press plate;

a motor having an output shaft driveably connected to said spindles by sprocket wheels fastened on said output shaft and each of said two vertical press spindles;

a single drive chain connecting all of said sprocket wheels and connecting said motor and both of said two vertical press spindles, whereby both spindles are driven in synchronism and in the same rotating direction;

said transverse elements projecting through said two vertical slots in said rear wall; and

flexible sealing means projecting into said vertical slots of said rear wall in order to prevent material to be baled from falling out of said press case through the slots.

4,497,248

THERMAL ENGRAVING PRESSES

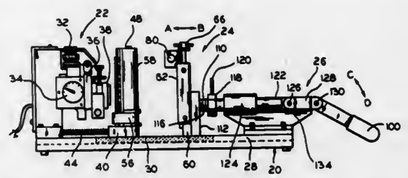
James C. Kanzelberger, Riverside, Ill., and William J. Deau, Manitowoc, Wis., assignors to Contemporary Inc., Chicago, Ill.

Continuation of Ser. No. 373, 180, Jun. 29, 1982, abandoned, which is a continuation of Ser. No. 297,758, Aug. 31, 1981, abandoned.

This application Dec. 12, 1983, Ser. No. 559,852

Int. Cl.³ B44B *5/00*

U.S. Cl. 104—27 **13 Claims**



1. A thermal engraving press comprising a stationary frame, heater means supported at a fixed location on said frame, a hot die heated by said heater means at a fixed location also on said frame, platen means mounted on said frame for horizontal displacement along said frame toward or away from said fixed locations of said hot die and heater means, means for precisely adjusting the length of a non-yielding horizontal excursion of said platen along said frame, said platen supporting a work piece in a vertical position opposing said die which is easily visible when said platen is in an open position away from said hot die, precision adjustment means associated with said platen for two dimensionally adjusting the position of said work piece relative to said die in a substantially vertical plane on said platen, means for horizontally moving said platen means over said excursion along said frame toward and away from said die, the completion of the displacement of said platen over the non-yielding excursion pressing said work piece to a closed position against said hot die at the fixed location on said frame, said excursion preserving the precise adjustment of said non-yielding horizontal displacement along the entire length thereof and especially at the closed position where said platen means confronts and presses the work piece against the die at the end of said excursion along said frame, whereby the position of said work piece may be precisely adjusted in three dimensions relative to said die.

4,497,249

ARRANGEMENT FOR PREVENTING SCREEN DEFORMATION

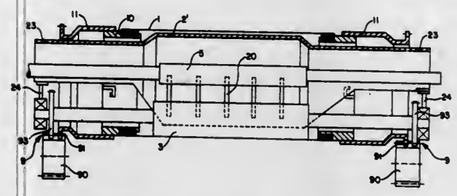
Mathias Mitter, Falkenstrasse 57, Schloss Holte, Fed. Rep. of Germany

Filed Jun. 30, 1982, Ser. No. 393,881

Claims priority, application Fed. Rep. of Germany, Jul. 17, 1981, 3128324

Int. Cl.³ B41L *13/06*

U.S. Cl. 101—120 **37 Claims**



1. In a machine for applying at least one flowable liquid medium to a workpiece which is disposed in a predetermined path, a combination comprising a flexible rotary endless cylindrical printing screen which is liable to deform out of its cylindrical shape having first and second ends; rigid end rings connected to the ends of the screen; stretch means for applying to said screen an axial stretching force by way of said end rings; means for rotating said screen about its axis by way of said end rings so that successive increments of the screen advance along a portion of said path; and support means located within the confines of said screen separate from said stretch means for preventing deformation of the screen, said support means being adjustable with respect to said stretch means and closely adjacent to but normally out of contact with the internal surface of said screen and being spaced apart from that portion of said screen which is adjacent to said portion of said path.

4,497,250

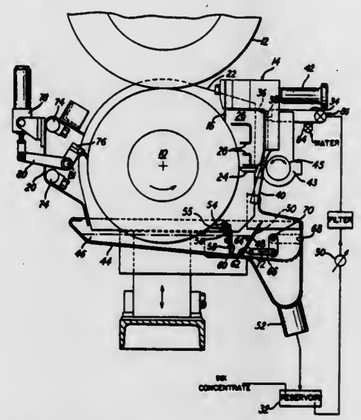
INK FOUNTAIN

Frederick K. Dressler, East Hartland, Conn., assignor to Motter Printing Press Co., York, Pa.

Filed Feb. 8, 1983, Ser. No. 465,027

Int. Cl.³ B41F *31/06, 31/08, 31/04*

U.S. Cl. 101—350 **15 Claims**



1. In a printing press having a roller and ink fountain means for applying ink to said roller, the improvement wherein said ink fountain means comprises:

a knife means closely spaced to said roller for interrupting the boundary layer of air on said roller surface;

ink applicator means for bringing ink into contact with a first portion of said roller, wherein said first portion is adjacent, in the rotational direction of said roller, said knife means;

a reverse angle doctor blade bearing against said roller for scraping excess ink from said roller, said doctor blade being arranged adjacent, in the rotational direction of said roller, said portion; and

a pre-inking applicator means for bringing ink into contact with a second portion of said roller, said pre-inking applicator means being spaced from, and arranged, in the direction of rotation, preceeding said ink applicator means.

4,497,251

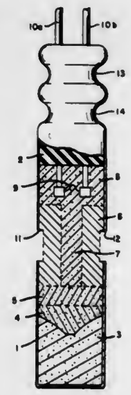
LIQUID-DISABLED BLASTING CAP

Klaus G. Rucker, Kinnelon, N.J., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Feb. 25, 1983, Ser. No. 469,954

Int. Cl.³ F42B *3/10*

U.S. Cl. 102—202.6 **13 Claims**



1. In a blasting cap comprising a tubular metal shell integrally closed at one end and containing, in sequence, from said closed end, a base charge of a detonating explosive composition and a priming charge of a heat-sensitive detonating explosive composition, and being closed at its opposite end by an ignition assembly containing an ignition charge of a heat- or flame-sensitive exothermic-burning composition for igniting said priming charge, the improvement comprising a porous tubular member seated within said metal shell between said priming charge and said ignition charge, said porous tubular member having an axial perforation containing a substantially continuous charge of a heat-sensitive exothermic-burning composition communicating with said priming charge and with said ignition charge in said ignition assembly so as to provide a substantially continuous train of charges from said ignition charge in said ignition assembly to said base charge, the sidewall of said tubular metal shell being provided with multiple perforations adjacent said porous tubular member seated therein whereby liquids may gain access to said porous tubular member and the charge of exothermic-burning composition contained therein.

4,497,252

PROXIMITY RESPONSIVE APPARATUS

Richard J. Taylor, London, England, assignor to EMI Limited, Hayes, England

Filed Feb. 9, 1973, Ser. No. 331,313

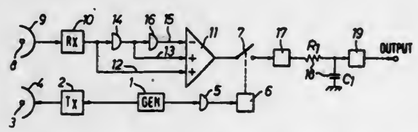
Claims priority, application United Kingdom, Feb. 18, 1972, 7726/72

Int. Cl.³ F42C *13/04*

U.S. Cl. 102—214 **7 Claims**

1. Proximity responsive apparatus comprising generating means for generating a pulse of energy, transmitter means for

transmitting said pulse, receiver means for receiving said pulse after reflection from a target, sampling means coupled to said receiver means for sampling the amplitude of a received pulse, as received at different times, over a period of shorter duration



than the pulse, comparing means coupled to said sampling means for comparing the amplitudes of the samples and output means coupled to said comparing means and adapted to respond to a predetermined relationship between said amplitudes by generating an electrical output signal.

4,497,253

ARMOR-PIERCING PROJECTILE

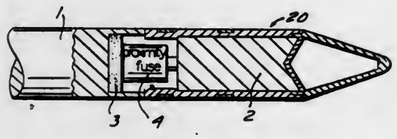
Udo Sabranski, Willich, Fed. Rep. of Germany, assignor to Rheinmetall GmbH, Duesseldorf, Fed. Rep. of Germany

Filed Feb. 4, 1981, Ser. No. 237,395

Claims priority, application Fed. Rep. of Germany, Feb. 5, 1980, 3004047

Int. Cl.³ F42B *11/22*

U.S. Cl. 102—476 **5 Claims**



1. An armor-piercing projectile having a hard core containing portion and a hollow charge containing portion arranged in front thereof with respect to the direction of flight, comprising proximity fuse means which are adapted to effect an ignition of the hollow charge prior to the impacting of the armor-piercing projectile on the target; said two portions being separable from each other during flight of the projectile; and including an explosive expulsion charge disposed in said projectile between said hard core containing portion and said hollow charge containing portion, said proximity fuse being operatively connected to said expulsion charge which is adapted to expel said hollow charge containing portion after being ignited due to the activation of the proximity fuse means.

4,497,254

ISOLATING DEVICE FOR AN OPENING TRAVERSED BY CONVEYOR CARS

Siegfried Schmidt, Olching, Fed. Rep. of Germany, assignor to Büropatent AG, Glarus, Switzerland

Filed Sep. 22, 1982, Ser. No. 421,396

Claims priority, application Switzerland, Oct. 7, 1981, 6434/81

Int. Cl.³ B61B *12/00*; E06B *7/00*

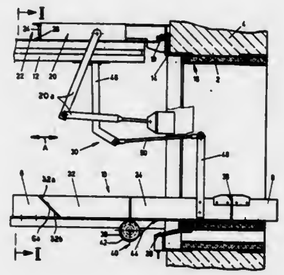
U.S. Cl. 104—1 R **13 Claims**

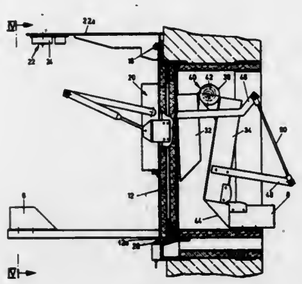
1. An isolating apparatus for an opening in a wall traversed by a conveyor track, comprising:

a door adapted to close said opening;

hinge means for swingably mounting said door adjacent said opening for displacement of said door from an open position wherein said door extends generally in the direction of said track into a closed position wherein said door closes said opening and lies perpendicular to said direction;

a movable section of said track adjacent said opening between fixed sections of said track, said movable section being shiftable in said direction to clear a path for said door; and





coupling means connecting said door to said movable section for displacing same in said direction as said door is displaced between said positions, said door being swingably mounted above said track.

4,497,255

MOBILE TRACK ALIGNMENT MACHINE

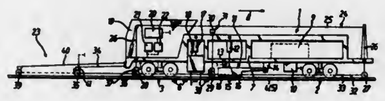
Josef Theurer, Vienna, Austria, assignor to Franz Plasser Bahnbaumaschinen Industriegesellschaft m.b.H., Vienna, Austria

Filed Nov. 9, 1982, Ser. No. 440,427

Claims priority, application Austria, Dec. 23, 1981, 5553/81

Int. Cl.³ E01B *33/00*

U.S. Cl. 104—8 **9 Claims**



1. A mobile track alignment machine mounted for mobility on the track rails for movement from an aligned, first track section to a second track section to be aligned, which comprises

(a) track alignment tool means positioned in the second track section,

(b) drive means operating the tool means for alignment of the second track section,

(c) a control for the drive means and

(d) a reference system for operating the drive means control in response to an operating signal emitted by the reference system and including

(1) a reference line means forming a chord of an arc in which the track extends and

(2) three rail sensing elements each determining a respective ordinate of the arc, one of the rail sensing elements being arranged at the track alignment tool means, a second one of the rail sensing elements being arranged in a leading portion of the first track section adjacent the second track section, a third one of the rail sensing elements being arranged in a trailing portion of the first track section, and an additional rail sensing element,

wherein the improvement comprises arranging the additional rail sensing element in the trailing portion of the first track section and associating the additional rail sensing element with a reference line means sensing element for determining residual track alignment errors, the reference line means sensing element associated with the additional rail sensing element emitting a correcting operating signal corresponding to the residual alignment error.

4,497,256

MOBILE TRACK POSITION CORRECTION MACHINE

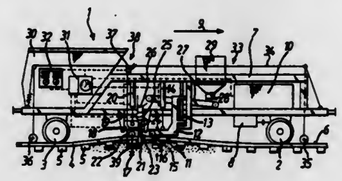
Johann Hansmann, Klosterneuburg, Austria, and Frederick Fawcett, Kings Langley, England, assignors to Franz Plasser Bahnbaumaschinen Industriegesellschaft m.b.H., Vienna, Austria

Filed Feb. 8, 1983, Ser. No. 464,902

Claims priority, application Austria, Feb. 9, 1982, 489/82

Int. Cl.³ E01B *27/02, 27/17*; G01F *11/06*

U.S. Cl. 104—11 **21 Claims**



1. A mobile track position correction machine mounted for mobility on a track consisting of two rails fastened to ties supported on a track bed, comprising

(a) a track level adjusting device for lifting the track whereby a gap is created between the track bed and the ties at a respective point of intersection between a respective rail and a respective tie,

(b) a power drive for imparting a lifting stroke to the track level adjusting device,

(c) a track level reference and measuring system controlling the lifting stroke of the device, the system including

(1) a track level measuring device capable of delivering parameters corresponding to the measured track level, a desired track level, and a measurable track level above the desired track level, and

(d) pneumatic arrangement for introducing additional track bed material into the gap, the pneumatic arrangement including

(1) a storage container for the track bed material,

(2) a vertically adjustable pipe arranged to receive track bed material from the storage container and to be immersed in the track bed alongside a longitudinal edge of the respective tie, the pipe having a tapered end for ready penetration into the track bed and a flattened side defining an outlet for the additional track bed material facing the longitudinal tie edge,

(3) means for delivering a blast of compressed air into the pipe for moving the additional track bed material therethrough and out of the outlet,

(4) a power drive for vertically adjusting the pipe,

(5) a stop arranged on the pipe for engagement with the respective rail,

(6) a power-driven metering device arranged between the storage container and the pipe for delivering a metered amount of the additional track bed material from the container to the pipe, the additional track bed material amount being metered by the metering device in response to the parameter corresponding to the desired track level to fill the gap between the track bed and the lifted tie.

4,497,257

RETRACTABLE WHEELED VEHICLE

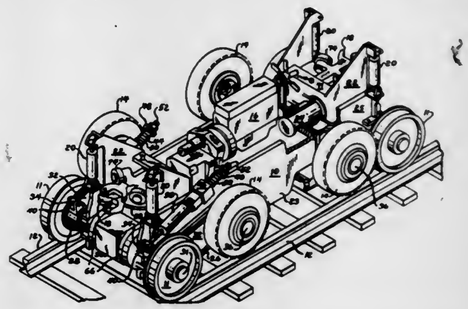
Eugene B. White, Jr., Park Forest, Ill., assignor to White Machinery Corporation, Joliet, Ill.

Division of Ser. No. 40,855, May 21, 1979, Pat. No. 4,355,584.

This application Dec. 3, 1981, Ser. No. 326,864

Int. Cl.³ B62D *61/12*; B61H *9/00*; B61F *13/00*

U.S. Cl. 105—215 C **6 Claims**



1. In a railcar moving vehicle of the type having rail wheels **11** for travelling on railroad track **12** and road wheels **14** for travelling on road, the improvement comprising, in combination, a pair of front rail wheels **11** and a pair of rear rail wheels **11**, a pair of front road wheels **14** and a pair of rear road wheels **14**, said front and rear road wheels **14** being movable between raised inoperative positions and lowered operative positions by hydraulic cylinder means **38**, and said front and rear rail wheels **11** being non-retractable so that said vehicle can move on rail when said road wheels are retracted and can move on roadway when said road wheels are extended down, said front pair of rail wheels **11** being mounted directly on a first internal planetary-type differential axle **30** having internal brake means **66**, said rear pair of rail wheels being mounted directly on a second internal planetary-type differential axle **30** having internal brake means **66**, and chain drive means **26** between one of said pairs of rail wheels **11** and an adjacent pair of road wheels **14** for providing differential drive to said pair of road wheels **14**.

4,497,258

TRANSVERSE BULKHEAD CONNECTION TO FILAMENT WOUND VEHICLE BODY SIDES

Douglas C. Ruhmann, Brentwood; Frederick E. Vorwerk, St. Peters, and James D. Mundloch, Florissant, all of Mo., assignors to ACF Industries, Incorporated, New York, N.Y.

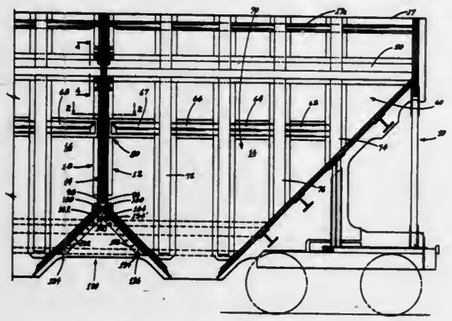
Filed Sep. 30, 1982, Ser. No. 429,745

Int. Cl.³ B61D *5/02, 7/02, 49/00*

U.S. Cl. 105—248 **9 Claims**

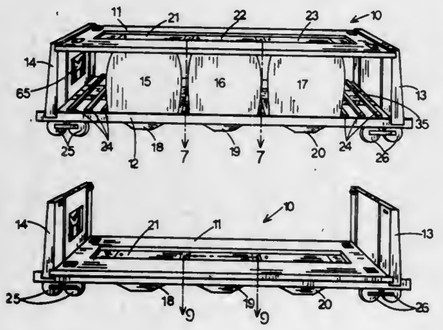
1. A transverse bulkhead restraining assembly comprising: bulkhead support means integrally connected to transversely spaced sides of a filament wound vehicle body; said bulkhead support means including longitudinally spaced extensions extending inwardly from said vehicle body sides; opposite end portions of said transverse bulkheads located within said extensions on both sides of the vehicle with longitudinal clearance; resilient bulkhead cushioning means located adjacent each side

and between said bulkhead and each extension on each side of the car; said resilient bulkhead cushioning means extending



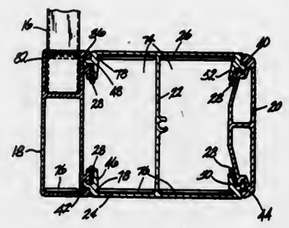
only a short distance transversely of the vehicle to introduce bulkhead loads into said car body sides primarily in shear.

4,497,259
CONVERTIBLE FREIGHT CAR
John D. Titterton, 2203 Grey Frirars Ter., Chalfont, Pa. 18914
Filed Jan. 7, 1983, Ser. No. 456,539
Int. Cl.³ B61D *5/02*; B65D *88/22*; B60P *3/06*
U.S. Cl. 105—359 **11 Claims**



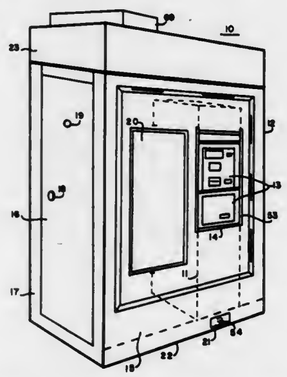
1. A convertible rail car for use in hauling a variety of material comprising:
a frame;
a first bulkhead located on one end of said frame;
said first bulkhead including a trailer hitch for attachment of a trailer to said convertible rail car;
a second bulkhead located on the opposite end of said frame;
a flatbed assembly having a top and bottom, said flatbed assembly movably mounted on said frame;
said flatbed assembly having at least two hopper wells for discharging material;
at least two collapsible flexible containers, each of said collapsible flexible containers having a top and bottom with said top of said collapsible flexible container connected to the bottom of said flatbed assembly and the bottom of said collapsible flexible container connected to said hopper wells so that said collapsible flexible container can be extended into an elevated condition when said flatbed assembly is raised and can be collapsed into said hopper well when said flatbed assembly is lowered, each of said collapsible flexible containers operable to support a material therein with only restraint of the top and bottom of said flexible container.

4,497,260
FLAT PALLET
Anton Bucher, Ennetbaden, Switzerland, assignor to Swiss Aluminium Ltd., Chippis, Switzerland
Filed Sep. 13, 1982, Ser. No. 417,062
Claims priority, application Switzerland, Sep. 23, 1981, 6119/81
Int. Cl.³ B65D *19/26*
U.S. Cl. 108—56.1 **3 Claims**



1. A flat pallet for use in the foodstuff industry wherein a high standard of hygiene is desired comprising a pair of substantially parallel long beams joined together by at least one cross beam, each of said long beams having a central substantially I-shaped beam portion connecting an upper portion and a lower member, said substantially I-shaped beam portion comprising a central portion connecting two arm portions wherein said arm portions are provided on the ends thereof with T-shaped projections adapted to be engaged with undercut grooves provided on said upper member and said lower member so as to secure said upper member and said lower member to said substantially I-shaped beam portion and further including a plurality of wedges provided between said arm portions and said upper member and said lower member for insuring good engagement between said first securing means and said second securing means.

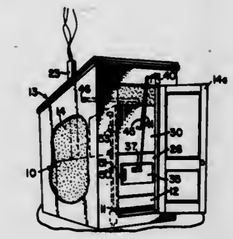
4,497,261
SECURITY ENCLOSURE FOR AN AUTOMATIC TELLER MACHINE
Richard A. Ferris, Rockville, Md.; Roger M. Hess, Mount Airy, N.C., and James R. Garman, Thurmont, Md., assignors to Commercial Modular Systems, Inc., Frederick, Md.
Filed Jun. 27, 1983, Ser. No. 508,255
Int. Cl.³ G07F *5/00*
U.S. Cl. 109—2 **8 Claims**



1. A portable terminal for conducting remote electronic banking transactions with pedestrians and motorists, using an automated teller machine housed within a secured enclosure that is adapted for installation in narrow places comprising

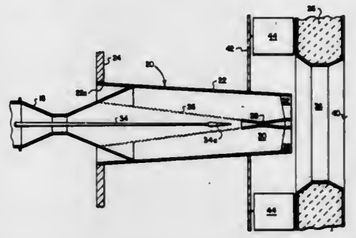
drive-through service islands, pedestrian walkways, malls, and retail outlets, said enclosure having an interior vault wherein a first volume of spaced occuped by said teller machine, as located for transactional operations responsive to said pedestrians and motorists, precludes access to the internal elements of said machine, and a second volume of space contiguous to said first volume, having a secured means of entry thereto, comprises working space for service personnel to service, test, and maintain said teller machine, wherein the improvement comprises:
a. turntable upon which said teller machine is mounted;
b. mechanical carriage supporting said turntable, operable by said service personnel for moving said teller machine from its operational location where transactions are performed by said pedestrians and motorists to an interior location within said secured enclosure interfacing said second volume of space comprising working space for visiting service personnel, and
c. means, responsive to said service personnel, for rotation of said turntable and said teller machine mounted thereto through a sector of azimuth angles about a vertical axis so as to permit access by said service personnel for their routine servicing, testing, and maintaining of said interior elements of said teller machine.

4,497,262
WOOD FIRED BOILER
Clifford Nordine, Roosevelt, Minn. 56673
Filed Nov. 3, 1983, Ser. No. 548,284
Int. Cl.³ F23B *7/00*
U.S. Cl. 110—234 **7 Claims**



1. A boiler construction, comprising:
(a) a base;
(b) a firebox mounted on said base, said firebox being a generally box-like structure having planar ends, sides and top walls, said walls having door and smoke discharge openings therein, said walls being constructed from spaced, metal tubular members of generally rectangular cross section, said tubular members each having a wider cross sectional dimension thereof coplanar with said respective wall, said tubular members including a plurality of header members and a plurality of wall forming members interconnected to provide a free flow of fluid throughout the walls of said box-like structure, and said structure further having metal plates overlying and connected to said walls to cover said spaces between said tubular members;
(c) a fluid storage tank mounted above said top wall;
(d) means interconnecting said box-like structure and said tank to provide a flow of fluid therebetween; and
(e) said door is located in a front end wall of said firebox and said smoke discharge opening is located in said top wall adjacent a rear end wall of said firebox, said smoke discharge opening having a smoke stack extending upwardly therefrom with a movable damper therein, wherein said fluid storage tank is mounted on said plate covering said top wall and has a front wall adjacent said door and a rear wall adjacent said stack, said front and rear walls having openings connected by a tubular member, and a damper control rod extending through said tubular member connected to said damper whereby said damper can be controlled from the front of said boiler construction.

4,497,263
COMBUSTION SYSTEM AND METHOD FOR A COAL-FIRED FURNACE UTILIZING A WIDE TURN-DOWN BURNER
Joel Vatsky, Millburn, and Edmund S. Schindler, Maplewood, both of N.J., assignors to Foster Wheeler Energy Corporation, Livingston, N.J.
Filed Mar. 7, 1983, Ser. No. 472,807
Int. Cl.³ F23K *3/02*
U.S. Cl. 110—347 **17 Claims**



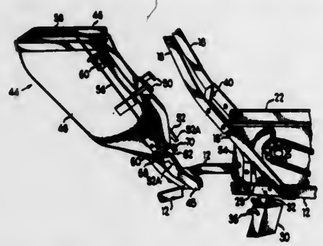
1. A system for combusting a coal-air mixture comprising an inner member; an outer member extending around said inner member and defining therewith a chamber surrounding said inner member, said inner member comprising an inlet end portion for receiving said mixture, a discharge end portion, and means for separating said mixture into a first stream and a second stream and for directing said first stream in an axial direction through said inner member and said second stream into said chamber; and means for varying the flow of said first stream through said inner member; said outer member having an open end defining an outlet for discharging said second stream from said chamber in a pattern surrounding said first stream and in a combustion-supporting relation to said first stream.

10. A method of combusting a coal-air mixture utilizing a burner having an inlet and at least one outlet, comprising the steps of passing said mixture to said inlet, separating the mixture in said burner into a first stream containing substantially coal and a second stream containing substantially air, varying the flow of said first stream through said burner, discharging said first stream from said outlet in a substantially axial direction, discharging said second stream from said outlet in a pattern surrounding said first stream and in a combustion-supporting relationship to said first stream, and providing additional air in a combustion-supporting relation to said streams.

4,497,264
COMBINATION SEEDER AND FERTILIZER DISPENSER FOR HOME VEGETABLE GARDENS
Kenneth J. Pickett, Mishawaka, and Carl B. Derr, Bristol, both of Ind., assignors to Earthway Products, Inc., Bristol, Ind.
Filed Nov. 4, 1982, Ser. No. 439,355
Int. Cl.³ A01C *5/06*
U.S. Cl. 111—73 **15 Claims**

1. In combination, a seeder comprising a frame including upper and lower frame portions, said upper portion of said frame including a pair of laterally spaced upwardly extending frame-forming means having handle grips at their uppr ends, and there being therebetween a crossmember below said handle grips, a seed hopper on said frame for holding a quantity of seed to be dispensed, wheel means attached to a lower portion of said frame for supporting said frame as it is propelled over the ground by an operator, ground opening means on the lower portion of said frame and having a ground digging

means for opening a furrow in the ground, said ground opening means having adjustment means for setting the cutting depth of said ground opening means to a chosen value, and seed directing means for directing the flow of seeds to the ground behind said ground digging means, said wheel means and said ground opening mans being disposed to traverse only a single common track aligned therewith as said seeder is propelled over the ground; and a fertilizer dispenser attachable upon said frame and comprising: a fertilizer hopper for holding a quantity of fertilizer to be dispensed, a fertilizer dispensing chute having fertilizer directing means positioned to drop the fertilizer from the hopper at a given point, manually controllable metering means for regulating the rate of flow of said fertilizer out of said dispensing chute, and mounting means for mounting said fertilizer dispenser on said frame of said seeder so that said dispensing chute is disposed to dispense said fertilizer behind said front ground digging means of said ground opening means



and along said single common track, so that said fertilizer dispenser when attached to said seeder dispenses fertilizer alongside growing plants as said wheel means is propelled alongside said plants, said mounting means comprising upper mounting means for removably attaching said fertilizer hopper to an upper portion of said frame, and lower mounting means for removably attaching said fertilizer hopper to said lower portion of said frame, said lower portion of said frame including a laterally extending member, said lower mounting means engaging with said laterally extending member, said upper mounting means including a pair of forwardly and downwardly extending spring clips extending forwardly from said fertilizer hopper and configured for lateral springout engagement with the interior surfaces of said upwardly extending frame-forming means when insertingly pressed therebetween, said clips having depending fingers configured to engage over said crossmember when pressed downward thereagainst.

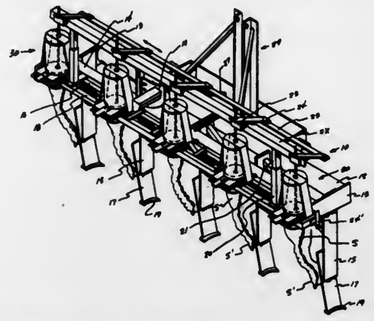
4,497,265

SEEDING IMPLEMENT

Clarence E. Hood, Jr., Clemson; Thomas R. Garrett, Six Mile, and Charles R. DuBose, Central, all of S.C., assignors to Clemson University, Clemson, S.C.

Filed Apr. 4, 1983, Ser. No. 481,789
Int. Cl.³ A01C *7/16*
U.S. Cl. 111—86 **20 Claims**

1. An improved agricultural seeder implement comprising:
(a) a container for seed to be metered onto the ground, said container including a bottom wall that defines an opening therein;
(b) metering means located adjacent said bottom wall of said container, said metering means defining at least one orifice therein, said orifice being smaller than said opening in said bottom wall and concentric with respect thereto, said opening and said orifice cooperating to define a dispensing outlet for seed from said container; and
(c) positive feed means received in said bottom wall opening and along an axis eccentric to a central axis through said orifice in said metering means, said feed means being adapted for arcuate motion about its axis whereby during



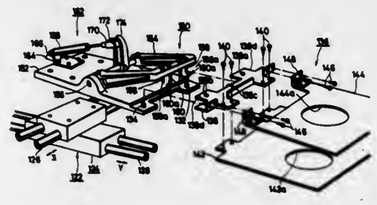
said arcuate motion of said feed means, seed are positively metered through said orifice.

4,497,266

AUTOMATIC SEWING MACHINE AND CLOTH RETAINER THEREFOR

Jiro Fujita, and Iwao Yamane, both of Aichi, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 29, 1983, Ser. No. 537,473
Claims priority, application Japan, Sep. 29, 1982, 57-170692
Int. Cl.³ D05B *19/00*
U.S. Cl. 112—121.11 **8 Claims**



1. A cloth retaining device for an automatic sewing machine, comprising;
(a) a cloth retainer for holding a material to be sewn;
(b) a cloth retainer driving device for driving said cloth retainer while positioning and holding the same at a predetermined position; and
(c) a control device for supplying a driving signal to said cloth retainer driving device in accordance with programmed data, said driving device including a cloth retainer positioning and holding mechanism adapted to detachably position and hold said cloth retainer, and a drive mechanism adapted to position and hold said cloth retainer and to release the positioning and holding thereof in response to instruction signals supplied from said control device prior to the start of a sewing operation and after completion of the sewing operation, respectively.

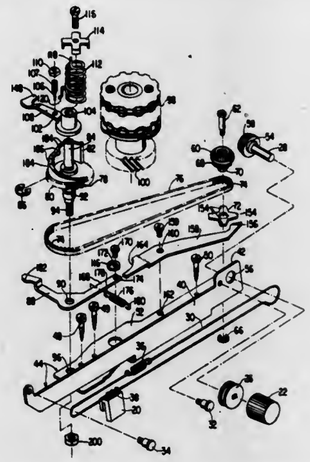
4,497,267

LOW TORQUE PATTERN SELECTING MECHANISM FOR A SEWING MACHINE

Jan Szostak, Lincroft; Henry Schaeffers, Pittstown, and Walter H. W. Marsh, Scotch Plains, all of N.J., assignors to The Singer Company, Stamford, Conn.

Filed Mar. 19, 1984, Ser. No. 590,932
Int. Cl.³ D05B *3/02*
U.S. Cl. 112—158 A **7 Claims**

1. Pattern selecting mechanism for a sewing machine comprising a rotatable pattern selecting dial; a plurality of rotatable pattern controlling cams; a cam follower; a fixed shaft having the follower pivotally and slidably mounted thereon; a circularly arranged stepped cam rotatable about the axis of said shaft for lifting the follower into positions to engage different ones of the said cams as defined by the rotational position of the cam; an operable connection between the dial and stepped cam enabling an operator to position the stepped cam by turning the dial, said operable connection including a gear rotatably driven by the dial, another gear which carries the stepped cam and has a diameter greater than the diameter of said dial rotatable gear; and means operable by the dial for disposing the cam follower apart from the pattern cams while being lifted by the stepped cam, said means including linkage means fulcrumed to amplify the force applied thereto be the operation of the dial.

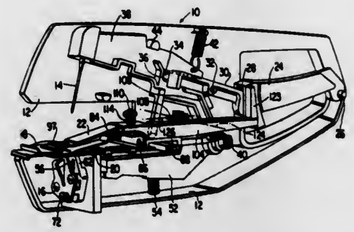


4,497,268

TOP WORK FEEDING ARRANGEMENT FOR A CHAIN STITCH SEWING MACHINE

Karl H. Killinger, Dover, N.J., assignor to The Singer Company, Stamford, Conn.

Filed Apr. 16, 1984, Ser. No. 600,704
Int. Cl.³ D05B *27/04, 1/06, 97/02*
U.S. Cl. 112—169 **6 Claims**



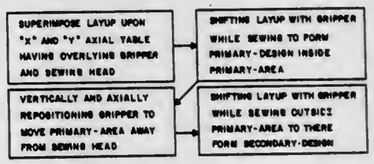
1. In a sewing machine; a sewing needle; a looper with a loop seizing point; a movable handle; mechanism responsive to the operation of the handle for moving the needle and looper into cooperative association for the formation of chain stitches, said mechanism including spring means which biases the handle to a defined hands off position; a feed dog with a work engageable end portion and a rearward extension; a work supporting bed; a pressure plate for holding a work piece against the bed, said plate including one or more openings for the feed dog end portion to extend through and engage the work piece; means mounting the feed dog along the rearward extension for pivotal movement in the machine about mutually perpendicular axes; and means responsive to the operation of the handle for pivoting the feed dog about one of said axes to thereby move said feed dog from an initial position with the end portion above the work piece to a position wherein the work piece is engaged by said end portion, and for moving the feed dog about the other axis while engaged with the work piece to thereby move the work piece relative to the needle; the feed dog being operably associated with said spring means for return thereby through movement about both of said axes to the said initial position.

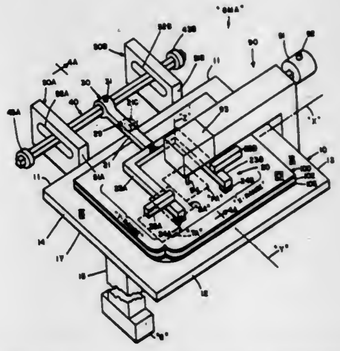
4,497,269

METHOD OF MAKING AESTHETIC QUILTING

Charles Schneider; Bruce H. Schneider, and Jerry S. Schneider, all of 518 N. 10th St., Council Bluffs, Iowa 51501

Continuation-in-part of Ser. No. 383,593, Jun. 1, 1982, abandoned. This application Apr. 25, 1983, Ser. No. 488,043
Int. Cl.³ D05B *57/00, 21/00, 11/00;* D05C *17/00*
U.S. Cl. 112—262.3 **13 Claims**





1. Method for making quilting having a predetermined stitching-pattern including at least one cusp therealong and having an overall-area located both within and outside a rectangular primary-area having an x-lateral dimension and a y-longitudinal dimension, said method comprising the following steps:
(A) as the initial step, superimposing upon a horizontal tabletop a trilaminar layup of vertically aligned broad sheets including relatively thin facing and base fabric sheets sandwiching a relatively thick resiliently-compressible foam sheet, said tabletop extending laterally along an x-axis and extending longitudinally along a y-axis perpendicularly intersecting said x-axis, there being attached to and overlying said tabletop an interruptably operational sewing head including a vertically reciprocatable needle; and
(B) continuously employing a gripper means that is movably associated with said tabletop and movable independently in the vertical, for an x-range parallel to the x-axis, and for a y-range parallel to the y-axis, and according to the following steps:
(Ba) during a chronologically early-time-period, downwardly compressing the trilaminar layup with said gripper

means in flanking relationship to said primary-area and said sewing needle, and by said gripper means shifting the layup along the x-axis less than said x-range and along the y-axis less than said y-range through primary sewing-command means while continuously operating said sewing head whereby the sewing needle provides exclusively within said primary-area a primary-design portion of the predetermined stitching-pattern;

(Bb) after said earlytime-period and before a chronologically latertime-period, and through gripper reposition-command means performing the following sub-steps in order:

(i) moving the gripper means upwardly away from the layup, whereby the facing and base sheets are permitted to creep along the foam sheet toward the layup primary-area,

(ii) translating the gripper means in at least one of the x-lateral and y-longitudinal directions,

(iii) moving the gripper means downwardly so as to re-compress the layup in a new position, this and the two preceeding sub-steps being performed while the sewing head is maintained in nonoperating condition, and

(iv) utilizing said gripper means, shifting the layup primary-area remotely away from the sewing needle;

(Bc) during a chronologically latertime-period, maintaining said layup in re-compression in said new position and flanking the sewing needle, and by said gripper means shifting the layup along the tabletop along the x-axis less than said x-range and along the y-axis less than said y-range through secondary sewing-command means while said sewing head is operating whereby the sewing needle provides exclusively outside the primary-area another portion of the predetermined stitching-pattern; at least one of said sewing-command means providing non-linear stitchlines terminating at a cusp, some of the stitchlines intersecting remotely from a stitching-pattern cusp.

8. Apparatus for quilting a resilently compressible trilaminar layup of vertically aligned flexible sheets according to a predetermined stitching-pattern, said apparatus comprising:

(A) at least one interruptably operational sewing head having a vertically reciprocatable sewing needle for making stitchline components of said stitching-pattern;

(B) a horizontally extending tabletop peripherally surrounding said sewing needle and extending laterally along an x-axis and longitudinally along a y-axis perpendicularly intersecting said x-axis;

(C) a carriage means attached to the tabletop and located beyond the periphery thereof, said carriage means being movable independently both parallel to the x-axis and y-axis; and

(D) gripper means overlying the tabletop and being attached to said carriage means whereby said gripper means is co-movable with the carriage means and both parallel to the x-axis and to the y-axis, said gripper means also being vertically movable and having an up-station further away from the tabletop and having a down-station closer to the tabletop so as to downwardly compress a layup supported upon said tabletop.

4,497,270

METHOD AND APPARATUS FOR SEWING ELONGATED FABRIC PIECE

Ronald J. Boser, Dix Hills, N.Y., assignor to Yoshida Kogyo K.K., Tokyo, Japan

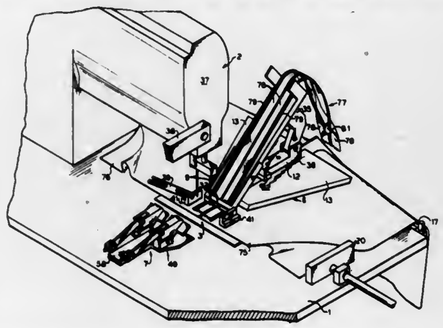
Filed Sep. 26, 1983, Ser. No. 535,729

Int. Cl.³ D05B *3/12, 21/00, 33/02*

U.S. Cl. 112—265.2 **22 Claims**

1. Apparatus for sewing elongated workpieces comprising a table on which is mounted guide surface means at a front end of said table, a sewing machine disposed intermediate of said table, and a releasable gripper means disposed via drive means for linear back and forth movement between respective forward and rearward stroke positions adjacent said sewing machine and outward away from the rear end of said table, said sewing machine having feed means for conducting a workpiece from said guide surface means, through said sewing machine, and toward said gripper means during operation of said sewing machine, said gripper means engaging a lead end of said workpiece and said drive means drawing said gripper means rearwardly under tension less than that applied to said workpiece by said feed means.

17. A method for operating an apparatus for automatically sewing elongated workpieces, said apparatus comprising a table on which is mounted a linearly directed, upstanding guidewall at a front end of said table, a sewing machine disposed intermediate of said table, and a releasable gripper means disposed via drive means for linear back and forth movement between respective forward and rearward positions adjacent said sewing machine and outward away from said rear end of



said table, said sewing machine having feed means for conducting a workpiece through said sewing machine in a rearward linear direction, said method comprising:

passing said workpiece along said guidewall such that a leading end thereof engages said feed means,

clamping said leading end of said workpiece in situ on said feed means,

operating said sewing machine, including said feed means, while substantially simultaneously removing the clamping of said leading end of said workpiece,

gripping the leading end of said workpiece as it is conducted rearwardly of said feed means, and

drawing said gripped workpiece rearwardly away from said table via said drive means with a tension less than that applied to said workpiece by said feed means.

4,497,271

STOWING STRUT FOR MAKING FAST CONTAINERS OR THE LIKE

Jürgen Gloystein, Osterholz-Scharmbeck, Fed. Rep. of Germany, assignor to Conver Ing. - Technik GmbH & Co., KG, Fed. Rep. of Germany

Filed Sep. 30, 1982, Ser. No. 430,150

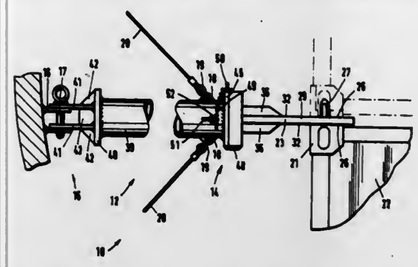
Claims priority, application Fed. Rep. of Germany, Jan. 15, 1982, 3201012

Int. Cl.³ B63B *25/24*

U.S. Cl. 114—75 **8 Claims**

1. In a stowing strut for lashing containers on board ship, said strut effecting a connecton between said container at a container corner having at least one corner brace, and a component firmly attached to the ship, the improvement wherein said stowing strut (10) consists of a support piece and an interlocking adjustment coupling bracket (23), said coupling bracket (23) consisting of a conical piece (24), a first plate (29) removably receiving said conical piece (24), a releasable coupling means on both ends of the support piece for removably connecting said support piece to said coupling bracket (23) and to said ship's component, said first plate (29) having an elongated longitudinal recess (30) with laterally opposed toothing (31), said conical piece (24) comprising a second plate (25) being of a width corresponding generally to the width of the

elongated longitudinal recess of said first plate and having laterally opposed edges bearing corresponding toothing (28) matching said toothing (31) of said first plate (29) and being inserted within said recess via said toothing with said conical piece second plate (25) being substantially smaller lengthwise than said recess (30) such that said conical piece (24) is adjustably positioned longitudinally within said recess (30), said conical piece (24) including a cone (27) for engagement with



said at least one container corner brace, and wherein said conical piece cone (27) is arranged on said second plate (25) in an off-center lengthwise direction, such that said conical piece (24) may be rotated 180 degrees while being shifted longitudially relative to said recess (30) wherein various length support pieces may be releasably coupled to said coupling bracket and said ship's component to maximize the adjustability of the container lashing system to rapidly lash various size containers to said ship.

4,497,272

MASTLESS SAILS

Sidney E. Veazey, Box 497, Rte. 2, Fredericksburg, Va. 22401

Filed Jun. 1, 1982, Ser. No. 383,673

Int. Cl.³ B63H *9/06*

U.S. Cl. 114—103 **4 Claims**



1. A mastless sail for a boat or ship comprising:

said means consisting of a balloon, parafoil and spinnaker for utilizing static and dynamic lift in combination with drag, gravity, and line tension to provide stability and propulsion forces for the boat or ship;

communication means located near the sail means when the sail means is aloft for use by the boat or ship;

sensing means located near the sail means when the sail means is aloft for use by the boat or ship; and

raising and lowering means for raising and lowering the communicating means and the sensing means.

4,497,273

APPARATUS FOR UNIFORM APPLICATION OF LIQUID TREATING MEDIA TO WORKPIECE WEBS

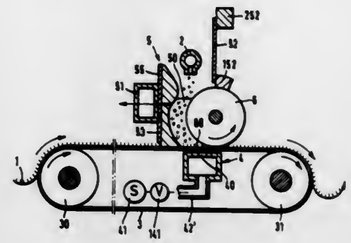
Mathias Mitter, Schloss Holte, Fed. Rep. of Germany

Division of Ser. No. 325,059, Nov. 25, 1981, Pat. No. 4,440,808. This application Aug. 30, 1982, Ser. No. 413,076

Claims priority, application Fed. Rep. of Germany, Nov. 26, 1980, 3044408

Int. Cl.³ B05C *3/18*

U.S. Cl. 118—50 **4 Claims**



1. Apparatus for uniformly applying the liquid fraction of a foamed liquid medium to a textile web, comprising foraminous means for supporting the bottom surface of the textile web in a predetermined plane and for advancing the web along a predetermined path in a predetermined direction; confining means defining adjacent to the upper surface of the textile web in said plane a circumambiently completely enclosed foam receiving space extending all the way to said path so as to prevent escape of foamed medium from said space and said path along the upper surface of the web in any direction, said confining means including a wall and said wall having means for admitting foamed medium into said space only from above; and a suction generating device disposed below said space adjacent said plane and having a slot arranged to draw liquid medium from said space into said path and hence into the material of the web, said wall further having a roller squeegee located downstream of and spaced apart from said slot, as considered in said direction, and arranged to force additional liquid medium into said path and hence into the material of the web so that those portions of the upper surface of the web which advance beyond said applicator device are entirely devoid of foam.

4,497,274

APPARATUS FOR SPREADING GLUE ONTO SHEET-LIKE BLANKS

Heinz Focke, Verden, Fed. Rep. of Germany, assignor to Focke & Co., Verden, Fed. Rep. of Germany

Continuation of Ser. No. 352,981, Feb. 26, 1982, abandoned. This application Aug. 8, 1983, Ser. No. 520,767

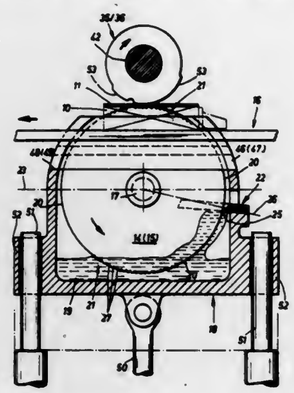
Claims priority, application Fed. Rep. of Germany, Mar. 4, 1981, 3108089

Int. Cl.³ B05C *1/02*

U.S. Cl. 118—221 **1 Claim**

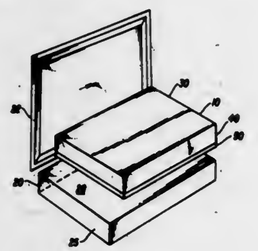
1. An apparatus for applying glue to laterally extending flaps of a partially formed package comprising a glue container, a first shaft rotatably mounted within the glue container, a pair of glue applying rollers mounted on said shaft in axial spaced apart relation, conveyor means extending orthogonally with respect to said shaft and located between said rollers for supporting a partially formed package having a pair of oppositely extending lateral flaps adapted to engage the peripheral surface of said rollers, a second shaft disposed parallel to said first shaft, a pair of backing rollers mounted on said second shaft in axial spaced apart relation with said backing rollers being opposed to said glue applying rollers for engagement with said flaps means for rotating said first and second shafts, cover means for said glue container disposed on opposite sides of

conveyor means, said cover means having aperture means through which the outer periphery of said glue applying rol-



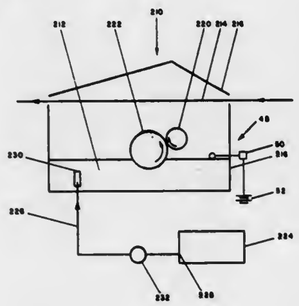
lers extend, and means for raising and lowering said glue container relative to said conveyor means.

4,497,275
INK STAMP PAD AND RESERVOIR
Lewis H. Johnson, Mansfield; Lee A. Carlson, Southboro, and David M. Lunt, Somerville, all of Mass., assignors to Dennison Manufacturing Company, Framingham, Mass.
Continuation-in-part of Ser. No. 407,367, Aug. 12, 1982, abandoned. This application Sep. 26, 1983, Ser. No. 536,132
Int. Cl.³ B05C *1/00*
U.S. Cl. 118—268 **16 Claims**



1. A composite ink pad comprising:
a porous pad comprising a thermoplastic, nonelastomeric resin having a microporous open cell structure housing a quantity of ink; and
a nonelastomeric reservoir liner in substantial contact with one side of said ink pad, said reservoir liner having a microporous open cell structure, wherein the average pore diameter of the reservoir liner is greater than the average pore diameter of the ink pad,
said reservoir liner capable of absorbing at least a portion of ink leaking from said pad when the pad is exposed to at least one of the two following conditions:
(a) elevated ambient temperature higher than about 80° F,
(b) elevated humidity higher than about 80 percent humidity;
said reservoir liner permitting the porous pad to reabsorb at least a portion of said ink from the liner upon reexposure of the pad to at least one of the two following normal ambient conditions:
(a) ambient temperature less than about 70° F.;
(b) humidity less than about 80 percent relative humidity.

4,497,276
APPARATUS AND METHOD FOR APPLYING PLASTICIZERS TO FIBROUS FILTER MATERIAL
James W. Sullivan, Glendale, and Robert T. Lewis, Louisville, both of Ky., assignors to Brown & Williamson Tobacco Corporation, Louisville, Ky.
Filed Nov. 16, 1981, Ser. No. 321,979
Int. Cl.³ B05B *9/00*
U.S. Cl. 118—694 **2 Claims**

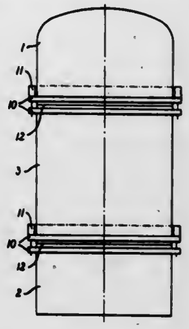


1. An apparatus for applying a controlled amount of a liquid to a moving band of filamentary material, comprising:
a housing through which said band passes and defining a reservoir below and open to the path of said band;
a brush-type liquid applicator rotatably mounted below the path of said band for spraying liquid upwardly and onto said band for absorption by said band;
a dip roller rotatably mounted at said reservoir near said applicator brush and in contact with liquid collected in said reservoir to transfer liquid from said reservoir to said applicator brush;
a supply source of liquid;
flow communication means for establishing liquid flow communication from said supply source to said reservoir;
a constant volume rate of flow pump in said liquid flow communication means for moving a constant volume of flow of liquid from said supply source to said reservoir equal to the amount of liquid to be ultimately absorbed by said band such that, as the liquid not initially absorbed by said band drains back into said reservoir, the liquid level in said reservoir rises so that said dip roller, not having to carry the liquid as far from the raised liquid level in said reservoir to said applicator brush as when the liquid level was lower, carries an excess of liquid to said applicator brush for absorption by said band.

4,497,277
BELL OF OPAQUE FUSED SILICA
Karl A. Schulke, Neuberg, Fed. Rep. of Germany, assignor to Heraeus-Quarzschmelze, Hanau am Main, Fed. Rep. of Germany
Filed Feb. 18, 1983, Ser. No. 467,998
Claims priority, application Fed. Rep. of Germany, Mar. 9, 1982, 3208381
Int. Cl.³ C23C *13/08*
U.S. Cl. 118—733 **20 Claims**

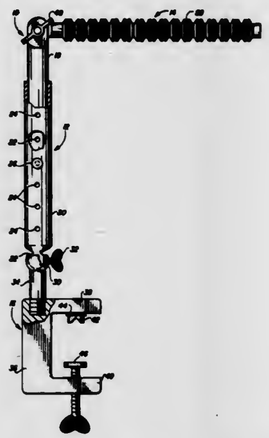
1. A bell of opaque fused silica for use in a high-temperature process, preferably the deposition of silicon, comprising: a dish-shaped end section; a tubular center section; a tubular end section; and means on the ends of the sections comprising a flange on at least one section to be joined to another for joining the sections together in the order recited, the tubular center

section being substantially longer than the other sections, whereby to enclose the zone of highest temperature in the



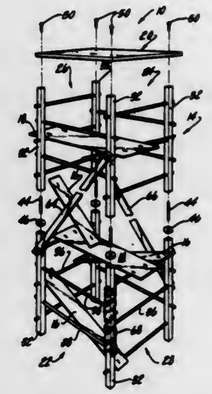
high-temperature process, and all the sections being of a diameter over 500 mm.

4,497,278
PORTABLE BIRD PERCH ASSEMBLY
Richard T. Balder, 4420½ Sepulveda, Sherman Oaks, Calif. 91403, and Michael P. Knutsen, 3833 Sawtelle Blvd., Los Angeles, Calif. 90066
Filed Jun. 11, 1984, Ser. No. 619,779
Int. Cl.³ A01K *31/12*
U.S. Cl. 119—26 **20 Claims**



1. An improved collapsible, portable bird perch assembly, said perch assembly comprising, in combination:
(a) an upraised support arm;
(b) anchoring means secured to said arm adjacent the lower end thereof for releasably attaching said perch assembly to different types of substrates; and,
(c) a bird perch arm secured to the upper end of said upraised supper arm by pivot means for movement between an operative perch position and a compact, collapsed storage position, whereby said assembly is carried from one location to another with said perch arm being collapsed and aligned with said support arm for ease of transport, and whereby said assembly, when at a desired location, is secured by said anchoring means to a substrate and said perch arm is moved about said pivot means to an operative position.

4,497,279
ANIMAL PLAY AND EXERCISE STRUCTURE
Audrey R. Bell, 5252 Blair Rd., Perry, Ohio 44081
Filed Feb. 28, 1983, Ser. No. 470,051
Int. Cl.³ A01K *15/00*; A63B *17/04*
U.S. Cl. 119—29 **11 Claims**

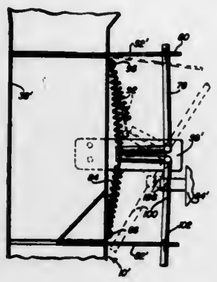


1. An animal play and exercise apparatus, especially for cats, comprising:
a first and a second rigid frame, each frame having a plurality of vertical support members with bores in the ends thereof and a plurality of horizontal rod members;
said support members each having a plurality of apertures, along its length;
said rod members insertable into said apertures interconnecting said support members to form said first and said second frames;
a plurality of recesses adjacent the ends of each of said rod members;
a plurality of plugs insertable into said recesses, said plugs abutting said support members for maintaining said rod members in said apertures;
a plurality of peg and ring-like spacer assemblies, with a spacer slidably disposed along each of said pegs;
said pegs insertable into said bores in said first frame vertical support members and into bores in said second frame vertical support members interconnecting said first frame and said second frame in vertical alignment with said spacers separating said frames;
a plurality of lateral ramp members and at least one horizontal bed member;
a plurality of leather thongs connecting said ramp members to more than one of said rod members on an incline relative to said horizontal rod members; and
a plurality of leather thongs connecting said bed members to more than one of said rod members horizontally relative to said rod members.

4,497,280
TIMER ACTUATED PET FEEDER
Grant H. Sanstrom, and Beverly J. Sanstrom, both of P.O. Box 138, Parker, Wash. 98939
Filed Jan. 9, 1984, Ser. No. 568,886
Int. Cl.³ A01K *5/02*
U.S. Cl. 119—51.11 **9 Claims**

9. A feeder including a hopper for receiving fluent material and provided with a lower downwardly discharging discharge chute, vertical spaced portions of said chute including inversely openable and closable gate means operatively associated therewith for controlling the downward flow of fluent material from said hopper through and from the lower end of said chute, force means yieldingly biasing said gate means

toward positions with the upper gate means open and the lower gate means closed, timer actuatable electrically operated motor means operatively connected to said gate means for shifting said upper and lower gate means toward the closed and open positions, respectively, thereof, said motor means being operatively connected to said lower gate means, only,



for direct shifting thereof from the closed position toward the open position, said lower gate means including a lost motion conection with said upper gate means for positively opening said upper gate means responsive to closing of said lower gate means and allowing said lower gate means to open, under the control of said motor means, in advance of closing of said upper gate means under the influence of said force means.

4,497,281

HEATER

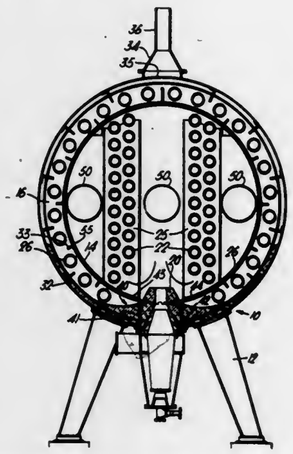
Gerardus A. Markus, S/Gravenzande, Netherlands, assignor to BS&B Engineering Company Inc., Houston, Tex.

Continuation of Ser. No. 494,689, May 17, 1983, abandoned, which is a continuation of Ser. No. 257,128, Apr. 24, 1981, abandoned. This application Apr. 23, 1984, Ser. No. 602,271

Claims priority, application United Kingdom, Jun. 17, 1980, 80190825

Int. Cl.³ F22B *37/10*

U.S. Cl. 122—248 **8 Claims**



1. A heater for heating a process fluid, said heater comprising, in combination:

(a) an elongated main chamber;

(b) a cylindrical wall extending axially of said chamber;

(c) end walls of said chamber;

(d) at least one high intensity burner mounted to project its products of combustion into the main chamber in a direction transverse to the axis of the main chamber;

(e) an annular secondary chamber concentrically surrounding the cylindrical wall of the main chamber;

(f) a first set of heat exchanger tubes in the main chamber, extending substantially parallel to the axis thereof;

(g) a second set of heat exchanger tubes in the secondary chamber, extending substantially parallel to the axis thereof, the adjacent tubes of said first and second sets being laterally spaced to allow the products of combustion to flow therearound;

(h) at least one combustion gas inlet to the secondary chamber comprising at least one refractory shield in which at least one said high intensity burner is mounted in the main chamber, and wings on said refractory shield which extend into the secondary chamber and which are so shaped as to guide gases from the main chamber into the secondary chamber; and

(i) at least one flue outlet from the secondary chamber positioned at a location opposite to the combustion gas inlet from the main chamber.

4,497,282

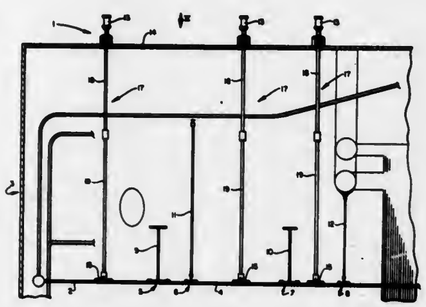
APPARATUS FOR DESLAGGING STEAM GENERATOR TUBES

Mark H. Neundorfer, Chesterland, Ohio, assignor to Neundorfer, Inc., Willoughby, Ohio

Filed Nov. 23, 1983, Ser. No. 554,616

Int. Cl.³ F28G *7/00*

U.S. Cl. 122—379 **19 Claims**



1. Apparatus for deslagging parallel tubes in a steam generator by application of high frequency shock energy comprising vibrator means for producing high frequency shock energy, base plate means extending across and contacting portions of each of a plurality of said parallel tubes for distributing said high frequency shock energy over a relatively large area of said plurality of tubes, means connecting said vibrator means to said base plate means for transmitting high frequency shock energy from said vibrator means to said base plate means, said connecting means including at least one interference fit tapered connection, and wherein means are provided for securing the base plate means in a position against the plurality of tubes to effect good transmission of high frequency shock energy while permitting thermal expansion of the tubes during operation of said steam generator.

4,497,283

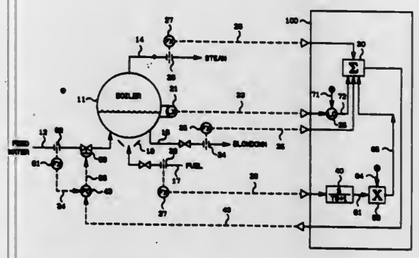
BOILER CONTROL

Ronald J. LaSpisa, and Merle R. Likins, Jr., both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Nov. 18, 1983, Ser. No. 553,443

Int. Cl.³ F22D *5/26*

U.S. Cl. 122—451.1 **10 Claims**



1. Apparatus comprising:

a boiler;

means for supplying feedwater to said boiler;

means for withdrawing steam from said boiler;

means for supplying fuel to a combustion system associated with said boiler, wherein the combustion of said fuel supplies heat to said boiler;

means for establishing a first signal representative of the actual flow rate of said steam;

means for establishing a second signal representative of the actual liquid level in said boiler;

means for establishing a third signal representative of the desired liquid level in said boiler;

means for comparing said second signal and said third signal and for establishing a fourth signal which is responsive to the difference between said second signal and said third signal, wherein said fourth signal is scaled so as to be representative of the difference between the flow rate of steam withdrawn from said boiler and the actual flow rate of said feedwater required to maintain a desired liquid level in said boiler;

means for establishing a fifth signal representative of the actual flow rate of said fuel;

means for establishing a biasing signal, which compensates for the swell or shrink caused by a change in the flow rate of said fuel, in response to said fifth signal;

means for summing said first signal, said fourth signal and said biasing signal to establish a control signal representative of the flow rate of said feedwater required to maintain a desired liquid level in said boiler; and

means for manipulating the flow rate of said feedwater to said boiler in response to said control signal to thereby maintain a desired liquid level in said boiler.

4,497,284

BARREL TYPE ENGINE WITH PLURAL TWO-CYCLE CYLINDERS AND PRESSURIZED INDUCTION

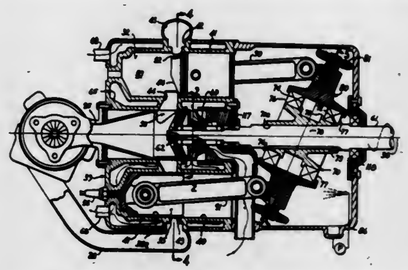
Buford J. Schramm, 1330 E. Fremont Dr., Tempe, Ariz. 85281

Filed Aug. 30, 1982, Ser. No. 413,239

Int. Cl.³ F02B *75/26*; F01B *13/06*

U.S. Cl. 123—41.47 **7 Claims**

1. In a two-cycle engine having an engine axis, an engine block, an axially-extending output shaft journaled to said block, each cylinder having a cylinder axis, and each cylinder axis being parallel to said engine axis, a piston slidably fitted in each of said cylinders for reciprocation along its respective cylinder axis, said cylinders being symmetrically centered around said engine axis, swash plate means mounted to said output shaft for rotation therewith, connecting rod means interconnecting said pistons to said swash plate means whereby reciprocation of said pistons is converted to rotation of said output shaft by said swash plate means, the improvement comprising: an exhaust port from each cylinder facing toward said engine axis and opening onto a generally circular surface, a rotary valve mounted to said output shaft and rotated therewith, said rotary valve being principally bounded by a generally circular surface, said surfaces being coaxial, and spaced from one another in close proximity, said rotary valve having a timing port therethrough adapted, when the rotary valve is turned, sequentially and alternatively to open and to



occlude said outlet ports so as respectively to enable and to impede flow of exhaust gases from the cylinders; a central exhaust gas collector receiving exhaust gases passed by said rotary valve from said cylinders; each of said exhaust ports being partially occluded by an axially-extending exhaust port web which serves to support a sliding piston ring as it moves along the exhaust port, there being a coolant passage extending through said exhaust port web through which coolant flows to cool said web.

4,497,285

COOLING STRUCTURE FOR INTERNAL COMBUSTION ENGINE

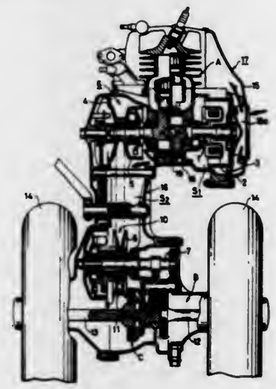
Makoto Kondo, Saitama, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 9, 1982, Ser. No. 416,425

Claims priority, application Japan, Sep. 9, 1981, 56-141912; Sep. 11, 1981, 56-135078[U]; Sep. 18, 1981, 56-138856[U]

Int. Cl.³ F01P *1/06*

U.S. Cl. 123—41.65 **8 Claims**



1. A cooling structure for an internal combustion engine, comprising a crankcase for housing an engine crankshaft, a substantially closed transmission case integral with said crankcase, and an outside cover defining a cooling chamber between said cover and crankcase, said outside cover and said transmission case being located substantially at both ends of said engine crankshaft, said transmission case incorporating therein power

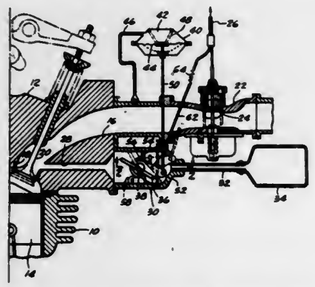
transmission means for an axle, said outside cover incorporating a first air cooling means for introducing atmospheric air from the outside, said cooling chamber and said transmission case communicating with each other through at least one communicating passage, an opening of said communicating passage being positioned inside said outside cover.

4,497,286

INTAKE SYSTEM FOR INTERNAL COMBUSTION ENGINES

Shoji Masuda, Saitama, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 2, 1981, Ser. No. 326,745
Claims priority, application Japan, Dec. 13, 1980, 55-175256
Int. Cl.³ F02B *27/00*
U.S. Cl. 123—52 M **7 Claims**



1. An intake system for an internal combustion engine having a valved intake port, comprising an intake passage extending to the valved intake port of the engine, a throttle valve disposed in said intake passage, a chamber with only one opening in communication with said intake passage between said throttle valve and the valved intake port, a control valve between said chamber opening and said intake passage to control all communication therebetween, and vacuum responsive valve control means for actuating said control valve responsive to vacuum in said intake passage to open said control valve responsive to increased intake passage vacuum and to close said control valve responsive to decreased intake passage vacuum and for overriding said intake passage vacuum to close said control valve with closure of said throttle.

4,497,287

INTAKE SYSTEM WITH OSCILLATOR TUBES

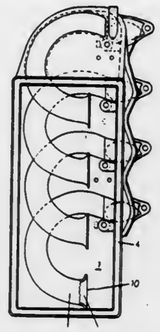
Herbert Schleiermacher, Brühl, and Lothar Bauer, Cologne, both of Fed. Rep. of Germany, assignors to Klöckner-Humboldt-Deutz Aktiengesellschaft, Cologne, Fed. Rep. of Germany

Filed May 13, 1982, Ser. No. 377,815
Claims priority, application Fed. Rep. of Germany, May 14, 1981, 3119190
Int. Cl.³ F02M *35/10*
U.S. Cl. 123—52 MC **22 Claims**

1. A multi-part intake system having a flow direction of suctioned intake combustion air for multi-cylinder internal combustion engines which include a cylinder head for said cylinders, said intake system comprising:

an intake housing including a cylinder-head side as well as having an inside and having an intake housing wall as well as inside and outside surfaces; and

intake oscillator tubes which are curved in more than one plane and which extend inside said intake housing as well as along said intake housing wall toward the cylinder head, said oscillator tubes each being connected with said intake housing in common and the cylinder head as well as respectively having a first end and a second end, with said first end of each oscillator tube being provided with an intake funnel which opens into said common intake housing, and with the second end of each oscillator tube being seated closely on said cylinder head, said intake oscillator tubes at least for a portion thereof consisting of adjoining shell halves having abutting surfaces formed along a single plane thereof lying in flow direction of suctioned intake combustion air with the shell halves being connected with each other, wherein said intake oscillator tubes cross each



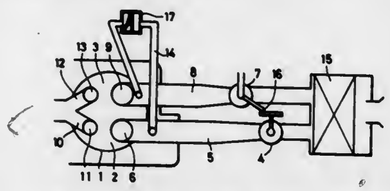
other inside the common intake housing, said adjoining shell halves crossing each other at the tube crossings which lie substantially in a single plane perpendicular to said plane of said abutting surfaces being unified into one structural part, said intake housing wall on the cylinder-head side being constructed as a shell half.

4,497,288

INTAKE DEVICE FOR AN ENGINE

Yoshikatsu Nakano, Saitama; Masaaki Matsuura, and Minoru Akiyama, both of Tokyo, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 11, 1983, Ser. No. 465,716
Claims priority, application Japan, Feb. 13, 1982, 57-20667
Int. Cl.³ F02B *75/18*
U.S. Cl. 123—52 M **4 Claims**



1. An air intake device for an internal combustion engine comprising an air inlet, a cylinder having inlet valve means, a primary carburetor receiving air from said air inlet and delivering an air/fuel mixture to a first intake passage coupled to said inlet valve means; a secondary carburetor receiving air from said air inlet and delivering an air/fuel mixture to a second intake passage coupled to said inlet valve means; means establishing fluid communication between said first intake passage and said second intake passage and, one-way valve means in said means establishing fluid communication allowing fluid from said first intake passage to said second intake passage.

4,497,289

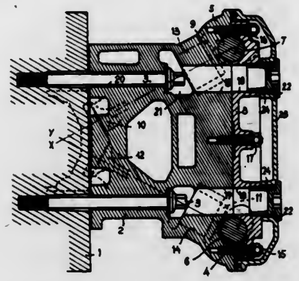
BEARING CAP FOR AN OVERHEAD CAM-SHAFT OF AN INTERNAL COMBUSTION ENGINE

Gérard Bortolussi, Franconville, France, assignor to Societe Anonyme Automobiles Peugeot and Societe Anonyme Automobile Citroen, both of, France

Filed Jun. 7, 1983, Ser. No. 501,916
Claims priority, application France, Jun. 14, 1982, 82 10330
Int. Cl.³ F01L *1/46*
U.S. Cl. 123—90.27 **6 Claims**

6. An internal combustion engine comprising a cylinder

block, a cylinder head, at least one overhead cam-shaft journalled in bearings, one half of which bearings is formed in the cylinder head which is fixed by bolts to the cylinder block while the other half of said bearings is formed in caps fixed by studs to the cylinder head, wherein there are two overhead



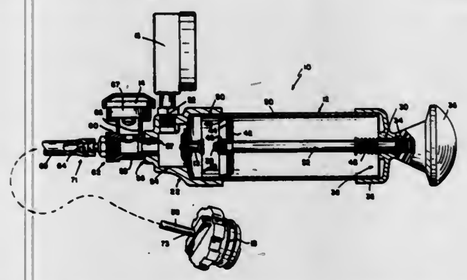
cam-shafts and each cap is provided for both cam-shafts and is secured by a central stud located between the two cam-shafts and has between each cam-shaft and said central stud an aperture for the passage of a bolt securing the cylinder head to the cylinder block.

4,497,290

FUEL SYSTEM TESTER AND PRIMER

Robert S. Harris, Connersville, Ind., assignor to Stant Inc., Connersville, Ind.

Filed Apr. 11, 1983, Ser. No. 483,717
Int. Cl.³ F02N *9/04*
U.S. Cl. 123—179 G **6 Claims**



1. For use with a vehicle fuel system including a fuel tank having a filler neck provided with fastening elements, a portable hand held apparatus for pressurizing the fuel tank and the system, the apparatus comprising

a pump for pressurizing the fuel system, a closure member for coupling the pump to the filler neck, the closure member including fastening elements for removably engaging the fastening elements on the filler neck, a conduit connecting the pump to closure member,

pressure relief means for relieving excess pressure within the fuel system, and

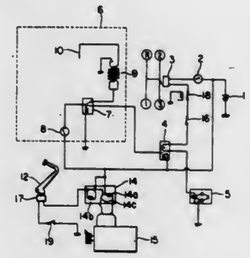
means for coupling the pressure relief means to the pump.

4,497,291

FULL ECONOMIZER FOR VEHICLES

Isao Hamano; Akira Morishita; Yoshifumi Akae; Toshisori Tanaka, and Kiyoshi Yabunaka, all of Himeji, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 30, 1983, Ser. No. 557,224
Claims priority, application Japan, Dec. 2, 1982, 57-183865
Int. Cl.³ F02D *35/00*
U.S. Cl. 123—179 BG **3 Claims**



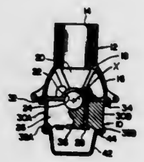
1. A fuel economizer for vehicles comprising a first clutch switch which detects a tread of a clutch pedal of the automobile, a second clutch switch which detects completion of the tread of the clutch pedal, a neutral switch which detects a neutral position of a transmission, a water temperature sensor which detects that a cooling water temperature of an engine falls within a predetermined range, an engine revolution sensor which detects that a rotational speed of the engine is less than a predetermined value, and a control means for automatically stopping the engine a predetermined time after signal generation of said neutral switch when supplied with respective detection signals of said neutral switch and said water temperature sensor and not supplied with a detection signal of said first clutch switch, and for automatically starting the engine when supplied with respective detection signals of said second clutch switch and said engine revolution sensor and not supplied with the detection signal of said neutral switch.

4,497,292

BEARING BEAM STRUCTURE

Yoshimasa Hayashi, Kamakura, and Naoki Ogawa, Yokohama, both of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Oct. 13, 1982, Ser. No. 433,886
Claims priority, application Japan, Oct. 14, 1981, 56-163988
Int. Cl.³ F02F *7/00*; F02B *77/13*; F16M *1/021*
U.S. Cl. 123—195 H **7 Claims**



1. A bearing beam structure of an internal combustion engine having a cylinder block formed with a plurality of bearing sections, said bearing beam structure comprising:

a plurality of main bearing cap sections each of which associates with a cylinder block bearing section to rotatably support a journal of a crankshaft;

a central beam section integrally directly connected with a central part of a lower end portion of each bearing cap

section to securely connect said bearing cap sections with each other;

first and second side beam sections integrally directly connected respectively to opposite end parts of the lower end portion of each bearing cap section to securely connect said bearing cap sections with each other; and

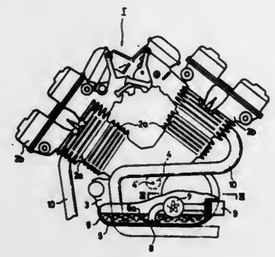
first and second side wall sections respectively integrally connected with opposite side portions of each bearing cap section to securely connect said bearing cap sections with each other.

4,497,293

INTERNAL COMBUSTION ENGINE OF MOTORCYCLE

Masatoshi Takagi, Tokyo, and Wataru Annaka, Saitama, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 19, 1982, Ser. No. 442,990
Claims priority, application Japan, Nov. 28, 1981, 56-189892
Int. Cl.³ F02M *1/00*
U.S. Cl. 123—196 A **13 Claims**



11. An internal combustion engine for a motorcycle, comprising; at least one cylinder, power transmission means, a crankcase accommodating therein said transmission means, and an oil filter disposed at the rear portion of said crankcase, an oil pump disposed within said crankcase,and an oil strainer connected to an inlet of said oil pump, said oil filter being connected to an outlet of said oil pump, a water pump detachable from and positioned outside of said crankcase, a rotary shaft of said water pump being substantially coaxial with a rotary shaft of said oil pump, said crankcase being subdivided into right and left cases, said water pump being secured to said right case from the outside, and said oil pump being secured to said right case from the inside, lower portions of said right and left cases together defining an oil pan, said oil strainer being disposed in said oil pan, and said oil pan being positioned below said transmission means.

4,497,294

ELECTRONICALLY CONTROLLED GOVERNOR FOR DIESEL ENGINES

Kouichi Izumi, Shiki, and Yasuhiro Hiyama, Musashino, both of Japan, assignors to Diesel Kiki Co., Ltd., Japan

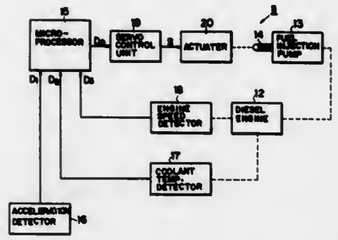
Filed Sep. 15, 1983, Ser. No. 532,735
Claims priority, application Japan, Sep. 16, 1982, 57-159680
Int. Cl.³ F02D *31/00*
U.S. Cl. 123—357 **6 Claims**

1. An electronically controlled governor for Diesel engines, in which the positional control of a fuel adjusting member of a fuel injection pump for injecting and supplying fuel to a Diesel engine is electronically carried out to control the rotational speed of the Diesel engine, said governor comprising:

a computing means responsive to at least one signal indicative of an operating condition of the Diesel engine at each instant for computing positional data showing a target position of said fuel adjusting member for obtaining an amount of fuel injection corresponding to said operating condition;

at least one detecting means for detecting said operating condition of the Diesel engine;

a correcting means for effecting a data correcting operation on said positional data in accordance with predetermined correction formulae in order to stabilize the controlling operation and to improve the response characteristics with respect to rapid changes in the condition of engine operation;



means for determining the coefficients in said data correction formulae in accordance with the detected result of said detecting means; and

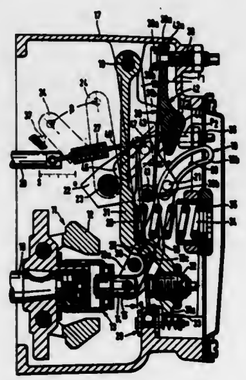
means responsive to the output data from said correcting means for controlling the position of said fuel adjusting member.

4,497,295

MINIMUM-MAXIMUM SPEED GOVERNOR FOR FUEL-INJECTED ENGINES

Werner Brühmann, Stuttgart, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Nov. 15, 1983, Ser. No. 552,199
Claims priority, application Fed. Rep. of Germany, Dec. 18, 1982, 3246992
Int. Cl.³ F02D *31/00*
U.S. Cl. 123—374 **10 Claims**



1. A minimum-maximum speed governor for fuel-injected internal combustion engines, in particular for Diesel vehicle engines, comprising:

a governor lever coupled with a supply quantity adjusting member of an injection pump, said governor lever being actuatable at least indirectly by means of a governor sleeve moved in accordance with engine speed and by means of an adjusting member pivotable in order to vary a fuel supply quantity arbitrarily,

a leaf spring acting as an idling spring, one end of said spring rests on a spring support which is adjustable in order to adjust a prestressing force of the leaf spring and another end of said spring support transmits the force of the leaf spring onto the governor sleeve,

a support bearing placed against the leaf spring, the support bearing being provided with a curved rolloff path determining the effective spring length of the leaf spring, and

an adjusting cam actuatable by the adjusting member, by means of which cam the operative position of the support bearing is variable in accordance with the pivot angle (β) of the adjusting member,

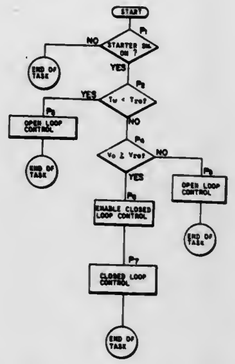
said curved rolloff path of the support bearing being adjustable toward the leaf spring by means of the adjusting cam in accordance with the pivot angle (β) of the adjusting member which is pivotable out of the idling position into a load position, the adjustment of the support bearing being such as to increase a prestressing force of the leaf spring, and that the adjusting cam is supported on a force transmission lever.

4,497,296

ELECTRONIC CONTROL SYSTEM FOR CARBURETOR AND CONTROL METHOD THEREFOR

Masataka Nakajima, Tokyo, and Yasushi Mase, Hachioji, both of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Oct. 27, 1982, Ser. No. 437,001
Claims priority, application Japan, Oct. 30, 1981, 56-173985
Int. Cl.³ F02M *51/00*
U.S. Cl. 123—440 **12 Claims**



1. An air/fuel ratio control system for an electronically controlled carburetor of an engine comprising:

an air/fuel ratio control means in said carburetor for controlling carburetion ratio of fuel supplied to said engine, said air/fuel ratio control means including an actuator responsive to a control signal to control said carburetion ratio of the fuel;

a starter switch which is turned on during engine cranking;

an engine coolant temperature sensor for producing a first signal representative of engine coolant temperature;

an O_2 sensor for producing a second signal representative of air/fuel ratio;

a CLOSED LOOP disabling condition detecting means for detecting a preselected CLOSED LOOP disabling condition, said detecting means being responsive to turning on of said starter switch to detect said preselected condition to produce a third signal when said preselected condition is satisfied; and

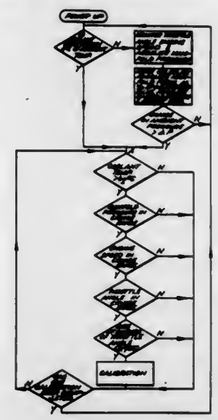
a control unit for selectively performing CLOSED LOOP and OPEN LOOP control for producing said control signal for controlling the operation of said actuator, said control unit performing said CLOSED LOOP control for controlling the actuator operation based on said second signal so as to maintain the air/fuel ratio at a stoichiometric value when said first signal value is above a given value and, otherwise, performing said OPEN LOOP control, said control unit being responsive to said third signal to disable said CLOSED LOOP control even when said first signal value is above said given value.

4,497,297

CONTROL SYSTEM FOR AIR/FUEL RATIO ADJUSTMENT SYSTEM

Neville H. Daniel, Four Oaks, and Hugh M. Duncan, Moseley, both of England, assignors to Austin Rover Group Limited, England

Filed Jul. 26, 1984, Ser. No. 634,584
Claims priority, application United Kingdom, Aug. 15, 1983, 8321175
Int. Cl.³ F02B *3/00*
U.S. Cl. 123—440 **6 Claims**



1. A control system for an air/fuel ratio measurement and adjustment system for an internal combustion engine, the control system comprising: means for measuring the extent of engine inlet throttle opening, engine speed and absolute inlet manifold pressure; means for deriving from stored information an expected inlet manifold pressure to correspond to the measured throttle opening and engine speed; means for deriving and storing the ratio between the expected and actual manifold pressures, means for comparing a subsequently derived ratio between the expected and actual manifold pressures with a previously determined such ratio and means for initiating measurement of the air/fuel ratio in response to a predetermined extent of change in said pressure ratio.

4,497,298

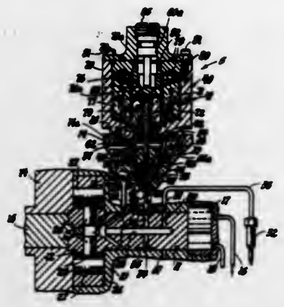
DIESEL FUEL INJECTION PUMP WITH SOLENOID CONTROLLED LOW-BOUNCE VALVE

Frank Ament, Rochester, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Mar. 8, 1984, Ser. No. 587,513
Int. Cl.³ F02M *39/00*
U.S. Cl. 123—450 **3 Claims**

1. In an engine driven, solenoid valve controlled, spill-inject-spill type fuel injection pump having a housing means with an injection pump means therein for sequentially supplying pressurized fuel via a discharge passage means to a plurality of injectors, a supply pump means for supplying fuel via an inlet passage means to the injection pump means, a spill passage means in the housing means in communication at one end with the discharge passage means and at its other end with the inlet passage means and having a solenoid actuated valve including an armature and needle valve operatively associated therewith for controlling the spill-inject-spill flow from the discharge passage means, the improvement wherein said needle valve is a two-piece valve and includes a needle valve tip with a stem extending therefrom, at least the needle valve tip and a portion

of said stem being of steel, the remainder of said stem being of a compliant material having an elastic modulus in the range of



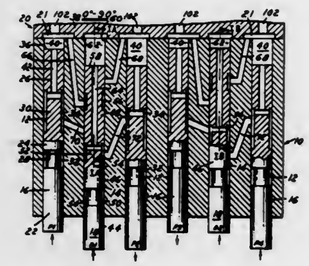
from 50 to 120 times lower than the elastic modulus of said steel.

4,497,299

PLUNGER TYPE FUEL INJECTION PUMP

Michael M. Schechter, Southfield, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Jan. 13, 1984, Ser. No. 570,556
Int. Cl.³ F02M *41/00*
U.S. Cl. 123—451 **8 Claims**



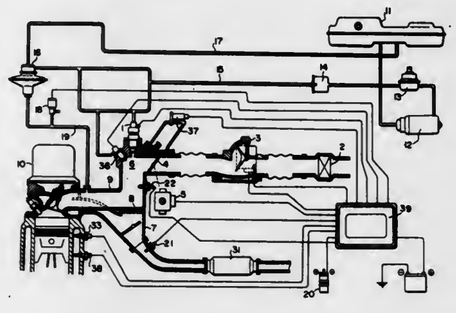
1. A fuel injection pump of the plunger type for an automotive type internal combustion engine, the pump having a plurality of fuel pumping plungers corresponding in number to the number of engine cylinders and each mounted for a reciprocatory movement in a plunger barrel through a fuel pumping stroke in one direction and a fuel intake stroke in the opposite direction, a number of fuel distribution plungers having a source of fuel under pressure connected thereto, the latter number being less than the number of pumping plungers, the distribution plungers also being reciprocably mounted in a plunger barrel for movement between fuel supply positions alternately supplying certain ones of the pumping plungers separately with fuel during the pumping intake stroke of the respective plunger while blocking the return flow of fuel from other pumping plungers during the pumping stroke of the respective pumping plunger, and vice versa, as a function of the position of the distributor plunger, the pumping and distribution plungers all being adapted to be reciprocated in timed relationship to one another by a common engine driven camshaft, each of the plunger barrels defining a fuel chamber at one end for pressurization of the fuel in the pumping plunger chamber during the plunger pumping stroke and for the intake of fuel thereto during the return intake stroke of the plunger, a number of open/closed fuel spill control valve means associated with and equal in number to the distribution plungers, passage means connecting fuel from the distribution plunger fuel chambers to each of the pumping plunger chambers past the spill valve means and back again through the fuel distribution plungers to the source, and electromagnet means operable selectively in timed relationship to reciprocatory movement of the plungers to open and close the spill valve means to control the return of fuel to the source and the pressurization of fuel in the pumping plunger chambers.

4,497,300

FUEL SUPPLY SYSTEM FOR AN INTERNAL COMBUSTION ENGINE

Kimiomi Maruyama, Yokohama, and Yasuo Nakajima, Yokosuka, both of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Continuation of Ser. No. 101,548, Dec. 7, 1979, abandoned. This application Mar. 5, 1982, Ser. No. 355,157
Claims priority, application Japan, Dec. 13, 1978, 53-154479
Int. Cl.³ F02M *51/06, 55/02*
U.S. Cl. 123—463 **26 Claims**



1. A fuel supply control system for a single-point injection internal combustion engine having an intake manifold and including a fuel injection valve connected to a fuel source, an electronic control circuit for controlling opening and closing of said fuel injection valve in accordance with engine driving conditions as detected by sensors for detecting various engine control parameters, and a fuel pressure control means for controlling a fuel pressure of fuel at said fuel injection valve as a function of a vacuum in the intake manifold;

said fuel pressure control means including a vacuum responsive valve means for varying the fuel pressure at the fuel injection valve as a function of engine load, said function varying at a greater rate than the rate of variation of intake vacuum with engine load.

4. A method for controlling fuel pressure at a fuel injection valve in a single point fuel injection internal combustion engine having a fuel supply system for supplying fuel in a controlled amount in synchronism with a spark ignition effected in the engine, said fuel supply system including a control system for determining a fuel amount to be supplied to an induction passage and for controlling said fuel injection valve, said method comprising:

determining a load condition of the engine; and

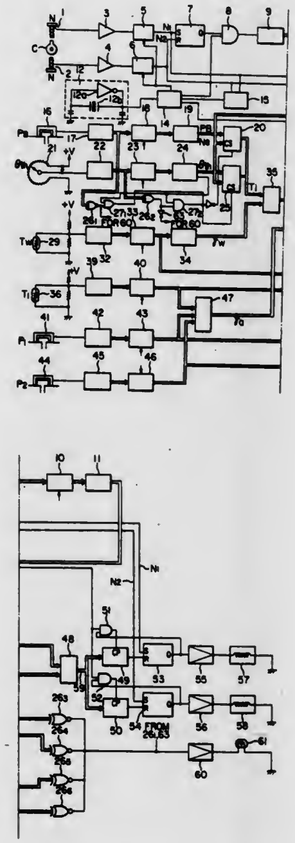
controlling fuel pressure at said fuel injection valve with a fuel pressure regulator means depending upon said engine load condition whereby the fuel pressure at said fuel injection valve is increased at a rate substantially larger than a determined increasing rate of engine load when engine load is increasing, and whereby a pressure difference between the fuel pressure at said injection valve and intake manifold absolute value is increased when the engine load is increased.

4,497,301

ELECTRONIC FUEL INJECTION CONTROL SYSTEM FOR INTERNAL COMBUSTION ENGINES, INCLUDING MEANS FOR DETECTING ENGINE OPERATING CONDITION PARAMETERS

Kazuo Inoue, Nerima, and Tetsuo Yamagata, Bunkyo, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 19, 1982, Ser. No. 350,360
Claims priority, application Japan, Feb. 20, 1981, 56-23175
Int. Cl.³ F02M *51/00*
U.S. Cl. 123—486 **18 Claims**



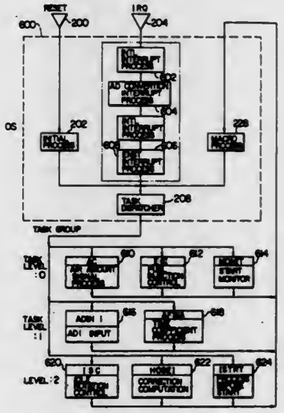
1. A fuel injection control system of the type electronically processing data indicative of a fuel quantity being injected into an internal combustion engine including an intake pipe and a throttle valve arranged in said intake pipe, in dependence upon parameters representative of operating condition of said engine, to obtain an electrical control signal corresponding to the value of processed data, and injecting a quantity of fuel determined by said electrical control signal into said engine, said system comprising: means for detecting a first parameter indicative of the rotational speed of said engine; means for detecting a second parameter indicative of the opening of said throttle valve; means for detecting a third parameter indicative of pressure in said intake pipe at a zone downstream of said throttle valve; means for detecting a fourth parameter indicative of the temperature of said engine; means for generating first data indicative of a basic fuel injection quantity, as a function of a combination of detected values of said first and second parameters; means for generating second data indicative of a basic fuel injection quantity, as a function of a combination of detected values of said first and third parameters; means for causing said second data generating means to generate said second basic fuel injection quantity data when an output value of said second parameter detecting means lies below a predetermined value, and causing said first data generating means to generate said first basic fuel injection quantity data when said output value lies above said predetermined value; means for generating a coefficient for correction of the value of said first or second basic fuel injection quantity data as a function of output of said fourth parameter detecting means; means for correcting the value of first or second basic fuel injection quantity data selectively generated by said first data generating means or said second data generating means, by an amount corresponding to a value of said correction coefficient generated by said correction coefficient generating means; means for generating said electrical control signal indicative of a desired fuel injection quantity corresponding to corrected data obtained by said correcting means; and means for setting the value of said correction coefficient to a value corresponding to a predetermined value of said fourth parameter which falls within a range within which the value of said fourth parameter can vary so long as said engine normally operates, when said fourth parameter detecting means generates an output value lying outside a range within which the output value of said fourth parameter detecting means can vary during normal operation of said engine.

4,497,302

FUEL CONTROL APPARATUS FOR INTERNAL COMBUSTION ENGINE

Takao Sasayama, and Matsuo Amano, both of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 1, 1983, Ser. No. 471,127
Claims priority, application Japan, Mar. 3, 1982, 47-32361
Int. Cl.³ F02P *3/00*; F02B *3/00*
U.S. Cl. 123—489 **7 Claims**



1. A fuel control apparatus for an internal combustion engine, the fuel control apparatus comprising:

means for injecting fuel into an intake path of an internal combustion engine, the injected fuel being transported through said intake path and supplied into at least one combustion chamber of the engine;

means for detecting at least one operating condition of said engine to produce an output signal representing the engine operating condition;

means responsive to the output signal of said detecting means, for calculating a fuel amount to be injected by said fuel injection means;

means responsive to the output signal of said detecting means for calculating a dead time which corresponds

substantially to a transport time of the injected fuel to said at least one combustion chamber of said engine; and

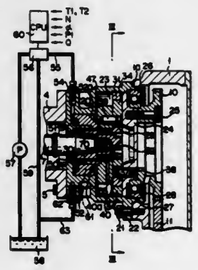
means connected to said fuel injection means, said fuel amount calculating means and said dead time calculating means for altering the beginning time of fuel injection by said fuel injection means in accordance with the dead time and the fuel amount, in order that substantially all of the injected fuel can be supplied into said at least one combustion chamber of said engine.

4,497,303

FUEL INJECTION TIMING DEVICE FOR INTERNAL COMBUSTION ENGINES

Fumiaki Murayama, and Shizuo Handa, both of Kariya, Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Dec. 10, 1982, Ser. No. 448,438
Claims priority, application Japan, Dec. 11, 1981, 56-199758
Int. Cl.³ F02M *59/20*
U.S. Cl. 123—501 **11 Claims**



1. A fuel injection timing device for an internal combustion engine, comprising:

a cam shaft connected to a fuel injection pump;

a driven section coupled to the cam shaft and having a driven flange;

a driving flange adjacent to the driven flange and coaxial with the cam shaft;

a driven gear fixed to the driving flange so as to be coaxial with the cam shaft and in mesh with a driving gear driven by the internal combustion engine in a cylinder block facing the fuel injuection pump;

cam shaft phase angle changing means mounted on the driving flange for advancing and delaying the cam shaft in phase angle in cooperation with the driving flange and the driven flange; and

a casing containing and carrying the driven section, the driving flange, and the cam shaft phase angle changing means and having two ends, one of which is supported by the fuel injection pump and the other of which supports the driving flange and is supported by the cylinder block; wherein

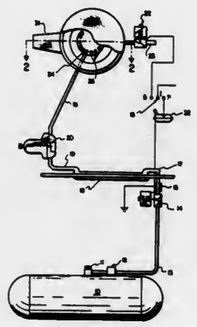
said cam shaft phase angle changing means includes slider means movable by a piston reciprocable in said casing in the radial directions of the driven flange, and eccentric cam means for advancing and delaying, in cooperation with the slider means, the driven flange and the driving flange, and cam shaft in phase angle in accordance with the position of the slider means relative to the driven flange.

4,497,304

FUEL AND AIR MIXING APPARATUS

Reginald Wintrell, and Vaughn R. Anderson, both of Orem, Utah, assignors to Dual Fuels Associates Corporation, Orem, Utah

Filed Apr. 11, 1980, Ser. No. 139,572
Int. Cl.³ F02M *21/02*
U.S. Cl. 123—527 **32 Claims**



1. Apparatus for blending a combustion mixture of fuel and air, and introducing said mixture into the manifold of an internal combustion engine in response to operation of an accelerator, comprising:

a mixing chamber mounted in association with said manifold to sense changes in pressure beneath said chamber in response to operation of said accelerator, and including:

air supply means, including air orifice means in communication with the interior of said chamber to deliver air into said chamber at a rate determined by the pressure within said chamber,

fuel supply means, including fuel orifice means in communication with the interior of said chamber to deliver fuel into said chamber at a rate determined by the pressure within said chamber,

the flow-through capacities of said air orifice means and said fuel orifice means being selected to provide the volume requirements of said manifold and proportioned relatively to effect a predetermined approximately constant area equivalence ratio, and

the flow characteristics of said air supply means and said fuel supply means being selected to effect rapid blending within said chamber, thereby to produce a combustion mixture, and

port means for transferring said combustion mixture to said manifold.

4,497,305

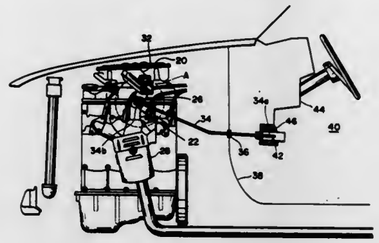
COLD-START BOOSTING DEVICE OF AUTOMOTIVE ENGINE

Masuo Ozawa, Tokyo, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

Filed Nov. 8, 1983, Ser. No. 549,749
Claims priority, application Japan, Dec. 1, 1982, 57-209297
Int. Cl.³ F02M *31/00*
U.S. Cl. 123—556 **11 Claims**

1. In a hot air intake system of an internal combustion engine having an air inlet tube through which air to be fed to the engine proper passes and an exhaust member through which hot combusted gas from the engine proper passes before discharging to the open air, said air inlet tube having a first opening for ambient air and a second opening for hot air, a hot air passage for transmitting heated air from said exhaust member to the second opening, and means for varying the opening degree of the first opening relative to that of the second opening in accordance with the temperature of the ambient air, the improvement comprising:

a heat pipe having a heat absorbing end and a heat emitting end mounted in a position exposed to the air flowing through the interior of said hot air passage; and



a portable thermal storage device detachably connectable in heat exchange relationship to said heat absorbing end of the heat pipe and providing a source of heat accumulated in the thermal storage device to heat the air in said hot air passage through the heat pipe.

4,497,306

IGNITION SYSTEM FOR AN INTERNAL COMBUSTION ENGINE

Kyugo Hamai, Yokosuka; Yasuhiko Nakagawa, Kamakura; Meroji Nakai, Yokosuka, and Ryusaburo Inoue, Yokohama, all of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Jul. 30, 1982, Ser. No. 403,858
Claims priority, application Japan, Aug. 3, 1981, 56-120652
Int. Cl.³ F02D *3/08*
U.S. Cl. 123—620 **8 Claims**

1. An ignition system for an internal combustion engine having a plurality of cylinders and a DC voltage source and at least one engine operating condition detector for generating a signal indicative of an engine operating condition, comprising:

(a) a spark plug for each of said cylinders, each of said spark plugs having a spark gap defined by a first electrode and a second grounded electrode;

(b) an ignition coil for each of said spark plugs, each of said ignition coils having a primary winding and secondary winding, one end of the secondary winding being directly connected to the first electrode of said spark plug and one end of said primary winding being biased by a DC voltage;

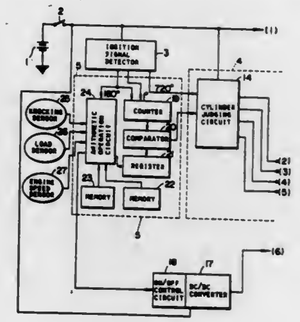
(c) an insulated housing for each of said ignition coils and corresponding spark plugs;

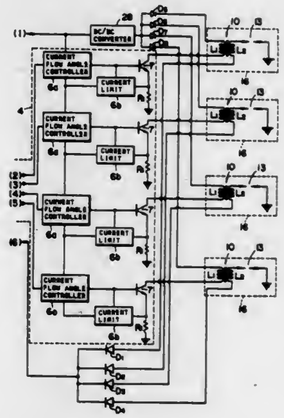
(d) a voltage boosting means connected to another end of the secondary windings of said ignition coils for applying a first boosted voltage to the spark gap of each of said spark plugs, said voltage boosting means including a control means responsive to an engine operating condition for selectively applying or interrupting said first boosted voltage;

(e) an ignition signal detector responsive to the rotation of said engine to generate a first signal having a period determined in accordance with the number of engine cylinders, and a second signal comprising a series of pulses having a pulse width which corresponds to an increment of engine rotation, and a third signal having a period which corresponds to one engine cycle;

(f) an ignition advance angle controller responsive to said ignition signal detector and said engine operating condition detector for determining an optimum spark timing angle relative to a top dead center position of a piston of each engine cylinder and for producing an ignition pulse signal whenever the number of pulses of the second signal reaches a predetermined optimum engine spark timing angle and for producing a control signal to said control means to enable said voltage boosting means to output said first boosted voltage to the secondary windings and thereby to the spark gaps in response to said engine operating condition; and

(g) an igniting means responsive to said ignition advance angle controller and ignition signal detector for sequencially designating which of said plurality of engine cylinders to ignite according to a predetermined ignition order and for generating ignition start signals for selectively interrupting current flow through the primary winding of the ignition coil corresponding to said engine cylinder to be ignited in response to the ignition pulse signal from said ignition advance angle controller to thereby produce a high surge voltage at the corresponding secondary winding.





4,497,307

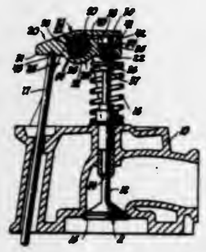
INTEGRAL ROCKER ARM HYDRAULIC LIFTER AND BEARING ASSEMBLY

Michael S. Paar, Battle Creek, and Christopher I. McCarthy, Grandville, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Feb. 3, 1984, Ser. No. 576,721
Int. Cl.³ F01L *1/18*
U.S. Cl. 123—90.33 **3 Claims**

1. A rocker arm assembly for use in the valve train of an internal combustion engine of the type having a fixed rocker shaft for supporting at least one rocker arm, the rocker shaft having an axial passage adapted to be in continuous communication with the pressurized lubricant supply of the engine and

at least one radial riser passage extending from the axial passage; said rocker arm assembly including a rocker arm having a central pivot portion with a bearing receiving bore extending transversely therethrough and opposed drive and driven arms extending from said pivot portion, said drive arm having a lash adjuster socket therein with a passage means extending from said socket to said bore; a hydraulic lash adjuster operatively positioned in said socket; and, a needle bearing and oil feed means operatively positioned in said bore and encircling the rocker shaft over the riser passage, said needle bearing and oil feed means including an outer race having an inner cylinder



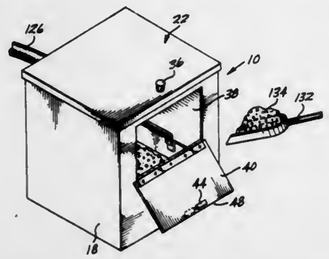
race surface and a radial aperture in fluid communication with said passage means, a plurality of needles operatively positioned on said race surface in rolling contact with a portion of the shaft opposite the riser passage therein and, a semi-cylindrical sleeve bearing fixed to said outer race in operative engagement with said race surface between opposite end ones of said needles whereby to encircle the remaining portion of the shaft, said sleeve bearing having a radial extending port means effecting flow communication between the riser passage in the shaft and said aperture in said outer race whereby lubricant can be supplied to said hydraulic lash adjuster.

4,497,308

ASH RECEPTACLE WITH DUST ELIMINATOR

Robert R. Johnson, 424-4th SE., Pacific, Wash. 98047

Filed Sep. 27, 1983, Ser. No. 536,943
Int. Cl.³ F23J *1/00*
U.S. Cl. 126—242 **5 Claims**



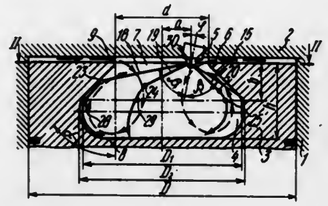
1. An ash collecting receptacle having wall means designed to form a substantially closed chamber having a side located inlet opening;
- an ash collector pan in a lower portion of the receptacle, said pan having a bottom and sidewalls, and a handle;
- said receptacle including a sidewall opening spaced from the inlet opening;
- means mounting a filter member over the inside of said sidewall opening;
- means on the opposite side of the opening for receiving a suction hose leading from a conventional vacuum cleaner;
- whereby the vacuum cleaner can be turned on and used for causing airflow to the filter, so that during ash introduction through the inlet opening into the ash pan within the receptacle, the ash dust will rise and be influenced by the suction provided by the vacuum cleaner towards the filter member, and will be collected by the filter member or drawn into the vacuum cleaner;
- wherein the means mounting a filter member comprises means on diametrically opposite sides of the sidewall opening which with said sidewall defines channels opening towards each other;
- wherein the filter comprises a body of fibrous material having opposite edge portions which are received in the channels; and
- wherein the means for receiving a suction hose comprising a sheet metal base member having edge portions and a central opening, a tube connected to the base member generally about the opening and projecting from the base member, and means on diametrically opposite sides of the sidewall opening which together with the sidewall defines a pair of channels opening towards each other, with edge portions of the base member being receivable in said channels.

4,497,309

INTERNAL COMBUSTION ENGINE

Nikolai N. Ivanchenko; Sergei S. Sokolov, both of Leningrad; Anatoly A. Lazarev; Evgeny M. Katsev, both of Chelyabinsk; Arkady A. Glazunov, and Evgeny S. Gorbunov, both of Leningrad, all of U.S.S.R., assignors to Tsentralny Iauchno-Issledovatelsky Dizelny Institut, Leningrad, U.S.S.R.

PCT No. PCT/SU80/00169, § 371 Date May 12, 1982, § 102(e) Date May 12, 1982, PCT Pub. No. WO82/01218, PCT Pub. Date Apr. 15, 1982
PCT Filed Sep. 29, 1980, Ser. No. 380,931
Int. Cl.³ F02B *23/06*
U.S. Cl. 123—276 **6 Claims**



1. A diesel engine, comprising:
- at least one cylinder;
- a cylinder head at the top of said cylinder, said cylinder head having air inlet means for letting air into said cylinder;
- an injection nozzle for injecting fuel jets into the top of said cylinder; and
- a piston having a combustion chamber for receiving said fuel jets when said piston is adjacent said cylinder head, said combustion chamber having a frustoconical side surface extending from a relatively narrow open throat at the top of said chamber to a transition region adjacent a relatively wide bottom surface of the chamber, said throat having a peripheral edge,
- said frustoconical side surface tapering in the direction of the throat at an angle of 30°–60° to the cylinder axis,
- the diameter of said throat being equal to 0.32–0.37 times the cylinder inside diameter,
- the transition region from said frustoconical side surface of said bottom surface of the combustion chamber being smooth along a radius thereof,
- the diameter D_1 of the combustion chamber at a distance b from said throat edge equal to half the height h of the combustion chamber between the closest plane of said throat edge and said bottom surface being less than the maximum diameter D_2 of the transition region,

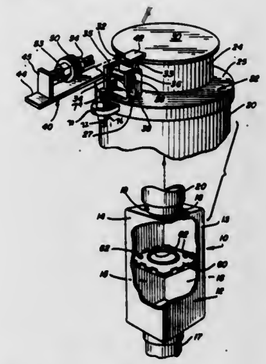
- said injection nozzle being mounted in an inclined position in the cylinder head relative to the cylinder axis, said injection nozzle being positioned relatively close to the throat edge and relatively remote from the center of said throat, at a position permitting penetration of fuel jets from said nozzle into said combustion chamber through the throat thereof,
- said injection nozzle having at least four fuel jet channels for directing fuel jets onto the side surface of the combustion chamber, so that mixing is effected when the fuel jets are acted upon by radial vortex streams of an air charge appearing in the combustion chamber during the motion of the piston at the end of the compression cycle and at the beginning of the expansion cycle,
- the extended axes of said fuel jet channels intersecting the side surface of the combustion chamber above the portion thereof having the diameter D_1,
- said extended channel axes forming different angles with each other and dividing each horizontal section of said side surface into a plurality of parts,
- the angle between the projections of the extended channel axes of a first pair of adjacent channels for supply of fuel onto the closest part of the combustion chamber side surface to said nozzle being 1.8 to 2.2 times the angle between the projections of the extended channel axes of any other pair of adjacent channels for supply of fuel onto the portion of the combustion chamber side surface which is most remote from said nozzle,
- said channel axes being inclined at an angle β from the longitudinal axis of said nozzle and intersecting at a point lying substantially in the plane of the upper edge of said throat when the piston is in the top dead center position thereof, said channel axes being generatrices of a conical surface with a vertex angle 2β,
- said injection nozzle being inclined from a vertical axis parallel to the cylinder axis by an angle ϕ, said frustoconical side surface intersecting the side surface of the combustion chamber (i) on the side of the throat closest to the nozzle at a depth of $\frac{1}{3}b$ from the throat edge, and (ii) on the side of the edge of said throat most remote from the nozzle at a depth of $\frac{1}{3}b$, where b is equal to half the height of the combustion chamber between the plane of said upper throat edge and said bottom surface.

4,497,310

FLUE BOX WITH ADJUSTABLE COUNTERBALANCE CAP

Craig D. Funke, Chicago, Ill., assignor to NRG Systems, Inc., Chicago, Ill.

Filed Feb. 13, 1984, Ser. No. 579,259
Int. Cl.³ F23L *3/00*
U.S. Cl. 126—292 **3 Claims**



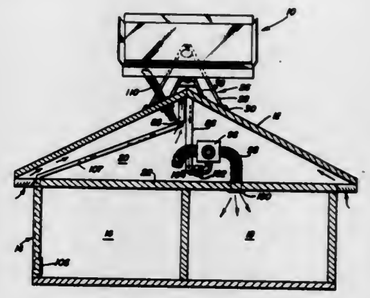
1. A flue box assembly of the type for use in conjunction with a heating plant having a housing with an interior diametric opening substantially greater than the exhaust gas inlet to and outlet from the interior of the housing, the housing having an inlet opening for flue gases to enter the housing and an outlet opening for flue gases under pressure to exit from the housing, and the housing including damper means pivotally mounted therein to permit movement between an open position and a closed position, the damper means further having a flue opening positioned therein, the flue opening being diametrically smaller than either the inlet or the outlet openings of the housing, the improvemnt comprising in combination,
- a cap pivotally mounted on said housing adjacent the outlet opening thereof,
- said cap adapted to pivotally move between a closed position occluding the outlet opening of the housing and an open position whereby the outlet opening is unobstructed,
- said cap further including a holding bar mounted on said cap in juxtaposition with respect to the pivotal mounting point of said cap and extending radially outwardly therefrom,
- and adjustable counterbalancing means associated with said cap for adjusting the relative pressure necessary to move said cap into an open and closed position respectively in relation to the force exerted by flue gases escaping through said outlet opening,
- said counterbalancing means comprising a threaded rod associated with and extending radially outwardly from a pivotal mounting point of said cap,
- said threaded rod including a threaded weight, threadedly carried thereon thereby to be threadedly movable along the length of said rod such that said weight may be moved toward and away from said cap thereby to adjust the relative pressure necessary to move said cap into an open and closed position respectively,
- said threaded rod being mounted on and carried by said holding bar having said threaded weight threadedly secured thereon for movement along the length of said threaded rod,
- whereby said cap is adapted to pivotally move to an open position in response to pressure exerted thereagainst by the flue gases exiting through the housing outlet opening, said counterbalancing means permitting the adjustment of the pressure exerted by said cap against the flow of flue gases thereby to adjust the degree by which said cap will open.

4,497,311

SUN TRACKING SOLAR AIR HEATING SYSTEM

Frank J. Brandenburg, Jr., Rte. 1, Box 487 S, Ashland, Va. 23005

Filed Aug. 26, 1982, Ser. No. 412,525
Int. Cl.³ F24J *3/02*
U.S. Cl. 126—425 **10 Claims**



9. A sun tracking solar air heating system for buildings having a roof and an enclosed space below the roof, said heating system comprising a solar collector, means mounting the solar collector on the roof in inclined relation for facing the sun, means connected to the solar collector for pivoting the

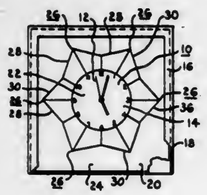
solar collector about a vertically inclined axis relative to the horizon for tracking the sun across the sky from sun up to sundown and returning the solar collector to an original position during the nighttime, and a flexible duct system connected with the solar collector and extending through the roof for communication with the space to be heated, said flexible duct system being connected to the solar collector and the roof in a manner to maintain the waterproof integrity of the roof and solar collector, said solar collector being of box-like configuration and provided with an open top closed by glazing material to provide an air space within the collector and a plurality of screen mesh panels oriented in spaced relation and positioned interiorly of the solar collector for storing heat within the collector and increasing the temperature of the air space within the collector, said flexible duct system including an enlarged flexible duct, a pair of smaller flexible ducts disposed within the larger duct for circulation of warm air downwardly from the solar collector and upward movement of cold air into the solar collector.

4,497,312

BREATHING AND RELAXATION PROGRAMS TO AID CHILDBIRTH

Brian K. Byrd, P.O. Box 169, Lehigh Acres, Fla. 33936

Filed Nov. 23, 1983, Ser. No. 554,536
Int. Cl.³ G04B *19/06*
U.S. Cl. 128—1 R **7 Claims**



1. A breathing and relaxation timing and training device to assist an expectant mother to relax and cooperate with the normal bodily functions including the contractions that are brought into action as the time for child delivery approaches, comprising a timepiece having a dial and a second hand movable relative to the dial, a frame superimposed over the dial and having a channeled frame to successively receive one of a series of chart overlays, each of the chart overlays having a series of time related intervals marked thereon to indicate a specific time related breathing and relaxation pattern, the chart overlays being so proportioned that when a chart overlay is positioned in the channeled frame the dial of the timepiece and the position of the second hand relative to the markings of the dial and the markings of the chart overlay are visible to indicate a specific breathing and relaxation pattern.

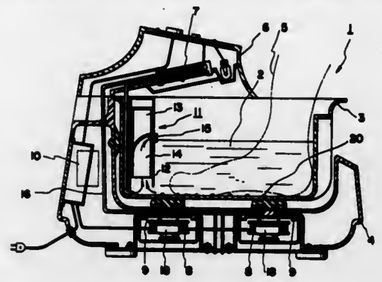
4,497,313

FOOT BATH

Tadashi Kurosawa, Urawa, Japan, assignor to Tensho Electric Industrial Co., Ltd., Tokyo, Japan

Filed Dec. 3, 1982, Ser. No. 446,602
Int. Cl.³ A61H *7/00*
U.S. Cl. 128—24.1 **5 Claims**

1. A foot bath comprising:
a bath body for containing hot water, which a foot is to enter, said bath body having a cover having an opening therein;
far infrared ray radiating means, provided in said cover, for radiating far infrared rays to the foot and the hot water, said radiating means including a ceramic layer in the cover and heating means for heating said ceramic layer to produce said far infrared rays;
vibrating means, provided under said bath body, for providing vibration to the foot in said bath body;
and means for generating a jet water stream in said bath body, said generating means, including a pump connected to said vibrating means so as to be driven by said vibrating means, an air transferring pipe connecting said pump and



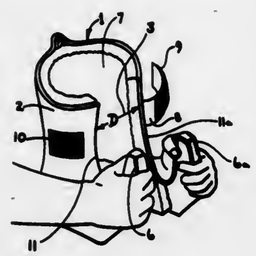
the bottom of said bath body to transfer air from said pump to the bottom of said bath body while the air is being heated by said infrared rays, and a nozzle provided in said bath body to mix the air heated by said infrared rays with the hot water in said bath body to eject the jet water stream as a mixture of heated air and hot water at the surface of the hot water in said bath body.

4,497,314

ANKLE SUPPORTING DEVICE FOR INVERTED POSTURE

Jack V. Miller, Sierra Madre, Calif., assignor to Gravity Guidance, Inc., Duarte, Calif.

Filed Dec. 2, 1982, Ser. No. 446,482
Int. Cl.³ A61H *1/02*
U.S. Cl. 128—75 **8 Claims**



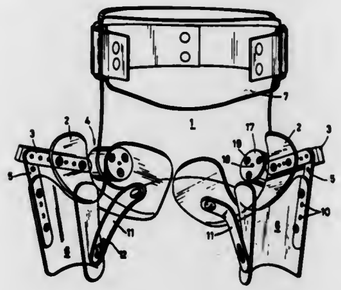
1. An ankle-supporting device for supporting a human in inverted posture comprising,
a tubular clamp of generally cylindrical shape, configured of substantially rigid material so as to conform to the approximate shape of a human ankle;
a longitudinal slit along the anterior length of the tubular clamp;
an integral extension projecting in the anterior direction from each edge of the longitudinal slit, each extension including a hook means open in the proximal direction and adapted to receive a horizontal bar such that said hook means are secured against outward lateral movement by said horizontal bar; and
a flexure portion integral with the posterior side of the tubular clamp, extending longitudinally, and having sufficient resilience to permit the hook means to be separated a distance at least the width of the human ankle for receiving the ankle into the tubular clamp.

4,497,315

ORTHOPEDIC DEVICE FOR TREATING HIP DISPLEASURE AND HIP LUXATION

Ewald Fettweis, Aachen, and Wolfgang Kindler, Cologne, both of Fed. Rep. of Germany, assignors to Otto Bock Orthopaedische Industrie KG, Duderstadt, Fed. Rep. of Germany

Filed Apr. 2, 1982, Ser. No. 364,661
Claims priority, application Fed. Rep. of Germany, Apr. 7, 1981, 3113981
Int. Cl.³ A61H *5/02*
U.S. Cl. 128—78 **13 Claims**



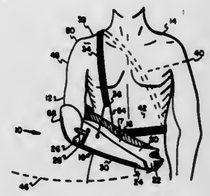
1. An orthopedic device for treating hip displeasure and hip luxation, comprising
a pelvic basket;
two thigh holders;
two thigh-guiding members having two ends, one end of each of said thigh guiding members being pivotally connected with said pelvic basket, whereas the other end of the same is connected with a respective one of said thigh holders;
two joints each provided in the region of a natural hip joint for providing said pivotal connection between said pelvic basket and a respective one of said thigh-guiding members and formed as a universal joint, each of said joints having a moveable joint part which can be arrested in any angular position; and
a further universal joint provided between the moveable joint part of each of said first-mentioned universal joints and a respective one of said thigh-guiding members, and having an axis.

4,497,316

CANTILEVERED SUSPENSION SLING

James A. Lilla, 4431 Ashton Dr., Sacramento, Calif. 95825

Filed Jul. 1, 1982, Ser. No. 394,445
Int. Cl.³ A61F *5/10*
U.S. Cl. 128—94 **4 Claims**



1. A method of supporting an arm of a patient, comprising the steps of:
forming a semi-rigid arm support member into a trough having a pair of lateral side portions positioned on each side of the patient's forearm;
partially encircling the patient's forearm with the trough;
placing the elbow and distal end of the patient's arm within the trough;
coupling one end of a strap to the middle portion of the trough and coupling the other end of the strap to the trough near the patient's elbow;
extending the strap over the ipsilateral shoulder of the patient, diagonally downwardly across the patient's back, and across the front of the patient's body, and adjusting the length of the strap to suspend the trough from the strap and elevate the patient's forearm to a predetermined position while permitting lateral movement of the distal end of the patient's forearm and rotation of the patient's upper arm at the shoulder joint.

4,497,317

VAGINAL DEVICE FOR CONTRACEPTIVE CONTROL

Enrica Boschetti, Via Melchiorre Gioia, 171, 20125 Milano, Italy

Filed Nov. 22, 1982, Ser. No. 443,744
Claims priority, application Italy, Dec. 9, 1981, 25486 A/81
Int. Cl.³ A61F *5/46*
U.S. Cl. 128—127 **14 Claims**



1. A contraceptive vaginal device comprising a substantially elastic ring of a generally circular shape and having a general plane; and a hollow elastic container made of expandable fabric and having walls impregnated with a spermicide or contraceptive medicinal substance, said ring being insertable into said container to stretch its walls and to shape it into a vaginal barrier, said container being of a substantially ellipsoid shape and being formed with a first opening for receiving said ring and including means for closing said opening after said ring has been inserted into said container, said container having a larger axis and a smaller axis and being adapted to receive said ring with its general plane lying along said larger axis or along said smaller axis, whereby said container and said ring are geometrically adjustable to each other and form in assembly said vaginal barrier of a cup-like shape having a periphery substantially coinciding with the periphery of said ring so that two walls of said container are superpositioned one on another, said container being provided with a tubular collar extended along said first opening, said closing means being a yarn received in said tubular collar, said yarn having free ends which are pulled and knotted by a user to close said first opening after said ring has been inserted into said container.

4,497,318

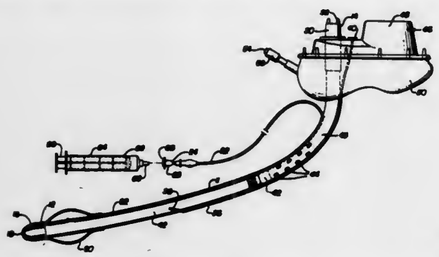
ESOPHAGEAL OBTURATOR AIRWAY

T. A. Donmichael, 2108/2110 Truxtun Ave., Bakersfield, Calif. 93301

Filed Apr. 9, 1982, Ser. No. 366,913
Int. Cl.³ A61M *16/00*
U.S. Cl. 128—202.28 **8 Claims**

1. A medical device for use during cardiopulmonary resuscitation and similar medical procedures, comprising:
(a) a flexible, elongated conduit configured for insertion into the esophagus and having a cross-sectional area approximately the same as the cross-sectional area of a normal esophagus, a proximal end and a distal end, said conduit further having an expandable element joined to said conduit adjacent said distal end, means for expanding said expandable element thereby forming a seal isolating the

stomach of a patient from the lungs, a solid sealing plug disposed in said conduit and dividing said conduit into first and second sections, with said first section, having a length approximately twice the length of said second section, adjacent said distal end, said sealing plug preventing fluid from flowing thereacross, a tube means, having a diameter substantially smaller than said conduit, for venting said first section, said tube means being externally joined to and having one end extending from the proximal end of said conduit along the length of said second section



and a second end extending through the wall of said conduit such that it is in flow communication with said first section, and a series of openings disposed in said second section and located so as to enable air or other fluid to flow between said second section and the patient's lungs; and

(b) a face mask having means for engaging said proximal end of said conduit and said one end of said tube means wherein said engaging means communicates said conduit and said tube means to the exterior of said face mask.

4,497,319

LASER IRRADIATING APPARATUS

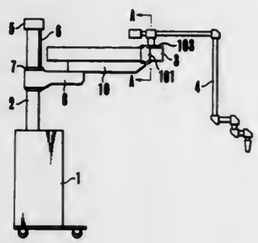
Kunio Sekine, Tokyo; Michihiro Kaneda; Kiichiro Shinokura, both of Kanagawa; Norihiro Suenaga, Tokyo, and Nobuyuki Suenaga, Kanagawa, all of Japan, assignors to Nippon Infrared Industries Co., Ltd., Tokyo, Japan

Filed Nov. 16, 1982, Ser. No. 442,089

Claims priority, application Japan, Nov. 19, 1981, 56-172677[U]

Int. Cl.³ A61B *17/36*

U.S. Cl. 128—303.1 **1 Claim**



1. A laser irradiating apparatus comprising: a power supply box, a vertical shaft arranged on said power supply box, a first arm disposed horizontally with respect to the vertical shaft and slidably movable vertically thereof and rotatably disposed thereabout, a second arm rotatably mounted to the first arm and including an upper surface and a head tip at one end thereof, a laser head having a lower side and an upper side, said lower side supported and fixed onto the upper surface of said second arm, a multi-joint articulated arm light guide provided at the tip of the laser head to guide the laser beam generated in said laser head to a desired target, a support arm provided at the head tip of the second arm, and a support plate fixed by said support arm and covering the upper side of the tip portion of the laser head, said support plate fixedly supporting the light guide thereon.

4,497,320

SURGICAL BLADE UNIT

James E. Nicholson, Lincoln, and James P. Ryan, Milton, both of Mass., assignors to Rudolph Beaver, Inc., Waltham, Mass.

Filed Feb. 14, 1983, Ser. No. 466,203

Int. Cl.³ A61B *17/32*

U.S. Cl. 128—305 **11 Claims**



1. A surgical blade unit for receiving substantial cutting load and adapted for use with a selected shaft-form handle that has, at its distal end, an axially aligned blade-unit receiving opening, said blade unit comprising:

(a) a metal blade defining a working edge and a load-transmitting, axially elongated metal support shank extending from said edge, and

(b) an intermediate load-transferring member of synthetic resin permanently molded about a proximal portion of said shank,

the distal extremity of said intermediate member being spaced proximally from said working edge leaving said blade and a substantial length of the distal portion of said shank exposed,

a proximal portion of said intermediate member defining an attachment fitting adapted to engage in load-transferring relationship with said handle,

the proximal portion of said shank extending through the intermediate member substantially into the region of said attachment fitting and being permanently embedded within said intermediate molded member to define an elongated, load-transferring interface therewith,

said intermediate member being comprised of synthetic resin that has substantial tensile and shear strength and being constructed and arranged to receive via said attachment fitting the surgeon's forces on said handle, and to receive via said substantial load-transferring interface, forces from said proximal end of said shank attributable to the resistance encountered by said metal blade, the substance of said intermediate member adapted to transfer said surgeon's forces to overcome said resistance forces while maintaining said blade in fixed relationship to said handle.

4,497,321

EAR TAG APPLICATORS

D. Michael Fearing, St. Paul, and George N. Johnson, Stillwater, both of Minn., assignors to Fearing Manufacturing Co., Inc., St. Paul, Minn.

Filed Jun. 1, 1982, Ser. No. 383,573

Int. Cl.³ A01K *11/00*

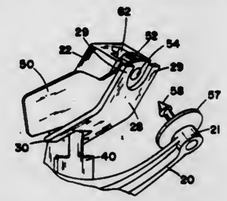
U.S. Cl. 128—330 **5 Claims**

1. An applicator for applying a first portion of an ear tag having a sharp point to the ear of an animal comprising:

a first jaw having means for holding the first portion of an ear tag having a sharp point for piercing through the ear of an animal;

a second jaw, said second jaw having a blunting area for blunting the sharp point on the first portion of the ear tag, said second jaw having an angled pivotal member for holding a second portion of an ear tag, said angled pivotal member having means thereon for holding the second portion of an ear tag in said second jaw and said angled pivotal member being spaced a distance from said second jaw so that a channel large enough to accomodate a portion of said second portion of an ear tag is formed between said second jaw and said angled pivotal member for holding the second portion of an ear tag in a bent position along said second jaw to thereby permit said second jaw and said second portion of an ear tag to be inserted into the ear of an animal;

means for opening and closing said first jaw and said second jaw, said first jaw and said second jaw having an open



position so that the ear of an animal can be inserted between said first jaw and said second jaw;

said first jaw and said second jaw having a closed position so that when said first jaw and said second jaw are moved from the open position to the closed position said means for holding the first portion of an ear tag forces the sharp point of the first portion of the ear tag through the animal's ear and into the blunting area to thereby stop further penetration of the ear tag and to blunt the sharp point of the ear tag.

4,497,322

ULTRASONIC DETECTION APPARATUS

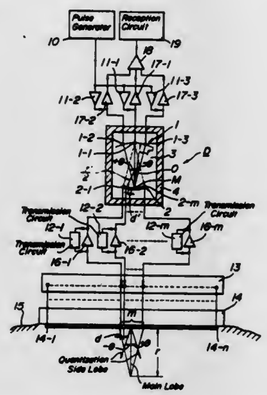
Tatsuo Nagasaki, Musashino, Japan, assignor to Olympus Optical Co. Limited, Japan

Filed Jun. 3, 1982, Ser. No. 384,497

Claims priority, application Japan, Jun. 5, 1981, 56-85616

Int. Cl.³ A61B *10/00*

U.S. Cl. 128—660 **6 Claims**



1. In an ultrasonic detection apparatus for forming a tomographic image of an object comprising

means for generating driving pulses;

means for delaying the driving pulses by predetermined delay times to produce delayed driving pulses;

probe means having an array of a plurality of electroacoustic oscillator elements arranged at a given pitch for generating focused ultrasonic waves in response to said delayed driving pulses into said object and for receiving ultrasonic waves reflected by the object to produce electric signals; and

display means for receiving said electric signals by means of said delaying means to display a tomographic image of the object, the improvement wherein said delaying means comprises a surface wave propagating medium, a first electroacoustic transducer including at least one main surface wave electrode applied on a surface of the propagating medium and a plurality of sub surface wave electrodes provided on the same surface of the propagating medium, and a second electroacoustic transducer including an array of surface wave electrodes provided on the same surface of the propagating medium, said main and sub surface wave electrodes of the first electroacoustic transducer being arranged along an arc having a center situating at a middle point of the second electroacoustic transducer and said sub surface wave electrodes being so arranged that lines connecting respective sub surface wave electrodes with said middle point make, with respect to a line connecting the main surface wave electrode with said middle point, angles which are equal to angles between a main lobe and quantization side lobes of the ultrasonic wave beam emitted from said probe means.

4,497,323

EXHAUST VALVE HAVING A CONSTANT BLEED RATE

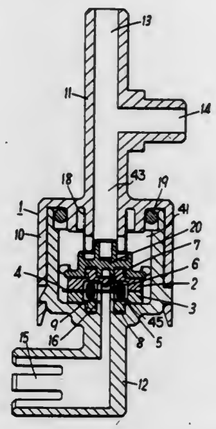
Masahiro Matsuura; Tsutomu Ichinomiya, and Hideaki Abe, all of Shiga, Japan, assignors to Matsushita Electric Works, Ltd., Kadoma, Japan

Filed Sep. 28, 1982, Ser. No. 425,914

Claims priority, application Japan, Nov. 14, 1981, 56-182876

Int. Cl.³ A61B *5/02*

U.S. Cl. 128—685 **12 Claims**



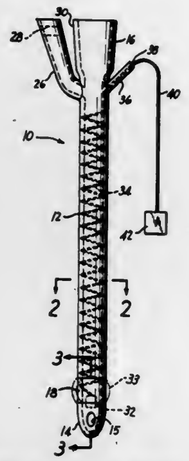
1. An exhaust valve comprising a first passage for receiving a fluid to be exhausted, a second passage for exhausting said fluid, a pair of abutting plates interposed in a fluid flow path between said first and second passages, means for biassing said pair of plates into pressurized contact with each other at least in part by a pressurized fluid in said first passage, at least one of said plates being formed of a resilient material, and a gap-forming member interposed between said abutting plates and forming a gap between said plates which serves as a variable flow exhaust path between said first and second passages.

4,497,324

TEMPERATURE MONITORING CATHETER

Michael D. Sullivan, Glendale; Robert L. Murtfeldt, Redondo Beach, and Arthur R. Yelsey, Corona del Mar, all of Calif., assignors to American Hospital Supply Corporation, Evanston, Ill.

Filed Oct. 3, 1983, Ser. No. 538,715
Int. Cl.³ A61B *10/00*
U.S. Cl. 128—736 **21 Claims**



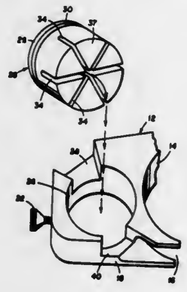
1. A temperature monitoring catheter, comprising:
an elongated shaft having a distal end, a proximal end and a wall portion defining a drainage lumen extending longitudinally through the shaft and opening through a drainage opening at the proximal end of the shaft;
temperature sensing means for determining temperature and converting such determined temperature to an electric signal, imbedded in the wall at the proximal end of the shaft; and
a bifilar electrical wire coil helically extending around the drainage lumen and imbedded in the wall of the shaft, connected at one end to the temperature sensing means and providing an end extending from the shaft at the distal end of the shaft for connecting to a power source and a temperature monitor.

4,497,325

ULTRASOUND NEEDLE, BIOPSY INSTRUMENT OR CATHETER GUIDE

Victor J. Wedel, P.O. Box 182, Kalona, Iowa 52247

Filed Jul. 15, 1982, Ser. No. 398,623
Int. Cl.³ A61D *10/00*
U.S. Cl. 128—754 **7 Claims**



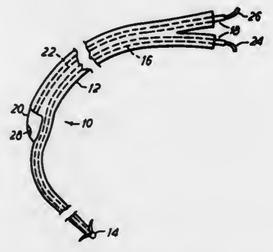
1. A device for use in connection with an ultrasound transducer for guiding medical instruments through the skin and into a selected body part of a patient, said device comprising a main body, attachment means on said main body providing for operative connection of the device to a transducer, said main body having a contact surface for engaging the skin of the patient in the area of the selected body part, said main body also having a cylindrical-shaped opening with the axis of the opening parallel to the plane of the contact surface, and a cylindrical-shaped guide member removably positioned in said cylindrical-shaped opening and turnable about said axis, said cylindrical-shaped guide member having a plurality of guide slots formed therein each along a diameter of said guide member to receive a medical instrument therein.

4,497,326

HEART PACING LEAD

Paul V. L. Curry, 6 Windermere Rd., Kingston Vale, London SW15 3QP, England

Filed Apr. 5, 1982, Ser. No. 365,707
Claims priority, application United Kingdom, Apr. 6, 1981, 8110732; Jan. 29, 1982, 8202539
Int. Cl.³ A61N *1/04*
U.S. Cl. 128—785 **6 Claims**



1. A transvenous heart pacing lead comprising an elongated lead body; a ventricular electrode mounted at one end of the lead body; terminal means provided at the other end of the body for connection with a pacing device; first conductor means in the lead body establishing electrical contact between said ventricular electrode and said terminal means; an atrial electrode supported directly on the lead body at a spaced location toward the said other end of the lead body such that the atrial electrode can in use be brought into contact with the atrial wall through manipulation of the lead body; second conductor means in the lead body establishing electrical contact between said atrial electrode and said terminal means; a bore extending longitudinally of the lead body enabling the introduction from said other end of the lead body of a guide wire; and a fixing element movably mounted in the atrial electrode between a first position within the electrode and a second position extending therefrom in response to manipulation of the guide wire to anchor the atrial electrode to the atrial wall.

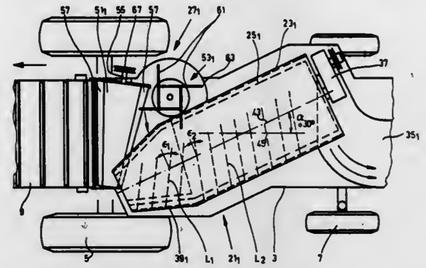
4,497,327

COMBINE HARVESTER WITH ANGLED AXIAL THRESHER

Franz Hug; Franz Johler, both of Gottmadingen, and Reimar Franke, Dillingen, all of Fed. Rep. of Germany, assignors to Klockner-Humboldt-Deutz AG, Fed. Rep. of Germany

Filed Aug. 31, 1982, Ser. No. 413,482
Claims priority, application Fed. Rep. of Germany, Sep. 4, 1981, 3135118
Int. Cl.³ A01F *12/10*
U.S. Cl. 130—27 T **35 Claims**

1. A movable combine harvester with axial thresher including a mowing apparatus, a conveyor connected thereto for the cut harvest product, a rotating threshing and separating drum assembly defining an axis of rotation accommodated in a drum housing for axially threshing harvested product, and an inserting device for transferring the harvest product delivered by the conveyor into an inlet of said drum housing, wherein the rotation axis (43) of the threshing and separating drum assembly (25) is disposed in the horizontal plane at an acute angle to



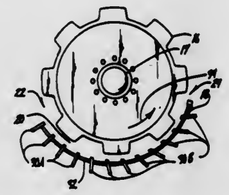
the longitudinal axis (45) of the combine harvester (1), the drum housing having at the forward end facing the conveyor (9), a tangential inlet (47_1) defined by a sidewall of the housing which serves as a guide wall (49_1), for the harvested crop extending to guide said crop from the conveyor (9), into said tangential inlet (47_1).

4,497,328

COMBINE CONCAVE

Arthur L. Alm, Rte. #1, Box 12, and Murry W. Schuler, Rte. #2, Box 66, both of Griswold, Iowa 51535

Filed Sep. 15, 1983, Ser. No. 532,373
Int. Cl.³ A01D *12/24*
U.S. Cl. 130—27 K **3 Claims**



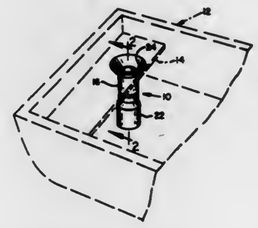
1. In combination, a combine cylinder having an axis of rotation, and a concave closely spaced with respect to said cylinder, said concave having an intake end and a discharge end,
said concave comprising,
a plurality of elongated, generally arcuately shaped parallel support members,
a plurality of elongated bars mounted on said support members such that the longitudinal axes of said bars are generally perpendicular to said support members and parallel to the axis of rotation of said cylinder,
said bars being permanently rigidly fixed to said support members and being generally rectangular in cross section including relatively narrow inner and outer edges with the inner edge positioned adjacent a portion of said cylinder, and relatively wider oppositely facing side edges extending generally away from said inner edge and said cylinder,
said bars, adjacent at least the discharge end of said concave, having the outer edges thereof circumferentially offset relative to the inner edges thereof in a direction toward the discharge end of the concave so that the side edges thereof are disposed at an angle with respect to a radial line passing from the center of said cylinder through the longitudinal axis of the respective bars to facilitate the movement of grain between the bars and to minimize the resistance of said bars to the passage of grain therebetween, and
said inner edges of said bars projecting an equal distance inwardly from said support members toward said cylinder.

4,497,329

CIGARETTE SNUFFER

James L. O'Dell, 4711 SE. 88th Ave., Portland, Oreg.

Filed Jul. 21, 1982, Ser. No. 400,457
Int. Cl.³ A24F *19/14*
U.S. Cl. 131—235 R **4 Claims**



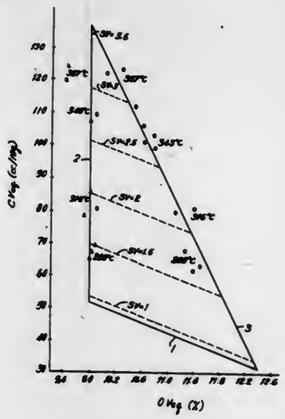
1. A cigarette snuffer for extinguishing a burning cigarette, comprising a substantially cylindrical tube internally dimensioned to snugly receive the cigarette, the tube including an internal circumferential ridge constricting the bore of the tube and dimensioned to compress the unburned material of the inserted cigarette.

4,497,330

PROCESS FOR INCREASING THE FILLING POWER OF TOBACCO

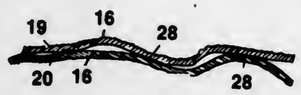
Joseph L. Banyasz, Richmond; Cassandra D. Owens, Petersburg; Elizabeth D. Mooz, Richmond; A. Clifton Lilly, Jr., Richmond; Peter Martin, Richmond; Henry B. Merritt, Richmond, and Bernard A. Semp, Richmond, all of Va., assignors to Philip Morris Incorporated, New York, N.Y.

Filed Jul. 6, 1982, Ser. No. 395,473
Int. Cl.³ A24B *3/18*
U.S. Cl. 131—291 **18 Claims**



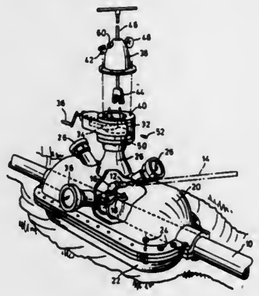
1. A process for increasing the filling power of tobacco comprising heating the tobacco at elevated temperature while maintaining the OV and SV values of the tobacco substantially constant.

4,497,331
TOBACCO PRODUCT WITH HIGH FILLING POWER AND PROCESS OF MAKING SAME
William J. Nellen, West Hartford, Conn., assignor to TMCI, Inc., South Windsor, Conn.
Filed Aug. 11, 1982, Ser. No. 407,081
Int. Cl.³ A24B 3/14
U.S. Cl. 131—353 10 Claims



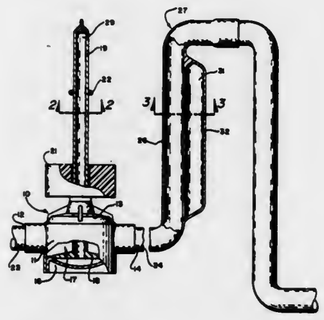
1. A tobacco laminate which has been threshed or shredded for use as a tobacco filler material for cigarettes and cigars and other tobacco products, the laminate comprising two plies of reconstituted tobacco sheet material wherein the plies are adhered together at spaced areas.

4,497,332
APPARATUS FOR SERVICING GAS LINES
John S. Sewell, Chatham; Frederick A. McColl, Brantford, and Peter M. Petkoff, Hamilton, all of Canada, assignors to Union Gas Limited, Chatham, Canada
Filed Feb. 24, 1984, Ser. No. 583,439
Int. Cl.³ F16K 43/00
U.S. Cl. 137—15 2 Claims



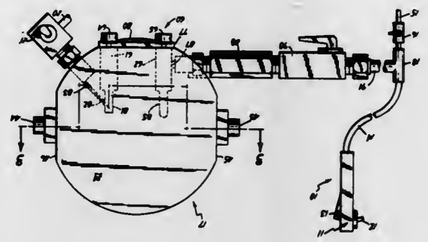
2. A method of servicing a pressurized gas main by interrupting and reestablishing the mechanical continuity of the pressurized gas conducting main without interrupting gas flow therethrough by the use of gas main service tools comprising the steps of:
(a) forming a gas tight work chamber around the main;
(b) forming a gas tight service tool entry chamber in communication with the gas tight work chamber through a service tool entry passage and also through a by-pass passage around the tool entry passage;
(c) providing a service tool having a working end and a shank extending from the working end, the shank extending from the exterior of the tool entry chamber and into the work chamber;
(d) manipulating the shank of the tool from the exterior of the tool entry chamber to locate the tool in the tool entry chamber;
(e) closing the tool entry passage;
(f) opening the by-pass passage;
(g) permitting the gas main to leak gas at a slow rate;
(h) venting the tool entry chamber to atmosphere until air is substantially depleted from the work chamber and the tool entry chamber;
(i) closing the tool entry chamber from atmosphere and permitting gas to leak from the main to cause the pressure to build up to line pressure in the work chamber and the tool entry chamber;
(j) opening the tool entry passage after the pressure has built up to line pressure;
(k) manipulating the shank of said service tool into the work chamber to cause the working end thereof to operatively engage with the gas main and perform a tool function on the gas main;
(l) manipulating the shank of the service tool to withdraw the working end thereof into the tool entry chamber;
(m) closing the tool entry passage and the by-pass passage;
(n) venting the tool entry passage to atmosphere;
(o) modifying the service tool in the tool entry chamber by changing the nature of the working end thereof;
(p) opening the by-pass passage to exclude air from the tool entry chamber;
(q) closing the tool entry chamber from atmosphere and permitting the pressure to build up therein to line pressure;
(r) opening the tool entry passage;
(s) manipulating the shank of the service tool into the work chamber to cause the working end thereof to operatively engage with the gas main and perform a tool function on the gas main
(t) repeating from steps (k) to (r) above recited as often as required to perform the intended work on the gas main except that with the last repetition will include only steps (l) to (m);
(u) and after the last repetition opening the by-pass and venting the tool entry chamber to atmosphere until gas is substantially exhausted from the work chamber;
(v) the said steps of removing the tool from the work chamber to the entry chamber and modifying the service tool and admitting the service tool to the work chamber being repeated as many times as there are separate operations to be performed on the gas main with a service tool.

4,497,333
SEQUENCING VALVE AND IRRIGATION SYSTEM
Chester C. Rodieck, 1035 N. Hamlin Way, Lindsay, Calif. 93247
Filed May 5, 1983, Ser. No. 491,665
Int. Cl.³ F17D 1/20; F16K 31/18
U.S. Cl. 137—122 2 Claims



1. A sequencing valve comprising a hollow body closed on the sides and bottom and open at the top, an inlet port and an oulet port in the body wall spaced from each other and from said open top, a closure plate in said body moveable vertically therein in response to the level of water surrounding said body between a position that leaves said top open and a position where said closure plate covers said open top to close the same, and a closed top hollow tube that is open at the bottom end and is secured to said closure plate to extend therethrough and vertically upwardly therefrom.

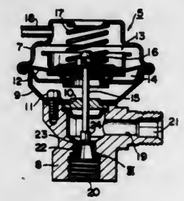
4,497,334
CLEANING APPARATUS FOR LIQUID DELIVERY SYSTEMS
Leo H. Wolf, Rte. 5, Box 363, River Falls, Wis. 54022, and Hugo M. Wolf, 1451 NE. Glacier La., Minneapolis, Minn. 55421
Filed Jul. 12, 1982, Ser. No. 397,454
Int. Cl.³ B67D 5/54
U.S. Cl. 137—209 25 Claims



1. Cleaning apparatus for a liquid delivery system comprising:
a container having an open top;
a control housing removably closing the top of said container, and having a supply conduit extending to the bottom of said container;
inlet means for connecting said housing to a source of air under pressure;
outlet means for connecting said housing to a liquid delivery system;
valving means in said housing, including first and second valves, actuable between normal positions and operated positions, conduit means interconnecting said valves, and means external to said housing for manually actuating each of said valves into the operated position thereof:
said first valve having a normally closed position and an operated position, in which said source is connected to said conduit means;
and said second valve having a normal position, in which said conduit means is connected to said outlet means and an operated position, in which said supply conduit is connected to said outlet means and an operated position, in which said supply conduit is connected to said outlet means;
so that operation of only said first valve connects air from said source to said delivery system through said second valve to enable liquid to be flushed therefrom, and so that operation of only said second valve enables fluid in said container to be supplied to said delivery system by pressure of the air from said source; and
quick release structure for removably interconnecting said housing and said container, said structure comprising a pair of arms pivotal about a central axis to said housing, a pair of struts projecting oppositely from the sides of said container at the bottom thereof, and means carried by said arms for engaging said struts to support said container against said housing.

4,497,335
CONTROL VALVE OF EXHAUST GAS RECIRCULATION APPARATUS
Yoshihiko Masuda, Toyota, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Aichi, Japan
Continuation-in-part of Ser. No. 106,050, Dec. 21, 1979, abandoned. This application Jan. 28, 1982, Ser. No. 343,477
Int. Cl.³ B08B 9/04; F16K 51/00
U.S. Cl. 137—244 7 Claims

1. A control valve for an exhaust gas recirculation apparatus disposed in a passage leading recirculating exhaust gas from an exhaust line to a suction line and designed to change the flow area of said passage in relation to air pressure acting on a diaphragm, said control valve comprising:
a seat portion provided in said passage and including a through hole coaxial with the exhaust line and having an upstream end and downstream end, the downstream end of said through hole defined as a tapered seat, said through hole having an axial length and a diameter at least four times the axial length of said through hole;
a valve body having an axis and comprising a seat sealingly abutting against said tapered seat and a rod portion extending from said seat towards said upstream end of said through hole, said rod portion having a diameter slightly smaller than the diameter of said through hole, said rod portion having an axial length longer than the axial length of said through hole and a free end so that when said seat abuts against said tapered seat the free end of said rod portion protrudes from the upstream end of said through hole, the free end surface of said rod portion at the upstream end being shaped into a flat plane with an acute peripheral edge perpendicular to the axis of the valve body, and said valve body being driven by the diaphragm; and

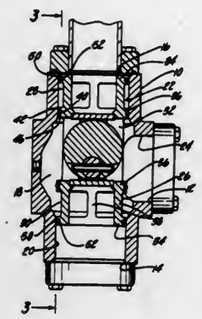


a throttling portion having a hole with an upstream end and downstream end and coaxial with said through hole and communicated with the upstream end of said through hole;
said rod portion and said through hole cooperating such that the acute edge of said rod portion scrapes off any deposit formed on the inner surface of said through hole when said rod portion moves toward said upstream end of said through hole and the diminishment of the diameter of said through hole by such deposits, which would disadvantageously affect the flow characteristics of the recirculating exhaust gas, does not take place because of the sufficiently large diameter of said through hole in proportion to the axial length of said through hole.

4,497,336
VALVE ASSEMBLY
Borje O. Rossen, 4031 Thornoaks Dr., Ann Arbor, Mich. 48104
Filed Apr. 22, 1983, Ser. No. 487,858
Int. Cl.³ B08B 9/04; F16K 31/524
U.S. Cl. 137—244 9 Claims

1. A valve assembly comprising:
a housing having a first port, a second port and a third port, said second and third ports being axially aligned, said ports adapted for fluid connection to a fluid system,
a piston axially slidably mounted in said housing between a first position in which said first and second fluid ports are fluidly connected and a second position in which said first and third fluid ports are fluidly connected,
a first and second seal, said first seal being carried by said piston at a position spaced inwardly from a first axial end of said piston, said second seal being carried by said piston at a position spaced inwardly from a second axial end of said piston, said first seal engaging a first sealing surface in said housing when said piston is in said first position and said second seal engaging a second sealing surface in said housing when said piston is in said second position,
a first and second scraping member, said first scraping member being carried by said piston adjacent its first axial end

and said second scraping member being carried by said piston adjacent its second axial end so that said seals are positioned in between said scraping members and so that said first and second scraping members pass across and respectively engage said first and second sealing surfaces as said piston moves between said first and second positions,



wherein said piston is dimensioned so that portions of said piston adjacent both of said scraping members remain in contact with said housing as said piston moves between said first and second positions to thereby guide said piston within said housing, and

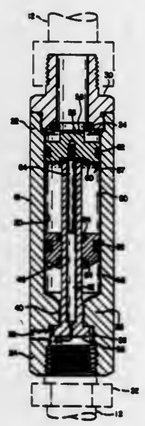
means for moving said piston between said first and second positions.

4,497,337

FLOOR TRAP PRIMER VALVE

Gregory A. Mosbrucker, and Dewayne M. Abelein, both of Portland, Oreg., assignors to Precision Plumbing Products, Inc., Portland, Oreg.

Filed Sep. 12, 1983, Ser. No. 530,903
Int. Cl.³ F16L *55/24*
U.S. Cl. 137—247.25 **4 Claims**



1. A valve for charging water into a sewer line trap from a water line containing water under variable pressure, the valve comprising:

(a) a case having a bore longitudinally therethrough,

(b) connecting means for connecting the case in series flow in the water line,

(c) a hollow shaft mounted in the case and extending from the downstream portion of the case a predetermined distance toward the upstream portion thereof,

(d) a piston slidably mounted on the shaft in sealed relation thereto and to the case and dividing the bore of the case into an air chamber downstream of the piston and a water chamber upstream thereof,

(e) floating seal means and

(f) mounting means mounting the floating seal means within the water chamber upstream of the piston and hollow shaft,

(g) the floating seal means and piston being retracted by water pressure from the water line when a condition of high pressure prevails therein, thereby compressing the air in the air chamber, and advanced by air pressure from the air chamber when a condition of low pressure prevails in the water line,

(h) the floating seal means in its retracted position connecting the water line and the water chamber while sealing off the hollow shaft, thereby charging the water chamber with water and compressing the air in the air chamber

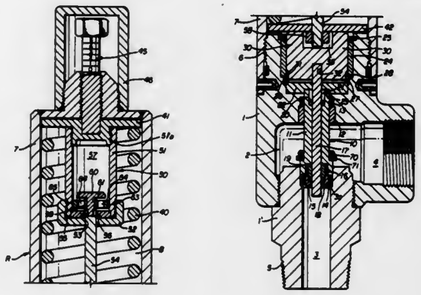
(j) the floating seal means in its advanced position, sealing off the water line from the water chamber and connecting the water chamber with the hollow shaft, thereby upon concurrent advancement of the piston discharging the water content of the water chamber into the trap.

4,497,338

RELIEF VALVE

William E. Baker, 10627 Sugar Hill, Houston, Tex. 77042

Filed Sep. 23, 1983, Ser. No. 535,209
Int. Cl.³ F16K *17/04*
U.S. Cl. 137—467 **20 Claims**



1. A relief valve for relieving excessive fluid pressures in a fluid pressure system comprising:

a valve body having a cavity therein and an inlet port and an outlet port in fluid communication with said cavity;

plug means carried in said valve body for reciprocal movement between a closed position in which said plug means prevents flow of fluids through said inlet port and an open position, in which said plug means permits flow of fluids through said inlet port and into said cavity for exit through said outlet port; and

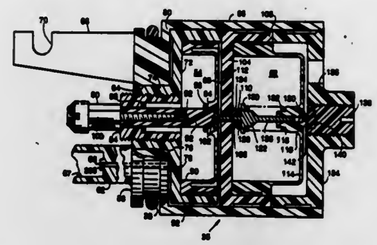
release means carried by said valve body for holding said plug means in said closed position but responsive to fluid pressures above a predetermined amount at said inlet port to release said plug means for movement toward said open position, said release means including a split ring engageable with a corresponding annular shoulder carried by said valve body for holding said plug means in said closed position, said split ring being radially contractable in response to said predetermined fluid pressures for disengagement from said annular shoulder, allowing said plug means to move toward said open position.

4,497,339

TWO-STAGE PRESSURE REGULATOR

George P. Gruner, Andover, and Walter J. Diederich, W. Newbury, both of Mass., assignors to The Gillette Company, Boston, Mass.

Filed Aug. 16, 1982, Ser. No. 408,549
Int. Cl.³ F16K *31/14*
U.S. Cl. 137—495 **10 Claims**



1. A regulator particularly adapted for use in a hand-held device powered by liquefied gas, comprising:

a first chamber having a fuel inlet port;

a first diaphragm dividing said first chamber into upstream and downstream compartments, said upstream compartment being in fluid communication with said fuel inlet port;

first valve means for maintaining a predetermined pressure difference between said upstream and downstream compartments;

a second chamber having a fuel outlet port and including a second diaphragm;

second valve means for establishing fluid communication between said downstream compartment and said second chamber whenever the pressure in said second chamber falls below a predetermined level and for blocking fluid communication between said downstream compartment and said second chamber whenever the pressure in said second chamber equals or exceeds said predetermined level;

positive shutoff means for blocking fluid communication between said downstream compartment and said second chamber, independent of the pressure in said second chamber; and

first adjusting means for adjusting said predetermined pressure difference.

4,497,340

SEAL FOR POST INDICATOR VALVE ASSEMBLY

Lorand H. Gain, Jr., Montgomery, Ill., assignor to AMSTED Industries Incorporated, Chicago, Ill.

Filed Jan. 24, 1983, Ser. No. 460,476
Int. Cl.³ F16K *37/00*
U.S. Cl. 137—556 **6 Claims**

1. A valve assembly comprising:

a body having a flow passage for a fluid therethrough;

a closure member disposed in said body for movement between a closed position to shut off the flow of said fluid and open position to permit the flow of said fluid through said flow passage;

operating shaft means having one end thereof connected to said closure member and the other extending beyond said body for remote operation of said closure member between said positions;

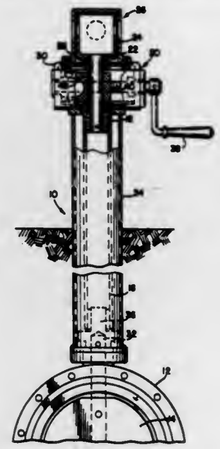
an extension shaft fixedly secured to said other end of said operating shaft for rotational movement therewith;

a valve operator housing disposed about said extension shaft including operating means for turning said extension shaft;

seal means carried by said valve operator housing and disposed about said extension shaft and having annular lip means sealing engagable with the periphery of said extension shaft to prevent leakage between said extension shaft and said valve operator housing;

orienting means formed on the extension shaft end opposite said operating shaft to provide a reference for determining the position of said valve closure member in said flow passage;

indicator means having socket means complementary to said



orienting means on said extension shaft for visually indicating the position of said closure member, said socket means slidably accommodates said orienting means for support thereon;

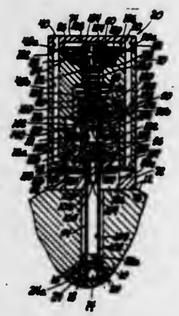
an indicator housing fixedly secured to said valve operator housing and having reference means alignable with said indicator means for remotely disclosing said positions of said closure member.

4,497,341

PAINT COLOR CHANGE VALVE ASSEMBLY FOR RECIRCULATING PAINT SYSTEM

Dolph D. Wright, Union Lake, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Aug. 22, 1983, Ser. No. 525,130
Int. Cl.³ E30B *7/07*
U.S. Cl. 137—563 **2 Claims**



1. In a multi-color paint spray apparatus having a main body provided with a common paint applicator channel and a plurality of radially extending passages in communication with said main channel and terminating in valve seats adjacent said main channel, a valve assembly associated with each radial passage and being selectively operable to control discharge of one

color of paint to the main channel, and means for constantly recirculating each color of paint from its source through its associated valve assembly and back to its source,

said valve assembly comprising an outer housing means secured to said main body and surrounding one of said radial passages,

an inlet in communication with said radial passage and said source,

an outlet in communication with said source,

a valve means including a valve poppet for engaging said valve seat,

a stem tube having one end secured to said valve poppet and an outer diameter which is less than the diameter of the radial passage to define an annular space therebetween,

said stem tube having transverse through apertures closely adjacent said poppet valve,

deflectable diaphragm means carried by said housing means and dividing said housing means into a first chamber which is in communication with said inlet of said housing means and a second chamber which is in communication with said outlet,

said diaphragm means having a central opening and being secured to said stem tube at its end remote from said poppet valve,

spring means for biasing said valve means to a first position in which said poppet engages said valve seat to prevent discharge of paint into said common channel and to cause all of the paint to flow from the inlet of the housing means into said first chamber and annular space and thence into the stem tube via the transverse apertures in the stem tube whereby the paint caused to be recirculated up to the poppet valve and through all areas of the valve assembly to minimize pigments in the paint from settling out, and

pressure responsive means operatively connected with said valve means for causing said valve means to be moved in opposition to the biasing force of said spring means to a second position in which said poppet is unseated to allow paint to flow therepast into the common channel.

4,497,342

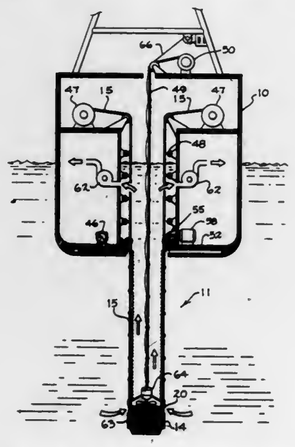
FLEXIBLE RETRACTABLE COLD WATER PIPE FOR AN OCEAN THERMAL ENERGY CONVERSION SYSTEM

James G. Wenzel, Saratoga, and Lloyd C. Trimble, San Jose, both of Calif., assignors to Lockheed Missiles & Space Company, Inc., Sunnyvale, Calif.

Filed Jun. 20, 1983, Ser. No. 505,832

Int. Cl.³ E02D *23/08*; E01G *4/04*; E02B *9/00*

U.S. Cl. 137—565 **18 Claims**



1. An ocean thermal energy conversion (OTEC) system comprising:

(a) a flexible conduit of generally tubular configuration, a proximal end of said conduit being secured to a surface structure and a distal end of said conduit being extendible from said surface structure to a selected ocean depth;

(b) ballast means secured to said distal end of said conduit;

(c) means for extending said distal end of said conduit from said surface structure to said selected ocean depth, and for retracting said distal end of said conduit from said selected ocean depth to said surface structure, said means for extending and retracting said distal end of said conduit including:

(i) a plurality of cables, a proximal end of each cable being secured to winch means mounted on said surface structure, and a distal end of each cable being secured to said ballast means; and

(ii) a plurality of annular shaping members coaxially surrounding said conduit, said shaping members being attached to said conduit at different locations between said proximal end and said distal end of said conduit, said annular shaping members including:

(A) an uppermost shaping member attached to said conduit adjacent said proximal end of said conduit, said uppermost shaping member being securable to said surface structure when said distal end of said conduit is extended to said selected ocean depth, and

(B) a lowermost shaping member attached to said conduit adjacent said distal end of said conduit;

(d) a plurality of clamping devices mounted on each shaping member located intermediate said uppermost and said lowermost shaping members, each one of said clamping devices on each one of said intermediate shaping members being operable to engage a corresponding one of said cables when said distal end of said conduit is extended to said selected ocean depth; and

(e) means for drawing water from said selected ocean depth through said conduit to said surface structure.

4,497,343

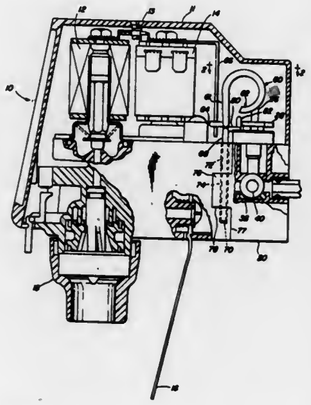
DISCONNECT ARRANGEMENT FOR BEVERAGE DISPENSER VALVES

Wade R. Brown, St. Charles, and Henry Wasserstrom, Chicago, both of Ill., assignors to The Coca-Cola Company, Atlanta, Ga.

Filed Jan. 28, 1982, Ser. No. 343,559

Int. Cl.³ F17D *1/08*

U.S. Cl. 137—614.06 **2 Claims**



1. In a beverage dispenser including a valve assembly removably connected to a mounting block, the valve assembly including a carbonated water inlet and a beverage syrup inlet and a dispensing valve for mixing and controlling the flow of beverage syrup and carbonated water dispensed by the beverage dispenser; and improved disconnect arrangement comprising:

said mounting block including means for connecting said mounting block to a source of carbonated water and to a source of beverage syrup;

a carbonated water passage through said mounting block communicating with the carbonated water inlet in the beverage dispenser;

a beverage syrup passage through said mounting block communicating with the beverage syrup inlet in the beverage dispenser;

said mounting block including disconnect valve means for being opened to allow flow of and for being closed to prevent the flow of carbonated water and beverage syrup respectively through said carbonated water passage and said beverage syrup passage;

retainer means for locking said beverage dispenser valve assembly to said mounting block when moved to a locked position and for unlocking said beverage dispenser valve assembly from said mounting block when moved to an unlocked position;

rotary locking means connected to said disconnect valve means for rotating into a first rotary position in locking engagement with said retainer means when said disconnect valve means is open for holding said retainer means in a locked position, and for rotating into a second rotary position wherein said rotary locking means is disengaged from said retainer means when said disconnect valves means is closed so that said retainer means may be moved to its unlocked position so that said valve assembly can be removed from said mounting block; and

stop means on said retainer means for engaging said disconnect valve means when said disconnect valve means is opened to an optimum flow position so that said disconnect valve means may be returned to said optimum flow position each time said beverage dispenser valve assembly is removed and then reconnected to said mounting block.

4,497,344

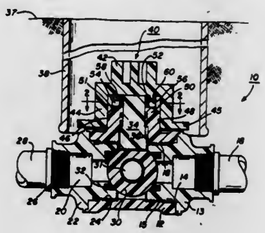
FRANGIBLE VALVE STEM ASSEMBLY FOR ROTARY VALVE

Stanley C. Kisiel, Bradford, Pa., assignor to Dresser Industries, Inc., Dallas, Tex.

Filed Dec. 6, 1982, Ser. No. 447,063

Int. Cl.³ F16K *13/04*

U.S. Cl. 137—797 **5 Claims**



1. In a rotary valve including a body defining a fluid passage between an inlet and an outlet, a closure member within said passage and operably rotatable via a stem extending exterior of said body between a first position opening said passage to fluid flow and a second position closing said passage to fluid flow, the improvement comprising said stem having means defining spaced apart slotted apertures along opposite sides and cap means adapted to cooperate with said stem in a rotational interlock for transmitting rotational torque applied to said cap to said stem for operating said closure member between said first and second positions, said cap means containing frangible means comprising shear pins extending from a surface of said cap into an interfitting relation within said stem slots for effecting said interlock and operative to prevent excess rotational torque applied to said cap from being transmitted to said stem.

4,497,345

FLOW CONVERSION DEVICE AND METHOD

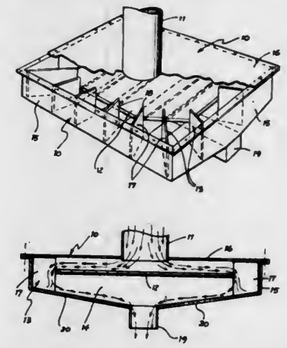
Jeremy J. Lees, 124 Louisa Rd., Birchgrove, NSW, Australia 2041

Filed Jul. 13, 1982, Ser. No. 397,772

Claims priority, application Australia, Nov. 4, 1981, PF1420/81

Int. Cl.³ F15D *1/14*; B65G *53/04*

U.S. Cl. 138—39 **6 Claims**



1. A device for converting at least a part of a stream of a flowable medium flowing down a tube into a flat stream having a substantially uniform flow rate across its width, comprising:

a substantially vertical tube down and through which the medium can flow;

a stationary and planar first plate, said first plate being substantially flat and substantially horizontal to induce smooth and non-turbulent flow of said medium across said first plate and being disposed below the tube;

at least one second plate inclined at an angle substantially less than 90° relative to the first plate and adapted to receive medium flowing over the edge of at least a portion of the first plate and extending at least partially beneath the first plate and terminating in a straight lower edge; and

means to meter the amount of medium flowing onto any one increment of the width of the second plate so that it will be, after flowing down the second plate a predetermined distance, substantially equal to the amount of medium flowing down any other increment of equal width.

4,497,346

CLUTCH ARRANGEMENT FOR CONTROLLING A HEDDLE OF A WEAVING MACHINE

Otto Hintsch, and Werner Julich, both of Wallisellen, Switzerland, assignors to Sulzer Brothers Limited, Winterthur, Switzerland

Filed Sep. 9, 1981, Ser. No. 300,663

Claims priority, application European Pat. Off., Sep. 12, 1980, 80 105440.4

Int. Cl.³ D03C *1/00*

U.S. Cl. 139—66 R **6 Claims**

1. A clutch arrangement for controlling a heddle of a power loom, said arrangement comprising

an intermittently rotatable drive shaft having at least one slot therein;

an eccentric rotatably mounted on said shaft;

a pawl mounted on said eccentric for engagement in said slot of said shaft;

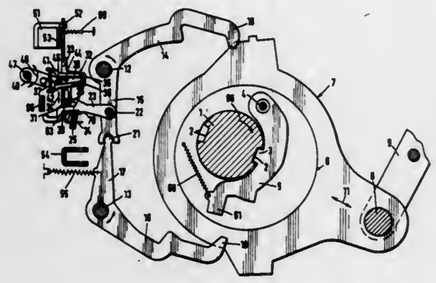
at least one control lever movable into the path of said pawl;

a bar connected to said control lever for moving said control lever back and forth;

a stroke meter drive for engaging said bar to move said bar;

a program control device for controlling operation of said pawl;

a stroke member for selectively driving said bar in programmed response to said stroke member scanning said control device;



a drive lever for imparting motion to said stroke member; and

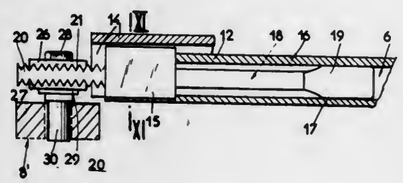
a spring interposed between said drive lever and said stroke member for biasing said stroke member against said bar to transmit forces therebetween.

4,497,347

MECHANISM FOR ACTUATING THE WEFT-INSERTING NEEDLES OF A WEAVING LOOM

Denis Kiwior, Riedisheim, and Victor Riner, Mulhouse, both of France, assignors to Societe Alsacienne de Construction de Materiel Textile, France

Filed Nov. 5, 1982, Ser. No. 439,639
Claims priority, application France, Dec. 11, 1981, 81 23169
Int. Cl.³ D03D *47/00*
U.S. Cl. 139—449 **9 Claims**



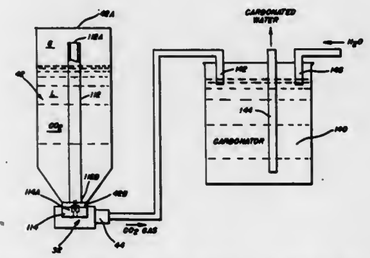
1. A device for controlling the rectilinear reciprocating movement of weft-inserting needles driven by a needle-actuating lever of a weaving loom, wherein each needle is connected to the needle-driving system by means of a flexible connecting member which is constituted by a flexible member of long and slender shape arranged in coaxial relation to the needle, one end of said flexible member being rigidly fixed by bonding in the vicinity of the end of said needle, the central portion of said long flexible member being free to move laterally with respect to the needle and the opposite end of said long flexible member being coupled to the end of the needle-actuating lever by means of a spindle, and said needle is guided within a rail by means of a block of antifriction material which is attached to the end of said needle.

4,497,348

APPARATUS AND METHOD FOR LOADING SYRUP AND CO_2 CONTAINERS INTO A PORTABLE POST-MIX BEVERAGE DISPENSER UNIT

Jason K. Sedam, Dunwoody, Ga., assignor to The Coca-Cola Company, Atlanta, Ga.

Continuation of Ser. No. 320,476, Nov. 12, 1981, , which is a continuation-in-part of Ser. No. 277,806, Jun. 26, 1981, Pat. No. 4,357,284. This application Jul. 24, 1984, Ser. No. 634,044
Int. Cl.³ B65B *3/04*; B01F *3/04*
U.S. Cl. 141—2 **9 Claims**



2. A method for loading syrup supply containers, and CO_2 supply containers into a post-mix beverage dispenser unit, said dispenser unit including first socket means in a CO_2 pressure regulator valve assembly for receiving and supporting the discharge end and the weight of a CO_2 cylinder and second socket means in a beverage dispenser valve assembly for receiving and supporting discharge ends and the weight of syrup containers, comprising the steps of:

providing syrup containers with discharge openings therein which are normally at the top of the container during storage and transportation;

providing a CO_2 container with an opening in a discharge end that is normally at the top of the container during storage and transportation;

inverting said syrup containers and plugging the discharge opening into said second socket means provided in the beverage dispenser valve assembly;

inverting said CO_2 container and plugging the discharge opening into said first socket means provided in the CO_2 regulator valve assembly; and

opening a valve between the discharge opening of said CO_2 container and said regulator valve assembly to initiate the flow of CO_2 from said CO_2 cylinder to said regulator valve assembly in response to the plugging of the discharge opening of said CO_2 container into the first socket means in the regulator valve assembly.

4,497,349

SOLUTION DISPENSER

Donald V. Farley, Crestline, Calif., assignor to Loma Linda University Medical Center, Loma Linda, Calif.

Filed Feb. 8, 1982, Ser. No. 346,629
Int. Cl.³ G21F *5/00*
U.S. Cl. 141—19 **4 Claims**

4. In an apparatus for dispensing a gas contained in a sealed ampule having an outlet line, the combination of:

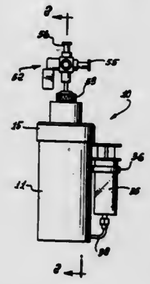
a housing having a cavity for receiving said ampule, said housing including means for retaining said ampule therein, seat means for engagement with said ampule outlet line, means defining first and second fluid flow paths from the exterior of said housing to said seat means, and a cap closing said cavity;

a syringe mounted on said housing and connected to said first flow path;

a hollow needle for positioning in said second flow path and having a first end for entering said ampule outlet line and a second end projecting from said housing; and

a valve for closing said second end of said needle;

whereby a liquid in said syringe is drawn into said ampule when the ampule seal is broken by insertion of said needle with said valve closed so that said gas is dissolved in said liquid, permitting withdrawal of gas-liquid solution through said needle and valve when said valve is open;



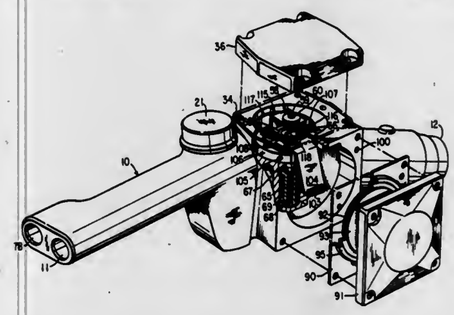
said means for retaining including a split collar about said outlet line, with said collar sliding within said cavity to support said ampule in said cavity, and housing means for clamping of said collar to said housing by said cap with the outer end of said outlet line engaging said cap.

4,497,350

VAPOR RECOVERY SYSTEM HAVING AUTOMATIC SHUT-OFF MECHANISM

Robert W. Guertin, Cincinnati, Ohio, assignor to Dover Corporation, New York, N.Y.

Filed Jun. 22, 1983, Ser. No. 506,857
Int. Cl.³ B65B *3/18*
U.S. Cl. 141—206 **20 Claims**



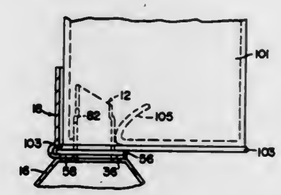
1. An automatic shut-off nozzle comprising a body having an inlet and an outlet, a valve in said body controlling flow of liquid from said inlet to said outlet, resilient means continuously urging said valve to its closed position, manual operated means to move said valve to an open position against the force of said resilient means, said manual operated means, including moving means for moving said valve to an open position, means slidably mounted in said body for sliding therein, and means to pivotally connect said moving means to said slidably mounted means a spout communicating with said outlet, said spout being insertable into a tank through an opening therein to allow the liquid to be dispensed therein, holding means for holding said slidably mounted means in a position in which said moving means can hold said valve in an open position against the force of said resilient means when said holding means is in a holding position, release means for holding said holding means in the holding position, said release means being movable in one direction to release said slidably mounted means of said manual operated means through ceasing to hold said holding means in the holding position in response to either pressure in the tank exceeding a predetermined pressure or the liquid in the tank reaching a predetermined level to allow closing of said valve and stoppage of liquid flow through said body through said slidably mounted means being movable in a direction opposite to the one direction in which said release means moves, first means communicating with the tank and causing movement of said release means in the one direction in resopnse to the liquid reaching the predetermined level in the tank, said first means including a first chamber communicating with the tank, a first diaphragm forming a wall of said first chamber, and first separate means separate from said release means and said holding means to act on said release means to cause movement of said release means in the one direction in response to said first diaphragm moving in response to the liquid reaching the predetermined level in the tank, and second means communicating with the tank separately from said first means and responsive only to the pressure in the tank exceeding the predetermined pressure, said second means including a second chamber communicating with the tank, a second diaphragm forming a wall of said second chamber and responsive only to the pressure in the tank exceeding the predetermined pressure, and second separate means separate from said release means and said holding means to act on said release means to cause movement of said release means in the one direction in response to said second diaphragm moving in response to the pressure in the tank exceeding the predetermed pressure.

4,497,351

APPARATUS FOR FILLING A DEVICE WITH A FLUID

Tony P. Garcia, P.O. Box 393, Indian Rocks Beach, Fla. 33535

Continuation of Ser. No. 199,353, Oct. 21, 1980, abandoned. This application Dec. 15, 1982, Ser. No. 449,916
Int. Cl.³ B65B *3/06*
U.S. Cl. 141—329 **16 Claims**



1. An apparatus for connection to a fluid input of a device for filling the device with a fluid contained within a container, comprising in combination:

a base including an aperture in the bottom thereof and an upstanding wall;

a substantially cylindrical hollow cutting element including an upper portion angularly formed to define a point for initiating the piercing of a hole in the container and for allowing the fluid to flow from the container into and through said cutting element and then into the device;

a stand means for connecting said cutting element above said upstanding wall of said base in a position substantially concentric to said upstanding wall with said cutting element being completely, non-contiguously, positioned from the upper edge of said upstanding wall to permit the container, partially filled with the fluid, to be prematurely removed from said cutting element and held above said cutting element allowing the remaining fluid in the container to drain therefrom into and through said cutting element and about the exterior of said cutting element and then into the device without spillage of the fluid over the outside of said upstanding wall of said base; and

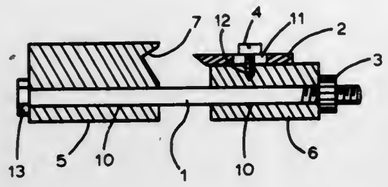
means for connecting said base to the fluid input of the device.

4,497,352

ADJUSTABLE VIOLIN PEG AND DOWEL SHAVING DEVICE

Paul K. Lippolt, 6128 N. Willston Dr., Falls Church, Va. 22044

Filed May 9, 1983, Ser. No. 492,957
Int. Cl.³ B27C *7/06*
U.S. Cl. 142—48 **9 Claims**



1. A violin peg and dowel shaving device comprising two guide bolts threaded at one end to receive adjusting nuts, each extending along an axis through bores in two substantially rectangular blocks, one block being stationary by means of said guide bolts being fixedly secured to it, and the other being movable along said guide bolts from their threaded ends, the stationary block having a V-shaped groove extending across on its side facing said movable block, and a cutterblade being mounted by means of two securing screws, each screwable into threaded bores atop said movable block, the cutterblade having a beveled edge facing stationary block.

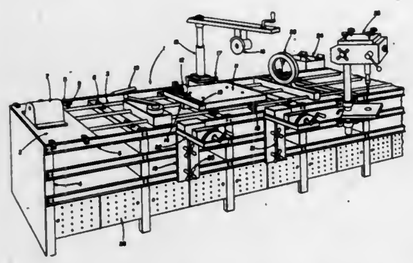
8. A process for shaving a peg or dowel comprising placing a peg or dowel in a V-shaped groove provided in a side of a stationary block, fitting an opposing movable block with a cutterblade such that a beveled edge of the cutterblade overhangs the movable block and is axially aligned with a vertex of the V-shaped groove, rotating adjusting nuts for axially advancing the movable block along guide bolts toward the stationary block until the edge of the cutterblade impinges upon the peg or dowel and rotating the peg or dowel to subject the outer surface of the peg or dowel to the cutting force of the beveled edge.

4,497,353

MULTIPURPOSE MATERIAL WORKING TOOL

William B. Sproat, Jr., 1763 Maple St., Salem, Ohio 44460

Filed Sep. 10, 1981, Ser. No. 300,757
Int. Cl.³ B27C *9/00*
U.S. Cl. 144—1 R **12 Claims**



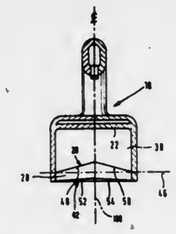
9. A multipurpose material working tool comprising a supporting frame having an end table portion and three longitudinal ways, a band saw secured to a vertical support member of said end table, a headstock anchored to said end table, a rotatable spindle extending axially from the headstock, a motor adapted to drive both the band saw and rotatable spindle, a work supporting table disposed at a 90° angle to said rotatable spindle, and a rotary tool attached to said spindle said tool further comprising a radial trolley adapted to ride on said longitudinal ways, such radial trolley being equipped with a lathe tail stock, a radial arm adapted to move in a vertical and circumferential direction to the surface of the radial trolley, and a removable radial saw, tilt arbor saw or radial drill press attached to said radial arm.

4,497,354

LOW NOISE PLANING MACHINE, PARTICULARLY HAND PLANER

Martin Kummer, Filderstadt; Uwe Krieg, Leinfelden-Echterdingen; Wolfgang Jundt, Ditzingen; Werner Rieker, Steinenbronn; Fritz Schädlich, Leinfelden-Echterdingen, and Günter Schaal, Stuttgart, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Continuation of Ser. No. 419,878, Sep. 20, 1982, abandoned, which is a continuation of Ser. No. 168,633, Jul. 11, 1980, abandoned. This application Jun. 6, 1984, Ser. No. 617,842
Claims priority, application Fed. Rep. of Germany, Sep. 29, 1979, 2939598
Int. Cl.³ B27C *1/10*
U.S. Cl. 145—4 **13 Claims**



1. Planing machine having a housing including a first portion defining a planing surface and a second portion defining an operating chamber (18);

an essentially cylindrical, rotary cutter (16) mounted in the housing and rotatable in the operating chamber about an axis of rotation, the cutter having a body portion and at least one axially extending and radially projecting cutter blade;

said operating chamber (18) having

an inlet portion (28) adjacent a rotary cutter and open to the planing surface of the machine,

an inner portion (32) and

an outlet (34) from the inner portion passing through the housing to permit removal of chips from the operating chamber (18),

said housing including an inner separating wall (36) forming, at least in part, a wall of said operating chamber and separating said inner portion of the chamber from the cutter, wherein

the separating wall terminates in an edge (26), which edge is positioned adjacent the rotary cutter and is located in a plane parallel to a plane tangent to the essentially cylindrical rotary cutter; and

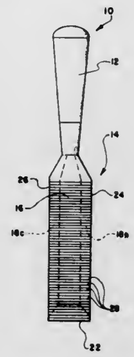
wherein the edge (26) extends at least in part in a direction which is inclined at an angle less than 90 degrees with respect to a line parallel to the axis of rotation of the rotary cutter (16) to provide for sequential passage of elementary zones or portions of the cutter blade past said edge and prevent formation of noise generating pressure waves.

4,497,355

WOODWORK CUTTING DEVICE SUCH AS A WOOD CHISEL WITH SHARPENING GUIDES PROVIDED THEREWITH

Ulys Smith, 903 Neuse Dr., New Bern, N.C. 28560

Filed Sep. 24, 1979, Ser. No. 78,487
Int. Cl.³ B25D *3/00*
U.S. Cl. 145—24 **1 Claim**



1. A woodwork cutting device such as a wood chisel or plane iron blade having a blade portion including two side edges, a cutting end and opposite front and back faces, the front face having a beveled cutting edge formed thereon adjacent said cutting end, a plurality of spaced grinding guide means formed transversely across said back face of said woodwork cutting device and extending in general parallel relationship with said cutting end for enabling said cutting end to be properly sharpened, while the front face and beveled edge is turned downwardly away from the individual sharpening the device, by grinding the cutting end such that it is maintained parallel with the adjacent transverse guide means formed across the back face of said woodwork cutting device, said beveled cutting edge being formed at a selection angle relative to side edges of said blade portion, and wherein there is provided a plurality of grinding angle guides formed on at least one side edge of said blade portion with said grinding angle guides extending in side by side parallel relationship with respect to each other and oriented generally parallel to and at approximately the same angle as the place of said beveled cutting edge such that during the sharpening process the grinding angle guides can be utilized to sharpen the beveled cutting edge at a proper angle relative to the side edges of the blade portion.

4,497,356

SCREENING APPARATUS

Terry C. Luck, Rayleigh, and Paul R. Marsden, High Wycombe, both of England, assignors to Intercraft Designs Limited, England

Filed May 21, 1982, Ser. No. 380,751
Claims priority, application United Kingdom, May 21, 1981, 8115613
Int. Cl.³ A47G *5/00*
U.S. Cl. 160—135 **8 Claims**

1. A partitioning wall, including:

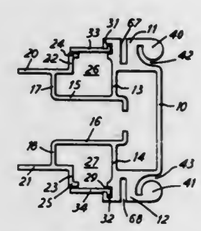
a first panel;

a second panel;

connecting means for releasably and adjustably joining the first panel to the second panel along an upright edge of each of the first and second panels;

first and second upright members, each having a left side portion, a right side portion and a rear face portion, the left side portion and the rear face portion together defining a left corner and the right side portion and the rear face portion together defining a right corner with said left and right side portions being arranged on the same side of the rear face portion extending generally perpendicularly from said rear face portion, said first upright member being provided along one end of the first panel and said second upright member being provided along one end of the second panel;

a first right projection provided at the right corner and extending along the first upright member, said first right projection together with said right corner defining a right arcuate groove having generally parallel sides, said right arcuate groove being provided between the first right projection and the rear face portion;



a first left projection provided at the left corner and extending along the first upright member, said first left projection together with said left corner defining a left arcuate groove having generally parallel sides, said left arcuate groove being provided between the first left projection and the rear face portion;

said connecting means including a joining member having first and second arcuate arms so as to be slidably received within said arcuate grooves of the first and second upright members, said first and second arcuate arms being defined by generally parallel side walls; and,

resilient flaps resiliently biased in said first and second upright members along an outwardly facing side of said left and right side portions.

4,497,357

SECTIONAL FOLDING CLOSURE

Henri M. R. Labelle, Cornwall, Canada, assignor to Martinray Industries Ltd., Cornwall, Canada

Continuation of Ser. No. 960,247, Nov. 13, 1978,. This application Oct. 3, 1980, Ser. No. 193,719
Int. Cl.³ E0D5 *15/26*
U.S. Cl. 160—199 **8 Claims**

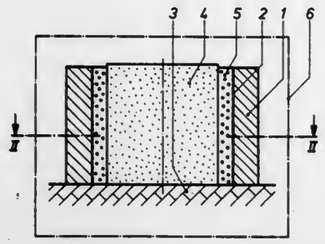


1. A folding closure assembly for closing an opening having; a plurality of closure sections; each closure section comprising a plurality of panels pivotably joined together; means on each closure section for use in suspending said closure section in the opening; a first joining member on one side edge of each section; a second joining member on the other side edge of each section; the first joining member on one section joining with the second joining member on an adjacent section after the sections are suspended in the opening, and fastening means for fastening the joined joining members together on the interior side of the folding closure.

4,497,358
PROCESS FOR THE MANUFACTURE OF A STEEL BODY WITH A BOREHOLE PROTECTED AGAINST ABRASION

Gerhard Gnadig, Ditzingen; Fritz Przybylla, Heilbronn, and Friedrich Schneider, Weissach, all of Fed. Rep. of Germany, assignors to Werner & Pfleiderer, Stuttgart, Fed. Rep. of Germany

Filed Nov. 23, 1982, Ser. No. 443,920
Claims priority, application Fed. Rep. of Germany, Nov. 25, 1981, 3146621
Int. Cl.³ B22D *23/06*
U.S. Cl. 164—80 5 Claims

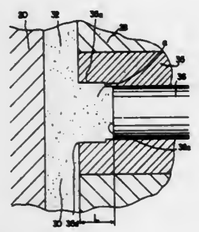


1. A process for providing abrasion and corrosion resistance in the borehole of a steel body comprising placing an alloying material of solid form within the borehole of a steel body, said alloying material having abrasion and corrosion resistance, and melting said alloying material in a gas heated protective gas oven without electro-magnetic force to effect diffusion bonding of said alloying material with said steel body and the formation of an abrasion and corrosion resistant lining on said steel body.

4,497,359
DIE-CASTING METHOD

Haruo Suzuki, Nishikasugai, and Shigeyoshi Hashimoto, Anjo, both of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

PCT No. PCT/JP79/00032, § 371 Date Oct. 14, 1980, § 102(e) Date May 7, 1979, PCT Pub. No. WO80/01655, PCT Pub. Date Aug. 21, 1980
Continuation of Ser. No. 209,705, Oct. 14, 1980, abandoned.
This PCT application Feb. 14, 1979, Ser. No. 561,128
The portion of the term of this patent subsequent to Apr. 19, 2000, has been disclaimed.
Int. Cl.³ B22D *18/02*
U.S. Cl. 164—120 16 Claims



1. A die-casting method comprising:

a first step of relatively moving dies into close contact so as to form therebetween die cavity for casting a product, a runner through which molten metal is injected into said die cavity, and a substantially non-narrowing squeeze passage having a cross-sectional area S and connected at open end directly to said die cavity at a point other than the point of connection between said die cavity and said runner;

a second step of injecting, by forwardly moving an injection plunger to effect a predetermined injection pressure, the molten metal from said runner via a gate into said die cavity and said squeeze passage to fill said die cavity and said squeeze passage with the molten metal;

a third step of starting a squeezing displacement of the molten metal in said non-narrowing squeeze passage by moving a squeeze plunger through said squeeze passage from a retracted position, wherein the squeeze plunger end which faces the die cavity is spaced a distance L from said end of said squeeze passage, toward said die cavity and at a predetermined squeezing pressure greater than said injection pressure and at a time before said gate is blocked by solidified molten metal, said squeeze plunger being moved a distance greater than one-half of said distance L;

a fourth step of continuing the squeezing on said molten metal by said squeeze plunger in said passage at said predetermined squeezing pressure until said cavity is filled voidlessly and, during said continued squeezing, forcing molten metal out of said die cavity through said gate into said runner by the molten metal displaced out of said squeeze passage by said squeeze plunger and until the molten metal is completely solidified at least in said die cavity while retaining said squeeze plunger substantially fully inside said passage to produce a solidified voidless die-cast product;

a fifth step of retracting said squeeze plunger to remove said squeezing pressure from said squeeze passage after the molten metal is solidified in said die cavity;

a sixth step of relatively moving said dies away from one another for the removal of said die-cast product which has been solidified in said die cavity; and

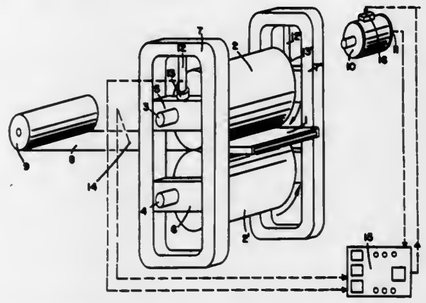
preventing said injection plunger from being moved backward during said third and fourth steps by the effect of said greater pressure applied by said squeeze plunger;

wherein said area S and said distance L are related by $S \geqq 0.35L^2$.

4,497,360
METHOD OF MONITORING AND CONTROLLING OPERATING PARAMETERS OF A MACHINE FOR THE CONTINUOUS CASTING OF STRIPS BETWEEN ROLLS

Serge Bercovici, Grenoble, France, assignor to Cegedur Societe de Transformation de l'Aluminiu, Pechiney, Paris, France

Filed Aug. 24, 1981, Ser. No. 295,532
Claims priority, application France, Sep. 1, 1980, 80 19162
Int. Cl.³ B22D *11/16*
U.S. Cl. 164—454 11 Claims

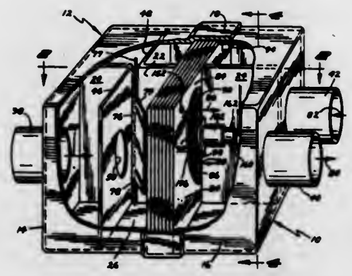


1. A method for the monitoring and control of operating parameters of a machine for the continuous casting of strips between journalled rolls, in which consideration is given to at least one of the parameters from the group consisting of the torque exerted on at least one of the rolls to cause the strip to advance and the stress exerted by the strip on at least one of the journals, the deviation between the instantaneous value of the parameter under consideration and the mean value of the same parameter are measured over a period of time immediately beforehand; reducing the speed of casting when this deviation becomes negative and greater in absolute value than a reference deviation, until the deviation becomes less than the reference deviation; increasing the casting speed for as long as the deviation between the instantaneous value of the parameter and the mean value of this parameter over a period of time immediately beforehand does not exceed the reference deviation.

4,497,361
REGENERATIVE HEAT AND HUMIDITY EXCHANGING APPARATUS

David J. Hajicek, 14824 Glendale Rd., Minnetonka, Minn. 55343

Filed Jun. 15, 1981, Ser. No. 273,355
Int. Cl.³ F28D *19/00*
U.S. Cl. 165—7 16 Claims



1. Regenerative heat and humidity exchanging apparatus comprising a housing providing a pair of passages through which gaseous fluids having different thermal characteristics flow, a portion of each passage being adjacent the other, a partition extending transversely across each of said passages, each partition having an opening therein, a fan associated with each partition opening, a valve means for closing said partition openings when said fans are not operating, said valve means having a flap valve member pivotally mounted so that one flap portion thereof coacts with one partition opening and a second flap portion thereof coacts with the other partition opening, a plurality of rotary disks pervious to the gaseous fluids passing through said passages, means mounting said disks for rotation about an axis so that one segment of each disk at any given moment resides in one of said adjacent passage portions used and a second segment resides in the other of said adjacent passage portions, and a plurality of stationary separators positioned in said housing having a first portion residing in said one passage portion and formed with an opening therein for the passage of a gaseous fluid therethrough and having a second portion residing in said second passage portion also formed with an opening therein for the passage of a gaseous fluid therethrough, there being one of said pervious disks rotatively positioned between adjacent separators, whereby, when said disks are rotated, heat and/or humidity is transferred by each disk from said one passage portion when the gaseous fluid flowing therethrough has a higher thermal or moisture characteristic to said second passage portion when the gaseous fluid flowing therethrough has a lower thermal or moisture characteristic.

7. Regenerative heat exchanging apparatus in accordance with claim 1 including spring means for biasing said flap valve member in a direction to cause said flap valve member to close both of said partition openings when said fans are not operating, said fans developing sufficient fluid pressure to overcome the biasing action of said spring means to cause opening of said partition opening when said fans are operating.

4,497,362
REGENERATIVE ROOM AIR EXCHANGER

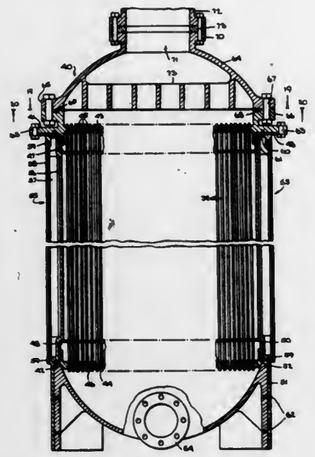
W. Dorwin Teague, Jr., Nyack, N.Y., assignor to Southern California Gas Co., Los Angeles, Calif.

Filed Mar. 21, 1983, Ser. No. 477,021
Int. Cl.³ F24F *7/08*; F24D *15/00*
U.S. Cl. 165—54 16 Claims



1. Apparatus for removing room air from a room of a house and for supplying fresh air to said room, comprising first vertically disposed conduit means through which said room air flows to the exterior of said room, said first conduit means being formed of heat conductive material and including a first set of vertically disposed channels to conduct a flow of air; second vertically disposed conduit means through which said fresh air flows to said room, said second conduit means being formed of heat conductive material and including a second set of vertically disposed channels to conduct a flow of air; said first and second sets of channels being interdigitated and in counterflow heat exchange relationship with each other to enable the transfer of heat from one to the other of the respective air flows conducted in said first and second sets of channels; a jacket surrounding and spaced from said first and second interdigitated sets of channels, thereby forming a third vertically disposed conduit surrounding said first and second sets of channels in the space between said jacket and said interdigitated channels, said third conduit being in fluid communication with said first conduit means; exhaust means in fluid communication with said first conduit means to discharge said room air therefrom; inlet means in fluid communication with said second conduit means to supply said fresh air thereto; a removal register coupled to said third conduit and positioned in said room in the vicinity of the ceiling thereof, and through which said room air passes to flow through said third conduit and then through said first conduit means to said exhaust means; said first conduit means communicating with said third conduit means within said jacket in the vicinity of the floor of the room, remote from said removal register; and a supply register coupled to said second conduit means and positioned in said room in the vicinity of the floor thereof, and through which said fresh air passes into said room from said second conduit means and said inlet means whereby room air drawn into said jacket through said removal register near the ceiling of the room by said exhaust means flows first downwardly in said third conduit means in concurrent relation to fresh air in said second conduit means and thence upwardly to said exhaust means through said first conduit means countercurrent to fresh air in said second conduit means.

4,497,363
PLATE-PIN PANEL HEAT EXCHANGER AND PANEL COMPONENTS THEREFOR
William E. Heronemus, 730 West St., Amherst, Mass. 01002
Filed Apr. 28, 1982, Ser. No. 372,539
Int. Cl.³ F28G 15/02
U.S. Cl. 165—95 34 Claims



1. A plate-fin heat exchanger adapted for use in ocean thermal energy conversion systems, the heat exchanger comprising:

a plurality of elongated metal plate-fin panels arranged in parallel spaced apart relation, each panel having two rectangular side walls with flat exterior surfaces and a plurality of longitudinally extending fins connecting the interior surfaces of said side walls together in spaced apart relation, said fins creating a plurality of longitudinally extending, laterally spaced, internal passages between the two side walls;

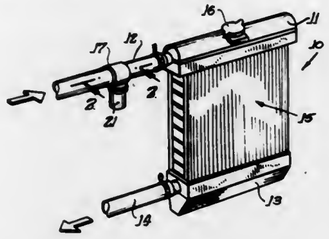
first and second header chambers disposed at opposite ends of the plate-fin panels, each header chamber including a headering plate having a plurality of parallel slotted apertures, and the corresponding end of each plate-fin panel being inserted through a corresponding one of said slotted apertures and being fastened thereto, whereby the plurality of panels are maintained in said parallel closely-spaced relation;

rigid support members extending between the first and second header chambers;

means for dislodging accumulated foreign matter from at least a localized portion of the exterior surface of each panel side wall; and

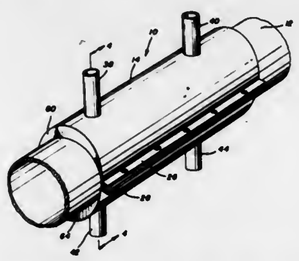
means mounted on said support members and connected to said dislodging means for moving said dislodging means to traverse the exposed exterior surface of each panel side wall between the header plates of said header chambers, wherein the thickness of and spacing between the side walls of each plate-fin panel are very small compared with the length of the panel, such that the panel could buckle even without the application of external load if unsupported with its longitudinal dimension approximately vertical, and said rigid support members exert an axially outward force against each header plate, whereby each plate-fin panel is maintained in tension in its longitudinal dimension to prevent buckling of said panel.

4,497,364
LAYERED SOLID CORROSION INHIBITORS FOR USE IN CORRODIBLE DEVICES FOR AUTOMATIC ADDITION TO COOLANT SYSTEMS
Brian E. Cheadle, Bramalea, and Gordon J. Lee, Mississauga, both of Canada, assignors to Long Manufacturing Ltd., Ontario, Canada
Filed Jan. 3, 1983, Ser. No. 415,115
Int. Cl.³ F28F 19/00
U.S. Cl. 165—134 R 5 Claims



1. In a device for automatic addition of corrosion inhibitor to a coolant system, said device comprising a container for corrosion inhibitor having at least a portion thereof formed of a corrodible metal foil positioned in the coolant system so that said corrodible metal foil is exposed to the coolant stream, the improvement wherein said corrosion inhibitor is a layered, solid, anhydrous composition comprising a surface layer formed of a caustic compound and a second layer formed of a corrosion inhibiting compound.

4,497,365
HEAT EXCHANGER
John Boyer, 203 Eveningside Dr., Chattanooga, Tenn. 37404
Filed Aug. 15, 1983, Ser. No. 522,976
Int. Cl.³ F28D 7/02; F28F 3/12
U.S. Cl. 165—164 9 Claims



1. A heat exchanger adapted to be disposed about an existing fluid carrying conduit to transfer heat between the fluid in said conduit and the fluid flowing through said heat exchanger, said heat exchanger comprising hollow thin walled outer and inner hollow housings of finite length positioned one within the other, said inner housing having a cross sectional configuration and size substantially conforming to the exterior of said conduit, each housing being incomplete about the respective periphery to provide a respective pair of spaced apart peripheral edges, means for securing each peripheral edge of the outer housing to a corresponding peripheral edge of the inner housing in sealed relationship along the length of each housing, means for securing the outer housing to the inner housing at adjacent facing surfaces in substantially sealed relationship along the length of said housings at a location substantially opposite said peripheral edges to form a pair of longitudinally extending cavities between said housings, fluid inlet and outlet means communcating with each cavity, end closure means secured to the ends of both housings for closing each cavity at each end of the housings while permitting said housings to hingedly bend along said secured surfaces when a force is applied to separate and open the space between the peripheral edges of the inner housing and the peripheral edges of the outer housing to permit entrance of said conduit through said space for disposition of said housings about said conduit, and fastening means for drawing and fastening the spaced peripheral edges together so that at least a substantial portion of the inner housing abuts the conduit.

4,497,366
PACKER ACTUATED VENT ASSEMBLY
Emmet F. Brieger, Albuquerque, N. Mex., assignor to Geo Vann, Inc., Houston, Tex.
Division of Ser. No. 384,578, Jun. 3, 1982, abandoned. This application Feb. 17, 1984, Ser. No. 581,339
Int. Cl.³ E21B 33/129, 34/12, 43/11
U.S. Cl. 166—150 15 Claims



1. In a packer device adapted to be anchored downhole in a borehole, and having a mandrel axially movable respective to a packer body for setting a packer element against the borehole wall, with a tubing string connected to the mandrel for conducting fluid flow from a location below the packer to the surface of the ground, in combination;

a packer actuated vent assembly, said vent assembly includes a hollow mandrel extension connected to the packer mandrel, a sliding valve means, and a barrel;

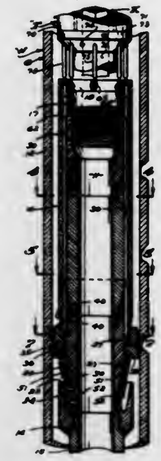
said mandrel extension, sliding valve means, and barrel are concentrically arranged respective to one another, with said sliding valve means slidably engaging a marginal length of said mandrel extension in sealed relationship therewith, and with said barrel being radially spaced from said sliding valve means and from said mandrel; aperture means in said marginal length of said mandrel extension by which a flow path is formed from the interior to the exterior thereof;

means by which the upper end of said mandrel extension and barrel, respectively, can be attached to the lower end of the packer mandrel and packer body, respectively;

means on said barrel for engaging and moving said sliding valve means from a flow permitting to a flow preventing position when said mandrel extension is moved relative to said barrel;

so that when the packer is set by moving the mandrel of the packer relative to the packer body, said mandrel extension is moved relative to said barrel, causing said means on said barrel to move said sliding valve means to the flow preventing position.

4,497,367
LINER HANGER
Alan R. Stevenson, 12350 E. Montague St., Pacoima, Calif. 91331
Filed Feb. 4, 1983, Ser. No. 464,104
Int. Cl.³ E21B 43/10
U.S. Cl. 166—208 14 Claims



1. A liner hanger comprising an elongate vertical body with upper and lower ends, a central longitudinal flow passage, a cylindrical exterior surface, coupling means at its lower end engaged with the upper end of a depending liner, releasable coupling means at and within its upper end with a threaded part releasably engaging a threaded part of a setting tool on an elongate upwardly extending setting string of pipe, a plurality of elongate vertically extending circumferentially spaced radially outwardly opening recesses with radially outwardly and downwardly disposed upwardly and radially outwardly inclined ramp surfaces in the exterior of the body and positioned longitudinally thereof in vertical spaced relationship below said releasable coupling means and elongate vertical passages in the body and opening upwardly at the upper end of the body and intersecting and opening at the ramp surfaces of related recesses; elongate vertically extending slips with upper and lower ends, outer semi-circular casing engaging surfaces and ramp surface engaging inner surfaces normally positioned in the lower portions of and shiftable vertically upwardly and radially outwardly in related recesses; spring means normally yieldingly urging the slips upwardly and outwardly in the recesses; elongate vertical push rods with upper and lower ends slidably engaged in the passages; releasing means on the setting tool releasably engaging the upper ends of the rods and holding the rods down in the passages with their lower end portions normally projecting into their related recesses and with their lower ends releasably engaging upwardly disposed stop surfaces on the slips and releasably holding the slips down and releasing the slips for upward and outward movement in the recesses when said releasing means releases and allows said rods to move upwardly in the passages.

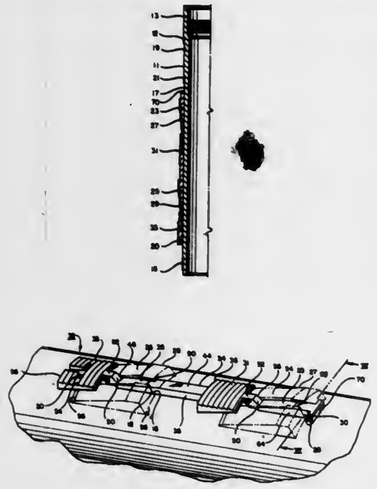
4,497,368
HANGER MECHANISM
John L. Baugh, Huntsville, Tex., assignor to Hughes Tool Company, Houston, Tex.
Continuation of Ser. No. 402,387, Jul. 27, 1982, abandoned. This application Mar. 23, 1984, Ser. No. 592,737
Int. Cl.³ E21B 23/00
U.S. Cl. 166—208 4 Claims

1. A hanger mechanism for a liner hanger of the type used to hang liners in a well bore, comprising:

an elongated tubular body;

at least two longitudinally spaced sets of cone elements extending circumferentially around the exterior of said tubular body;

one or more slip units, each of said slip units having at least a leading and a trailing spaced slip element connected by an intermediate longitudinal bar, said leading slip element having a rear edge joined to a generally rectangular mid-section of said longitudinal bar, and said longitudinal bar having a guide portion adapted to be slidingly received within a guide track formed in selected ones of said cone elements on the exterior of said tubular body, said guide tracks including an upper retaining lip for holding said



longitudinal bar inward against said tubular body as said slip elements move over said cones; and

wherein said guide portion of said intermediate longitudinal bar has a lower surface in contact with said tubular body, opposing side surfaces and a top surface, said top surface being joined by a downwardly sloping surface to an extension of said trailing slip, said trailing slip extension having an upwardly sloping portion which connects said downwardly sloping surface to a top surface of said trailing slip, whereby sliding movement of said guide portions within the respective guide track causes said spaced slip elements to ride over said longitudinally spaced cone elements to move said slip elements radially outwardly to engage the well bore.

4,497,369

HYDRAULIC CONTROL OF SUBSEA WELL EQUIPMENT

Gary L. Hurta, Houston; Lionel J. Milberger, Spring, and Alford M. Williams, Houston, all of Tex., assignors to Combustion Engineering, Inc., Windsor, Conn.

Filed Aug. 13, 1981, Ser. No. 319,179
Int. Cl.³ E21B *7/12*
U.S. Cl. 166—368 **5 Claims**

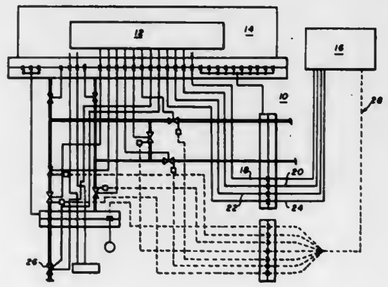
1. A subsea production control system for controlling the flow of product from a subsea well in accordance with a known program comprising:

(a) a plurality of valve means located at the site of the subsea well and operative for causing product to flow from the subsea well;

(b) surface control means located at a site remote from the site of the subsea well and operative for controlling said plurality of valve means to accomplish the flow of product from the subsea well;

(c) fluid means operatively connecting said surface control means to said plurality of valve means, said fluid means being operative to provide the fluid that supplies the power to operate said plurality of valve means;

(d) sequence valving means located at the site of the subsea well, said sequence valving means including a plurality of sequence valves, each of said plurality of sequence valves being connected in operative relation through said fluid means both to said surface control means and to at least a corresponding one of said plurality of valve means, each of said plurality of sequence valves being selectively positionable in a plurality of positions, said plurality of positions defining different operating modes of each of said plurality of sequence valves, each of said plurality of sequence valves embodying a constant force biasing means operative to bias the corresponding one of said plurality of sequence valves equipped therewith to one of



said plurality of positions thereof, when occupying said one of said plurality of positions thereof each of said plurality of sequence valves in response to the receipt thereof of a command unique thereto generated at said surface control means being movable against the bias of said constant force biasing means embodied thereby to another of said plurality of positions thereof thereby effecting the operation of the corresponding one of said plurality of valve means that is cooperatively associated therewith; and

(e) pilot means operatively connecting said surface control means to said plurality of sequence valves, said pilot means being operative to transmit a plurality of commands generated at said surface control means to said plurality of sequence valves, each of said plurality of commands being of unique character such that each of said plurality of sequence valves is caused to move to said another of said positions thereof when receipt is had thereby of a particular one of said plurality of commands.

4,497,370

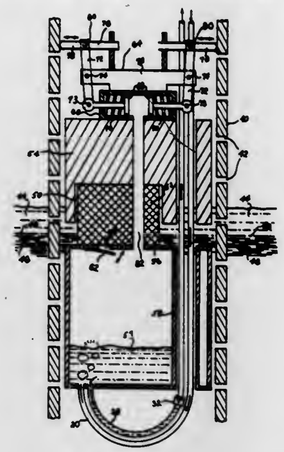
APPARATUS AND METHOD FOR RECOVERY OF LIQUID HYDROCARBONS FROM GROUND WATER

Michael K. Breslin, 38 Caselli Ave., San Francisco, Calif. 94114

Filed Aug. 12, 1982, Ser. No. 407,514
Int. Cl.³ E21B *43/00*
U.S. Cl. 166—372 **45 Claims**

1. Apparatus for recovery of liquid hydrocarbons on ground water below ground level comprising: a plurality of well casings, the well casings being perforated and adapted to be driven into the ground through the interface between the liquid hydrocarbons and the ground water so that the liquid hydrocarbons can enter the well casings; a recovery unit for each well casing, respectively, each recovery unit including a housing for collecting liquid hydrocarbons, the housing having a semi-permeable membrane defining the outer surface thereof,

the membrane being pervious to the liquid hydrocarbons and impervious to the ground water, and a flotation member coupled with the housing to permit the latter to be floated on the ground water such that a portion of the housing intersects the interface between the liquid hydrocarbons and the ground



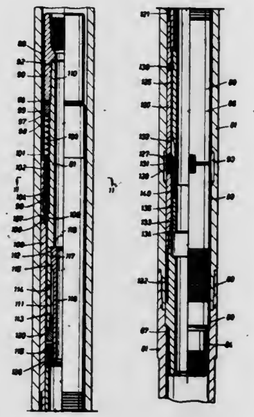
water; a conduit coupled with each recovery unit, respectively and adapted to be coupled to a fluid receiver remote from the recovery units for directing liquid hydrocarbons from the housing to the receiver; and means coupled with the recovery units for sequentially forcing the collected hydrocarbons from the recovery units to the receiver.

4,497,371

SETTING TOOL AND RETRIEVABLE LANDING ASSEMBLY

Hiram E. Lindsey, Jr., Midland, Tex., assignor to MWL Tool and Supply Company, Midland, Tex.

Filed Jun. 16, 1981, Ser. No. 274,170
Int. Cl.³ E21B *23/04*
U.S. Cl. 166—377 **18 Claims**



1. A method of setting a retrievable landing assembly in a packer bore receptacle in a well bore comprising the steps of:

lowering a retrievable landing assembly and setting tool on a string of tubing through a string of pipe containing a packer bore receptacle until the retrievable landing assembly is sealingly received in the packer bore receptacle and is seated therein;

applying hydraulic pressure to said string of tubing to determine by a build-up of pressure that the retrievable landing assembly is properly seated in the packer bore receptacle,

opening a valve in the setting tool to permit circulation of liquid between the setting tool and packer bore receptacle above the sealing elements on the packer bore receptacle and dropping a sealing ball through the tubing string to seal off the cross-section of the setting tool so that a setting force may be applied to the retrievable landing assembly;

applying hydraulic pressure to said tubing string after the ball is seated in the setting tool for actuating said setting tool and said retrievable landing assembly;

disconnecting said setting tool from the retrievable landing assembly after the actuation of the retrievable landing assembly and retrieving said setting tool.

4,497,372

ANTI-TWIST CONTROL SYSTEM FOR DEVIATED CONDUCTOR DRIVING SYSTEMS

James K. Simpson, New Orleans, La., assignor to Gurtler, Hebert & Co., Inc., New Orleans, La.

Filed Jun. 7, 1983, Ser. No. 499,976
Int. Cl.³ E21B *7/08*
U.S. Cl. 166—381 **5 Claims**



1. A method for countering any undesired twisting of a deviated conductor which is to be deviated in a desired direction as it is driven into a substratum from an offshore platform through one or more conductor guides mounted on the platform structure, comprising the following steps:

a. providing at least one bar stop on and extending inwardly and radially from the inner surface of at least one conductor guide and at least one corresponding bar stop on and extending outwardly and radially from the outer surface of the conductor casing, with the inward extent of the bar stop of the conductor guide and the outward extent of the bar stop of the conductor casing over-lapping; and

b. positioning the conductor casing in the conductor guide with their respective bar stops relatively positioned so that they come into side-to-side contact when the conductor casing attempts to twist away from its desired targeted deviation direction in said conductor guide.

4,497,373

FIRE AND EXPLOSION DETECTION AND SUPPRESSION

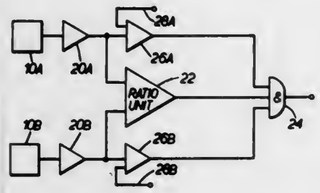
Robert L. Farquhar, Reading, England, assignor to Graviner Limited, High Wycombe, England

Filed Aug. 3, 1982, Ser. No. 404,726
Claims priority, application United Kingdom, Aug. 20, 1981, 8125485
Int. Cl.³ A62C *3/00*
U.S. Cl. 169—45 **20 Claims**

1. A fire and explosion detection system responsive to radiation from fires and explosions and capable of discriminating between a first case in which radiation is produced from a source of fire and explosion in the presence of a flammable substance before it commences to burn and a second case in which radiation is produced therefrom in the absence of the

flammable substance, so as to produce an alarm signal in the first case but not in the second case, comprising

first and second radiation detection means arranged to produce electrical signals in response to radiation received in respective narrow wavelength bands, the wavelength band of the first radiation detection means being a band in which the said flammable substance absorbs radiation from the said source, and the wavelength band of the



second radiation detection means being a band not associated with absorption by the flammable substance of radiation from the said source, and

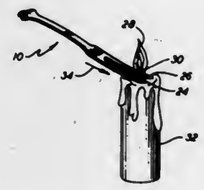
output means comprising means for comparing the electrical signals of the two detection means whereby to produce a said alarm signal indicative of the said first case when the comparison indicates that the signal from the first detection means is relatively low compared with the signal from the second detection means.

4,497,374

CANDLE SNUFFER AND METHOD

William G. Millar, 124 Arlington Rd., Utica, N.Y. 13501

Filed May 23, 1983, Ser. No. 497,361
Int. Cl.³ A62C 3/00
U.S. Cl. 169—46 1 Claim



1. A method of extinguishing the flame of a candle having a wick of predetermined thickness with a candle snuffer having a handle portion and a pair of elongated tines extending therefrom in spaced relation, the space between at least predetermined portions of said tines being not substantially greater than said predetermined wick thickness, said method comprising the steps of:

(a) moving said candle snuffer in a generally forward direction along the axis of said elongated tines to place a portion of said candle wick between the flame and the candle body between said predetermined portions of said tines; and

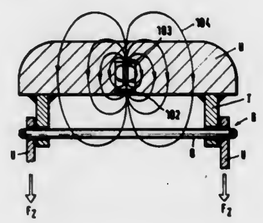
(b) moving said candle snuffer in a generally upward direction to draw said predetermined portions of said tines over the end of said wick, thereby extinguishing said flame.

4,497,375

FORCE MEASURING APPARATUS MOUNTED ON TRACTOR INCLUDING HALL SENSOR DETECTING DEFORMATION OF FLEX ROD TO CONTROL TRACTOR POWER HOIST

Norbert Mucheyer, Rechtenbach, and Hubertus Schmidt, Lohr, both of Fed. Rep. of Germany, assignors to Mannesmann Rexroth GmbH, Lohr, Fed. Rep. of Germany

Filed Mar. 15, 1982, Ser. No. 357,897
Claims priority, application Fed. Rep. of Germany, Mar. 16, 1981, 3110107
Int. Cl.³ A01B 63/112
U.S. Cl. 172—10 11 Claims



1. A force measuring apparatus mounted on an agricultural tractor with a power hoist, said force measuring apparatus for controlling said power hoist wherein the force affecting a point on said power hoist is transferred to an elastic system which is elastically deformed, comprising:

a flex rod subjected to a bending moment introduced by a pair of lower hitches wherein said flex rod indicates a bending moment said lower hitches forming part of said power hoist;

at least one Hall sensor having its detector surface intersecting the plane of the main bend deformation of said flex rod in a region of maximum deflection thereof wherein the longitudinal axis of said rod is in said plane; and

a control circuit connected to the output of said Hall sensor for controlling said force; wherein

said Hall sensor is combined with a first magnet to form a single unit component securely attached to the rear of said tractor and spaced from said flex rod in such a way that the magnetic field lines starting from the magnet and going through the Hall sensor substantially exclusively lie in the plane of the bend deformation to be measured.

4,497,376

INTERCHANGEABLE RAM DIESEL PILE

George Kurylko, Hanover, N.J., assignor to MKT Geotechnical Systems, Dover, N.J.

Filed Aug. 2, 1982, Ser. No. 404,367
Int. Cl.³ F21B 7/00; F01B 29/04
U.S. Cl. 173—1 3 Claims

1. In a pile driving diesel-engine hammer adapted to be provided with interchangeable rams to drive a pile into a foundation comprising:

an outer cylindrical casing having a combustion chamber therein,

at least two interchangeable rams of different weights, each having a piston at one end thereof to be slidably received in said casing above said combustion chamber,

at least one pair of air intake-exhaust ports provided in the wall of said outer cylindrical casing and in communication with said combustion chamber,

an anvil seated in the bottom of said outer cylindrical casing below said combustion chamber and said pair of air intake-exhaust ports,

a pile driving cap connected to said anvil, and

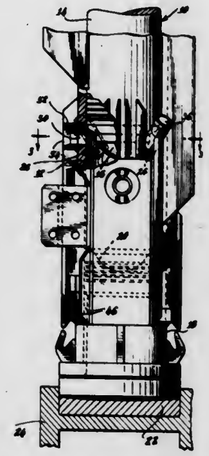
means on said outer cylindrical casing for introducing fuel into said combustion chamber for admixture with air

received through said air intake-exhaust ports in response to movement of a ram within said casing,

the improvement comprising:

means for plugging said intake-exhaust ports when the heaviest one of said rams is in said casing, and

an auxiliary and alternate air intake-exhaust means including an opening circumferentially spaced from said pair of air



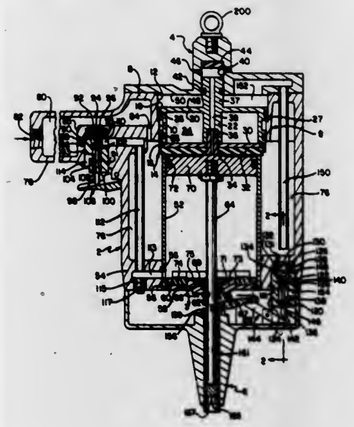
intake-exhaust ports in the outer cylindrical casing and at a greater height above said anvil than said pair of air intake-exhaust ports for introducing air into said combustion chamber and for receiving the products of combustion expelled from said chamber when said plug means are inserted in said pair of air intake-exhaust ports and said hammer is in use with the heaviest one of said rams.

4,497,377

PNEUMATIC TOOL

Harry M. Haytayan, Lincoln, Mass., assignor to Paeutek, Inc., Hudson, N.H.

Filed Nov. 30, 1978, Ser. No. 965,107
Int. Cl.³ B25C 1/04, 5/02
U.S. Cl. 173—15 8 Claims



1. A penumatic tool comprising:

a hollow housing having upper and lower ends;

a hollow cylinder mounted in said housing, said cylinder having upper and lower ends;

a piston slidably mounted in said cylinder;

a hammer connected to said piston and having a striking surface;

lower end means for closing off said lower ends of said cylinder and said housing, said lower end means having a first bore therein for slidably receiving said hammer;

an air reservoir defined within said housing, said housing having an inlet for connecting said reservoir to a regulated source of high pressure air;

a primer valve for alternately (1) transmitting high pressure air from said air reservoir to said lower end of said cylinder below said piston, or (2) exhausting high pressure air from said lower end of said cylinder below said piston;

selectively operable mechanical means for operating said primer valve;

a poppet valve for rapidly opening up or closing off said upper end of said cylinder above said piston, in order that high pressure air from said air reservoir may or may not be admitted rapidly to the upper end of said cylinder above said piston;

an elongate feeler rod mounted in said lower end means and adapted for movement between a first extended position and a second retracted position, said feeler rod extending substantially below said hammer when said piston is positioned at said upper end of said cylinder and said feeler rod is positioned in said first extended position, said feeler rod being arranged to be moved by an object from said first extended position to said second retracted position when said tool is engaged with said object;

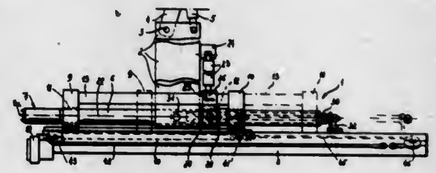
a feeler-operated control valve disposed at least partly within said lower end means and adapted for alternately (1) transmitting high pressure air to said poppet valve so as to cause said poppet valve to close off said upper end of said cylinder above said piston when said feeler rod is in said first extended position, or (2) exhausting said high pressure air from said poppet valve so as to cause said poppet valve to open up said upper end of said cylinder above said piston when said feeler rod is in said second retracted position, in order that said piston may be driven from said upper end of said cylinder to said lower end of said cylinder when and only when (1) said primer valve has exhausted high pressure air and (2) said feeler-operated control valve has exhausted said high pressure air from said poppet valve so as to cause said poppet valve to open up said upper end of said cylinder above said piston to the high pressure air of said air reservoir, said primer valve and said feeler-operated control valve being operable independently of one another.

4,497,378

DRILLING AND BOLTING TURRET

Gilbert Beney, Meyzieu, and Michel Combet, Beynost Miribel, both of France, assignors to Elmco-Secoma Societe Anoayme, Meyzieu, France

Filed Feb. 1, 1983, Ser. No. 462,989
Claims priority, application France, Feb. 2, 1982, 82 02109
Int. Cl.³ E21C 11/00
U.S. Cl. 173—32 19 Claims



1. A drilling and bolting turret comprising:

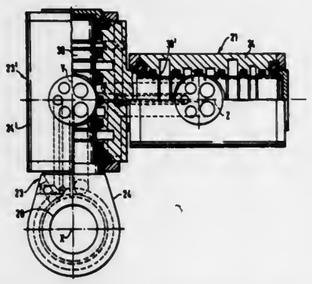
a support having two ends, one of said ends being connectable to an arm for positioning the turret;
a first cylindrical member mounted on said support at the other end thereof and formed at one of its extremities with an anchoring point adapted to be seated in a wall for preventing rotation of said first cylindrical member;
a pair of bearings axially spaced apart and rotatable on said first cylindrical member while being axially slidable therealong;
a girder fixed on said bearings and extending parallel to said first cylindrical member;
a drilling carriage longitudinally shiftable on said girder for drilling a hole in said wall, and a bolting carriage longitudinally shiftable on said girder for inserting a bolt in a hole drilled by said drilling carriage;
means on said girder for longitudinally shifting said carriages therealong;
means for longitudinally sliding said girder relative to said support;
a second cylinder member fixed to said bearings and movable therewith upon axial displacement of said bearings and said girder relative to said first cylindrical member;
a connecting element swingably mounted on said first cylindrical member and slidably receiving said second cylindrical member; and
a fluid-responsive piston-and-cylinder arrangement operatively connected to said support and said connecting element for angularly displacing the connecting element about the axis of said first cylinder member, thereby rotating said turret about said axis and selectively positioning said carriages with respect to said wall.

4,497,379

MODULAR PIVOTAL FLUIDIC JOINT SYSTEMS AND COMPONENTS THEREOF

Pierre Mailliet, and Edgar Kraemer, both of Howald, Luxembourg, assignors to Paul Wurth S.A., Luxembourg

Filed Oct. 22, 1981, Ser. No. 313,780
Claims priority, application Luxembourg, Nov. 17, 1980, 82942
Int. Cl.³ F17D *1/00*
U.S. Cl. 173—39 **31 Claims**



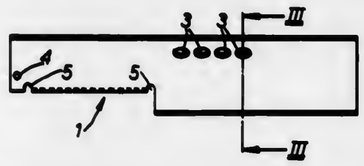
1. A multi-path rotatable fluid coupling to which fluidic pressure lines are secured comprising:
first joint means, said first joint means including a body portion having a cylindrical bore, said first joint means having a plurality of spacially separated annular grooves formed in the wall of said bore, said first joint means further having a plurality of internal passages, said passages establishing fluid communication between said annular grooves and the exterior of said first joint means, said first joint means further having a cylindrical extendion, said extension having a plurality of annular grooves formed on the exterior thereof, said extension having an axis which is oriented transversely with respect to the axis of said bore;
second joint means, said second joint means having a body portion and a cylindrical extension, said extension being sized to be rotatably fitted within said bore of said first joint means, said second joint means being provided with internal passages extending between the exterior of said body portion and the exterior of said extension, the terminations of the passages at the exterior of said extension, the terminations of the passages at the exterior of said extension being in registration with said annular grooves of said first joint means;
first sealing means, said first sealing means fluidically sealing said second joint means within said bore of said first joint means while allowing rotation between said first joint means, said sealing means preventing leakage of fluid between adjacent of said first joint means grooves;
third joint means, said third joint means having a cylindrical bore provided with annular grooves, said extension of said first joint means being rotatable fitted within the bore of said third joint means, said third joint means having internal passages which establish fluid communications between the exterior of said third joint means and said grooves in said bore of said third joint means; and
second sealing means fluidically sealing said extension of said first joint means within said bore of said third joint means, said second sealing means preventing leakage of fluid between adjacent grooves of the bore of said third joint means while permitting relative rotation between said first and third joint means.

4,497,380

HAND-HELD POWER TOOLS INCLUDING BEARING SUPPORTS FOR COMPONENTS UNDERGOING LINEAR MOVEMENT

John H. Flack, deceased, late of Uxbridge, England (by Margaret A. Flack, administrator), and Frank F. Simpson, Staines, England, assignors to Black & Decker Inc., Newark, Del.

Filed Jun. 16, 1982, Ser. No. 389,142
Claims priority, application United Kingdom, Jun. 17, 1981, 81.18671
Int. Cl.³ F16C *5/00*
U.S. Cl. 173—117 **8 Claims**



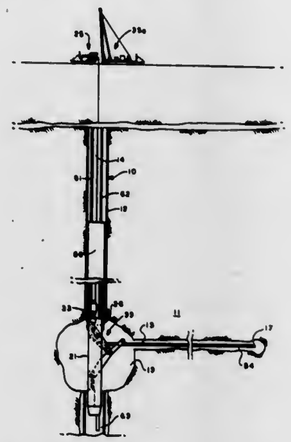
1. A hand-held power tool, comprising:
a housing;
a motor mounted in said housing;
a component for undergoing linear reciprocating movement for actuating a tool member when present;
a bearing support mounted in said housing and within which said component is reciprocally driven by said motor;
said bearing support comprising a guide cylinder of sheet metal, said guide cylinder having been formed from a strip of the sheet metal;
said guide cylinder having a gap extending along the full length thereof and defined by two opposed edge portions of said sheet metal, at least part of the length of said gap being defined by closely adjacent edges of said sheet metal, said closely adjacent edges not being in actual contact;
said guide cylinder being able to flex radially due to said gap and to being formed from sheet metal in order to accommodate said component therewithin;
said guide cylinder having a cut away portion at one end to accommodate a reciprocating drive connection between said component and said motor, said cut away portion defining a substantially wider portion of said gap than said at least part defined by said closely adjacent edges; and
said cut away portion having turned over longitudinal edges comprising guide surfaces for a part of said reciprocating drive connection.

4,497,381

EARTH DRILLING APPARATUS AND METHOD

Ben W. O. Dickinson, III, San Francisco; Robert W. Dickinson, San Rafael; Irving L. Odgers, Loomis, and James McGhee, Berkeley, all of Calif., assignors to Bechtel National, Inc., San Francisco, Calif.

Filed Mar. 2, 1983, Ser. No. 471,431
Int. Cl.³ E21B *7/08, 7/18*
U.S. Cl. 175—61 **13 Claims**



1. Earth well drilling apparatus comprising a structure adapted to be positioned within a well adjacent a mineral producing region, piping in the well to which the structure is secured, a drilling tube of the solid metal wall type disposed within the piping, means for applying hydraulic liquid under pressure to the piping and tube, a drilling head of the hydraulic jet type secured to the lower end of the tube, means forming a seal between the piping and the tube, the tube and drilling head being urged downwardly through the piping when hydraulic pressure is applied to the same, tube bending means carried by the structure, said bending means being laterally extensible from a retracted position substantially within the configuration of the structure and serving when extended and when hydraulic pressure is applied to the tube to propel the same downwardly through the piping and bending means to bend the tube and to direct the tube and drilling head laterally toward the formation.

4,497,382

RETRACTABLE CORE DRILL BIT

Nikolay D. Nenkov, Sofia, Bulgaria, assignor to Komitet po Goelogica, Sofia, Bulgaria

Filed Mar. 24, 1983, Ser. No. 478,486
Int. Cl.³ E21B *10/64*
U.S. Cl. 175—260 **1 Claim**

1. In a retractable core drill bit having an upper end and a lower end, said drill bit containing an outer tube and a unitary core drill bit fitted to the lower end of the outer tube, above said unitary core drill bit there being affixed to the outer tube cutting components, the improvement which comprises a hollow cylindrical body housed within the outer tube, the unitary core drill bit being screwed to the lower end of said hollow cylindrical body and a strip nut being affixed to the upper end thereof, said stop nut having its both ends in the form of opposite chucks, wherein the middle of the hollow cylindrical body there are pivotally attached said cutting components and longitudinal slots are formed between these cutting components, inside the hollow cylindrical body there being a spacer the upper portion of which is connected to an end piece and the hollow cylindrical body being enveloped by



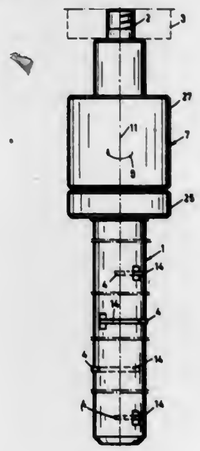
a guiding sleeve which is in contact with a supporting sleeve enveloped by an external end piece in which the cutting components are affixed in slots positioned one opposite the other in planes which are disposed perpendicular to each other on the lower end of the hollow cylindrical body.

4,497,383

UNDERCUTTING DEVICE FOR ANCHOR HOLES

Alfred Ostertag, Celle, Fed. Rep. of Germany, assignor to Norton Company, Worcester, Mass.

Continuation of Ser. No. 405,498, Aug. 5, 1982, abandoned. This application May 14, 1984, Ser. No. 609,527
Claims priority, application Fed. Rep. of Germany, May 15, 1981, 3119605
Int. Cl.³ E21B *7/28*
U.S. Cl. 175—289 **20 Claims**



1. A device for undercutting a wall about a bore hole comprising:
a rotatable tubular support housing adapted for insertion into a

bore hole, to be coupled to and rotated by rotary drive means, and having

at least one circumferential guide slot including an entrance thereto situated between axially spaced slide surfaces extending circumferentially in a portion of the support housing and inwardly from the entrance to the circumferential guide slot, and

pull type connector means including at least one bearing pocket with a peripheral side entrance and a driving trailing side surface, of the support housing, adjoining the bearing pocket and facing in a leading working direction of the support housing, adjoining and extending inwardly from the peripheral side entrance and axially from one of the slide surfaces and situtated solely at a leading end portion of the circumferential slot whereby the support housing is adapted to receive, support, engage, guide and pull around at least one cutting tool insertable and swivelable in the guide slot from a retracted position outside the cross sectional contour of the support housing and back to the retracted position;

a cutting tool including a cutting member and a pivot lever supporting the cutting member on a trailing end portion thereof, slideably mounted in between the slide surfaces of the tubular support housing, swivelable inwardly and outwardly in a plane of motion that intersects with the support housing and which has

a pull type connection with the support housing only at its leading end portion which precedes the cutting member during rotation in a working rotational direction by a predetermined circumferential distance, including at least one stud extending axially from the leading end portion and inserted, by way of the side entrance, into the bearing pocket and the stud having

a side surface extending toward the working rotational direction and away from the driving trailing side surface and a portion of the stud drivingly engaged by the driving trailing side surface which during rotation exerts on the stud a reaction force with an inwardly directed vector relative to the support housing whereby the cutting tool is easily removed and replaced solely by way of the side entrance, constantly forced inwardly toward the retracted position, pulled around by the support housing and placed in tension during a cutting operation;

positioning means in the support housing and operable from a region of the device outside the bore hole for positioning and moving the cutting tool into cutting engagement with the bore hole wall including

a feed control rod axially displaceable in the tubular support housing and having a camming surface adapted for engaging and displacing the pivot lever; and

actuating means supported by the support housing for axially displacing the feed control rod relative to the housing and thereby adjusting the position of the pivot lever and cutting member thereon in the plane of motion.

4,497,384

REAMER DISASSEMBLY

Lawrence D. Hart, Houston, Tex., assignor to Smith International, Inc., Newport Beach, Calif.

Filed Jan. 4, 1982, Ser. No. 336,804

Int. Cl.³ E21B *12/00*

U.S. Cl. 175—315 **12 Claims**

1. Apparatus for disassembly of a wall contacting device, such device having a body with a socket therein and a block making an interference fit with the socket and removable out of the socket by movement in a certain direction, said block having a part facing away from the direction the block must move for removal from the socket,

said apparatus comprising:

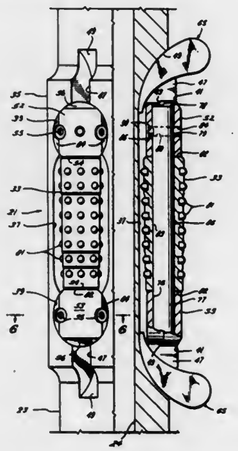
passage means in such device via which a disassembly tool can be placed for exerting force on the block to effect such removal,

a disassembly tool removably received in said passage means,

said tool having a pressure portion engaged with said part of the block and a head portion exposed to the exterior of the device for receiving force, and

cooperting guide means on the body and tool for guiding the tool to impart a certain motion thereto to keep said pressure portion engaged with said part of the block as the block moves out of the socket in response to force applied to said head,

said certain motion consisting of rotation in parallel planes, perpendiculars to which are transverse to said certain direction of movement of the block,



said cooperating guide means comprising surfaces on said body and tool both of which surfaces are cylindric about a common axis perpendicular to said planes,

the radial distance from said axis of each of said surfaces being a constant and the radial distance of one of said surfaces from said axis being equal to the radial distance of the other of said surfaces from said axis,

said cylindric surface of the body supporting the tool over the area of engagement of said cylindric surfaces during motion of the tool to resist galling and gouging,

said certain motion of said tool during block removal being pure rotation about the axis of said cylindric surfaces, tending to prevent translatory rebound upon sudden application of force to the head portion of the tool, said axis of rotation being stationary relative to said tool passage.

4,497,385

COMBINATORIAL WEIGHING APPARATUS

Takashi Sashiki, Nagaokakyo, Japan, assignor to Kabushiki Kaisha Ishida Koki Seisakusho, Kyoto, Japan

Filed Aug. 18, 1982, Ser. No. 409,298

Claims priority, application Japan, Aug. 18, 1981, 56-122914[U]; Aug. 18, 1981, 56-122915[U]; Sep. 4, 1981, 56-132244[U]

Int. Cl.³ G01D *19/32*

U.S. Cl. 177—59 **13 Claims**

1. A combinatorial weighing apparatus, comprising:

a distribution table for distributing material to be weighed that is supplied thereto;

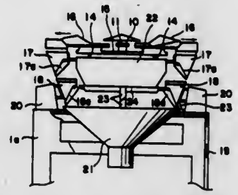
distribution supply devices arranged radially around said distribution table and positioned to received said material distributed by said distribution table;

hoppers fixedly positioned below said distribution supply devices and positioned to received said material from said distribution supply devices;

weight sensors coupled to said hoppers to weigh the material in the associated hoppers;

computing means, operatively connected to said weight sensors, for computing the total weight of the material for various combinations of hoppers and selecting the best combination of hoppers which provides a total weight most closely approximating a preset target weight within a predetermined tolerance; and

hopper drive means, operatively connected to said computing means and engagable with said hoppers, for driving said hoppers on the basis of the best combination thereby to let the hoppers of said best combination discharge said



material, said hopper drive means being surrounded by said hoppers and comprising:

a motor;

lever mechanisms for and engagable with respective hoppers; and

transmission mechanisms, coupled to said motor and said lever mechanisms, for respective hoppers and for selectively transmitting the output torque of said motor to said lever mechanisms, where said transmission mechanisms selected on the basis of said best combination are operated to activate the associated lever mechanisms thereby to open said hoppers constituting said best combination.

4,497,386

WEIGHING APPARATUS INCLUDING IMPROVED FORCE-TRANSMITTING LEVER MEANS

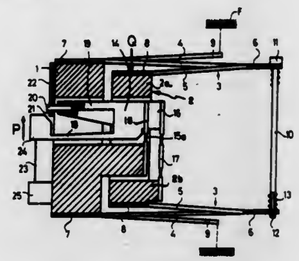
Eugen Meier, Meilen, Switzerland, assignor to Mettler Instrumente AG, Greifensee, Switzerland

Filed Dec. 27, 1982, Ser. No. 453,103

Claims priority, application Switzerland, Jul. 16, 1982, 4337/82

Int. Cl.³ G01G *3/08, 23/02*

U.S. Cl. 177—229 **8 Claims**



1. Weighing apparatus of the short-stroke type, comprising

(a) a console member (1);

(b) a load-receiving member (2);

(c) resilient parallel guide means (3) connecting said load-receiving member with said console member for vertical displacement relative thereto;

(d) short-travel movement measuring means (23) connected at one end with said console member;

(e) force transmitting lever means (14) connecting the other end of said measuring means with said load-receiving member, including

(1) a multi-arm lever (14) including a rigid first arm (19);

(2) pivot means (15) connecting said lever with said console for pivotal movement about a horizontal pivot axis (15*a*), said lever including a resilient second arm (18) connected with the other end of said measuring means; and

(3) means connecting said lever with said load receiving member, whereby vertical displacement of said load-receiving member is transmitted to said measuring means via said resilient second arm; and

(f) stop means (20) cooperating with said rigid first arm for limiting the extent of pivotal travel of said lever about its pivot axis.

4,497,387

TRANSFORMER WITH SMOOTH-WALLED TANK

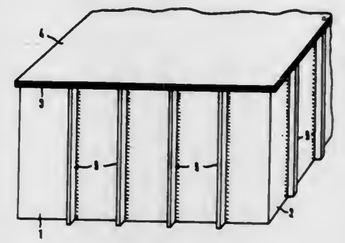
Erich Reiplinger, Nuremberg, Fed. Rep. of Germany, assignor to Transformatoren Union Aktiengesellschaft, Stuttgart, Fed. Rep. of Germany

Filed Sep. 1, 1982, Ser. No. 413,750

Claims priority, application Fed. Rep. of Germany, Sep. 7, 1981, 3135420

Int. Cl.³ H02K *5/24*

U.S. Cl. 181—202 **6 Claims**



1. Transformer having an active part thereof disposed in an oil-filled, smooth-walled tank having side walls braced by ribs secured by welding and subdivided into wall-high panels, the panels, respectively, comprising a sheetmetal wall having a resonance frequency f_o smaller according to the function $f_o=(S\cdot k_f)/B^2$ than twice the main electric power line frequency, wherein S is the thickness of the sheetmetal in cm, B the net panel width in cm, and k_f a constant having an absolute magnitude which depends upon the length-to-width ratio of the panel, upon the modulus of elasticity, upon the transverse contraction and upon the specific gravity of the material used therefor.

4,497,388

PULSATION DAMPENER AND ACOUSTIC ATTENUATOR

Edwin Dexter, South Brooksville, Me., assignor to Gaulin Corporation, Everett, Mass.

Continuation-in-part of Ser. No. 296,228, Aug. 25, 1981, abandoned. This application Dec. 3, 1981, Ser. No. 327,131

Int. Cl.³ F16L *55/02*

U.S. Cl. 181—233 **15 Claims**

1. A pipeline pulsation dampener of the type mounted in series with a pipeline for flow of liquid through the dampener, comprising:

a housing comprising a single tubular member having ports for connecting the housing in series with the pipeline one port extending through a side of the housing near a first end thereof to cause a significant change in direction of liquid flow at that port and the other port being centered at a second end of the housing;

a restraining screen member enclosed entirely within the housing with an annular orifice provided at the second port between the housing and a closed nose of the restraining screen; and



a deformable bladder, within the screen, containing a pressurized fluid, the bladder being attached to only the first end of the housing and being removable from the housing through that end while the housing is connected at the ports to the pipeline.

4,497,389

METHOD OF ERECTING DROP SCAFFOLDING, A DROP SCAFFOLDING STRUCTURE, AND A SCAFFOLD COUPLING THEREFOR

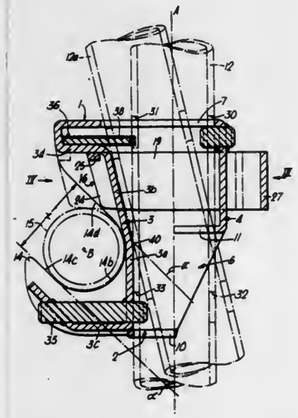
Joseph E. Whitlam, Barnsley; Alwyn H. Richards, Pontefract, and Brian Akers, Sheffield, all of England, assignors to Whitlam Holdings Limited of Low Valley Industrial Estate, Barnsley, England

Filed Nov. 13, 1981, Ser. No. 320,888

Claims priority, application United Kingdom, Nov. 19, 1980, 8037144

Int. Cl.³ E04G 3/10

U.S. Cl. 182—150 **13 Claims**



1. A method of erecting drop scaffolding comprising; taking first and second drop tubes, each drop tube having a top coupling secured by first securing means to an upper part thereof against axial movement relative thereto, and a bottom coupling secured by the second securing means to a lower part thereof against axial movement relative thereto, each top coupling having a cradle with an opening directed generally downwardly and each bottom coupling having a cradle with an opening directed generally upwardly; hooking the top coupling of each drop tube to a horizontal support tube that is secured against vertical movement, the support tube extending transversely of the drop tubes, while the drop tubes are inclined at an acute angle to the vertical; swinging the trapeze-like structure formed by the drop tubes and a scaffold tube extending transversely between said drop tubes parallel to said horizontal support tube and releasably secured in the cradles of the two bottom couplings so that said drop tubes move from said inclined position to hang vertically from the horizontal support tube; and releasably securing the top couplings to the horizontal support tube.

4,497,390

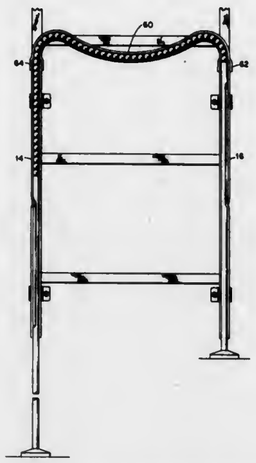
SELF-ADJUSTING LADDER

Frederick D. Wilson, 630 Ramsler Dr., Hendersonville, N.C. 28739

Filed May 23, 1983, Ser. No. 497,121

Int. Cl.³ E06C 7/44

U.S. Cl. 182—202 **1 Claim**



1. A mechanism for making a ladder self-adjusting, comprising:

a U-shaped hollow tubular member adapted to be rigidly coupled to the bottom portion of the ladder, the tubular member including a pair of parallel channels and a bridge channel connecting the tops of the parallel channels, said bridge channel being flexible so that the mechanism may be utilized with ladders of varying widths; a pair of rods slidably received in each of said parallel channels, a plurality of balls movably received in said bridge channel and said parallel channels, said balls not being coupled to one another and adapted to freely and independently roll in said channels, the inside surfaces of said channels where said balls are located are substantially smooth, the far ends of each of said rod adapted to contact normal supporting surfaces for the ladder, a portion of each rod extending from the open end of the respective channel, the length of the portion of each rod which extends from the open end of each of said channels depending upon the relative level of the respective surface of which each of said rod contacts, said mechanism providing infinite levels of adjustment over its total range of adjustment.

4,497,391

MODULAR OPERATIONAL ELEVATOR CONTROL SYSTEM

Arnold Mendelsohn, Simsbury; Joe K. Koe, Avon, both of Conn., and Gregory Schlenda, Tuscon, Ariz., assignors to Otis Elevator Company, Farmington, Conn.

Filed Oct. 27, 1983, Ser. No. 546,225

Int. Cl.³ B66B 3/00

U.S. Cl. 187—29 R **5 Claims**

1. A control system for controlling communication between passengers and an elevator controller including fixtures for providing passenger request signals in response to passenger service requests and for providing displays to the passengers indicative of status signals from the controller, and means for communicating the passenger request signals from the fixtures to the controller and for communicating the status signals from the controller to the fixtures, comprising:

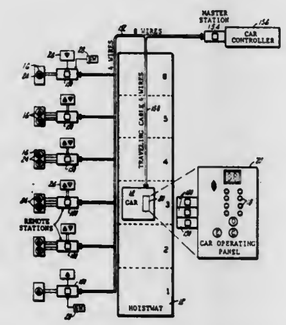
a transmission line;

a portion of the controller dedicated to the control system for controlling communication between the passengers and the remainder of the controller for providing clock pulses on the transmission line to mark time slots in a transceive cycle of a time-division, half-duplex multiplex protocol; and

a master station, connected between the portion of the controller and the transmission line, comprising:

first counter means for providing first receive cue signals during assigned time slots in response to the clock pulses and for providing first transmit cue signals during assigned other time slots in response to the clock pulses;

first output switch means for providing the passenger request signals from the transmission line in serial format to the portion of the controller on first parallel output lines in a system receive mode in response to the first receive signals according to the multiplex protocol; and



first input switch means for providing the status signals from the portion of the controller on first parallel input lines to the transmission line in serial format in a system transmit mode in response to the first transmit signals according to the multiplex protocol;

remote stations, each connected between the fixtures and the transmission line and comprising:

second counter means for providing second receive cue signals during an assigned time slot in respose to the clock pulses and for providing second transmit cue signals during an assigned other time slot in response to the clock pulses;

second input switch means for providing the passenger request signals from the fixtures on second parallel input lines to the transmission line in serial format in the system receive mode in response to the second receive cue signals according to the multiplex protocol; and

second output switch means for providing the status signals from the transmission line in serial format to the fixtures on second parallel output lines in the system transmit mode in response to the second transmit cue signals according to the multiplex protocol.

4,497,392

RAIL VEHICLE DISC BRAKE CALIPER

Bo G. Stensson, Brösarp; Lars M. Severinsson, Hishult, and Bo Lundström, Helsingborg, all of Sweden, assignors to SAB Nife AB, Landskrona, Sweden

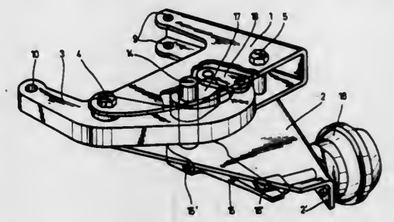
Filed Mar. 29, 1983, Ser. No. 480,108

Claims priority, application Sweden, Apr. 5, 1982, 8202163

Int. Cl.³ B61H 5/00

U.S. Cl. 188—59 **4 Claims**

1. A rail vehicle disc brake caliper arrangement for actuating a braking disc on the rail vehicle comprising in combination, a brake caliper including a base frame having a pivotally attached caliper lever extending therefrom to operate in a caliper plane and adapted to carry brake pads on opposite sides of said braking disc, a slack adjuster with a worm wheel for positioning a rotatable shaft thereof pivotally arranged in the base frame adjusting differences of slack during brake pad wear by small relative rotary movements of the worm wheel and shaft



and having an actuating lever arm disposed to rotate said shaft, means mounting said slack adjuster in said frame with said lever arm disposed to move in a plane substantially parallel to the caliper plane, means connecting a fluid actuated brake cylinder to rotate the slack adjuster actuating lever arm for braking, and coupling means coupling the slack adjuster rotatable shaft to pivot said caliper lever in response to both the brake cylinder braking and the slack adjuster adjustments.

4,497,393

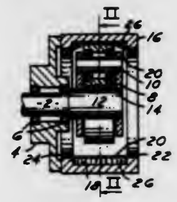
ROTARY RETARDATION DEVICES

John H. Brems, Apt. 16-D, 2800 S. Ocean Blvd., Boca Raton, Fla. 33432

Filed Dec. 4, 1981, Ser. No. 327,515

Int. Cl.³ F16F 9/10

U.S. Cl. 188—322.5 **2 Claims**



1. In a rotary device for angular velocity control in which the retarding torque is substantially proportional to the angular velocity, and which utilizes the deformation of a viscous fluid to create said retarding torque, a construction which includes:

(a) a first torque member,

(b) a second torque member mounted for unlimited rotation relative to said first torque member in a clockwise or counter-clockwise direction, and

(c) a rotating member mounted on one of said torque members for rotation relative to the other of said torque members, and

that improvement which comprises an annular shallow cavity formed in one of said members having on open side, and a flexible deformable membrane diaphragm overlying said open side to close said cavity, said diaphragm being sealed to the open side of said cavity, and a quantity of viscous fluid in said sealed cavity, said membrane being in contact with a rotating path of one of said torque members,

whereby a relative rotational movement between said first and second torque members creates a progressive deflection of said diaphragm between said rotating member and

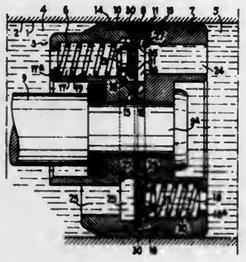
one of said torque members causing a progressive shearing of said viscous fluid thereby creating a retarding torque between said first and second torque members.

4,497,394

PISTON HAVING VALVES FOR A DAMPER

Michel Ferrand, Montbeliard, and Maurice Durupt, Bavans, both of France, assignors to Automobiles Peugot/Automobiles Citroen, France

Filed Sep. 8, 1982, Ser. No. 416,023
Claims priority, application France, Sep. 23, 1981, 81 17908
Int. Cl.³ F16F 9/34; F15B 15/22
U.S. Cl. 188—322.15 **7 Claims**



1. In a piston structure for in particular a damper, the piston structure comprising a rod, a central element fixed on the rod and two lateral elements fixed on the rod axially on opposite sides of the central element, the central element, the lateral elements and the rod being coaxial, the central element and the lateral elements being distinct elements in axially adjoining relation defining aligned passages axially in the extension of one another and circumferentially spaced apart, valve members for closing the passages and received in the lateral elements and respectively cooperative with valve seats defined by the central element on opposite sides of the central element; the improvement wherein the central element is a thin disc clamped between the two lateral elements and having a diameter which is less than a maximum diameter of the piston structure and at least one of the two lateral elements carries a guide ring on the periphery of said one lateral element for guiding sliding contact with a cylinder in which the piston structure is intended to operate.

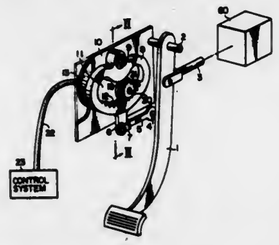
4,497,395

ANTI CREEP VEHICLE BRAKING SYSTEM ALLOWING FURTHER ADDITIONAL BRAKING ACTION APPLICATION

Takahiro Nogami; Shigetaka Akahori; Harumi Oohori, and Nobuyasu Nakanishi, all of Toyota, Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Feb. 22, 1982, Ser. No. 350,571
Claims priority, application Japan, May 22, 1981, 56-74977; May 22, 1981, 56-78235; May 22, 1981, 56-79732
Int. Cl.³ B60K 41/28
U.S. Cl. 192—4 A **12 Claims**

1. An anti creep braking system for a vehicle, comprising: a brake pedal movable to and fro with respect to said vehicle and adapted to be moved in a first direction by a vehicle operator in order to generate braking force;
a braking force generation system drivingly connected with said brake pedal and adapted to generate a braking force that brakes said vehicle with increased intensity when said brake pedal is moved more in said first direction;
a brake holding member movable with respect to said vehicle; a one way clutch;
a braking device which selectively allows or prevents the movement of said brake holding member with respect to said vehicle;
and a control system for controlling said braking device so as selectively to allow to prevent the movement of said brake holding member with respect to said vehicle;
said brake holding member being drivingly connected with said brake pedal via said one way clutch to be moved with respect to said vehicle, the sense of force transmission of



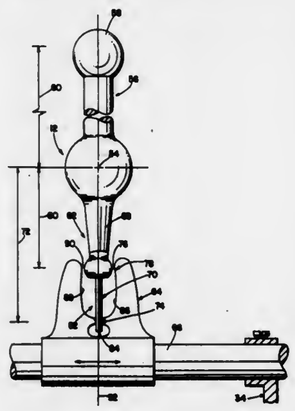
said one way clutch being such that said brake pedal can move freely with respect to said brake holding member in said first direction but any movement of said brake pedal in a direction opposite to said first direction is transmitted to said brake holding member via said one way clutch.

4,497,396

VARIABLE MECHANICAL ADVANTAGE SHIFT LEVER

Alan R. Davis, Plainwell, Mich., assignor to Eaton Corporation, Cleveland, Ohio

Filed Sep. 20, 1982, Ser. No. 419,851
Int. Cl.³ F16D 23/06; G05G 9/12, 7/04
U.S. Cl. 192—53 E **17 Claims**



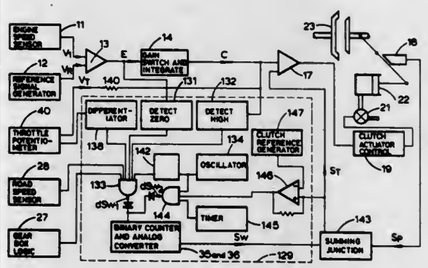
1. In combination a lever and a member to be selectively moved substantially axially against a resistance, said combination comprising:
a first class lever having a first fixed length lever portion extending from a selectively moved end to a substantially fixed pivot point and a second variable effective length lever portion engagable with said member to be axially moved, said second lever portion engagable with said member to be moved at a first and at a second contact point, said first point more distant from said pivot point than said second point, and
resiliently deflectable means associated with one of said second lever portion and said member to be axially moved for causing said second lever portion to resiliently engage said member to be moved at said first point and preventing said second lever portion from engaging said member to be moved at said second point when said resistance to said axial movement is less than a predetermined value, said resilient means resiliently deflectable to allow said second lever portion to solidly contact said member to be moved at said second point when said resistance to axial movement is at least equal to said predetermined value.

4,497,397

CLUTCH CONTROL SYSTEM

Harry M. Windsor, Harbury, and Andrew J. Mallion, Leamington Spa, both of England, assignors to Automotive Products Limited, Leamington Spa, England

Filed Feb. 19, 1982, Ser. No. 350,284
Claims priority, application United Kingdom, Feb. 24, 1981, 8105845; Apr. 8, 1981, 8111079; Nov. 8, 1981, 8130418
Int. Cl.³ B60K 41/28
U.S. Cl. 192—0.076 **17 Claims**



1. A vehicle electronic control system for a rotary transmission clutch and which includes:
a reference signal generator;
a clutch position signal generator means which is response to vehicle operating parameters, means for deviving an error signal from an output of the reference signal generator and an ouput of the clutch position signal generator and;
an inverting integrator which receives the error signal and the output of which forms a command signal which dictates the state of engagement of the clutch;
a clutch actuator for operation of the clutch;
a clutch actuator control means responsive to the command signal and which controls the operation of the actuator and which includes a comparator responsive to the command signal and a transducer responsive to the position of the clutch and which produces a feedback signal which is fed into the comparator for comparison with the command signal; and
a wear compensator means that modifies the feedback signal to alter said feedback signal as the clutch wears, the wear compensator means comprising a first detect means connected to the integrator input for sensing a given error signal voltage and which produces an output signal for control of a first AND gate, a second detect means connected to the integrator output for sensing when the command signal has passed a threshold value and which also produces an output signal for command of the first AND gate, and a wear signal generator means controlled by the first AND gate for producing a wear signal, said wear signal being summed with the feedback signal.

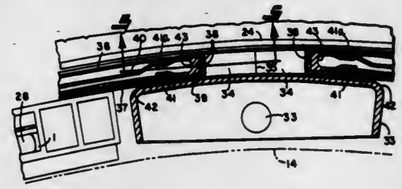
4,497,398

FLUID OPERATED CLUTCH OR BRAKE

Kiritkumar R. Patel, North Royalton, Ohio, assignor to Eaton Corporation, Cleveland, Ohio

Filed Oct. 7, 1982, Ser. No. 433,333
Int. Cl.³ F16D 25/04, 49/14
U.S. Cl. 192—88 B **4 Claims**

1. A brake or clutch comprising:
two relatively rotatable structures adapted for torque-sustaining frictional engagement with each other and arranged one radially inside the other, one of said structures comprising a hollow fluid-distensible resilient annular tube having an annular torque-sustaining wall of cord reinforced rubber-like material which is positioned to be forced radially toward the other of said structures by internal fluid pressure in the tube,
said tube being split tranversely to form abutting walls both formed by a block of rubber-like material,



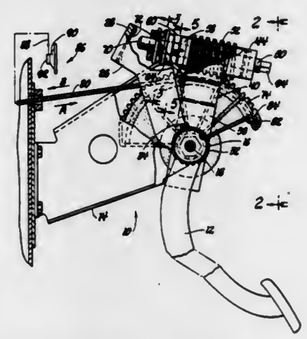
a U-shaped boot positioned adjacent each block with the open end facing away from said abutting walls and cord reinforced plies ends folded around the closed end of said boot, and a restraining member extending across the juncture of said abutting walls and circumferentially of said tube substantially beyond the ends of said boot to thereby limit the flexing of the boot.

4,497,399

ADJUSTING MECHANISM FOR A MANUALLY OPERATED CLUTCH

Leonard F. Kopich, Madison Heights, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Dec. 3, 1982, Ser. No. 446,715
Int. Cl.³ F16D 13/75
U.S. Cl. 192—111 A **2 Claims**



1. A clutch adjustment mechanism for a manually operated vehicle clutch having a control cable subject to increased clutch applying spring force when clutch misadjustment is present and a manual pedal pivotally mounted on a bracket secured to the vehicle, said mechanism comprising; a toothed sector resiliently connected to the manual pedal and secured to one end of the control cable; a housing pivotally mounted on the bracket; a shaft slidably and rotatably disposed in said housing with at least one end thereof extending through one end of the housing; a worm disposed on the shaft for rotation therewith and being in mesh with said toothed sector; a two member one-way jaw clutch disposed between said worm and the one end of the housing with one member of the clutch being secured to said shaft and the other member being rotatably disposed on said shaft; and torque arm means secured between said housing and said other member for rotating said other member as said other member is moved linearly with said shaft relative to said housing when said jaw clutch is engaged; said jaw clutch being operable to transmit rotation in one

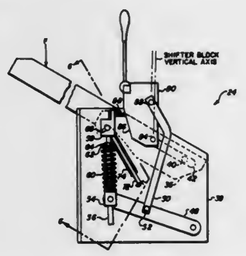
direction only to said worm through said shaft, said cable being operable when the vehicle clutch is engaged to rotate said sector relative to said pedal when said clutch is misadjusted to move said worm and shaft resulting in engagement of said jaw clutch and operation of said adjustment mechanism, and said manual pedal contacting said shaft for linear movement thereof toward disengagement of said jaw clutch when said vehicle clutch is disengaged thereby permitting indexing of said jaw clutch.

4,497,400

LOAD-UNLOAD DEVICE—LIMIT OVERLOAD SENSING DEVICE

Stanislaus J. Otto, Silver Spring, Md., and Verle L. Doty, Harrison, Ohio, assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Feb. 7, 1983, Ser. No. 464,224
Int. Cl.³ B65G *17/12, 43/00*
U.S. Cl. 198—468 **8 Claims**



1. An unload device for receiving articles from spaced apart conveyor trays on a conveyor at transfer stations and having anti-jamming features comprising:

a pivotably mounted platform defining one of the transfer stations upon which articles carried on the conveyor trays are adapted to be received for removal from the conveyor;

means associated with said platform whereby when a force exceeding a predetermined magnitude is exerted on said platform whenever the article carried thereon becomes jammed between said platform and another conveyor tray for permitting said platform to pivot in response to the force on the jammed article and free-fall to a position for increasing the spacing between said platform and said another conveyor tray for relieving the force on the jammed article; and,

means responsive to pivotal movement of said platform for stopping further travel of the conveyor.

4,497,401

DECORATIVE DISPENSING CONTAINER

Jacqueline B. Ackerman, 2170 Century Park East, Los Angeles, Calif. 90067

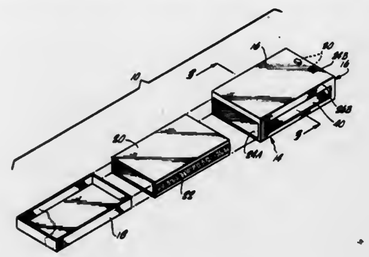
Continuation-in-part of Ser. No. 360,010, Mar. 19, 1982, abandoned, which is a continuation-in-part of Ser. No. 333,722, Dec. 23, 1981, abandoned. This application Mar. 18, 1983, Ser. No. 476,827
Int. Cl.³ B65D *5/38*
U.S. Cl. 206—131 **13 Claims**

13. A box-shaped decorative dispensing container comprising:

(a) a sleeve substantially rectangular in cross-section having opposing open ends, opposing side walls, a top wall, and a bottom wall;

(b) a drawer within the sleeve, the drawer being sized to slide in and out of the sleeve through the open ends thereof;

(c) a decorative external case substantially rectangular in cross-section having opposing first and second open ends, opposing side walls, a top wall, and a bottom wall, the case continuously tapering smaller from the first end to the second end forming a cross-sectional area of the case continuously decreasing from the first open end to the second open end, and the second open end of the case being smaller than the first open end, the the sleeve with the drawer therein sliding in and out of the larger first open end of the case and only the drawer and not the sleeve sliding out of the smaller second open end of the



case, the case having a ledge at the intersection of the top wall and one of the side walls; and

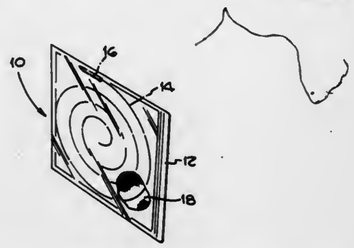
(d) a decorative plaque comprising a metal substrate with a decorative design on one surface thereof with the opposing surface of the plaque being secured to the top wall of the case, the edges of the plaque and the edges of the top wall of the case being substantially coincident, the plaque being tapered with a wide end and a narrow end, the wide end being against the ledge.

4,497,402

PIERCED EAR CLEANING AND STERILIZING APPARATUS

Lisa M. Karos, 12911 Gilmore Ave., Los Angeles, Calif. 90066

Filed Jun. 20, 1983, Ser. No. 506,022
Int. Cl.³ A61M *7/00;* **A61B** *19/00, 17/00;* **B65D** *85/00*
U.S. Cl. 206—210 **12 Claims**



1. In an apparatus for cleaning and sterilizing ear lobe holes for pierced earrings, including a packaging means, an improved disposable apparatus, comprising:

absorbent string means;

firm tip means disposed at one end of said string means; and

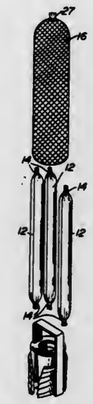
antiseptic fluid means, disposed in said packaging means in contact with said string means, whereby said string means and said tip means are packaged in said packaging means, with said string means being saturated with said fluid, until cleaning and sterilizing of said ear lobe is desired, whereupon said string means and said tip means are removed from said packaging means and run through said ear lobe hole, said string means both cleaning said ear lobe hole and imparting said antiseptic fluid to said hole.

4,497,403

CARTRIDGE CONTAINING MULTIPLE AREAS OF A MULTI-COMPONENT MIX AND METHOD OF MAKING THE SAME

Paul G. Rausch, Lexington, Ky., assignor to Celtite, Inc., Georgetown, Ky.

Filed Jun. 24, 1983, Ser. No. 507,445
Int. Cl.³ B65D *25/08*
U.S. Cl. 206—219 **9 Claims**



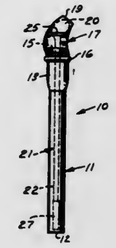
1. A cartridge containing multiple areas of a multi-component mix, said cartridge comprising multiple small, non-rigid envelopes each having a pair of ends and formed of a film and containing at least one component of said multi-component mix, said envelopes being in contact with each other and being longitudinally disposed with the corresponding ends disposed laterally of each other, such that said envelopes are packed closely together, and an outer porous casing enclosing said envelopes.

4,497,404

PROTECTIVE DEVICE FOR A GOLF CLUB

William T. Lowrance, 74 LeCline Cir., Concord, N.C. 28025

Filed Sep. 30, 1983, Ser. No. 537,782
Int. Cl.³ A63B *57/00;* **B65D** *85/20*
U.S. Cl. 206—315.2 **6 Claims**



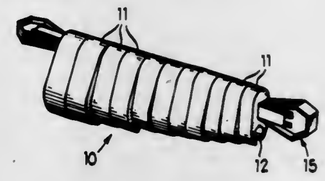
1. A protective device for completely enclosing a golf club, comprising, in combination, a sleeve having an opening at the upper end thereof for receiving a shaft and grip of said club, a cover open at both ends for receiving a head of the club, and means for attaching one end of said cover adjacent the opening of said sleeve, said sleeve including a pair of spaced-apart annular rings with one of said rings being located adjacent the peripheral edge of said sleeve opening and both rings defining a channel for receiving one end of said cover and said attaching means, said cover being made of an expandable material enabling it to be inverted over said sleeve with said one end being held by said attaching means and the other end being located below the other one of said rings.

4,497,405

WRENCH HOLDER

Frank Mikic; John E. Fuhreck, and Larry D. Pacetti, all of Kenosha, Wis., assignors to Snap-on Tools Corporation, Kenosha, Wis.

Filed Jul. 2, 1984, Ser. No. 627,057
Int. Cl.³ B65D *85/62*
U.S. Cl. 206—378 **16 Claims**



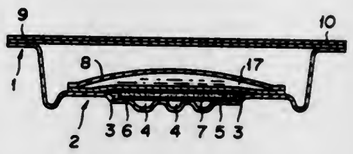
1. A wrench holder for a set of wrenches each having an opening for receiving the shank end of a drive tool, comprising a pair of elongated members, each of said members including an elongated body and a pair of substantially parallel legs extending therefrom, the cross-sectional size of said body and said legs being less than the size of the wrench opening so that said body and said legs can be passed through and pulled out of such openings, the legs and the body of one of said elongated members slidably interfitting with the legs and the body of the other of said elongated members, each of said elongated members further including a head on the end of the body thereof remote from the associated legs, the cross-sectional size of each head being greater than the size of each wrench opening so that the wrenches are retained on the wrench holder when said legs are interfitted.

4,497,406

PACKAGE FOR STORAGE OF MEDICAL CONTAINER

Nobuyasu Takanashi, Fujinomiya, Japan, assignor to Terumo Corporation, Tokyo, Japan

Filed Sep. 28, 1982, Ser. No. 426,215
Claims priority, application Japan, May 6, 1982, 57-74503
Int. Cl.³ B65D *81/20*
U.S. Cl. 206—438 **14 Claims**



1. A package for storing a medical container which contains a medical fluid, the package comprising:

a tightly sealed substantially gas-impervious vessel having a recess formed on the bottom of said vessel, said recess opening to the inside of said vessel; said vessel having a gas barrier property sufficient to limit the oxygen concentration in the package to no more than 0.1% by volume when said tray has been heat sealed for 72 hours;

a deoxidizer in said recess;

a gas-pervious sheet covering one side of said deoxidizer and being between said deoxidizer and said bottom of said vessel;

a gas-impervious sheet on at least one other side of said deoxidizer and facing upward and away from the bottom

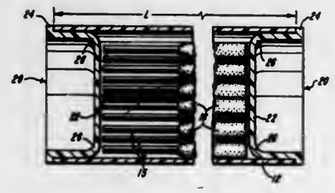
of said vessel; said medical container being in said vessel and above and in contact with said gas-impervious sheet;
at least one passage provided on the bottom inner side of said vessel and adjoining said gas-pervious sheet side of said deoxidizer for communicating said gas-pervious sheet side of said deoxidizer with the atmosphere enclosed within said tightly sealed vessel of the package whereby said medical container is in gas communication with said deoxidizer; and
wherein said at least one passage comprises grooves formed in a surface of said bottom of said vessel, and said grooves extending from under the gas-pervious sheet covering said one side of said deoxidizer to remote from said gas-pervious sheet covering said one side of said deoxidizer.

4,497,407

WELDING ROD PACKAGE

Daniel J. Stager, 110 Long St., Pleasant Hill, Ohio 45359

Filed Apr. 16, 1984, Ser. No. 600,417
Int. Cl.³ B65D *85/26, 59/02*
U.S. Cl. 206—443 **19 Claims**



1. A welding rod package for use in shipping and storing welding rods in a protected environment, comprising a bundle of welding rods having a predetermined length, an elongated tube of extruded air-impervious plastics material, said tube having opposite end portions and surrounding said bundle of rods, said tube extending the length of said rods and having substantial rigidity for protecting said rods against an impact, a set of end closure members of molded air-impervious plastics material and engaging said opposite end portions of said tube in press-fit relation, each of said end closure members conforming to the corresponding said end portion of said tube and forming an air-resistant friction seal with said end portion, and at least one of said closure members being removable from the corresponding said end portion of said tube and resealable therewith to form an economical and reusable air-resistant enclosure for the welding rods.

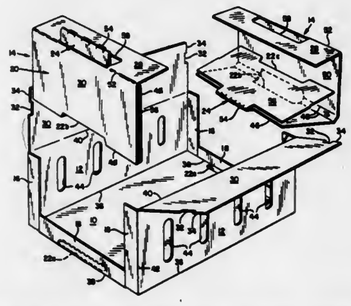
4,497,408

STACKABLE CONTAINER WITH LOCKING LID

Otto J. Jes, Long Beach, Calif., assignor to Willamette Industries, Inc., Portland, Oreg.

Filed Nov. 29, 1982, Ser. No. 445,362
Int. Cl.³ B65D *5/34, 55/00*
U.S. Cl. 206—509 **3 Claims**

1. A stackable container for packaging and transporting fresh fruits, vegetables and the like, comprising
(a) a body member having a generally rectangular vertical cross section and open at its opposite ends, said body member being formed from a unitary, generally rectangular blank of corrugated paperboard including
(1) a generally rectangular bottom wall (**10**) having opposed side and end edges, said bottom wall end edges each containing an opening (**22***a*), respectively;
(2) a pair of side walls (**12**) connected with said bottom wall side edges by a pair of first parallel fold lines (**36**), respectively, said side walls being folded about said first fold lines, respectively, to spaced parallel positions normal to said bottom wall; and
(3) a pair of lid flaps (**30**) connected with the edges of said side walls opposite said bottom wall by a pair of second parallel fold lines (**40**), respectively, said lid flaps being adapted for folding about said second fold lines, respectively, to coplanar positions normal to said side walls spaced from and parallel to said bottom wall, thereby to define the top wall of the body member, said lid flaps each containing a cut-out portion (**32**) in each end edge thereof, said cut-out portions each defining a locking tongue extension (**34**);
(b) a pair of end walls (**14**) for closing the ends of said body member, each of said end walls being formed from a unitary, generally rectangular blank of corrugated paperboard, respectively, each of said blanks including
(1) a generally rectangular intermediate section (**56**) having opposed side and end edges;
(2) a generally rectangular inner section (**46**) connected with one end edge of said intermediate section by first fold line means (**54**);
(3) a generally rectangular outer section (**50**) connected with the free end edge of said inner section by second fold line means (**48**) parallel to said first fold line means;
(4) a generally rectangular ledge section (**28**) connected with the free end edge of said outer section by third fold line means (**52**) parallel to said second fold line means;
(5) said intermediate and inner sections containing a pair of recesses (**60**) in their side edges, respectively, along said first fold line means to define a cleat bridging said intermediate and inner sections;
(6) said inner section containing a pair of spaced apertures (**26**) adjacent said first fold line means;



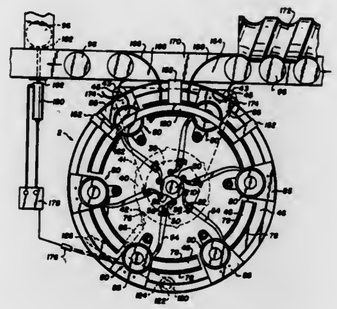
(7) at least one of said inner and outer sections containing a first aperture (**22***b*) intermediate the side edges thereof along said second fold line means; and
(8) said ledge section containing a second aperture (**58**) intermediate the side edges thereof along said third fold line means, said intermediate section being folded about said first fold line means to a position in contiguous engagement with said inner section, said inner section being folded about said second fold line means to a position parallel with said outer section, said intermediate section being sandwiched between said inner and outer sections to define a three-layer end wall with said cleat extending beyond the upper edge thereof; and
(c) means connecting said end walls with said body member with said inner sections arranged facing one another and with said end wall first apertures being aligned with said body member bottom wall openings, respectively, said ledge sections being folded about said third fold line means over said cleats to positions parallel to and opposite said body member bottom wall and said body member lid flaps being folded about said second fold lines to positions adjacent said ledge sections with said lid locking tongue extensions engaging said end wall inner section apertures, respectively, to close and lock the container, whereby when the containers are stacked, said cleats of a lower container are received by said aligned end wall first apertures and said body member bottom wall openings of the upper container.

4,497,409

SEAM INSPECTION APPARATUS

Wan C. Chong, 69 Wallace Place, Delta, British Columbia, Canada

Filed Dec. 27, 1982, Ser. No. 453,203
Int. Cl.³ B07C *5/02*
U.S. Cl. 209—538 **20 Claims**



12. Apparatus to permit inspection of an object, the apparatus comprising a central fixed shaft;
table rotatably attached to the shaft;
a circumferential opening in the table to define a track with which the object can move;
means to rotate the table;
means to carry the object along with the track comprising a carriage movable in the track, the carriage comprising a chassis adapted to move along the track by an arm abutting the carriage and pivotally attached to the table;
clamping means to hold the object as it moves;
means defining an inspection zone on the track;
means to stop the object moving along with the track at the inspection zone;
means to rotate the object in the inspection zone so it may be inspected;
a flange attached to the central shaft;
a flattened portion in the flange radially aligned with the inspection zone;
the arm including a dog-leg extending to contact the flange whereby the arm cannot rotate out of contact with the carriage under the influence of the weight of the object but the flat portion allows the arm to pivot to cease moving the carriage along the track in the inspection zone.

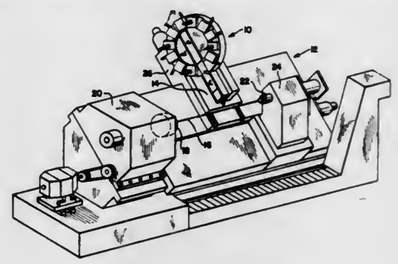
4,497,410

AUTOMATIC TOOL CHANGER FOR A LATHE

William C. Coate, Cincinnati, Ohio, assignor to The Lodge & Shipley Company, Cincinnati, Ohio

Division of Ser. No. 376,813, May 10, 1982, Pat. No. 4,457,065, which is a continuation of Ser. No. 93,726, Nov. 13, 1979, Pat. No. 4,330,928. This application Aug. 15, 1983, Ser. No. 523,257
Claims priority, application European Pat. Off., Nov. 13, 1980, 80304085.6
The portion of the term of this patent subsequent to May 25, 1999, has been disclaimed.
Int. Cl.³ B23Q *3/155*
U.S. Cl. 211—1.5 **5 Claims**

3. A tool magazine for a machine tool, comprising
a circular support frame including a drive shaft adapted for mounting on the machine tool and defining an axis of rotation for said support frame concentric with its center;
a plurality of carrier blocks each having at least one tool holder thereon,
an equal plurality of channel shaped recesses in said support frome each including guide rails receiving one of said carrier blocks and providing for movement of the blocks out of said recesses along lines parallel to and offset from radial extending through said drive shaft,
a stationary guide channel section extending outwardly of said support frome and having rails arranged to be aligned with the guide rails in said recesses,
a stationary circular channel located within said support frome and having an opening aligned with said guide channel section,
each of said carrier blocks having roller means engaged with



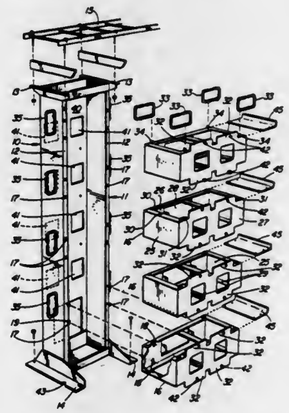
said circular channel except when the block is aligned with said stationary guide channel rails,
a shuttle member movable along said stationary guide channel section and including an arcuate channel segment corresponding to the opening in said circular channel,
means for rotating said drive shaft to present a selected carrier block at said stationary guide channel section,
means for moving the selected carrier block outwardly along the rails of said stationary guide channel section to a tool post position.

4,497,411

DISTRIBUTING FRAME FOR TELECOMMUNICATIONS SYSTEMS

George DeBortoli, Ottawa, Canada, assignor to Northern Telecom Limited, Montreal, Canada

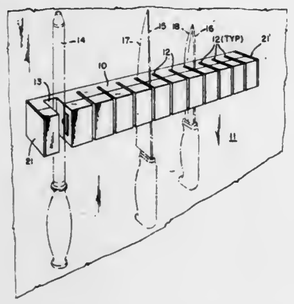
Filed Apr. 19, 1982, Ser. No. 369,342
Int. Cl.³ A47F *5/00*
U.S. Cl. 211—26 **12 Claims**



1. A distributing frame comprising:
an upright hollow member having a front and a back;
a plurality of hollow shelf members mounted on said front, one above the other, with access from said hollow member through said front to said shelf members;
each of said shelf members including an aperture in a back wall and at least one aperture in a front wall;

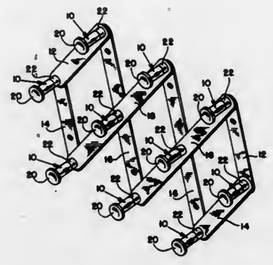
means for attaching modules on said front wall of each of said shelf members, with access to the modules from said shelf members through said apertures in said front walls;
means for attaching modules on said back, one above the other, with access from said hollow member through said back to the modules attached to said back.

4,497,412
IMPLEMENT HOLDER
Edward J. Labelle, 777 Overlake Dr. E, Bellevue, Wash. 98004
Filed Mar. 12, 1984, Ser. No. 588,764
Int. Cl.³ A47F *5/08, 7/00*
U.S. Cl. 211—60 T **16 Claims**



1. A holder for knives and the like to be mounted on a mounting surface and comprising:
a body having a first end, a second end, a long dimension extending from said first end to said second end, a mounting face, a cavity having a cross section and extending from said first end to said second end and at least one slot oriented essentially perpendicular to said mounting face and said long dimension, said at least one slot having a width and a first face and extending part way through said body toward said mounting face and intersecting said cavity, said body being mountable with said mounting face against said mounting surface;
means for attaching said body to said mounting surface with said mounting face against said mounting surface;
at least one fastener having an outer surface having a portion farthest from said at least one slot;
at least one magnetic means sized to fit in said cross section of said cavity, having a working face, a center, a hole through said center, said hole having a diameter and a wall with a portion of said wall farthest from said working face and a distance between said working face and said portion of said wall farthest from said working face and said at least one magnetic means positioned in said cavity with said working face essentially coplanar with said first face of said at least one slot and being retained in said at least one slot and being retained in said cavity by said at least one fastener inserted into said body perpendicular to said mounting face extending through said hole and said cavity; whereby, with said body attached against said mounting surface by said means for attaching with said mounting face against said mounting surface, a knife or the like of ferromagnetic material inserted into said at least one slot is engaged by said at least one magnetic means and thereby held.

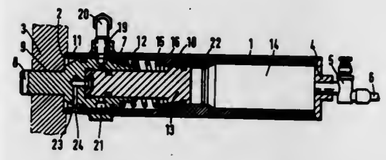
4,497,413
RACK
Richard M. Tocci, 121 Scenic Dr., Leominster, Mass. 01453
Filed Feb. 1, 1984, Ser. No. 575,877
Int. Cl.³ A47F *5/08*
U.S. Cl. 211—202 **9 Claims**



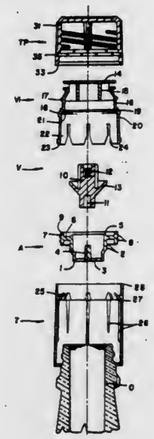
1. An expanding rack for hanging articles comprising:
at least one pair of elongated crossed members consisting of an upper and a lower member, each member having an upper and lower surface,
a large barrel, open end to end, on the upper member, said large barrel having an axis at a right angle to the upper member and further having an upper portion extending from the upper surface of said upper member and a lower portion extending through said upper member,
a small barrel, open end to end, on the lower member, said small barrel having an axis at a right angle to the lower member, said small barrel being shorter than the large barrel and having an upper portion extending from the upper surface of said lower member into the lower portion of said large barrel and further having a lower portion extending through said lower member,
a pin having a main first part equal in diameter to the outer diameter of the upper portion of the large barrel, said main first part having a shorter axially extending second part of less diameter so as to enter the large barrel, a third part extending axially from the second part, and a button on the distal end of the third part, said button having a diameter greater than the interior diameter of the small barrel so as to enter the latter with the button snapping through and under the small barrel to attach the two members together in interpivoted relationship,
the main first part of the pin having an outside dimension and shape the same as the outside dimension and shape of the upper portion of the large barrel, the main first part of the pin and the upper portion of the large barrel abutting endwise and appearing together as a continuous pin.

4,497,414
MECHANICAL CENTRAL BUFFER COUPLING
Hilmar Forster, Wolfenbüttel, and Heinz-Georg Wonka, Braunschweig, both of Fed. Rep. of Germany, assignors to Scharfenbergkupplung GmbH, Fed. Rep. of Germany
Filed Sep. 16, 1982, Ser. No. 418,973
Claims priority, application Fed. Rep. of Germany, Nov. 11, 1981, 3144730
Int. Cl.³ B61G *5/08*
U.S. Cl. 213—76 **10 Claims**

1. An air valve, for a Scharfenberg type mechanical central buffer coupling arrangement for a rail vehicle having a coupling which is used to form a connection with a cooperating coupling of an adjacent rail vehicle upon movement of the couplings from an uncoupled to a coupled position, and in which arrangement a rail brake influencing main air conduit is provided for connection to a coupling lock in a brake actuator coupling lock for operating the brake of the rail vehicle, such coupling lock having a controlled pneumatic valve for opening the coupling lock, such that said air valve is adapted to be mounted on an end plate of the corresponding coupling and connected with the main air conduit and the pneumatic valve to control the brake actuator coupling lock whereby in the case of an unintentional severing of the connection of the central buffer coupling with that of the adjacent rail vehicle said air valve will actuate the brake of the rail vehicle by venting the main air conduit so as to cause the brake to operate automatically,
said air valve comprising
a cylinder having a first end and a second end and a wall defining an interior, and being arranged at its first end on a coupling end plate having an end plate opening,
an inlet in the cylinder wall adapted for connection with such main air conduit and an outlet in the cylinder wall remote from the inlet for venting air,
a guide movable in the cylinder and having a first end provided with a ram portion extending into the end plate opening and movable from an extended ram position protruding from the exterior of the end plate, which corresponds to the uncoupled position of the central buffer coupling, to a retracted ram position not protruding therefrom, which corresponds to the coupled position of the central buffer coupling, and having a second end provided with a reception recess,
a piston movable in the cylinder and movable relative to the guide and having a stem portion extending into and displaceable in the reception recess and a head portion forming an air chamber with the cylinder interior, the piston being movable relative to the air chamber from an extended position in which its stem portion is closer to the cylinder first end to a retracted position in which its stem portion is farther from the cylinder first end, and
means in the guide defining a closeable vent flow path for flow communicating the cylinder wall inlet with the cylinder wall outlet through the reception recess and arranged such that in the coupled position of the central buffer coupling in which the ram portion is in retracted position, the guide extends into blocking relation with the cylinder inlet so as to keep the vent flow path closed, and in the uncoupled position of the central buffer coupling in which the ram portion is in extended position the guide is positioned out of blocking relation with the cylinder inlet while the piston is in its extended position and extends into the reception recess and into blocking relation with the vent flow path so as to keep the vent flow path closed, and
such that upon unintentional severing of the connection of the central buffer coupling, the ram portion moves to its extended position and the guide moves out of blocking relation with the cylinder inlet while the piston remains in its retracted position and is out of blocking relation with the vent flow path so as to open the vent flow path for venting air entering the cylinder inlet from the main air conduit through the vent flow path and the cylinder outlet to the exterior of the air valve.



4,497,415
NON-REFILLABLE AND INVIOLABLE BOTTLE-CAP
Adriano G. Arona Delonghi, Monterrey, Mexico, assignor to Fabrication De Maquinas, S.A., Monterrey, Mexico
Filed Feb. 3, 1984, Ser. No. 576,868
Claims priority, application Mexico, Feb. 4, 1983, 196169
Int. Cl.³ B65D *49/02*
U.S. Cl. 215—21 **10 Claims**



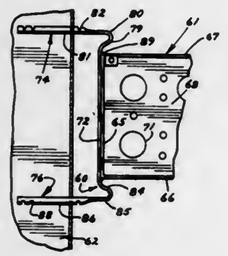
1. Improved, non-refillable and inviolable cap for bottles and similar containers, featured by and including a combination of: a valve-seat for coupling hermetically to the mouth of the container, and which encompasses a relatively flexible valve-seat flange, a hollow-bottom to allow the flow of the receptacle's contents, a guiding, central and vertical projection, and an annular retention-member including an interlocking-surface on one end; a valve having a central cavity on each of its ends, one of which is loosely coupled into the vertical projection of the seat, and a conical sealing-wall which surrounds it and which rests on the valve-seat flange; an externally-threaded spout, embracing a flange in the middle thereof, an internal, interlocking-surface, a plurality of protuberances (legs), all of them having an external interlocking-flange on their lower ends, and an internal, central ring pending from the upper wall, in order to guide and withhold the valve when open, a fastening-tube encompassing a plurality of relatively flexible internal fastening-protuberances, passing through the spout's protuberances (legs), so as to interlock against the brim of the container's neck to prevent if from sliding upwards, a plurality of interlocking-surfaces, one of which interlocks with the flange of the spout's protuberances (legs), to hamper it from sliding downwards, and a plurality of internal, vertical fastening ribs, which cooperate with the flange of the container's neck, hindering it from revolving around the container; and a cap threaded internally towards the spout, including a central pivot pending from its upper wall, and penetrating through the upper cavity of the valve, in order to push and retain the valve, sealing it against the seat-flange, a portion of annular lapping entirely united to the cap by a plurality of breakable reticula, lapping which includes a plurality of interlocking-surfaces that permit it to interlock directly or indirectly with the spout and/or the tube.

4,497,416

ELECTRICAL RECEPTACLE BOX ASSEMBLY

Robert A. Smolik, 670 W. Seventh St., St. Paul, Minn. 55102

Continuation-in-part of Ser. No. 399,473, Jul. 19, 1982, Pat. No. 4,403,708. This application Jun. 23, 1983, Ser. No. 507,098
The portion of the term of this patent subsequent to Sep. 13, 2000, has been disclaimed.
Int. Cl.³ H02G *3/10*
U.S. Cl. 220—3.5 **24 Claims**



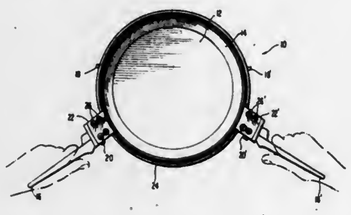
1. An electrical receptacle box assembly comprising:
housing means for accommodation of an electrical receptacle;
a wall stud of the type for use in building construction with a side having a plurality of mounting holes describing a hole pattern;
a mounting bracket for mounting said housing means to said wall stud;
said mounting bracket including a base having first and second opposite longitudinal ends;
means securing the housing means to the base between the longitudinal ends;
a plurality of resilient tines outwardly extended from the first and second longitudinal ends of the base opposite the housing means, each having a linear tine portion outwardly extended from the base, said linear tine portions being substantially parallel to each other, each tine at an opposite end having a flexure arm fixed to a longitudinal end of the base permitting a resilient deflection of the linear tine portion with respect to the base, said linear tine portions having outer tips arranged to describe a pattern generally corresponding to, but slightly deviant from, the hole pattern on the wall stud whereby the tines are insertable into the holes under slight spring deflection to mount the housing means to the wall stud.

4,497,417

ROTATABLE SPLIT HANDLED COOKING UTENSIL

Michael A. Tabet, 1302 Pamela Pl., Norfolk, Va. 23513

Filed Mar. 23, 1983, Ser. No. 477,947
Int. Cl.³ B65D *25/28*
U.S. Cl. 220—94 R **5 Claims**



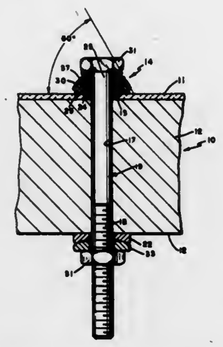
1. A cooking utensil of the type having a cooking surface with a side wall extending upwardly therefrom, the improvements comprising:
(a) a pair of split handles,
(b) means on one end of each handle for permanently and slidably attaching the same to the wall of the cooking utensil, and means on the side wall, operatively associated with said means on one end of each handle, which allow the split handle portions slidably attached to the side wall to slide to a position adjacent one another with a function as a single handle, and to positions opposite each other around the periphery of the cooking surface so as to allow a user to lift and manipulate the cooking utensil by grasping both split handles; and
(c) securing means which hold the split handles together for use as a single handle unless separated by a user for use as split handles.

4,497,418

REPAIR PLUG ASSEMBLY FOR VESSEL HAVING A CORROSION RESISTANT LINING

Erwin J. Nunlist, Penfield, N.Y., assignor to Kennecott Corporation, Cleveland, Ohio

Filed Feb. 15, 1984, Ser. No. 580,319
Int. Cl.³ B65D *53/00*
U.S. Cl. 220—234 **14 Claims**



1. A repair plug assembly for repairing a breach in a glass coated lining of a corrosion resistant vessel wall, said assembly comprising
(a) a stud secured to said vessel wall and having a partially threaded portion inserted in the breach and a second portion exposed at said lining surface,
(b) a flexible and compactible packing material disposed over said breach and about the surface of said exposed portion of said stud,
(c) containing means about the periphery of said packing material,
(d) a concave dome-shaped cap mounted over said packing material and having a central aperture therein through which extends the free end of said exposed portion of said stud, and
(e) means on said stud applying pressure to said cap against said packing material to simultaneously squeeze the material into sealing position against both the exposed portion of said stud and the glass coated surface of said vessel on and about said breach.

4,497,419

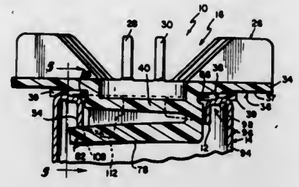
ONE-PIECE CAP

Henry M. Reitzel, Connersville, Ind., assignor to Stant Inc., Connersville, Ind.

Filed Feb. 2, 1984, Ser. No. 576,315
Int. Cl.³ B65D *41/06, 41/36*
U.S. Cl. 220—302 **14 Claims**

1. A cap for closing an aperture having a camming surface, the cap comprising

a first body portion having a diameter larger than the aperture, and



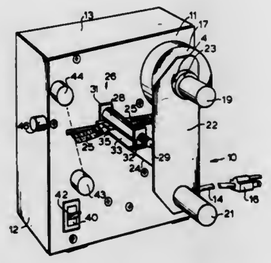
a second body portion for insertion into the aperture, the second body portion including first and second generally parallel, non-colinear arms for engaging the camming surface of the aperture.

4,497,420

LABEL DISPENSER

William N. Stelcher, Deerfield, Ill., and Michael J. Murdock, Bristol, Wis., assignors to Kinetronics Corporation, Lake Bluff, Ill.

Filed May 14, 1982, Ser. No. 378,128
Int. Cl.³ B65C *9/42*
U.S. Cl. 221—13 **1 Claim**



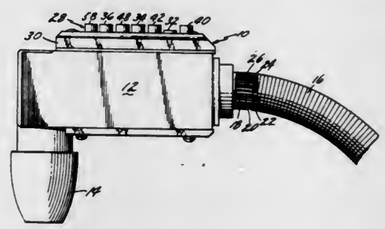
1. An automatic label dispenser comprising, a case with at least one planar wall, a take-up shaft mounted on said one planar wall, drive means connected to said take-up shaft, a pay-out shaft mounted on said one planar wall for supporting and supplying backing ribbon with labels mounted thereon, a peel bar mounted on and extending out from said one planar wall and said backing ribbon and labels passing thereby with the backing ribbon passing to said take-up shaft and said labels separated from said ribbon at said peel bar and extending therefrom, infrared transmitting and receiving means mounted on said one planar wall and said receiving means connected to said drive means and positioned such that a label will pass between said transmitting and receiving means to intercept the energy transmitted from said transmitting means to turn off said drive means, including a planar member with openings receivable over said take-up shaft and said pay-out shaft and means for locking said planar member at selected distances from said one planar wall, wherein said means for locking comprises a collar receivable over said pay-out shaft and set screw means to lock said collar to said pay-out shaft, including means for moving said peel bar relative to said one planar wall to adjust for labels of varying lengths, and wherein said peel bar includes a bracket for rotatably supporting a guide shaft and said backing ribbon and said labels passing between said guide shaft and said bracket, wherein said one planar wall is formed with a slot in which said bracket is mounted and means for moving said bracket, and wherein said means for moving said bracket includes a threaded lead screw rotatably supported by said case and threadedly engaged with said bracket such that when said lead screw is rotated said bracket moves in said slot to move said peel bar, wherein said guide shaft has a flexible outer layer and said bracket having an edge for changing the direction of said ribbon to separate said labels from said ribbon, including means for modulating the energy radiated by said infrared transmitting means and means in said receiving means for detecting the modulated energy to discriminate between said radiated energy and ambient radiation, and including switch means connected to said receiving means to energize said drive means.

4,497,421

MECHANICAL POST MIX BEVERAGE DISPENSING SYSTEM

William Schilling, Farmington, Conn., assignor to Alco Foodservice Equipment Company, Miami, Fla.

Filed Jun. 18, 1982, Ser. No. 389,692
Int. Cl.³ B67D *5/60*
U.S. Cl. 222—144.5 **8 Claims**



1. A beverage dispensing unit comprising:
housing means for housing a plurality of valve elements, said housing means having a plurality of fluid inlets to receive a first fluid and a plurality of second fluids and a plurality of fluid outlets for delivery of fluids to a mixing head;
a first group of valve chambers in said housing means, a first of said first group of valve chambers being connected to receive a supply of a first fluid, and a plurality of second of said first group of valve chambers being arranged in an array with respect to said first valve chamber and being connected to receive supplies of second fluids;
first valve means in said first valve chamber of said first group;
second valve means in each of said second valve chambers of said first group;
first valve operating means associated with said first valve means of said first group to operate said first valve;
second valve operating means associated with each of said second valve means of said first group to operate each of said second valves;
bridging means from each of said second valve operating means of said first group to said first valve operating means of said first group to automatically operate said first valve means of said first group for delivery of said first fluid with a second fluid whenever a second valve operating means of said first group is operated for delivery of any selected second fluid;
a second group of valve chambers in said housing means, a first of said second group of valve chambers being connected to receive a supply of a first fluid, and a plurality of second of said second group of valve chambers being arranged in an array with respect to said first valve chamber and being connected to receive supplies of second fluids;
first valve means in said first valve chamber of said second group;
second valve means in each of said second valve chambers of said second group;
first valve operating means associated with said first valve means of said second group to operate said first valve;
second valve operating means associated with each of said

second valve means of said second group to operate each of said second valves;

bridging means from each of said second valve operating means of said second group to said first valve operating means of said second group to automatically operate said first valve means of said second group for delivery of said first fluid with a second fluid whenever a second valve operating means of said second group is operated for delivery of any selected second fluid; and

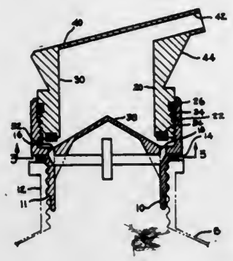
means for switching at least one of said second valve operating means and its bridging means of said first group to said second group for automatic operation of said first valve means of said second group whenever said one second valve operating means is thereafter operated.

4,497,422

POURING CAP

Garry W. Klees, 9130 SE. 72nd Pl., King County, Wash. 98040

Filed Jun. 23, 1983, Ser. No. 507,091
Int. Cl.³ B67D *3/00*
U.S. Cl. 222—482 9 Claims



1. A combination pourer and stopper for thin, primarily volatile liquids, comprising:

a threaded adapter member, adapted to be sealingly coupled to the neck of a liquid bottle, said adapter member having radially, widely spaced pouring and vent holes through which the liquid can leave the bottle and air can enter the bottle, respectively,

a pouring member threaded into said adapter member, said pouring member having a pouring spout and a vent port, the vent port being widely spaced from the pouring spout and the pouring spout generally overlying the pouring hole of the adapter member, the pouring member having an externally threaded flange and having a cavity defined by a generally vertical internal wall for reducing surface adhesion of liquid within the pouring member, sealing means for selectively sealing threads of the flange from the pouring spout for precluding movement of liquid from the threaded flange to the pouring spout but allowing access by the liquid to the threads for lubrication when unsealed, and sealing means responsive to axially inward movement of the pouring member for selectively sealing the pouring and vent holes for precluding, when sealed, movement of liquid out of said bottle.

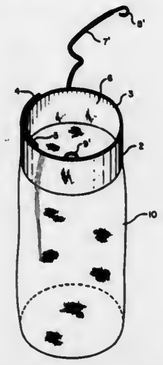
4,497,423

CLOTHES HANGER HAVING SHROUD TO MAINTAIN GARMENTS IN ROLLED CONDITION

Pamela R. Cummins, 602/2 Broughton Rd., Artarmon, NSW 2064, Australia

Filed May 3, 1982, Ser. No. 374,163
Claims priority, application Australia, Nov. 13, 1981, PF1550
Int. Cl.³ A47J *51/086, 51/14*
U.S. Cl. 223—96 1 Claim

1. A clothes hanger for hanging and for reducing creasing of a garment during packing and movement of the same comprising a resiliently expandable, circular clamping band of spring material, said clamping band having an internal clamping surface and end portions, said clamping band being movable from a normally compressed state in which said end portions overlap to an expanded state in response to an expanding force to receive a rolled-up article of clothing therein and for retaining the article of clothing in the rolled up condition in response to the removal of the expanding force, said rolled up article of clothing receivable within said band in response to an increase in the diameter thereof and retainable in said band by a clamping force exerted by said clamping surface due to the tendency of said band to return to the compressed state; and hanging means fixedly connected at only one end thereof to the clamping band for hanging the clamping band with a retained article of clothing on a closet bar, said hanging means comprises a strap connected at one end to the clamping band, a hook connected to the other end of the strap and an eyelet connected on the clamping band opposite from the strap connection and engagable with said hook; and a tubular shroud of stretchable material connected at one end to said clamping band and extending downwardly therefrom whereby said shroud provides an enclosed member to encase and contain the article of clothing received in said clamping band to prevent creasing of the garment.

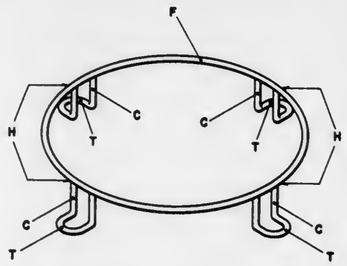


4,497,424

ELASTIC HOSIERY APPLICATOR

Samuel W. Smith, 1104 Burbank Rd., Anthony, Fla. 32617

Filed Jun. 11, 1981, Ser. No. 272,686
Int. Cl.³ A47J *51/06*
U.S. Cl. 223—111 5 Claims



1. A device for facilitating the application of elastic hosiery upon the lower leg of a person without taxing hand strength, including:

a rigid perimeter frame means sized to encircle the said lower leg of a person and preferably planar and circular in shape, said frame means affording a plurality of graspable portions at various stages of planar rotation, means whereby said elastic hosiery, collected upon said device without specific orientation thereto, may be oriented to the said lower leg of a person upon the planar rotation of said device, and

a plurality of descending collector leg means extending from said frame means substantially normal to the plane thereof and in spaced array, upon which said collector leg means said elastic hosiery may be collected in incremental pleatings without taxation of hand strength, and

retainer tip means upon a lower portion of said collector leg means and comprising an obstructive protuberance hindering the premature deployment of said elastic hosiery from collection upon said collector leg means, with

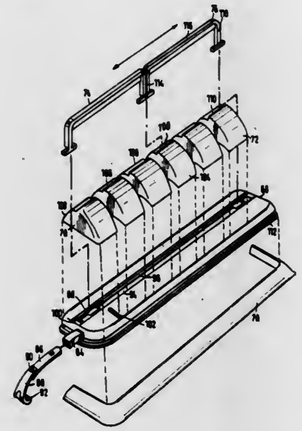
said device having a non-destructive exterior finish sufficiently smooth and blunt in character as to preclude snagging, running, or otherwise damaging the said elastic hosiery during the use of the said device.

4,497,425

CARRIER ARRANGEMENT

Ulrich Möbius, Fraunhoferstrasse 45, D-6450 Hanau (Main), Fed. Rep. of Germany

Filed May 4, 1982, Ser. No. 374,892
Claims priority, application Fed. Rep. of Germany, May 7, 1981, 8113476[U]
Int. Cl.³ B60R *9/04*
U.S. Cl. 224—324 27 Claims



1. A vehicle roof carrier for accommodating goods to be carried on the roof of a motor vehicle, said carrier comprising:

at least one elongated carrier member having upper and lower surfaces and opposing ends and adapted to being mounted transversely on the vehicle roof to support the goods carried thereon, said carrier member including means defining a slit longitudinally extending between said opposing ends and having at least one enlarged area in communication with said slit;

mounting means associated with said at least one carrier member for mounting said at least one carrier member transversely on the vehicle roof;

plural mounting members each retained on said upper surface of said at least one carrier member at predetermined positions, each said mounting member defining a convexly curved forward surface to minimize resistance thereof to air flow and means defining recessed surfaces rearward of said forward surface; and

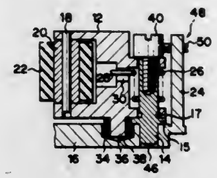
at least one retaining clip means for retaining said mounting members in said predetermined positions, said at least one retaining clip means being generally U-shaped having a pair of vertical legs separated by a horizontal leg, each said vertical leg including engagement members registrable with said enlarged area, wherein one of said engagement members is registered with said enlarged area and longitudinally moved in said slit prior to said plural mounting members being placed in said predetermined positions and thereafter the other of said engagement members is registered with said enlarged area and longitudinally moved in said slit so that said horizontal leg seats in each said recess surface of said mounting members to retain said mounting members in said predetermined positions.

4,497,426

MECHANISM OF CONTROLLING PARALLELISM BETWEEN THE PINCH ROLLER AND CAPSTAN SHAFT

Akira Osanai, Hachioji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 303,922, Sep. 21, 1981, abandoned. This application Aug. 29, 1983, Ser. No. 527,374
Claims priority, application Japan, Sep. 25, 1980, 55-133164
Int. Cl.³ B65H *5/06, 23/16*
U.S. Cl. 226—187 13 Claims



1. In a tape recorder comprising a pinch roller adapted to engage with a capstan shaft; a support arm shaft mounted on a base board; and a pinch roller support arm coupled to said support arm shaft,

the improvement comprising means for controlling parallelism between said pinch roller and said capstan shaft, said parallelism controlling means including:

a wall extending upwardly relative to said base board, close to said support arm shaft;

said support arm shaft having one end fixedly and nonadjustably connected to said base board;

said support arm shaft extending upwardly from said base board such that it has a tendency to be inclined toward said wall to produce a reaction force against reducing the inclination thereof, said support arm shaft having a free end portion remote from said one fixed end, and rotatably holding said support arm; and

a pinch roller parallelism-adjusting means coupled to said wall, and which is located within the limits of the thickness of said pinch roller support arm, said parallelism-adjusting means including adjustable pressing means which presses against said free end portion of said support arm shaft to push said support arm shaft in a direction away from said wall, against said inclining tendency and said reaction force of said support arm shaft.

4,497,427

TIP ASSEMBLY HAVING REPLACEABLE TIP

William S. Fortune, 29866 Cuthbert St., Malibu, Calif. 90265

Filed Feb. 22, 1982, Ser. No. 350,698
Int. Cl.³ B23K *3/00*
U.S. Cl. 228—20 15 Claims

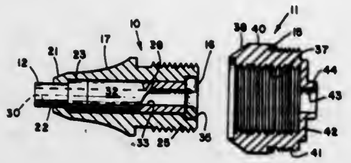
1. A tip assembly for a desoldering instrument, the assembly having a replacable tip, said assembly comprising:

(a) a tip housing portion and having an outward forward portion with a decreasing diameter forming in cross-section a concave curve, the extreme outward front portion forming a short cone, and a central cylindrical bore extending along the central axis of said housing portion, the front portion of said cylindrical bore being of smaller

diameter than that of the remainder of said cylindrical bore;

(b) an end cap portion threaded to the rear portion of the tip housing portion and having a central wide bore, the rear end of said bore being of smaller diameter and forming a disk extending beyond the rear surface of said end cap portion; and

(c) a desoldering tip retained by and forwardly of said disk



having an internal bore and extending through said bore of said tip housing and formed of a heat-resistant plastic material, said short cone of said housing forming a heat sink for said tip wherein said housing portion and said end cap portion are separate pieces removably secured together by screw threads provided on each one of said portions and a spacer bushing of substantially pure Teflon extending through said bore of said tip housing portion to the rear end thereof and in contact with said tip.

4,497,428

METHOD OF BRAZE-JOINTING METALLIC PROFILE COMPONENTS

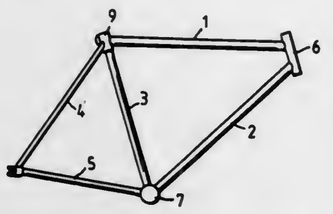
Wolfgang Baumann, Langenfeld, Fed. Rep. of Germany, assignor to FA. ELGA Elektro-und Apparatebau GmbH, Ingbert, Fed. Rep. of Germany

Filed Sep. 14, 1981, Ser. No. 302,121

Claims priority, application Fed. Rep. of Germany, Sep. 18, 1980, 3035187

Int. Cl.³ B23K *33/00, 31/08*

U.S. Cl. 228—175 **3 Claims**



1. A method for joining a plurality of tubes with at least one joint to form a frame, wherein said method comprises:

providing an end portion of a first tube of said plurality of tubes with a profile substantially matching the shape of said at least one joint along an outer contour of a second tube of said plurality of tubes;

providing the end face of said profile of said end portion of said first tube with a plurality of projections for projection welding;

forming a brazing gap of substantially uniform width between said first and second tubes by contacting said first tube with said second tube exclusively at said plurality of projections so as to form said brazing gap laterally between adjacent projections along the end face of said profile;

projection welding said first and second tubes at each of said plurality of projections to stabilize said frame for a brazing operation; and

brazing said first tube to said second tube to form said joint by brazing along said brazing gap.

4,497,429

PROCESS FOR JOINING TOGETHER TWO OR MORE METAL PARTS USING A HOMOGENEOUS LOW MELTING POINT COPPER BASED ALLOYS

Debasis Bose, Randolph; Amitava Datta, Morris Township, Morris County, and Nicholas J. DeCristofaro, Chatham, all of N.J., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Division of Ser. No. 420,549, Sep. 20, 1982, Pat. No. 4,460,658. This application Mar. 7, 1984, Ser. No. 587,323

The portion of the term of this patent subsequent to Dec. 18, 2001, has been disclaimed.

Int. Cl.³ B23K *35/30*

U.S. Cl. 228—263.18 **5 Claims**

1. A process for joining together two or more metal parts which comprises:

(a) interposing a filler metal between the metal parts to form an assembly, the filler metal having a melting point less than that of any of the parts;

(b) heating the assembly to at least the melting temperature of the filler metal; and

(c) cooling the assembly; wherein the improvement comprises employing, as the filler metal, a homogeneous copper based foil having a composition consisting essentially of 10 to 52 atom percent nickel, 2 to 10 atom percent tin and 10 to 15 atom percent phosphorus, the balance being copper and incidental impurities and the total of copper, nickel and tin ranging from about 85 to 90 atom percent.

4,497,430

BRAZING METHOD USING HOMOGENEOUS LOW MELTING POINT COPPER BASED ALLOYS

Debasis Bose, Randolph; Amitava Datta, Morris Township, Morris County, and Nicholas J. DeCristofaro, Chatham, all of N.J., assignors to Allied Corporation, Morris Township, N.J.

Division of Ser. No. 420,550, Sep. 20, 1982, Pat. No. 4,448,851. This application Mar. 8, 1984, Ser. No. 587,718

Int. Cl.³ B23K *1/04*

U.S. Cl. 228—263.18 **5 Claims**

1. A process for joining together two or more metal parts which comprises:

(a) interposing a filler metal between the metal parts to form an assembly, the filler metal having a melting point less than that of any of the parts;

(b) heating the assembly to at least the melting temperature of the filler metal; and

(c) cooling the assembly; wherein the improvement comprises employing, as the filler metal, a homogeneous copper based foil having a composition consisting essentially of about 2.5 to 11 atom percent tin, about 11 to 15 atom percent boron, the balance being copper and incidental impurities and the total of copper and tin ranging from about 85 to 89 atom percent.

4,497,431

CONTAINER STRUCTURE

James E. Fay, Neenah, Wis., assignor to James River—Norwalk, Inc., Norwalk, Conn.

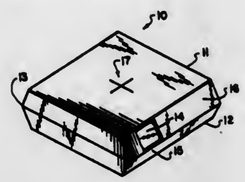
Filed Jan. 4, 1982, Ser. No. 336,675

Int. Cl.³ B65D *5/42*

U.S. Cl. 229—6 R **22 Claims**

1. A container for hot moist foods from which moisture emanates, said container including at least one wall area of paperboard formed from a sheet of from about 10 point to about 14 point paperboard, one surface of said sheet facing the inside of said container and forming the inner surface thereof, said inner surface being capable of absorbing moisture emanating from hot moist foods when the foods are contained inside the container, the improvement comprising at least two tab

sections formed by an array of knife cuts in the wall area, said knife cuts comprising straight continuous cuts, at least two of said cuts intersecting one another at an angle of 90 degrees or less to form two cut edges of each said tab section, each said tab section having said cut edges free of connection with said wall area and a region of connection with the wall area, each



said tab section being for the purpose of curling outwardly about said region of connection upon absorption of said moisture by the inner surface of each said paperboard tab section and thereby forming a vent accommodating escape of vapors from said container; each said tab section uncurling back to said wall area upon drying of said inner surface and thereby closing said vent.

4,497,432

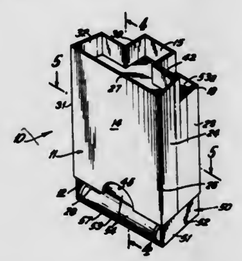
DISPENSER PACKAGE ASSEMBLY

Frank Milia, Commack, N.Y., assignor to Carlisle Laboratories, Inc., Inwood, N.Y.

Filed Oct. 7, 1983, Ser. No. 540,024

Int. Cl.³ B65D *5/38, 5/72*

U.S. Cl. 229—17 B **7 Claims**



1. A dispenser package assembly comprising a hollow outer casing open at each end; a top margin and a bottom margin at the open ends thereof, a tray member slidably received within the outer casing, said casing comprising a front panel, a rear panel, a first side panel and a second side panel, all interconnected along three spaced parallel fold lines extending from the top margin to the bottom margin of the casing; a side margin on the first side panel, a first hinged tab formed in one corner of the rear panel and inwardly disposed from the top margin, a second hinged tab formed in the opposite corner of the rear panel and inwardly disposed from the top margin, said tabs being swingable inwardly of the casing, opening to overlie the tray when it is not fully received within the casing, and a side flap integral with the rear panel, extending outwardly thereof and secured to the first side panel.

4,497,433

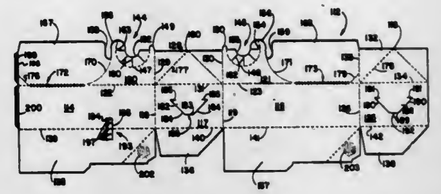
COMBINATION FOOD TRAY

Henry Wischusen, III, Lilburn, Ga., assignor to Rock-Tenn Company, Norcross, Ga.

Continuation-in-part of Ser. No. 414,952, Sep. 3, 1982, abandoned. This application Sep. 20, 1983, Ser. No. 534,186

Int. Cl.³ B65D *5/10*

U.S. Cl. 229—30 **11 Claims**



1. In a carton formed of paperboard or the like including a pair of longitudinally extending side panels held in spaced apart relation by a pair of transversely extending end panels foldably connected to said side panels, and automatic bottom panel means foldably connected to said side and end panels, the improvement comprising:

a pair of cover panels each foldably connected to one of said side panels and extending transversely at least half the distance between the distance between said side panels, said cover panels including means for defining mating recesses in longitudinal free edges thereof such that said recess defining means align when said cover panels are folded inwardly to form an opening for receiving and supporting an item inserted downwardly into said opening; and

means for securing said cover panels in a position folded inwardly to substantially enclose said carton;

said recess defining means comprising U-shaped scores opening toward the longitudinal free edges of said cover panels, and a plurality of break-away scores extending radially from said U-shaped scores to an acurate edge, said radial break-away scores defining tabs therebetween, such that an outer tab of each of said recess defining means overlaps the other recess defining means sufficiently to be beyond an outer tab of said other recess defining means, and

said recess defining means further comprising lock score means for locking said outer tabs when said tabs are folded into said carton upon insertion of said item.

4,497,434

DETECTOR OF THE FLOWING OF A FLUID IN A PIPE AND ENERGY SAVING DEVICE FOR A HOT WATER SYSTEM USING THIS DETECTOR

Jacques Lawless, 1740, 7th. Ave., Grand-Mere, (Quebec), Canada G9T 2E1

Filed Apr. 11, 1983, Ser. No. 483,690

Int. Cl.³ F22B *35/00*

U.S. Cl. 236—23 **11 Claims**

1. A device for detecting the flowing of a fluid in a pipe, comprising:

a tubular element vertically mounted on said pipe for serially interconnecting two portions of this pipe, said tubular element comprising an upper end and a lower end, one of said portions of the pipe being connected to said upper end of the tubular element and the other portion to its lower end;

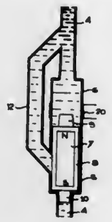
a piston made of a magnetic material slidably mounted within said tubular element, said piston being free to move along said tubular element;

a by-pass conduit interconnecting a part of the tubular element adjacent to its lower end with said one portion of the pipe to allow the fluid to flow from said part of the tubular

element to said one portion, and therefore from the other portion of the pipe to said one portion;

said piston moving upwardly in said tubular element as soon as the fluid starts to flow, to allow said fluid to flow from said other portion to said one portion of the pipe through the by-pass conduit, said piston moving downwardly by gravity to the lower end of said tubular element as soon as the fluid stops flowing; and

means mounted on the tubular element and responsive to said magnetic material for producing an electrical signal every time the piston moves in the tubular element, wherein:



the tubular element has a section greater than the section of the pipe, each portion of the pipe being connected substantially in the middle of the corresponding end of the tubular element, and

the piston has upper and lower ends each provided with a frusto-conical element, each portion of the pipe adjacent to the tubular element being so shaped to match with the corresponding frusto-conical element, said frusto-conical elements cooperating with the shaped ends of the portions of the pipe for absorving shocks when the piston reaches on of the portions of the pipe, in order to eliminate noise resulting from these shocks.

4,497,435

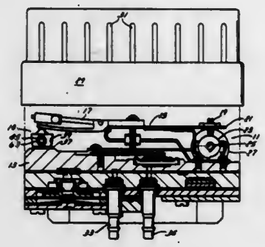
CONTROL AIR EXHAUST FOR HUMIDISTAT

Arnold G. Trobaugh, Milwaukee, Wis., assignor to Johnson Service Company, Milwaukee, Wis.

Filed Nov. 7, 1983, Ser. No. 549,276

Int. Cl.³ G05D *22/00*

U.S. Cl. 236—44 A **1 Claim**



1. An apparatus for controlling the humidity within a space and including a humidity sensing element moveable in response to changes in said humidity for control thereof, said apparatus including:

a base member;

a modulating assembly supported by said base member;

a humidity sensing element supported upon said base member and arranged for positioning control of said modulating assembly to effect said humidity regulation;

a cover for substantially surrounding and protecting said sensing element and said modulating assembly, said cover including a plurality of apertures for permitting the free flow of relatively humid air therethrough;

said modulating assembly including a pneumatic control nozzle for flowing relatively dry pneumatic control fluid therethrough, a rigid control cone coupled to said nozzle and including a pin member movable relative to said cone for nozzle modulation in response to said movement of said sensing element, said nozzle and said cone defining a cavity therebetween having a fixed volume;

a discharge spigot having a first end and a second end, said first end being attached to said modulating assembly in fluid flowing communication with said cavity for receiving said pneumatic control fluid therethrough, said second end terminating adjacent one of said apertures for exhausting said control fluid to a region exterior of said cover.

4,497,436

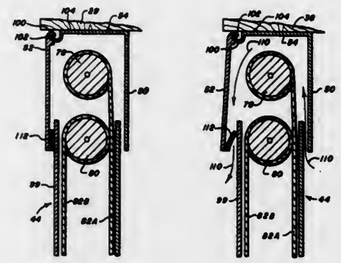
VENTING SYSTEM FOR INSULATING WINDOW SHADE

Daniel L. Ingold, Newfane, and Robert L. Stewart, Brookfield, both of Vt., assignors to Appropriate Technology Corporation, Brattleboro, Vt.

Filed Feb. 17, 1983, Ser. No. 467,390

Int. Cl.³ F24J *3/02*; **F24F** *13/10*

U.S. Cl. 236—49 **9 Claims**



1. A venting system for insulating window shades comprising:

an inverted U-shaped valance adapted to be secured to the top of a window frame, said valance having top, rear and front walls,

a shade roller adapted to be mounted on the window frame within or adjacent to the valance,

an insulating shade on the roller adapted to be drawn from the roller over and spaced from the inside of the window to insulate it, said valance front wall being normally in a first position in sealing engagement with said insulating shade,

sealing tracks adapted to be mounted on the sides of the frame and engage side edges of the shade to seal the space between the window and shade,

means responsive to the temperature in the space between the shade and a window for moving said valance front wall from said first to a second position spaced from said insulating shade when the temperature in the space between the shade and window exceeds a predetermined value, and

a vent disposed between said rear valance wall and said insulating shade to allow air to flow to and from the space between the shade and window and said valance front wall to vent the space between the shade and window when the valance front wall is in said second position.

4,497,437

CONTROL DEVICE WITH A BIMETALLIC ELEMENT UNILATERALLY FASTENED IN A HOUSING

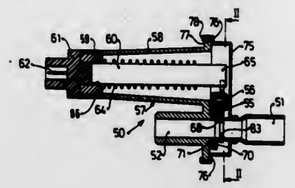
Siegfried Fehrenbach, Markgröningen; Kurt Herbst, Burgstetten, and Eberhard Utz, Stuttgart, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Sep. 8, 1982, Ser. No. 415,945

Claims priority, application Fed. Rep. of Germany, Mar. 6, 1982, 3208107

Int. Cl.³ G05D *23/19*

U.S. Cl. 236—68 B **4 Claims**



1. In a control device provided with a bimetallic element disposed axially in a metal housing, the improvement comprising:

a metallic holder in one end of said housing,

said metallic holder having at least one passage extending axially thereof,

oppositely disposed axially extending holding grooves in said metallic holder which opens toward said at least one passage,

one end of said bimetallic element is positively disposed in said oppositely disposed axially extending holding grooves, so that said at least one passage partially encompasses said bimetallic element and

a plastic filling filling said at least one passage in said metallic holder which secures said one end of said bimetallic element in said metallic holder.

4,497,438

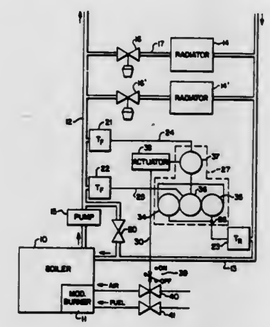
ADAPTIVE, MODULATING BOILER CONTROL SYSTEM

Ulrich Bonne, Hopkins, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Dec. 23, 1982, Ser. No. 452,533

Int. Cl.³ F24D *3/00*

U.S. Cl. 237—8 R **6 Claims**



1. A thermo-mechanical control apparatus for a modulated burner hot water heating system comprising:

a pair of temperature sensors of the liquid fill type, one of said sensors adapted to sense boiler output temperature and the second of said sensors adapted to sense return flow temperature to the boiler;

a third temperature sensor of the liquid fill type, said third temperature sensor being adjustable in volume for manual reset purposes, said third sensor being adapted to sense boiler output temperature;

a thermo-mechanical actuator comprising

first liquid filled actuator means,

second liquid filled actuator means, and,

liquid filled reset expansion actuator means, having an output port, wherein said thermo-mechanical actuator includes at least three bellows as said first, second and reset liquid filled actuator means,

said first liquid filled actuator means being mounted to cause compression of said reset actuator means when said first means is expanded,

said second liquid filled actuator means being mounted to cause expansion of said reset actuator means when said second means is expanded;

a liquid filled main expansion actuator, adapted to adjust the fuel and air of a modulated burner;

first capillary tube means connecting said one sensor in controlling relation to said liquid filled main expansion actuator and connecting the output port of said reset actuator means to said main expansion actuator so that both the one temperature sensor and the output of said reset actuator means control the setting of said main expansion actuator;

second capillary tube means connecting said second sensor to said second liquid filled expansion actuator means of said thermo-mechanical actuator;

third capillary tube means connecting said third sensor to said first liquid filled expansion actuator means of said thermo-mechanical actuator.

4,497,439

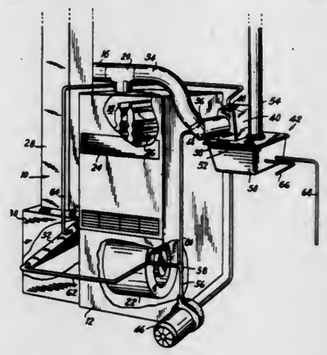
HEAT EXTRACTOR

Dan Ben-Shmuel, and Philip Zacuto, both of St. Johnsville, N.Y., assignors to Heat Extractor Inc., Melrose, Mass.

Continuation-in-part of Ser. No. 907,667, May 19, 1978, Pat. No. 4,340,572. This application May 21, 1982, Ser. No. 380,606

Int. Cl.³ F24D *5/00*

U.S. Cl. 237—53 **8 Claims**



1. For use with a chimney and a furnace fired by a burner, a heat extractor system including:

(a) first means directly connecting the furnace to the chimney,

(b) a vent having an entrance end and an exit end higher than its entrance end,

(c) second means connecting the entrance end of the vent to the furnace,

(d) means for creating a spray of water in the second connecting means to induce a draft therein in the direction toward the exit end of the vent,

(e) said water being heated by combusted gases from the burner passing through the second connecting means, and
(f) means to utilize the heat of said water,
(g) said vent functioning as a fail-safe such that, if a draft is not induced in said second connecting means, combusted gases from the burner will automatically divert and leave through the chimney, choosing the path of least resistance.

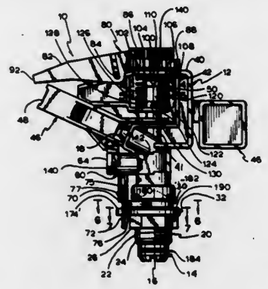
4,497,440
NON-DRAIN VALVE FOR SPRINKLER SYSTEMS
Cecil Galloway, Glendora, Calif., assignor to Browaline Pipe Inc., Pomona, Calif.
Filed Oct. 7, 1982, Ser. No. 433,241
Int. Cl.³ B05B 1/30
U.S. Cl. 239—201 **8 Claims**



1. A sprinkler system comprising
a plurality of water discharge heads,
a pipe system interconnecting said discharge heads with a pressurized water supply,
a main valve for controlling flow of pressurized water from said supply through said pipe system to said discharge heads, said valve being positioned at an elevation above at least some of said discharge heads whereby water in said pipe system tends to drain from said discharge heads after said main valve is operated to stop flow of water from said water supply, and
non-drain means for decreasing drainage from at least one of said discharge heads, said non-drain means comprising
a non-drain valve body connected in said pipe system adjacent said one discharge head, said body having an inlet, an outlet, a plunger chamber between the inlet and outlet, and a valve seat adjacent said outlet,
a hollow valve plunger slidably mounted in said chamber and having an end closure cooperating with said seat to close said outlet, said plunger having an enlarged piston slidably sealed to walls of said chamber, and having ports connecting the interior of said plunger with said chamber downstream of said piston,
tubular guide sleeve fixed to said valve body, said sleeve extending axially in said chamber and spaced from said chamber walls, said plunger being slidably mounted within and sealed to said sleeve,
an atmospheric port connecting the chamber upstream of said piston to atmosphere, and
spring means for urging said plunger end closure toward said valve seat, said spring means being positioned between said sleeve and a wall of said chamber and extending between said piston and an end of said sleeve adjacent said inlet.

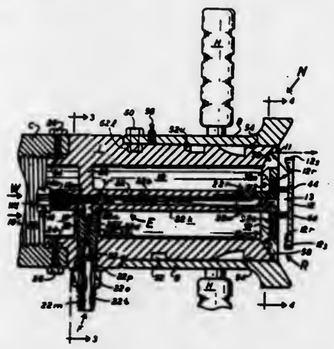
4,497,441
PULSATING SPRINKLER
Ho Chow, River Edge, N.J., assignor to Melnor Industries, Inc., Moonachie, N.J.
Filed Apr. 25, 1983, Ser. No. 488,203
Int. Cl.³ B05B 03/14
U.S. Cl. 239—230 **7 Claims**

1. In a pulsating sprinkler comprising
(A) a helical torsion spring having an axis;
(B) a sprinkler body having a hollow portion adapted to carry a fluid stream; and
(C) an impact arm mounted on said sprinkler body for oscillating movement toward and away from an impact limiting position, said impact arm being adapted to move away from said impact limiting position under the influence of the stream and toward said impact limiting position under the influence of said spring, said spring operatively connecting adjacent one end thereof said sprinkler body and adjacent the other end thereof said impact arm;
the improvement wherein said sprinkler body and said impact arm each include lug means extending generally



toward and spaced from one another in the direction of the axis of said spring, having a surface laterally exposed substantially at right angles to the axis of said spring and, spaced therefrom, an aperture operatively closed in the direction of the axis of said spring toward the other of said lugs, and said spring has ends which are reversely bent to form incomplete loops a first portion of which engages said surface of said lug means and a second portion of which enters said aperture, said loops being disengageable from and re-engageable with said lug means, without further opening or closing of said loops and without the use of tools.

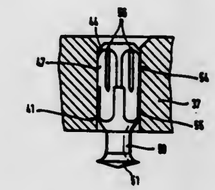
4,497,442
FOAM-APPLYING NOZZLE HAVING ADJUSTABLE FLOW RATES
Leslie P. Williams, Port Neches, Tex., assignor to Cause Consequence Analysis, Inc., Vidor, Tex.
Filed Apr. 6, 1983, Ser. No. 482,499
Int. Cl.³ A62C 31/12
U.S. Cl. 239—437 **7 Claims**



1. A nozzle assembly for applying a foam of the type which includes an inner barrel and a telescoping outer barrel each having an axial bore with an inlet and an outlet, and eductor means within the inner barrel having means for mixing a first portion of a liquid stream flowing through the inner barrel

with a foam-forming concentrate and discharging the foam concentrate and liquid mixture through a discharge opening in proximity to the inner barrel outlet, the improvement residing in means for focusing the stream of foam discharged from the nozzle, comprising:
a slanted reflection edge formed on the outlet of the inner barrel;
the eductor means having:
a mixing plate mounted substantially perpendicular to the longitudinal axis of the axial bore of the inner barrel;
a deflection plate mounted inwardly and spaced from said mixing plate to form a mixing chamber therebetween for receiving the foam-forming composition discharged from the eductor means; and,
said deflection plate being formed with a plurality of ducts through said deflection plate to direct a second portion of the liquid stream flowing through the inner barrel to said mixing chamber, said ducts being formed in a slanting direction from the longitudinal axis of the inner bore whereby the second liquid stream portion first reflects from said mixing plate to said slanted reflection edge of the inner barrel and then reflects from said slanted edge substantially parallel to the axial bore of the inner barrel.

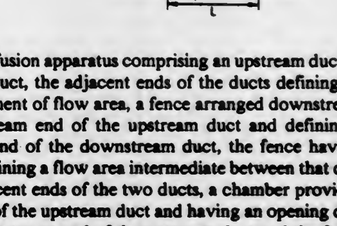
4,497,443
INJECTION VALVE
Rudolf Sauer, Benningen, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany
Filed Sep. 7, 1982, Ser. No. 415,214
Claims priority, application Fed. Rep. of Germany, Dec. 23, 1981, 3151020
Int. Cl.³ B05B 1/02, 1/26; F02M 69/04, 61/16
U.S. Cl. 239—533.3 **5 Claims**



1. An injection valve for fuel injection systems of internal combustion engines, comprising a movable valve element arranged to cooperate with a fixed valve seat provided in a nozzle body, characterized in that said nozzle body has a guide bore downstream of said valve seat, a fuel flow control insert in said bore, said fuel flow control insert in said bore having a linear axis, said fuel flow control insert having axially extending grooves open toward said guide bore, said axially extending grooves further including a plurality of axially extending faces tilted relative to said linear axis of said insert whereby the distance between said linear axis and each said face is smaller at an end oriented toward said valve seat than at an end remote therefrom thereby forming a flow cross section which decreases in the direction of fluid flow, and said grooves are arranged to meter and prepare a fluid to be injected.

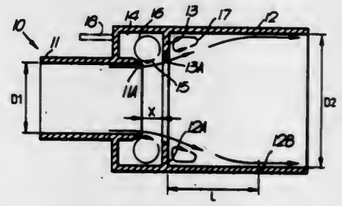
4,497,444
SHOWER HEAD
Don C. Arnold, Buffalo Grove, Ill., assignor to Beatrice Foods Company, Chicago, Ill.
Filed Oct. 28, 1982, Ser. No. 437,509
Int. Cl.³ B05B 15/08, 1/30
U.S. Cl. 239—587 **13 Claims**

1. In a shower head comprising a first portion adapted to be attached to a water supply and a spray head pivotally attached to said first portion, the improvement comprising, in combination; said first portion including a shallow, curved, socket-defining shell, an aperture in said shell and a flow path for communicating between the water supply and the aperture;
said spray head comprising an inner spray body and a separable outer sleeve, said spray body having a flow limiting vortex chamber with water inlet opening means at one end of said spray body, a spray outlet at the other end and a diverging flow path portion therebetween, one end of said sleeve slidably engaged behind said shell and the other end being threadably engaged with said spray body at said



other end to pivotally secure said spray body to the inside surface of said shell; and
a resilient O-ring carried by said spray body at said one end and disposed around said vortex chamber to slidably and sealingly engage the inside surface of said shell along an uninterrupted line enclosing said aperture at all pivot positions of said spray head to prevent leakage between said spray body and said concave surface while allowing communication between said aperture and said water inlet opening means of said vortex chamber.

4,497,445
DIFFUSION APPARATUS
Richard C. Adkins, Buckinghamshire, and James O. Yost, Bristol, both of England, assignors to Rolls-Royce Limited, London, England
Continuation of Ser. No. 241,419, Mar. 6, 1981, abandoned. This application Oct. 7, 1983, Ser. No. 540,102
Claims priority, application United Kingdom, Mar. 10, 1980, 8008070
Int. Cl.³ F02C 7/00
U.S. Cl. 239—590 **16 Claims**



1. Diffusion apparatus comprising an upstream duct, a downstream duct, the adjacent ends of the ducts defining a sudden enlargement of flow area, a fence arranged downstream of the downstream end of the upstream duct and defining the upstream end of the downstream duct, the fence having a free edge defining a flow area intermediate between that defined by the adjacent ends of the two ducts, a chamber provided at the outside of the upstream duct and having an opening defined by the downstream end of the upstream duct and the free edge of the fence, the chamber having a bleed flow rate of less than 5 percent, and wherein the area ratio of the ducts at said adjacent ends thereof lies between 1.4 and a minimum greater than 1.

4,497,446

SPREADER

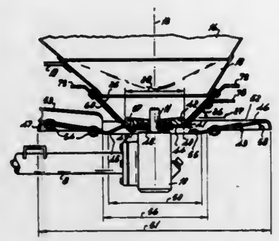
Ary van der Lely, Maasland, and Cornelis J. Gerardus Bom, Rozenburg, both of Netherlands, assignors to C. Van der Lely N.V., Maasland, Netherlands

Filed Aug. 18, 1982, Ser. No. 409,024

Claims priority, application Netherlands, Aug. 21, 1981, 8103896

Int. Cl.³ A01C *17/00*

U.S. Cl. 239—661 23 Claims



1. A spreader for spreading granular or powdery material or both, comprising a container delivery member having an outlet port, a distribution member mounted for rotation about an upwardly extending rotary axis, said distribution member forming at least partly a floor of said container delivery member and providing support for said container delivery member, said outlet port being provided in a wall portion of said container delivery member near a lower side thereof adjacent said distribution member, said wall portion having said outlet port being disposed at an angle less than 90° relative to said distribution member and to the horizontal when the spreader is on level ground, said distribution member having a downwardly conically flaring part located beneath said outlet port to receive a flow of said material therefrom.

4,497,447

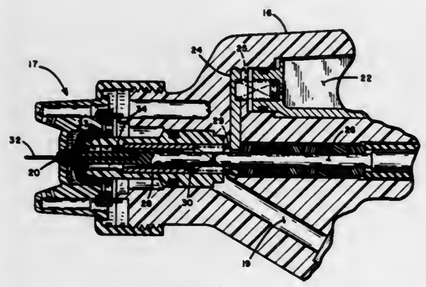
ENERGY DAMPING DEVICE FOR SPRAY GUN

Gordon V. Mommsen, Brooklyn Center, and Anil Marfatia, Maple Grove, both of Minn., assignors to Graco, Inc., Minneapolis, Minn.

Filed May 23, 1983, Ser. No. 496,830

Int. Cl.³ B05B *5/00*

U.S. Cl. 239—691 5 Claims



1. In an electrostatic spray gun of the type having fluid passages therein for the passage of fluid therethrough, and having passages therethrough for containing electrically conductive components for carrying a voltage to a forwardly projecting electrode, the electrode and the forwardmost fluid passage being in axial alignment, the improvement comprising

(a) a fluid ejection orifice proximate the forward end of said forwardmost fluid passage;

(b) a fluid valve adapted for seating in fluid sealing relationship in said fluid ejection orifice;

(c) a conductor in said fluid valve, said conductor having a segment projecting forwardly through said fluid ejection orifice to form said forwardly projecting electrode, and said conductor having a further segment projecting externally of said fluid valve into said forwardmost fluid passage;

(d) a resistive element in said forwardmost fluid passage, said resistive element having an axial opening therethrough sized to permit axial movement of said fluid valve therein, said further segment of said conductor in said fluid valve being in electrical contact against said resistive element;

(e) means for electrically connecting said resistive element to further electrically conductive components in said spray gun passages;

(f) means for coupling said forwardmost fluid passage to further fluid passages in said spray gun; and

(g) means for axially moving said fluid valve in opening and closing relationship to said fluid flow.

4,497,448

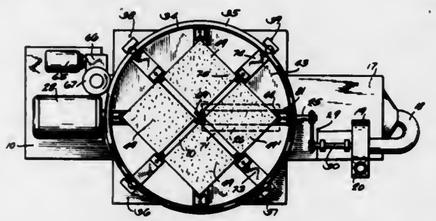
OFFSET ORBIT FLUFF GENERATOR

Curt G. Joa, Ocean Ridge, Fla., and Edmund Radzins, Sheboygan Falls, Wis., assignors to Curt G. Joa, Inc., Sheboygan Falls, Wis.

Filed Mar. 14, 1983, Ser. No. 474,752

Int. Cl.³ B02C *13/286*

U.S. Cl. 241—186.4 3 Claims



1. Apparatus for disintegrating wood pulp sheets into their constituent fibers, said sheets being stacked congruently to form bales having generally planar bottom faces, said apparatus comprising:

tub means having a hollow interior and a bottom opening lying in a horizontal plane,

means mounting said tub means for rotation about a vertical axis that is central to said interior and perpendicular to the horizontal plane of said bottom,

a planar bed below said bottom having a port therein,

a power driven cutting mill having radially extending blades, said mill being mounted for rotating about a horizontal axis in parallelism with the bed, the blades of said cutting mill extending through said port for performing a cutting action on bales bearing on said bed,

a plurality of guide means mounted to the interior of said tub means and arranged around its axis of rotation for retaining a corresponding plurality of bales against radial movement and permitting vertical movement such that the bottom surfaces of said bales may settle on said bed, said guide means being arranged such that all portions of the bottom surface of each bale is offset radially outwardly from the tub means axis of rotation, and

power means for rotating said tub means about said vertical axis so the retained bales will move in an orbital path radially offset from said axis to thereby sweep said bales successively over said cutting mill blades for said cutting action to occur over the entire bottom surface of each bale.

4,497,449

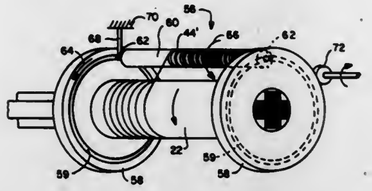
METHOD OF AND ARRANGEMENT FOR ASSEMBLING ELECTRICAL COILS AROUND TRANSFORMER CORES

Kou C. Lin, Hermitage, and Charles E. Burkhardt, Sharon, both of Pa., assignors to Electric Power Research Institute, Inc., Palo Alto, Calif.

Filed Jun. 11, 1982, Ser. No. 387,335

Int. Cl.³ H01F *41/08*

U.S. Cl. 242—4 R 4 Claims



1. A method of assembling a coil around a straight section of a core in the manufacture of a transformer, said method comprising the steps of:

(a) placing a coil supporting straight tubular member around said core section in a way which allows said member to rotate about its own axis and around the core section, said tubular member being provided with circular end plates diametrically larger than said tubular member and fixedly attached concentrically to the ends of said tubular members;

(b) providing annular grooves on the confronting sides of said end plates concentrically around said tubular member;

(c) providing a supply of coil material such that the material is ready to be wound into a coil;

(d) supporting said supply of coil material in a wound fashion around a separate tubular carrier shorter in length than said tubular member;

(e) supporting said carrier for rotation about its own axis adjacent to and in parallel relationship with said tubular member by means extending outward from the opposite ends of said carrier and into said grooves;

(f) connecting one end of said coil material to said tubular member;

(g) causing said tubular member to rotate by means of a power driven mechanism; and

(h) preventing said carrier from moving other than rotating about its axis, whereby rotation of said tubular member about its own axis causes said coil material to unwind from its carrier and onto the tubular member.

4,497,450

FILAMENT WINDING MACHINE

Kurt Schefer, Winterthur, and Kurt Salvisberg, Gächlingen, both of Switzerland, assignors to Sulzer Brothers Limited, Winterthur, Switzerland

Filed Aug. 26, 1982, Ser. No. 411,701

Claims priority, application United Kingdom, Nov. 10, 1981, 8133836

Int. Cl.³ B65H *54/02, 67/04*

U.S. Cl. 242—18 A 12 Claims

1. A winder for thread comprising

a friction drive member rotatable about a longitudinal axis thereof to receive a thread thereabout,

a first chuck movable along a first path between a rest position spaced from said friction drive member and a winding position adjacent said friction drive member to receive a thread from said drive member;

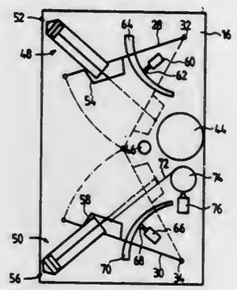
a second rotatable chuck movable along a second path between a rest position spaced from said friction drive member and a winding position adjacent said friction drive member to receive a thread thereon,

said paths being so disposed that a chuck moving towards the winding position thereof intercepts a length of thread extending between said friction drive member and a chuck moving away from the winding position thereof,

a headstock structure,

a pivotally mounted swing arm supporting one of said chucks,

a two stage extensible and retractable means between said headstock structure and said swing arm for pivoting said swing arm to move said one chuck in said respective path, and



control means for operating one stage of said means upon termination of a winding operation to move said swing arm and said one chuck in said respective path to a position at which a length of thread extends between said one chuck and said friction drive member for interception by the other chuck and for sequentially operating the other stage to move said one chuck to said rest position thereof after transfer of the thread to said other chuck.

4,497,451

PNEUMATIC DRIVE FOR A SWINGABLE SPOOL HOLDER

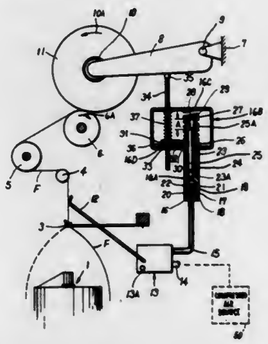
Hans Guggemos, Peterthal, and Rolf-Dieter Weber, Kempten, both of Fed. Rep. of Germany, assignors to Saurer-Allma GmbH, Kempten, Fed. Rep. of Germany

Filed Aug. 4, 1983, Ser. No. 520,103

Claims priority, application Fed. Rep. of Germany, Sep. 28, 1982, 3235789

Int. Cl.³ B65H *63/02*

U.S. Cl. 242—37 R 7 Claims



1. In a control arrangement for a pivotally supported spool holder which rotatably supports a spool which can be rotationally driven by contact between its periphery and a surface on a moving friction member, including pneumatic drive means for selectively swinging said spool holder between an operating position and a rest position in which said periphery of said spool is respectively engaging and spaced from said surface on

said friction member, and a compressed-air line which is connected to said pneumatic drive means and to a control valve, said control valve having a vent hole and having a feeler lever which can be moved between first and second switching positions and which engages a thread which is to be wound up on said spool, wherein when said feeler lever is in said first switching position said control valve connects said compressed-air line with said vent hole and wherein when said feeler lever is in said second switching position said control valve connects said compressed-air line to a compressed-air source, the improvement comprising throttle valve means for controlling air flow through said compressed-air line, said throttle valve means being responsive to air flow in said compressed-air line for restricting the flow of compressed air therethrough in a direction toward said pneumatic drive means and for permitting a rapid flow of compressed air therethrough in a direction away from said pneumatic drive means, said pneumatic drive means having a movably supported piston member which moves away from an initial position in a direction of movement at a predetermined speed as compressed air is supplied to said pneumatic drive means through said throttle valve means and said compressed-air line, and including clamping means cooperable with said pneumatic drive means and with a movably supported operating rod which is operatively coupled to said spool holder for permitting said piston member to move a predetermined distance in said direction of movement relative to said operating rod and for thereafter causing said operating rod to be operatively coupled to and to be moved in said direction of movement by said piston member.

4,497,452

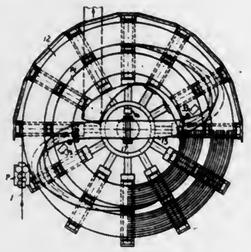
TWIN COIL STRIP ACCUMULATOR

Tadeusz Sendzimir, P.O. Box 1350, Waterbury, Conn. 06721

Continuation-in-part of Ser. No. 421,066, Sep. 22, 1982,. This application Dec. 5, 1983, Ser. No. 557,948

Int. Cl.³ B65H *17/48, 17/42, 75/02*

U.S. Cl. 242—55 **22 Claims**



1. An apparatus for storing a variable uninterrupted length of forwardly advancing strip material disposed in two adjacent coaxial spiral coils, each of multiple turns between the innermost and outermost convolutions, and with the convolutions thereof coursing in opposite directions, with transition curve between the coils for effecting the reversal of the direction of the convolutions, comprising

(a) guide means for withdrawing the innermost convolution of the first spiral coil in the direction away from both coils and substantially beyond the space inside said coils into a large transition curve of substantially the same radius of curvature as said convolutions, while simultaneously and gradually imparting thereto a twist of approximately 90°, at the farthest point,

(b) return guide means for the strip to follow a course roughly symmetrical to said outward course i.e., while imparting an additional 90° twist for joining the latter with the second coil at a point substantially antipodal to the point of departure of said strip from the first coil wherein the strip is bent at a curvature comparable to that of the radius of said coils, and

(c) said guide means comprising a plurality of cylindrical bodies for controlling the free transport of the strip through the transition curve with no more than tangential contact of the strip with said bodies.

4,497,453

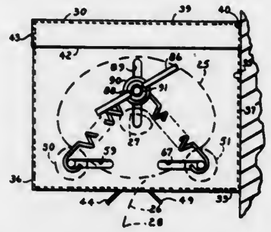
DISPENSER FOR INTERNALLY SELF-SUPPORTED ROLLED MATERIAL

Henry P. Butcher, 2843 NE. 18th Ct., Ocala, Fla. 32670

Filed May 16, 1983, Ser. No. 494,883

Int. Cl.³ B65H *19/00, 17/12*

U.S. Cl. 242—55.53 **4 Claims**



3. In a wall mounted dispenser having an interior compartment and an elongated web of flexible material located in the compartment, the improvement wherein said material is plastic material, said web has inner and outer end portions and, inwardly of the outer end portion, is rolled entirely upon itself to provide an internally self-supported roll of said material, and said dispenser has a horizontally arranged bottom wall provided with an elongated slot having opposite sides and opposite ends, a pair of upright end walls fixed to the bottom wall at said opposite respective ends, and a pair of elongated cylindrical rollers horizontally spaced apart within the compartment and located laterally of and at said opposite respective sides; said end walls having two pairs of horizontally extending slots, said pairs being respectively associated with said rollers, and the slots of each of said pairs being horizontally aligned and located in said end walls laterally of and at one of said opposite sides; each of said rollers having opposite ends and elongated axial extensions located at the opposite respective ends of the roller, said extensions being respectively arranged to project to the exterior of the dispenser through the slots associated with said roller; said dispenser having a pair of tension springs respectively secured to said end walls and to the extensions of one of said rollers for continuously urging said one roller toward the other of said rollers, and said roll being restingly supported on said rollers with the outer end portion of the web extending through the space therebetween and through the slot in said bottom wall.

4,497,454

TAPE LOADING MACHINE

George M. Woodley, Shrewsbury, Mass., assignor to King Instrument Corporation, Westboro, Mass.

Filed Mar. 11, 1983, Ser. No. 474,467

Int. Cl.³ B65H *19/20, 19/16, 21/02*

U.S. Cl. 242—56 R **10 Claims**



10. A method of operating a machine for loading C-O cassettes with a use tape so that a first use tape from a first tape supply reel is automatically spliced to a second use tape from a second tape supply reel, whereby (a) when said first supply reel is depleted the machine can continue to load cassettes with use tape from said second supply reel and (b) during the time that said machine is loading cassettes with said second use tape, the depleted first supply reel can be replaced with another reel of use tape, said method comprising the steps of:

(a) splicing the leading end of a first use tape from a first supply reel to the trailing end of a waste tape at a first station;

(b) pulling said spliced waste tape and said first use tape far enough so that said waste tape is displaced by said first use tape at a second station located downstream of said first station;

(c) cutting said first use tape at said second station so as to form a new leading end for said first use tape and a new waste tape;

(d) loading said first use tape commencing with said leading end thereof into a plurality of cassettes so that said cassettes are loaded one at a time;

(e) when said first supply reel is nearly depleted, cutting said first use tape so as to form another new leading end at said second station;

(f) splicing said another new leading end to said new waste tape at said second location;

(g) cutting said first use tape at said first station so as to form a new trailing end;

(h) splicing said new trailing end to the leading end of a second use tape from a second supply reel;

(i) pulling said second use tape far enough so that said first use tape is displaced by said second use tape at said second station;

(j) cutting said second use tape at said second station so as to form a new leading end therefor and another waste tape; and

(k) loading said second use tape commencing with said new leading end thereof into a plurality of cassettes so that said cassettes are loaded one at a time.

4,497,455

WINDING MACHINE

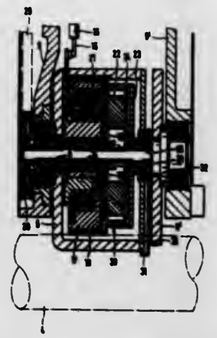
Eberhard Kampf, and Armin Hutzenlaub, both of Wiehl, Fed. Rep. of Germany, assignors to Erwin Kampf GmbH & Co Maschinenfabrik, Fed. Rep. of Germany

Filed Apr. 22, 1983, Ser. No. 487,868

Claims priority, application Fed. Rep. of Germany, Apr. 23, 1982, 3215204

Int. Cl.³ B65H *35/02;* **H02K** *49/04*

U.S. Cl. 242—56.9 **4 Claims**



1. A winding machine for winding a longitudinally slit strip, said winding machine having a number of winding stations; each winding station comprising: a driving shaft; a frictional wheel; an eddy-current clutch which couples the frictional wheel to the driving shaft; wherein the clutch includes a clutch housing and a clutch disk which are adjustably spaced so that the torque transmitted between the clutch housing and the clutch disk may be varied; wherein the clutch disk is axially movable on the driving shaft, and further comprising an adjusting member coupled with the clutch disk to allow for axial displacement of the clutch disk; whereby the winding tension of each winding station is independently and relatively adjustable.

4,497,456

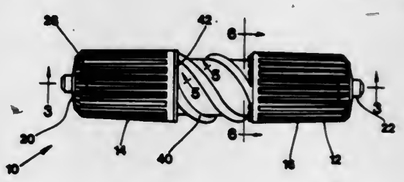
VAPOR-DISPENSING PAPER ROLL HOLDER

James R. Crapser, Racine, Wis., assignor to S. C. Johnson & Son, Inc., Racine, Wis.

Filed Jul. 25, 1983, Ser. No. 516,507

Int. Cl.³ B65H *19/00*

U.S. Cl. 242—55.55 **13 Claims**



1. A rolling device mountable on and between opposed sockets and adapted for use in supporting a roll of toilet tissue, comprising:

a pair of axially aligned body members together forming an elongated cage, each body member including an axial protuberance engagable with one of the sockets;

a vaporizable, air-treating substance within the cage; and

a spring spreading the body members to a relative axial adjustment and compressible therebetween to allow suspension of the cage between the opposed sockets of varying spacings, said spring comprising a material which undergoes stress relaxation at ambient temperatures such that its spreading force drops readily to near zero to reduce frictional forces between said protuberances and the sockets for whatever spacing the spring has accommodated,

whereby the device will freely rotate in the sockets as paper is pulled from a paper roll mounted thereon to increase the rate of vapor dispersing from within the cage.

4,497,457

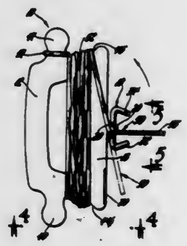
LINE HOLDER

William O. Harvey, 1240 E. 26th Rd., Cadillac, Mich. 49601

Filed Aug. 18, 1983, Ser. No. 524,758

Int. Cl.³ B65H *75/34, 75/36*

U.S. Cl. 242—96 **7 Claims**



1. Apparatus for storing and selectively dispensing a line comprising, in combination, a reel for storing a predetermined diameter line in a coil substantially defined by a reel axis, reel

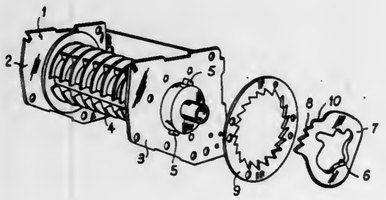
support means for supporting said reel and angularly moving said reel so as to change the position of said reel axis; and a line control means secured to said reel for selectively engaging and disengaging said line so as to selectively dispense said line from said reel while said line uncoils from said reel in a certain direction, said line control means including two opposed hooks which curve in the same direction and a hook support which supports said hook a predetermined distance from said reel which is greater than said line diameter so as to permit said line extending between said hooks and said reel, said hooks engaging said line so as to prevent uncoiling said line from said reel by angularly moving said reel to a first position in which said line cannot uncoil from said reel and then angularly moving said reel to a second position in which one of said hooks engages said line by said line extending between said reel and said one hook and through said one hook in said certain direction, thereby preventing uncoiling of said line when said reel axis substantially points in said certain direction, said one hook disengaging said line so as to permit uncoiling said line from said reel by angularly moving said reel to said second position and then to said first position, thereby permitting uncoiling of said line when said reel axis substantially points in said certain direction.

4,497,458

WINDER FOR A SAFETY BELT HAVING A RAPID LOCKING AND UNLOCKING ACTION AND A REDUCED OPERATING NOISE

Daniel Gueguen, Montesson, and Jacques Rothera, Saint Michel sur Orge, both of France, assignors to Autoliv AB, Vargarda, France

Filed Mar. 15, 1983, Ser. No. 475,662
Claims priority, application France, Mar. 18, 1982, 82 04584
Int. Cl.³ A62B *35/02*; B65H *75/48*
U.S. Cl. 242—107.4 B **9 Claims**



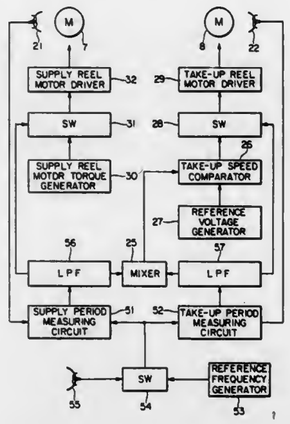
1. An automatically-locked winder for a safety belt, the winder comprising a support, a mandrel rotatively mounted on the support and around which mandrel a strap of the safety belt is wound, a torsion spring associated with the mandrel for biasing the mandrel in a winding direction, a locking device cooperative with the mandrel for locking the mandrel against rotation and preventing the unwinding of the strap when a sudden pull is exerted on the strap, the locking device comprising first means rigid with the support, second means drivenly connected to the mandrel, the first means cooperating with the second means to lock the mandrel against rotation, one of said first means and second means comprising projections for engagement in recesses provided in the other means, abutment means being provided on only one of said first and second means which prevent, in normal use of the winder, the full engagement of said projections in said recesses, said abutment means being destructible in the event of impact resulting in a sudden pull on the strap, wherein said first means comprise a ratchet wheel having inner teeth and fixed to the support and said second means comprise a cam having an internal cam surface cooperating with a cam-driving element kinetically integral with said mandrel, said cam further having outer teeth for engaging the inner teeth of the ratchet wheel, said destructible abutment means comprising a small additional tooth associated to the outer teeth of the cam and adapted, in normal use of the winder, to prevent full engagement of the outer teeth of the cam in the inner teeth of the ratchet wheel, said additional tooth being destroyed in the event of impact by the force exerted between said inner teeth and outer teeth.

4,497,459

TAPE DRIVE CONTROL APPARATUS

Tadashi Yoshino, and Masayuki Mamei, both of Osaka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Dec. 19, 1983, Ser. No. 562,861
Claims priority, application Japan, Dec. 20, 1982, 57-224236
Int. Cl.³ G03B *1/04*; G11B *15/32*
U.S. Cl. 242—186 **3 Claims**



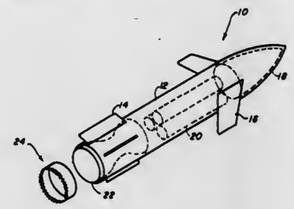
1. A tape drive control apparatus comprising: supply and take-up reels which are driven by supply and take-up reel motors, respectively; first and second rotation detecting means detecting rotation of said supply and take-up reels and for generating signals having frequencies corresponding to rotational velocities, respectively; tape driving means for driving a magnetic tape while the magnetic tape is brought into tight contact with a capstan and a pinch roller; third rotation detecting means for detecting rotation of said capstan and generating a signal having a frequency corresponding to a rotational velocity of said capstan; first period measuring means, having a first input terminal for receiving an output generated from said first rotation detecting means and a second input terminal for receiving a clock signal, and for generating an output substantially corresponding to the number of clock signals received during one period of the output generated from said first rotation detecting means; second period measuring means, having a first input terminal for receiving an output generated from said second rotation detecting means and a second input terminal for receiving the clock signal, and for generating an output corresponding to the number of clock signals received during one period of the output generated from said second rotation detecting means; first and second low-pass filters for receiving the outputs generated from said first and second period measuring means; mixing means for mixing outputs from said first and second low-pass filters; velocity comparing means for comparing an output from said mixing means with a reference voltage and generating an output corresponding to a difference therebetween; torque generating means for generating a constant voltage; reference frequency signal generating means for generating a signal having a predetermined frequency; first switching means for supplying as the clock signal the signal output from said reference frequency signal generating means to said first and second period measuring means in a fast forward mode wherein the magnetic tape is driven by only said supply and take-up reel motors without using said tape driving means with said capstan, and for supplying as the clock signal the signal output from said third rotation detecting means to said first and second period measuring means in a constant-speed mode wherein the magnetic tape is driven by said tape driving means; second switching means for supplying the output from said torque generating means to said supply reel motor in the fast forward mode and the output from said first low-pass filter to said supply reel motor in the constant-speed mode; and third switching means for supplying the output from said velocity comparing means to said take-up reel motor in the fast forward mode and the output from said second low-pass filter to said take-up reel motor in the constant-speed mode.

4,497,460

ERODALE SPIN TURBINE FOR TUBE-LAUNCHED MISSILES

Kenneth G. Thorsted, Fredericksburg, and John W. Pennington, Spotsylvania, both of Va., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 25, 1983, Ser. No. 478,747
Int. Cl.³ F42B *13/24*
U.S. Cl. 244—3.3 **3 Claims**



1. An improved tube-launched missile of the type having an airframe with canted fins and canards, a payload disposed in the forward end of said airframe, a propellant charge disposed in said airframe aft of said payload, and a nozzle disposed in said airframe aft of said propellant charge for ejecting thrust-producing exhaust gases generated by said propellant charge, wherein the improvement comprises:

an erodable spin turbine in the form of a cylinderical sleeve;

a forward portion of said cylinderical sleeve defining a skirt portion of the nozzle; and,

an aft portion of the cylinderical sleeve having a plurality of contiguously disposed axial slits disposed equidistant about the entire cylinderical sleeve and extending forward from its aft extremity for defining a plurality of rearwardly extending tabs therebetween;

each tab being partially bent inwardly about a diagonal bend line defined between adjacent axial slits defining tabs therebetween to form a plurality of neutral vanes and a plurality of lift vanes;

said neutral vanes being integrally colinear with said skirt whereby the exhaust gas stream flows substantially parallel to said neutral vanes;

said lift vanes lying obliquely within the exhaust gas stream whereby the plane of said lift vanes intersecting the axial flow of the exhaust gas stream defines an angle of attack;

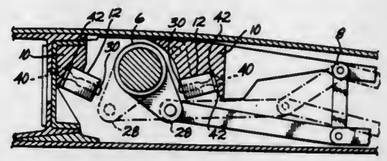
whereby said lift vanes are subjected to a lift force due to the flow of the exhaust gas stream across its surface with a component of said force imparting an angular torque to said missile as it traverses its launch tube and the lift vanes are effectively eroding away due to temperature and kinetic energy of exhaust gas impinging thereon.

4,497,461

SNUBBING APPARATUS FOR AN AIRCRAFT CONTROL SURFACE ACTUATOR

Dennis R. Campbell, Lynnwood, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Sep. 24, 1982, Ser. No. 422,530
Int. Cl.³ B64C *19/00*
U.S. Cl. 244—75 R **13 Claims**



1. In combination with an aircraft control system of the type having a movable control surface, and an actuator for producing movement of said control surface, the improvement which comprises:

snubber means for stopping movement of a movable portion of the actuator beyond a normal predetermined stop position and absorbing its kinetic energy; said snubber means comprising a fixed member, a movable member, a variable volume chamber defined between the fixed member and the movable member, said chamber including orifice means, and a body of extrusible material substantially filling the chamber; and

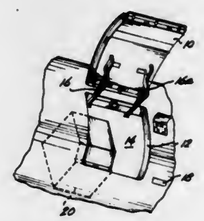
contact means carried by said movable portion of the actuator for contacting the movable member when said movable portion of the actuator moves beyond said predetermined position and pushing the movable member against the extrusible material to decrease the volume of the chamber and to cause the extrusible material to be extruded through the orifice means.

4,497,462

OUTWARD OPENING ELECTRICALLY POWERED PLUG-TYPE CARGO DOOR

Tomio Hamatani, Seattle, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Mar. 28, 1983, Ser. No. 479,676
Int. Cl.³ B64C *1/14*
U.S. Cl. 244—129.5 **14 Claims**



1. In an aircraft having an entry opening formed in the body of the aircraft, a door assembly for closing said opening, said door assembly comprising:

a door;

hinge means associated with said door for pivotally attaching said door to said body for swinging movement of said door between a first position in which said door lies within said opening and a second position in which said door is spaced from said opening, said hinge means being constructed and arranged to move an upper edge of said door

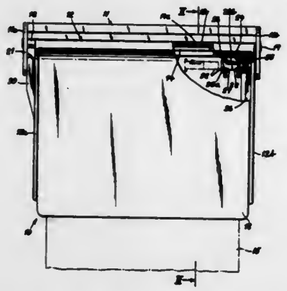
outboard from said body as said door moves from said first position to said second position;
hinge drive means coupled in driving relationship to said hinge means for driving said door between said first and second positions;
latch means operable when said door is in said first position to place said door in a latched position in which movement of said door to said second position is prevented;
latch drive means drivingly coupled to said latch means to operate said latch means;
hinge power means coupled to said hinge drive means for providing power to said hinge drive means;
latch power means coupled to said latch drive means for providing power to said latch drive means;
a plurality of sensor switch means spaced about said door and associated with said hinge power means and said latch power means to sense the position of said door to control the application of power from each of said hinge power means and latch power means to said hinge drive means and latch drive means in response to the sensed position of said door.

4,497,463

SINGLE-HANDEDLY FLIPPABLE BAG HOLDER

Rainer Wendel, Berlin, Fed. Rep. of Germany, assignor to Susanne Spilker, Berlin, Fed. Rep. of Germany

Filed Jun. 22, 1983, Ser. No. 506,681
Int. Cl.³ B65B *67/12*
U.S. Cl. 248—95 **7 Claims**



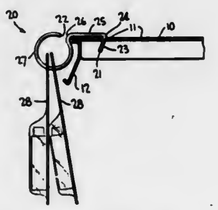
1. A holder for a waste-disposal bag, comprising:
a bracket fixedly mounted on an upright support;
a rectangular frame articulated to said bracket for swinging about a horizontal axis between a depending withdrawn position and a substantially level utilization position, said bracket being provided with stop means arresting said frame in said utilization position, said frame having sidewalls provided with a pair of aligned holes offset from said pivotal axis;
a lid overlying said frame and having a lug projecting into the interior of said frame in the vicinity of one of said sidewalls, said lug having an aperture aligned with said holes;
a pair of hinge pins of resilient material on said lid respectively projecting through said holes and defining a horizontal swing axis for said lid, one of said hinge pins being rigid with said lid, the other of said hinge pins traversing said aperture and being provided with a barb and a head bearing upon said lug from opposite sides for substantially immobilizing said other of said hinge pins relatively to said lug in an axial direction;
spring means anchored to said frame and to said lid for biasing the latter into a closure position in all-around contact with said frame, said lid having an extension projecting beyond said frame in said closure position for enabling a user to swing said frame about said pivotal axis from said depending position into said utilization position and thereupon lifting said lid off said frame in a continuing swing motion against the force of said spring means; and
a removable rectangular insert resiliently fitted into said frame for supporting a bag with an open end facing upward in said utilization position.

4,497,464

SUPPORT HOOK AND ASSEMBLY FOR MERCHANDISING DISPLAY

Jacob Fast, 7561 NW. 9th St., Plantation, Fla. 33317

Continuation-in-part of Ser. No. 358,868, Mar. 17, 1982, Pat. No. 4,476,983. This application Sep. 23, 1982, Ser. No. 422,303
Int. Cl.³ E04G *3/00*
U.S. Cl. 248—220.3 **12 Claims**



1. A support hook for supporting apertured items from a body member for purposes of display, said body member having a forward edge and at least one surface including said forward edge with a through hole defined therein and spaced from said forward edge, said support hook comprising an integral elongated rod-like member having first and second ends and bent to form, in a common plane, a supporting position and a mounting portion for securing said hook to said body member with said supporting portion projecting forwardly of said body member, said mounting portion including said first end, said supporting portion including said second end and being generally configured as a ring with a gap formed therein between said second end and said mounting portion, said gap being of sufficient size to permit said apertured items to be suspended from said ring by inserting said second end of said member through the apertured items, and wherein said mounting portion includes a first section having said first end adapted for insertion down through said through hole and a second section which extends generally above and along said body member when said hook is deployed with said first section inserted in said through hole; wherein said first section of said mounting portion includes a bend such that said first end extends generally upward toward said body member from beneath when the hook is deployed on the body member, and further comprising an elastic band stretched between said supporting portion and said bend so as to be flexed by a portion of said body member.

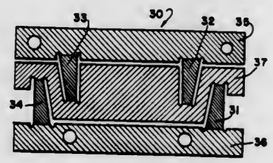
4,497,465

PIVOTAL MECHANISM UPON WHICH TRACKING MIRRORS AND THE LIKE USED IN OPTICAL SYSTEMS MAY BE MOUNTED

Lester M. Yeakley, Boulder, and Karen M. Fitzgerald, Lafayette, both of Colo., assignors to Storage Technology Partners II, Louisville, Colo.

Filed Mar. 31, 1983, Ser. No. 481,045
Int. Cl.³ A47F *7/14*
U.S. Cl. 248—466 **6 Claims**

1. An improved flexural mechanism for pivoting a first object a few degrees plus or minus about an axis of rotation comprising:
a plurality of spaced-apart base sections lying in a first plane;
a mounting surface lying in a second plane; and
a plurality of flex arm pairs coupling said base sections to said mounting surface, each of said pairs comprising a first flex arm extending from a first of said base sections to said mounting surface, and a second flex arm extending from a second of said base sections to said mounting surface, said axis of rotation passing through a point where said first and second flex arms, or the extensions thereof, appear to cross when said mechanism is viewed from an end thereof;
said base sections, mounting surface, and flex arm pairs being characterized as initially forming part of an integral sheet of flexible material, which material has a pattern placed



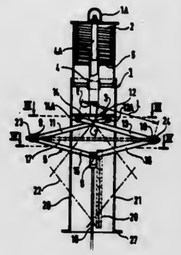
therein that defines the size, shape, and location of said base sections, mounting surface, and flex arm pairs;
said base sections being affixed to a suitable base material, and said first object being affixed to said mounting surface;
whereby if one of said base material or first object is held stationary, the other of said base material or first object may be selectively pivoted a few degrees plus or minus about said axis of rotation.

4,497,466

SPRING SUPPORT DEVICE FOR PIPEWORK

Jean Perrier, Les Essarts-Lerol, France, assignor to Stein Industrie, Velizy-Villacoublay, France

Filed Aug. 20, 1982, Ser. No. 409,808
Claims priority, application France, Sep. 4, 1981, 81 16839
Int. Cl.³ F16M *13/00*
U.S. Cl. 248—588 **3 Claims**



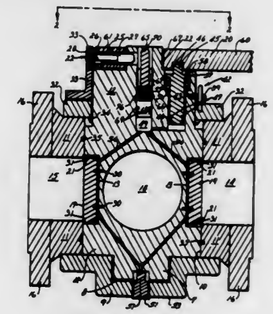
1. A spring support device capable of large vertical displacement and for supporting relatively light pipework, wherein the device includes an articulated parallelogram linkage comprising upper arms and lower arms;
(a) a first hinge connected to a fixed point and joining said upper arms intermediate their ends;
(b) a second hinge joining said lower arms and connected to a load, and vertically opposite the first hinge; and
(c) two side hinges in the same horizontal plane joining ends of said upper and lower arms, the two upper arms of the parallelogram linkage that pass through the first hinge having extensions projecting beyond the first hinge, a plate overlying the extensions, the ends of said extensions slidably bearing against said plate, a compression spring positioned above said plate and means for transmitting said load force acting on said plate to said compression spring, the extensions being considerably shorter than the balance of the upper arms forming sides of the parallelogram linkage to provide a spring support device subjected to relatively small load variation between spring compressed and extend positions and which multiply the vertical displacements of the spring as seen by the pipework so supported.

4,497,467

PLUG VALVE WITH HYDRAULICALLY ACTUATED SEALS

Carl O. DeWald, 3920 Avenida Verano, Thousand Oaks, Calif. 91360, and Jack H. Pollock, 1428 W. 132nd St., Gardena, Calif. 90249

Filed Sep. 15, 1982, Ser. No. 418,590
Int. Cl.³ F16K *31/44*
U.S. Cl. 251—78 **8 Claims**



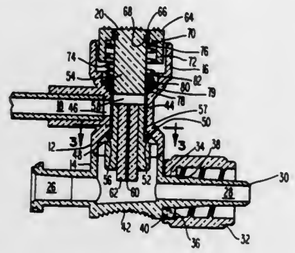
1. A rotary plug valve comprising:
a body having an inlet duct and an outlet duct;
a rotatable valve plug in the body having a port for fluid communication between the ducts, the valve having an open position where at least part of the port overlaps the ducts, and a closed position where no part of the port overlaps the ducts;
means mounted on the plug for forming a pressurizable seal with the body;
a fluid reservoir containing a hydraulic fluid and communicating with the pressurizable seal;
a piston in the valve plug operatively communicating with the reservoir for applying pressure to the hydraulic fluid in the reservoir for pressurizing the seal;
a handle for turning the valve plug from the open position to the closed position;
means for rotatably coupling and uncoupling the handle with or from the valve plug, the handle being coupled with the valve plug when the valve is open, the handle being uncoupled from the valve plug when the valve is closed, the coupling means including,
a cam on the valve body, a locking pin, a cam follower on the locking pin, a passage in the handle for receiving the locking pin, a recess in the valve plug for engaging the locking pin, and means for urging the cam follower against the cam, whereby engagement of the cam follower with the cam causes the locking pin to selectively engage or disengage the recess in the valve plug, so that when the locking pin engages the recess, the handle is rotatably coupled with the valve plug, and when the locking pin is withdrawn from the recess and disengages the recess, the handle is rotatably uncoupled from the valve plug, and
actuating means for actuating the piston upon the rotation of the handle when the handle is rotatably uncoupled from the valve plug for pressurizing the seal.

4,497,468

CATHETER PATENCY FLUSH FLOW CONTROLLER

James R. Hubbard, Moorestown, N.J.; Joseph Pelensky, Philadelphia, Pa., and Niles Kin, Clarence, N.Y., assignors to Graphic Controls Corporation, Buffalo, N.Y.

Filed Apr. 26, 1982, Ser. No. 371,656
Int. Cl.³ F16K 47/04
U.S. Cl. 251—117 16 Claims



1. A catheter patency flow-flush controller adapted for connection to an in-dwelling vascular catheter and for selective delivery thereto of a patency-maintaining fluid at one of two pre-selected rates, said controller including:

(a) a housing having at least one passage therethrough, said housing also having two openings, linearly displaced from one another along a valve actuation line, said openings communicating with said passage and comprising an inlet and an outlet for said passage;

(b) a valve seat defined in said passage between said openings;

(c) a valve member mounted in said passage and movable along said valve actuation line;

(d) means for biasing a valve element of said valve member into valve-closing contact with said valve seat;

(e) internal valve passage extending through said valve member for providing a continuous low flow rate, liquid flow path through said valve member from said inlet to said outlet of said housing;

(f) push button means for selectively moving said valve member out of contact with said valve seat to provide a high rate liquid flow path around said valve member from said inlet to said outlet;

said controller characterized by

(g) said biasing means consisting of a coil spring axially aligned with said valve actuation line and retained under compression between (i) a first abutment formed in a portion of said housing surrounding said valve member, said first abutment including a resilient sealing means held under compression by said spring and adapted to prevent leakage around said valve member at said first abutment, and (ii) a second abutment, facing said first abutment, and associated with said valve member;

(h) said valve member further including a cap member with a downwardly dependent skirt mating with and secured to said valve member, said cap member forming said second abutment and said dependent skirt surrounding at least part of said coil spring, said cap member and valve member together forming said push button means,

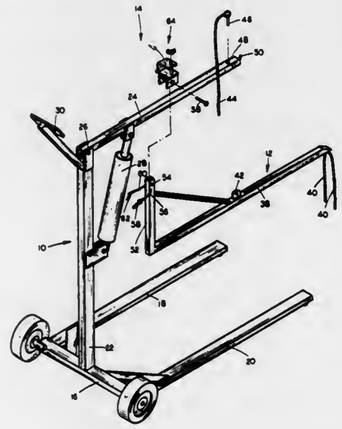
(i) said housing further including an upwardly dependent open skirt oppositely disposed with respect to said dependent skirt of said cap, said housing skirt also surrounding at least part of said coil spring, said housing skirt and said cap dependent skirt fitting within one another in mating portions thereof and being slidably movable relative to one another along said valve actuation line within said mating portion, wherein said valve member is cylindrical, and said first abutment resilient sealing means is an O-ring compressively retained against said valve member and against a portion of said first abutment by said coil spring, said cap and second abutment including a circumferential spacer surrounding said valve member, one end of said coil spring fitting around said circumferential spacer, said controller further including, interposed between the end of said coil spring and said first housing abutment O-ring, a washer having a planar element surrounding said valve member and positioned and adapted to transmit compressive force from said spring to said O-ring, said washer also having a cylindrical element perpendicularly disposed with respect to said planar element, said cylindrical element slidably engaging said valve member, said spring end fitting around said cylindrical element.

4,497,469

VAN ENGINE REMOVAL ASSEMBLY

Richard W. Barnhouse, 14024 Blair High Rd., Omaha, Nebr. 68134

Filed Mar. 18, 1983, Ser. No. 476,798
Int. Cl.³ B60P 1/48
U.S. Cl. 254—8 B 3 Claims



1. In combination,

a floor hoist comprising a wheeled frame means and having at least one floor engaging stabilizer arm extending therefrom, an upstanding post means, an elongated support arm, having first and secondary ends, pivotally secured at its first end, about a horizontal axis, to said post means adjacent the upper end thereof and extending therefrom above said stabilizer arm, and means for selectively pivotally moving said support arm upwardly and downwardly relative to said post means,

and a van engine removal assembly secured to said support arm,

said assembly comprising a first frame member having upper and lower ends and being secured at its upper end to said support arm between the ends thereof, and an elongated second frame member extending from the lower end of said first frame member beyond the second end of said support arm, said second frame member having an outer end positioned outwardly of said second end of said support arm, said second frame member being positioned below said support arm and generally parallel thereto,

support means extending from said support arm, adjacent its second end, to said second frame member intermediate the length thereof,

means on the outer end of said second frame member for attachment to the van engine,

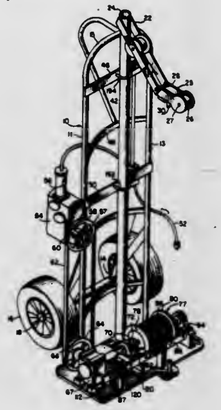
and a swivel means connecting the upper end of said first frame member to said support arm.

4,497,470

POWERED CART MOUNTED CABLE PULLER

William M. Carter, Rt. #1, Box 74-D-5, Daytona Beach, Fla. 32014, and John M. Rodgers, 1722 "B" Avenue, Ormond Beach, Fla. 32074

Filed Apr. 12, 1982, Ser. No. 367,180
Int. Cl.³ E21C 29/16
U.S. Cl. 254—134.3 FT 3 Claims



1. In a device for pulling electrical cable through conduit the combination comprising:

a first rigid frame means having a plurality of support members;

wheel means connected for rotation to said frame means to enable the frame means to be easily rolled from place to place in a wheelbarrow like fashion;

power means rigidly and removably connected to said frame means; the power means having a rotatable output shaft;

a torque multiplying, speed reducing means having a shaft for being driven by said output means and having an output shaft;

a shiftable clutch means for receiving power from said torque multiplying speed reducing means;

a reel member having sides mounted for rotation on a shaft means and said shaft means driven by the output side of said shiftable clutch means, said reel member adapted to accept a length of cable;

a guide and support means fixedly connected to said frame means for holding said frame in a fixed position away from the conduit and for guiding the cable to be fed to reel member to said reel member;

shiftable clutch means including first and second clutch face members having mutually engaging surfaces and a resilient member biasing said clutch members in a clutch engaging direction;

a plurality of roller members mounted on a shift rod for engaging the sides of said reel member for causing the engagement and disengagement of said clutch means.

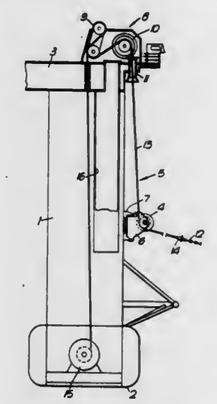
4,497,471

ASSEMBLY ON A CHAIN SHEAVE/CHAIN-ROPE SYSTEM

Leif Longberg, Landas, and Hakon S. Pedersen, Hop, both of Norway, assignors to A/S Bergens Mekaniske Verksteder, Bergen, Norway

Filed Jul. 25, 1983, Ser. No. 517,502
Claims priority, application Norway, Aug. 3, 1982, 822658
Int. Cl.³ B63B 21/14; B66D 1/30
U.S. Cl. 254—372 5 Claims

2. An assembly on a chain sheave/chain-rope system wherein an end of a chain is connected to an end of a rope in a splice member adapted to travel over a chain sheave by lying within a recess or pocket of the sheave, the splice member comprising a sleeve socket for receiving the rope end and a half-link of chain, from which the end link of the chain is suspended, characterized by guide members on the splice member which cooperate with guide members in a hawsehole preceding the chain sheave, by means of which the end link of the chain is brought into the correct position for engagement prior to entering the chain sheave, the guide member being arranged within the hawsehole for cooperation with guide members disposed on the splice member, such that the end link of the chain, which hangs from the chain half-link disposed on the splice member, is brought into the correct position for engagement prior to the chain's entry onto the chain sheave, said guide members being in the form of two diametrically opposed grooves extending along the interior walls of the hawsehole in the direction of cable passage, with guide ramps leading up to the respective guide grooves.

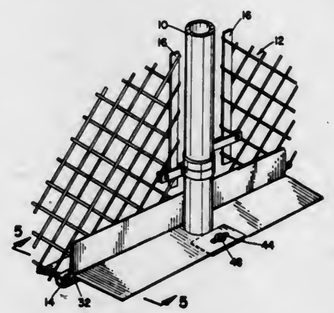


4,497,472

VEGETATION BLOCKING FENCE EDGING ASSEMBLY

J. Darrel Johnson, 16289 Bardbury, Middleburg Heights, Ohio 44130

Filed Nov. 15, 1982, Ser. No. 441,685
Int. Cl.³ E04H 17/06
U.S. Cl. 256—32 16 Claims



1. A one piece extruded plastic edging strip for blocking vegetation growth along fences, the edging strip comprising:

a generally J-shaped, longitudinally extending lower fence edge engaging portion which is substantially J-shaped in transverse cross section, the J-shaped fence engaging portion including a generally U-shaped channel for receiving a lower edge of the fence and a single guide strip extending from a first edge of the U-shaped channel for engaging a first face of the fence, whereby the generally

J-shaped portion is adapted to be slid under the fence lower edge until the guide strip engages the fence first face; and,

a longitudinally extending vegetation shield portion including first and second flanges extending transversely from opposite sides of the J-shaped portion and terminating in substantially linear longitudinally extending first and second flange edges, respectively.

4,497,473

COMPOSITE REFRACTORY ARTICLES AND METHOD OF MANUFACTURING THEM

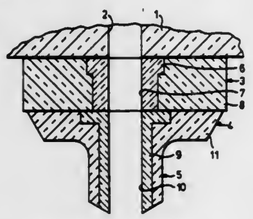
Pierre Robyn, Nivelles, and Pierre Deschepper, Charleroi, both of Belgium, assignors to Glaverbel, Brussels, Belgium

Filed Sep. 17, 1982, Ser. No. 420,505

Claims priority, application United Kingdom, Nov. 5, 1981, 8133409

Int. Cl.³ B22D *41/08*

U.S. Cl. 266—44 **34 Claims**



1. A method for manufacturing a composite refractory article having a flow passage through which a molten metal stream may be conducted, said article comprising a first body of a relatively high grade refractory material which defines an axially extending surface of that passage, said first body being fused to a second body of relatively lower grade refractory material; comprising the steps of producing said second body defining a passageway of greater cross-sectional dimensions than said flow passage and providing within said passageway said first body of refractory material for defining said flow passage surface, said first body being formed in a sliding gate valve plate and being formed in the larger passageway by causing its refractory material to cohere and bond to said second body by fusion or partial fusion in situ.

4,497,474

APPARATUS FOR SEQUENTIALLY ANNEALING AND THEN HARDENING LONG METAL COMPONENTS MADE OF FINE OR SPECIAL STEEL

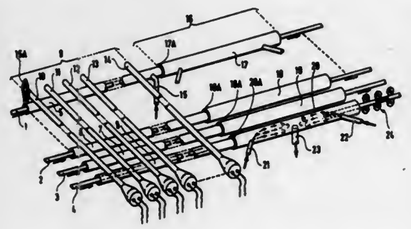
Jean-Claude Bourget, Issy les Moulineaux, France, assignor to Les Cables de Lyon, France

Continuation of Ser. No. 362,324, Mar. 26, 1982, abandoned. This application Dec. 9, 1983, Ser. No. 559,839

Claims priority, application France, Mar. 31, 1981, 81 06443

Int. Cl.³ C21B *9/62*; F27B *5/14*

U.S. Cl. 266—81 **3 Claims**



1. Apparatus for sequentially annealing and quenching armoured electric components, said components including at least a conductor core, a coating of mineral insulant and an outer sheath of fine or special steel with an austenitic structure, said apparatus comprising:

unitary longitudinal mufflers bearing respectively said components,

at least one annealing furnace along an upstream portion of said unitary muffles including means for containing a reducing or neutral atmosphere therein, and

quenching means along a downstream portion of said unitary muffles including means for flowing a cooling fluid through each said downstream muffle portion in a circuit,

the improvement further comprising means for controlling the inlet temperature and the flow rate of the cooling fluid flowing through each downstream muffle portion, so that the components undergo no trnasformation of their austenitic structure during quenching, and means for subjecting each electric component to direct contact with the cooling fluid during passage through said downstream portion of said muffles, and wherein said apparatus consists of a single furnace about said upstream muffle portion for simultaneously annealing said sheath and said core during passage through said upstream portion of each of said muffles, and wherein said single furnace includes resistors exterior of said muffles to effect a high degree of homogenity in heating and to insure simultaneous anneaing of the conductor core and said outer sheath.

4,497,475

NOZZLE ASSEMBLY FOR A METALLURGICAL FURNACE

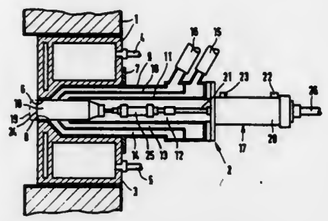
Gerhard Fuchs, Kehl-Bodersweier, and Ernst Wabersich, Kehl-Marlen, both of Fed. Rep. of Germany, assignors to Korf & Fuchs Systemtechnik GmbH, Fed. Rep. of Germany

Filed Dec. 12, 1983, Ser. No. 560,510

Claims priority, application Fed. Rep. of Germany, Jan. 18, 1983, 3301466

Int. Cl.³ C21B *7/16*

U.S. Cl. 266—270 **13 Claims**



1. A nozzle assembly for use in a metallurgical furnace above the level of the molten bath therein, comprising a duct having a discharge opening, a member which is disposed displaceably in the region of said discharge opening and which is displaceable into a position of closing said discharge opening, an actuating means for displacing said member into said closure position, and oscillation generating means operable to cause oscillation of at least a part of said displaceable member which is operative to close said discharge opening in the closure position of said displaceable member.

4,497,476

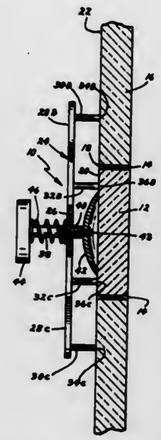
DEVICE FOR POSITIONING A PLUG FOR REPAIRING PANES OF GLASS

Robert W. Wiele, Prior Lake, Minn., assignor to Novus Inc., Minneapolis, Minn.

Filed Mar. 4, 1983, Ser. No. 472,043

Int. Cl.³ B25B *3/00*

U.S. Cl. 269—1 **8 Claims**



1. A device for supporting a plug in an opening while repairing a break in a rigid plate, comprising:

a frame;

a first set of legs extending away from said frame in a first direction, the legs of the first set circumscribing a first area of the frame and providing a plurality of support surfaces at spaced locations around the circumscribed first area;

a second set of legs mounted on and extending away from the frame in generally the same direction as the first set of legs and circumscribing a second area smaller than and within the first area and providing a plurality of second support surfaces at spaced locations around the circumscribed second area;

each leg of the first and second sets having a distal end, spaced outwardly from the frame, the first and second support surfaces being at the distal ends of the legs and the support surfaces of the legs of the first and second sets all lying on a common plane;

support means for supporting a plug generally smaller than the area circumscribed by the first set of legs against the support surfaces of the second set of legs, the plug being for use in plugging an opening in a rigid plate; and

said device being positionable against said rigid plate with the support surfaces of the first set of legs contacting one surface of a rigid plate to be repaired outwardly of an opening in such plate and with a supported plug within the opening so that a surface of such plug is held coplanar with said one surface of such rigid plate.

4,497,477

APPARATUS FOR CUTTING GLASS INTO VARIOUS SHAPES

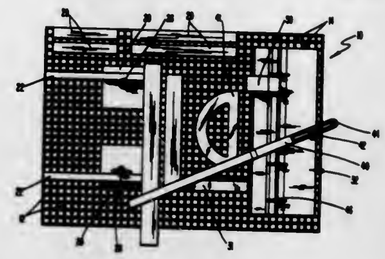
Donald Abel, Morton, Ill., assignor to Morton Glass Works, Morton, Ill.

Continuation-in-part of Ser. No. 201,718, Oct. 29, 1980, abandoned. This application Nov. 5, 1981, Ser. No. 318,450

Int. Cl.³ B25B *1/08*

U.S. Cl. 269—303 **23 Claims**

1. A device for supporting a piece of glass while cutting same by scoring and subsequently breaking it along the score line comprising: a plurality of generally vertically oriented intersecting walls having upper and lower edges, the upper edges of the walls being coplanar so as to define a planar supporting surface for said glass piece and a generally horizontal base attached to the lower edge of each of the walls such that the walls and base form a plurality of upwardly opening pockets to catch and retain glass chips generated by the scoring and breaking process below the planar supporting surface;



a variable angle cutting jig base having a plurality of projections projecting from its lower surface to engage said upwardly opening pockets; a cutting guide bar pivotally attached to said variable angle cutting jig base; and, an adjustable stop block slidably retained on said variable angle cutting jig base so as to act as a lateral stop for the glass piece.

4,497,478

APPARATUS FOR SQUARING, STAPLING, AND STACKING COPY SETS

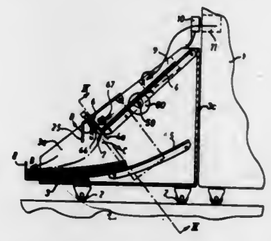
Rudolf Reschenhofer; Ludwig Müllritter, both of Munich; Günther Schnall, Eching, and Franz Fruth, Germering, all of Fed. Rep. of Germany, assignors to Agfa-Gevaert AG, Leverkusen, Fed. Rep. of Germany

Filed Sep. 19, 1983, Ser. No. 533,578

Claims priority, application Fed. Rep. of Germany, Sep. 20, 1982, 3234746

Int. Cl.³ B42B *1/02*

U.S. Cl. 270—53 **20 Claims**



1. In combination with a copier that produces a succession of sheet copies, an apparatus comprising:

a housing adapted to be positioned adjacent the copier;

an upper support plate in the housing positioned to receive the copies from the copier and having a downstream end remote from the copier;

a stop flap at the downstream end and pivotal between a position blocking copies from sliding down off the downstream end and a freeing position permitting copies to slide down off the downstream end;

a downwardly inclined lower support plate in the housing below the downstream end of the upper plate and positioned to receive copies sliding in the freeing position of the stop flap off the downstream end of the upper plate;

means including a stapler fixed in the housing adjacent the upper plate upstream of the downstream end thereof;

actuating means connected to the stapler for closing same on a stack of copies on the upper plate for stapling same together; and

control means connected to the stop flap and the stapler actuating means for periodically stapling the copies on the upper plate together and thereafter pivoting the stop into the freeing position to slide the stapled-together copies onto the lower plate.

4,497,479

DEVICE FOR SYMMETRICALLY OPENING SIGNATURES MADE UP OF SEVERAL SHEETS AND ARRANGING THEM ONTO A TRANSPORT SADDLE

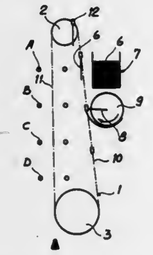
Giorgio Pessina, and Aldo Perobelli, both of Via Arborina 2, Paderno Dugnano (Milano), Italy (20037)

Filed Jul. 6, 1982, Ser. No. 395,282

Claims priority, application Italy, Jul. 3, 1981, 22749 A/81

Int. Cl.³ B65H *39/02*

U.S. Cl. 270—54 **2 Claims**



1. A device for symmetrically opening signatures made up of several sheets and arranging them onto a transport saddle, the device including a signature feeder provided with signature holding or gripping means, as well as signature opening means of the suction cup or vacuum-operated type, characterized in that said signature feeder comprises a signature opening length or section arranged to extend in a substantially vertical direction, with said length or section of the signature feeder there being associated, on either sides thereof and in a symmetrical fashion, a plurality of signature opening means, and characterized in that said signature feeder comprises two parallel chains provided with link studs adapted for supporting, or gripping the signatures.

4,497,480

EJECTOR MECHANISM FOR INCOMPLETE FASCICLES IN A CONVEYOR LINE

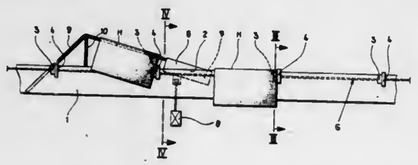
Edgar Nothdurft, Grosserlach, Fed. Rep. of Germany, assignor to Maschinenbau Oppenweiler GmbH, Oppenwiler, Fed. Rep. of Germany

Filed Dec. 2, 1983, Ser. No. 557,234

Claims priority, application Fed. Rep. of Germany, May 18, 1983, 3318047

Int. Cl.³ B65H *39/02*

U.S. Cl. 270—58 **10 Claims**



1. An ejector for incomplete fascicles which, in a straddle arrangement on a transport rail, are carried along by driver means moving in the lengthwise direction of said transport rail, characterized by

(a) a guide rail (9) which starts at a distance from the transport rail (1) that is greater than the thickness of the complete fascicles and extends upward and to the side from this starting end at an acute angle to the direction of movement of the fascicles moving along the transport rail (1) up to a highest point whose position with respect to the transport rail (1) is selected such that the incomplete fascicles (H) leave the active region of the driver means (3) only after the center of gravity of the fascicle has moved past the highest point of the guide rail (9), said guide rail having a down-slope toward its end which is sufficient for transport of the incomplete fascicles past this end under the weight of the fascicles themselves, and

(b) a switch tongue (6) which is movable between a first position in which it forms a guide path for the incomplete fascicles (5) from the transport rail (1) to the starting end of the guide rail (9) and a second position in which it permits the transport of fascicles through the intermediate space between the transport rail (1) and the starting end of the guide rail (9).

4,497,481

ARRANGEMENT FOR SUPPLYING ORIGINALS FOR COPYING APPARATUS

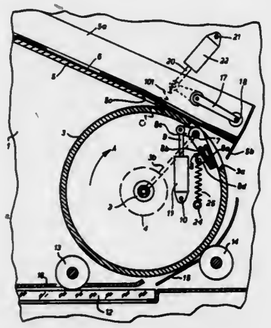
Guenter Wetzel, Haar, Fed. Rep. of Germany, assignor to Agfa-Gevaert AG, Leverkusen, Fed. Rep. of Germany

Filed Sep. 27, 1982, Ser. No. 424,962

Claims priority, application Fed. Rep. of Germany, Dec. 18, 1981, 3150223; Dec. 18, 1981, 3150224

Int. Cl.³ B65H *3/08*

U.S. Cl. 271—3.1 **8 Claims**



1. An arrangement for supplying originals for a copying apparatus, comprising

a supply stack arranged above an illumination location of a copying apparatus and having a stack supporting surface, and a front stack abutment, said originals being placed in said stack so that their sides to be illuminated face upwardly;

separating means arranged to remove an original from a lower side of said stack;

guiding means forming a transport path for guiding the original from said stack supporting surface of said stack to the illumination location;

transporting means arranged to turn the original removed from said stack and supply the original to the illumination location with its side to be illuminated downwardly, said transporting means including a rotatable transport cylinder connected with said transport path, said transport cylinder having a periphery and a through opening formed in said periphery, said stack supporting surface having near said transport cylinder an end section forming a tangent with the periphery of said transport cylinder and provided with an opening, said stack supporting surface contacting said transport cylinder in a contact point, said separating means being mounted on said transport cylinder in the region of said through opening and including a

pivotable suction nozzle member, said opening of the stack supporting surface extending substantially from said contact point to said front stack abutment and allowing pivoting of said suction nozzle member to a free lower side of said stack in the region of said opening of the stack supporting surface;

said suction nozzle member including a plurality of suction nozzles and being pivotable relative to said transport cylinder from a position inside said transport cylinder through said through opening of the transport cylinder to a position outside said transport cylinder towards the opening of the stack supporting surface to separate a lowermost original from the stack and back from the position outside the transport cylinder through said through opening in the periphery of the transport cylinder to the position inside thereof;

a suction conduit with a valve operatively communicating suction conduit with said suction nozzles of said suction nozzle member; and

control means arranged to switch off said transport cylinder in a position in which said suction nozzle member is to be pivoted towards said opening of said stack supporting surface, to pivot said suction nozzle member to the lower side of said stack after said transport cylinder has been switched off, to actuate said valve for communication said suction nozzles of said suction nozzle member with said suction conduit, to again switch on said transporting cylinder, and to pivot said suction nozzle member back inside said transport cylinder so that said transport cylinder is rotated together with said suction nozzle member to transport the lowermost original towards said illumination location.

4,497,482

FEEDING STACKS OF SHEETS

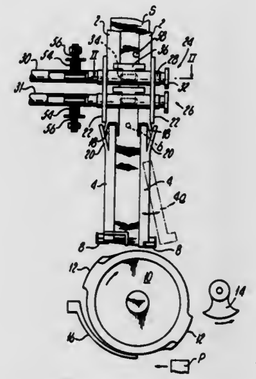
Victor J. Furze, and Thomas J. Howlett, both of London, England, assignors to Molins PLC, London, England

Filed Jul. 30, 1982, Ser. No. 403,908

Claims priority, application United Kingdom, Aug. 4, 1981, 8123774

Int. Cl.³ B65H *3/12*

U.S. Cl. 271—94 **6 Claims**



1. Apparatus for feeding a stack of sheets, such as stamps for cigarette packets, comprising:

(a) a substantially vertically disposed guide means, having top and bottom ends, for defining a stack of superposed sheets, the cross-sectional dimensions of said guide means being greater than that of said sheets and said bottom end of said guide means comprising stack support means;

(b) suction withdrawal means for withdrawing sheets singly at a predetermined rate from said bottom end of said guide means;

(c) upper and lower gripping means disposed intermediate said top and bottom ends of said guide means and spaced from said bottom end and from each other, said upper and lower gripping means being operable to project into said guide means for gripping solely against the side edges of said sheets in said stack; and

(d) actuating means operable at a rate slower than said predetermined rate of said withdrawal means to alternately operate said upper and lower gripping means such that, while sheets are withdrawn from said bottom end of said guide means by said withdrawal means and the part of said stack below said gripping means is lowered, the part of said stack above said gripping means is supported alternately by said upper and lower gripping means to lower said part of said stack above said gripping means at intervals corresponding to the operating rate of said actuating means;

(e) whereby said stack of sheets are fed downwardly in a controlled manner towards said bottom end of said guide means without the full weight of said stack being transmitted to said stack support means at said bottom end of said guide means and with the weight of said stack on said stack support means remaining substantially constant.

4,497,483

DEVICE FOR DIVIDING ICE-HOCKEY RINKS

Göran Ahlgren, Pl 1421, S-790 30 Insjön, Sweden

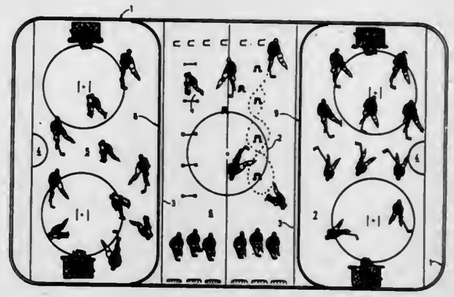
PCT No. PCT/SE82/00340, § 371 Date Jun. 20, 1983, § 102(e) Date Jun. 20, 1983, PCT Pub. No. WO83/01390, PCT Pub. Date Apr. 28, 1983

PCT Filed Oct. 21, 1982, Ser. No. 514,829

Claims priority, application Sweden, Oct. 21, 1981, 8106215; Mar. 18, 1982, 8201730

Int. Cl.³ A63C *19/06;* **E04H** *17/16*

U.S. Cl. 272—3 **9 Claims**



1. A device in combination with an ice-hockey rink for dividing the rink into at least two smaller rink parts, characterized in that it comprises a plurality of straight sideboard elements (8*a*) and a plurality of curved sideboard elements (8*b*), and in that the sideboard elements (8*a*, 8*b*) are provided with means (16, 20, 21) for interconnection thereof so as to form a supplemental sideboard (8, 9) which, when placed across the ice-hockey rink, together with the stationary sideboard (1) of the rink encloses a smaller rink (5, 7) having symmetrically curved corners.

4,497,484

PLAYGROUND CLIMBER

Donald E. West, Fort Payne, Ala., assignor to Game Time, Inc., Fort Payne, Ala.

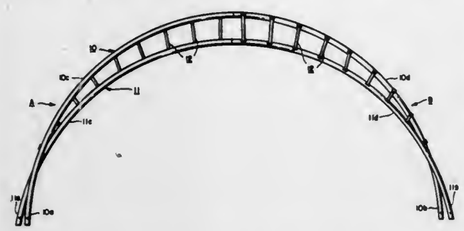
Filed Feb. 25, 1983, Ser. No. 469,805

Int. Cl.³ A63B *17/04*

U.S. Cl. 272—113 **16 Claims**

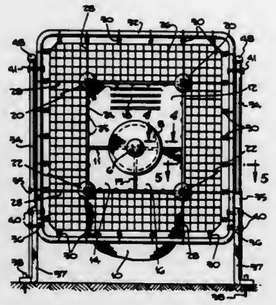
1. A children's climbing apparatus suitable for use in parks and playgrounds comprising:

a first arcuate rail member having a pair of first member end portions supportable by the ground,
a second arcuate rail member having a pair of second member end portions supportable by the ground,
said first and second arcuate rail members lying generally in intersecting planes,
said first and second arcuate rail members being positioned relative to each other and to a vertical plane having first



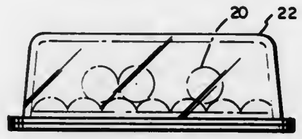
and second sides such that one said first member end portion is positioned on said first side and the other said first member end portion is positioned on said second side and the one said second member end portion closest to said one said first member end portion is positioned on said second side and the other said second member end portion is positioned on said first side, and
a plurality of children's climbing rungs interconnecting said first and second rail members.

4,497,485
BASEBALL PITCHING TARGET
Robert L. Macosko, 9701 Nila Ave., Chatsworth, Calif. 91311
Filed Jun. 4, 1984, Ser. No. 616,838
Int. Cl.[3] A63B 69/40
U.S. Cl. 273—26 A 4 Claims



1. A baseball pitching target for receiving pitched baseballs, comprising in combination:
a peripheral main frame of generally rectangular configuration having rounded corners;
a generally rectangular portion of mesh netting within the periphery of said main frame;
net and bag retaining springs attaching said mesh netting to said peripheral main frame;
a front support member attached to said peripheral main frame and to the ground;
two adjustable telescoping brace members, each attached to the ground and to one side of the upper portions of said main frame;
a rectangular insert region or strike zone attached to said mesh netting and approximately centrally located within said generally rectangular portion of said mesh netting, including:
large cords cooperating with said net and bag retaining springs and said mesh netting to position said strike zone;
two shoulder target discs located at the two upper corners of said rectangular insert region or strike zone;
two catcher's knee protector target discs located at the two lower corners of said rectangular insert region or strike zone;
simulated catcher's chest protector ribs located at the upper central portion of said rectangular insert region or strike zone;
a compartmentalized ball receiving bag having a mouth attached to said rectangular insert region or strike zone;
said compartmentalized ball receiving bag being separated into three chambers;
an upper chamber of said compartmentalized ball receiving bag;
a lower compartment of said compartmentalized ball receiving bag;
a bag center wall dividing said upper chamber from said lower compartment;
a lower left-hand chamber of said lower compartment;
a lower right-hand chamber of said lower compartment;
a bag divider wall dividing said lower left-hand chamber from said lower right-hand chamber;
reinforcing large cords defining each of said upper chamber, said lower compartment, said lower left-hand chamber and said lower right-hand chamber;
a juncture of said reinforcing large cords at said bag center wall with said bag divider wall; and
a simulated catcher's mitt, centrally located beneath said simulated catcher's chest protector ribs and secured to said juncture of said reinforcing large cords at said bag center wall with said bag divider wall.

4,497,486
DEVICE FOR SELECTING NUMBERS RANDOMLY
Robert A. Bennett, 170 Sturbridge Rd., Easton, Conn. 06612
Filed Aug. 3, 1984, Ser. No. 637,596
Int. Cl.[3] A63F 7/04
U.S. Cl. 273—144 B 4 Claims



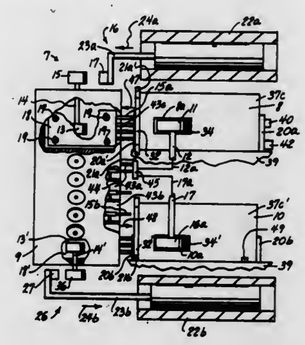
1. A device for selecting numbers comprising:
a horizontal rectangularly shaped plate having a flat top surface;
a first plurality of like members, each member being secured to the top surface of said plate and extending upwards, each member being hemispherically shaped, said members being equidistantly shaped and arranged into rows and columns, each row containing the same second plurality of members, each column containing the same third plurality of members, said first plurality being equal to the product of said second and third pluralities, each two adjacent members in any row together with the corresponding two adjacent members in an immediately adjacent row defining a cell, each cell having a centrally disposed region exposing an underlying portion of said plate, each region having a different number associated therewith;
at least one spherical ball adapted to rest removably in any region; and
a transparent cover secured peripherally to said plate and extending over said members, the separation between the top of said members and the inner surface of said cover being larger than the diameter of said ball.

4,497,487
CHANCE DEVICE
Henry O. Crippen, 1700 Grand Concourse, Bronx, N.Y. 10457
Continuation-in-part of Ser. No. 137,725, Apr. 7, 1980, abandoned. This application Aug. 28, 1980, Ser. No. 182,234
Int. Cl.[3] A63F 9/04
U.S. Cl. 273—146 2 Claims



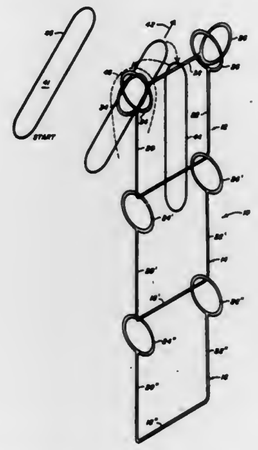
1. A game device comprising a chance device having two icosahedral chance elements having a number on each of the surfaces thereof, one chance element having numbers thereon representing ten odd numbers and ten even numbers of from 1 to 40, and the other chance element having numbers thereon representing the remaining twenty numbers of from 1 to 40, the sum of the numbers appearing on each chance element being 410 and one of the chance elements has a second number from 0 to 9 on each face with the same number appearing on directly opposite faces of the icosahedral element.

4,497,488
COMPUTERIZED CARD SHUFFLING MACHINE
Jerome B. Plevyak, 200 N. Faklanding Rd., Maple Shade, N.J. 08052, and Adolph E. Nicoletti, 8 Villano Ct., Berlin, N.J. 08009
Filed Nov. 1, 1982, Ser. No. 438,408
Int. Cl.[3] A63F 1/12
U.S. Cl. 273—149 R 37 Claims



1. A computerized card shuffling device comprising in combination: a card holding and feeding means for holding a stack of cards and for feeding cards intermittently therefrom and thereto; a card transfer means including a plurality of card-receiving stations; and shifting means for intermittently randomly matching non-random sequences of said plurality of stations with said card holding and feeding means, the arrangement being such that when matched a card is feedable from the card holding and feeding means into a matched one of said plurality or alternately is feedable from a matched one of said plurality into said card holding and feeding means.

4,497,489
BOW AND LADDER AMUSEMENT DEVICE
Wilmer O. Pelletier, Portsmouth, N.H., assignor to Bernice Pelletier, Portsmouth, N.H.
Filed Aug. 11, 1982, Ser. No. 407,251
Int. Cl.[3] A63F 9/08
U.S. Cl. 273—158 9 Claims



1. An amusement device comprising in combination:
a ladder structure having rungs and links in the form of rings having a predetermined diameter, said rungs and links being permanently and rigidly attached, with said links surrounding all but the bottom rung, and a barbell member through the links adjacent the top of the ladder structure, said barbell member having rings at either end thereof, the diameters of the barbell rings being larger than those of the links at the top of the ladder structure; and
an elongated earless noncollapsible bow having a completely enclosed unobstructed center region, said bow having maximum width which permits the passage of the bow completely through any of said links and a maximum length essentially that of the length of the unobstructed center region.

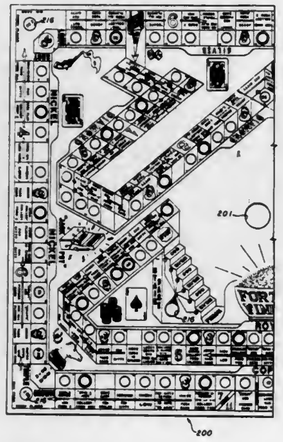
4,497,490
BOARD GAME AFFORDING COMPETITIVE CHALLENGE AMONG PLAYERS
Thurmond J. Rogers, Jr., 12011 Woolford Dr., Houston, Tex. 77065
Filed Apr. 27, 1979, Ser. No. 33,941
Int. Cl.[3] A63F 3/00
U.S. Cl. 273—249 14 Claims

1. A board game apparatus comprising
a playing board including
a plurality of marked spaces interconnected in a first path of progression around said board,
a plurality of marked spaces interconnected in a second path of progression forming a closed loop with said first path at spaced intervals therealong,
playing pieces for movement by each player along said first or second paths of progression according to the rules of the game,
means associated with selected ones of said marked spaces to indicate monetary value for purposes of gain to the player whose playing piece occupies such space,
means associated with selected other ones of said marked spaces to indicate monetary value for purposes of loss to the player whose playing piece occupies such space,
said means for indicating monetary value on each of said marked spaces comprising means removably secured

adjacent to said first named and said second named selected marked spaces for varying the value indicated for any selected marked space,

indicia means on said playing spaces directing a player to pay or collect from other players or the cashier or to take specified competitive action,

chance means for directing movement of said playing pieces



and having indicia corresponding to the numbers or faces of playing cards, and

a plurality of cards having indicia of complete playing hands of five cards each ranked according to the game of poker and used by the players competitively to challenge or be challenged by other players when one player's playing piece occupies a selected playing space directing competitive action.

4,497,491

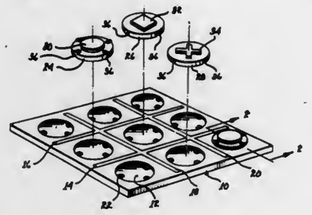
APPARATUS AND METHOD EMPLOYING SELECTIVELY STACKABLE GAME PIECES

Paul D. Holman, 919 E. Kaler Dr., Phoenix, Ariz. 85020

Filed Dec. 19, 1983, Ser. No. 563,237

Int. Cl.³ A63F *3/00*

U.S. Cl. 273—271 **25 Claims**



1. A game of skill, said game comprising in combination:

(a) a game board;

(b) a plurality of positions delineated on said game board;

(c) at least two sets of game pieces for use with said game board, each said set of game pieces including:

i. a first plurality of game pieces having a first valuation;

ii. a second plurality of game pieces having a second valuation, which second valuation is superior to the first valuation;

iii. a third plurality of game pieces having a third valuation, which third valuation is superior to the second valuation and inferior to the first valuation; and

(d) means for stacking said game pieces only in ascending order of valuation upon selected ones of said positions of said game board.

4,497,492

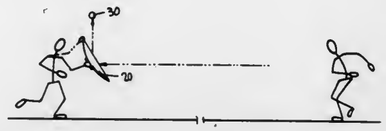
GAME WITH SHIELDS FOR DEFLECTING HURLED PROJECTILE

R. Danford Lehman, Jr., 6944 Park Ave., and Michael F. Williams, 6903 Park Ave., both of McLean, Va. 22101

Filed Nov. 12, 1982, Ser. No. 440,991

Int. Cl.³ A63B *71/00*

U.S. Cl. 273—411 **19 Claims**



1. A game for a plurality of players comprising:

a plurality of shield members, one for each player, each shield member including rebound means for providing substantial and controllable generally upward rebound of airborne objects under the control of a player, said rebound means including a concave rebound surface and handle means arranged to permit a player to movably support the shield member in one hand with said concave rebound surface facing away from that player, said rebound surface having a sufficiently moderate degree of concavity to permit said substantial and controllable rebound; and

projectile means:responsive to being forcefully impacted against said concave rebound surface of a shield member for resiliently bouncing from that rebound surface;

whereby the object of the game is for one player to hurl said projectile toward another player and³ for said another player to rebound the projectile with the concave rebound surface of one of said shield members and catch the rebounded projectile before it lands.

4,497,493

MECHANICAL FACE SEALS WITH WEAR MONITOR MEANS

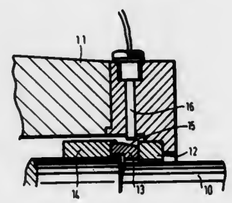
Surinderpal S. Sali, Slough, and John Kemp, Franham Common, both of England, assignors to Crane Packing Limited, Slough, England

Filed Jul. 11, 1984, Ser. No. 629,813

Claims priority, application Fed. Rep. of Germany, Jul. 20, 1983, 8319550

Int. Cl.³ F16J *15/34*

U.S. Cl. 277—2 **13 Claims**



1. A method of monitoring the wear of the sealing faces of a mechanical face seal having an axially fixed seat and an axially movable seal face member which is urged into sealing engagement with said seat; comprising positioning a sensor radially of said seal face member or a component which moves axially with the seal face member, such that it may detect a signal from a radially opposed surface of the seal face member or component, said surface of the seal face member or component being arranged to provide a change in signal as the seal face member moves axially with respect to the sensor, thereby indicating the wear limit or the amount of wear of the sealing faces.

4,497,494

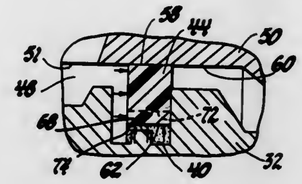
PRESSURE ACTIVATED SEAL RING

Karl D. Allen, Canton, and Alan L. Brace, Livonia, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Apr. 9, 1984, Ser. No. 598,421

Int. Cl.³ F16J *15/24, 15/46*

U.S. Cl. 277—27 **2 Claims**



1. An improvement in pressure activated seal rings, having inner and outer cylindrical surfaces, for use on relatively moveable components, one of which has a bore the other of which has a shaft, with a seal groove disposed in one of said components, said seal being used in a hydraulic system wherein fluid pressure is applied to one radial face of the seal and to one of the cylindrical surfaces of said seal whereby said seal is urged radially against one of said components and axially against one sidewall of said groove wherein the improvement comprises: one of said cylindrical surfaces of said seal having formed therein a plurality of undulations to permit said fluid pressure to act on said one cylindrical surface when said seal is pressurized to thereby ensure radial movement of said seal ring to seal against one of said components.

4,497,495

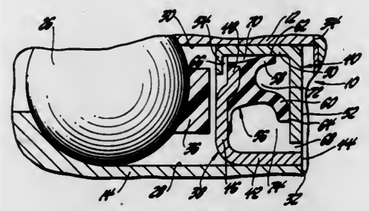
UNITIZED WHEEL BEARING SEAL WITH MULTIPLE LIPS

Paul J. Christiansen, Sandusky, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Mar. 5, 1984, Ser. No. 586,343

Int. Cl.³ F16J *15/32, 15/48*

U.S. Cl. 277—50 **3 Claims**



1. A unitized wheel bearing seal assembly comprising,

a unitary first sheet metal casing having a cylindrical wall adapted to be press fitted within a nonrotatable cylindrical bore,

a unitary second sheet metal casing having a cylindrical wall concentric with the first casing cylindrical wall and adapted to be press fitted within a rotatable cylindrical bore concentric with the stationary bore, said second casing having an axially outer side wall adapted to be exposed to ambient and extending radially outwardly from its cylindrical wall,

and a seal bonded to the first casing including first and second unsprung integral lips, the first lip extending into sealing engagement with the second casing cylindrical wall at an acute angle with respect thereto so as to be flexible radially outwardly away therefrom,

said second lip extending into sealing engagement with the axially outer side wall at an acute angle with respect thereto so as to be flexible axially inwardly away from said side wall,

said sealing lips further forming a lubricant cavity therebetween,

the angle and flexibility of the lips acting as one way gates to allow ingress of lubricant to the cavity and egress of lubricant from said cavity to ambient while resisting the ingress of contaminants from the ambient to the cavity.

4,497,496

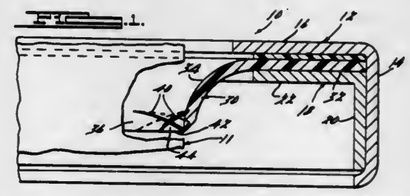
HYDRODYNAMIC SLITTED SEAL AND METHOD OF MANUFACTURE THEREOF

James A. Repella, Berkley, Mich., assignor to Microdot Inc., Darien, Conn.

Continuation-in-part of Ser. No. 494,817, May 16, 1983, Pat. No. 4,451,050, which is a continuation-in-part of Ser. No. 322,640, Nov. 18, 1981, abandoned, and a continuation-in-part of Ser. No. 350,359, Feb. 19, 1982, Pat. No. 4,450,614. This application Apr. 23, 1984, Ser. No. 603,148

Int. Cl.³ F16J *15/32, 15/54;* B23D *17/00;* B21D *39/00*

U.S. Cl. 277—134 **12 Claims**



1. A bi-directional hydrodynamic oil seal comprising an annular case, and a thin washer-like seal element having a radially outer portion supported by said case and a generally cylindrical radially inner portion adapted to engage a shaft, the radially inner portion of said seal element having a plurality of generally arcuate slits in the surface thereof that extend at an acute angle relative to the central axis of the shaft and divergent from the oil side of said seal and intersect the radially inner edge of said seal element to effect hydrodynamic pumping in conjunction with a rotating shaft, said slits varying in depth from a maximum at the oil side of the radially inner portion thereof to a minimum at the dry side thereof.

4,497,497

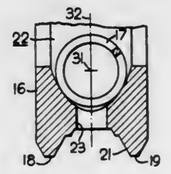
OIL RING ASSEMBLY WITH ANNULAR EXPANDER SPRING

Jerome L. Berti, Chicago Heights, and Paul J. Patchen, Homewood, both of Ill., assignors to Allis-Chalmers Corp., Milwaukee, Wis.

Filed Jun. 21, 1984, Ser. No. 623,010

Int. Cl.³ F16J *9/06, 9/22, 9/20*

U.S. Cl. 277—163 **7 Claims**



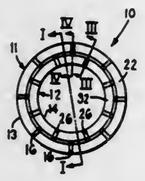
1. An oil ring assembly for an internal combustion engine piston comprising:

an annular piston ring having a gap in the circumference

thereof for accommodating radial expansion and contraction of said ring and having a radially inward facing circumferential groove in the inner periphery of said ring,
wall means in said ring defining a plurality of circumferentially spaced slots extending radially between the bottom of said groove and an outer circumference of said ring,
an annular coiled expander spring disposed in said groove, the coils of said spring being of a predetermined outer radius,
the intersection of the surface of said groove by a radial plane defining a longitudinal end portion of an elongated ellipse whose major axis extends radially in relation to said ring, said predetermined outer radius of said spring coils and said ellipse being proportioned to provide radial space between the spring coils and the vertex of said end portion, the points of contact between the coils of said spring and said surface of said groove defining a pair of axially spaced annular bands spaced axially from axially opposite sides of said slots in said ring.

4,497,498
EXPANDING-CONTRACTING GRIPPING DEVICE FOR WORKPIECE

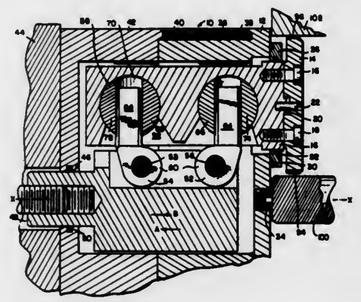
James R. Buck, 1902 SE. 36th St., Cape Coral, Fla. 33904
Filed Aug. 6, 1982, Ser. No. 405,793
Int. Cl.³ B23B *31/40*
U.S. Cl. 279—2 R **18 Claims**



1. A device for releasably gripping a workpiece, comprising:
inner and outer axially elongated, sleevelike gripping members, said inner gripping member being coaxially supported within said outer gripping member for axial movement relative thereto, said outer gripping member being radially resiliently expandable and said inner gripping member being radially resiliently contractable;
each said gripping member comprising an elongated and substantially cylindrical sleeve, the radially outer surface of said outer gripping member and the radially inner surface of said inner gripping member both being smooth cylindrical surfaces;
each said gripping member having a plurality of circumferentially spaced slits extending axially from at least one end thereof through an axial extent which is slightly less than the full length of the respective gripping member, said slits extending radially between the inner and outer surfaces of the respective gripping member for dividing each gripping member into a plurality of circumferentially spaced, axially elongated segments which are joined to adjacent segments by relatively short integral webs located at an end of the respective segment, said segments permitting the outer gripping member to resiliently radially expand and the inner gripping member to resiliently radially contract;
the segments of the outer gripping member having a plurality of axially spaced ramps on the radially inner surface thereof, and the segments of the inner gripping member having a plurality of axially spaced ramps on the radially outer surface thereof, each said ramp on said outer gripping member having a camming surface thereon which slidably engages a camming surface on a respective said ramp on said inner gripping member so that axial movement of one said gripping member relative to the other said gripping member in a first direction effects relative radial movement between the gripping members due to resilient deflection.

4,497,499
DOUBLE-CAM POWER CHUCK

Joseph S. Allen, Indianapolis, Ind., assignor to Stace-Allen Chuck, Inc., Indianapolis, Ind.
Filed Dec. 28, 1981, Ser. No. 334,633
Int. Cl.³ B23B *5/34, 5/22, 25/00, 31/12*
U.S. Cl. 279—119 **15 Claims**



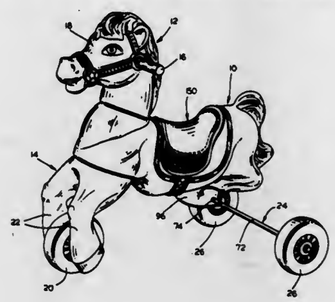
1. A chuck, comprising a base
rotatable about an axis of rotation, an actuator axially disposed in the base for axial reciprocation relative thereto,
a plurality of first links, each first link including a distal member axially offset in a first direction and pivotally connected to the actuator, a like plurality of second links, each second link including a distal member axially offset opposite the first direction and pivotally connected to the actuator, the distal members of the first and second links extending substantially radially from the actuator,
a like plurality of jaw support members arranged circumferentially about the axis and movable radially relative thereto, each jaw support member receiving a first and a second link therein for relative motion therewith, and
eccentric means connecting the distal members of the first and second links to the jaw support members for translating axial motion of the actuator into radial motion of the jaw members, each first link being pivotable about a first pivot point such that, during axial reciprocation of the actuator, the first pivot point traverses a first plane defined by the pivot axes of the eccentric means connected thereto, and each second link being pivotable about a second pivot point such that, during reciprocation of the actuator, the second pivot point remains axially forward of a second plane defined by the pivot axes of the eccentric means connected thereto.

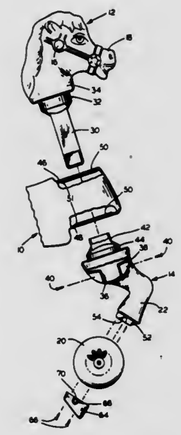
4,497,500
SPRING ACTION RIDE-ON TOY

Frank Mercurio, Wallingford, Conn., assignor to Coleco Industries, Inc., Hartford, Conn.
Filed Jul. 5, 1983, Ser. No. 510,961
Int. Cl.³ A63G *19/00*
U.S. Cl. 280—1.13 **8 Claims**

1. A child's ride-on toy adapted for facile assembly, including a rigid body member of hollow construction comprised of upper and lower walls, each of said walls having a relatively large circular opening formed therethrough to define a pair of generally vertically aligned seat portions in the forward part of said body member; a head member mounted on said body member and extending downwardly through said opening in said upper wall; a leg member mounted on said body member and extending upwardly through said opening in said lower wall, said leg member having first ground-engaging wheel

means thereon; cylindrical bearing portions on both said head member and said leg member, said bearing portions being received within said seat portions of said top and bottom walls, respectively, for pivotable movement of said head and leg



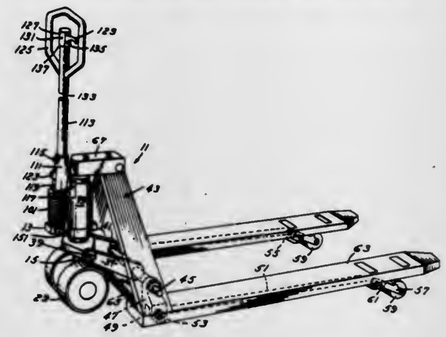


members relative to said body member; means interengaging said head and leg members in assembly against relative rotation and axial displacement; and second ground-engaging wheels means on a rearward part of said body member.

4,497,501
PALLET TRUCK WITH HYDRAULIC LIFT

Tuval Kedem, Miami, Fla., assignor to Equipment Company of America, Hialeah, Fla.
Filed Oct. 26, 1981, Ser. No. 313,411
Int. Cl.³ B62D *21/18*
U.S. Cl. 280—43.12 **19 Claims**

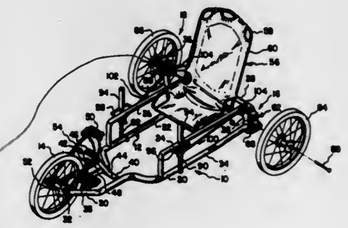
1. In a hydraulic lifting unit having a base plate mounting an upright lift cylinder having therein a reciprocal combined lift rod and piston means and a pump cylinder having a pump outlet and a manually reciprocal pump piston projecting therefrom;
a hydraulic control mechanism secured to and depending from said base plate, said control mechanism having an elongated bore extending axially of and communicating with said lift cylinder;
a plunger piston positioned within and projecting from said bore, through said base plate and at one end secured to said lift piston means;
there being a first passage in said base plate interconnecting said pump cylinder outlet and said bore;
a reservoir mounted upon said base plate containing hydraulic fluid and having a first outlet communicating with said first passage for directing hydraulic fluid into said pump cylinder upon its suction stroke;
first valve means adjacent said first passage blocking pressurized hydraulic fluid from said reservoir first outlet;
downward movement of said pump piston directing pressurized hydraulic fluid to said bore thereby lifting said plunger piston and said lift cylinder piston means and rod;



said reservoir having a second outlet;
there being a second passage in said base plate at one end communicating with said second outlet and at its other end communicating with said lift cylinder;
upward movement of its piston means drawing hydraulic fluid from said reservoir into said lift cylinder.

4,497,502
RECUMBENT TRICYCLE

Robert C. Forbes, Sun Valley, Calif., and John VanderKam, Dayton, Ohio, assignors to Huffy Corporation, Dayton, Ohio
Filed Jan. 31, 1983, Ser. No. 462,489
Int. Cl.³ B62D *9/02*
U.S. Cl. 280—281 LP **8 Claims**



1. A tricycle comprising:
a front wheel;
a frame having a passenger seat and including a pair of lower rails, each having an upwardly-inclined forward portion rotatably and nonsteerably mounting said front wheel, a divergent portion passing below and outwardly of said seat and terminating in an upwardly inclined section, a rear rail extending between said divergent portions and having an arcuate shape protruding rearwardly of said frame thereby providing a rear bumper therefor, and a pair of upper side rails, each extending upwardly from a different one of said lower side rails to said rear rail;
a pair of rear wheel assemblies mounted to said frame rearwardly of and on either side of said seat, each including a substantially vertically oriented rear wheel, hinge means attached to said rear rail at a top portion thereof and to one of said divergent portions of said lower rails at a bottom portion thereof and having a pivotal axis inclined 10° from the vertical inwardly toward said frame and

mounting said rear wheel for rotational movement about a horizontal axis and pivotal movement about said pivotal axis;

each of said hinge means including a housing attached to said rear rail and said lower rail, a rear wheel bracket pivotally mounted to said housing to rotate about said pivotal axis and including a vertical member rotatably mounting an associated one of said rear wheels, an upper flange pivotally attached to said housing at an upper portion thereof and including a link arm extending inwardly from said pivotal axis, and a lower flange pivotally attached to said housing and including a stud projecting outwardly from said pivotal axis;

a tie rod attached to and extending between said studs of said hinge means whereby said rear wheels are at all times oriented substantially parallel to each other;

steering means including a pair of levers mounted to different ones of said lower rails on either side of said seat for forward and rearward pivotal movement, a pair of link rods operatively joining each of said levers to one of said link arms on a common side of said frame, such that said levers may be displaced in alternate forward and rearward positions wherein said rear wheels are pivoted to turn said tricycle in a direction corresponding to said rearwardly pivoted lever; and

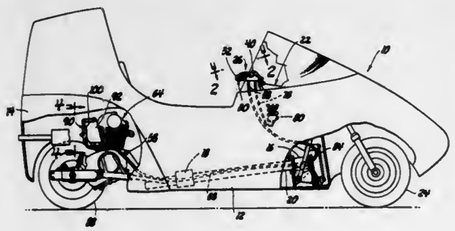
means for rotating said front wheel including crank means mounted to said frame forwardly of said seat and rearwardly of said rear wheel.

4,497,503

HYDRAULIC CONTROL SYSTEM FOR VEHICLE

Clarence C. Irwin, Dryden, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Feb. 14, 1983, Ser. No. 465,819
Int. Cl.³ B62K *11/14*
U.S. Cl. 280—335 **5 Claims**



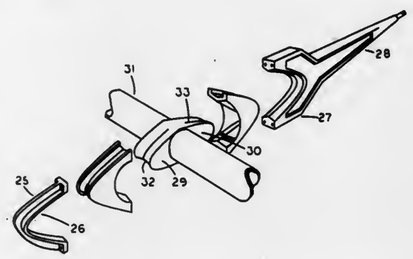
1. In a wheeled vehicle, steering means in a first location having dirigible road wheel means at the lower end thereof for contacting a vehicle support surface and a manual steering device at the upper end thereof grippable by a vehicle driver for steering the vehicle, engine means in a second location drivingly connected to rear road wheels contacting said support surface, hydraulically operable control means associated with said engine for controlling the power output thereof, manual actuator means associated with said manual steering device for operating said engine control means and the power output of said engine characterized in that the manual actuator means comprises piston means movably mounted in a piston bore formed in a housing mounted to said steering device, said bore being hydraulically coupled to said engine control means by an incompressible fluid confined in a continuous flexible conduit extending in a long and tortuous path from said housing to said control means, said fluid being displaced upon movement of said piston means to control the power output of said engine.

4,497,504

AXLE ALIGNMENT BUSHING

James M. Duff, 149 Kirk Rd., Sequim, Wash. 98382

Filed May 16, 1983, Ser. No. 494,651
Int. Cl.³ B60G *3/00*
U.S. Cl. 280—673 **10 Claims**



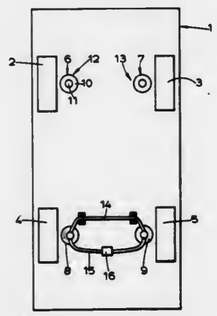
1. A strut arm coupling bushing adapted to maintain optimum alignment of a vehicular front axle comprising a C-shaped body formed for a bushing insert between front and rear members of a coupling and an intermediary pair of opposed front and rear lugs with top and bottom surfaces projecting from the axle, the body having opposed first and second transverse walls tapering longitudinally in thickness from an open end to a point adjacent a closed end of said body, including inner and outer surfaces for meshing with the enclosed surfaces of the members and the axle lugs and to apply pressure therein to maintain said axle in alignment, and further including spaced side webs connected to C-shaped edges of the walls having a rim portion extending above the outer surfaces adjacent to the C-shaped edges for engagement with the outer sides of said members so as to retain said body securely within said members, the rim further merging into a thinner side web portion having a front edge formed into an arc of a circle adjacent to the open end of said body for contact with said axle beside said lugs.

4,497,505

VEHICLE SUSPENSION SYSTEMS

Anthony W. Harrison, Birmingham, and Robert J. Goudie, Solihull, both of England, assignors to Lucas Industries Public Limited Company, Birmingham, England

Filed Oct. 26, 1982, Ser. No. 436,664
Claims priority, application United Kingdom, Nov. 5, 1981, 8133329
Int. Cl.³ B60G *3/00*
U.S. Cl. 280—698 **20 Claims**



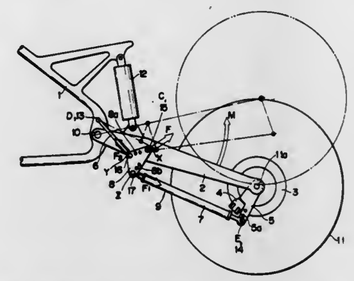
1. A vehicle suspension system for a vehicle with front and rear wheels, wherein the load on each of said front and rear wheels is supported by a gas spring comprising a volume of gas for supporting said load and a volume of hydraulic fluid through which movement of said wheel is transmitted to said volume of gas, said suspension system providing independent suspension for each of said front and rear wheels, and comprising suspension for said front wheels and suspension for said rear wheels, said suspension for said front wheels being so constructed and arranged that a roll stiffness of said suspension for said front wheels increases with an increase in said load on said front wheels, and said suspension for said rear wheels includes a torsion bar, and a connection is provided between said hydraulic fluid volumes of said gas springs supporting said rear wheels, said connection being constructed and arranged to allow flow of hydraulic fluid between said gas springs supporting said rear wheels.

4,497,506

ANTI-LIFTING MECHANISM FOR MOTOR VEHICLES

Shinichi Miyakoshi, Saitama, and Tokio Isono, Tokyo, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 26, 1983, Ser. No. 461,135
Claims priority, application Japan, Jan. 26, 1982, 57-9856[U]
Int. Cl.³ B62K *25/04*
U.S. Cl. 280—703 **30 Claims**



1. An anti-lifting mechanism in a motor vehicle having at least one shock absorber, a rear wheel supporting member vertically and pivotably connected at the front end thereof to a body frame of the vehicle, a brake member integrally connected with a rear wheel and rotatably supported by said rear wheel supporting member, braking means for braking at least one rear wheel by pressure contact thereof with said brake member, braking force sensing means fixed to said braking means and rotatably supported by a rear axle which supports said rear wheel, and torque link means disposed between said braking force sensing means and said body frame for transmitting a braking torque of said rear wheel to the vehicle body, wherein:

said torque link means comprises:

a substantially straight first torque transfer member;

a substantially straight second torque transfer member;

a link member interposed between said first and said second torque transfer members so as to interconnect said torque transfer members, whereby said body frame is prevented from being lifted up at the rear portion thereof during braking;

said first torque transfer member being pivotally connected at one end thereof to either one of said body frame and said rear wheel supporting member;

said second torque transfer member being pivotally connected at one end thereof to said braking force sensing means; and

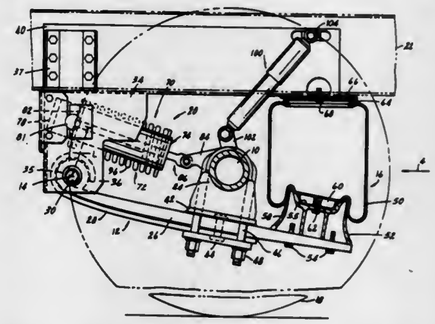
said link member having a first end pivotally connected to the other one of said body frame and said rear wheel supporting member, a second end pivotally connected to the other end of said first torque transfer member and a third end pivotally connected to the other end of said second torque transfer member.

4,497,507

VEHICLE AXLE SUSPENSION

Paul R. Chervenak, Warren, Mich., assignor to Granning Suspensions, Inc., Livonia, Mich.

Filed Apr. 11, 1983, Ser. No. 483,598
Int. Cl.³ B60G *11/26*
U.S. Cl. 280—704 **2 Claims**



1. The combination with a vehicle frame having a frame, of a hanger depending from said frame, an auxiliary axle, means mounting said axle for up and down pivotal movement comprising a generally horizontal beam assembly which extends longitudinally of the vehicle and is pivoted at one end to said hanger for movement about a first horizontal axis, said axle being secured to said beam assembly between its ends in spaced relation to said first horizontal axis, selectively operable mechanism depending from said frame and acting on the opposite end of said beam assembly for forcing said beam assembly and axle downward to a load-supporting position, and means effective when said mechanism is not operating for lifting said beam assembly and axle to an elevated position above said load-supporting position, said lifting means comprising a power device having an elongated extensible and contractable resilient unit one end of which is connected to said axle, the opposite end of the said resilient unit being pivoted to said hanger for movement of said resilient unit about a second horizontal axis spaced from the first horizontal axis, said resilient unit applying a force on a line in the direction of its length to urge said beam assembly and axle to said elevated position, and said resilient unit and second horizontal axis being so located that the lever arm of the line of force with respect to said first horizontal axis decreases in length as the beam assembly and axle are forced downward to load-supporting position.

4,497,508

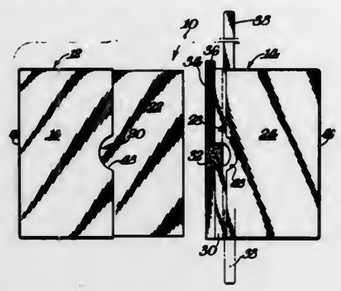
PROTECTIVE BOOK COVER

Edward L. McHugh, 7437 Royal Dominion Dr., Bethesda, Md. 20817

Continuation-in-part of Ser. No. 179,435, Aug. 19, 1980, Pat. No. 4,355,822. This application Jun. 28, 1982, Ser. No. 392,372
The portion of the term of this patent subsequent to Oct. 26, 1999, has been disclaimed.
Int. Cl.³ B42D *3/10, 3/06, 3/00*
U.S. Cl. 281—34 **7 Claims**

1. A removable book cover comprising a first pocket section and a second pocket section for receiving a respective cover of a book, each of said pocket sections being of envelope-type form having an inner member and an outer member, said inner member and said outer member having coterminous upper edges and coterminous lower edges parallel to said upper edges and having coterminous remote edges perpendicular to said upper edges and said lower edges, said inner and outer members being connected together along said coterminous upper and lower and remote edges, each of said pocket sections being completely open along its side opposite said remote edge, said outer member of each of said pocket sections extend-

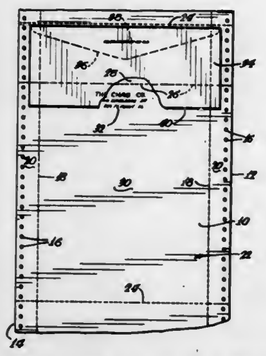
ing outwardly beyond its open side whereby one of said pocket sections may be telescoped over the front cover of a book and the other of said pocket sections may be telescoped over the back cover of the book with said flaps extending toward each other, each of said flaps having an upper edge and a lower edge disposed in generally the same direction as said respective upper edge and said lower edge of its pocket section, said upper edge and lower edge of each of said flaps being tapered toward each other, the distance between said upper edge and said lower edge of each of said flaps being less than the distance between said upper edge and said lower edge of its pocket section whereby after said pocket sections have been telescoped over the front and back covers of the book said flap of said first pocket section may be inserted in a completely flat condition against the cover of the book, and adjustable attaching means on said flap of said second pocket section whereby after said first flap is tucked into said second pocket section said first and said second pocket sections may be secured together by said attaching means to thereby retain said pocket sections on their respective covers of the book.



4,497,509
CONTINUOUS BUSINESS FORM FOR AUTOMATED MAILING

Thomas C. Gore, Crystal Lake, Ill., assignor to Uarco Incorporated, Barrington, Ill.

Filed Sep. 16, 1982, Ser. No. 419,547
Int. Cl.³ B41L *1/26*
U.S. Cl. 282—11.5 A **10 Claims**

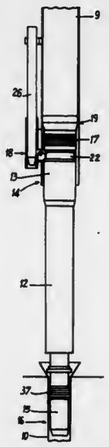


1. A continuous business form for use in automated mailing systems or the like, comprising:
- a single elongated ply of paper having feeding means on at least one longitudinal edge;
- a longitudinal line of weakening adjacent said edge(s) but spaced therefrom sufficiently to accomodate the associated one of said feeding means to define a removable feed strip and a main panel;
- a plurality of cross lines of weakening extending across said ply to divide said main pane into alternating mailing facilitating panels and message bearing panels, with each said mailing facilitating panel having a length longitudinally of the ply that is a minor fraction of the length of each message bearing panel longitudinally of the web; and
- means secured to said mailing facilitating panels and cooperating therewith without substantially obstructing said message bearing panels to define mailing pieces for said message bearing panels.

4,497,510
CONNECTION-DISCONNECTION DEVICE BETWEEN ONE RIGID PIPE, INSIDE WELL-TUBING CONNECTED TO A BASE BY AN ARTICULATED COUPLING, AND ANOTHER RIGID PIPE FIXED TO THIS BASE

Philippe Cabrit, Pau; Jean Mourlevat, Roquefort S/Garonne, and Jacques de Saint-Palais, Pau, all of France, assignors to Societe Nationale Elf Aquitaine (Production), France

Continuation of Ser. No. 096,840, Nov. 23, 1980, abandoned. This application Jul. 29, 1983, Ser. No. 518,442
Int. Cl.³ F16L *35/00*
U.S. Cl. 285—18 **11 Claims**

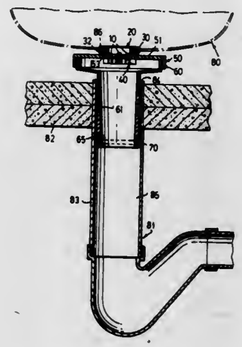


1. A connection-disconnection device for use between pipe ends, comprising in combination:
- one pipe end and another pipe end spaced therefrom;
- an adaptor received within each pipe end and extending therebeyond, toward, and in spaced relation to the other adaptor;
- a flexible pipe, adapted to be stretched, interconnecting said adaptors;
- a lock device carried on at least one of said pipe ends, said lock device having a lock element interengageable with a lock recess on the associated one of said adaptors to secure said one adaptor in said one of said pipe ends;
- sealing means between each one of said adaptors and its associated pipe end for sealing engagement therewith;
- and positioning means operable between at least one of said adaptors and its associated pipe end, said positioning means including inclined surface means on said one adaptor in engagement with inclined surface means on its associated pipe end for seating said one adaptor in selected longitudinal relation with respect to its associated pipe end and for longitudinally locating said one adaptor for interengagement of said lock recess with said lock element.

4,497,511
CONNECTORS FOR VESSELS OR PIPES

Allan D. Barker, Nerang, Australia, assignor to A.D. & R.E. Barker Pty. Ltd., Nerang, Australia

PCT No. PCT/AU80/00106, § 371 Date Aug. 2, 1982, § 102(e) Date Aug. 2, 1982, PCT Pub. No. WO82/01928, PCT Pub. Date Jun. 10, 1982
PCT Filed Dec. 4, 1980, Ser. No. 403,655
Int. Cl.³ F16L *5/00*
U.S. Cl. 285—158 **10 Claims**

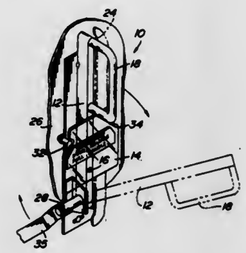


1. A connector for connecting vessels or pipes comprising:
- a first connection member (20) adapted to be connected to a first vessel or pipe (80);
- a second connection member (60) adapted to be connected to a second vessel or pipe (83);
- clamping means (40) adapted to secure said first and second connection members (20, 60) together;
- said second connection member (60) having a portion (63) of greater diameter than the diameter of said first connection member (20);
- a wall (51) closing said portion (63), said wall (51) having a hole (53) formed therein to receive said first connection member (20) to form the connection between said vessels or pipes (80, 83); and
- resilient sealing means (30) surrounding the hole (53) formed in the wall (51) and adapted to be compressed between said first and second connection members (20, 60) to form a fluid-tight seal therebetween.

4,497,512
EMERGENCY RELEASE HANDLE

Lionel Sherrow, Huntingdon Valley, Pa., assignor to The Budd Company, Troy, Mich.

Filed Sep. 19, 1983, Ser. No. 533,388
Int. Cl.³ E05C *15/02*
U.S. Cl. 292—92 **6 Claims**

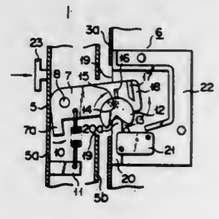


1. In combination with a linkage means element for actuating a mechanism in a railway car under emergency conditions, means for actuating said linkage means under emergency conditions comprising:
- (a) a handle pivotally mounted within an interior wall of said rail car and connected to said linkage means;
- (b) a flexible member adapted to be connected to said handle and including at least two slots therein;
- (c) retaining elements connected to said interior wall through said slots to normally hold said flexible member against said interior wall and said handle within said interior wall; and
- (d) manual gripping means connected to said handle extending away from said interior wall to permit a person to manually grip and pull to cause said guard member to flex and move past said retaining elements and cause said handle to be pivoted within said interior wall to actuate said linkage means to actuate said mechanism in said railcar.

4,497,513
LOCKING DEVICE FOR DOOR OF COOKING APPARATUS

Takafumi Sasaki, Hokkaido, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Sep. 15, 1982, Ser. No. 418,543
Claims priority, application Japan, Sep. 21, 1981, 56-148995
Int. Cl.³ E05C *3/16*
U.S. Cl. 292—217 **4 Claims**



1. A locking device for a door of a cooking apparatus, comprising:
- a cooking apparatus housing including a door;
- an arm including an end portion, said arm being pivotably mounted at an inside portion of the door and including means for pivoting said arm within a limit of a predetermined rotation angle about a pivoting axis;
- an eccentric cam rockably mounted on the end portion of said arm, said eccentric cam having a notched portion for the locking the door;
- means for rocking said eccentric cam within the limit of a predetermined angle about a rocking axis;
- engaging means provided in the cooking apparatus housing, said engaging means being engaged with said notched portion; and
- means for switching an energizing circuit of said cooking apparatus, said switching means being operated by said notched portion.

4,497,514
INSIDE-HANDLE ARRANGEMENT FOR AN AUTOMOTIVE VEHICLE DOOR ASSEMBLY

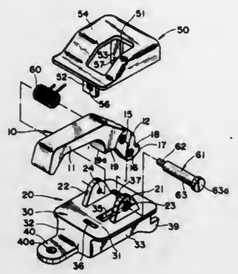
Masaichi Moriya, Chigasaki, and Osamu Seko, Yokohama, both of Japan, assignors to Nissan Motor Company, Limited, and Ohi Seisakusho Co., Ltd., both of Yokohama, Japan

Filed May 5, 1982, Ser. No. 375,010
Claims priority, application Japan, May 6, 1981, 56-66851
Int. Cl.³ E05B *3/00*
U.S. Cl. 292—336.3 **26 Claims**

1. An inside handle arrangement for operating a door latch mechanism of an automotive vehicle door assembly, comprising:
- an inside handle co-operatively associated with said door

latch mechanism and movable between a first normal position and a second operated position;

a bracket fixed to a door panel for pivoting said inside handle adjacent said door panel, said bracket having an opening for receiving one end of said inside handle and permitting said inside handle to move between said first and second positions; and



means for closing said opening, said closing means including a portion of said inside handle adapted to contact a portion of said bracket adjacent said opening to establish an air-blocking closure therebetween at least when said inside handle is in said first position.

4,497,515

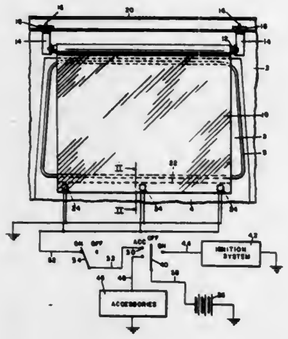
STAKE-OUT CURTAINS FOR AUTOMOBILES

Jay M. Appelson, 2211 W. 71st St., Prairie Village, Kans. 66208

Filed Mar. 28, 1983, Ser. No. 479,641

Int. Cl.³ B60J *1/02*

U.S. Cl. 296—141 **10 Claims**



1. A stake-out curtain for an automotive vehicle window, said curtain comprising:

a. a curtain comprising a sheet at least a portion of the area of which is formed of one-way viewing material of a type such that substantial vision may be had therethrough only from the side thereof at which ambient light is lower than that at its opposite side, and

b. quick-release attaching means to secure said curtain releasably in a use position overlying said vehicle window, whereby to permit outward vision through said window from the interior of said vehicle, but not vision into said vehicle from points external thereto, so long as ambient light outside of said vehicle is greater than that inside of said vehicle.

4,497,516

SEALING ASSEMBLY FOR AUTOMOTIVE FRONT-PILLAR AND SIDE-DOOR ARRANGEMENT

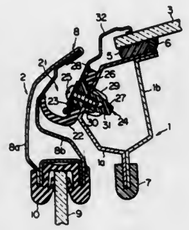
Yoshinori Morita, Yokohama, and Yutaka Ohmura, Fujisawa, both of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Jul. 6, 1982, Ser. No. 395,115

Claims priority, application Japan, Aug. 4, 1981, 56-116063[U]

Int. Cl.³ B62D *27/04*

U.S. Cl. 296—206 **4 Claims**



1. A sealing assembly for a front-pillar and side-door arrangement of an automotive vehicle, the front-pillar and side-door arrangement including a front pillar having a wall portion formed with an opening, a front window molding having a portion located adjacent to said wall portion and formed with an opening substantially aligned with the opening in said wall portion, and a side-door sash assembly spaced apart from said wall portion, the sealing assembly comprising:

a flexible sealing member having an inner portion securely intervening between the outer surface of the wall portion and the inner surface of the window molding and an outer portion warped from the inner portion and held in elastically pressing contact with said side-door sash assembly, the sealing member being formed with an opening in the inner portion thereof; and

a snap element passed through the opening in the sealing member and projecting into the front pillar through the opening in said wall portion for securing the inner portion of said sealing member between said window molding and said wall portion, wherein said snap element has a head portion passed through the opening in the sealing member and a stem portion projecting into the front pillar through the opening in said wall portion of the front pillar and smaller in cross sectional area than said head portion so that the head portion has adjacent to the stem portion an end face which is held in contact with the outer surface of said wall portion of the front pillar, said head portion of said snap element intervening between the outer surface of said wall portion of the front pillar and the inner surface of the window molding portion located adjacent to said wall portion so that said portion of the window molding is spaced apart from the outer surface of the wall portion of the front pillar, said snap element being formed with a blind bore which extends at least in said head portion of the snap element and which is open toward said front end portion of said side-door sash assembly.

4,497,517

MOTOR VEHICLE SEAT

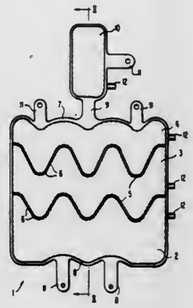
Günter Gmeiner, Sindelfingen; Hermann Möller, Aidlingen; Rudolf Andres, Sindelfingen, and Eberhard Faust, Stuttgart-Degerloch, all of Fed. Rep. of Germany, assignors to Daimler-Benz Aktiengesellschaft, Fed. Rep. of Germany

Filed Jun. 30, 1982, Ser. No. 393,597

Claims priority, application Fed. Rep. of Germany, Jun. 30, 1981, 3125588

Int. Cl.³ A47C *7/02*

U.S. Cl. 297—231 **7 Claims**



1. A seat cushion adapted to be concealed within a backrest portion of a motor vehicle seat, comprising at least two superimposed separately inflatable chamber means for forming a support for a spinal column of a user of the seat cushion, continuous connecting rib means extending generally transversely of the seat cushion between adjoining chamber means of said at least two superimposed chambers, said connecting rib means disposed so as to follow an undulating path such that adjoining walls of adjoining chamber means of said at least two superimposed chamber means form an area of tooth-like meshing, said area being a transition area wherein adjoining chamber means of said at least two superimposed chamber means inflated to different hardnesses are less apparent to a user supported thereby.

4,497,518

ADJUSTABLE SEAT STRUCTURE FOR A MOTOR VEHICLE

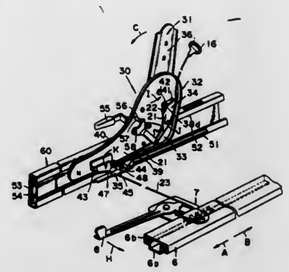
Shinichi Nishimura, Zama; Yoshinori Akiyama, and Yuzo Kanazawa, both of Yokohama, all of Japan, assignors to Nissan Motor Company, Limited and Ikeda Bussan Co., Ltd., both of Yokohama, Japan

Filed Dec. 23, 1981, Ser. No. 333,765

Claims priority, application Japan, Dec. 26, 1980, 55-186286

Int. Cl.³ A47C *1/10*

U.S. Cl. 297—341 **11 Claims**



1. An adjustable seat structure for a motor vehicle having a seat cushion and a seat back, comprising:

a seat support structure including a stationary support member, a movable support member slidably mounted on said stationary support member and carrying the seat cushion, and latching means for latching said movable support member on said stationary support member at a selected position of a plurality of selectable positions and allowing a forward movement of said movable support member from said selected position when released;

a base plate fixed to said movable support member of said seat support structure;

tilting means for allowing the seat back to be tilted relative to the seat cushion, said tilting means including a seat back arm fixedly connected to the seat back and pivotally connected to said base plate and rotatably supported thereby;

sensing means disposed on said base plate for sensing the rotation of said seat back arm in response to the forward tilting of the seat back; and

latch release means disposed on said base plate for releasing said latching means in response to the forward tilting of the seat back during a forward movement of said movable support member relative to said stationary member and the subsequent movement until said movable support member returns to said selected position.

4,497,519

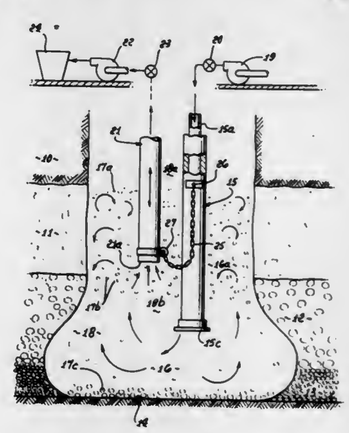
METAL PARTICLE RECOVERY AT SUB-SURFACE LOCATIONS

Donovan B. Grable, Rte. 8 - Box 317, Caldwell, Id. 83605

Filed Nov. 22, 1982, Ser. No. 443,534

Int. Cl.³ E02F *7/00*

U.S. Cl. 299—8 **8 Claims**



1. Apparatus for recovering metallic particles in a formation at a sub-surface locality, comprising

(a) a first downwardly extending duct having a discharge and operable to deliver water in a pressurized stream to said locality via said discharge for effecting differential elevation of metallic and non-metallic particles in a turbulent water zone associate with said discharge, and

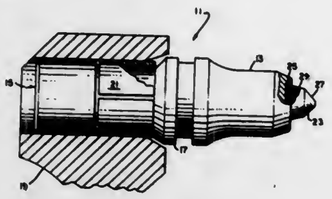
(b) a second downwardly extending duct having an intake positioned in said zone for drawing water and metallic particles from said zone into said second duct,

(c) a loose flexible interconnection between said ducts accomodating second duct movement in its entirety up and down relative to the first duct and relative movement of the ducts toward and away from one another, as well as positioning of the second duct intake above the level of the first duct discharge,

(d) means for adjusting the position of the intake of the second duct relative to the discharge of the first duct,

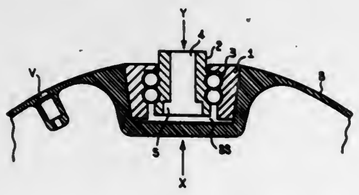
(e) and a carrier vehicle movable over terrain and water and suspending said ducts.

4,497,520
ROTATABLE CUTTING BIT
Randall W. Ojanen, Bristol, Va., assignor to GTE Products Corporation, Stamford, Conn.
Filed Apr. 29, 1983, Ser. No. 489,990
Int. Cl.³ E21C *35/18*
U.S. Cl. 299—86 15 Claims



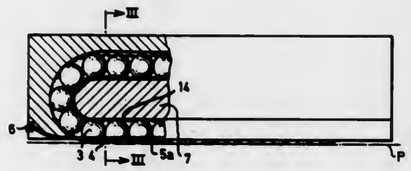
1. A rotatable cutting bit comprising a head portion, a shank portion depending from said head portion along a longitudinal axis, said head portion having a socket at the forward end, a hard insert having coaxially aligned and integral sections, said sections comprising a base section, a tip section, and an intermediate section contiguous said base and tip section, said base being fixedly mounted in said socket and having a first diameter, said tip section being conically shaped and having a maximum second diameter, said intermediate section having a maximum third diameter, said second and third diameters each being less than said first diameter, said intermediate section and said base forming a fillet at the juncture thereof whereby said base forms a shoulder with said intermediate section.

4,497,521
BALL-LIKE WHEEL WITH SOCKETS FOR AXLE
Michael B. Lowery, 228 Preston New Rd., Blackpool, England
Filed Jun. 28, 1982, Ser. No. 392,517
Int. Cl.³ B60B *5/02, 27/02*
U.S. Cl. 301—106 7 Claims



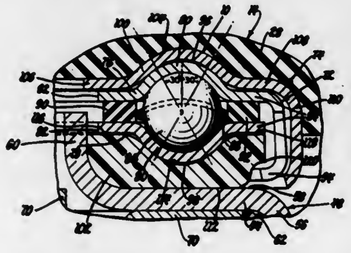
1. A ball-like ground engaging apparatus for use in human, gravity or low powered vehicles, said apparatus comprising a ball-like member of plastic material moulded in one piece and including diametrically opposite inwardly tapering sockets accommodating a bearing in each socket, said bearing including a bearing housing and a spindle defining a hollow shaft, said bearing housing being correspondingly tapered inwardly and the bearing housing being received in the socket and gripped fully by the walls of the socket, the socket depth is selected to be greater than the length of the bearing housing and said hollow shaft having a captive nut recess at its innermost end adapted to accommodate a nut for securing an axle stub in said hollow shaft.

4,497,522
GUIDE MEANS FOR ROLLING ELEMENTS OF A BALL-RACE DEVICE
Franz Szenger, Königsbronn, Fed. Rep. of Germany, assignor to Carl-Zeiss-Stiftung, Oberkochen, Fed. Rep. of Germany
Filed May 6, 1983, Ser. No. 492,125
Claims priority, application Fed. Rep. of Germany, May 19, 1982, 3218845
Int. Cl.³ F16C *29/06*
U.S. Cl. 308—6 C 13 Claims



1. Guide means for rolling elements of a travel shoe having plural rows of balls rotating under load in a partial section thereof, characterized by the fact that the travel path of each row of balls is in a ball-travel plane, that the ball-travel planes of the respective rows are in spaced parallel relation, the spacing between ball-travel planes of adjacent rows being less than ball diameter with the balls (2, 3, 4) of adjacent rows in nested contact and staggered in their direction of travel with respect to each other by a length equal to the radius of a ball.

4,497,523
MODULAR SUSPENSION STRUT BEARING
Frederick E. Lederman, Sandusky, Ohio, assignor to General Motors Corporation, Detroit, Mich.
Filed Feb. 28, 1983, Ser. No. 470,158
Int. Cl.³ F16C *19/12*; B60G *11/42*
U.S. Cl. 384—613 4 Claims

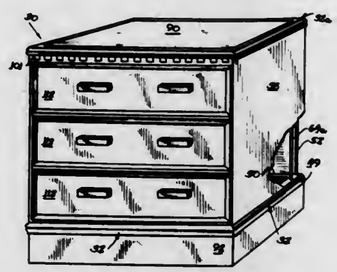


1. A modular bearing assembly providing a rotatable support and transferring loads between two relatively rotatable parts of a vehicle suspension, comprising,

a bearing including upper and lower races providing opposed raceways on the inner surfaces thereof for a complement of rolling antifriction elements, said raceways and rolling antifriction elements engaging one another so as to transfer imposed loads through said elements and through said races to selected portions of the outer surfaces thereof covering less than said entire outer surfaces, said races being formed of a relatively thin material of insufficient strength to solely support the imposed loads transferred to said selected portions,

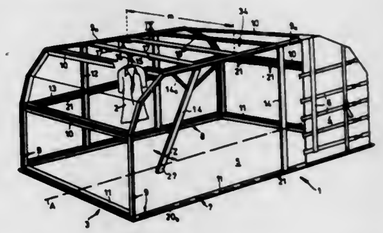
a housing module enclosing and cooperatively strengthening the bearing module, including an upper and lower housing member each having an outer surface movable with one of said relatively rotatable parts of the suspension and each having an inner surface shaped to conform to the outer surfaces of said respective upper and lower races so as to transfer imposed loads only to said selected portions of the outer surfaces of said races so as to coact therewith to structurally reinforce said races to provide a structural unit of sufficient strength to resist the loads only at said selected portions, whereby the structural cooperation between the races and housing members provides bearing assembly with races of minimal thickness which is capable of resisting vehicle loads.

4,497,524
KNOCK-DOWN FURNITURE ASSEMBLY
Nelson Levings, Jr., P.O. Box 204, Palos Park, Ill. 60464; Donald J. Evans, deceased, late of Naperville, Ill., and by Stephen G. Evans, administrator, Westhaven, Ill.
Filed Sep. 30, 1982, Ser. No. 430,669
Int. Cl.³ A47B *47/04*; F16B *12/14*
U.S. Cl. 312—265 24 Claims



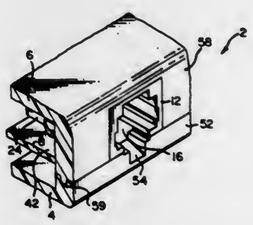
1. A knock-down furniture assembly comprising: substantially similar top frame and bottom frame members each comprising means defining a frame and at least one fastener means coupled to said frame and at least one side wall member including means for rotatably receiving elongate mating fastener means extending from top to bottom of said side wall member for mating with the respective fastener means of both said top and bottom frame members for assembling said top and bottom frame members to said side wall member to define an assembled state of said knock-down furniture assembly; wherein each said elongate mating fastener means comprises an elongate rod-like member having at one end thereof an externally threaded fastener portion defining a major thread diameter of a first dimension and at the opposite end thereof an internally threaded fastener portion defining a major thread diameter of a second dimension which is equal to or less than said first dimension and an intermediate rod-like portion joining said first and second end portions; each said elongate mating fastener means further including driver means formed at a bottom portion of said internally threaded portion thereof and dimensioned for receiving a tool of lesser cross-sectional dimension thatn the minor thread diameter of said internally threaded portion for rotating said rod-like member to achieve threadable advancement of said externally threaded end thereof with respect to he aligned fastener means of one of said top and bottom frame members.

4,497,525
CONTAINER, IN PARTICULAR FOR TRANSPORTING FREIGHT BY AIR
Gerhard Mittelmann, Oehningen, Fed. Rep. of Germany, assignor to Swiss Aluminium Ltd., Chippis, Switzerland
Continuation of Ser. No. 40,465, May 18, 1979,. This application Jun. 18, 1982, Ser. No. 390,052
Claims priority, application Fed. Rep. of Germany, Jun. 3, 1978, 2824434
The portion of the term of this patent subsequent to Nov. 2, 1999, has been disclaimed.
Int. Cl.³ B65D *88/00*; A47F *5/10*
U.S. Cl. 312—321 4 Claims



1. A freight container for transporting hanging items and/or stackable items having a floor and a load supporting structural frame secured thereto, said frame including a plurality of load bearing rods running above said floor, the improvement comprising at least one support rod pivotably mounted on said frame and movable from a first load bearing position where said at least one support rod extends from said frame to said floor in a direction substantially perpendicular to said load bearing rods to a second non-load bearing position where said at least one support rod is substantially parallel to said load bearing rods wherein said at least one support rod is in said first position when transporting hanging items such that said at least one support rod aids in supporting said plurality of load bearing rods when said load bearing rods carry the hanging items.

4,497,526
CIRCUIT BOARD HOUSING HAVING SELF-CONTAINED MODULAR JACK
Ronald W. Myers, Landisburg, Pa., assignor to AMP Incorporated, Harrisburg, Pa.
Filed Mar. 28, 1983, Ser. No. 479,248
Int. Cl.³ H01R *23/72*
U.S. Cl. 339—17 LC 7 Claims



1. The combination of a modular jack receptacle mounted on one surface of a circuit board and a first panel which extends parallel to, and is spaced from, the other surface of the circuit board, the modular jack receptacle comprising an insulating housing having a mating end and a rearward end, a plug receiving opening extending into the mating end, the opening having opposed internal endwalls and first and second opening sidewalls, the housing having oppositely facing external end-

walls and first and second external sidewalls which are proximate to the first and second opening sidewalls, a plurality of conductors in side-by-side relationship, each conductor having a contact portion which extends from the first opening sidewall diagonally into the opening from a location adjacent to the mating end and a lead portion which extends to the rearward end of the housing and to the one surface of the circuit board, the opening having latching shoulder means therein facing inwardly of the mating end for cooperation with a complementary latching shoulder on a modular plug, the combination of the modular jack receptacle, the circuit board, and the panel being characterized in that:

the circuit board has one edge which extends parallel to one edge of the first panel, the first panel having a lip extending from the one edge thereof towards the one edge of the circuit board, the lip having an internal surface which is parallel to and adjacent to the one edge of the circuit board,

the modular jack being mounted on the circuit board adjacent to the one edge thereof and being oriented with the mating end extending normally of the plane of the circuit board and parallel to the lip of the first panel,

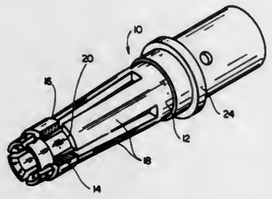
the lip having a recess therein which is centrally located with respect to the plug-receiving opening, the lip constituting at least portions of the mating end of the modular jack, the latching shoulder means of the modular jack being on the internal surface of the lip adjacent to the recess in the lip.

4,497,527

SUPPLEMENTARY FORCE HEAT-RECOVERABLE CONNECTING DEVICE

John K. Cameron, Fremont, Calif., assignor to Raychem Corporation, Menlo Park, Calif.

Filed Sep. 30, 1982, Ser. No. 430,556
Int. Cl.³ H01R *13/20*
U.S. Cl. 339—30 **9 Claims**



1. A reusable connecting device comprising:

a socket member having at least two tines, at least one of said tines capable of being resiliently deformed away from another tine to define a socket for receiving and holding a substrate with sufficient inward force to provide a physical connection; and

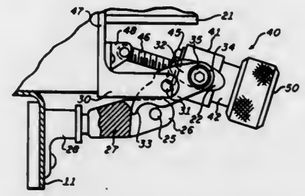
at least one driver member composed of heat-recoverable metal capable of being expanded in the martensitic phase and recovering in the austenitic phase, said driver loosely surrounding the tines of the socket member when the metal of the driver member is in its martensitic phase, allowing at least one of said tines to be resiliently deformed to define said socket member without further expanding said driver member, the driver member capable of instantaneous inward recovery when the metal of the driver member is in its austenitic phase to exert additional uniform inward force on the tines, said driver member capable of maintaining stable mating contact characteristics with a substrate that may be inserted within the socket.

4,497,528

AVIONICS CHASSIS INSERTION/EXTRACTION MECHANISM

William H. Murtland, Phoenix, Ariz., assignor to Sperry Corporation, New York, N.Y.

Filed Aug. 6, 1982, Ser. No. 405,839
Int. Cl.³ H01R *13/62*
U.S. Cl. 339—45 M **9 Claims**



1. A mechanism for inserting and extracting an electronics chassis member having a plurality of electrical connectors into and out of a holding fixture member having corresponding mating connectors, the combination comprising:

(a) a keeper pin secured to one of said members,

(b) a pivot pin secured to said member other than said one,

(c) a lever mounted on said pivot pin, said lever having one end thereof engageable with said keeper pin,

(d) rotatably actuated translating means with actuating knob means, comprising an externally threaded shaft and a mating internally threaded cylinder said translating means having a part secured to said one member and a part secured to an end of said lever opposite said one end and adapted upon rotation thereof to pivot said lever about said pivot pin to bring said one end of said lever into engagement with said keeper pin and upon continued rotation thereof to pivot said lever about said keeper pin to translate one member relative to another member and effect mating of said electrical connectors, and

(e) torque limiting clutch means coupled to said translating means for limiting translational force between said members to a predetermined maximum.

4,497,529

INTEGRATED CIRCUIT SOCKET HAVING AN IMPROVED COVER

Mitsuo Hoshino, Atsugi; Osamu Fukushima, Kawasaki, and Toshio Kakuta, Higashiosaka, all of Japan, assignors to Sony Corporation, Tokyo and Hosiden Electronics Co., Ltd., Osaka, both of, Japan

Filed Nov. 22, 1982, Ser. No. 443,795
Claims priority, application Japan, Dec. 2, 1981, 56-180276[U]
Int. Cl.³ H01R *13/62*
U.S. Cl. 339—75 M **15 Claims**

1. A connector comprising:

a substantially rectangular-prism-like base made of an insulating material;

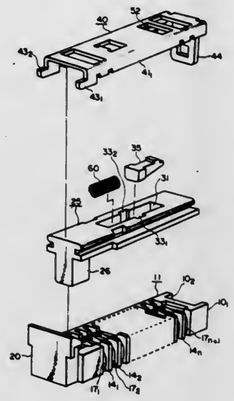
a plurality of ribs formed integrally with the base at regular intervals in its lengthwise direction to extend on its top surface in a direction perpendicular to the lengthwise direction, defining a plurality of contact receiving portions located respectively between adjacent ones of said ribs;

a plurality of contacts respectively disposed in the contact receiving portions and retained to the base;

an elongated cover made of an insulating material for covering the base so as to hold the conductors of an external circuit in engagement with said contacts;

a slider mounted on the cover in a manner to be slidable relative to said cover in the lengthwise direction of said cover;

retaining means for engaging the slider and the base with each other while fixing the cover to the base with the conductors of the external circuit resiliently pressed against the contacts by the cover; and



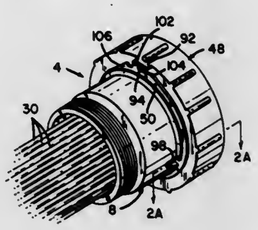
biasing means interposed between the cover and the slider, said biasing means producing a force in the lengthwise direction of said cover and slider operative to exert a bias on said retaining means which holds the cover and the slider in engagement with the base.

4,497,530

ELECTRICAL CONNECTOR HAVING A COUPLING INDICATOR

Suel G. Shannon, Harrisburg, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Jul. 25, 1983, Ser. No. 516,625
Int. Cl.³ H01R *13/623, 3/00*
U.S. Cl. 339—89 M **12 Claims**



1. An electrical connector assembly of the type comprising a plug member and a receptacle member each having electrical terminals secured in passageways extending therethrough, a coupling member rotatingly mounted on the plug member and having threads on an internal surface for threadable engagement with threads on an external surface of the receptacle member to mate the plug member and receptacle member together and the electrical terminals therein, and a spring member secured onto said plug member retaining said coupling member onto said plug member, characterized in that:

said spring member has a hammer section and a detent section adjacent each other;

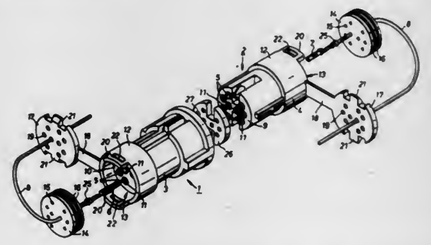
said coupling member has an anvil section and a pin member, said pin member rides along an outer surface of said spring member as the threads of said coupling member are threadably moving along the threads of said receptacle member and engages said detent section causing said spring member to be radially and circumferentially deformed thereby cocking said hammer section which forcefully strikes said anvil section as said pin member moves into a relief area between said hammer section and said detent section resulting in a tactile, audible and visible indication that the connector assembly is completely mated.

4,497,531

ELECTRICAL CONNECTOR

Robert W. Baker, Harrow, England, assignor to AMP Incorporated, Harrisburg, Pa.

Filed Jul. 19, 1982, Ser. No. 399,505
Claims priority, application United Kingdom, Jul. 23, 1981, 8122671
Int. Cl.³ H01R *13/52*
U.S. Cl. 339—94 M **4 Claims**



1. An electrical connector comprising a housing of insulating material formed with a plurality of through passageways each to receive an electrical terminal terminating an electrical conductor, each passageway extending from a mating face to an opposite, conductor-entry face of the housing, including an axially extending shroud surrounding the conductor-entry face of the housing and defining a cavity into which the conductor-entry ends of the passageways open; a single sealing member receivable in the cavity and having a plurality of holes therethrough each sized to receive and grip a conductor passing through the sealing member into a respective passageway in the housing; and a sealing-member-retaining lid formed with a plurality of through holes each to pass a terminal entering a respective passageway in the housing, the lid serving to close the cavity and compress the sealing member between the lid and the conductor-entry face of the housing and into sealing engagement with the shroud and with conductors passing through the holes in the sealing member, the lid and the shroud being formed with cooperating latching means serving to latch the lid to the housing in the closed position, the lid being hingedly connected to the housing by means of an integrally formed hinge strap portion, and being movable between an open position remote from the cavity to permit insertion of the sealing member into the cavity, and a closed position closing the cavity.

4,497,532

HEAT SHIELDED, SPARK PLUG BOOT ASSEMBLY

Michael J. Bezusko; Daniel P. Liska, and Joseph A. McGee, all of Warren, Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed Oct. 25, 1983, Ser. No. 545,359
Int. Cl.³ H01R *13/533, 13/658*
U.S. Cl. 339—112 R **5 Claims**

1. A heat shielded, spark plug boot assembly for an ignition cable connector, comprising,

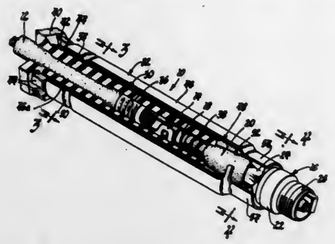
a tubular elastomeric boot having a cable end portion for receiving an ignition cable, an intermediate cavity portion for housing a terminal at the end of the ignition cable, and a seal end portion for receiving a spark plug and sealing around the insulator thereof, and

a heat shield which is mounted on the cable end portion of the elastomeric boot and which extends past the seal end

portion of the elastomeric boot for engaging a ground member,

said heat shield having an outer metal shell and an inner dielectric barrier,

said inner dielectric barrier surrounding the cavity and seal end portions of the elastomeric boot and extending past



the seal end portion to prevent electrical discharges through the cavity and seal end portions of the elastomeric boot and,

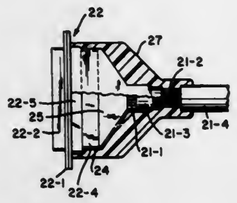
said metal shell being formed so as to provide an inwardly facing metal surface at one end of the dielectric barrier for conducting corona around rather than through the dielectric barrier.

4,497,533

SHIELDED CABLE SYSTEM AND METHOD

Anthony T. Genova, Bolton; Vincent Squitieri, Billerica, both of Mass., and William G. Lionetta, Jr., Hampton, N.H., assignors to Chomerics, Inc., Woburn, Mass.

Filed Jun. 21, 1982, Ser. No. 390,547
Int. Cl.³ H01R *13/648, 13/658*
U.S. Cl. 339—143 R **7 Claims**



1. A cable system comprising a connector having a plurality of pins supported in an insulator which is itself supported in a metal portion, a cable having a plurality of wires in an electrically conductive cable shield, said wires coupled to said pins, a thin preformed electrically conductive, conductive particle loaded pressure sensitive adhesive carrying insert folded at predetermined fold lines and positioned about a metal portion of the connector and the electrically conductive cable shield acting as an enclosing extension of said shield with the adhesive of said insert in contact with said connector and said shield and means over said insert for urging said adhesive portion of said insert against said connector and said shield to aid in electrical contact therewith.

4,497,534

HOLOGRAPHIC OPTICAL HEAD

Glenn T. Sincerbox, San Jose, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 28, 1983, Ser. No. 470,659
Int. Cl.³ G02B *5/32*
U.S. Cl. 350—3.72 **10 Claims**

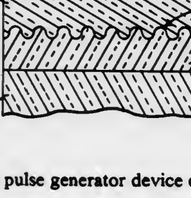
1. A holographic optical head through which a coherent beam of radiation is directed to a record medium and through which a reflected beam of radiation from said record medium is directed to means for sensing the reflected beam comprising:

first holographic means for diffracting a first coherent beam into the −1 order direction over a first optical path,

beam director means positioned in said first optical path, said beam director means adapted for directing said first beam along said first path,

a quarter-wave plate positioned in said first optical path so that said first beam passes therethrough,

second holographic means positioned in said first optical path diffracting the coherent beam into the +1 order



direction for converging said first beam into a point focus on the record medium, and

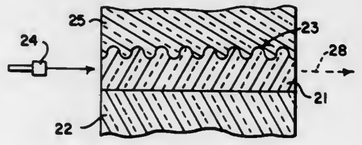
third holographic means positioned in a second optical path that is at an angle to said first optical path at said beam director means whereby the light reflected from said record medium passes in reverse direction along said first optical path through said second holographic means and said quarter-wave plate to said beam director means where the light is redirected along said second optical path to said third holographic means and then to the sensing means.

4,497,535

OPTICAL PULSE GENERATOR

Herbert G. Winful, Brighton, and Gene D. Cooperman, Waltham, both of Mass., assignors to GTE Laboratories Incorporated, Waltham, Mass.

Filed Mar. 19, 1982, Ser. No. 359,736
Int. Cl.³ G02B *5/172*
U.S. Cl. 350—96.12 **2 Claims**



1. A passive optical pulse generator device comprising

a substrate; and

a thin wave-guiding layer of material deposited thereon, said material having a large third-order nonlinear susceptibility so that the refractive index of said material changes appreciably in response to changes in light intensity,

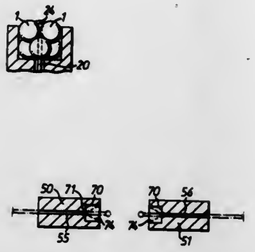
wherein said material is indium antimonide.

4,497,536

COUPLING OF DIELECTRIC OPTICAL WAVEGUIDES

David B. Payne, Wickham Market, and Colin A. Millar, Stowmarket, both of, assignors to Post Office, London, England

Continuation of Ser. No. 166,891, Jul. 8, 1980, abandoned. This application May 27, 1983, Ser. No. 497,219
Claims priority, application United Kingdom, Jul. 9, 1979, 79.23817; Nov. 5, 1979, 79.38194
Int. Cl.³ G02B *7/26*
U.S. Cl. 350—96.21 **16 Claims**



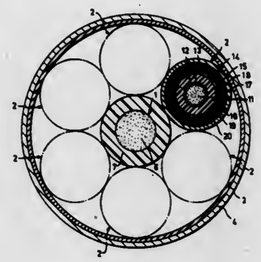
1. An optical waveguide coupling assembly comprising a plurality of coupling elements, wherein the coupling elements each have a groove therein, each of which grooves slidably supports a waveguide, the arrangement being such that the axes of the waveguides lie in a common plane, and wherein each waveguide has a bead integral with its end, the surface of the bead which lies towards the waveguide being in contact with a locating surface on the respective coupling element such that axial movement of each waveguide in one direction only is restricted thereby with axial movement in the direction opposite to said one direction being unrestricted.

4,497,537

ELECTRIC AND/OR OPTICAL CABLE

Godfrey R. M. Dench, Orpington, England, assignor to BICC Public Limited Company, London, England

Filed Jun. 9, 1983, Ser. No. 502,809
Int. Cl.³ G02B *5/16*; H01B *7/14*
U.S. Cl. 350—96.23 **12 Claims**



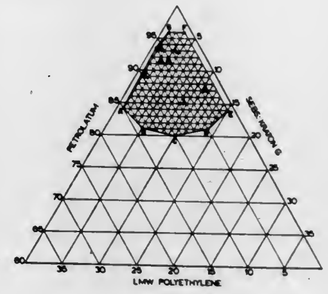
1. A cable comprising at least one cable core, and, surrounding the core or assembly of cores, a water-impermeable barrier comprising a cushioning layer of elastomeric material; a substantially circumferentially continuous wall of metal or metal alloy constituted by at least one longitudinally applied, transversely folded metal tape which carries a coating of plastics material on its outwardly facing surface; at least one elongate flexible binder helically wound around the metal wall under such a tension that at least one helically extending corrugation is formed in the metal wall throughout the length of the cable and that elastomeric material of the cushioning layer fills the trough of the helical corrugation in the inner surface of the metal wall; and, surrounding the metal wall, an extruded sheath of plastics material which is bonded to the plastics coating on the outer surface of the metal tape or tapes constituting the metal wall.

4,497,538

FILLED TRANSMISSION CABLE

Naren I. Patel, Hickory, N.C., assignor to Siecor Corporation, Hickory, N.C.

Filed Aug. 10, 1983, Ser. No. 521,954
Int. Cl.³ B32B *27/00*; G02B *5/16*; H01B *7/00*
U.S. Cl. 350—96.23 **5 Claims**



1. A cable comprising a plurality of conductors contained within a jacket leaving voids between the conductors and the jacket and a filling material substantially filling the voids, the invention characterized in that the filling material consists essentially of a mixture of:

(A) styrene-ethylene butylene-styrene block copolymer having a styrene to rubber ratio of 0.39 to 0.41,

(B) polyethylene having a molecular weight from 1,000 to 10,000, and,

(C) petrolatum,

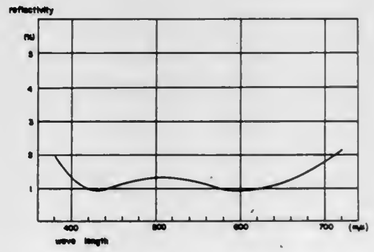
the ingredients A, B and C having relative proportions falling within the shaded area abounded by ABCDEFGHI of the FIGURE.

4,497,539

ANTIREFLECTION OPTICAL COATING

Kunio Sakurai, Hino; Hiroshi Ito, Tachikawa, and Takashi Nozaki, Hino, all of Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Oct. 6, 1982, Ser. No. 432,989
Claims priority, application Japan, Oct. 7, 1981, 56-158797
Int. Cl.³ G02B *1/10*
U.S. Cl. 350—164 **6 Claims**

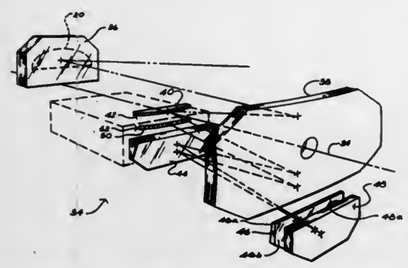


1. A multilayer antireflection film for optical parts made of synthetic resin consisting essentially of a plurality of superimposed evaporation films of silicon monoxide, each film having a different refractive index resulting from different evaporation conditions.

4,497,540
OPTICAL SYSTEM

James B. Breckinridge, La Canada; Norman A. Page, Monrovia, both of Calif.; Roland V. Shack, and Robert R. Shannon, both of Tucson, Ariz., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Mar. 23, 1983, Ser. No. 478,130
Int. Cl.[3] G02B *5/10*
U.S. Cl. 350—168 32 Claims



1. An optical system adapted to be used at elevations high above a surface and for forming a spectral and spatial image of the surface, comprising:

entrance aperture means through which light from the surface enters the system;

first means for focusing light passing through the entrance aperture means on a first focal plane within the system, said first means including

aspheric mirror means and spherical mirror means in the optical path between the entrance aperture means and the first focal plane,

said aspheric and spherical mirror means aligned relative to each other and the entrance aperture means so that the light passing through the entrance aperture means first strikes the aspheric mirror means which directs this light to a first segment of the spherical mirror means, and wherein said spherical mirror means is aligned and shaped so that said light reflects off the first segment and is focused at the first focal plane to form a spatial image of said surface; and

second means for providing a spectral image of the surface and for focusing this image at a second focal plane within the system, including

mirror means at the first focal plane for reflecting light from the first focal plane to a second segment of the spherical mirror means, with the light reflecting from said second segment being substantially collimated,

dispersing means in the optical path between the second focal plane and the spherical mirror means for dispersing the light into a spectrum of different wavelengths, and

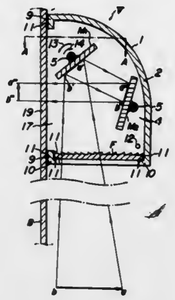
means for focusing the light at different wavelengths exiting the dispersing means at the second focal plane to form thereat a spectral and spatial image of said surface.

4,497,541
REAR VIEWER FOR AUTOMOBILE

Makoto Okamura, No. 1567-4, Sakata, Okegawa City, Japan

Filed Mar. 8, 1982, Ser. No. 355,489
Claims priority, application Japan, Mar. 17, 1981, 56-37194[U]
The portion of the term of this patent subsequent to Jun. 23, 1998, has been disclaimed.
Int. Cl.[3] G02B *5/08, 5/10*
U.S. Cl. 350—626 3 Claims

1. A rear viewer for automobile comprising, a holder frame box; a sealed type box-like retaining chamber formed in the holder frame box; a front side opening provided at front side of the holder frame box; an under side opening provided at an under side of the holder frame box; a thin plate-like Fresnel concave lens mounted on said under side opening; the front side of the holder frame box being attachable onto the outer surface of an automobile rear window glass; a first reflex mirror adjustably retained in said chamber for showing the road condition in an area from approximately immediately below a rear end portion of the automobile to a desired area behind the rear end portion of the automobile through said thin plate-like

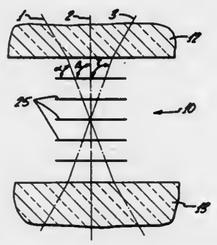


Fresnel concave lens, and a second reflex mirror adjustably retained in said chamber and arranged oppositely to the first reflex mirror for enabling the automobile driver to see the condition at the road reflected by the first reflex mirror, whereby the automobile driver can see the road condition transmitted by said plate-like Fresnel concave lens, the first reflex mirror and the second reflex mirrors as an uninverted image.

4,497,542
APPARATUS FOR MINIMIZING BEAM COLLIMATION SENSITIVITY IN OPTICAL INSTRUMENTS INCLUDING LIQUID CRYSTAL CELLS

Wilbur I. Kaye, Corona Del Mar, Calif., assignor to Beckman Instruments, Inc., Fullerton, Calif.

Continuation of Ser. No. 45,726, Jun. 5, 1979, abandoned. This application Jun. 1, 1981, Ser. No. 269,141
Int. Cl.[3] G02F *1/137, 1/135*
U.S. Cl. 350—335 15 Claims



1. In an optical instrument including a birefringent liquid crystal cell including a pair of plates and a zero-twist, nematic-phase, liquid crystal material between said plates, the liquid crystal molecules being oriented in and tilting in a first plane perpendicular to said cell plates, the improvement comprising:

a pair of polarizes positioned on opposite sides of said liquid crystal cell;

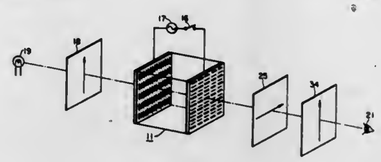
a filament light source positioned with the filament axis normal to said first plane; and

means for collimating the light from said source and conducting the collimated light through said polarizer and said cell, generally normal to said plates thereof, whereby said light is more effectively collimated in said first plane than in the orthogonal planes.

4,497,543
LIQUID CRYSTAL DISPLAY WITH COLORS FROM DYE AND POLARIZER MIXED

Shigeo Aoki, Habikino; Junichi Tamamura, Yao; Yasuhiro Ukai, Yao, and Hideo Morita, Yao, all of Japan, assignors to Hosiden Electronics Co., Ltd., Osaka, Japan

Filed Jun. 2, 1981, Ser. No. 269,211
Claims priority, application Japan, Jun. 28, 1980, 55-88274
Int. Cl.[3] G02F *1/133*
U.S. Cl. 350—337 6 Claims



1. A liquid crystal display element comprising:

a nematic liquid crystal cell comprising a pair of spaced opposing side plates which define a region therebetween containing a nematic liquid crystal having liquid crystal molecules, a positive dielectric anisotropy, and an N type dichroic dye mixed therein,

a transparent electrode located on an inner surface of each of said opposing side plates to which electrodes a voltage may be applied to said cell, at least one of said transparent electrodes being formed in a pattern to be displayed,

the molecules of the liquid crystal near the respective side plates of the liquid crystal cell having orientations which are substantially parallel to the respective side plates but perpendicular to each other to form a twisted nematic structure, molecules of the N type dichroic dye having the same orientation as the molecules of the liquid crystal, and the molecules of both the liquid crystal and the N type dichroic dye being oriented substantially at right angles to the planes of the respective side plates of the liquid crystal cell when a voltage is applied to said cell;

a neutral polarizing plate disposed opposite one of the side plates of the liquid crystal cell and having a direction of polarization substantially parallel to the orientation of the molecules of the liquid crystal and the N type dichroic dye near said side plate to exhibit a substantially uniform polarizing characteristic over a visible wavelength region; and

a color polarizing plate disposed adjacent the other side plate of the liquid crystal cell and having a direction of polarization substantially parallel to the orientation of the molecules of the liquid crystal and the N type dichroic dye on said other side plate to exhibit a polarizing characteristic over a specific wavelength region;

said display element being operative, upon application of a voltage across said transparent electrodes, to display said pattern in a mixed color resulting from said N type dichroic dye and said color polarizing plate.

4,497,544
OPTICAL IMAGING DEVICE AND METHOD

Gordon L. Mitchell, New Brighton, and John H. Tressler, III, Plymouth, both of Minn., assignors to Honeywell Inc., Minneapolis, Minn.

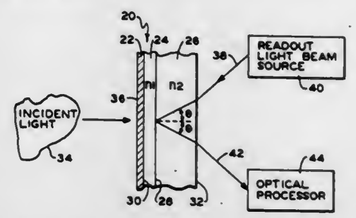
Filed Dec. 27, 1982, Ser. No. 453,446
Int. Cl.[3] G02F *1/19*
U.S. Cl. 350—353 6 Claims

1. An optical device comprising:

means for absorbing at least one wavelength of light incident thereupon;

a first layer of a first material having a first index of refraction and being in thermal contact with said absorbing means;

a second layer of a second material having a second index of refraction which is larger than said first index of refraction and which forms an interface with said first layer, wherein said first layer is between said absorbing means and said second layer;



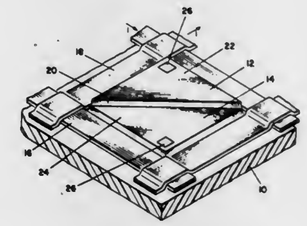
a readout light source, which emits a coherent optical beam, adapted to illuminate at least a part of said interface at an angle which is greater than the critical angle for total internal reflection; and

means to focus the incident light at a surface in space, and wherein at least a portion of said absorbing means intercepts said surface.

4,497,545
METHOD AND DEVICE FOR INCREASING THE DENSITY OF A PLURALITY OF SWITCHABLE MAGNETIC ELEMENTS

William E. Ross, Woodland Hills, Calif., assignor to Litton Systems, Inc., Beverly Hills, Calif.

Filed May 5, 1982, Ser. No. 375,327
Int. Cl.[3] G02F *1/09*
U.S. Cl. 350—376 13 Claims



1. A method for increasing the density of a plurality of switchable magnetic post elements formed from a magnetic material upon a nonmagnetic material, comprising the steps of:

placing a magnetic material having high anisotropy upon said nonmagnetic material to form separations in said magnetic material and thus form said post elements;

arranging said separations in a grid-like pattern having a first set of separations in a first direction and a second set of separations in a second direction to form said post elements into quadrilateral shapes;

arranging further separations in alternate rows of said post elements, between said separations in said first direction, in a third direction diagonally across said quadrilaterally shaped post elements to form triangularly shaped post elements;

placing a conductive material in alignment with each of said grid-like separations in said first and second directions;

arranging still further separations in the remaining rows of said post elements, between said separations in said first direction, in a fourth direction diagonally across said quadrilaterally shaped post elements to form additional triangularly shaped post elements; and

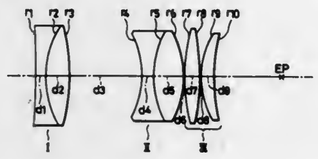
placing a first region of material in said high anisotropy magnetic material which forms said post elements that has a low anisotropy relative to said high anisotropy of said magnetic post elements, said first region placed in a corner of each triangularly shaped post element opposite said diagonals in said third and fourth directions.

4,497,546

WIDE-FIELD EYEPIECE

Yuko Kobayashi, Hachiooji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Apr. 8, 1983, Ser. No. 483,278
Claims priority, application Japan, Apr. 19, 1982, 57-64068
Int. Cl.³ G02B *9/34, 25/00*
U.S. Cl. 350—410 **6 Claims**



1. A wide-field eyepiece comprising a first, second and third lens components wherein said first lens component is a positive cemented doublet consisting of a negative lens and a positive lens, said second lens component is a negative cemented doublet consisting of a negative lens and a positive lens, and said third lens component comprises at least two lens elements and has positive refractive power as a whole, the lens element located on the eye side in said third lens component being a positive meniscus lens arranged to be concave toward the eye side, said wide-field eyepiece being arranged to fulfill the following conditions:

(1) $n_6 \geqq 1.75$
(2) $(n_3 - n_4) \geqq 0.1$
(3) $-0.8f \geqq r_4 \geqq -1.2f$
(4) $52 \geqq \nu_2 \geqq 36$

wherein reference symbols n_3 and n_4 respectively represent refractive indices of respective lens elements constituting the second lens component, reference symbol n_6 represents the refractive index of the lens element arranged on the eye side in the third lens component, reference symbol r_4 represents the radius of curvature of the lens surface located on the first lens component side in the second lens component, reference symbol ν_2 represents Abbe's number of the lens element arranged on the second lens component side in the first lens component, and reference symbol f represents the focal length of the lens system as a whole.

4,497,547

ZOOM LENS

Kiyoshi Hayashi, Yokohama, Japan, assignor to Nippon Kogaku K.K., Tokyo, Japan

Filed Apr. 13, 1982, Ser. No. 367,807
Claims priority, application Japan, Apr. 24, 1981, 56/61469
Int. Cl.³ G02B *9/64, 15/18*
U.S. Cl. 350—427 **6 Claims**

1. A zoom lens comprising, in succession from the object side, a convergent first lens unit (G_1) stationary during zooming and moved on the optical axis during focusing, a divergent second lens unit (G_2) which is a variator moved on the optical axis during zooming, a divergent third lens unit (G_3) which is a compensator moved on the optical axis during zooming, and a convergent fourth lens unit (G_4) as a master lens system stationary during zooming, characterized in that said fourth lens unit (G_4) comprises, in succession from the object side, a convergent first master lens unit (G_{41}), a convergent second master lens unit (G_{42}) spaced from said first master lens unit (G_{41}) with an air space therebetween, and a divergent third master lens unit (G_{43}) spaced from said second master lens unit (G_{42}) with an air space therebetween, said first master lens unit (G_{41}) having, in succession from the object side, a positive lens, a positive and a negative lens cemented to each other in a cemented concave toward the object side, a positive lens having its surface of greater curvature facing the object side, and a negative lens having its surface of greater curvature facing the image side, said second master lens unit (G_{42}) having the biconvex lens, said third master lens unit (G_{43}) having a negative lens and a positive lens, said zoom lens satisfying the following conditions:

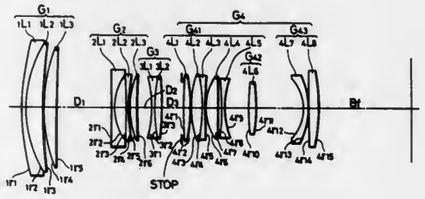
$$1.70 < |f_{42}/f(_4r_9)| < 4.20 \quad (1)$$

$$0.05f_{42} < {}_4d_9 < 0.13f_{42} \quad (2)$$

$$-0.2 < (_4r_{11} + {}_4r_{10})/(_4r_{11} - {}_4r_{10}) < 0.1 \quad (3)$$

$$0.75 < f(_4r_9)/f(_4r_{12}) < 1.15 \quad (4)$$

$$0.65f(_4r_{12}) < {}_4d_9 + n(_4L_6){}_4d_{10} + {}_4d_{11} < 0.85f(_4r_{12}) \quad (5)$$



$$n(_4L_3) - n(_4L_2) \geqq 0.18 \quad (6)$$

$$0.8 < |f(_4L_4)/f(_4L_5)| < 1.35 \quad (7)$$

$$n(_4L_5) - n(_4L_4) \geqq 0.23 \quad (8)$$

where

$_ir_j$: radius of curvature of the jth surface from the object side in the ith lens unit
$_id_j$: spacing of the jth lens surface from the object side in the ith lens unit
$n(_iL_j)$: refractive index for d-line of the jth lens from the object side in the ith lens unit
f_{42}: focal length of the second master lens unit G_{42}
$f(_ir_j)$: focal length of the jth surface from the object side in the ith lens unit
$f(_iL_j)$: focal length of the jth lens from the object side in the ith lens unit.

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VARIABLE-POWER RIFLESCOPE WITH RANGE-COMPENSATING RETICLE AND A FIELD STOP DIAPHRAM CENTERED OFF THE OPTICAL AXIS

Donald J. Burris, Greeley, Colo., assignor to Burris Company, Greeley, Colo.

Continuation of Ser. No. 213,335, Dec. 5, 1980, abandoned. This application Dec. 13, 1982, Ser. No. 449,400
Int. Cl.³ G02B *23/00*
U.S. Cl. 350—560 **4 Claims**



1. In a variable-power riflescope having an optical axis defined by an optical system including objective lens means at the front end thereof adapted to reproduce an inverted image of a distant real object in a first image plane spaced rearwardly thereof, erector lens means mounted for axial movement to the rear of the first image plane adapted to reproduce an erect image of the real object in a second image plane spaced therebehind at varying degrees of magnification, eyepiece lens means located behind the second image plane adapted to focus upon the erect image reproduced therein, and means connected to the erector lens means operative upon actuation to shift the axial positions thereof so as to vary the degree of image magnification, the improvement which comprises: first reticle means mounted in the first image plane carrying first aiming indicia visible through the eyepiece lens means, second reticle means mounted in the second image plane carrying second aiming indicia visible through the eyepiece lens means in superimposed relation upon the first aiming indicia, said first and second aiming indicia cooperating when thus superimposed to define a first aiming reference in substantial horizontal alignment with a point of bullet impact at a first preselected range, point-defiiing means defining a point located in the second image plane displaced vertically with respect to the optical axis, said point-defining means being responsive to increases in the degree of image magnification so as to open a gap between it and the first aiming reference, and said point-defining means when so moved defining a second aiming reference in vertically-spaced relation to said first aiming reference and in substantial horizontal alignment with a point of bullet impact at a different range, and means in said second image plane defining a field stop diaphragm with said point-defining means at the center thereof.

4,497,549

COLLAPSIBLE LENS SHADE

Carl Yurdin, Port Washington, and Carmel S. Monti, Deer Park, both of N.Y., assignors to Photographic Peripherals, Inc., Dexter, Mich.

Division of Ser. No. 104,974, Dec. 18, 1979, abandoned, which is a division of Ser. No. 892,204, Mar. 31, 1978, Pat. No. 4,205,895.
This application Jan. 21, 1983, Ser. No. 460,027
The portion of the term of this patent subsequent to Jun. 3, 1997, has been disclaimed.
Int. Cl.³ G02B *7/22*
U.S. Cl. 350—581 **19 Claims**



1. A collapsible, adjustable lens shade external to a lens of a camera and for removable attachment to the front of said lens, comprising:

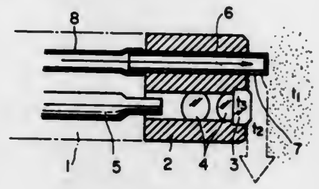
a front member;
a rear member;
means coupled to said rear member for removably coupling said rear member to a lens;
a foldable shade means connected between said front member and said rear member;
an elongated track means including; a first track member fixedly connected to and extending from said front member; and an elongated second track member pivotally connected at one end thereof to said first track member;
first locking means for selectively locking said second track member in a position extending from and aligned with said first track member;
slide means coupled to said rear member and being slidingly engaged with said track means so as to be slideable along the length of said track means when said second track member is in its extended, aligned, locked position, to vary the position of said rear member along the length of said track means, thereby varying the effective length of said foldable shade means; and
second locking means for fixing said slide means at selected positions along the length of said track means to thereby fix said rear member relative to said track means.

4,497,550

DEVICE FOR PREVENTING THE OBSERVING OBJECTIVE LENS WINDOW OF AN ENDOSCOPE FROM COLLECTING MOISTURE

Teruo Ouchi; Kiyoshi Chikashige, both of Saitama, and Hirohisa Ueda, Tokyo, all of Japan, assignors to Kabushiki Kaisha Medos Kenkyusho, Tokyo, Japan

Continuation of Ser. No. 132,713, Mar. 21, 1980, abandoned. This application Mar. 19, 1982, Ser. No. 360,086
Claims priority, application Japan, Apr. 23, 1979, 54/54984[U]
Int. Cl.³ A61B *1/00*; F15B *1/00*
U.S. Cl. 350—584 **6 Claims**



1. A device for preventing the observing objective lens window of an endoscope from collecting moisture comprising: an air source; means for providing a small flow of air over the front surface of said observing objective lens window at all times so as to form a layer of air on the front surface of said observing objective lens window; said air source comprising a control valve having a first tube, a cylinder having openings to said first tube and a piston slidably disposed in said cylinder; said piston having a center longitudinal opening and first and second apertures of different sizes disposed in said piston at positions so that for a first position of said air is allowed to flow along said first tube and for a second position of said piston air is vented to the atmosphere through said center longitudinal openings; a bypass tube around said first tube; and a pressure regulator valve disposed in said bypass tube.

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METHOD AND SYSTEM OF AERIAL SURVEYING

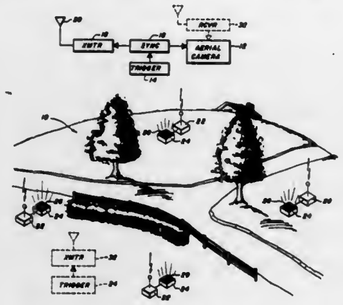
James M. Lapeyre, New Orleans, La., assignor to The Laitram Corporation, New Orleans, La.

Filed May 27, 1983, Ser. No. 498,953
Int. Cl.³ G03B *37/00*
U.S. Cl. 354—67 **15 Claims**

1. A method of aerial surveying comprising the steps of:

providing a remotely-controlled light source located adjacent a predetermined object located on the ground subject to survey or a predetermined object located at the surface of the sea subject to survey;
activating the shutter of an aerial camera aimed at the terrain in which said light source is located;
activating said light source to produce a flash of light at the time said shutter is activated; and

providing a representation of the scene photographed by the aerial camera, whereby the location of said light source



shows up on said representation in the form of a highly visible point of light.

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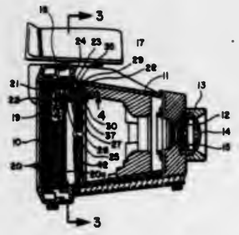
DATA RECORDING SYSTEM FOR CAMERAS

Lowell C. Howard, 2249 King St., Salt Lake City, Utah 84109, and Charles K. Peterson, 1483 West 300 South, Salt Lake City, Utah 84104

Continuation-in-part of Ser. No. 290,362, Aug. 5, 1981, abandoned, which is a continuation of Ser. No. 87,873, Oct. 24, 1979, abandoned. This application Jan. 14, 1983, Ser. No. 458,159

Int. Cl.[3] G03B *17/24*

U.S. Cl. 354—106 **16 Claims**



1. Apparatus for placing information on film comprising a multisection display means, each section thereof capable of displaying one set of a limited number of characters; means for the user to enter the limited number of characters making up a set of characters to be displayed; interface means for receiving a set of characters entered, storing such characters entered, and supplying signals to the display indicative of the characters entered; means for defining an information area on the film which can contain more than one set of characters; means for illuminating one section of the display so that one set of characters representing the information stored in the interface means is recorded in a portion of the information area of the film; and means for illuminating different sections of the display so that subsequently entered and displayed sets of characters are recorded in different portions of the information area of the film.

4,497,553

SHUTTER MECHANISM

David C. Smart, Penfield, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Apr. 27, 1983, Ser. No. 489,272

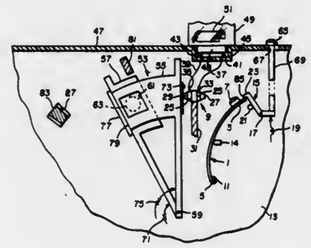
Int. Cl.[3] G03B *15/04, 9/16*

U.S. Cl. 354—135 **14 Claims**

1. In photographic camera apparatus of the type wherein flash firing means ignites a chemical flash lamp, and a shutter is fully open at the peak intensity of an ignited flash lamp, the improvement comprising:

an opening blade for opening said shutter and a closing blade for closing said shutter;

means for effecting movement of said opening and closing blades, substantially simultaneously with said firing means



igniting a flash lamp, in a forward direction without opening said shutter; and

return means for first moving said opening blade and then moving said closing blade in a reverse direction to open and close said shutter, whereby initial opening of said shutter is delayed after flash ignition to synchronize its full opening with the peak intensity of an ignited flash lamp.

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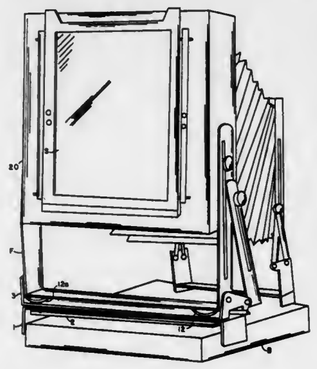
CAMERA FOCUSING MEANS

Morris Hoffman, 19 Grand Ave., Farmingdale, N.Y. 11735

Filed Sep. 28, 1982, Ser. No. 425,471

Int. Cl.[3] G03B *17/02*

U.S. Cl. 354—160 **10 Claims**



1. In a camera of the flat bed type having a base, the camera being focused by looking at a ground glass back viewing screen supported on a frame which is movable for focusing:

means to adjust the frame to simultaneously move the frame forward and backward, sideways and rotatably for focusing the camera,

wherein the means to adjust comprises:

a first elongated member fixedly mounted to the base, each end of said member having an aperture extending parallel to the sighting axis of the camera, each aperture having a plurality of indentations extending perpendicular to the sighting axis of the camera,

a second elongated member movably mounted under the first member, each end of the second elongated member having an aperture,

a third elongated member movably mounted on top of the first member, each end of the third elongated member having an aperture,

first and second screws each extending through one of the apertures of the second and third members and through one of the apertures of the first member, the screws fixedly connecting the second and third members in an assembly which is movable with respect to the first member, the frame being mounted on the third elongated member,

whereby the second and third member assembly and the frame may be moved simultaneously forward and backwards, sideways and rotatably to focus the camera.

4,497,555

MOTOR-DRIVEN FILM WINDING MECHANISM

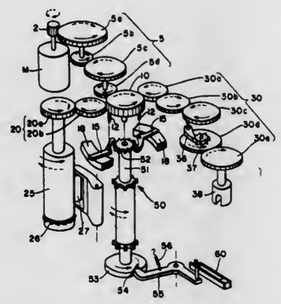
Kazuhiro Akiyama, Saitama, Japan, assignor to Fuji Photo Optical Co., Ltd., Saitama, Japan

Filed Nov. 26, 1982, Ser. No. 444,702

Claims priority, application Japan, Nov. 26, 1981, 56-189822

Int. Cl.[3] G03B *1/12, 1/24*

U.S. Cl. 354—173.1 **5 Claims**



1. A motor-driven film winding mechanism for a photographic camera, comprising:

a driving motor;

a driving force transmission;

a take-up spool driven by said driving motor through said driving force transmission for winding up a film on the spool;

a sprocket drum having a plurality of sprockets on its periphery which are engageable with film perforations; and

means for releasably connecting said sprocket drum to said driving force transmission in dependence on the speed of movement of said sprocket drum relative to the speed of movement of said driving force transmission, said releasably connecting means releasing from said driving force transmission said sprocket drum when the speed of movement of said sprocket drum is greater than that of said driving force transmission.

4,497,556

PHOTOGRAPHIC STILL CAMERA

Evan A. Edwards, 2 Prospect Hill Rd., Pittsford, N.Y. 14534

Filed Apr. 25, 1983, Ser. No. 488,272

Int. Cl.[3] G03B *1/10, 17/26*

U.S. Cl. 354—212 **11 Claims**

1. A photographic still camera arranged for using a film system comprising:

a. a paper backed film strip wound in a supply coil;

b. a leading end of a paper backing for said film strip being attached to a take-up spindle in a take-up container that is variably separable from said supply coil;

c. said supply coil being held between flanges having outwardly extending pins eccentric to the supply coil axis; and

d. said take-up container having a gear on said take-up spindle;

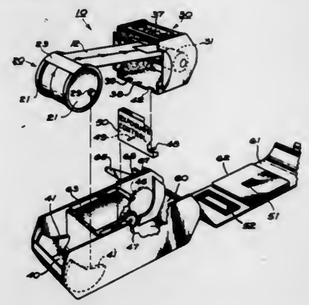
said camera comprising:

1. a supply recess configured for receiving said supply coil;

2. a take-up recess configured for receiving said take-up container;

3. a camera gear in said take-up recess arranged for meshing with said gear on said take-up spindle;

4. means for rotating said camera gear one revolution for each film advance;



5. opposite sides of said supply recess having ledges arranged for engaging said eccentric pins to orient said supply coil, said ledges being configured for enabling said supply coil to roll back to take up any excess initial paper backing extending between said supply coil and said take-up container when said film system is loaded into said camera; and

6. said ledges and said supply recess being arranged for holding said flanges in position for rotationally unwinding said supply coil relative to said flanges as said film strip advances through said camera.

4,497,557

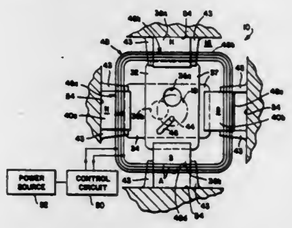
ELECTROMAGNETIC SHUTTER MECHANISM

Christian C. Petersen, Westwood, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Jun. 25, 1982, Ser. No. 392,315

Int. Cl.[3] G03B *9/14*

U.S. Cl. 354—234.1 **4 Claims**



1. In a shutter mechanism for controlling the unblocking and blocking of an opening through which light passes along a given path comprising: a first group of shutter blade assemblies; means for mounting the shutter blade assemblies so that each is movable between unblocking and blocking conditions and each is generally parallel to a given plane, said blade assemblies being oriented with respect to each other so that when said blade assemblies are in their blocking condition, the light opening is blocked, and when in their unblocking condition the light opening is at least partially open; and means operable for driving said blade assemblies along respective

paths between said unblocking and blocking conditions, the improvement wherein;

each of said blade assemblies includes at least a permanent magnet having its field extending generally transverse to the given plane;

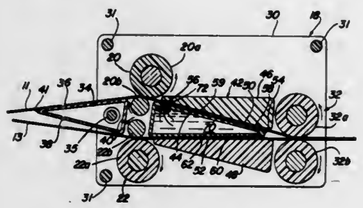
said operable driving means includes a single energizeable coil arrangement having active conductor portions generally parallel to the given plane, respective ones of said active portions are juxtaposed in respective ones of the fields of said magnets and are generally normal to the path of movement of respective ones of said blade assemblies; said active conductor portions of said coil arrangement and permanent magnets being arranged with respect to each other so that when said active portions are energized with reverse polarity, each of said blade assemblies is driven between the unblocking and blocking conditions.

4,497,558

DIFFUSION-TRANSFER PROCESSOR FOR PHOTOMECHANICAL REPRODUCTIONS

Bruce Cooperberg, North Hollywood, and Gene E. Peck, Sun Valley, both of Calif., assignors to Insta-Print, Inc., North Hollywood, Calif.

Filed Nov. 14, 1983, Ser. No. 550,790
Int. Cl.³ G03D *9/00*
U.S. Cl. 354—303 **11 Claims**



1. An improved diffusion-transfer processor for photomechanical reproduction of artwork and like mediums, comprising:

a first upper pair of transport rollers positioned in parallel engagement with each other, and adapted to receive and transport a first medium rearwardly thereof;

a second lower pair of transport rollers positioned in parallel engagement with each other, and spaced below said first pair of transport rollers, said second pair of rollers being adapted to separately receive and transport rearwardly a second medium below said first medium;

means for continuously supplying an activator solution so as to bathe said mediums in said solution, as said mediums are transported rearwardly;

a third pair of rollers defining press rollers positioned rearwardly of said supply means, whereby said mediums are simultaneously received by said rollers, so as to press said mediums in direct contact with each other; and

drive means coupled to at least one of said rollers, whereby all of said rollers are operably interconnected so as to rotate together in a synchronized relationship with respect to each pair of rollers, and to each roller of each pair, allowing said mediums to be in selected alignment with each other as they pass through said press rollers;

a pair of oppositely disposed end walls spaced apart and adapted to rotatably support each of said pairs of rollers;

a bath tray positioned under said rollers to catch said activator solution; and

wherein said means for continuously supplying said activator solution comprises; a pump means

a fluid-discharge member connected to said pump means and positioned rearwardly of said first and second transport rollers and forwardly of said press rollers, said discharge member having at least one discharge opening to allow said solution to bathe said mediums as they are transported rearwardly; and

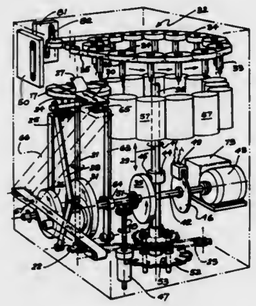
guide means positioned above and below said discharge member to guide said mediums, so as to be simultaneously received in said press rollers as said mediums are being bathed in said solution.

4,497,559

DISC FILM DEVELOPER

Wiltjie Maris, Cromer, and Robert Moran, Narrabeen, both of Australia, assignors to Blanrima Pty. Ltd., Lismore, Australia

Filed Aug. 16, 1983, Ser. No. 523,676
Claims priority, application Australia, Aug. 25, 1982, PF5544
Int. Cl.³ G03D *3/06, 3/08*
U.S. Cl. 354—316 **11 Claims**



1. A film disc developing machine for processing in a processing cycle film units each consisting of an emulsion bearing disc having a hub and a central hole through the hub comprising:

a light tight casing;

means for supporting a film unit with the plane of the disc substantially horizontal;

means for rotatably supporting a plurality of spaced vertically extending spindles arranged around a closed path which passes over said film unit supporting means;

a plurality of containers containing photographic solutions disposed below and spaced along a closed path corresponding to said path of said spindles;

means to move said spindle supporting means so that said spindles move along said path over said film unit supporting means and said containers;

means to continuously rotate said spindles about their axes when in the positions over said photographic solution containers;

a lower free end on each spindle shaped and adapted to be removably insertable into the hole in the hub of the film disc to frictionally retain said film disc therein;

means to cause relative vertical movement at predetermined intervals between said spindle supporting means and said containers and film unit supporting means so that when said spindles and film unit supporting means and containers are moved toward each other said lower end of one of said spindles engages within the hole in a film disc support means and the lower free ends of other of said spindles are immersed in the solutions in said solution containers, and when said spindles and film unit supporting means and containers are moved away from each other a film disc retained on the lower free end of said one spindle is raised off of said film unit support means and the lower free ends of said other of said spindles is withdrawn from said containers;

means for detaching a developed film unit from a spindle which has completed passage through the processing cycle; and

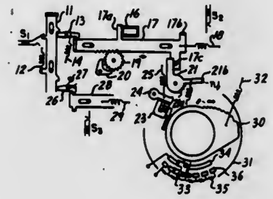
means for controlling and timing the operation of the machine so that film units retained on the lower free ends of said spindles are progressively raised off of said film unit supporting means, moved a distance along said path corresponding to the distance between adjacent containers, immersed in the photographic solutions for a predetermined period of time and removed by the detaching means at the end of a processing cycle.

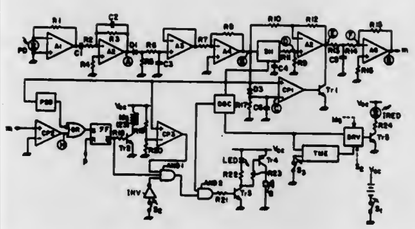
4,497,560

CONTROL CIRCUIT FOR ACTIVE TYPE RANGE FINDER

Shinji Nagaoka, and Koji Sato, both of Yotsukaido, Japan, assignors to Seiko Koki Kabushiki Kaisha, Yotsukaido, Japan

Filed Jan. 10, 1983, Ser. No. 456,789
Claims priority, application Japan, Jan. 11, 1982, 57-2618
Int. Cl.³ G01C *3/08*; G03B *3/10*
U.S. Cl. 354—403 **20 Claims**





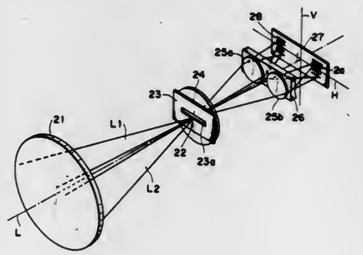
1. In a range finder of the active type in which light projecting means comprised of a light emitting element and a light projecting lens projects light on an object to be photographed and the light reflected from the object is detected and processed to detect the object distance, a control circuit for an active type range finder comprising: a photodetector element disposed to receive the light reflected from the object and produce a photoelectric output signal proportional to the amount of received light, a light shielding member for scanning over the surface of the photodetector element in correlation with the object distance to successively shield successive regions of the photodetector element surface from receiving light, a driving circuit for pulsatively driving said light emitting element, an alternating current amplifier circuit for amplifying the photoelectric output signal from said photodetector element, a detecting circuit and an integrating circuit for converting the variation of the amplified photoelectric output signal into an integrated direct current signal having a negative peak value corresponding to the position of the scanning light shielding member which corresponds to the object distance, a peak detecting circuit for detecting the negative peak value of the direct current signal, and an electromagnet control circuit responsive to the detection of the negative peak value for controlling the focussing of an objective lens.

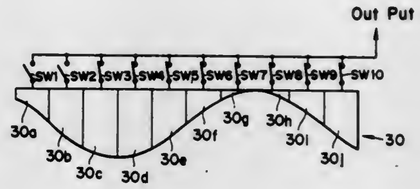
4,497,561

FOCUS DETECTION APPARATUS

Kenji Suzuki, Kawasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 28, 1983, Ser. No. 536,735
Claims priority, application Japan, Oct. 4, 1982, 57-174220
Int. Cl.³ G03B *3/10*
U.S. Cl. 354—406 **10 Claims**





1. A focus detection apparatus comprising:

(a) first optical means;

(b) second optical means for reforming a first object image formed on an imaging plane of said first optical means as a plurality of second object images; and

(c) light-receiving means for receiving signals necessary for discriminating a focusing state of the first object image formed on the light-receiving surface of said first optical means in accordance with a positional relationship between said plurality of second object images, said light-receiving means having at least one photoelectric conversion element having a sinusoidally shaped light-receiving surface.

4,497,562

EXPOSURE CONTROL DEVICE FOR FLASH PHOTOGRAPHY

Tokuji Ishida, Daito, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

PCT No. PCT/JP82/00475, § 371 Date Aug. 24, 1983, § 102(e) Date Aug. 24, 1983
PCT Filed Dec. 23, 1982, Ser. No. 530,574
Claims priority, application Japan, Dec. 25, 1981, 56-210354
Int. Cl.³ G03B *15/05*
U.S. Cl. 354—416 **4 Claims**

1. An exposure control device for a camera comprising:

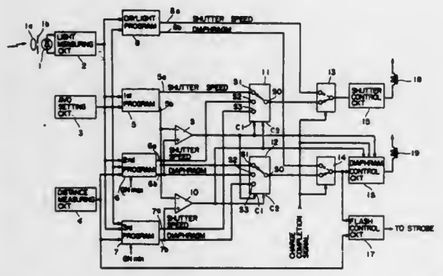
a light measuring means for generating a light measurement output as a function of the brightness of a scene to be photographed;

a program signal means for generating signals representative of shutter speed and diaphragm aperture value for flash photography in accordance with the light measurement outputs;

a range finding means for generating a distance signal corresponding to the distance between the camera and a target object;

a marginal exposure signal means for generating signals representative of a shutter speed and a diaphragm aperture value in compliance with the distance signal, the light measurement output, and marginal light amount to be emitted from the flash device in use;

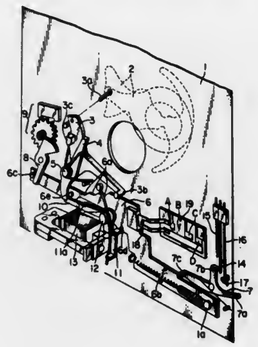
a comparing means for comparing the diaphragm aperture value signals from said program signal means and said marginal exposure signal means;

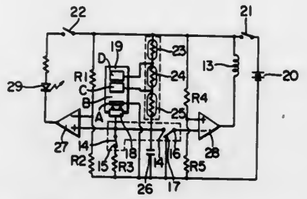


a selecting means for selecting the shutter speed and diaphragm aperture value signals from those from said program signal means and said marginal exposure signal means, in accordance with the output of said comparing means; and

an exposure control means for controlling the shutter speed and diaphragm of the camera in accordance with the signals selected by said selecting means.

upon each aperture corresponding to the opening positions of the shutter element, and initiating an aperture closing operation during the shutter element opening operation in response to the cutoff signal.





4,497,564

EXPOSURE MODE SETTING DEVICE IN AN EXPOSURE CONTROL APPARATUS OF A CAMERA

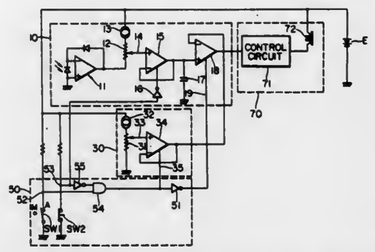
Hiroshi Meguro, Kawasaki; Yuji Okubo, and Sakuji Watanabe, both of Omiya, all of Japan, assignors to Nippon Kogaku K.K., Tokyo, Japan

Filed Jul. 14, 1983, Ser. No. 513,406

Claims priority, application Japan, Jul. 20, 1982, 57-108759[U]; Feb. 8, 1983, 58-17162[U]

Int. Cl.³ G03B *7/089, 17/00*

U.S. Cl. 354—442 **10 Claims**



1. An exposure control apparatus of a camera comprising:

(a) exposure control means adjusted to control the quantity of light applied onto a photosensitive film;

(b) means having means for preparing a photometering output responsive to the quantity of light from an object to be photographed, said means being effective to prepare on the basis of said photometering output a first output used to adjust said exposure control means so that the quantity of light applied onto said film is proper;

(c) means including means for setting the exposure amount by manual operation, said means being effective to prepare a second output used to adjust said exposure control means so that said set exposure amount is obtained;

(d) selecting means having a first selecting position for making said first output effective and a second selecting position for making said second output effective, in order to adjust said exposure control means; and

(e) operating means operated to store said photometering output, said operating means including change-over means operated when said selecting means is in said second selecting position to thereby act on said selecting means and make said first output instead of said second output effective.

4,497,563

PROGRAMMED AUTOMATIC EXPOSURE CONTROL

Kohji Matsushima; Yasutsugu Nakagawa, and Michio Yagi, all of Hachioji, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Oct. 18, 1982, Ser. No. 435,112

Claims priority, application Japan, Oct. 26, 1981, 56-170219

Int. Cl.³ G03B *7/08*

U.S. Cl. 354—429 **3 Claims**

1. A method for automatic exposure control wherein a shutter element is opened from a minimum aperture to a maximum aperture and is closed in response to a cutoff signal generated from an output signal of a photometry means by the detection of light from a subject, comprising the steps of providing a plurality of photosensitive elements for said photometry means which are selectively operated in stepwise fashion depending

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4,497,565

EXPOSURE DEVICE FOR LOCALLY DISCHARGING A PHOTOCONDUCTIVE IMAGING ELEMENT

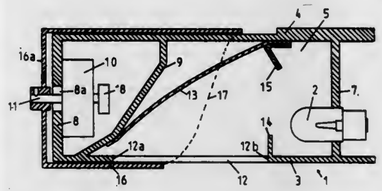
Hendrik G. J. Rutten, Arcen, Netherlands, assignor to Océ-Nederland B.V., Venlo, Netherlands

Filed Sep. 16, 1982, Ser. No. 419,215

Claims priority, application Netherlands, Sep. 30, 1981, 8104461

Int. Cl.³ G03G *15/04*

U.S. Cl. 355—3 R **8 Claims**



1. An exposure device for homogeneously exposing to light regions of a photoconductive imaging element located outside regions thereof on which images are to be formed, comprising a housing containing a light source and having a window through which light may be passed to a said element and masking means for covering any desired portion of the area of said window, said masking means comprising an opaque member for overlying a portion of said window and having a terminal edge extending obliquely relative to an axis of said window, said opaque member being displaceable transversely relative to said window axis to vary the location of said terminal edge over said window and thus adjust the extent of masking of said area.

4,497,566

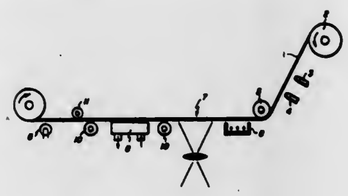
CORRECTION OF IMAGE DEFECTS IN PHOTOCONDUCTIVE FILM

Yee S. Ng, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 3, 1983, Ser. No. 471,947

Int. Cl.³ G03G *15/00, 5/06;* **B65H** *17/32*

U.S. Cl. 355—3 CH **3 Claims**



1. In a method of forming an image on a photoconductive roll film having a photoconductive layer deposited on a conductive support, which comprises:

(a) charging said photoconductive film to uniform polarity;

(b) exposing said photoconductive film to actinic radiation, thereby dissipating the charge in the exposed areas and forming a latent electrostatic image; and

(c) developing said image on said photoconductive film by contacting the exposed element with an electrophotographic liquid developer, the improvement comprising:

heating the photoconductive layer of said film while it is under stress relieving tension and prior to charging, to a temperature above Tg, the glass transition, of said photoconductive layer for a time sufficient to relieve core-set and reduce cracking defects in the photoconductive roll film.

4,497,567

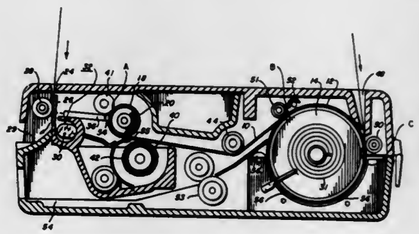
TONER TRANSFERRING METHOD AND APPARATUS

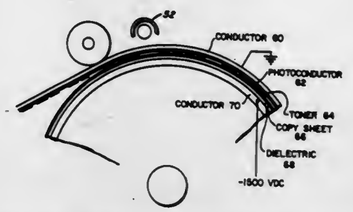
Charles A. Gage, Webster; Timothy T. Blair, Shortsville, and Thomas W. Morgan, Macedon, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Apr. 28, 1983, Ser. No. 489,621

Int. Cl.³ G03G *15/16*

U.S. Cl. 355—3 TR **27 Claims**





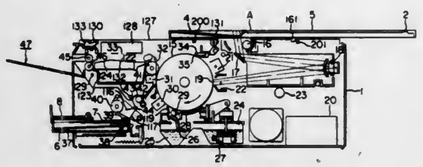
1. Apparatus for transferring charged toner present in image configuration on an insulating layer bearing an electrostatic latent image to a copy substrate, said apparatus comprising an insulating layer on an electrically grounded conductive substrate, means to form a sandwich comprising in sequential order said conductive substrate support for said insulating layer, said insulating layer bearing said electrostatic latent image, the toner image, copy substrate, dielectric layer, and conductive electrode; means for applying a potential to said conductive electrode after said sandwich is formed of a magnitude and potential sufficient to create an electric field to transfer toner from the insulating layer to the copy substrate, means to discharge the electrostatic latent image on said insulating layer before separation of said sandwich, and means to strip said copy substrate from said dielectric layer while said field is applied.

4,497,568

IMAGE FORMATION APPARATUS

Yutaka Komiya, Tokyo; Yoshimasa Kimura, Kawasaki, and Koichi Murakami, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 26, 1982, Ser. No. 401,676
Claims priority, application Japan, Dec. 20, 1977, 52-154173
Int. Cl.³ G03G *15/22*
U.S. Cl. 355—14 R **22 Claims**



1. An image forming control apparatus, comprising:
a rotatable member;
a plurality of energizable means for forming an image on said rotatable member and for transferring the image to a transfer material, said plurality of energizable means including imaging means and heat transfer means for affecting the temperature of a portion of the apparatus;
switch means for initiating an image forming operation by transmitting an image forming signal;
control means for controlling the energization state of said energizable means to provide a plurality of energizational modes, including;
an image forming mode wherein said member is rotated and at least some of said energizable means are energized to effect the formation of images;
a post-rotation mode wherein said member is rotated to effect cleaning thereof for a predetermined time interval following the termination of said image forming mode;
a first standby mode wherein said member is stationary but at least some of said energizing means including said heat transfer means are maintained in an energized state, whereby the apparatus is maintained ready to proceed to the image forming mode in response to a signal from said switch means; and
a second standby mode which commences upon the termination of the first standby mode if, during the first standby mode, no signal is transmitted by said switch means, wherein the heat transfer means is switched from an energized state to a de-energized state but wherein at least one other energizable means remains activated;
wherein said control means controls the time interval between the actuation of said switch means and activation of said imaging means in accordance with the time of actuation of said switch means, when said switch means is actuated.

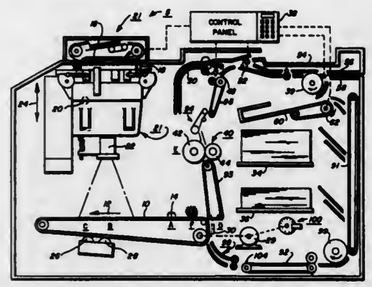
4,497,569

COPY PROCESSING SYSTEM FOR A REPRODUCTION MACHINE

Ronald P. Booth, Sr., Pittsford, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Sep. 21, 1982, Ser. No. 421,005
Int. Cl.³ G03G *15/00*
U.S. Cl. 355—14 R **10 Claims**

1. In a reproduction machine the combination of:
(a) means forming a path along which a copy sheet being processed passes;
(b) transport means for moving said copy sheet along said path,
(c) a plurality of discrete copy sheet monitoring stations disposed in preset locations along said path for monitoring movement of said copy sheet along said path;
(d) control means for enabling said monitoring stations whereby each of said monitoring stations scans said path for said copy sheet, the next one of each of said monitoring stations commencing tolling of a predetermined timed interval in response to detection of said copy sheet by the preceding one of said monitoring stations for said copy sheet to reach said next monitoring station whereby movement of said sheet along said path is monitored;
(e) copy processing information means providing information for processing said copy sheet,



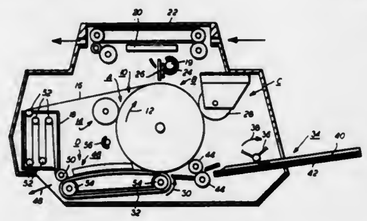
(f) means forming a plurality of locations where said copy processing information may be read to obtain instructions for processing said copy sheet; and
(g) means for advancing said copy processing information from location to location in response to detection of said copy sheet by each of said monitoring stations along said path in succession.

4,497,570

PRINTING MACHINE EMPLOYING AN OPERATOR REPLACEABLE INTERPOSITION WEB AND PHOTOCONDUCTIVE MEMBER

Steven B. Bolte, Rochester; Grace T. Brewington, Fairport; Theodore Davidson, Rochester; Richard F. Koehler, Jr., Webster, and Robert G. Martin, Irondequoit, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Feb. 2, 1983, Ser. No. 463,099
Int. Cl.³ G03G *15/00*
U.S. Cl. 355—16 **14 Claims**



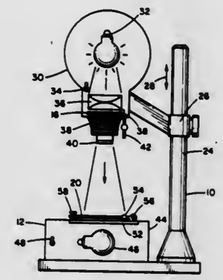
1. A printing machine for producing copies, including:
a housing mounted in the printing machine, said housing being operator removable therefrom after a preselected number of copies have been made and operator replaceable with an unused housing;
a photoconductive member mounted in said housing;
a web mounted in said housing and entrained about a portion of said photoconductive member;
means for recording a latent image on said photoconductive member;
means for transporting marking particles to the portion of said web entrained about said photoconductive member so that the latent image recorded thereon attracts the marking particles to said web in image configuration;
means for advancing a copy sheet into contact with the marking particles on said web;
means for heating the marking particles interposed between said web and the copy sheet; and
means for separating the copy sheet from said web after the copy sheet has cooled so that the marking particles remain affixed to the copy sheet.

4,497,571

PHOTOGRAPHIC ENLARGEMENTS

John J. Herrmann, 300½ 63rd St. Ocean, Marathon, Fla. 33050

Filed May 31, 1983, Ser. No. 499,203
Int. Cl.³ G03B *27/52, 27/32*
U.S. Cl. 355—40 **6 Claims**



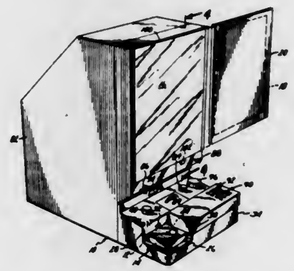
1. Apparatus for superior print enlargement of a photographic image existing in developed negative on a first photographic negative film segment having high grain, comprising:
an enlarger having,
an enlarger holding means for successively, releasably holding in a first location the first photographic negative film segment and thereafter a second photographic negative film segment being unexposed and having low grain,
an enlarger illumination means for projecting light through the first photographic negative film segment while in the first location to produce projected light of the photographic image,
an enlarger housing means for confining the projected light along a desired path,
an enlarger switch means for selectively actuating the illumination means,
lens means along the desired path for focusing the projected light along the path; and
a light box having,
an at least translucent surface,
a light box holding means for successively, releasably holding in a second location on the surface a third photographic negative film segment being unexposed and thereafter the third photographic negative film segment when exposed and with the image developed thereon,
the light box being adapted to be positioned relative to the enlarger for placing the surface along the path and further adapted to be positioned relative to the enlarger lens means for focusing by the enlarger lens means of the projected light onto the photographic negative film segment while in the second location and unexposed, to expose the third photographic negative film segment and thereby produce the photographic image latent thereon, whereby the exposed third segment may be released from the apparatus, the latent image thereon developed thereon and the third photographic negative film segment with the image developed thereon returned to the second location,
light box illumination means, light box housing means and light box switch means for selectively projecting confined light through the surface and the exposed, developed, third photographic negative film segment, while returned to the second location, back along the desired path through the enlarger lens means onto the second, unexposed, low grain, photographic negative film segment to produce the photographic image latent thereon, whereby the second photographic negative film segment may be released from the enlarger, the latent image developed thereon, and the second exposed, developed, low grain photographic negative film segment used to produce print enlargements superior in grain to print enlargements produced directly from the first photographic negative film segment.

4,497,572

AUTOMATIC X-RAY MICROFILM READER

Ronald G. Beachem, Hopkins, Minn., assignor to Med-Tech Micrographics, Inc., Edina, Minn.

Filed Jan. 10, 1983, Ser. No. 457,060
Int. Cl.³ G03B *21/48, 21/134*
U.S. Cl. 355—45 **15 Claims**



1. An microfilm reader for projecting a magnified image from a web of microfilm located at a film gate onto an image plane, wherein the web has a plurality of image frames and a frame location hole indicating a location of each frame, and wherein the web is contained on a rotatable spindle in a cartridge, the microfilm reader comprising:
a cartridge station for receiving the cartridge;
a rotatable takeup reel;
a guide path for guiding the web between the cartridge station and the takeup reel, and wherein the film gate is located along the guide path between the cartridge station and the takeup reel;
lamp means for providing light;
means for directing the light from the lamp means along an optical path through the web of the film gate and onto the image plane;
a screen located proximate the image plane upon which the magnified images can be viewed;
motor means for providing rotational drive at a speed which is a function of a motor control signal;
drive roller means positioned adjacent the cartridge station for engaging and driving the web in a first direction along the guide path toward the takeup reel, the drive roller means being driven by the motor means;
drive roller positioning means for selectively bringing the drive roller means into engagement with the web in response to a drive roller control signal;
takeup clutch means for providing the rotational drive from the motor means to the takeup reel in response to a takeup clutch control signal to cause movement of the web in the first direction;
cartridge rewind clutch means for providing the rotational drive from the motor means to the spindle of the cartridge in response to a rewind clutch control signal to cause movement of the web in a second direction toward the cartridge;
hole sensor means positioned along the guide path for providing a hole sensor signal in response to each frame location hole in the web;
takeup sensor means for providing a takeup sensor signal indicative of presence of the web in the takeup reel;
user-actuated index means for providing an index signal

which indicates that the user desires the web to be advanced automatically from the cartridge to the takeup reel so that a first frame of the web is located at the film gate;

user-actuated means for providing a desired frame number indicative of a frame which the user desires to be located at the film gate;

user-actuated search means for providing a search signal which indicates that the user desires the web to be moved so that the desired frame is located at the film gate;

user-actuated unload means for providing an unload signal which indicates that the user desires the web to be moved in the second direction so that the web is rewound into the cartridge; and

digital control means for providing the motor control signal, the drive roller control signal, the takeup clutch control signal and the rewind clutch control signal as a function of the hole sensor signal, the takeup sensor signal, the index signal, the desired frame number, the search signal, and the unload signal; wherein in response to the index signal the digital control means provides the drive roller control signal until the takeup sensor signal is received and provides the motor control signal and the takeup clutch control signal until the hole sensor signal is received indicating the presence of the first frame at the film gate; wherein the digital control means maintains a current frame count based upon hole sensor signals received, the current frame count being incremented when the web is moved in one direction and decremented when the web is moved in an opposite direction; wherein in response to the unload signal the digital control means provides the motor control signal and the rewind clutch control signal; and wherein in response to the search signal the digital control means provides either the takeup clutch control signal or the rewind clutch control signal based upon a sign of a difference between the current frame count and the desired frame number and provides the motor control signal as a function of a magnitude of a difference between the current frame number and the desired frame number, so that the web is decelerated as the current frame count approaches the desired frame number and the web is stopped with the desired frame aligned with the film gate by the digital control means discontinuing the clutch control signal and the motor control signal.

4,497,573

VARIABLE MAGNIFICATION OPTICAL APPARATUS

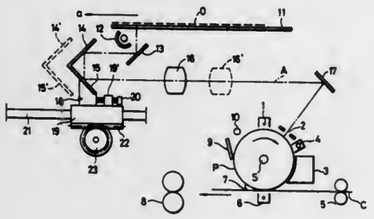
Mitsuhiro Tokuhara, Chigasaki; Akiyoshi Torigai, Machida, and Teruo Morikawa, Sagamihara, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 26, 1982, Ser. No. 411,992

Claims priority, application Japan, Sep. 3, 1981, 56-139160; Sep. 3, 1981, 56-139161; Sep. 3, 1981, 56-139162

Int. Cl.³ G03B *27/36*

U.S. Cl. 355—58 **37 Claims**



37. A variable magnification optical apparatus in which at least a first magnification image formation mode and a second magnification image formation mode can be selected, said apparatus including:

illuminating means for illuminating an original;

a photosensitive medium;

an optical system for forming an image of the original on said photosensitive medium, said optical system having a mirror and a lens;

a movable carriage for supporting one of said mirror or lens;

carriage moving means for moving said carriage to change the image formation mode; and

correction means for correcting the distance over which said carriage is moved by said carriage moving means correspondingly to an error of the focal length of said lens, said correction means having

a stopper member for stopping said carriage;

a stopper engaging member mechanically connected to said carriage, said stopper engaging member having at least first and second engaging portions; and

adjusting means for adjusting the spacing between said first and said second engaging portion correspondingly to the error of the focal length of said lens wherein said stopper member being engaged with said first engaging portion during the first magnification image formation mode and being engaged with said second engaging portion during the second magnification image formation mode.

4,497,574

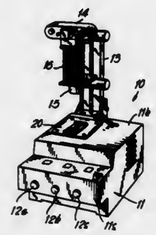
SLIDE SUPPORTING ASSEMBLY FOR COLOR-SLIDE DUPLICATOR

Joseph Tarsia; Alexander S. Ross, and Marina Gertsek, all of Cedar Knolls, N.J., assignors to Kenro Corporation, N.J.

Filed Jun. 13, 1983, Ser. No. 503,818

Int. Cl.³ G03B *27/62*

U.S. Cl. 355—76 **11 Claims**



1. In a color-slide duplicator having a housing containing a light source and including a wall with an opening therein illuminated by light from said source; a slide supporting assembly comprising a carrier plate dimensioned to span said opening and having an aperture, magnetic means for releasably securing said carrier plate to said wall in an adjustable position at which said aperture registers, at least in part, with the illuminated opening in said wall, and quick-release means for positioning a slide to be duplicated on said carrier plate over said aperture and for holding said slide to be duplicated against said carrier plate.

4,497,575

OPTICAL FIBER TEST INSTRUMENT CALIBRATOR

Harald Philipp, Aloha, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.

Filed Nov. 1, 1982, Ser. No. 438,102

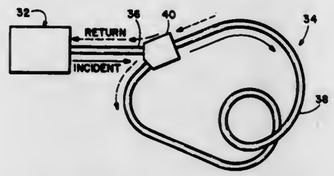
Int. Cl.³ G01N *21/84*; G02B *5/14*

U.S. Cl. 356—73.1 **9 Claims**

1. A calibration device, for calibrating an optical time domain reflectometer of the type comprising a light source for generating pulses of light, a light detector for generating electrical signals in response to light received thereby, an optical coupler for coupling the light source and the light detector to one end of an optical fiber whereby light pulses from the light source are introduced into the optical fiber by way of said one end and electrical signals are generated by the light detector in response to light leaving the optical fiber by way of said one end, and display means for providing a display of the time relation between light pulses generated by the light source and electrical signals generated by the light detector, the calibration device comprising:

a first optical transmission member having two opposite ends, one of which is connected, in use, to the coupler of the reflectometer to be tested;

optical directional coupling means having at least first, second and third ports and being connected by way of its first port to the other of said two opposite ends of the first optical transmission member, the coupling means directing light received by way of the first port to the second



port but not substantially to the third port, dividing light received by way of the second port and directing it to the third port and to the first port, and directing light received by way of the third port to the second port; and

a second optical transmission member having a known propagation characteristic and having two opposite ends connected respectively to the second and third ports of the coupling means.

whereby the nature of the display provided by the display means of the reflectometer when the reflectometer is operative and is connected to the calibration device can be utilized, in conjunction with the known propagation characteristic of the second optical transmission member, to calibrate the reflectometer.

4,497,576

ARTICLE ANALYZER APPARATUS BY SILHOUETTE PROJECTION

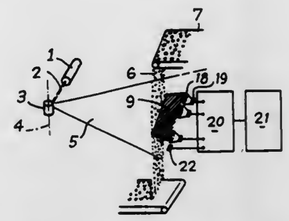
Jean-Marie Caussignac, Le Perreux sur Marne, and Maurice Leroy, Sauteville les Rouen, both of France, assignors to L'Etat Francais, France

Filed Jan. 8, 1982, Ser. No. 338,155

Claims priority, application France, Jan. 14, 1981, 81 00549

Int. Cl.³ G01N *15/02*

U.S. Cl. 356—335 **3 Claims**



2. Particle analyzer apparatus for analyzing particles of a granular material by the silhouette projection method, said apparatus including in combination a dispensing machine for forming a sheet of said particles falling with virtually the same speed, a fixed laser for producing a beam of light, an optical device for receiving light from said beam and directing the light back towards and through said sheet of particles, means for receiving light which has passed through the sheet of particles to generate signals representing the light received, and a signal processing unit for processing said signals, said optical device being fixed and transforming the received laser beam into a plane divergent sheet beam of light extending towards and traversing the sheet of particles at least over its width and at a substantially right angle before being collected by the receiving device, said receiving device being situated in the plane of said beam over a width which corresponds to the width of said particles, said optical device being constituted by a reflecting cylinder having an axis orthogonal to the direction of the incident laser beam, said receiving device being constituted by a battery of lenses in the focal plane of which are placed analog photo-electric cells in order to generate signals representing the covering power of the particles.

4,497,577

STEAM WETNESS MEASURING APPARATUS

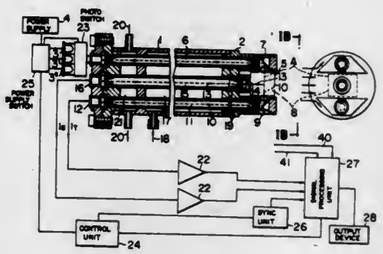
Takeshi Sato, Hitachi; Syogo Tsuji, Katsuta; Kengo Shigeta, Hitachi, and Akira Uenishi, Mito, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed May 28, 1982, Ser. No. 383,186

Claims priority, application Japan, Jun. 3, 1981, 56-86242

Int. Cl.³ G01N *15/02*

U.S. Cl. 356—336 **8 Claims**



1. A steam wetness measuring apparatus comprising:

light source means;

a portion defining a measuring space when said apparatus is inserted in a steam flow;

photo-electric converter means;

incident light beam transmitter means for transmitting an incident light beam from said light source means to said measuring space;

scattered light beam transmitter means including a plurality of scattered light beam transmitting members for transmitting to said photo-electric converter means a plurality of scattered light beams of different scattering angles obtained by radiating the incident light beams on said measuring space;

pressure detector means for detecting the pressure of the steam flow and producing an electrical signal associated with said pressure;

temperature detector means for detecting the temperature of the steam flow and producing an electrical signal associated with the temperature; and

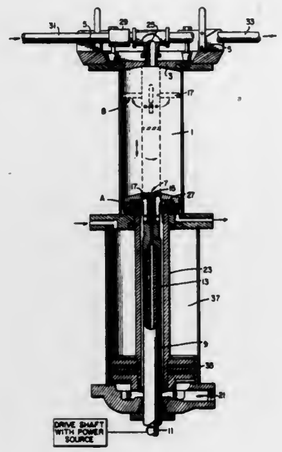
processing means for computing the particle size distribution of water droplets in the steam flow on the basis of the electrical signals produced from said photo-electric converter means in accordance with the intensity of said scattered light beams and computing the steam wetness on the basis of said particle size distribution and said electrical signals produced from said pressure detector means and temperature detector means.

4,497,578

MACHINE FOR MIXING AND INJECTING WATER AND GROUT INTO A ROOF BOLT HOLE

Robert E. Simpson, Spokane, Wash., assignor to The United States of America as represented by the Secretary of the Interior, Washington, D.C.

Filed Jul. 10, 1980, Ser. No. 168,815
Int. Cl.³ B01F *5/04*
U.S. Cl. 366—42 **8 Claims**



1. An apparatus for mixing two components and then extruding the resultant mixture from the same chamber comprising:

a mixing chamber with a first opening to allow the introduction of one of the components to be mixed, said chamber having means to close the first opening and a second outlet opening to discharge the components after mixing;

a rotatable mixing head having retractable mixing fingers mounted thereon extending into said mixing chamber, said mixing head being mounted on a mixing ram and movable upwardly and downwardly in the chamber;

means for supplying a second component to said mixing chamber, said component being deposited in the chamber near the mixing fingers;

a movable extrusion ram having a ram head at its upper portion, said ram head being mounted in the mixing chamber and normally extending around the mixing head and its retracted fingers when the mixing head in its lower chamber position;

first means for rotating and moving the mixing head and its ram to mix said two components in the mixing chamber; and

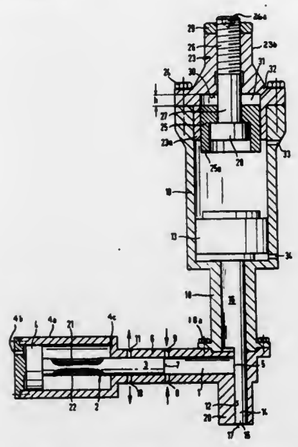
second means for independently moving the extrusion ram and its ram head from the movement of the mixing ram and head to provide for the extrusion of the two mixed components from the mixing chamber out of its second outlet opening.

4,497,579

MIXING HEAD FOR REACTIVE MATERIALS

Horst Schmitz, München, and Wolfgang Krompass, Inning, both of Fed. Rep. of Germany, assignors to Krauss-Maffei Aktiengesellschaft, Munich, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 381,740, May 24, 1982, Pat. No. 4,464,056. This application Oct. 18, 1983, Ser. No. 543,123
Claims priority, application Fed. Rep. of Germany, May 22, 1981, 31204821
Int. Cl.³ B01F *5/04*
U.S. Cl. 366—134 **10 Claims**



1. A mixing head for two reactive components comprising:

means forming an elongated mixing chamber provided with ports for introducing said components into said mixing chamber, and an outlet opening at one end of said mixing chamber;

a first plunger shiftable in said mixing chamber between a retracted position in which a mixture of said component is formed therein, and a second position wherein said first plunger is advanced to said opening to drive said mixture from said chamber;

means forming an elongated quieting passage communicating with said mixing chamber at said opening, said passage having a discharge end remote from said opening;

a second plunger shiftable in said passage between a retracted position wherein said mixture can be discharged through said passage at said discharge end, and an advanced position wherein said second plunger drives said mixture from said passage; and

a shiftable abutment for said second plunger establishing said reactracted position such that said plunger extends across said opening to partially obstruct flow from said mixing chamber into said passage, and displaceable to enable said second plunger to assume a position in which flow from said outlet is completely unblocked.

4,497,580

TWO-MOTOR, BATTERY-OPERATED MIXER-POURER

John S. Doyel, 404 W. 20th St., New York, N.Y. 10011

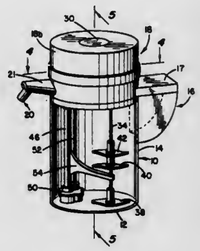
Filed Dec. 16, 1983, Ser. No. 562,165
Int. Cl.³ B01F *15/02*; B67D *5/48, 5/50*
U.S. Cl. 366—190 **5 Claims**

1. A two-motor, battery-operated mixer-pourer comprising:

an open top vessel having a bottom wall and a sidewall, and an open top, handle-shaped filling chute extending outwardly from the upper part of the sidewall and communicating with the interior of the vessel;

a removable housing capping the vessel and the chute and containing a mixer motor and a pump motor, at least one battery, and a manually operable switching arrangement for turning on only a selected one of said motors at a time, a mixer driveshaft directly driven by the mixer motor and extending downwardly therefrom into the vessel to a point near the vessel's bottom, a bottom mixer blade affixed to the bottom end of the mixer driveshaft to rotate therewith, at least one upper mixer blade affixed to a higher part of the mixer driveshaft to rotate therewith, a spout having a free end extending outwardly of the housing, a pump conduit extending downwardly from the housing and having a top end in fluid flow communication with the spout and a bottom end near the vessel's bottom, a pump secured at the bottom end of the pump conduit for pumping liquid from the vessel up through the conduit and out through the spout, a pump driveshaft directly driven by the pump motor and extending downwardly therefrom to the pump to drive it when the pump motor is on, and a brace secured to and extending from the pump conduit to the mixer driveshaft and having an opening in which the mixer driveshaft is journaled for rotation;

wherein said switching arrangement has a neutral position in which both motors are off, a mixing position in which only the mixer motor is on to rotate the driveshaft and



thereby the mixer blades, and a pumping position in which only the pump motor is on to rotate the pump driveshaft and drive the pump to move liquid from the bottom part of the vessel up through the conduit and out through the spout;

and wherein said housing is manually rotatable relative to the vessel to uncover the filling chute and allow mixing ingredients to be introduced into the vessel without removing the entire housing and wherein, in the alternative, said housing can be completely removed from the vessel by lifting it therefrom, as for cleaning;

whereby mixing ingredients can be introduced into the vessel through the filling chute, when the housing is on the vessel but rotated relative thereto to uncover the chute, or ingredients can be introduced into the vessel with the housing completely removed therefrom, and whereby when the housing caps the vessel and preferably, but not necessarily, covers the chute inlet, the switching arrangement can be manually operated to turn on only the mixer motor to mix the ingredients and, after sufficient mixing, can be operated to turn on only the pump motor, to pump a desired amount of the vessel's contents up through the conduit and out through the spout.

4,497,581

PAINT SHAKER

Herbert L. Miller, Roselle, Ill., assignor to Miller Paint Equipment, Inc., Addison, Ill.

Filed Nov. 15, 1979, Ser. No. 94,634
Int. Cl.³ B01F *9/00*
U.S. Cl. 366—208 **19 Claims**

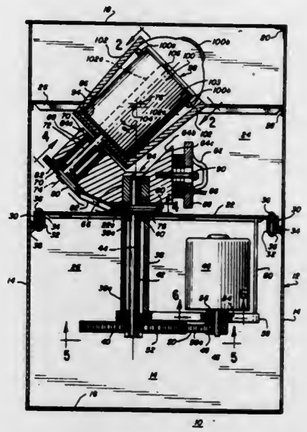
1. Apparatus for agitating flowable material such as paint and the like in a container, comprising:

bucket means having an open upper end for receiving said container of material and mounted for spinning movement about an upwardly sloping spin axis;

yoke means supporting said bucket means for spinning movement thereon, said yoke means mounted for spinning movement about a vertical spin axis angularly devergent with and intersecting said sloping spin axis of said bucket means at a crossover point; and

motor means for driving said bucket means and said yoke means to simultaneously rotate about their respective spin axes;

said bucket means including means for supporting said container in spinning position on said sloping spin axis with the center of gravity of said container and contents maintained continuously spaced below said crossover point and spaced closely radially outwardly of said vertical spin axis of said yoke means, said vertical spin axis extending upwardly through said bucket means continuously during spinning movement of said yoke means in close spaced relation to the center of gravity of a container and contents placed in said bucket means, wherein said bucket means includes rib means on an inside surface of said side wall means for drivingly engaging containers placed on said bucket means.

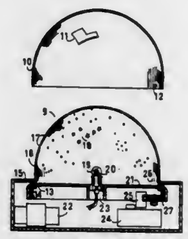


4,497,582

PLANETARIUM ALARM CLOCK

Abby G. Lipman, 26 Cypress Pl., Sausalito, Calif. 94965, and Herbert L. Levin, 215 Fox Hill Rd., Needham, Mass. 02192

Filed Jul. 27, 1983, Ser. No. 438,043
Int. Cl.³ G04B *19/26*
U.S. Cl. 368—15 **19 Claims**



1. A planetarium comprising:

an opaque hemispherical dome surface provided with patterned groupings of perforations therethrough in configurations resembling the apparent positions of constellations of stars from earth;

a lighting means centrally located within the hemisphere to shine light through the perforations thereby projecting

images of the constellations about a room in which the planetarium is located;

at least one opaque hemispherical mask which fits snugly over the hemispherical dome and which mask is provided with a patterned opening therethrough to allow the lights of one constellation to be projected through the mask at a time;

a timed means for rotating the hemisphere.

4,497,583

FLUID-TIGHT WATCH CASE WITH U-SHAPED BEZEL

Hanajörg Finger, Lengnau, Switzerland, assignor to Firma H. Finger, Berne, Switzerland

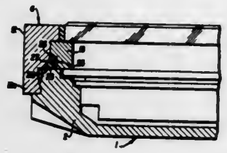
Division of Ser. No. 151,826, May 21, 1980, Pat. No. 4,363,555. This application Jul. 15, 1982, Ser. No. 398,580

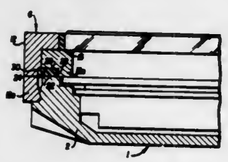
Claims priority, application Switzerland, May 30, 1979, 5041/79

The portion of the term of this patent subsequent to Dec. 14, 1999, has been disclaimed.

Int. Cl.³ G04B *37/00*

U.S. Cl. 368—291 **3 Claims**





1. A fluid tight watch, comprising:

a case;

a movement;

a dial fixed to said movement, said movement and said dial being contained in said case;

said case comprising:

a back having a peripheral wall which surrounds said movement and extends to a level at least as high as said dial;

a glass;

a bezel; and

an annular gasket;

wherein said bezel comprises a first annular part of L-shaped cross section having a first axially-directed arm and a first radially directed arm, said first axially-directed arm extending around and outside said peripheral wall, said first radially-directed arm extending radially inwardly, with said glass being fitted to said first radially-directed arm; said bezel further comprising a second part of L-shaped cross section having a second axially-directed arm and a second radially-directed arm, said second axially-directed arm extending from said glass to said dial within said peripheral wall, said second radially-directed arm extending outwardly beneath said first radially-directed arm, each of said first and second parts of said bezel comprising at least one contacting surface which is joined to the contacting surface of the other part of said bezel by cementing, brazing, soldering or welding, said first axially-directed arm comprising means for engaging said peripheral wall, said gasket being disposed between said first and second axially-extending arms and compressed against said peripheral wall, said gasket being disposed at a level between the level of said dial and the level of said glass.

4,497,584

WRIST WATCH CASE WITH VULCANIZED GASKET

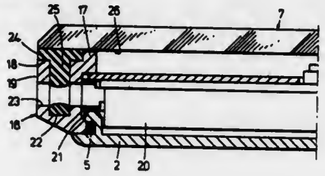
Michel Ratajski, Bienne, Switzerland, assignor to Firma H. Finger, Lengnau, Switzerland

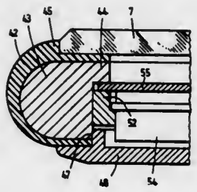
Filed Jun. 7, 1983, Ser. No. 501,825

Claims priority, application Switzerland, Jun. 21, 1982, 3805/82

Int. Cl.³ G04B *37/00*

U.S. Cl. 368—294 **15 Claims**





1. A wrist watch case comprising a glass and an annular case body, said glass being tightly secured to said case body along the periphery thereof, wherein a ring of vulcanizable material is interposed between said glass and said case body, said ring having bonding surfaces vulcanized to a matching surface of each one of said glass and case body, respectively, said case body further including an annular wall for encircling and securing a watch movement having one or more control stems protruding therefrom, said annular wall being traversed by one or more radial holes for receiving said one or more control stems, and said annular wall further having one or more recesses extending between said matching surface of said case body and said one or more radial holes, and said wrist watch case further comprising a mass of vulcanizable material integral with said ring partially filling said one or more recesses to form a gasket in contact with said one or more control stems.

4,497,585

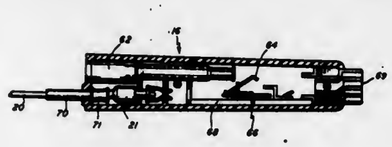
ELECTRONIC THERMOMETER

Seymour Paull, Natick, and Michael J. Marino, Lynn, both of Mass., assignors to Rol Corporation, Wakefield, Mass.

Division of Ser. No. 566,714, Apr. 10, 1975, Pat. No. 4,007,832. This application Dec. 20, 1976, Ser. No. 752,154

Int. Cl.³ G01K *1/14, 7/16*

U.S. Cl. 374—158 **24 Claims**



1. An independent, replaceable probe unit for an electronic measuring system having a housing with a compartment for receiving said probe unit, comprising:

a probe member including a probe element bearing a sensor device for sensing the parameter to be measured by the system and a cable electrically connected to said sensor device; and

a probe chamber removably mountable in said compartment and having a recess for receiving said probe member, said chamber including contact means interconnected with said cable and disposed to engage corresponding contact means in said compartment for interconnecting said probe member with the electronic measuring system.

4,497,586

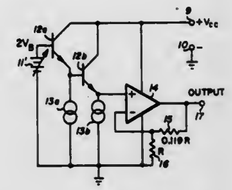
CELSIUS ELECTRONIC THERMOMETER CIRCUIT

Carl T. Nelson, San Jose, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Filed May 17, 1982, Ser. No. 379,203

Int. Cl.³ G01K *7/00*

U.S. Cl. 374—163 **10 Claims**



1. In an electronic thermometer circuit for producing a temperature related voltage that follows a predetermined temperature scale, said circuit comprising:

means for developing a first voltage having a positive temperature coefficient, wherein said first voltage is developed as a function of the base-to-emitter potential difference between a pair of transistors conducting at different emitter current densities;

means for developing a second voltage having a negative temperature coefficient;

means for subtracting said second voltage from said first voltage;

an amplifier responsive to the difference between said first and said second voltages to provide an output voltage related to said difference; and

means for adjusting one of said voltages whereby said amplifier output voltage is zero at the zero reference of said temperature scale, the improvement comprising:

means for obtaining second voltage by combining a plurality of series connected base to emitter voltages of conducting transistors and means for adjusting the gain of said amplifier to provide a desired scale factor whereby said amplifier gain is close to unity.

4,497,587

THREE-PAD JOURNAL BEARING

R. Davis Pine, Ballston Lake, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Jun. 20, 1983, Ser. No. 505,749

Int. Cl.³ F16C *17/03*

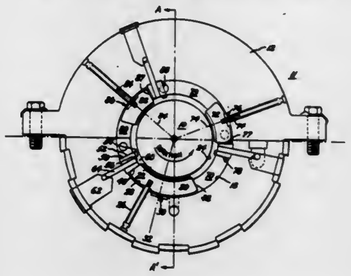
U.S. Cl. 384—117 **11 Claims**

1. An oil lubricated three pad journal bearing for supporting a horizontally disposed, rotatable steam turbine shaft, said bearing including a bearing casing, comprising:

a lower arcuate bearing pad for spacing said shaft away from the bearing casing and for supporting the shaft below the horizontal centerline of the shaft, the radial centerline of said pad being offset with respect to the vertical centerline of the shaft, said lower bearing pad including an arcuately extending pad face operatively spaced from the shaft;

two upper arcuate bearing pads for spacing said shaft away from said casing above the horizontal centerline of the shaft, each upper pad being arcuately smaller than said lower pad and the radial centerline of each upper pad being assymmetrically located with respect to the radial centerline of said lower pad and further with respect to the horizontal centerline of the shaft, each said upper bearing pad respectively including an arcuately extending pad face operatively spaced from the shaft; and

lubricating means for lubricating each pad, said lubricating means including a feed dam respectively associated with each pad, each feed dam located proximate the leading edge of its corresponding pad, each feed dam including a respective damming ridge extending radially inward from said casing, each damming ridge including an arcuately extending face operatively spaced from the shaft wherein



the respective face of each respective damming ridge is operatively radially spaced from the shaft a distance greater than the operative radial spacing of the respective corresponding pad face from the shaft, each said feed dam defining a respective channel between the trailing edge of said respective ridge, the leading edge of said respective corresponding pad and a respective radially inner channel surface of each said respective feed dam, each said respective channel surface operatively spaced from the surface of the shaft, said lubricating means further including supply means for delivering oil into each said channel, thereby creating a reservoir of oil in each said channel such that while rotating the shaft draws oil from said reservoir to form a continuously flowing film of oil across each pad face, said film of oil maintaining the shaft surface in non-wiping contact with each pad face.

4,497,588

PRINTING OR TYPING APPARATUS WITH A ROTATING PLATEN AS WELL AS GUIDE DEVICES FOR THE PAPER

Hans-Werner Volke, Salzkotten; Jürgen Hilkenmeier, Paderborn; Hermann Kohlhage, Paderborn, and Udo Tewes, Paderborn, all of Fed. Rep. of Germany, assignors to Nixdorf Computer AG, Fed. Rep. of Germany

Filed Sep. 30, 1982, Ser. No. 430,436

Claims priority, application Fed. Rep. of Germany, Apr. 20, 1982, 3214634

Int. Cl.³ B41J *13/10*

U.S. Cl. 400—645.1 **3 Claims**

1. In a printer apparatus of the type having a roller platen rotatably mounted in a housing, a printer carrier movable in a line direction across the platen, and a printer unit mounted on the carrier, the improvement which comprises:

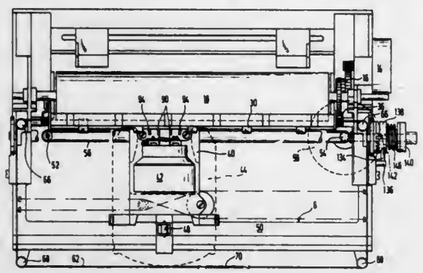
a single flexible strip of material mounted in an essentially closed loop within said housing and having a portion extending along said platen between the platen and the printer unit for holding paper into contact with the platen;

a plurality of at least three spaced roller means mounted in said housing for collectively supporting said strip in said

closed loop configuration and for permitting movement of said strip in said line direction relative to said platen;

means securing said strip to said printer carrier whereby movement of said carrier causes synchronous movement of said strip relative to said platen;

an aperture formed in said strip in the area of said printer



unit to permit said printer unit to access paper through said strip; and

said strip being constructed with spaced apart terminal ends, the combination further including spring means joining said terminal ends, said spring and said strip together creating a closed loop, said spring serving to maintain tension on said strip.

4,497,589

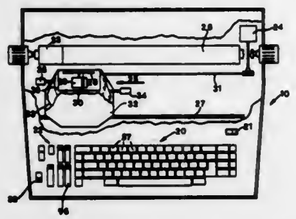
ELECTRONIC TYPEWRITER WITH MEANS FOR POSITIONING THE TYPED MEMBER

Mario Figini, B. Marengo, Italy, assignor to Ing. C. Olivetti & C., S.p.A., Ivrea, Italy

Division of Ser. No. 120,781, Feb. 12, 1980, abandoned. This application Aug. 16, 1982, Ser. No. 408,428

Int. Cl.³ B41J *29/44, 29/48*

U.S. Cl. 400—706 **8 Claims**



1. An electronic typewriter comprising line spacing means actuatable for line spacing a recording sheet;

selection key means for selecting a line space pitch as a set multiple of an elementary line step;

a line space command operable to actuate said line spacing means according to said set multiple of an elementary line step;

a line space memory capable of storing a number of elementary line steps which can be typed on the recording sheet;

a control circuit responsive to each operation of said line space command, to said line space memory and to a selected line space pitch for calculating a number of permitted operations of said line spacing command which can still actuate said line spacing means before the last line to be typed on the recording sheet;

comparing means for comparing said number of permitted operations with a given reference number of lines; and

a display device controlled by said control circuit and by said comparing means to display said number of permitted operations when said number is not more than said reference of lines.

4,497,590

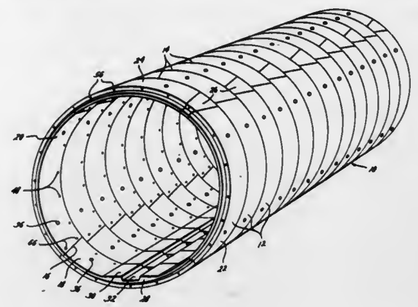
TUNNEL LINING

Arthur P. Chase, Potomac, Md., assignor to CRS Group, Inc., Houston, Tex.

Filed Mar. 8, 1982, Ser. No. 356,133

Int. Cl.³ E21D *11/00*

U.S. Cl. 405—152 **14 Claims**



1. A prefabricated cylindrical tunnel lining comprising

a plurality of annular reinforced concrete rings fastened to each other in longitudinally abutting relationship along a plurality of abutting circumferential joints;

each of said rings comprising a plurality of reinforced concrete arcuate ring segments fastened to each other in circumferentially abutting relationship along a plurality of generally longitudinal joints;

each of said arcuate ring segments having first and second circumferential edges for defining said circumferential joints and first and second generally longitudinal edges for defining said generally longitudinal joints;

said first and second circumferential edges having generally mating stepped annular configurations comprising at least three intersecting stepped edge surfaces, with the circumferential stepped edge on each arcuate ring segment in one ring being configured to mate with the stepped edge of the adjacent arcuate segments of the next longitudinally adjacent ring to provide a generally mating stepped annular configuration for said plurality of circumferential joints;

means for accommodating limited non-circular alignment between said circumferentially abutting ring segments while preserving maximum contact areas between said circumferentially abutting ring segments for structural strength, said means comprising said first and second longitudinal edges having generally mating annular arcuate configurations with the longitudinal arcuate edge on each ring segment being configured to mate with the longitudinal arcuate edge on the next circumferentially adjacent ring segment in abutting relationship to provide a generally mating annular arcuate ring configuration for said plurality of generally longitudinal joints.

4,497,591

ADVANCING MECHANISM AND SYSTEM UTILIZING SAME FOR RAISING AND LOWERING A WORK PLATFORM

Don A. Gillis, 208 N. Western Ave., Wenatchee, Wash. 98801

Filed Sep. 6, 1983, Ser. No. 529,358

Int. Cl.³ E02B *17/08;* B66F *1/00*

U.S. Cl. 405—198 **12 Claims**

1. An advancing mechanism, comprising:

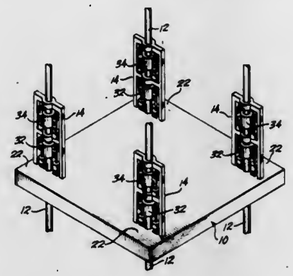
an elongated guide member, including at least one rack extending along a side thereof;

a movable member guided for movement along said guide member;

a pair of spaced apart pinion wheel supports, each carrying a pinion wheel which engages the rack, and each pinion wheel support including an extendible-retractable lock element having an end portion which when the lock element is extended is in locking engagement with tooth portions of the pinion wheel, and when retracted is out of engagement with tooth portions of the pinion wheel; and

a separate extendible-retractable hydraulic cylinder interconnected between each pinion wheel support and the movable member,

whereby the lock element associated with a first one of the pinion wheel supports can be extended into locking engagement with tooth portions of its pinion wheel, to in that manner prevent rotation of such pinion wheel and hold it in position relative to the guide member, while at



the same time the hydraulic cylinder connected to the first pinion wheel support is extended or retracted to move the movable member in position relative to the first pinion wheel support and the guide member, and at the same time the lock element associated with the pinion wheel carried by the second pinion wheel support is retracted into an unlocked position, allowing its pinion wheel to rotate along the rack carried by the guide member, and the second cylinder is moved to a starting position, so that at the end of the stroke of the first cylinder the second lock element can be advanced to lock its pinion wheel in position relative to the guide member, the first lock element can be retracted to free its pinion wheel from rotation along the rack carried by the guide member, and then the second cylinder can be operated to advance the movable member and the first cylinder can be returned to a start position.

4,497,592

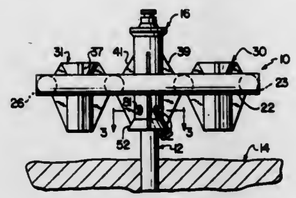
SELF-LEVELLING UNDERWATER STRUCTURE

John E. Lawson, London, England, assignor to Armco Inc., Middletown, Ohio

Filed Dec. 1, 1981, Ser. No. 326,330

Int. Cl.³ E02B *17/00;* E02D *5/54;* E21B *33/047*

U.S. Cl. 405—202 **10 Claims**



1. In an underwater well structure, the combination of an elongated substantially upright support fixed to the floor of the body of water against lateral and vertical movement and projecting upwardly from the floor;

an underwater structure including a levelling and supporting unit having an upper end portion, a lower end and a longitudinal axis,

a pivot device disposed to coact between the upper end portion of the levelling and supporting unit and the upright support to support the underwater structure on the upright support with freedom of pivotal movement about all axes transverse to the upright support,

the levelling and supporting unit being hollow and having transverse dimensions such that the unit surrounds and is spaced outwardly from the upright support at the lower end of the unit and for at least a substantial portion of the length of the unit commencing at the lower end of the unit;

the underwater structure having an even distribution of weight on opposed transverse sides of the longitudinal axis of the levelling and supporting unit;

the underwater structure, when supported on the upright support gravitating to a position in which the longitudinal axis of the unit is vertical whether or not the upright support is vertical; and

securing means engageable between the levelling and supporting unit and the upright support, in a location spaced substantially from the upper end of the unit, for securing the unit in its vertical position to the upright support.

4,497,593

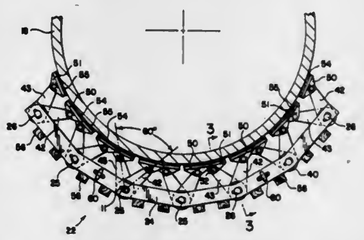
FLOATING STRUCTURES

James H. Kramer, Akron, Ohio, assignor to The B. F. Goodrich Company, New York, N.Y.

Filed Oct. 13, 1982, Ser. No. 434,029

Int. Cl.³ B63B *59/02;* E02B *3/22;* F16F *1/14*

U.S. Cl. 405—212 **8 Claims**

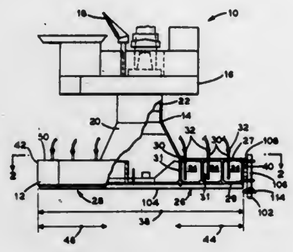


1. A fender system for a floating structure wherein said structure has a deck and a plurality of depending support columns, said fender system having a plurality of vertically spaced horizontally extending rail members, said horizontal rail members are interconnected by a plurality of shafts extending therethrough, torsion spring means are mounted on each of said shafts, each of said spring means having a cylinder mounted on said shafts, a pair of vertically spaced sleeves mounted in concentric relationship on each of said cylinders, an annulus of elastomeric material located between each of said pair of sleeves and said cylinders that are concentrically spaced therefrom, each of said annulus of elastomeric material having an inner surface and an outer surface that are secured to said cylinders and said sleeves respectively providing a yieldable torsion member, an arm member keyed to each of said sleeves forming pairs of arm members, each pair of arm members are off-set relative to the center line of the shaft on which said pair of arm members are located, each of said arm members having a pad thereon for contacting one of said columns, said arm member diverging from said shaft in each pair of said sleeves, and said fender system being mounted on said columns for abutting contact of said pads with said columns.

4,497,594
OFFSHORE STRUCTURE AND METHOD OF SINKING SAME

Derek T. Fern, Gretna, La., assignor to McDermott Incorporated, New Orleans, La.

Filed Sep. 30, 1982, Ser. No. 429,895
Int. Cl.³ E02B 17/00
U.S. Cl. 405—217 18 Claims



1. A method for sinking a structure having a first end portion and a second end portion to the sea bed comprising the steps of: a. ballasting said first end portion of the structure to sink said first end portion to the sea bed while said second end portion is closed to ballast; b. ballasting said second end portion of the structure, after said first end portion is sunk, to sink said second end portion to the sea bed; c. attaching at least one removable buoyancy member to the structure during at least one of steps a and b to maintain stability of the structure; d. attaching at least two piles at the end corresponding to said first end portion of the structure; e. spacing the piles over the length of said end; and f. fixedly positioning the piles vertically so that bottom portions thereof are lower than a skirt on the structure to absorb the force of impact of said first end portion with the sea bed and to maintain the skirt out of contact with the sea bed until both ends of the structure have been sunk to the sea bed.

4,497,595
METHOD OF BONDING ROOFBOLT RODS TO BOLTHOLES

Frank Meyer; Wolfgang Cornely, and Hans Mehesch, all of Essen, Fed. Rep. of Germany, assignors to Bergwerksverband GmbH, Essen, Fed. Rep. of Germany

Filed Jan. 10, 1983, Ser. No. 456,751
Claims priority, application Fed. Rep. of Germany, Jan. 12, 1982, 3200574
Int. Cl.³ E21D 20/02, 21/00
U.S. Cl. 405—261 11 Claims

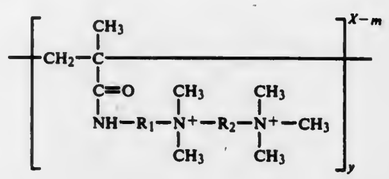
1. In a method of bonding roofbolt rods to boltholes of the type in which the roofbolt rod is pushed under rotating movements into a bolthole filled with an adhesive mass comprising a mix by whose reaction is obtained polyurethane, the improvement comprising using a mass comprised of polyisocyanate-prepolymerides which has been prepared from polyisocyanates and one or more polypropylene-glycols in a molecular weight range between 800 and 5,000, and mixing said means in the bolthole with 1 to 25% by weight (related to the mass) of water and/or polyols serving as the hydroxyl component.

4,497,596
METHOD OF MINIMIZING FINES MIGRATION IN A SUBTERRANEAN FORMATION

John K. Borchardt, and Bill M. Young, both of Duncan, Okla., assignors to Halliburton Company, Duncan, Okla.

Filed Mar. 24, 1983, Ser. No. 478,573
Int. Cl.³ E02D 3/12
U.S. Cl. 405—263 20 Claims

1. A method of stabilizing fines within a permeable formation comprising contacting said fines with an effective amount of a polymer having repeating monomer units of the general formula:



wherein

R_1 is an alkyl group having from about 2 to about 5 carbon atoms, and preferably propyl;

R_2 is an unsubstituted alkyl group having from about 2 to about 6 carbon atoms or a substituted alkyl group having from about 2 to about 6 carbon atoms and containing a hydroxy group or from about 1 to about 3 ether groups, and preferably 2-hydroxypropyl;

X is an anion selected from the group consisting of chlorine, bromine, iodine, sulfate, hydroxyl, methyl sulfate and mixtures thereof;

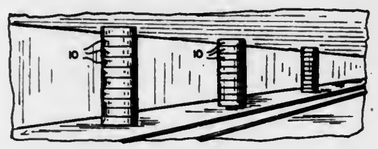
m is an integer equal to the number of anions required to maintain electronic neutrality; and,

y is an integer equal to the number of monomer units in said polymer required to increase the viscosity of deionized water to from about 250 centipoises to about 10,000 centipoises said viscosity of said polymer being measured by adding 40 grams of the polymer to 60 grams of deionized water to form a solution and measuring said viscosity of said solution on a Brookfield Model LVT viscometer, No. 3 spindle, 6 r.p.m. at about 76° F.

4,497,597
CRIBBING

Nicholas Chlumecky, Youngstown, Ohio, assignor to Commercial Shearing, Inc., Youngstown, Ohio

Filed Aug. 25, 1982, Ser. No. 411,583
Int. Cl.³ E21D 11/00
U.S. Cl. 405—288 8 Claims



1. A yieldable, deformable crib member for use in superimposed layers one upon another as cylindrical hollow cribbing in an underground cavity comprising a portable concrete annulus of greater diameter than height having an unsupported center opening and at least one annular metal retaining member surrounding the outside periphery of said member and firmly attached thereto.

4,497,598
METHOD AND APPARATUS FOR CONTROLLED RATE FEEDING OF FLUIDIZED SOLIDS

William A. Blanton, Woodacre, Calif., assignor to Chevron Research Company, San Francisco, Calif.

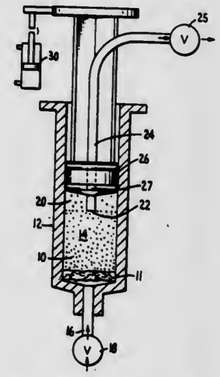
Filed Nov. 19, 1982, Ser. No. 443,117
Int. Cl.³ B65G 53/24
U.S. Cl. 406—114 8 Claims

1. A method of controlling the rate of flow at a known density of fluidized solids being fed into a process which comprises:

confining a bed of solid particles to be fluidized to a lower portion of a chamber;

extending at least one moveable conduit through the upper portion of said chamber having an upper vapor space, said conduit being within a moveable piston member having a sliding peripheral seal and an inlet that extends beyond said piston, said piston member positionable by said conduit at a selectable height above said bed;

flowing a transporting and fluidizing fluid uniformly upwardly through said bed of solid particles in said chamber



defined by said piston member to fluidized particles uniformly over the upper portion of said bed into said vapor space for flow into said conduit inlet;

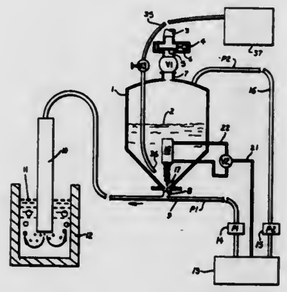
adjusting the distance said moveable conduit extends into said chamber and the flow rate of said fluid to obtain a desired flow of particles in said fluid as a stream through said inlet; and

moving said moveable conduit inlet to maintain a substantially constant flow rate of fluidized particles in said stream.

4,497,599
SYSTEM FOR PREVENTING CLOGGING OF THE OUTLET ORIFICE OF A DISPENSER TANK CONTAINING POWDERED REAGENT AND AUXILIARY TANK DISCHARGE MEANS

Victor Benatar, Atlanta, and Walter R. Wilburn, Calhoun, both of Ga., assignors to Advance Engineering, Inc., Decatur, Ga.

Continuation of Ser. No. 246,703, Mar. 23, 1981, abandoned.
This application Apr. 19, 1983, Ser. No. 484,301
Int. Cl.³ B65G 53/46
U.S. Cl. 406—132 9 Claims

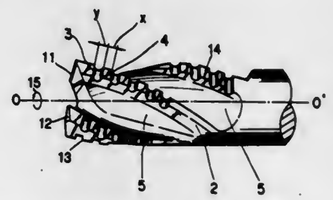


1. In a system for discharging powdered reagent from a dispenser tank under pressure P_2 and having a discharge orifice in communication with a carrier gas conduit under pressure P_1 which is less than pressure P_2 and which is arranged to receive and to convey the powdered reagent to a point of use, an arrangement including a plunger having a diameter less than the diameter of said orifice and being reciprocably movable through said orifice for engaging and crumbling globules of material which are of sufficient size and orientation as to interfere with normal discharge of powdered reagent through said orifice, fluid actuated operating means disposed within said tank and having an operating cylinder and piston which are subjected to operating pressure which is isolated from the pressure P_2 and from the powdered reagent within said dispenser tank for imparting reciprocable movement to said plunger, and a closure element mounted on and movable with said plunger and arranged to engage and to disengage a part of said dispenser tank adjacent to but spaced from said orifice so as effectively to prevent and to allow passage of reagent through said orifice respectively, said closure element being larger than said orifice such that compaction of powdered reagent in close proximity to said orifice may tend to clog said orifice, said closure element being configured to provide space for accommodating powdered reagent which is in close proximity to said orifice thereby to prevent clogging of said orifice by said powdered reagent.

4,497,600
END MILL

Kiyoshi Kishimoto, Osaka, Japan, assignor to Kabushikigaisha Nippon Kogu Seisakusho, Osaka, Japan

Filed Apr. 7, 1983, Ser. No. 482,973
Claims priority, application Japan, Sep. 8, 1982, 57-156148
Int. Cl.³ B26D 1/12
U.S. Cl. 407—53 3 Claims

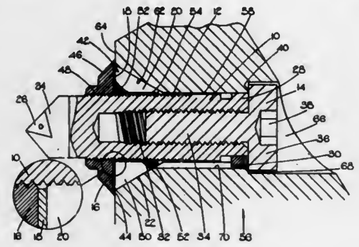


1. An end mill comprising:

a main body having a tool end and a shank end and rotatable in one direction for performing a milling operation;

at least three of helical blades extending along said main body from said tool end toward said shank end and having helical flutes therebetween defining said blades, the outer peripheral surfaces of said blades each having a plurality of transverse notches spaced therealong in the direction of the length of said main body and at predetermined intervals with the notches in each blade shifted a distance Z in one longitudinal direction of the main body from the corresponding notches in the blade which precedes said blade in the rotation of said main body during a milling operation, said distance Z being according to formula: $Z=(X+Y/N)$ where N is the number of blades, X is the distance along the blade surface between the notches and Y is the dimensions of the notches along the blade surface, said notches being inclined in the direction from the leading side of the blade during rotation to the trailing side of the blade in a direction opposite to the direction in which the notches are longitudinally shifted relative to the notches in a preceding blade.

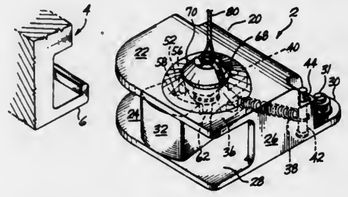
4,497,601
CUTTING TOOL
Terence I. Negus, Camborne, England, assignor to Multi Bar Systems Ltd., Cornwall, England
Filed Oct. 12, 1982, Ser. No. 433,661
Int. Cl.³ B23B *29/02*
U.S. Cl. 408—156 **14 Claims**



1. A cutting tool removably mountable for use on a tool holder of a machine tool wherein the tool holder has a bore, a tapered recess extending inwardly from one end of the bore and a first abutment surface at the outer end of said tapered recess, the cutting tool comprising:
- an adjustable body member adapted to be axially slidable in the bore of the tool holder having an outer end adjacent the tapered recess end of the bore;
- a cutting tip on said outer end of said body member;
- an external screw-thread on said body member;
- an adjusting member having an internal screw-thread cooperatively engaging said external screw thread on said body member adjacent said outer end thereof;
- an abutment surface on said adjusting member adapted to be engageable with the first abutment surface on the tool holder;
- a tapered collet supported on said body member between said adjusting member and the tool holder having a tapered surface adapted to be cooperatively engageable with the tapered recess in the tool holder; and
- a releasable clamping member cooperatively engaging said body member and adapted to be operatively engageable with the tool holder;
- so that when said clamping member is in a released position said cutting tip may be displaced with respect to the tool holder by rotation of said adjusting member, and when said clamping member is in a clamping position for use said abutment surface on said adjusting member is held tightly against the first abutment surface of the tool holder and said tapered collet is compressed inwardly by the tapered recess in said tool holder into clamping engagement with said adjustable body member to rigidly fix said cutting tip with respect to the tool holder.

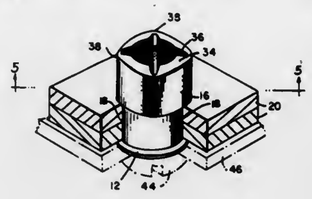
4,497,602
LOCKING DEVICE
Karen McCarthy, Kirkland, and Charles R. Prochaska, Auburn, both of Wash., assignors to The Boeing Company, Seattle, Wash.
Filed Mar. 4, 1983, Ser. No. 472,066
Int. Cl.³ B60P *7/08*
U.S. Cl. 410—69 **20 Claims**

1. Apparatus for restraining movement of a movable body in a given direction along a path out from a set position, comprising:
- a restraint member located at one side of the path of the movable body;
- mounting means for pivotally mounting the restraint member;
- releasable lock means for locking the restraint member into a blocking position in the path of the movable body to prevent unwanted movement of the movable body in said given direction out from its set position; and
- biasing means for biasing the restraint member into an unlocked center position in the path of the movable body; said biasing means allowing the restraint member to pivot in one direction out from the path of the movable body in response to the body being moved against said member as



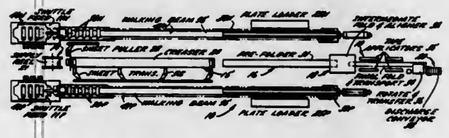
the body is being moved into its set position, and to pivot in the opposite direction out from the path of the movable body in response to the body being moved against said member as the body is being moved out from its set position; and said biasing means operating to pivot the restraint member back into the path of the movable body and into its blocking position following movement of the body into its set position.

4,497,603
PULL THROUGH BLIND RIVET
Donald A. Boucher, and Gilbert D. Boucher, both of Acushnet, Mass., assignors to USM Corporation, Farmington, Conn.
Filed Jun. 28, 1982, Ser. No. 392,705
Int. Cl.³ F16B *13/04, 37/04*
U.S. Cl. 411—34 **2 Claims**



1. A pull through type blind rivet comprising:
- a. a rivet having a cylindrical body portion being open at one end and terminating in a flanged head at the opposite end, the flanged head being adapted to be placed against the surface of a workpiece with said body portion being adapted to be inserted into an opening in the workpiece and extend beyond the opposite surface of the workpiece;
- b. said cylindrical body portion having an uninterrupted cylindrical surface throughout its longitudinal extent and terminating in said open end having an uninterrupted circular configuration;
- c. a mandrel having a stem adapted to be inserted into said rivet through said open end with said stem terminating in a head portion adapted to abut against said rivet open end;
- d. said mandrel having a predetermined head configuration said predetermined head configuration having means to form the open end of the rivet into a plurality of inwardly extending flanges and means to upset said rivet body into a rectangular shape, said flanges being adapted to threadably receive a screw fastener.

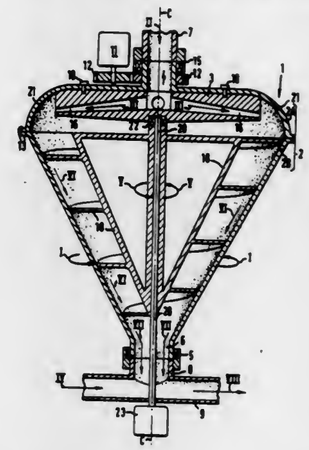
4,497,604
APPARATUS AND METHOD FOR SUPPLYING ELECTRODE PLATES IN THE ASSEMBLY OF BATTERY CELL ELEMENTS
Anthony Sabatino, St. Paul, Minn.; Daniel Orlando, New Berlin, Wis., and Douglas J. Olszewski, Inver Grove Heights, Minn., assignors to GNB Batteries Inc., Mendota Heights, Minn.
Filed Aug. 9, 1982, Ser. No. 406,645
Int. Cl.³ H01M *10/14*
U.S. Cl. 414—131 **27 Claims**



1. In an apparatus for assembling battery cell elements having a plurality of electrode plates of alternating polarity comprising:
- plate feed means including means for containing at least one vertical stack of plates of common polarity and means for successively dispensing single plates from each said stack,
- transfer means for successively receiving plates from said dispensing means and moving the plates into a row with the plates uniformly spaced and commonly oriented,
- means for simultaneously removing from said transfer means the total number of plates of common polarity required for the assembly of a cell element,
- means cyclically operating said plate dispensing means and plate removing means, and
- said removing means being operable to remove during each cycle of operation a number of plates at least equal in number to those dispensed during each cycle of operation by said dispensing means.

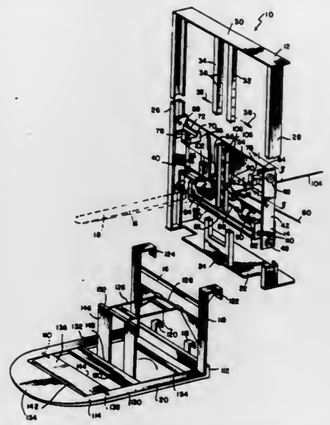
4,497,605
CENTRIFUGAL PUMP FOR TRANSFERRING SOLID PARTICLES FROM A LOW PRESSURE ZONE INTO A HIGH PRESSURE ZONE
Franciscus H. J. Bukkems, and Bernardus B. Quist, both of Amsterdam, Netherlands, assignors to Shell Oil Company, Houston, Tex.
Filed Feb. 4, 1983, Ser. No. 463,707
Claims priority, application United Kingdom, Jun. 30, 1982, 8218858
Int. Cl.³ B65G *33/20*
U.S. Cl. 414—218 **8 Claims**

1. A centrifugal pump for transferring solid particles from a low pressure zone into a high pressure zone, said pump comprising:
- an inlet and an outlet that are coaxial to a central axis;
- a centrifugal rotor and a housing that are rotatable about the central axis;
- said rotor centrifugally debouching particles into the interior of the housing; and
- screw conveyor transport means arranged for rotation in the housing at a speed different from that of the housing for



transporting particles over the inner surface of the housing to the outlet.

4,497,606
FORK LIFT TRUCK ATTACHMENT
Lloyd L. Hobson, 312 North East St., Elnora, Ind. 47529
Filed Jul. 19, 1982, Ser. No. 399,334
Int. Cl.³ B66F *9/06*
U.S. Cl. 414—607 **12 Claims**



1. An attachment for a lift truck having a vertically movable carriage, the attachment comprising:
- a frame,
- a carrier slidably engaged within the frame and attachable to the carriage of a lift truck, the carrier having at least one receiving pocket and gate means for substantially closing the receiving pocket, and
- a load-supporting element removably supported on the carrier, the load-supporting element including bracket means received in the receiving pocket of the carrier and retained therein by the gate means for maintaining the load-supporting element in operable position on the carrier, the gate means on the carrier comprising
- a pivot rod,

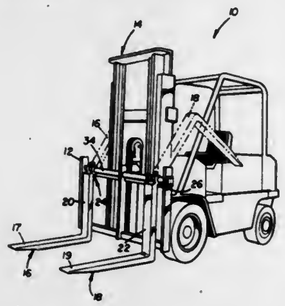
an inverted L-shaped locking element supported on the pivot rod,
biasing means for biasing the locking element toward a receiving pocket-closing position, and
an actuator for moving the locking element against the biasing means toward a receiving pocket opening position.

4,497,607

FORK POSITION RETAINER

Richard J. Johannson, Dallas, Oreg., assignor to Towmotor Corporation, Mentor, Ohio

PCT No. PCT/US82/00519, § 371 Date Apr. 22, 1982, § 102(e) Date Apr. 22, 1982
PCT Filed Apr. 22, 1982, Ser. No. 386,829
Int. Cl.³ B66F 9/14
U.S. Cl. 414—664 **9 Claims**



1. A carriage and fork assembly for a load handling vehicle (10) comprising
a carriage (12) mounted on said load handling vehicle (10), said carriage (12) having a mounting shaft (34);
a fork (18) having a load handling end (21) and a mounting end (26);
means (28, 30, 40) for selectively fixing the linear position of said mounting end (26) of said fork (18) at any position along said shaft (34) permitting rotation of said fork (18) about said shaft at said selected position and preventing linear movement of said fork at any rotated position.

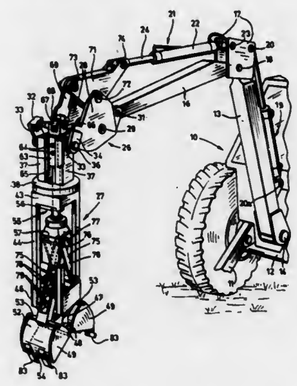
4,497,608

MONUMENT FOUNDATION DIGGER

Roy J. P. Sheppard; Howard S. Thornhill, and Mark S. Francis, all of Willowdale, Canada, assignors to The Trustees of The Toronto General Burying Grounds, Toronto, Canada

Filed Jun. 13, 1983, Ser. No. 503,661
Int. Cl.³ E02F 3/44, 3/81
U.S. Cl. 414—726 **15 Claims**

1. A digger attachment for the dipper stick of a backhoe comprising an attachment frame adapted to be secured to the free end of the dipper stick, an elongated digger frame pivotally connected to the attachment frame and depending downwardly therefrom, a clam shell bucket at the lower end of the digger frame and having two shell sections each having a point of pivotal connection to a lower region of the digger frame about which the sections can swing between a closed position with the shell sections mutually adjacent and an open position with the shells spread apart, an operating shaft extending longitudinally of the digger frame, a connecting link pivotally connected to the operating shaft adjacent an upper end thereof, a rocking lever pivotally connected to the connecting link and to the attachment frame and having a coupling point for coupling with a piston of a cylinder and piston arrangement provided on the dipper stick, whereby rocking motion of the rocking lever alternately drives the connecting link and the operating shaft downwardly and upwardly, and an operating link pivotally connected at one end to each shell section and having its opposite end pivotally connected to the operating shaft whereby upward and downward movement of the operating shaft



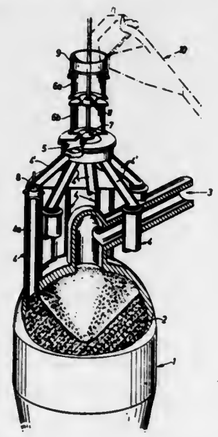
swings the shell sections between their open and closed positions.

4,497,609

METHOD AND DEVICE FOR CONTINUOUS SUPPLY OF LUMPS OF MATERIAL TO A SHAFT

Sven O. Santén, Hofors, Sweden, assignor to SKF Steel Engineering Aktiebolag, Hofors, Sweden

Filed Dec. 7, 1981, Ser. No. 327,936
Claims priority, application Sweden, Mar. 10, 1981, 8101494
Int. Cl.³ F27B 1/20
U.S. Cl. 414—786 **6 Claims**



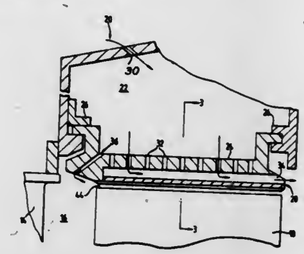
1. A method of withdrawing high temperature gas at a central upper portion of a shaft such that said high temperature gas is directed away from the upper periphery of the shaft and toward said central upper portion, said method comprising the steps of:
(a) providing supply means for supplying lump material to the shaft, said supply means having discharge means for discharging said material into said shaft substantially completely around and adjacent to the upper periphery of the shaft;
(b) feeding said material through said supply means into said shaft such that the shaft is continuously filled with said material substantially at least to the height of said discharge means thereby causing the upper surface of said material in said shaft to form an inverted cone extending downwardly from the periphery of the shaft to the center of the shaft such that the surface of the cone has a downward angle which substantially corresponds to the natural angle of repose of said material;
(c) passing high temperature gas upwardly through the shaft and through the material such that as the gas reaches the region of the inverted cone-shaped upper surface of the material it will tend to flow toward the central portion of the shaft, thereby reducing heat stresses from said high temperature gas on the inner surface of the shaft and the supply means;
(d) passing the high temperature gas upwardly through the inverted cone upper surface of the material centrally disposed gas outlet.

4,497,610

SHROUD ASSEMBLY FOR A GAS TURBINE ENGINE

David A. Richardson, Mickleover, and Michael H. Coney, Littleover, both of England, assignors to Rolls-Royce Limited, London, England

Filed Feb. 16, 1983, Ser. No. 467,078
Claims priority, application United Kingdom, Mar. 23, 1982, 8208494
Int. Cl.³ F01D 11/08
U.S. Cl. 415—116 **6 Claims**



1. A shroud assembly for a gas turbine engine comprising: a housing defined in part by a relatively thick and stiff boundary wall member, said boundary wall member having apertures for through flow of a cooling fluid, said boundary wall member further having a plurality of projections extending away from said housing, and a skin attached to said projections of said boundary wall member to define a plurality of spaces therewith into which said cooling fluid flows from said apertures in said boundary wall member, said skin defining in part an annular passage in the gas turbine engine for through flow of motive gases, said skin comprising an inner relatively thin, flexible metallic layer as compared to said boundary wall member and an outer layer of ceramic coating for contact by said motive gases, said boundary wall member and said skin further defining outlet passages for exhausting said cooling fluid adjacent a downstream end of the shroud assembly.

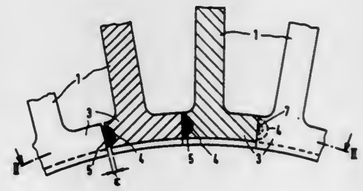
4,497,611

DEVICE FOR VIBRATION DAMPING IN A GUIDE VANE RING

Herbert Keller, Mülheim, Fed. Rep. of Germany, assignor to Kraftwerk Union Aktiengesellschaft, Mülheim, Fed. Rep. of Germany

Filed Mar. 24, 1983, Ser. No. 478,286
Claims priority, application Fed. Rep. of Germany, Mar. 25, 1982, 3211073
Int. Cl.³ F01D 5/16
U.S. Cl. 415—191 **9 Claims**

1. Vibration damping guide vane ring assembly of an axial flow turbomachine, comprising mutually adjacent guide vanes disposed between first and second spaces on opposite sides of the guide ring vane ring, individual cover plates each being rigidly connected to a respective guide vane forming a cover band of the guide vane ring, said cover plates being frictionally connected to each other at mutual contact surfaces thereof;
said cover plates of said adjacent guide vanes having wedge-shaped recesses formed in said contact surfaces between said cover plates, said recesses defining inclined surfaces of said cover plates extended between a wider and a narrower end of said recesses, and wedge-shaped damping elements being movably inserted in said recesses, said damping elements having surfaces matching said inclined surfaces of said cover plates extended between a wider and a narrower end of said damping elements;



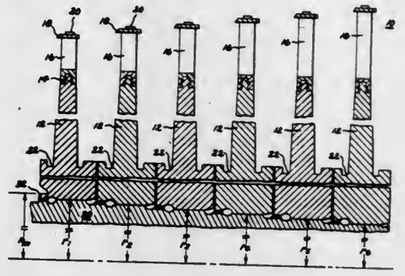
said wider ends of said recesses and said wider ends of said damping elements being in communication with said first space, said narrower ends of said recesses and said narrower ends of said damping elements being in communication with said second space, said first space having a greater pressure than said second space defining an axial pressure difference, each of said wedge-shaped damping elements being pressed into said recesses for exerting a vibration damping pressure on said respective cover plates through said surfaces of said damping elements in response to said axial pressure difference across the guide vane ring during operation of the turbomachine.

4,497,612

STEAM TURBINE WHEEL ANTIROTATION MEANS

Victor J. Knorowski, Rexford, and Daniel J. Sheflin, Schenectady, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Nov. 25, 1983, Ser. No. 555,179
Int. Cl.³ F01D 5/06
U.S. Cl. 416—198 A **13 Claims**



1. In a steam turbine, a rotor comprising:
a multi-stepped shaft rotatably mounted within said steam turbine, each step having a substantially uniform radius over its axial expanse and at least some of the steps having sequentially decreasing radii along an axial segment of said shaft from a maximum radial portion of said shaft;
each of the sequential steps having a step surface which includes a pair of substantially parallel circumferential grooves thereon, the axially fore groove is adjacent the preceeding step having a greater radius and the axially aft groove is axially spaced apart from but proximate to the

next succeeding step having a lesser radius, each step surface having a longitudinal slot thereon axially extending between said aft groove and the axially aft edge of said step, and said slot having a depth less than that of said aft groove;

a plurality of wheels being associated with said sequential steps, at least one wheel of said plurality of wheels being secured to each sequential step by an interference shrink fit between the radially inner surface of the hub section of said one wheel and the corresponding step surface, said interference fit preventing rotation between said wheels and said shaft during normal steam turbine operations, and each wheel including, at its radially outermost portion, a plurality of steam turbine blades;

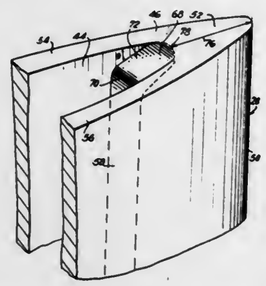
the hub section of said wheels having a shoulder portion at each axial end of said radially inner surface, said shoulder having a greater radial dimension than said inner surface, and said hub section having at least one discrete radially inward disposed member protruding from the shoulder at one axial end of said hub section, said member being axially spaced away from said inner surface by a discrete arcuate groove circumferentially oriented on said shoulder, said member being matingly engageable with the slot proximate said one axial end, and the member's leading face being in contact with the slot's leading side wall such that said member prevents rotation of said wheel relative to said shaft if said interference fit should loosen.

4,497,613

TAPERED CORE EXIT FOR GAS TURBINE BUCKET

Diether E. Carreno, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Jan. 26, 1983, Ser. No. 461,007
Int. Cl.³ F01D *5/10*
U.S. Cl. 416—228 **6 Claims**



1. A turbine bucket of the type having an aerodynamic section, a shank section and a dovetail section, comprising:

a cavity in said aerodynamic section extending inward from a tip of said aerodynamic section, said cavity defining walls adjacent thereto;

an uncored section between said cavity and at least one of a trailing edge and a leading edge of said bucket;

a transition between an end of said cavity adjacent said uncored section and said tip;

said transition including a curved portion curved toward said uncored section and a ramp portion continuing in said uncored section, said ramp portion including a first end joining said curved portion and a second end exiting said cavity at an extremity point of said ramp portion;

said curved portion beginning within said cavity radially inward of said tip between said walls at a radial distance from said tip; and

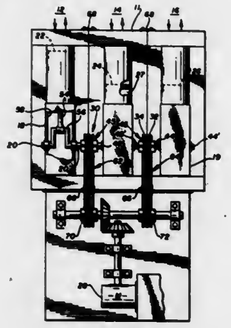
said radial distance and said at least a curved portion being effective to displace a location of a maximum stress concentration produced by at least one vibration mode a sufficient distance from said tip within said cavity from a location of a maximum stress concentration produced by at least one other source of stress concentration that crack initiation in said walls is inhibited.

4,497,614

HELICOPTER TRANSPORTABLE MUD PUMP

Shelby T. Frink, Odessa, Tex., assignor to Oime, Inc., Odessa, Tex.

Filed Mar. 14, 1983, Ser. No. 474,993
Int. Cl.³ F04B *19/00, 39/14;* F16D *1/00*
U.S. Cl. 417—238 **5 Claims**



1. In a multi-stage pump assembly separable into three individual stages to facilitate transport thereof from one to another geographical location; wherein each individual stage includes a simplex pump having a crankshaft, a piston connected to said crankshaft and reciprocatingly received within a cylinder, and a crankshaft housing; said crankshaft extends laterally respective to said cylinder and away from said housing so that a prime mover can be connected thereto; the combination with said multi-stage pump assembly of a coupling means by which the adjacent shaft ends of adjacent stages can be connected together to cause the piston of each stage to be arranged in timed relationship respective to the other pistons of the other stages;

said coupling means includes a first and second coupling half which can be attached to adjacent shaft ends of adjacent stages to connect one stage to another stage;

each coupling half has a face formed thereon which confronts the face of the other half of the coupling means, and a drive means conneoting the two coupling halves together so that the shafts remain in the same relative position respective to one another;

each said coupling half is substantially identical to other of the coupling hales and include means forming indicia thereon, the indicia is located respective to the location of the crank of the crankshaft whereby each piston of each stage is timed 120° respective to one another;

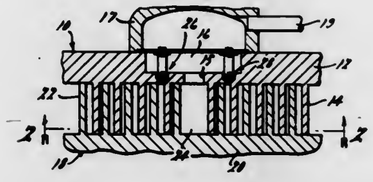
means forming a chain sprocket on each said coupling member; the drive means includes two rows of endless chain arranged to be placed in meshed relationship to a drive sprocket, wherein the drive sprocket includes a row of teeth for meshing with each endless chain; whereby the two rows of chain can be meshed with the coupling member and the drive sprocket and thereby maintain the coupling members properly indexed respective to one another.

4,497,615

SCROLL-TYPE MACHINE

Russell W. Griffith, Troy, Ohio, assignor to Copeland Corporation, Sidney, Ohio

Filed Jul. 25, 1983, Ser. No. 516,773
Int. Cl.³ F04C *18/02, 29/08*
U.S. Cl. 417—310 **10 Claims**



1. A scroll member suitable for constructing a scroll apparatus, comprising:

(a) an end plate having a generally flat sealing surface;

(b) a spiral wrap having a beginning and an end and being attached to said end plate and projecting outwardly from said sealing surface;

(c) a valve port extending through said end plate intermediate of said beginning and said end of said spiral wrap, said port being generally kidney shaped in plan,

one edge of said port lying immediately adjacent said wrap and being similar in shape thereto in plan; and

(d) a pressure responsive valve disposed in said valve port, said valve being generally kidney shaped in plane and substantially flush with said sealing surface.

4,497,616

HYDRAULICALLY-OPERATED PUMP JACK WITH CHAIN DRIVE

Raymond E. Ratell, Jr., Rte. 305, R.D. #4, Warren, Ohio 44481

Filed May 9, 1983, Ser. No. 493,070
Int. Cl.³ F04B *47/04*
U.S. Cl. 417—390 **20 Claims**



1. A pump jack for pumping a liquid such as oil, brine and the like from a well having a casing at its head and a tube on said casing through which the polish rod at the top of a string of sucker rods extends outwardly and upwardly therefrom, said casing providing an exit for the pumped liquid, said pump jack comprising:

a tower disposed upright at the well head, said tower including two elongated vertically-disposed side plates held in facing spaced-apart relation by an elongated vertically-disposed intermediate plate extending crosswise of said side plates,

a hydraulic cylinder having one end secured to said tower near a lower end thereof, said cylinder having a piston rod extending outwardly of the opposite upper end thereof,

rotatable sprocket means supported on a shaft carried near the upper end of said tower,

chain means having one end connected for lifting and lowering movement to said piston rod of said cylinder upper end, said chain means extending upwardly and over and around said sprocket means and downwardly therefrom and having its other end connected to an upper portion of said polish rod,

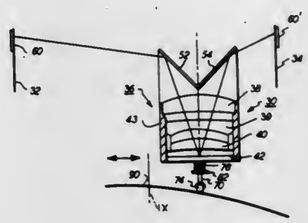
said hydraulic cylinder being constructed and arranged so that the piston therein is driven in a direction toward its said one end to lift said polish rod, with said hydraulic cylinder being vertically-disposed and having its lower end secured to at least certain of said side and intermediate plates and located at one side surface of said intermediate plate, the latter terminating at its upper end short of said rotatable sprocket means and said sprocket means located so that said chain means extends upwardly from its connection to said cylinder adjacent to said one side surface of said intermediate plate and extends downwardly from said sprocket means for connection to said polish rod adjacent to the opposite side surface of said intermediate plate whereby the latter is in position to reenforce against stress generated when said polish rod is raised and lowered.

4,497,617

OPTICAL SYSTEM UTILIZING A VARIABLE FOCAL LENGTH REFLECTOR LENS

Edgar E. Price, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Sep. 13, 1982, Ser. No. 417,786
Int. Cl.³ G02B *15/14, 17/00*
U.S. Cl. 350—425 **3 Claims**



1. An optical system for projecting an image of an object at an object plane onto an image plane at a plurality of magnifications, said system including a lens assembly having the following elements in alignment along the lens optical axis;

a fixed outer lens element,

at least one movable lens element spaced from said outer element and movable along said optical axis,

a reflector spaced from said movable element,

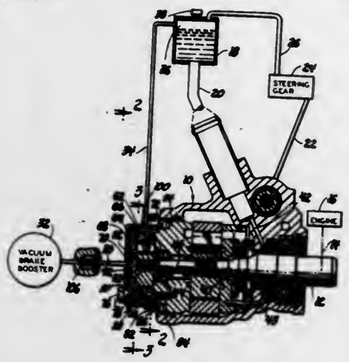
a first and second reflective element positioned proximate to said fixed outer lens element, said first and second reflective elements joined together to form at least a right angle, said optical axis intersecting said angle, said system further including means for moving said lens assembly between said object and image planes, while simultaneously moving said movable lens element along said lens optical axis.

4,497,618

COMBINED VACUUM PUMP AND POWER STEERING PUMP ASSEMBLY

Stanley E. Anderson, Saginaw, and Gary G. Hegler, Chesaning, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Sep. 12, 1983, Ser. No. 530,951
Int. Cl.³ F04C 11/00; F04B 23/00, 39/02
U.S. Cl. 418—212 2 Claims



1. In a combined power steering pump and vacuum pump assembly for an automotive vehicle wherein the pumps are arranged in tandem and driven by a common shaft and wherein the power steering pump is adapted to circulate hydraulic fluid in a power steering system while the vacuum pump is adapted to draw and discharge air to create a vacuum to operate one or more devices in the vehicle, an improved lubrication system comprising a vented reservoir connected to receive the discharge of the vacuum pump as well as supply the fluid for circulation by and lubrication of the power steering pump, and hydrodynamic seal means for sealing the vacuum pump from the power steering pump at the periphery of the shaft when the pumps are stopped and providing limited delivery of the fluid from the power steering pump to the vacuum pump axially along the periphery of the shaft when the pumps are running whereby the fluid in the power steering system is prevented from draining into the vacuum pump when stopped and is delivered thereto when running to lubricate same and is thence delivered with the discharge air to the reservoir so that there is no loss of the fluid from the power steering system in lubricating the vacuum pump.

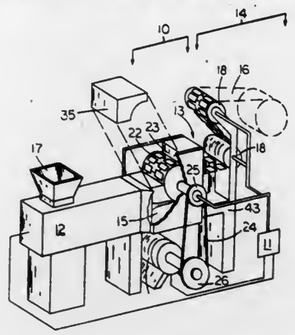
4,497,619

CONTINUOUS MOLDING APPARATUS

Anatolly Popow, 1810 Craig Rd., St. Louis, Mo. 63141

Filed Jan. 18, 1983, Ser. No. 458,787
Int. Cl.³ B29D 7/00
U.S. Cl. 425—75 12 Claims

1. A continuous molding apparatus comprising at least one endless molding means which is configured to the shape of the molded parts desired, means for injecting molten material to said endless molding means, means for operating said endless molding means in timed relationship with said injection means, and endless sliding and sealing means in continuous sliding and sealing contact with said endless molding means around the



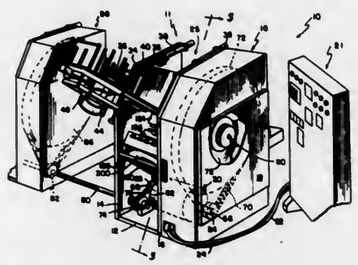
molded part configurations thereof for maintaining a continuous predetermined pressure, temperature, seal and confinement around the molded parts during the molding operation.

4,497,620

SMALL PRESS FOR FORMING SHEET MATERIAL

Edmond N. Dempsey, Marion, Ind., assignor to Peerless Machine & Tool Corporation, Marion, Ind.

Continuation-in-part of Ser. No. 382,716, May 27, 1982, Pat. No. 4,435,143. This application Jan. 17, 1983, Ser. No. 458,348
Int. Cl.³ B29C 1/00, 17/00
U.S. Cl. 425—145 22 Claims



1. A press for cutting and forming sheet material comprising a frame,

a head mounted for reciprocal movement on the frame between a blank-cutting position at one extreme of the head's reciprocal movement and a blank-forming position at the opposite extreme of the head's reciprocal movement,

cutting means for cutting sheet material and forming means for forming sheet material,

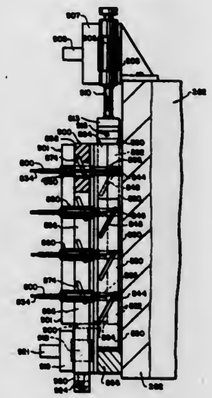
the cutting means being operatively engageable by the head at the blank-cutting position, and the forming means being operatively engageable by the head at the blank-forming position.

4,497,621

APPARATUS FOR SIMULTANEOUSLY DRIVING VALVE MEANS THROUGH CO-INJECTION NOZZLES OF A MULTI-CAVITY INJECTION MOLDING MACHINE

Frederick G. Knebert, Niles; Maurice G. Latreille, Batavia; William A. Tennant, Schaumburg, and Thomas T. Tung, Hoffman Estates, all of Ill., assignors to American Can Company, Greenwich, Conn.

Filed Apr. 13, 1983, Ser. No. 484,561
Int. Cl.³ B29F 1/03; B29D 9/00
U.S. Cl. 425—145 26 Claims



1. Apparatus for simultaneously driving each of a plurality of valve means identically through each of a plurality of co-injection nozzle means mounted in a multi-nozzle, multi-polymer injection molding machine, which comprises,

a plurality of co-injection nozzle means, each adapted to receive valve means, and each having plural passages for feeding plural polymeric materials,

a plurality of identical valve means one only being for each of the co-injection nozzle means and each adapted to operate therewithin to, in each nozzle means, identically initiate, regulate and terminate the flow of the respective, plural polymeric materials therethrough,

drive means adapted for simultaneously and identically driving the plurality of valve means, including common moving means to which each of the valve means is connected in a manner that simultaneously provides identical movements of each of the valve means within the co-injection nozzle means within which it operates, and provides in each nozzle simultaneous identical control over the initiation, regulation and termination of the flow of said plural polymeric materials through each of the co-injection nozzle means, and

control means connected to the common moving means, for moving the common moving means in a desired mode which provides said identical simultaneous movements and said identical simultaneous flow controls.

4,497,622

BLOW PIN ASSEMBLY

Thaddeus J. Grebowiec, Kansas City, Mo., assignor to Brockway-Imco Inc., Richmond, Va.

Filed Aug. 2, 1982, Ser. No. 404,413
Int. Cl.³ B29C 17/07, 17/12
U.S. Cl. 425—525 6 Claims

1. An apparatus for providing a rounded, dripless pour lip on a thermoplastic container blow molded from an extruded tube, said apparatus comprising:

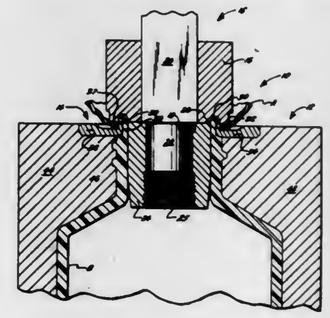
A. a split annular anvil having an upstanding collar said collar being defined by an annular outside wall, a single annular inside wall, which is concentric with said annular outside wall, and a sloping top wall downwardly and outwardly connecting said annular outside wall to said annular inside wall, and said split annular anvil being mounted to a split blow mold, which split blow mold defines a hollow mold space including a neck finish defining portion and which is adapted for the capture of and the blow molding of said extruded tube,

a. said annular outside wall of said split annular anvil and said annular inside wall of said split annular anvil both having a diameter that is less than the diameter of said neck finish defining portion of said blow mold whereby said dripless pour lip on said container has an outside diameter less than the outside diameter of the neck finish portion of said container;

B. a blow pin assembly reciprocally movable along the vertical axis of said hollow mold space, said blow pin assembly comprising,

i. a blow pin stem having a bore for the passage of blow air therethrough,

ii. a hollow blow pin tip mountable to the distal end of said blow pin stem and having an outside diameter less than said inside diameter of said split annular anvil, and



iii. a cutter mounted to said blow pin stem at a position above said blow pin stem and said blow pin tip, said cutter having an annular downwardly facing groove which has,

a. an inside diameter less than said inside diameter of said split annular anvil, and an outside diameter slightly greater than the diameter of said annular outside wall, whereby, said groove at its outside diameter is in neck moil shearing relationship with said annular mold when said blow pin assembly is lowered to position said blow pin tip within the neck finish defining portion of said hollow mold space, and

b. a concave surface which provides a lip forming cavity with said split annular anvil for forge forming said dripless pour lip on the upper portion of said captured extruded tube when said blow pin assembly is lowered to position said blow pin tip within said neck finish defining portion of said hollow mold space, said concave surface being located between said inside diameter and said outside diameter of said groove.

4,497,623

BLOW PIN ASSEMBLY

Joseph J. Beuscher, Independence, Mo., assignor to Brockway-Imco Inc., Richmond, Va.

Filed Aug. 9, 1982, Ser. No. 406,211
Int. Cl.³ B29C 17/07, 17/12
U.S. Cl. 425—525 4 Claims

1. An apparatus for providing a rounded, dripless pour lip on a thermoplastic container blow molded from an extruded tube, said apparatus comprising:

A. a split annular anvil,

i. having a single annular vertical wall defining its inside diameter,

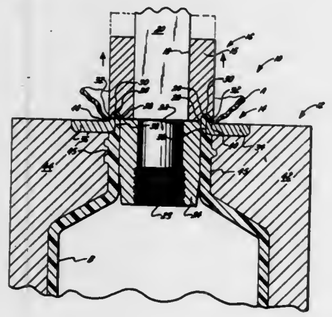
ii. having an annular top wall which slopes downwardly and outwardly from the upper extent of said annular vertical wall,

iii. being mounted to a split blow mold, said split blow mold defining a hollow mold space including a neck finish defining portion and being adapted for the capture of and the blow molding of said extruded tube,

iv. said inside diameter of said annular anvil being smaller than the inside diameter of said neck finish defining portion of said split blow mold to thereby provide a neck finish on said blow molded container having a vertical wall annular recess in the outer wall of said neck finish at the uppermost end thereof;

B. a blow pin assembly reciprocally movable along the vertical axis of said hollow mold space, said blow pin assembly comprising,

i. a blow pin stem having a bore for the passage of blow air therethrough,



ii. a hollow blow pin tip mountable to the distal end of said blow pin stem and having an outside diameter less than said inside diameter of said split annular anvil, and

iii. a cutter mounted to said blow pin stem at a position above said blow pin tip, said cutter having an annular downwardly facing groove which has the shape of an inverted "U" when said groove is viewed in axial section and having,

a. an inside diameter less than and an outside diameter greater than said inside diameter of said split annular anvil but less than the diameter of said neck finish defining portion of said split blow mold, wherein said groove at its outside diameter makes neck moil cutting contact with said annular top wall of said split annular anvil when said blow pin assembly is lowered to position said blow pin tip within the neck finish defining portion of hollow mold space, and

b. a concave surface for forge forming the rounded part of said dripless pour lip on the upper portion of said captured extruded tube, said concave surface being located between said inside diameter and said outside diameter of said groove.

4,497,624

INJECTION MOLDING MACHINE

Philip L. Brun, Dayton, and Stephen A. Bright, Troy, both of Ohio, assignors to Electra Form, Inc., Vandalia, Ohio

Filed Nov. 8, 1982, Ser. No. 439,760

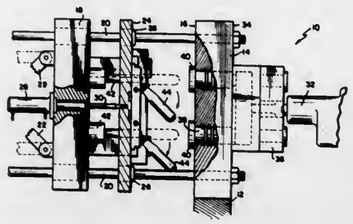
Int. Cl.³ B29C *1/00*; B29F *1/08, 1/022, 1/14*

U.S. Cl. 425—548 **6 Claims**

1. In an injection molding machine comprising a base, a stationary platen fixed with respect to the base having a front face and a back face, a plastics injection unit coupled to the back face of the stationary platen, a movable platen adjacent the front face of the stationary platen, guide means for guiding movement of the movable platen with respect to the stationary platen, and motive means for moving the movable platen, the improvement comprising

at least one mold element-receiving chamber extending from the front face to the back face of the stationary platen,

at least one first mold element substantially wholly received within the at least one chamber, and



at least one second mold element connected to the movable platen and cooperatively engageable with the first mold element, the first and second mold elements each having a surface for forming therebetween a space for receiving a plastics material, the first mold element space forming surface extending into the mold element receiving chamber.

4,497,625

HIGHLY HEATABLE FUEL PREPARING ELEMENT, PARTICULARLY FOR VAPOR BURNERS FED WITH LIQUID FUEL

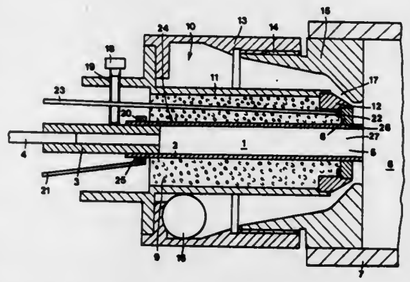
Jorgen H. Petersen; Peter J. M. Clausen, and Hilmar O. Rasmussen, all of Nordborg, Denmark, assignors to Danfoss A/S, Nordborg, Denmark

Filed Nov. 10, 1983, Ser. No. 550,310

Claims priority, application Fed. Rep. of Germany, Nov. 24, 1982, 3243397

Int. Cl.³ F23D *11/44*

U.S. Cl. 431—208 **21 Claims**



1. A fuel preparing unit for a vapour burner having a combustion chamber, an air supply system for supplying air of combustion to said combustion chamber, and electric power supply means; said fuel preparing unit, comprising, a fuel preparing chamber connected to said power supply means and having at least one outlet aperture opening into said combustion chamber, said fuel preparing chamber having a plurality of ceramic parts including first and second smaller and larger diameter tube parts with said first tube part being pushed into the inlet section of said second tube part, at least one ceramic glow ring part surrounding the outlet end of said second tube and having a close fit therewith, and said parts having approximately equal coefficients of thermal expansion at their abutting areas and being joined by heat treatment.

4,497,626

HEATABLE GODET AND A METHOD OF HEATING A GODET

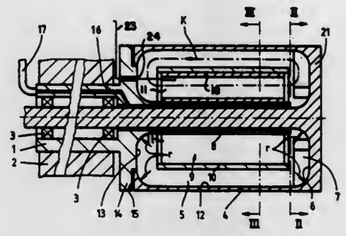
Kurt Mueller, Zurich, and Armin Wirz, Ossingen, both of Switzerland, assignors to Rieter Machine Works, Winterthur, Switzerland

Division of Ser. No. 388,235, Jun. 14, 1982, Pat. No. 4,443,689. This application Sep. 16, 1983, Ser. No. 533,008

Claims priority, application Switzerland, Jun. 15, 1981, 3914/81

Int. Cl.³ F27D *3/00, 5/00*; H05B *5/00*

U.S. Cl. 432—9 **3 Claims**



1. A method of heating a godet having a circumferential wall defining a hollow chamber, said method comprising the steps of

circulating a gaseous medium in a substantially closed free flow path of U-shaped cross-section limited by an annular face side of the godet, said circumferential wall and an opposite annular face side of the hollow chamber to heat said circumferential wall;

passing the gaseous medium from said flow path circumferentially into and through guide ducts extending between said annular face sides and circumferentially therefrom into said flow path; and

heating the gaseous medium within said guide ducts by means of a heating means in order to transfer substantially the total amount of heat from the heating means to said wall by means of said gaseous medium.

4,497,627

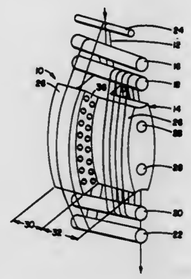
HOT SHOE APPARATUS FOR PREHEATING DRAFTING, AND STABILIZING IN SEQUENCE A RUNNING YARN STRAND

Bobby M. Phillips, Kingsport, Tenn., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 23, 1984, Ser. No. 582,679

Int. Cl.³ F27B *9/28*; C21D *9/52*

U.S. Cl. 432—59 **6 Claims**



1. Apparatus for preheating, drafting, and stabilizing in sequence a running yarn strand, said apparatus comprising:

a heated shoe device having a pair of oppositely facing convex surfaces adapted to be heated and over which said running yarn strand travels in contact therewith to be heated to a predetermined temperature, and means for heating said pair of oppositely facing convex surfaces,

a first freely rotating idler roll and a second freely rotating idler roll spaced one from the other and upstream along a running yarn strand path from said heated shoe device at one end thereof,

a third freely rotating idler roll and a fourth freely rotating idler roll spaced one from the other and downstream along said running yarn strand path from said heated shoe device at the opposite end thereof, and

a fixed draw pin spaced upstream along said running yarn strand path from said first and second freely rotating idler rolls,

said freely rotating idler rolls and said heated shoe device together defining multiple running yarn strand paths for said running yarn strand as said running yarn strand passes back and forth along said yarn strand paths a predetermined number of times over said first freely rotating idler roll, along one of the pair of oppositely facing convex surfaces of said heated shoe device to said fourth freely rotating idler roll for return over said heated shoe device along the other of said pair of oppositely facing convex surfaces of said heated shoe device, next from said fourth freely rotating idler roll over said heated shoe device to and around said fixed draw pin for drawing said running yarn strand, and then from said draw pin back and forth over said second freely rotating idler roll, heated shoe device, and said third freely rotating idler roll a predetermined number of times before exiting downstream along said running yarn strand path from said apparatus, and

said heated shoe device defining along the width of its pair of oppositely facing convex surfaces a first temperature zone for preheating said running yarn strand in its back and forth travel between said first and fourth freely rotating idler rolls, and a second temperature zone for heat stabilizing said running yarn strand in its back and forth travel between said second and third freely rotating idler rolls at a temperature higher than said first temperature zone.

4,497,628

DESIGN OF TRANSVERSE-BURNER RECUPERATIVE FURNACES

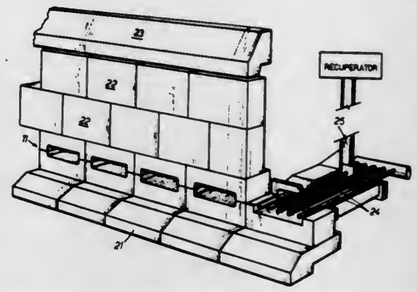
Pierre Blanchet, Boulogne, and Joseph Recasens, Sorgues, both of France, assignors to Societe Europeenne des Produits Refractaires, Courbevoie, France

Filed Mar. 31, 1983, Ser. No. 480,672

Claims priority, application France, Apr. 2, 1982, 82 05723

Int. Cl.³ C03B *5/16*; C27D *17/00*; F23C *5/08*

U.S. Cl. 432—179 **10 Claims**



1. In a transverse-burner recuperative furnace for melting glass, which comprises a hearth, a vault, tank walls, two piedroits (or casing walls) extending upwardly from the tank walls to the vault and supporting same, each of said piedroits copmrising, above the molten glass level, a row of burner blocks each connected to an air inlet and to at least one fuel

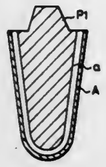
injection pipe, and a recuperator for preheating the air fed to said burner blocks, the improvement wherein said burner blocks have inner apertures each of generally elongate rectangular shape, each said aperture presenting a first block portion of constant cross-section extending from the rear face of the burner block, and each said aperture presenting a second block portion progressively flaring upwards and downwards to the front face of the burner block, said second portion having an angle of flare of not more than 15 degrees, and the cumulated total length of said apertures representing at least 0.65 times the length of said row of burner blocks.

4,497,629

DENTAL IMPLANT AND METHOD OF MAKING SAME

Makoto Ogino; Toshihiko Futami, both of Kawasaki; Michio Kariya, Yokohama; Takeo Ichimura, Tokyo, and Takamitsu Fujiu, Tokyo, all of Japan, assignors to Nippon Kogaku K.K., Tokyo, Japan

Filed Dec. 13, 1982, Ser. No. 449,426
Claims priority, application Japan, Jan. 7, 1982, 57-1198
Int. Cl.³ A61C *8/00*
U.S. Cl. 433—201 **4 Claims**



1. A dental implant comprising a biocompatible metal core and a multi-layer glass coating applied on said core, said dental implant being characterized in that an outer layer of said multi-layer glass coating is formed of a biologically active glass composed of:

SiO_2	35–60 mol %
B_2O_3	0–15
Na_2O	10–30
CaO	5–40
TiO_2	0–2
P_2O_5	0–15
K_2O	0–20
Li_2O	0–10
MgO	0–5
$La_2O_3 + Ta_2O_5 + Y_2O_3$	0–8
F_2	0–15

and having substantially the same thermal expansion coefficient as that of said metal core, and that an inner layer of said multi-layer glass coating is formed of a lower or substantially no biologically active glass as obtained by merely increasing the content of TiO^2 in the glass composition selected for said outer layer to 5–10 mol%.

4,497,630

KIT FOR TEACHING CHARACTERISTICS AND USE OF ELECTRICAL DEVICES

Roland A. G. Oliver, Tuscaloosa, Ala., assignor to Alabama Power Company, Birmingham, Ala.

Filed Mar. 14, 1984, Ser. No. 589,486
Int. Cl.³ G09B *23/18*
U.S. Cl. 434—224 **7 Claims**

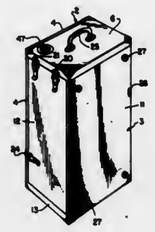
1. In an educational kit for use in teaching the characteristics and use of electrical devices, the combination of

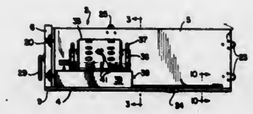
two housing units each comprising side walls and an end wall,

the two housing units being constructed and arranged to be fitted together to define a closed housing with the end walls of the two units disposed at different ends of the housing;

means on one side wall of one of the housing units for mounting a first electrical device on a portion of that side wall adjacent one end thereof with the first electrical device so disposed as to be enclosed within the housing when the two housing units are fitted together;

means on one side wall of the other of the housing units for





mounting a second electrical device on a portion of that side wall adjacent one end thereof with the second electrical device so disposed as to be enclosed within the housing and located at the end of the housing opposite the position occupied by the first electrical device when the two housing units are fitted together; and

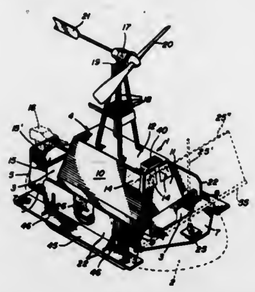
releasable fastener means for securing the two housing units together when the housing units are interfitted to define the housing.

4,497,631

WIND-POWERED WATER-CRAFT

Ernest Belanger, 243 Leblanc St., Chute-aux-Outardes, Province of Quebec, Canada G0H 1C0

Filed Sep. 13, 1982, Ser. No. 416,944
Int. Cl.³ B63H *13/00*
U.S. Cl. 440—8 **3 Claims**



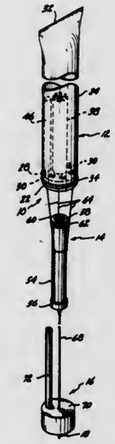
1. A wind-powered water-craft comprising a generally rectangular seaworthy air-inflated dinghy having a generally rectangular longitudinal depression formed by the sides and bottom of said dinghy, said sides defining a peripheral top surface, rigid transverse members extending across said depression and resting on said top surface, a pair of keels secured to the ends of said transverse members and extending downwardly along the sides of said dinghy below said bottom; an electric outboard motor mounted astern of said dinghy; an electric generator for driving said outboard motor, a frame-work secured to said transverse members, upstanding from said dinghy and supporting said generator at the top thereof, a wind-driven propeller axially connected to said generator and adapted to revolve with the wind; said generator being further provided with a horizontal rearwardly-extending vane; and a swivel for said generator, whereby the latter and said propeller can turn towards the direction of the wind; further including two flat, rigid and elongated strips adapted to rest on the top lateral surfaces of said dinghy; a horizontal flat plate adapted to rest both on said strips, being rigidly secured to the latter, and also over the entire said peripheral top surface of the dinghy; said plate being formed with a cut-out portion, generally conforming to the inner dimensions of the dinghy; said rigid transverse members resting on said plate.

4,497,632

INFLATABLE BUOY

Lyle D. Galbraith, Redmond, Wash., assignor to Rocket Research Company, Redmond, Wash.

Filed Apr. 6, 1983, Ser. No. 482,428
Int. Cl.³ B63B *21/00*
U.S. Cl. 441—30 **6 Claims**



1. A buoy assembly adapted to be submerged in a liquid and inflated below the surface of the liquid, comprising:

receptacle means comprising a base having a cavity opening in a first, normally downward direction, an inflatable bag having a mouth surrounding and sealed to the base such that the bag can be inflated to extend in a second, normally upward direction from the base, and means forming a tubular recess projecting from the base in the second direction into the interior of the bag, the base having apertures therein communicating between the cavity and the interior of the bag;

gas generating means comprising a breech and a propellant disposed in the breech, the breech having a first end comprising a nozzle, the propellant being capable of generating gas when ignited, the breech being slidably positioned within the tubular recess with its first end in the second direction prior to ignition of the propellant;

suspension means for coupling the gas generating means to the receptacle means such that the gas generating means may be suspended a predetermined distance below the receptacle means; and,

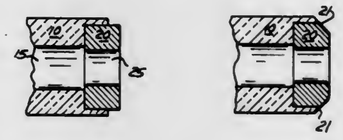
the assembly being adapted such that upon ignition of the propellant, the resulting gas causes the breech to move in the first direction out of the tubular recess and become suspended by the suspension means at said predetermined distance below the receptacle means, such that gas thereafter generated by the gas generating means passes from the nozzle, through an unconfined volume of the liquid in which the assembly is submerged, and into the receptacle means to inflate the bag.

4,497,633

METHOD OF FORMING A TUBULAR ELECTRICAL INSULATOR ASSEMBLY

Helmut P. Meyer, and Gaston R. Isliker, both of Sidney, N.Y., assignors to The Bendix Corporation, Southfield, Mich.

Filed Jul. 8, 1982, Ser. No. 396,198
Int. Cl.³ H01T *13/20*
U.S. Cl. 445—7 **3 Claims**



1. A method of forming a tubular electrical insulator assembly for an igniter of the type having an inner electrode coaxially arranged with an outer tubular electrode and separated by said tubular electrical insulator assembly, said method comprising:

making a recess in one end of the tubular insulator;

placing at least a portion of a tubular semi-conductor into said recess; and

grinding an annular chamfer into the ends of said insulator and said semiconductor to form a conical surface extending across the junction of said insulator and semiconductor.

4,497,634

TANNING MATERIAL CONTAINING BASIC CHROMIC SULFATE AND MERCAPTOACETIC ACID

Giovanni Gheili, Savona, and Alessandro Barbon, Arluno, both of Italy, assignors to Luigi Stoppani S.p.A., Milan, Italy

Filed Jun. 9, 1983, Ser. No. 502,495
Claims priority, application Italy, Jun. 10, 1982, 21807 A/82
Int. Cl.³ C14C 3/06
U.S. Cl. 8—94.26 2 Claims

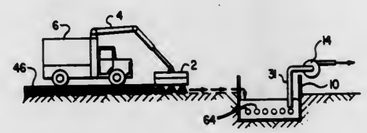
1. Improved tanning material containing basic chromium sulfate and quinone compounds, wherein mercaptoacetic acid is added to the tanning solution to hinder said quinone compounds.

4,497,635

SULFUR REMELTING

Rodger Blackwood, R.R. 1, DeWinton, Alberta, Canada (T0L 0X0)

Filed Dec. 1, 1982, Ser. No. 446,031
Int. Cl.³ E21C 41/14
U.S. Cl. 23—308 S 10 Claims



1. A method of remelting sulfur from the face of solid sulfur block comprising:
generating super-heated liquid sulfur;
spraying the super-heated liquid sulfur at above ambient pressures against the face of the sulfur block to thereby melt and physically remove sulfur from the block face; and
collecting the melted sulfur.

4,497,636

PROCESS FOR REMOVING SULFUR FROM COAL

Tetsuo Aida, Ames; Thomas G. Squires, Gilbert, and Clifford G. Venier, Ames, all of Iowa, assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Aug. 11, 1983, Ser. No. 522,277
Int. Cl.³ C10L 9/06
U.S. Cl. 44—15 R 17 Claims

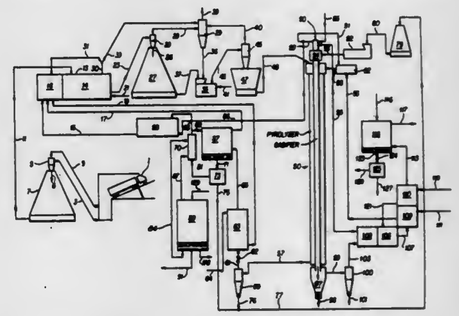
1. A process of removing divalent organic and inorganic sulfur compounds from carbonaceous material consisting essentially of:
contacting the finely divided carbonaceous material, as a slurry in a slurry liquid, with an electrophyllic oxidant to selectively oxidize the divalent organic and inorganic sulfur compounds to trivalent and tetravalent organic and inorganic sulfur compounds, the oxidant being selected from the group consisting of chlorine, bromine, and hydrogen peroxide,
separating the carbonaceous material containing the oxidized organic and inorganic sulfur compounds from the oxidant;
contacting the carbonaceous material with a molten caustic to dissolve the trivalent and tetravalent organic and inorganic compounds and to neutralize any oxidant remaining in the material, thereby separating the sulfur compounds from the carbonaceous material;
separating the carbonaceous material from the molten caustic; and
removing any caustic remaining in the carbonaceous material.

4,497,637

THERMOCHEMICAL CONVERSION OF BIOMASS TO SYNGAS VIA AN ENTRAINED PYROLYSIS/GASIFICATION PROCESS

Kenneth R. Purdy, Decatur; Charles W. Gorton, and James A. Knight, Jr., both of Atlanta, all of Ga., assignors to Georgia Tech Research Institute, Atlanta, Ga.

Filed Nov. 22, 1982, Ser. No. 443,335
Int. Cl.³ C10J 3/46, 3/48, 3/86
U.S. Cl. 48—111 23 Claims



1. A method of converting biomass raw material to synthesis gas comprising;
drying and sizing said biomass raw material;
introducing said biomass raw material into an entrained pyrolysis chamber;
pyrolyzing said biomass raw material with pyrolysis oil and preheated air and intimately mixing said entrained biomass raw material and pyrolysis oil and air with a hot inert gaseous mixture and conveying the mixture through the entrained pyrolysis chamber, thereby obtaining a product mixture of char, pyrolysis oil and pyrolysis gas, said pyrolysis gas being fed back for use in at least said drying step; and
gasifying said char and pyrolysis oil in the presence of steam and oxygen by conveying the char, oil, steam, and oxygen through a flow reactor, at a temperature sufficient to form said synthesis gas product consisting essentially of carbon monoxide and hydrogen.

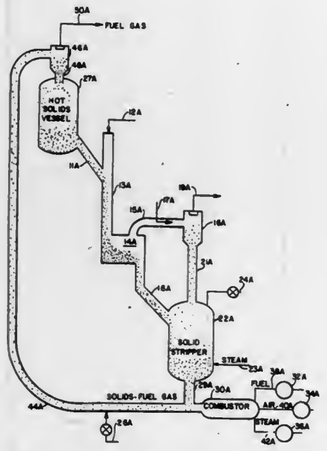
15. An apparatus for the conversion of biomass raw material to synthesis gas, comprising:
means for dyring said biomass raw material;
means for grinding said dried biomass raw material;
pyrolyzer means for pyrolyzing said ground biomass raw material at a temperature of 900° to 1600° F. as said material is intimately mixed with an inert carrier gas stream yielding a product mixture of pyrolysis oil, pyrolysis gas and char; means for feeding said pyrolysis gas back for use by at least said drying means; and
gasifier means for gasifying said char in the presence of steam and oxygen to a synthesis gas product consisting essentially of carbon monoxide and hydrogen.

4,497,638

FUEL GAS GENERATION FOR SOLIDS HEATING

Axel R. Johnson, North Babylon, N.Y., and Herman N. Woebcke, Stamford, Conn., assignors to Stone & Webster Engineering Corp., Boston, Mass.

Continuation-in-part of Ser. No. 82,048, Oct. 5, 1979, abandoned. This application Aug. 15, 1980, Ser. No. 178,491
Int. Cl.³ C10J *3/46*
U.S. Cl. 48—197 R **2 Claims**



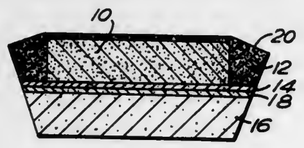
1. In a TRC process wherein the temperature in the cracking zone is between 1300° and 2500° F. and wherein hydrocarbon feed or hydrodesulfurization residual oil along with entrained inert solids and a diluent gas are passed through the cracking zone for a residence time of 0.05 to 2 seconds, the improvement comprising the process for generating fuel gas and removing coke deposited on said solids comprising:
(a) generating fuel gas having a high CO to CO_2 ratio and a high molal ratio of H_2O to H_2 from fuel, air and steam;
(b) delivering the fuel gas with steam to a tubular transfer line;
(c) delivering particulate solids having coke deposits thereon to the tubular transfer line;
(d) mixing the fuel gas containing the steam and the particulate solids to reach an equilibrium temperature; and
(e) converting the coke deposits from the particulate solids to fuel gas with the heat and the steam in the tubular transfer line.

4,497,639

SILICON CARBIDE CUTTING INSERT WITH PRE-PRESSED CORE CENTER PIECE AND SINTERED DIAMOND ENVELOPE

John M. Ohno, Plymouth, Mich., assignor to General Electric Company, Detroit, Mich.

Filed Dec. 16, 1981, Ser. No. 331,370
Int. Cl.³ C04B *31/16*
U.S. Cl. 51—307 **9 Claims**



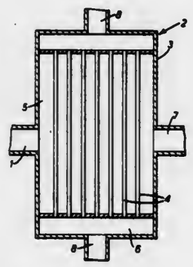
1. A process for producing a cutting insert comprising:
preparing a crystal dispersion of superhard crystals selected from the group consisting of diamond and cubic boron nitride crystals, and carbon black in a temporary binder;
preparing a core dispersion of carbon fiber, carbon black and filler in a temporary binder;
pre-pressing said core dispersion at a first pressure to form a pre-pressed core;
enveloping said pre-pressed core with said crystal dispersion;
compacting said crystal dispersion with said pre-pressed core at a second pressure greater than said first pressure to form an intermediate composite;
heating said intermediate composite to allow for the removal of said temporary binder and the infiltration of liquified silicon into said intermediate composite; and
sintering said intermediate composite to produce said cutting insert.

4,497,640

PROCESS FOR THE DEHYDRATION OF GASES CONTAINING HYDROCARBONS

Francois J. C. Fournié, Paris, and Christian J. A. Deleuze, Gradignan, both of France, assignors to Compagnie Francaise de Petroles and Commissariat a l'Energie Atomique, both of Paris, France

Filed Feb. 3, 1984, Ser. No. 576,826
Claims priority, application France, Feb. 4, 1983, 83 01815
Int. Cl.³ B01D *53/22*
U.S. Cl. 55—16 **11 Claims**



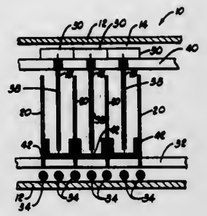
1. A process for the dehydration of a gas containing hydrocarbons, using at least one permeator which comprises a feed compartment having an inlet and a permeation compartment separated from said feed compartment by a membrane of selective permeability, and comprising supplying a gas to be dehydrated under pressure to the inlet of said feed compartment, maintaining said permeation compartment at a lower pressure than said feed compartment, withdrawing a water-enriched gas from said permeation compartment and recovering a water-impoverished gas from said feed compartment, wherein said membrane comprises a bundle of hollow fibres based on polymers, which comprise an active layer and a substrate, having an internal diameter of between 0.1 mm and 0.5 mm, a length of between 0.5 m and 3 m and a thickness of between 0.05 mm and 0.3 mm, the thickness of the active layer alone being less than 1 μm, which have a methane permeability of at least 10^{-5} cm^3/cm^2.s.cm Hg and a water/methane selectivity factor of more than about 100, and which are open at both their longitudinal ends, the exterior of said hollow fibres being located in the feed compartment and the interior of said hollow fibres forming said permeation compartment.

4,497,641

APPARATUS AND METHOD FOR DUST CONTROL BY CONDENSATION ENLARGEMENT

James T. Brown, Jr., and Frank D. Schowengerdt, both of Golden, Colo., assignors to Colorado School of Mines, Golden, Colo.

Filed Nov. 18, 1983, Ser. No. 553,038
Int. Cl.³ B01D *47/06*
U.S. Cl. 55—94 **10 Claims**



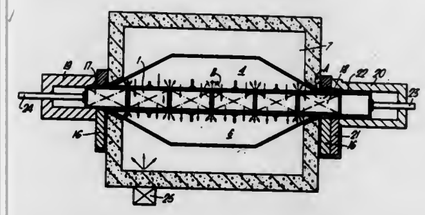
1. A method for controlling and enhancing the control of dust-laden air by condensation enlargement, the steps comprising:
heating at least one first plate mounted in a housing;
cooling at least one second plate mounted in a housing and disposed in a spaced relationship to the first plate;
introducing a liquid on the first plate and vaporizing the liquid therefrom;
introducing the dust-laden air into the housing and between the first and second plates;
nucleating droplets and condensing the liquid vapor on dust particles as the vapor diffuses from the first plate to the second plate; and
collecting a slurry of the condensed liquid and dust particles in the bottom of the housing and discharging the slurry therefrom.

4,497,642

FILTER ASSEMBLY

Stanley Hackney, Warrington, England, assignor to United Kingdom Atomic Energy Authority, London, England

Filed Jun. 24, 1983, Ser. No. 507,598
Claims priority, application United Kingdom, Jul. 7, 1982, 8219686
Int. Cl.³ B01D *46/00*
U.S. Cl. 55—422 **8 Claims**



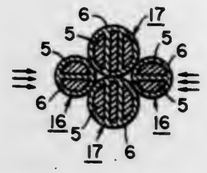
1. A filter assembly comprising a pack of individual filters movable in line across a duct for gas to be filtered, normally closed access means at opposite ends of the line movable to permit entry and removal of the filters, means for introducing purge gas between opposing faces of adjacent filters in the line and to the ends of the line at the access means, the purge gas being at a pressure greater than the pressure in the duct such that the purge gas flows into the duct and opposes entry of the gas being filtered between the opposing faces of adjacent filters in the line and opposes the escape of the gas being filtered at the ends of the line.

4,497,643

OPTICAL FIBER JUNCTION DEVICE AND METHOD OF MAKING THE SAME

Nobuo Kowata, 7-4-15 Sagamihara, and Naoshige Sasano, 379-2 Kamikuzawa, both of Sagamihara, Kanagawa, Japan

Filed Sep. 10, 1982, Ser. No. 416,585
Claims priority, application Japan, Sep. 16, 1981, 56-145776
Int. Cl.³ C03B *23/20*
U.S. Cl. 65—4.21 **4 Claims**



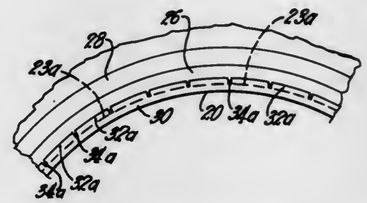
1. A method of making an optical fiber junction device, comprising the steps of:
providing a central inner pipe or rod of glass with an axial-tapered portion having a reduced diameter;
arranging a plurality of optical fibers around said inner pipe or rod, said optical fibers being composed of a plurality of optical fiber junction units each having a plurality of optical fibers;
externally heating said optical fibers and said central inner pipe or rod to form a thermally fused assembly having cores of a sectorial cross section.

4,497,644

BLOWER FOR THE ATTENUATION OF FIBERS

Farrokh Kaveh, Dublin, Ohio, assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Sep. 12, 1983, Ser. No. 530,918
Int. Cl.³ C03B *37/04*
U.S. Cl. 65—14 **8 Claims**



1. Apparatus for producing glass fibers comprising a rotatably mounted spinner having a perhiperal wall with orifices, means for rotating the spinner, means for feeding molten glass to the spinner, such molten glass being emitted from the orifices as fibers during rotation of the spinner, an annular blower for attenuating fibers positioned circumferentially around the spinner comprising an annular manifold and a plurality of slots positioned circumferentially around the blower for the discharge of attenuating gas from said manifold, said slots having an aspect ratio within the range of from about 35 to about 70.

4,497,645

METHOD OF AND FURNACE ASSEMBLY FOR BENDING GLASS SHEETS

Esko J. Peltonen, Suorama, Finland, assignor to O/Y KYRO A/B Tamglass, Tampere, Finland

Filed Apr. 16, 1984, Ser. No. 600,788
Claims priority, application Finland, Jul. 25, 1983, 832684
Int. Cl.³ C03B *23/025*
U.S. Cl. 65—107 **13 Claims**



1. A method of bending glass sheets, wherein glass sheets are placed upon bending moulds (5) supported by transport cars (4), successive cars (4) are displaced periodically from one heating section (10) to another, temperature of glass sheets (6) is elevated by means of heating resistances (23) fitted in each heating section (10), in the final heating section a glass sheet (6) is heated until it bends by the action of heat and gravity to the curvature corresponding to mould (5), whereafter a car (4) in the final heating section is lowered from an upper transport run (2) to a lower run (3) along which cars (4) are displaced periodically in the transport direction opposite to that of the upper run and, at the loading end of a furnace (1), car (4) is steered through a gate (9) in the end wall of said furnace out of the furnace and a bent glass is replaced with a glass to be bent and car (4) is returned into the furnace and lifted onto upper run (2), characterized in that separation of heating sections (10) from each other into sections separate in the longitudinal direction of furnace during each heating cycle is effected only by means of front walls (8) of cars (4) and separation of chilling sections from each other into sections separate in the longitudinal direction of furnace during each chilling cycle is also effected only by means of said front walls (8) of cars, and that the glass sheets on lower run (3) by having them deliver heat through the open-structured or otherwise well heat transferring bottoms (25) of cars (4) to the glass sheets to be heated on upper run (2).

4. A furnace assembly for bending glass sheets comprising:
an elongated furnace (1), having a loading end and a bending end and whose bending end is closed,
an array of cars (4), each having a bending mould (5) for receiving glass sheets (6) and for bending them by means of heat and gravity,
an upper transport run (2) for conveying cars (4) from one heating section (10) to another,
electric resistance elements (23) in the ceiling of heating sections,
a lower transport run (3) for returning cars (4) back to the loading end of the furnace below the cars of upper run (2),
a gate (9) at the loading end of said furnace for passing cars (4) in and out,
a lift device (15*a*) at the loading end of the furnace for picking up cars (4) from the level of lower run (3) to the level of upper run (2),
a lift device (14*a*) at the furnace for lowering cars (4) from the level of upper run (2) to the level of lower run (3), and
displacement means (16, 17; 18, 19) for moving cars (4) on upper run (2) from the furnace loading end to its bending end and on lower run (3) in the opposite direction, characterized in that the side walls and back wall of cars (4) are missing partially or completely and only the front wall (8) (leading wall in the upper run transport direction) is sufficiently high and integral to provide a lock in the longitudinal direction of the furnace between successive sections (10) and that the bottom design (25) of cars (4) is such that heat can readily transfer from the lower run glass sheets to the upper run glass sheets.

4,497,646

CULTIVATION OF RICE WITH SIMULTANEOUS CONTROL OF WEEDS AND FUNGUS DISEASE

Valentin de A. Rubio, Mexicali, Mexico, assignor to Quinica Orgánica de Mëxico, S.A., Mexico

Filed Aug. 23, 1982, Ser. No. 410,386
Int. Cl.³ A01N *37/22, 31/10*
U.S. Cl. 71—3 **9 Claims**

1. A method for simultaneously controlling weed growth and rice blast fungus disease caused by infection of rice plants with *Piricularia oryaze* in cultivated rice fields comprising simultaneously applying to a rice field:
(a) propanil in the form of an aqueous spray in an amount sufficient to inhibit weed growth but insufficient to damage the rice plants; and
(b) pentachloronitrobenzene in the form of an aqueous spray in an amount sufficient to inhibit infection of the rice plants with *Piricularia oryzae.*

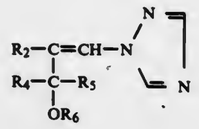
4,497,647

TRIAZOLYLALKENES AS FUNGICIDES AND PLANT GROWTH REGULANTS

Alfred Meyer, Basel; Walter Kunz, Oberwil; Ludwig Maier, Arlesheim, and Hermann Rempfler, Ettingen, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Feb. 16, 1983, Ser. No. 466,825
Claims priority, application Switzerland, Feb. 19, 1982, 1049/82
Int. Cl.³ A01N *43/50, 43/64;* C07D *233/60, 249/08*
U.S. Cl. 71—76 **9 Claims**

1. A compound of the formula



wherein
R_2 is C_1–C_9 alkyl;
R_4 and R_5 independently of the other are hydrogen or C_1–C_4 alkyl; and
R_6 is C_1–C_3 alkyl, phenyl or phenyl which is substituted by halogen, CF_3 or C_1–C_3 alkyl.

7. A composition for controlling or preventing attack by fungi and/or for regulating plant growth, which composition contains as active ingredient an effective amount of a compound according to claim 1, together with an inert carrier.

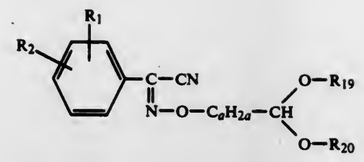
4,497,648

OXIME DERIVATIVES FOR PROTECTING PLANT CROPS

Henry Szczepanski, Wallbach, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation-in-part of Ser. No. 344,708, Feb. 1, 1982, , which is a continuation-in-part of Ser. No. 238,345, Feb. 26, 1981, Pat. No. 4,468,242, which is a division of Ser. No. 69,414, Aug. 24, 1979, Pat. No. 4,269,775. This application Aug. 12, 1982, Ser. No. 407,668
Claims priority, application Switzerland, Sep. 1, 1978, 9252/78
Int. Cl.³ A01N *37/34, 43/28, 43/32*
U.S. Cl. 71—88 **45 Claims**

1. A method for protecting maize from injury caused by application of a haloacetanilide or thiolcarbamate herbicide, said method comprising treating maize seed with an effective amount of a compound of the formula



wherein
R_1 is hydrogen, methyl, methoxy, chlorine, cyano or trifluoromethyl,
R_2 is hydrogen or chlorine, or
R_1 and R_2 taken together is —CH=CH—CH=CH— attached to adjacent carbon atoms in the ring,
a is 1 or 2, and
R_{19} and R_{20} are each methyl or ethyl, or
R_{19} and R_{20} taken together is C_2–C_7 alkylene having 2 or 3 carbon atoms in its principal chain.

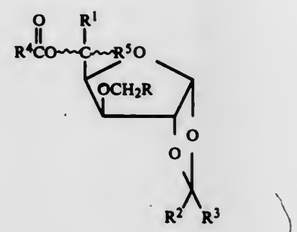
4,497,649

5-O-ACYL-5-C-ALKYL-3-O-ARYLMETHYL OR SUBSTITUTED ARYLMETHYL-1,2-O-ALKYLIDENE-αD-GLUCO-PENTOFURANOSE AND β-L-IDO-PENTOFURANOSE HERBICIDES

William Loh, Petaluma, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Aug. 18, 1983, Ser. No. 524,512
Int. Cl.³ A01N *43/08;* C07H *17/04*
U.S. Cl. 71—88 **20 Claims**

1. A compound having the formula:



(I)

wherein
the wavy (~) bond line indicates the D-gluco or L-ido isomers or mixtures thereof,
R is naphthyl, 2-trifluoromethylphenyl, or substituted aryl having 6 through 10 ring carbon atoms and 1 through 3 substituents independently selected from the group of lower alkyl, and halo;
R^1 is alkyl having 1 through 4 carbon atoms;
R^2 and R^3 are independently selected from the group consisting of hydrogen, lower alkyl, lower haloalkyl having 1 through 3 halo substituents and aryl having 6 through 10 carbon atoms or R^2 and R^3 together with the carbon atom to which they are joined form a cycloalkyl group having 5 or 6 carbon atoms;
R^4 is lower alkyl, lower alkoxyalkyl, lower haloalkyl having 1 through 3 halo substituents, aryl having 6 through 10 ring carbon atoms or substituted aryl having 1 through 3 substituents selected from the group of lower alkyl, lower alkoxy, and trifluoromethyl; and
R^5 is hydrogen or methyl.

18. A plant growth regulating composition comprising a compatible carrier and a plant growth regulating effective amount of a compound according to claim 1.

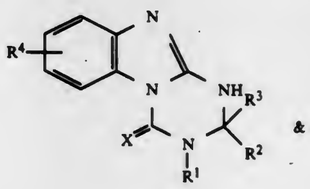
4,497,650

TETRAHYDROTRIAZINES

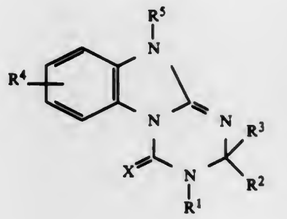
Carl E. Ward, Mountain View, Calif., and Robert V. Berthold, South Charleston, W. Va., assignors to Union Carbide Corporation, Danbury, Conn.

Filed Dec. 28, 1979, Ser. No. 108,284
Int. Cl.³ A01N *43/64;* C07D *403/04*
U.S. Cl. 71—93 **51 Claims**

1. Compounds selected from the group consisting of compounds having the general formula:



&



wherein
R^1 is hydrogen, lower alkyl (C_1–C_6), cycloalkyl (C_3–C_7) lower alkenyl (C_2–C_6), lower alkynyl (C_3–C_6), haloalkyl (C_1–C_6) and alkoxyalkyl (C_2–C_6);
R^2 and R^3 individually are hydrogen, ketoalkyl (C_3–C_5), lower alkyl (C_1–C_6), cycloalkyl (C_3–C_6), alkoxyalkyl (C_2–C_4), alkenyl (C_2–C_6), haloalkyl (C_1–C_6), and acyl (C_2–C_4); R^2 and R^3 taken together can also form a spirocyclic ring of C_3–C_5 carbon atoms;
R^4 individually can be H, alkyl (C_1–C_6), a maximum of two halogens selected from the group consisting of Cl, F, and Br, alkoxyl (C_1–C_4), nitro, alkylthio (C_1–C_4) and alkylsulfonyl (C_1–C_4);
R^5 may be hydrogen, carbamoyl, N-alkylcarbamoyl (C_2–C_{14}), N-arylcarbamoyl, N-(substituted aryl)carbamoyl, N-haloalkylcarbamoyl (C_2–C_{12}), N-carboalkoxyalkylcarbamoyl, N-carboxyalkylcarbamoyl (C_3–C_{14}), N-alkoxyalkylcarbamoyl (C_3–C_{14}), N-arylsulfonylcarbamoyl, acyl(C_1–C_{14}), aroyl, substituted aroyl, alkoxycarbonyl (C_2–C_{14}), aryloxycarbonyl, hydroxyacyl (C_2–C_8), alkoxyacyl (C_3–C_9) alkylthioacyl (C_3–C_9), alkylsulfonylacyl (C_3–C_7), N,N-dialkylaminoacyl (C_4–C_{10}), alkylsulfonyl (C_3–C_{14}), haloalkylsulfonyl (C_1–C_{14}), arylsulfonyl, substituted arylsulfonyl, alkyl (C_1–C_{14}), hydroxyalkyl (C_1–C_8), alkoxyalkyl (C_2–C_9), haloalkyl (C_1–C_8), cycloalkyl (C_3–C_7), alkenyl (C_2–C_{14}), cycloalkenyl (C_5–C_7), alkynyl (C_2–C_{14}), aryl and substituted aryl;
X is oxygen or sulfur.

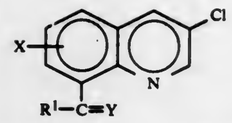
4,497,651

DICHLOROQUINOLINE DERIVATIVES FOR USE AS HERBICIDES

Helmut Hagen, Frankenthal; Juergen Markert, Mutterstadt, and Bruno Wuerzer, Otterstadt, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Feb. 17, 1982, Ser. No. 349,675
Int. Cl.³ A01N *43/42;* C07D *215/12, 215/14, 215/48*
U.S. Cl. 71—94 **11 Claims**

1. A dichloroquinoline derivative of the formula



I

where X is chlorine in the 5-, 6- or 7 position, Y is oxygen, two hydrogen atoms, two chlorine atoms or =N—A—B, R^1 is hydrogen, OM or $—NR^2R^3$ where Y is oxygen; R^1 is OM or $—NR^2R^3$, where Y is two hydrogen atoms; R^1 is hydrogen if Y is two chlorine atoms and R^1 is hydrogen if Y is =N—A—B, where A is a direct bond or CH_2 and B is a phenyl or pyridine radical which is unsubstituted or substituted by chlorine, nitro, methyl, trifluoromethyl or methoxy, and R^1 is hydrogen, or $—NR^2R^3$, where R^2 and R^3 are identical or different and each is hydrogen, C_1–C_6-alkyl, C_1–C_6-alkenyl, C_1–C_6-hydroxyalkyl, formyl, cyclohexyl, phenyl or pyridinyl, or R^2 and R^3 together are $(CH_2)_4$, $(CH_2)_5$, $(CH_2—O—(CH_2)_2$ or $(CH_2—N(CH_3)—(CH_2)_2$, or R^1 is OM, where M is a metal of main group 1 or 2 of the Periodic Table, hydrogen, C_1–C_8-alkyl, phenyl which is unsubstituted or substituted by halogen, nitro, C_1–C_4-alkyl or trihalomethyl, or $H_2N⊕R^2R^3$, where R^2 and R^3 have the above meanings, or Y and R^1, together with the carbon atom, are nitrile.

2. A herbicide containing a compound of the formula I as set forth in claim 1 and a solid or liquid carrier.

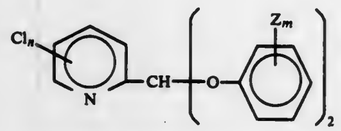
4,497,652

DIPHENOXYMETHYLPYRIDINE HERBICIDES

Sudarshan K. Malhotra, Walnut Creek, Calif., assignor to The Dow Chemical Company, Midland, Mich.

Filed Dec. 23, 1982, Ser. No. 452,585
Int. Cl.³ A01N *43/40*
U.S. Cl. 71—94 **7 Claims**

1. A method for controlling the growth of undesirable plants which comprises applying to plants, plant parts or their habitat a composition which comprises an inert carrier in admixture with a herbicidally effective amount of a compound corresponding to the formula



wherein n represents an integer of 1 or 2; Z represents chloro, fluoro, or alkoxy of 1 to 4 carbon atoms and m represents an integer of 0, 1 or 2.

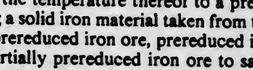
4,497,653

AMIDOCARBONYLSULFONIC ACID SALTS: HERBICIDE ANTIDOTES

Ferenc M. Pallos, Walnut Creek, Calif., assignor to Stauffer Chemical Company, Westport, Conn.

Filed Jun. 4, 1982, Ser. No. 385,191
Int. Cl.³ A01N *25/32*
U.S. Cl. 71—100 **12 Claims**

1. The method of protecting a corn or soybean crop from injury due to S-ethyl N,N-di-n-propyl thiolcarbamate and/or S-n-propyl N,N-di-n-propyl thiolcarbamate comprising preplant incorporation in the soil in which said crop is to be planted, a non-phytotoxic antidotally effective amount of a compound corresponding to the formula



wherein R is selected from the group lower alkyl having 1 to 4 carbon atoms, inclusive and 2-chloroethyl and M is an alkali metal cation.

4,497,654

FERROMAGNETIC METALLIC POWDERS USEFUL FOR MAGNETIC RECORDING AND PROCESSES FOR PRODUCING SAID METALLIC POWDERS

Katsuhiro Takano; Yoshishige Koma; Masaru Hagiwara, and Shintaro Suzuki, all of Gunma, Japan, assignors to Kanto Denka Kogyo Co., Ltd., Tokyo, Japan

Filed Nov. 9, 1983, Ser. No. 550,114
Claims priority, application Japan, Nov. 29, 1982, 57-208937
Int. Cl.³ B22F *9/00*
U.S. Cl. 75—0.5 AA **22 Claims**

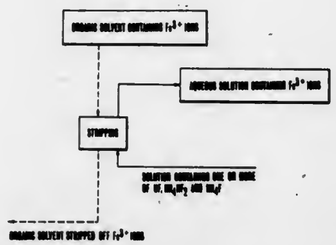
1. A ferromagnetic metallic powder material suitable for use in production of magnetic recording media which comprises iron as a main component and 10–50% by weight of Ni and has a coercive force in the range of 550–900 Oe and a saturation flux density in the range of 90–170 emu/g, wherein said powder comprises particles comprising a core consisting essentially of said iron and a sheath consisting essentially of nickel surrounding said core.

4,497,655

PROCESS FOR PRODUCTION OF HIGH-PURITY METALLIC IRON

Morio Watanabe, Hyogo, and Sanji Nishimura, Kyoto, both of Japan, assignors to Solex Research Corporation of Japan, Tokyo, Japan

Continuation of Ser. No. 294,538, Aug. 20, 1981, Pat. No. 4,434,002. This application Nov. 2, 1983, Ser. No. 547,870
Claims priority, application Japan, Aug. 29, 1980, 55-119308
The portion of the term of this patent subsequent to Feb. 28, 2001, has been disclaimed.
Int. Cl.³ C01G *49/00*
U.S. Cl. 75—34 **1 Claim**



1. A process for the production of metallic iron comprising heating ammonium iron fluoride in a hydrogen stream.

4,497,656

STEEL MAKING METHOD

Edgardo J. Robert, Buenos Aires, Argentina, assignor to Pennsylvania Engineering Corporation, Pittsburgh, Pa.

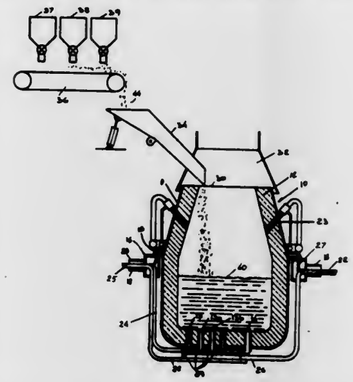
Filed Jun. 23, 1982, Ser. No. 391,134
Int. Cl.³ C21C *7/00*
U.S. Cl. 75—60 **2 Claims**

1. A method of producing steel from ferrous hot metal containing carbon, comprising the steps of:

delivering oxygen and a surrounding sheath of hydrocarbon shielding fluid to said metal and beneath its surface to elevate the temperature thereof to a preselected level,

delivering a solid iron material taken from the group consisting of prereduced iron ore, prereduced iron pellets and at least partially prereduced iron ore to said hot metal at a controlled rate, said iron material tending to lower the temperature of said metal,

entraining carbon in particulate form in an inert gas and delivering the same to said metal at a controlled rate



beneath the surface of said metal and simultaneously with the delivery of said iron material, the feed rate of said carbon being such as to maintain the carbon level in said metal at a substantially constant level as the same is oxidized by said oxygen,

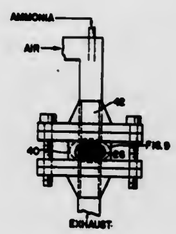
injecting a hydrocarbon shielding fluid in surrounding relation to said carbon, terminating the delivery of said iron material and carbon to said metal while continuing to deliver oxygen and shielding fluid to reduce the level of carbon therein to a preselected level.

4,497,657

METHOD FOR RECOVERING PLATINUM IN A NITRIC ACID PLANT

William R. Hatfield, Westfield; Ronald M. Heck, Frenchtown, and Thomas H. Hsiung, Piscataway, all of N.J., assignors to Engelhard Corporation, Iselin, N.J.

Division of Ser. No. 403,996, Aug. 2, 1982, Pat. No. 4,412,859, and a continuation-in-part of Ser. No. 292,113, Aug. 12, 1981, abandoned. This application Apr. 27, 1983, Ser. No. 489,180
The portion of the term of this patent subsequent to Nov. 1, 2000, has been disclaimed.
Int. Cl.³ C22B *11/00*; B22F *3/00*
U.S. Cl. 75—83 **20 Claims**



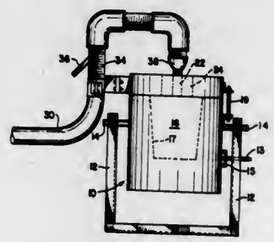
1. A method for the recovery of platinum and/or rhodium lost from a platinum-containing catalyst during ammonia oxidation processes at temperatures above 850° C.; which comprises bringing said lost platinum and/or rhodium into contact with a foraminate element fabricated from material consisting essentially of palladium and nickel characterized by (a) a novel configuration whereby the initial product of mesh size (N) and wire diameter (d_w) for said element is greater than at least about 0.2 and (b) where, for a given nitrogen throughput, the weight recovery efficiency (η') is a function of the wire diameter (d_w) and mesh size (N) combination, and such that weight recovery efficiency is improved by increasing either the mesh size (N) at a given recovery, wire diameter (d_w) or the wire diameter at a given mesh size.

4,497,658

COMPACT PRECIOUS METAL FURNACE AND RECOVERY METHOD

Manfred J. Woog, 1960 B. St., Craig, Colo.

Filed Oct. 11, 1983, Ser. No. 540,441
Int. Cl.³ C22B *11/12*
U.S. Cl. 75—83 **8 Claims**



1. A precious metal recovery furnace comprising:

(a) a support frame;

(b) a furnace body pivotally mounted on said frame to allow tipping thereof, said body having a refractory lined cavity which has a top opening;

(c) a furnace cover substantially rigidly secured to the body providing a cover for the cavity, said cover having a first opening therein sized to receive a gas burner and having a second opening therein spaced from said first opening to provide an escape for exhaust gases and flames and to provide means to input material into said cavity and to provide pouring means for removing molten contents of the cavity by tipping said body;

(d) a gas burner mounted to said cover in a manner so as to provide a downwardly directed oxidizing flame into said cavity; and

(e) means to provide air and gas to said burner.

4,497,659

PRODUCTION OF METALS WITH LOW SELENIUM CONTENTS

Ranko Crnojevich, Gretna; Edward I. Wiewiorowski, New Orleans, and Peter H. Yu, Harvey, all of La., assignors to Amax Inc., Greenwich, Conn.

Filed Aug. 19, 1983, Ser. No. 524,707
Int. Cl.³ C01B *19/02*; C22B *23/04*
U.S. Cl. 75—109 **16 Claims**

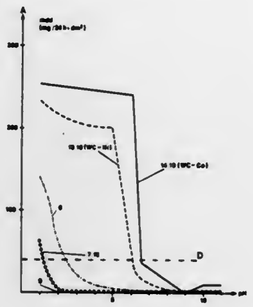
1. A process for precipitating selenium from an aqueous solution of at least one metal selected from the group consisting of cobalt, copper, nickel, iron, zinc and cadmium, which comprises adding chromous sulfate to the solution to precipitate selenium therefrom.

4,497,660

CEMENTED CARBIDE

Leif Lindholm, Hägersten, Sweden, assignor to Santrade Limited, Lucerne, Switzerland

PCT No. PCT/SE80/00141, § 371 Date Jan. 15, 1981, § 102(e) Date Jan. 15, 1981, PCT Pub. No. WO80/02569, PCT Pub. Date Nov. 27, 1980
Continuation of Ser. No. 230,943, Jan. 15, 1981, abandoned. This PCT application May 14, 1980, Ser. No. 589,037
Claims priority, application Sweden, May 17, 1979, 7904331
Int. Cl.³ C22C *29/00*
U.S. Cl. 75—240 5 Claims



1. Sintered hard metal alloy of high wear resistance combined with good toughness properties, good strength and excellent corrosion and oxidation resistances, said alloy consisting essentially of from 55–95% by volume hard materials of which at least 98% is WC, remainder being one or more carbides of the metals Ti, Zr, Hf, V, Nb and Ta and from 5 to 45% by volume of a single phase binder, said single phase binder consisting essentially of, in % by volume:

Ni: at least 50
Cr: 10–25
Mo: 3–15
Mn: 10 max.
Co: 30 max.
Fe: 20 max.
W: 13 max.

and one or more of:

Al: 0.5–5.0
Si: 0.5–5.0
Cu: 0.5–10

and a total carbon concentration (weight percent, or w/o, C) in the sintered alloy of:

w/o $C=A_i-B_i$ (100 minus w/o hard material)

wherein $A_i=1/100$ (w/o WC in hard material $\times 6.13+$ w/o TaC in hard material $\times 6.22+$ w/o VC in hard material $\times 19.08$) and

$B_i=0.061\pm0.008$ for Cr + Mo between 13–15 volume % and
$B_i=0.058\pm0.007$ for Cr + Mo between 16–35 volume %.

4,497,661

FORMED BRIQUETTES, PROCESS FOR FORMING THE SAME AND PROCESS FOR UTILIZING THE SAME IN THE MANUFACTURE OF METALS

Nicholas Valenti, Mayfield Heights, Ohio, assignor to Ohio & Pennsylvania Fuels Co, Ltd., Mayfield Heights, Ohio

Continuation of Ser. No. 291,151, Aug. 11, 1981, abandoned, which is a continuation-in-part of Ser. No. 235,402, Feb. 18, 1981, abandoned, and Ser. No. 129,946, Mar. 13, 1980, abandoned, which is a continuation-in-part of Ser. No. 067,847, Aug. 20, 1979, abandoned. This application Dec. 5, 1983, Ser. No. 557,989
Int. Cl.³ C22B *9/10;* C21C *7/02*
U.S. Cl. 75—256 21 Claims

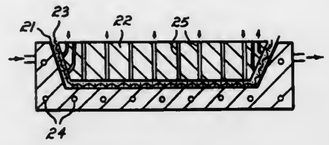
1. A compressed briquette formed from a composition comprising a member selected from the group consisting of one or more metal-containing materials, coke, coal and a mixture thereof, magnesia and a cross-linked reaction product of a reactive isocyanate group-containing compound and a reactive hydroxyl group-containing resin, said reaction product being present in an amount effective to bind said briquette together.

4,497,662

MOULDED PRODUCT

Donald M. Chisholm; Colin Newton, and Stanley W. Winchester, all of Adelaide, Australia, assignors to Douglas Ross Fleet, Birdwood, Australia, a part interest

Filed Feb. 22, 1983, Ser. No. 468,075
Int. Cl.³ C04B *7/352*
U.S. Cl. 106—92 8 Claims



1. A process for moulding an article, comprising:

(a) forming a mixture of between 32 and 48 parts by weight of shredded paper, between 24 and 36 parts by weight of plain wheaten flour, between 0.7 and 1.3 parts by weight of caustic soda, between 32 and 48 parts by weight of Portland cement, and a quantity of water equal to between 30% and 70% of the total weight of the other said components,

(b) placing a lining of sheet material into a female mould, and pouring said mixture into said female mould,

(c) placing perforate sheet material over the surface of a vented male mould, and urging the male mould into the female mould and imparting a pressure to said mixture,

(d) heating said female mould to a temperature of between 66° C. and 150° C. until set, and

(e) removing said article from the mould.

4,497,663

METHOD OF ENCAPSULATING A POLLUTING LIQUID

Robert G. Fisher, Beckenham; Ian G. Meldrum, Leatherhead; Alan J. Plomer, London, and Richard A. Robinson, Camberley, all of England, assignors to The British Petroleum Company Limited, London, England

Continuation of Ser. No. 356,512, Mar. 9, 1982, abandoned, and a continuation of Ser. No. 161,385, Jun. 20, 1980, abandoned.
This application May 30, 1984, Ser. No. 615,720
Claims priority, application United Kingdom, Jun. 26, 1979, 7922248
Int. Cl.³ C02F *1/40;* B08B *7/00;* F16L *55/18*
U.S. Cl. 134—4 30 Claims

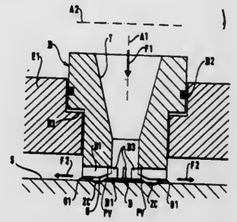
1. A method of encapsulating a liquid organic material to reduce hazard or pollution risk said organic material selected from the group consisting of hydrocarbons, halogenated hydrocarbons, organo phosphates, silicones, esters and ethers said method comprising adding to and mixing with said organic material a liquid polymer miscible with the organic material and containing functional groups, which functional groups are carboxylic acid, anhydride or acid chloride groups and reacting with said liquid polymer in the presence of said organic material a cross-linking agent, also miscible with the organic material and containing complementary functional groups which complementary functional groups are primary or secondary amine groups or alcohol groups, the aforementioned reactants being capable of forming a three dimensional network within an hour at ambient temperatures and allowing a three dimensional polymer network containing encapsulated organic material to form a relatively solid handleable substance thereby rendering the organic material more tractable or innocuous.

4,497,664

EROSION OF A SOLID SURFACE WITH A CAVITATING LIQUID JET

Philippe Verry, Meylan, France, assignor to Alsthom-Atlantique, Paris, France

Filed Oct. 7, 1983, Ser. No. 539,900
Claims priority, application France, Oct. 7, 1982, 82 16798
Int. Cl.³ B08B *3/02*
U.S. Cl. 134—22.12 10 Claims



9. In a process of erosion of a solid surface by a cavitating flow, said process comprising the steps of:

directing a flow of a working liquid under high pressure, said liquid being vaporizable at the ambient temperature at a pressure below the ambient pressure, through a nozzle (B) forming a converging tube (T) in its "longitudinal" direction to form a high speed jet with said liquid, while reducing the pressure of the liquid, and directing said jet toward the surface (S) to be eroded along said longitudinal direction, and

creating cavitation in said liquid jet by lowering the pressure locally to partially vaporize the liquid and create violent displacements of the liquid upon recondensation of the vapor in a condensation zone (ZC) where the pressure is raised and which is in contact with the solid surface to be eroded, the improvement wherein said step of creating cavitation comprises urging said jet against a deflector (D) positioned close to the surface (S) to be eroded, such that the deflector receives the jet on its exit from the nozzle (B) and deflects it in a "lateral" direction parallel to said surface with the edge of said deflector forming an "active" ridge (D2) causing a separation of the flow and the formation of a pocket of vapor (PV) immediately downstream of said ridge between the separated flow and the surface to be eroded.

4,497,665

METHOD FOR MANUFACTURING SEMICONDUCTOR DEVICE

Takeshi Fukuda, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

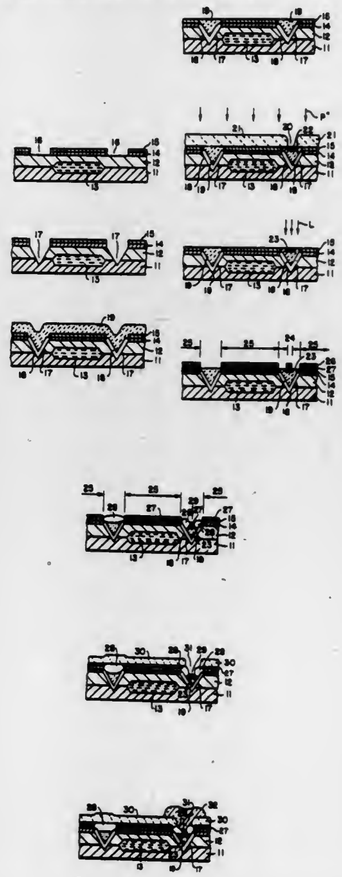
Division of Ser. No. 244,952, Mar. 18, 1981, Pat. No. 4,409,609.
This application Jan. 3, 1983, Ser. No. 455,327
Claims priority, application Japan, Mar. 25, 1980, 55-38070
Int. Cl.³ H01L *21/76, 21/308*
U.S. Cl. 148—1.5 6 Claims

1. A method of manufacturing interconnections for a plurality of semiconductor devices on a substrate, comprising the steps of:

preparing said semiconductor substrate to have a first conductivity type and a semiconductor layer of a second conductivity type opposite to the first conductivity type, the layer being formed on the substrate,

forming V-grooves penetrating through the semiconductor layer and reaching into the substrate for selectively separating said devices,

forming an insulating film on the surface of the V-groove,



forming a polycrystalline semiconductor layer on the insulating film in the V-grooves so as to substantially fill said V-grooves, and

irradiating an energy beam onto selected surface portions of the polycrystalline semiconductor layer along said V-grooves to convert said selected portion to single-crystal semiconductor for forming said interconnections.

4,497,666

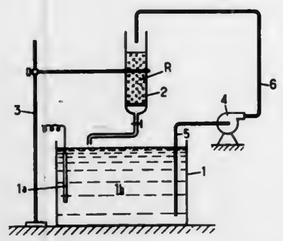
PROCESS FOR THE TREATMENT OF PHOSPHATIZED METAL SURFACES WITH A COMPOSITION COMPRISING TRIVALENT TITANIUM

Joseph Schapira, Paris; Victor Ken, Colombes, and Jean-Loup Dauptain, Aulnoye-Aymeries, all of France, assignors to Compagnie Francaise De Produits Industriels, Gennevilliers, France

Filed Jan. 28, 1983, Ser. No. 462,088
Claims priority, application France, Jan. 29, 1982, 82 01476
Int. Cl.³ C23C *1/10;* C23F *7/08*
U.S. Cl. 148—6.15 R 4 Claims

1. Process for the treatment of phosphatised metallic surfaces, wherein, before the possible application of a paint layer, the phosphatised metal surface is treated by contacting said

surface with a composition comprising an effective amount of a solution of trivalent titanium, said solution having a pH in the



acid range, for a period of time sufficient to confer on the treated surface the desired resistance to corrosion.

4,497,667

PRETREATMENT COMPOSITIONS FOR METALS

Devendra C. Vashi, Lansdale, Pa., assignor to Amchem Products, Inc., Ambler, Pa.

Filed Jul. 11, 1983, Ser. No. 512,513
Int. Cl.³ C09K *3/00*; C23G *1/20*
U.S. Cl. 148—6.15 R **32 Claims**

1. A solid composition for use in aqueous solution in the cleaning and conditioning of the surface of a metal selected from the group consisting of iron, zinc, aluminum, and alloys of said metals, prior to the application on said surface of a conversion coating, which solid composition contains in percent by weight:

(i) a titanium salt in an amount from about 0.01 to about 0.18%, calculated as titanium ion,

(ii) an alkali metal phosphate selected from the group consisting of mono-, di- and tri-alkali metal orthophosphates and mixtures thereof, in an amount from about 0.6 to about 16%, calculated as PO_4,

(iii) an alkali metal polyphosphate or pyrophosphate or mixtures of said polyphosphate and pyrophosphate, in an amount from about 3 to about 14.5%, calculated as P_2O_5,

(iv) an alkali metal carbonate selected from the group consisting of alkali metal carbonates, bicarbonates, and sesquicarbonates and mixtures thereof, in an amount from about 1.6 to about 37%, calculated as CO_3,

(v) an alkali metal hydroxide in an amount from about 1.5 to about 11%, calculated as hydroxyl,

(vi) an alkali metal salt of EDTA in an amount from about 0.3 to about 9.3%, calculated as EDTA.

(vii) an alkali metal silicate selected from the group consisting of alkali metal metasilicates, alkali metal orthosilicates, and mixtures thereof, in an amount from about 3.5 to about 41%,

(viii) the anionic surfactant sodium butoxy-ethoxyacetate in an amount from about 1 to about 15%, and

(ix) a non-ionic surfactant in an amount from about 0.1 to about 7.5%.

4,497,668

PHOSPHATING PROCESS FOR ZINC-PLATED METALS

Rashad Mady, Pulheim; Winand Hanelt, Düren; Roland Morlock, Bergheim; Dieter Geruhn, Werl; Lutz Leyhe, Wittenheven; Jobst H. Meyer zu Bexten, Soest-Ostönnen, and Franz Ricke, Schwelm, all of Fed. Rep. of Germany, assignors to Gerhard Collardin GmbH, Cologne, Fed. Rep. of Germany

Filed Nov. 25, 1983, Ser. No. 554,879
Claims priority, application Fed. Rep. of Germany, Dec. 8, 1982, 3245411
Int. Cl.³ C23F *7/08*
U.S. Cl. 148—6.15 Z **20 Claims**

1. A process for phosphating a zinc-plated metal article comprising contacting said zinc-plated metal article with a phosphating solution consisting essentially of zinc ions and phosphate ions wherein

(a) from about 1 to about 2.5 g/l of zinc ions are present,

(b) the free acid content thereof is in the range of from about 0.8 to about 3 points,

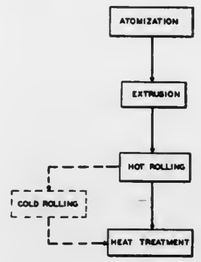
(c) the ratio of total acid to free acid is in the range of from about 5 to about 10, and wherein the contact time is not longer than about 5 seconds.

4,497,669

PROCESS FOR MAKING ALLOYS HAVING COARSE, ELONGATED GRAIN STRUCTURE

Kathy K. Wang, Suffern, and Mark L. Robinson, Warwick, both of N.Y., assignors to Inco Alloys International, Inc., Huntington, W. Va.

Filed Jul. 22, 1983, Ser. No. 516,109
Int. Cl.³ C21D *00/00*
U.S. Cl. 148—11.5P **28 Claims**



1. A method of making alloys characterized by a coarse, elongated grain structure, the method comprising:

(a) water atomizing a charge of components comprising the alloy to form powder,

(b) extruding the powder to a predetermined product configuration,

(c) hot rolling the product in a direction substantially parallel to the extrusion direction and,

(d) annealing the product to permit recrystallization therein.

4,497,670

ROTOR SHAFT AND MANUFACTURING METHOD THEREOF

Masao Siga; Seishin Kirihara; Takatoshi Yoshioka; Katsukuni Hisano; Toshimi Tan; Yoji Akutsu, all of Hitachi, and Kei Kobayashi, Kitaibaraki, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 4, 1983, Ser. No. 463,854
Claims priority, application Japan, Feb. 8, 1982, 57-19508
Int. Cl.³ C21D *9/28*
U.S. Cl. 148—12 R **14 Claims**



1. A rotor shaft having at least one journal portion adapted to be supported by a bearing means, comprising a plurality of segments joined to each other by welding to form a cylindrical sleeve, said sleeve being mounted on said journal portion by a shrink-fit, each of said segments being made of an alloy steel of bainite structure comprising, by weight, 0.04 to 0.35% C, 0.2 to 2% Mn, 0.1 to 0.6% Si, 0.5 to less than 5% Ni, 0.5 to 3% Cr, 0.2 to 2%Mo, and the balance Fe, and having at least 50 kg/mm² yield strength at room temperature and a hot crack susceptibility (Lt) of less than 24, which is expressed by the following equation:

$$Lt=70(C-Si/12-Mn/9+3P+4S+Ni/23+Cr/35-+Mo/70),$$

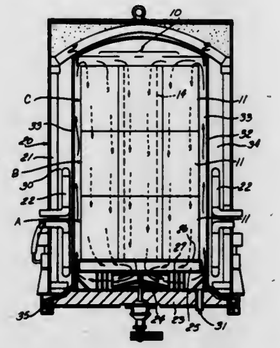
wherein each element symbol in the equation represents the content of the element in weight percent.

4,497,671

PROCESSED FERROUS METAL AND PROCESS OF PRODUCTION

Gary L. Wasserman, 4635 Private Lk. Dr., Birmingham, Mich. 48010 and David J. Carter, 22620 E. River, Grosse Isle, Mich. 48138

Continuation of Ser. No. 344,469, Feb. 1, 1982, abandoned. This application Nov. 25, 1983, Ser. No. 555,431
Int. Cl.³ C21D *1/48*
U.S. Cl. 148—16 **7 Claims**



1. In the production of ferrous metal from carbon-containing non-particulate scrap steel segments, the steps comprising:

establishing in the chamber or retort of an axial flow decarburizing atmosphere furnace a random loaded gas-permeable array of non-particulate scrap steel segments each having a maximum dimension of about eight inches and thus loaded being spatially distributed to accommodate uniform axial gas flow among the segments so as to avoid mobilizing or mixing of the loaded segments during decarburizing;

subjecting the thus loaded segments to a decarburizing anneal cycle in a circulating high water-vapor decarburizing atmosphere at elevated temperatures peaking in the range from about 1300° to about 1650° F. such that on completion of the anneal cycle the segments are decarburized to the core of the segments and the average carbon content of the segments is reduced to less than about 0.04%;

and cooling the decarburized segments.

4,497,672

METHOD FOR THE PREPARATION OF A RARE EARTH-COBALT BASED PERMANENT MAGNET

Yoshio Tawara, and Ken Ohashi, both of Fukui, Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Filed Apr. 4, 1983, Ser. No. 481,822
Claims priority, application Japan, Apr. 6, 1982, 57-57027
Int. Cl.³ H01F *1/02*
U.S. Cl. 148—102 **5 Claims**

1. A method for the preparation of a rare earth-cobalt based permanent magnet which comprises the steps of:

(a) sintering a shaped body of an alloy powder composed of from 22 to 28% by weight of at least one rare earth element, from 10 to 30% by weight of iron, form 2 to 10% by weight of copper and from 0.1 to 5% by weight of at least one additive element selected from the group consisting of zirconium, titanium, manganese, tantalum, hafnium, chromium, silicon, tungsten and vanadium, the balance being cobalt, into a sintered body;

(b) subjecting the sintered body to a primary aging treatment by heating at a temperature in the range from 600° to 850° C. followed by a first continuous cooling of the sintered body down to a temperature in the range from 300° to 400° C. at a cooling velocity in the range from 0.5° to 3.0° C./minute; and

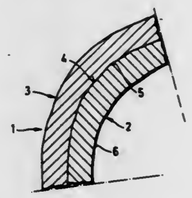
(c) subjecting the sintered body after the step (b) to a secondary aging treatment by heating at a temperature in the range from 700° to 900° C. followed by a second continuous cooling of the sintered body down to a temperature in the range from 300° to 500° C. at a cooling velocity in the range from 0.1 to 5.0° C./minute.

4,497,673

METHOD OF MANUFACTURING DOUBLE-WALLED TUBE

Alexander Esser, Warstein, Fed. Rep. of Germany, assignor to Esser-Werke GmbH Vorm. Westmontan-Werke, Warstein, Fed. Rep. of Germany

Filed Dec. 6, 1982, Ser. No. 447,626
Claims priority, application Fed. Rep. of Germany, Dec. 8, 1981, 3148498
Int. Cl.³ C21D *1/00*
U.S. Cl. 148—127 **5 Claims**



1. A method of manufacturing a double-walled tube for transporting solid materials comprising the steps of, comprising the steps of providing a flame-hardened circumferentially uninterrupted core tube member of a hardenable carbon steel and a casing tube member of a tough steel material with an inner diameter of the casing tube member and the outer diameter of the core tube member selected such that a sufficient amount of play remains therebetween; inserting the core tube member into the casing tube member easily because of the sufficient amount of play; and subjecting the core tube member to repeatedly successive heat hardening steps for successive radial expansion of the core tube member during successive heat hardening steps and for firm adhering surface abutment of an outer surface of the core tube member against an inner surface of the casing tube and fixation of the core tube member in the casing tube member even with great deviations in the inner and outer diameters and/or noncircularity of the tube members.

4,497,674

METHOD AND APPARATUS FOR CONTINUOUSLY ANNEALING STEEL SHEET

Hiroshi Ikegami; Kozaburo Ichida, and Katsuyoshi Kobayashi, all of Kitakyushu, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

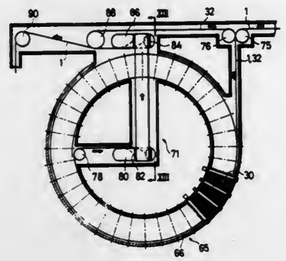
Filed May 31, 1984, Ser. No. 615,528
Claims priority, application Japan, May 31, 1983, 58-95017; Jan. 5, 1984, 59-80
Int. Cl.³ C21D *9/56*
U.S. Cl. 148—156 **15 Claims**

1. In a method of continuously annealing steel strip succes-

sively passed through a heating zone, soaking zone, primary cooling zone, overaging zone and secondary cooling zone in an annealing furnace, the overaging treatment comprises the steps of:

allowing an endless guide strip to run at the same speed as a strip being processed delivered from the primary cooling zone along a passageway spirally extending in the overaging zone and at a given distance in the direction of radius;

laying the strip being processed over the guide strip on the entry side of the overaging zone to allow the two strips to travel together spirally through the overaging zone;



guiding the processed and guide strips together out of the spiral passageway by changing the direction of the travel thereof at a point where the overaging treatment is completed;

separating the processed strip from the guide strip by changing the direction of the travel of at least one of the two strips;

delivering the separated processed strip to the subsequent secondary cooling zone; and

returning the guide strip to the entry end of the overaging zone for the next circular trip through the spiral passageway.

4,497,675

PROCESS FOR THE MANUFACTURE OF SUBSTRATES FROM CARBON-COATED SILICON DIOXIDE FABRIC THAT CAN BE USED FOR LARGE-SURFACE SILICON BODIES

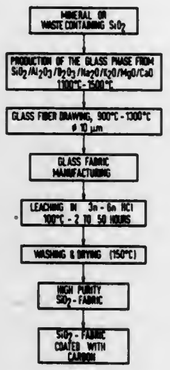
Hubert Aulich, Munich; Karl-Heinz Eisenrith, Schliersee, and Hans-Peter Urbach, Munich, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Nov. 25, 1983, Ser. No. 555,099

Claims priority, application Fed. Rep. of Germany, Dec. 22, 1982, 3247532

Int. Cl.³ H01L *21/225;* **C03C** *25/02, 25/06*

U.S. Cl. 148—191 **20 Claims**



1. A process for the manufacture of substrates from carbon-coated silicon dioxide fabric that can be used for large-surface silicon bodies, for the manufacture of solar cells according to a strip-coating process, the improvement comprising the steps of:

(a) using mineral or waste materials containg SiO_2 as starting materials;

(b) transforming said starting materials into a glass phase with a mixture of materials selected from the group consisting of aluminum oxide (Al_2O_3), carbonates, and oxides of the elements in the alkaline and alkaline earth metal groups;

(c) producing a homogenous glass melt at 1100° to 1500° C.;

(d) transforming said glass melt into a glass fiber stage;

(e) processing said glass fiber into a glass fabric;

(f) subjecting said glass fabric to a leaching process in hot mineral acid; and

(g) coating said glass fabric with carbon.

17. The process according to claim 1, wherein a composition of the glass is used so that following subjecting said glass fabric to a leaching process, a sufficient amount of boron remains in said silicon dioxide whereby, when subsequently coating said fabric with molten silicon, primary doping of said silicon body is accomplished by diffusion from said fabric.

4,497,676

GUNPOWDER SUBSTITUTED COMPOSITION AND METHOD

Earl F. Kurtz, 3607 Columbia Dr., Longmont, Colo. 80501

Filed Nov. 1, 1982, Ser. No. 437,965

Int. Cl.³ C06B *45/00*

U.S. Cl. 149—2 **20 Claims**

1. A consumable cartridge comprising:

(a) a primer; and

(b) a projectile; and

(c) a molded cartridge case containing means for receiving said primer and means for receiving said projectile in association therewith for use in a firearm, said molded cartridge case comprising a composition made from an inorganic nitrate oxidizer and an organic acid selected from the group consisting of erythorbic acid, ascorbic acid, and mixtures thereof.

4,497,677

METHOD FOR MANUFACTURING CERAMIC SUBSTRATE

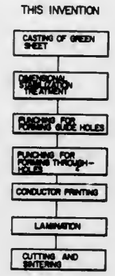
Sakae Sanada, Hadano, and Yoshiyuki Ohzawa, Hiratsuka, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 4, 1983, Ser. No. 463,855

Claims priority, application Japan, Mar. 10, 1982, 57-37367

Int. Cl.³ B32B *31/14;* **C04B** *39/12*

U.S. Cl. 156—89 **10 Claims**



1. A method for manufacturing a ceramic substrate comprising the steps of:

making a green sheet;

pressing and heating said green sheet to a temperature of 20°

to 250° C., the pressure applied during the pressing being within the range of 1 to 100 kg/cm² to effect dimensional stabilization of said green sheet;

forming a conductor on the surface of said green sheet; and

sintering the conductor-formed green sheet.

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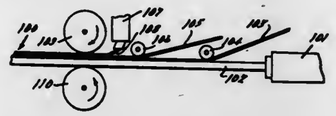
METHOD OF MAKING A LAMINATE CONSTRUCTION

Joel H. Nussbaum, Farmington Hills, Mich., assignor to The Standard Products Company, Cleveland, Ohio

Continuation of Ser. No. 432,077, Sep. 30, 1982, abandoned, which is a division of Ser. No. 250,879, Apr. 3, 1981, Pat. No. 4,368,225. This application Nov. 28, 1983, Ser. No. 555,411

Int. Cl.³ B29D *3/00*

U.S. Cl. 156—244.11 **7 Claims**



1. The method of making a laminate construction, said method comprising the steps of:

laminating a first sheet of a first material to a second sheet of a second material using sheet lamination techniques, said sheet lamination techniques including pressing said first and second sheets together with adhesive means therebetween;

extrusion laminating with heat a first body comprising a first thermoplastic onto said first sheet, said first thermoplastic being compatible for lamination with said first material of said first sheet without the use of adhesives;

extrusion laminating with heat a second body comprising a second thermoplastic onto said second sheet, said second thermoplastic body compatible for lamination with said second material without the use of adhesives and being incompatible for lamination with said first thermoplastic by said extrusion lamination with heat, said at least one of first and second bodies being substantially thicker than either of said first or second sheets.

4,497,679

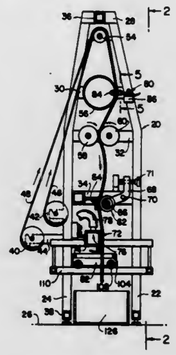
METHOD OF FORMING PLASTIC ENVELOPES

Charles T. Hathaway, 518 S. Rancho Lindo, Covina, Calif. 91724

Filed Oct. 13, 1981, Ser. No. 311,038

Int. Cl.³ B32B *31/18*

U.S. Cl. 156—251 **4 Claims**



1. The process of forming plastic protective envelopes from sheet polyester which is untreated with material to aid in marginal bead sealing including:

superimposing at least one sheet of relatively thin untreated polyester upon another sheet of relatively thin untreated polyester;

drawing said superimposed sheets over a mandrel;

interposing a plurality of fixed first cutting and sealing means independent of said mandrel in the path of said sheets capable of simultaneously cutting said sheets into endless strips and bead sealing endless marginal edges of said strips;

feeding said sealed strips through stop clamp means to regulate the speed and metering of said strips;

positioning a vacuum means in the path of said metered strips adapted to releasable retain said strips in a fixed position; and

activating a second cutting sealing means adjacent said vacuum means in the path of said vacuum retained strips capable of simultaneously cutting said metered strips and bead sealing marginal edges normal to said endless marginal edges to form said individual untreated polyester envelopes.

4,497,680

Patent Not Issued For This Number

4,497,681

APPARATUS AND METHOD FOR APPLYING HEAT SHRINKABLE CONICAL PLASTIC LABELS ON CONTAINERS

Robert F. Kontz, Toledo, and Gary L. Moore, Swanton, both of Ohio, assignors to Owens-Illinois, Inc., Toledo, Ohio

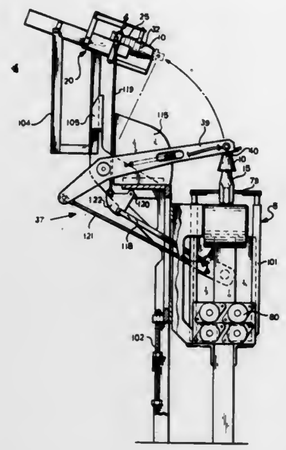
Filed Nov. 10, 1983, Ser. No. 550,412

Int. Cl.³ B29C *7/30*

U.S. Cl. 156—363 **14 Claims**

1. An apparatus for applying preformed conical plastic labels to a container, the apparatus comprising: means for holding a stacked column of preformed conical labels, the labels being of a generally cylindrical cross section and having no top or bottom, the labels being of a frusto-conical outline, transferring means for picking a label from the supply stack and applying it to a container in a woodpecker-like action, the label being turned about 180° from its position at the bottom of the stacked column, there being a transfer head on the transfer arm to pick a label from the bottom of the column, means for retracting the end portion of the head so the head will not take a label from the column, means to move the end of the head outwardly

therefrom to seat within the bottom opening of the label and grasp the label, and means for separating the grasped label



from the column including air blowing between the column and the inside of the grasped label.

4,497,682

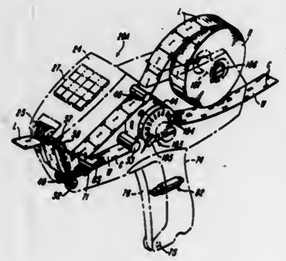
HAND-HELD ELECTRICALLY SELECTABLE LABELER

Paul H. Hamisch, Jr., Franklin, Ohio, assignor to Monarch Marking Systems, Inc., Dayton, Ohio

Continuation of Ser. No. 268,320, May 29, 1981, abandoned. This application Jul. 11, 1983, Ser. No. 512,820

Int. Cl.³ B41J *3/00*; B41F *1/08*

U.S. Cl. 156—384 **33 Claims**



1. A hand-held labeler adapted to print and apply pressure sensitive labels releasably secured to a carrier web, comprising: a housing having a handle, the housing having a front portion, a rear portion, and a top portion, the handle depending in a downward direction, a label applicator mounted on the front portion, label roll mounting means disposed at the rear portion, electrically selectable printing elements disposed in the housing, means for advancing the carrier web, a keyboard disposed at the top portion of the labeler, a visual display disposed adjacent the keyboard for displaying data entered into the keyboard, a control circuit for the print head and the display, means including a circuit board for the control circuit disposed adjacent and in underlying relationship to the keyboard, and means electrically connecting the control circuit with the keyboard, the printing elements and the display.

4,497,683

PROCESS FOR PRODUCING DIELECTRICALLY ISOLATED SILICON DEVICES

George K. Celler, New Providence, and McDonald Robinson, Chester, both of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed May 3, 1982, Ser. No. 374,308

Int. Cl.³ C30B *25/10*; B05D *5/12*

U.S. Cl. 156—603 **6 Claims**



1. A process for producing a device comprising an active region of single crystal silicon overlying a region of silicon oxide comprising the steps of

(1) forming a precursor structure that includes a region of non-single crystal silicon material which both overlies said region of silicon oxide and contacts a nucleative region of single crystal silicon wherein said precursor structure is formed from a body having an exposed surface of a region of single crystal silicon below an exposed surface of said region of silicon oxide by

(a) selectively epitaxially depositing silicon on said region of single crystal silicon to produce said nucleating region of single crystal silicon while substantially avoiding the deposition of silicon on said region of silicon oxide until the surface of said epitaxially deposited silicon is substantially coplanar with said surface of said region of silicon oxide and

(b) depositing silicon both on said region of silicon oxide and on said nucleating region of single crystal silicon and

(2) converting said non-single crystal silicon region into said active region of single crystal silicon by employing said nucleating region of single crystal silicon as a nucleating site.

4,497,684

LIFT-OFF PROCESS FOR DEPOSITING METAL ON A SUBSTRATE

Edward H. Sebesta, San Francisco, Calif., assignor to Amdahl Corporation, Sunnyvale, Calif.

Filed Feb. 22, 1983, Ser. No. 468,130

Int. Cl.³ C23F *1/02*; B44C *1/22*; C03C *15/00, 25/06*

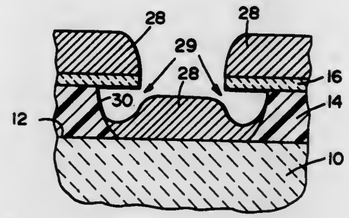
U.S. Cl. 156—643 **17 Claims**

1. A method of depositing a metal on a substrate to form a metal pattern, comprising:

(a) providing a substrate having a surface covered with a first sacrificial layer of a greater thickness than said metal pattern, which first sacrificial layer is covered by a second rigid sacrificial layer, which is covered by a photoresist layer, which has one or more trenches exposing a pattern on the second sacrificial layer;

(b) extending substantially the pattern through the second sacrificial layer to expose substantially the pattern on the first sacrificial layer without significantly affecting the photoresist layer or the first sacrificial layer;

(c) selectively removing sufficient of the first sacrificial layer to partially undercut the second sacrificial layer to provide an overhanging lip portion and to expose an enlarged similar pattern on the substrate without significantly affecting the second sacrificial layer or the substrate, said lip portion overhanging said enlarged pattern by at least about 1000 Å;



(d) stripping the photoresist layer from the second sacrificial layer without significantly affecting the second sacrificial layer or the first sacrificial layer;

(e) depositing the metal on the enlarged pattern on the substrate; and

(f) eliminating the first sacrificial layer while leaving the metal pattern on the substrate.

masking the substrate to outline a pair of boundary regions for each semi-array of active regions to become resistors;

slotting the substrate in said boundary regions to a given depth;

etching away the substrate via said slots sufficiently to separate the semi-arrays of active regions from the substrate except at spaced apart supporting locations therealong;

oxidizing the substrate and semi-arrays to at lease substantially completely oxidize the peripheries of the semi-arrays;

slotting the substrate orthogonally to the first mentioned slots to provide second slots with orthogonal pairs of slots defining individual transistor active regions for the respective transistors;

optionally doping the regions defined by orthogonal pairs of slots via corresponding edges of the second slots and driving in the doping; and,

establishing electrical connections to the regions.

4,497,685

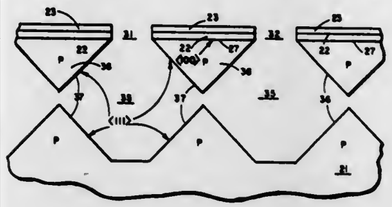
SMALL AREA HIGH VALUE RESISTOR WITH GREATLY REDUCED PARASITIC CAPACITANCE

Sidney I. Soclof, San Gabriel, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Division of Ser. No. 261,435, May 8, 1981,. This application Oct. 24, 1983, Ser. No. 544,914

Int. Cl.³ H01L *21/306*; B44C *1/22*; C03C *15/00, 25/06*

U.S. Cl. 156—647 **8 Claims**



1. A method for forming an array of sub-micron dimensioned resistors on a doped substrate, wherein each resistor is formed comprising the following steps:

4,497,686

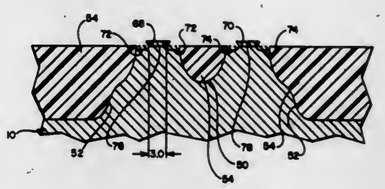
FINE-LINE DIE AND METHOD OF MAKING SAME

Walter Weglin, Bellevue, Wash., assignor to Jerobee Industries, Inc., Redmond, Wash.

Continuation-in-part of Ser. No. 369,906, Apr. 19, 1982, Pat. No. 4,437,924, and a continuation-in-part of Ser. No. 365,368, Apr. 5, 1982, Pat. No. 4,447,286. This application Mar. 16, 1984, Ser. No. 590,722

Int. Cl.³ C23F *1/02*; B44C *1/22*; C03C *15/00, 25/06*

U.S. Cl. 156—651 **13 Claims**



10. A method for fabricating a precision die by chemical milling the working face of an etchable workpiece to form a plurality of raised die elements separated and bounded by a plurality of cavities in a line-and-space array, said method comprising the steps of:

a. forming an etchant-resistant surface pattern of pockets penetrating slightly into the working face of an etchable workpiece, masking the regions corresponding to the

desired location for raised die elements in the finished die configuration and having a surface width dimension greater than the desired finished line width;

h selectively etching said workpiece in etchant-active regions intermediate and outwardly bounded by said pockets to undercut the same and form die cavity precursors within said working face having a width approximately equal to the desired space width in the finished die configuration;

c. forming an etchant-resistant surface pattern of boundary grooves along the marginal edges of said raised die element precursors; and,

d. selectively etching etchant-active regions intermediate said boundary grooves to undercut the same and form die element cavity precursors having a width approaching substantially the desired line width.

4,497,687

AQUEOUS PROCESS FOR ETCHING COOPER AND OTHER METALS

Norvell J. Nelson, Palo Alto, Calif., assignor to Psi Star, Inc., Hayward, Calif.

Continuation-in-part of Ser. No. 517,943, Jul. 28, 1983, which is a continuation-in-part of Ser. No. 501,159, Jun. 6, 1983.
This application Dec. 20, 1983, Ser. No. 563,683
Int. Cl.³ C23F *1/02*; B44C *1/22*; C03C *15/00, 25/06*
U.S. Cl. 156—659.1 **36 Claims**

1. In a process for etching copper, the steps of: forming a film of water on the surface of the copper, and exposing the water-covered copper to gaseous NO_2 for a time sufficient to dissolve the copper.

4,497,688

OIL SCAVENGING MATERIAL

Ernest R. Schaefer, 40 Country Corners Rd., Wayland, Mass. 01778

Continuation of Ser. No. 265,385, May 20, 1981, abandoned.
This application Mar. 21, 1983, Ser. No. 477,155
Int. Cl.³ D21H *3/66*
U.S. Cl. 162—181.1 **3 Claims**

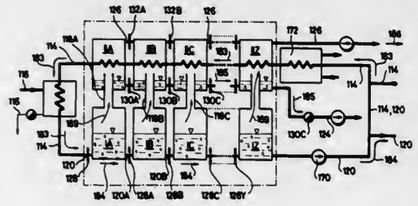
1. Method of scavenging an oil slick which comprises contacting that oil slick with a quantity of particles derived from a friable material formed from paper machine sludge combined in the presence of water with a very high early strength, fast-setting portland cement and dried in the absence of substantial pressure at a moderate temperature, said sludge comprising the sludge formed from the paper-making machine fluid discharge in the daily manufacture of high quality bond and artistic paper and having a consistency similar to papier mache with a ratio of water to solids in said sludge such that about one pound total sludge contains about three ounces of paper machine sludge solids, said sludge solids containing approximately 80 percent substantially pure cellulose fibers derived from wood and cotton fibers and approximately 20 percent other solids comprising titanium pigment, silica pigment and paper-maker's clay in substantial equal quantities, said sludge being substantially free of resinous materials, said very high early strength, fast-setting portland cement being a fast-setting hydraulic cement having very high compressive strengths within a few hours of mixing with water, and generally from about 2,900 to over 5,000 p.s.i. within 24 hours, containing beta $2CaO.SiO_2$, $3CaO.CaSO_4$ and chemically unbound $CaSO_4$ obtained by firing at a temperature between about 1,200° and 1,600° C. for about 1 to 5 hours a mixture of a source respectively of CaO, SiO_2, Al_2O_3 and SO_3 in proportions of about 1 to 3 moles of $CaSO_4$ to about (0.5 to 2)+2n moles of $CaCO_3$ per mole of $Al_2O_3.nSiO_2$ and grinding the resultant clinker where n is about 1.5 to about 2.5, wherein the ratio of paper machine sludge solids to portland cement solids is about three parts by weight of sludge solids to between about one-half part and about three parts by weight of cement solids, said friable material characterized in that when placed on an oil slick it will sorb up to five times its weight of oil substantially to the exclusion of any water that may be present in the vicinity of the oil and will continue to float on such water even when saturated with oil, and removing the oil-containing particles together with the oil contained therewith from the area of the oil slick.

4,497,689

HEAT ENGINEERING APPARATUS FOR CARRYING OUT THERMODYNAMICAL PROCESSES COMPRISING A PAIR OF MUTUALLY OPPOSITE PHASE TRANSITIONS OF A WORK MEDIUM

László Sziics, and Csaba Tasnádi, both of Budapest, Hungary, assignors to Energiagazdalkodasi Intezet, Budapest, Hungary

Continuation of Ser. No. 287,579, Jul. 28, 1981, abandoned. This application Sep. 30, 1983, Ser. No. 537,324
Claims priority, application Hungary, Aug. 22, 1980, EE-2555
Int. Cl.³ B01D *1/26, 3/02, 3/06*
U.S. Cl. 202—174 **35 Claims**



1. In a heat-engineering apparatus comprising elements designed, sized and arranged for carrying out thermodynamic processes in which a work medium undergoes mutually opposite phase transitions comprising evaporation and condensation without the need to provide an enclosing vessel for the apparatus, the apparatus comprising casings consisting of confining plates and spacers therebetween, phase transition compartments in said casings, passages connecting pairs of said phase transition compartments with one another so as to form a number of work chambers, passages connecting said work chambers in series to as to form stages of mutually opposite phase transitions, and passages for introducing and withdrawing said work medium into and from said phase transition compartments; the improvement comprising means for precluding the need for transition third compartments, said means being characterized in that at least two adjacent casings enclose an even number of and not less than four phase transition compartments in superimposed relationship, said work medium introducing passages being delimited from the interior of said casings by said confining plates and said spacers, and said passages connecting the members of the pairs of phase transition compartments being orifices free from pipe structure in partitions separating the former from one another within said casings.

4,497,690

DISTILLATION

Richard R. Manzone, Fairhaven, Mass., assignor to Hoyt Manufacturing Corporation, Westport, Mass.

Filed May 19, 1982, Ser. No. 379,664
Int. Cl.³ B01D *3/02*
U.S. Cl. 202—181 **15 Claims**

1. A still having enhanced condensation efficiency comprising:

a cylindrical housing,

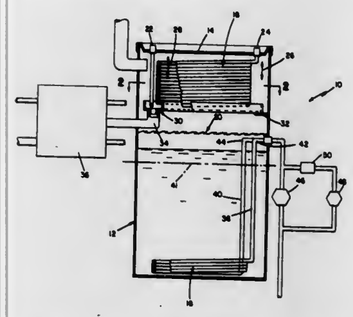
a heating coil located inside said housing,

means for maximizing condensation efficiency, including

a condensing coil, mounted above said heating coil in said housing,

said condensing coil having a diameter smaller than said cylindrical housing to define a vapor flow space between said cylindrical housing and said condensing coil,

said condensing coil having further vapor flow space inside its turns, said turns being designed, dimensioned and arranged such that a segment of the inside thereof



and a segment of the outside thereof are available for vapor condensation, and

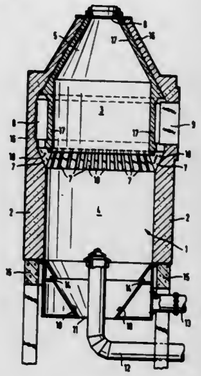
means for removing condensate from said housing to said exterior of said housing.

4,497,691

STACK COOLER FOR DRY QUENCHING OF COKE

Heinz Thubeauville, Bochum, Fed. Rep. of Germany, assignor to Dr. C. Otto & Comp. G.m.b.H., Bochum, Fed. Rep. of Germany

Filed Jan. 18, 1983, Ser. No. 458,904
Claims priority, application Fed. Rep. of Germany, Mar. 9, 1982, 3208415
Int. Cl.³ C10B *39/02, 45/00*
U.S. Cl. 202—228 **18 Claims**



1. A stack cooler for dry quenching of coke and other lumpy fuel materials comprising:

a vertical circular chamber formed from refractory materials and including a substantially circular prechamber having a charging opening in the top of an upper tapered section which narrows in an upward direction and has an inner refractory materials walling and an outer walling, the inner walling and outer walling being independent and separate with a space therebetween such that the weight loads are not transferred to the other, a substantially cylindrical section located below and adjacent the upper tapered section, said cylindrical section including means forming spaced-apart gas exhaust discharge openings along the circumference and at the bottom of the prechamber, said inner and outer wallings defining an annular gas-collection channel behind the refractory materials of the inner walling above said gas exhaust openings where the inner walling of the gas-collection channel continues to the inner refractory walling of the upper tapered section and where the outer walling of the gas-collection channel continues to the outer walling of the upper tapered section, and

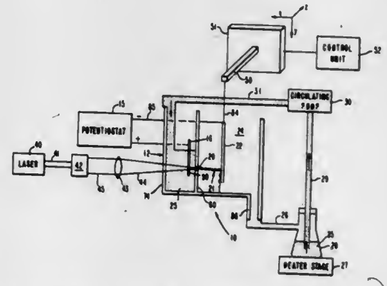
a substantially cylindrical quenching chamber disposed below and adjacent the bottom of said circular prechamber, said quenching chamber having a discharge opening disposed at and adjoining the bottom thereof.

4,497,692

LASER-ENHANCED JET-PLATING AND JET-ETCHING: HIGH-SPEED MASKLESS PATTERNING METHOD

Mordechai H. Gelchinski, Bedford Hills; Lubomyr T. Romankiw, Briarcliff Manor; Donald R. Vigliotti, Yorktown Heights, and Robert J. Von Gutfeld, New York, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 13, 1983, Ser. No. 504,016
Int. Cl.³ C25D *5/02, 5/08, 21/10*; C25F *3/02*
U.S. Cl. 204—15 **54 Claims**



1. In a process of chemically-enhanced additive or subtractive processing of a substrate in a chemically-active electrolyte fluid,

the improvement comprising directing a high intensity energy beam to heat said substrate at the site to be treated concomitantly with simultaneously directing a jet of said fluid at the locus of desired enhanced-chemical action on said substrate,

said energy beam being collinear with said jet,

said site and said locus coinciding at the same spot, and

said beam having a diameter comparable to or less than the diameter of said jet at said locus.

4,497,693

METHOD FOR PLATING AN ARTICLE AND THE APPARATUS THEREFOR

Ken Ogura, Okazaki; Nobuhiko Yamada, Hekinan, and Hiroshi Ohmi, Anjo, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

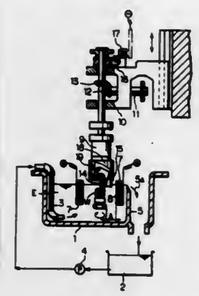
Filed Mar. 22, 1984, Ser. No. 592,087
Claims priority, application Japan, Apr. 11, 1983, 58-62318
Int. Cl.³ C25D *5/02, 17/06*
U.S. Cl. 204—15 **5 Claims**

1. A method for plating an article comprising the steps of preparing a station holding an amount of an electrolyte of a certain fixed level with an anode soaked in said electrolyte,

grasping said article by a chuck at a portion of said article where no plating is needed within a shield cover, maintaining an airtight space between said chuck and said shield cover, and leaving a gap between an end of said chuck and an end of said shield cover, said article being cathode, and

dipping said article together with said shield cover to such an extent that an end portion of said shield cover is dipped

into said electrolyte, said end of said chuck being apart from a surface of said electrolyte.



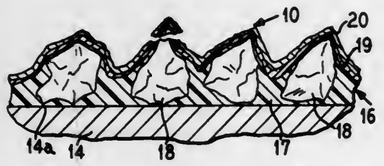
wherein said portion of said article is not plated, whereas all the remaining portion of said article is plated.

4,497,694

METHOD OF MANUFACTURING ABRASIVE ARTICLES

Jack D. Bankier, Northbrook, and Dennis A. Gross, Lake Forest, both of Ill., assignors to Barristo, Ltd., Chicago, Ill.

Filed Apr. 17, 1984, Ser. No. 602,403
Int. Cl.³ C25D *5/34, 5/48, 15/00*
U.S. Cl. 204—16 **8 Claims**



1. The method of making files which comprises stamping sheet metal into a plurality of fingers depending from a header strip, covering the fingers with a slurry of epoxide resin and abrasive grits, heat curing the epoxide resin to form a sheath around each finger with the abrasive grits firmly anchored therein, suspending a plurality of the sheath covered fingers from their header strips in a vacuum chamber, evacuating the chamber to degasify the sheaths on the fingers, melting a strike metal in the chamber, increasing the vacuum in the chamber below the vapor pressure of the molten strike metal, depositing a thin layer of the strike metal around each plastic sheath, acid etching the deposited strike metal layer on each finger, electroplating a hard metal layer around each etched strike metal layer, separating the fingers from the header strips, and applying a plastic handle over the separated ends of the fingers.

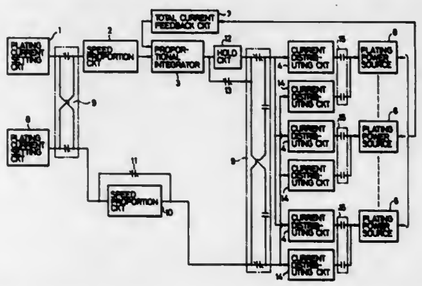
4,497,695

PLATING CURRENT AUTOMATIC SWITCHING METHOD AND APPARATUS

Daisuke Shiakai; Haruo Komoto, and Shigeharu Hamada, all of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha and Nippon Steel Corporation, both of Tokyo, Japan

Filed Feb. 16, 1983, Ser. No. 467,046
Claims priority, application Japan, Feb. 16, 1982, 57-23360
Int. Cl.³ C25D *5/10, 7/06*
U.S. Cl. 204—28 **11 Claims**

1. A plating current automatic switching device comprising:
- a first speed proportion circuit (2) for providing a first current set value in proportion to a first plating line speed;
- a plurality of plating power sources (6) for supplying plating current to a plating tank (17) associated with each said source;
- a plurality of first tank current distributing circuits (4) for distributing an output of said first speed proportion circuit to said plurality of plating power sources for setting magnitude of said plating currents in said plating tanks;
- a second speed proportion circuit (10) for providing a second current set value in proportion to a second plating line speed different from said first plating line speed;
- a plurality of second tank current distributing circuits (14) for distributing an output of said second speed proportion circuit to said tanks for setting magnitudes of said plating currents in said plating tanks; and
- a plating current setting switching circuit (15) provided for each plating tank for switching, when a plating thickness change point of a material to be plated reaches a plating tank, the plating current of said tank from a value determined by said first current set value provided by said first



tank current distributing circuit to a value determined by said second current set value provided by said second tank current distributing circuit.

7. A method for controlling plating currents in a multi-tank plating line along which a strip member to be plated passes, comprising the steps of:
- providing first and second control signals corresponding to first and second plating currents and respective first and second plating thicknesses; and
- as a plating thickness change point on said member passes along said plating line, controlling currents in one of said tanks before said plating thickness change point with said first control signal and controlling plating currents in ones of said tanks after said plating thickness change point with said second control signal.

4,497,696

GOLD-PLATING ELECTROLYTE AND PROCESS FOR PREPARING SAME

Elena V. Shemyakina, ulitsa 800 let Moskvy, 3, korpus 2, kv. 8; Nina M. Dyatlova, Samotechny pereulok, 4, korpus 1, kv. 4; Alexandr I. Formenov, 7-ya Parkovaya ulitsa, 30, kv. 164; Alexandr V. Belikin, ulitsa Vilisa Latsisa, 4, kv. 208; Alexandr Y. Fridman, ulitsa 800 let Moskvy, 3, korpus 2, kv. 8; Nina I. Sinko, Zhigulevskaya ulitsa, 32, kv. 47; Iosif G. Ernsalimchik, Sirenevy bulvar, 19, kv. 21, all of Moscow; Galina I. Efimova, ulitsa Gagarina 4, kv. 67, and Julian P. Zavalsky, ulitsa Pionerskaya, 12, kv. 9, both of poselok Tomilino, Moskovskaya oblast, all, U.S.S.R.

Filed Jan. 18, 1982, Ser. No. 340,351
Int. Cl.³ C01G *7/00*; C25D *3/48*
U.S. Cl. 204—46 G **8 Claims**

4. A process for producing a gold-plating electrolyte comprising reacting of the reagents chloroauric acid, an alkali metal salt of ethylenediaminetetracetic acid, an alkali metal sulphite, caustic potash and ammonium chloride in a single stage in distilled water at a temperature of from 80° to 90° C. with the following proportions of the reagents, g/l;

chloroauric acid	12.6–250

-continued

alkali metal salt of ethylenediamine-tetraacetic acid	39–1,000
alkali metal sulphite	6–190
caustic potash	32–800
ammonium chloride	6.6–132;

whereby a gold-plating electrolyte is obtained along with a precipitate of chlorides and sulphates of alkali metals; and separating precipitate from the electrolyte by filtration.

4,497,697

ELECTROLYTIC PREPARATION OF 3,6-DICHLOROPICOLINIC ACID

Cary S. Marshall, Danville, and Scott D. Troyer, Pittsburg, both of Calif., assignors to The Dow Chemical Company, Midland, Mich.

Filed Mar. 2, 1984, Ser. No. 585,662
Int. Cl.³ C25B *3/00*
U.S. Cl. 204—73 R **10 Claims**

1. An improvement in the process of preparing 3,6-dichloropicolinic acid wherein tetrachloropicolinic acid in basic aqueous solution is electrolytically reduced to 3,5,6- and/or 3,4,6-trichloropicolinate anions under conditions such that said trichloro species are further reduced to 3,6-dichloropicolinate anions,

said improvement comprising providing as said solution one which, in addition to the anions of said tetrachloroacid, contains said trichloro anions in a concentration greater than could have been achieved by reduction in-situ, under said conditions, of more of said tetrachloro anions.

4,497,698

LANTHANUM NICKELATE PEROVSKITE-TYPE OXIDE FOR THE ANODIC OXYGEN EVOLUTION CATALYST

John O'M. Bockris, College Station, Tex., and Takaaki Ottagawa, Westmoat, Ill., assignors to Texas A&M University, College Station, Tex.

Filed Aug. 11, 1983, Ser. No. 521,973
Int. Cl.³ C05B *1/02*
U.S. Cl. 204—129 **4 Claims**

1. An electrochemical cell for producing oxygen and hydrogen by the electrolysis of water, said cell comprising:
- a container;
- an aqueous electrolyte in said container;
- a cathode mounted in said container in contact with said electrolyte;
- a lanthanum nickelate anode mounted in said container in contact with said electrolyte; and
- means for electrically interconnecting said cathode and said anode,
- whereby when an electrical potential is exerted between said cathode and said anode, gaseous hydrogen will be evolved at said cathode and gaseous oxygen will be evolved at said anode.

4,497,699

METHOD OF TREATING FOIL FOR ELECTROLYTIC CAPACITORS

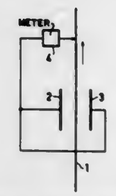
Hendrik J. de Wit; Albertus W. M. Van Berlo, and Cornelis Crevecoeur, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 28, 1983, Ser. No. 479,595
Claims priority, application Netherlands, Apr. 14, 1982, 8201558
Int. Cl.³ C25F *3/02*; H01L *21/306*; B44C *1/22*
U.S. Cl. 204—129.2 **2 Claims**

1. A method for treating foil for use in electrolytic capacitors in which said foil moving in one direction is passed through a treatment liquid and in the liquid the capacitance of the foil is measured continuously, including the steps of:

passing an alternating current from at least one current-carrying electrode immersed in the treatment liquid in the proximity of the foil in the treatment liquid; and

having present at least one voltage electrode at a small distance from the foil between the current-carrying elec-



trode(s) and the foil at which voltage electrode the voltage is measured as a measure of the required foil capacitance by means of a phase-sensitive voltmeter; and

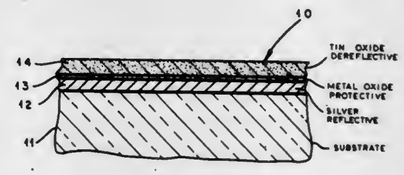
using the measured capacitance to control the treatment process.

4,497,700

METHOD OF COATING A TRANSPARENT SUBSTRATE

Rolf Groth, Bochum, and Dieter Müller, Siegen, both of Fed. Rep. of Germany, assignors to Flachglas Aktiengesellschaft, Fürth, Fed. Rep. of Germany

Filed Mar. 22, 1984, Ser. No. 592,239
Claims priority, application Fed. Rep. of Germany, Mar. 25, 1983, 3310916; May 6, 1983, 3316548
Int. Cl.³ C23C *15/00*
U.S. Cl. 204—192 P **10 Claims**



1. A method of coating a transparent substrate with a multilayer optical filter which comprises the steps of:
- (a). applying a reflective silver coating to said substrate;
- (b). thereafter applying a protective coating to said silver coating of a metal oxide by magnetron cathode sputtering at an S protective coating rate and in an S protective coating partial pressure;
- (c). thereafter applying by magnetron cathode sputtering a dereflective metal oxide coating at an E dereflective coating-oxygen partial pressure and at an E dereflective coating rate; and
- (d). controlling the coating rates during the application of said protective and dereflective coating so that the S partial pressure is less than the E partial pressure and the S coating rate is less than the E coating rate.

4,497,701

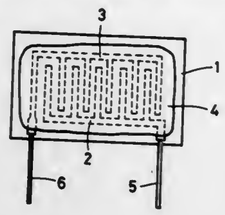
HUMIDITY SENSITIVE DEVICE

Michihiro Murata, Kyoto, and Akira Kamada, Ootsu, both of Japan, assignors to Murata Manufacturing Co., Ltd., Japan

Filed Feb. 22, 1983, Ser. No. 468,479
Int. Cl.³ G01N *27/46*
U.S. Cl. 204—430 **12 Claims**

1. A humidity sensitive device comprising an insulating substrate, first and second electrodes formed on the surface of said insulating substrate and spaced from each other, and a humidity sensitive film formed on the surface of said insulating

substrate and covering at least the position of said surface located between said electrodes, characterized in that said humidity sensitive film comprises: (a) at least one of a conductive powder and a semiconductive powder; (b) a solid electrolyte powder; and (c) an organic polymer at least a part of which is cross-linked by a zirconium compound.



4,497,702

CORROSION INHIBITION

Richard F. Miller, Humble; Tony S. Go, Houston, and George R. Wilson, III, Houston, all of Tex., assignors to Atlantic Richfield Company, Los Angeles, Calif.

Filed Aug. 9, 1982, Ser. No. 406,605
Int. Cl.³ C23F *11/08*
U.S. Cl. 208—47 **6 Claims**

1. In a method of inhibiting metal corrosion in process equipment by the introduction of amide-based corrosion inhibiting compositions into the equipment, the improvement comprising using a corrosion inhibiting composition containing as the principal component a compound having the structural formula:

$$R'R''R'''CCNHR(NHR)_xNHCCR'R''R'''$$

wherein x is an integer having a value of 0 to 12, R is a straight or branched chain alkylene group having 2 to 6 carbon atoms, R' R'' and R''' are alkyl groups and the average sum of the carbon atoms contained in R' R'' and R''' varies from 3 to 20.

4,497,703

HYDROTREATMENT FOR PETROLEUM CUTS WITH OFFRETITE

Jacques Bousquet, Irigny, and Claude Guguen, Septeme Pont L'Eveque, both of France, assignors to Elf France, Paris, France

Filed Mar. 28, 1983, Ser. No. 479,212
Claims priority, application France, Apr. 5, 1982, 82 05876
Int. Cl.³ C10G *45/12, 47/20*
U.S. Cl. 208—111 **10 Claims**

1. A hydrotreatment process for petroleum cuts containing sulfur for simultaneous desulfurization and improvement of flow properties by conversion of n-paraffins, comprising contacting the sulfur containing cuts at a temperature of 200° to 500° C., a pressure of 1 to 80 bars, a liquid spatial velocity of the load (LSV) of 0.3 to 6 $m^3/m^3/h$, with hydrogen at a hydrogen/hydrocarbon molar ratio between 2 and 10, in the presence of a catalytic system based on a synthetic zeolitic crystalline silico aluminate of the offretite structure having the chemical formula $(M_1,M_2 \ldots)_2 (Al_2O_3)(Sio_2)_y$ wherein y is between 10 and 50, M_1 and M_2 are selected from cations of the groups I and II of the Periodic Table of Elements, the offretite is impregnated with a mixture of oxides or sulfides of at least one metal selected from the group consisting of chromium, molybdenum and tungsten with an oxide or a sulfide of at least one metal selected from the group consisting of iron, cobalt and nickel.

4,497,704

HYDROCARBON CONVERSION PROCESS

Mark J. O'Hara, Mt. Prospect, and Russell W. Johnson, Villa Park, both of Ill., assignors to UOP Inc., Des Plaines, Ill.

Division of Ser. No. 481,969, Apr. 4, 1983, Pat. No. 4,447,556.
This application Jan. 26, 1984, Ser. No. 574,231
Int. Cl.³ C10G *47/12*
U.S. Cl. 208—112 **2 Claims**

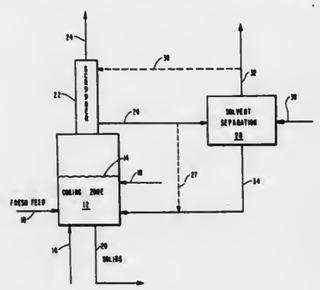
1. A process for the hydrocracking of a hydrocarbon charge stock which comprises contacting said charge stock at hydrocracking conditions with a catalytic composite comprising a combination of a carrier material, a Group VIB metal component and Group VIII metal component wherein said Group VIB metal component and said Group VIII metal component are incorporated in said catalytic composite by means of a non-aqueous organic solution of a Group VIB metal compound and a Group VIII metal compound, wherein said non-aqueous organic solution comprises dimethylformamide, formamide, diethylformamide, ethylformamide, methylformamide, pyridine, aniline or toluene and wherein said catalytic composite is calcined in a non-oxidizing atmosphere.

4,497,705

FLUID COKING WITH SOLVENT SEPARATION OF RECYCLE OIL

Harold N. Weinberg, Livingston; Charles Rebick, Annandale, and Kenneth O. McElrath, Iselin, all of N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Aug. 17, 1983, Ser. No. 523,960
Int. Cl.³ C10G *9/32*
U.S. Cl. 208—127 **8 Claims**



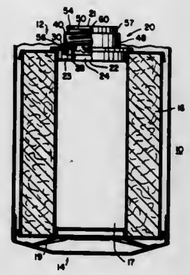
1. In a fluid coking process comprising the steps of:
(a) contacting a carbonaceous chargestock with hot fluidized solids in a fluidized bed contained in a coking zone at coking conditions to produce coke which deposits on said fluidized solids and a vapor phase product, including heavy and light normally liquid hydrocarbons, and
(b) passing said vapor phase product of step (a) to a scrubbing zone and separating at least a portion of said heavy hydrocarbons from said vapor phase product in said scrubbing zone, said separated hydrocarbons having a Conradson carbon content ranging from about 5 to about 50 weight percent, the improvement which comprises:
(c) subsequently contacting at least a portion of said separated hydrocarbons, said portion of separated hydrocarbons having a Conradson carbon content ranging from about 5 to about 50 weight percent, with a solvent in a solvent separation zone at separation conditions to separate said heavy hydrocarbons into a high Conradson carbon hydrocarbonaceous product and a low Conradson carbon hydrocarbonaceous product;
(d) recycling at least a portion of said high Conradson carbon product to said coking zone, and
(e) recovering said low Conradson carbon hydrocarbonaceous product of step (c).

4,497,706

OIL FILTER RELIEF VALVE

Charles G. Pickett, North Plainfield; John G. Charney, Colonia, and Marra Khasin, Rahway, all of N.J., assignors to Purolator Inc., New Brunswick, N.J.

Filed Nov. 2, 1983, Ser. No. 547,960
Int. Cl.³ B01D *27/10*
U.S. Cl. 210—130 **16 Claims**



1. A fluid filter assembly comprising:
(a) a filter housing having an open end and a closed end;
(b) a filter element positioned in the filter housing and extending between the closed end of the filter housing and the open end of the filter housing; and
(c) a relief valve in the fluid filter, the relief valve including
(i) a housing having a first end a second end, the first end located adjacent the open end of the filter, and the second end having fluid inlet ports therein and extending toward the closed end of the filter;
(ii) a base fixedly connected to the second end of the housing and extending into the area defined by the filter element;
(iii) a piston positioned inside of the housing;
(iv) an annular valve seat located in the base for normally receiving the piston in sealing relation, the valve seat having a continuous channel therein with one end being capable of fluid communication with the fluid inlet ports of the housing and the other end of the continuous channel opening from a surface of the valve seat toward the piston; and
(v) a spring positioned in the housing between the first end of the housing and the piston for urging the piston toward the base and against the valve seat.

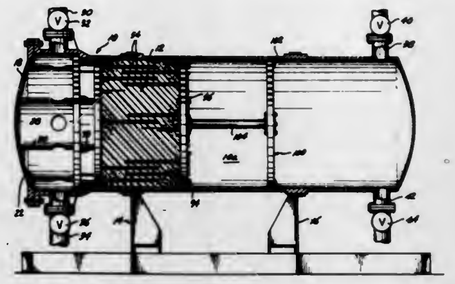
4,497,707

REGENERABLE FLOW-THROUGH OIL/WATER SEPARATION APPARATUS

Joseph W. Anderson, Bellevue, Wash., assignor to Marine Construction & Design Co., Seattle, Wash.

Filed Mar. 21, 1983, Ser. No. 477,640
Int. Cl.³ B01D *29/38*
U.S. Cl. 210—136 **11 Claims**

1. Regenerable filtration apparatus for separating dispersed immiscible liquids and/or solids from a continuous phase carrier liquid such as water, comprising a containment vessel having interior spaces interconnected by an elongated filter chamber having a substantially cylindrical interior wall, and a substantially cylindrical filter coaxially received in said filter chamber, the filter comprising a compressible and reexpandable filter body comprising strands of open-pore foam material, and a substantially flow-impervious, close-fitting flexible tubular skin bonded to the peripherally exterior strands of said filter body substantially throughout the length of the filter body, the skin at one end of said filter body being peripherally fixed and sealed in relation to and around the interior wall of said chamber while the remaining length of said skin is free to slide along said interior wall as the skin-covered filter body is compressed and reexpanded, the relative dimensions of the skin and filter body being selected such that the skin does not compress the filter body.

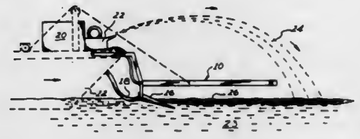


4,497,708

DEVICE FOR MAGNETICALLY RECLAIMING OIL FROM WATER

James M. Young, 3417 Voorde Dr., South Bend, Ind. 46628

Continuation of Ser. No. 295,855, Aug. 24, 1981, abandoned.
This application Feb. 22, 1983, Ser. No. 468,854
Int. Cl.³ B01B *35/06*
U.S. Cl. 210—222 **7 Claims**



1. In a combination, a floating vehicle and a device for reclaiming oil from a body of water comprising impeller means mounted on said vehicle for distributing ferromagnetic particles in said oil, said vehicle carrying means for drawing said oil and particles from said water after the oil is saturated with the particles, said drawing means in communication with a storage facility in said vehicle, a magnetic grid means cantilevered from said vehicle and spaced above said oil and water adjacent said drawing means for concentrating the particle impregnated oil under the grid means and adjacent the drawing means, said grid including means for providing a magnetic field in a pulsating manner to allow said drawing means to create a flow of said oil particles to said storage facility and pumping means for causing said concentrated oil and particles to enter said storage facility from said drawing means.

4,497,709

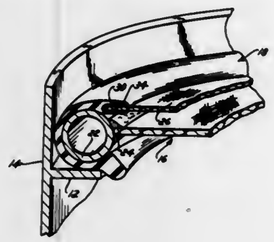
TWO PIECE SCREEN FILTER

Charles B. Nicholson, Glens Falls, N.Y., assignor to Albany International Corp., Menands, N.Y.

Filed Sep. 3, 1982, Ser. No. 414,807
Int. Cl.³ B01D *25/08, 25/04*
U.S. Cl. 210—489 **16 Claims**

1. A filter unit for filtering a substance by having the substance pass through successive filter media positioned in a layered like fashion, said unit comprising:
a first filter including first filter media supported by a substantially rigid member about said filter's perimeter;
a second filter including second filter media and sleeve means detachably coupled to said rigid member;
said sleeve means being of a resilient material; and
wherein said sleeve means is capable of being stretched into

a bearing coupling about a portion of said rigid member so as to detachably maintain said second filter adjacent said



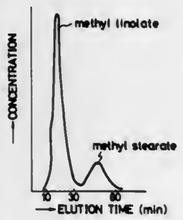
first filter in a layered relationship so as to allow successive filtering by the first and second filter media.

4,497,710

SUBSTRATE FOR LIQUID CHROMATOGRAPHY AND PROCESS FOR ISOLATING AND PURIFYING FAT-SOLUBLE SUBSTANCE BY THE LIQUID CHROMATOGRAPHY ON THE SUBSTRATE

Masakatsu Wagu; Shoichiro Hayashi; Naohiro Murayama, and Teruo Sakagami, all of Iwaki, Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 30, 1982, Ser. No. 428,655
Claims priority, application Japan, Oct. 7, 1981, 56-159713
Int. Cl.³ B01A *15/08*
U.S. Cl. 210—635 **6 Claims**



1. A process for isolating and purifying a fat-soluble substance comprising subjecting the fat-soluble substance to liquid chromatography by using as a substrate spherical particles of a highly cross-linked polymer which comprises:

(a) 100 parts by weight of at least one monomer unit selected from the group consisting of vinyl octanoate, vinyl laurate, vinyl stearate, 2-ethylhexyl acrylate, 2-ethylhexyl methacrylate, dodecyl acrylate, dodecyl methacrylate, stearyl acrylate and stearyl methacrylate, and

(b) 10 to 100 parts by weight of a cross-linking agent unit which is copolymerizable with any of said monomer and has at least two functional groups.

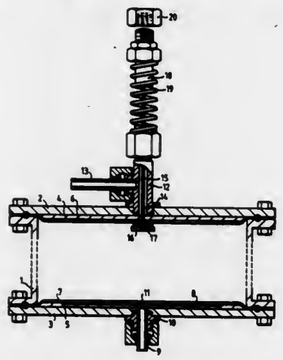
4,497,711

CHROMATOGRAPHY COLUMNS

David Shepherd, Cheshire, England, assignor to Imperial Chemical Industries, PLC, Great Britain

Filed Aug. 17, 1983, Ser. No. 524,073
Claims priority, application United Kingdom, Sep. 6, 1982, 8225308
Int. Cl.³ B01D *15/08*
U.S. Cl. 210—656 **17 Claims**

7. A chromatography column for packing with particulate bed-material, said column comprising a tubular container having a first end portion defining an inlet port at one end and a second end portion defining an outlet port at the other end, both said inlet and outlet ports being protected by porous bed-retaining means positioned with a space for the bed between them, and filler tube means which communicates directly with the space for the bed for feeding at least a final portion of a slurry or smoke of particulate material from a



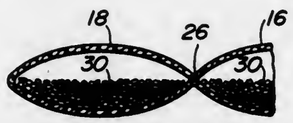
pressurized source thereof until said space is full of particulate material and said particulate material extends at least partially into said filler tube means to maintain said bed at a predetermined pressure when said filler tube means is disconnected from the pressurized source to thereby prevent pressure relaxation of said bed.

4,497,712

ABSORBENT PILLOW

Albert R. Cowling, Rosemont, Pa., assignor to Geotech Development Corporation, King of Prussia, Pa.

Filed Oct. 14, 1983, Ser. No. 541,924
Int. Cl.³ E02B *15/04*
U.S. Cl. 210—691 **16 Claims**



1. Apparatus for absorbing liquids from a surface which constitute an environmental problem comprising an expendable pillow, said pillow being the form of a container having at least three discrete pockets side by side, each pocket being only partially filled with an organic granular absorbent material occupying not more than about 50% of the volume of each pocket, said container being made from a non-woven synthetic fiber, said container having high permeability and being coated with a surfactant, said granular material having an absorption capacity in excess of 300% so that it may expand on contact with liquids and fill the pockets, the weight of the pillow before use being less than four pounds, said pockets being delineated by means joining opposite faces of said container, said means including a pair of spaced joints between said opposite faces of said container so that said container can be separated by cutting the container between said joints.

4,497,713

METHOD OF INHIBITING CORROSION AND DEPOSITION IN AQUEOUS SYSTEMS

Gary E. Geiger, 4156 Whiting Rd., Philadelphia, Pa. 19154

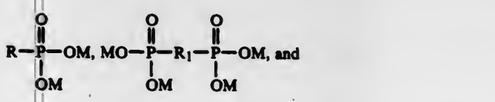
Filed Apr. 1, 1982, Ser. No. 364,562
Int. Cl.³ C02F *5/14*
U.S. Cl. 210—699 **11 Claims**

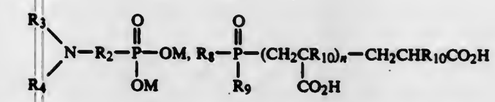
1. Method of treating cooling water systems having a pH of about 8 or greater so as to inhibit scale formation on, and corrosion of, metallic parts in contact with said water system, said method comprising the steps of adding to said cooling water system, based on one million parts of said cooling water system,

(1) a water soluble zinc compound adapted to liberate from about 0.1 parts per million to about 15 parts per million of Zn^{+2} ions in solution;

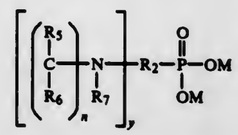
(2) from about 0.5 to about 50 parts per million of a water soluble sodium carboxymethylcellulose having a viscosity of less than about 200 centipoise (2% gum solution concentration, measured at 25° C.); and

(3) from about 0.2 to about 50 parts per million of an organo-phosphorus acid compound or water soluble salt thereof; said organo-phosphorus acid compound comprising a member or water soluble salt of such member selected from the group of compounds represented by the formulas

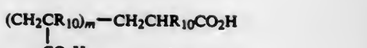




wherein R is lower alkyl having from about one to six carbon atoms, substituted lower alkyl of 1–6 carbon atoms, a mononuclear aryl radical, or substituted mononuclear aromatic; M is a water soluble cation; R_1 is alkylene having from 1 to about 12 carbon atoms or a substituted alkylene having from about 1 to about 12 carbon atoms; R_2 is a lower alkylene having from about one to four carbon atoms, or an amine or hydroxy substituted lower alkylene; R_3 is H, OH, NH_2, substituted amino, an alkyl having from one to six carbon atoms, a substituted alkyl of from one to six carbon atoms (e.g., OH, NH_2 substituted), a mononuclear aromatic radical and a substituted mononuclear aromatic radical (e.g., OH, NH_2 substituted); R_4 is R_3 or the group represented by the formula



where R_5 and R_6 are each hydrogen, lower alkyl of from about one to six carbon atoms, a substituted lower alkyl (e.g., OH, NH_2 substituted), hydrogen, hydroxyl, amino group, substituted amino group, a mononuclear aromatic radical, and a substituted mononuclear aromatic radical (e.g., OH and amine substituted); R_7 is R_5, R_6, or the group R_3—PO_3M_2 (R_2 is as defined above); n is a number of from 1 through about 15; y is a number of from about 1 through about 14; R_{10} is H, CH_3, or C_2H_5; R_9 is H, a straight or branched alkyl residue having from 1–18 carbon atoms, a cycloalkyl residue having from 5–12 carbon atoms, an aryl residue, an alkylaryl residue, or a residue of the formula:



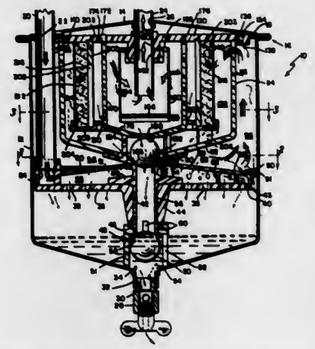
wherein R_{10} has its previous significance and the sum of n+m is an integer of at most 100, or a residue —OX wherein X is hydrogen or a straight or branched alkyl residue having 1–4 carbon atoms and; R_9 is a residue —OX, wherein X has its previous significance.

4,497,714

FUEL-WATER SEPARATOR

Robert S. Harris, Connersville, Ind., assignor to Stant Inc., Connersville, Ind.

Continuation of Ser. No. 241,076, Mar. 6, 1981, Pat. No. 4,384,962. This application Sep. 27, 1982, Ser. No. 424,346
The portion of the term of this patent subsequent to May 24, 2000, has been disclaimed.
Int. Cl.³ B01D *21/26*
U.S. Cl. 210—788 **5 Claims**



1. A fuel-water separator, comprising a container having fuel entry port means, fuel exit port means, a lower portion having a drain opening, means for separating water from the fuel inside said container and causing the water to move downwardly while the low density fuel moves upwardly, a first valve means inside said container for preventing the separated water from remixing with the fuel, said first valve means including an opening through which separated water drains downwardly and float means for closing said opening when the water collected raises to said opening, and second valve means for closing said drain opening, said second valve means including a safety valve ball for stopping fuel flow through the drain opening, said safety valve ball having a density less than water and greater than the fuel to move downwardly to close said drain opening when the separated water has been drained.

4,497,715

N-ALKYLISOSTEARAMIDES AS ANTISTATIC AGENTS

Robert A. Bauman, New Brunswick, N.J., assignor to Colgate-Palmolive Company, New York, N.Y.

Filed Aug. 3, 1982, Ser. No. 404,794
Int. Cl.³ C11D *3/32*; D06M *13/40*
U.S. Cl. 252—8.8 **20 Claims**

1. An antistatic composition for use in the wash cycle of fabric laundering comprising an effective antistatic amount of N-alkylisostearamide antistatic agent having the formula:

RCONHR'

wherein RCO is derived from isostearic acid, and R' is a primary saturated or unsaturated aliphatic hydrocarbon chain

containing 1–18 carbons, dispersed into and/or absorbed onto an absorbent substrate.

11. An antistatic composition for laundering fabrics comprising an effective antistatic amount of an N-alkylisostearamide antistatic agent having the formula:

RCONHR'

wherein RCO is derived from isostearic acid, and R' is a primary saturated or unsaturated aliphatic hydrocarbon chain containing 1–18 carbons, and a detergent selected from the group consisting of anionic, nonionic, amphoteric detergent materials, and mixtures thereof.

18. A method of protecting fabrics against acquiring static electricity during the laundering process comprising contacting fabrics with the composition of claim 11.

4,497,716

FABRIC SOFTENING COMPOSITION

Ho T. Tai, Santes, France, assignor to Lever Brothers Company, New York, N.Y.

Filed Dec. 15, 1983, Ser. No. 561,850

Claims priority, application United Kingdom, Dec. 23, 1982, 8236650

Int. Cl.³ D06M *13/16, 13/18, 13/20*

U.S. Cl. 252—8.8 **6 Claims**

1. A concentrated liquid fabric softening composition comprising an aqueous base, at least 10% by weight of a water-insoluble cationic fabric softening agent, from 0.02% to 0.5% by weight of an electrolyte and from 0.2% to 4% of a nonionic viscosity control agent which comprises an alkylene oxide adduct of a fatty compound selected from the group consisting of fatty amides, fatty alcohols, fatty acids and fatty esters, said fatty compound containing at least 10 carbon atoms and each molecule of the alkylene oxide adduct containing an average of not more than 7 alkylene oxide groups per molecule and from 0% to 2.5% by weight of a monohydric alkanol having 1 to 4 carbon atoms.

4,497,717

COMPOSITIONS FOR USE IN OIL RECOVERY AND METHOD OF USE

Leslie Bretherick, Ascot, and Philip K. G. Hodgson, Reading, both of England, assignors to The British Petroleum Company p.l.c., London, England

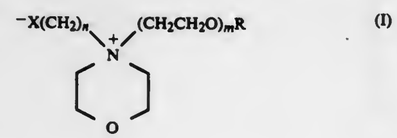
Filed Mar. 31, 1982, Ser. No. 363,865

Claims priority, application United Kingdom, Apr. 1, 1981, 8110210

Int. Cl.³ E21B *43/22*

U.S. Cl. 252—8.55 D **3 Claims**

1. A method of recovering crude oil from a formation which method comprises displacing the crude oil from the formation employing an aqueous surfactant composition wherein the surfactant composition comprises an aqueous medium having dispersed therein a surfactant wherein the surfactant is a betaine of formula:



(I)

where

R is a C_8 to C_{24} alkyl or C_8 to C_{24} alkylphenyl which may optionally be substituted by inert substituents

m is an integer from 1 to 10

n is an integer from 1 to 5

and X is CO_2^-, SO_3^- or $PO_3^=$.

4,497,718

HOMOGENEOUS AQUEOUS FABRIC SOFTENING COMPOSITION WITH STILBENE SULFONIC ACID FLUORESCENT WHITENER

Oscar W. Neiditch, Fair Lawn; Edmund S. Hurdle, North Bergen, and Daniel J. Fox, Hawthorne, all of N.J., assignors to Lever Brothers Company, New York, N.Y.

Filed Apr. 20, 1983, Ser. No. 486,624

Int. Cl.³ D06L *3/12;* **D06M** *13/38, 13/46*

U.S. Cl. 252—8.75 **13 Claims**

1. A method for forming a fabric softening system containing fluorescent whitening agents comprising:

(a) preparing an organic premix of:

(i) from about 0.5% to about 10% fabric softening cationic surfactant;

(ii) from about 0.001% to about 0.3% stilbene sulfonic acid fluorescent whitening agent added in acid form;

(iii) from about 0.001% to about 0.5% of a nonionizable base, the ratio of base to fluorescent whitening agent on an equivalent weight basis being about 1:1 to about 6:1;

(b) adding said premix to deionized water containing water-soluble adjunct fabric softening components including from 0.01% to 0.3% of an acidic pH adjusting agent to obtain a pH of 3.0 to 6.0; and

(c) mixing the combined blends with sufficient stirring to uniformly disperse all components.

7. A method according to claim 1 wherein the fluorescent whitening agent is either 4,4'-bis[(4-phenylamino-6-N-bis(2-hydroxyethyl)amino-1,3,5-triazin-2-yl)amino]stilbene-2,2'-disulfonic acids or 5-(2H-naphtho[1,2d]triazol-2-yl]-2-(2-phenylethenyl)-benzene-sulfonic acid.

4,497,719

METAL SALTS OF 1,2,4-THIADIAZOLE AND LUBRICANTS CONTAINING THESE METAL SALTS

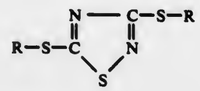
James P. King, Lansdale, and Paul Tubbs, Philadelphia, both of Pa., assignors to Pennwalt Corporation, Philadelphia, Pa.

Filed Sep. 29, 1982, Ser. No. 426,526

Int. Cl.³ C10M *1/54*

U.S. Cl. 252—42.7 **4 Claims**

1. A lubricating composition comprising from about 80 to about 99.9 parts of a lubricant selected from the group consisting of a lithium grease, a clay grease, a silicone grease, an aluminum complex grease, a mineral oil of lubricating viscosity, and a synthetic fluid of lubricating viscosity and from about 0.1 to about 20 parts of a composition having the formula



wherein R is a metallic ion.

4,497,720

METHOD FOR TREATING METALLIC OR CERAMIC SURFACES AT HIGH TEMPERATURES

Hiroyuki Moriga, Takatsuki; Masao Uchida, Ibaraki; Koichi Iwashita, and Shuji Tanaka, both of Matsuyama, all of Japan, assignors to Teijin Limited, Osaka, Japan

Filed Aug. 26, 1983, Ser. No. 526,586

Claims priority, application Japan, Apr. 10, 1982, 57-173263; May 10, 1982, 57-173986; Jun. 10, 1982, 57-174444; Aug. 27, 1982, 57-147793; May 31, 1983, 58-94971

Int. Cl.³ C10M *1/30*

U.S. Cl. 252—52 A **13 Claims**

1. A method for treating metallic or ceramic surfaces, which comprises applying a lubricating composition comprising

50% by weight or more of a polyalkylene glycol or derivative thereof thermally decomposable at 150° C. or above in air and

50% by weight or less of at least one fluorine containing compound selected from the group consisting of

(b-1) nonionic fluorine-containing compounds having a fluoroalkyl group of 3 to 20 carbon atoms and a polyoxyalkylene chain,

(b-2) compounds having a fluoroalkyl group of 3 to 20 carbon atoms and a residue of a carboxylic acid or a salt thereof with a metallic atom, ammonia or a nitrogen-containing amino compound capable of forming the salt with the carboxylic acid group in the molecule,

(b-3) compounds having a fluoroalkyl group of 3 to 20 carbon atoms and a residue of phosphoric acid or a salt thereof with a metallic atom, ammonia or a nitrogen-containing amino compound capable of forming the salt with the phosphoric acid group in the molecule,

(b-4) compounds having a fluoroalkyl group of 3 to 20 carbon atoms and a residue of sulfonic acid or a salt thereof with a metallic atom, ammonia or a nitrogen-containing amino compound capable of forming the salt with the sulfonic acid group in the molecule,

(b-5) compounds having a fluoroalkyl groups of 3 to 20 carbon atoms and a cationic group containing a quaternary nitrogen atom in the molecule, and

(b-6) compounds having a fluoroalkyl group of 3 to 20 carbon atoms and an amphoteric group in the molecule

to the metallic or ceramic surfaces kept at 200° C. or above, and treating the metallic or ceramic surfaces while thermally decomposing the component positively on the metallic or ceramic surfaces and converting the lubricating composition into a slightly sticking and piling up sludge consisting of a complex of the formed decomposition product with the component.

4,497,721

REFRIGERATOR OIL COMPOSITION

Takao Katayama, Ichihara, Japan, assignor to Idemitsu Kosan Company Limited, Tokyo, Japan

Filed Nov. 7, 1983, Ser. No. 549,588

Claims priority, application Japan, Nov. 17, 1982, 57-200280; Dec. 16, 1982, 57-220604

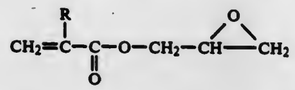
Int. Cl.³ C10M *3/18, 5/12*

U.S. Cl. 252—56 R **5 Claims**

1. A refrigerator oil composition comprising:

(1) mineral oil, synthetic oil or a mixture thereof; and

(2) (a) 15-crown-5, (b) a derivative of 15-crown-5, (c) a glycidyl compound represented by the general formula:



(wherein R is a hydrogen atom or an alkyl group containing from 1 to 5 carbon atoms), or (d) a mixture thereof.

4,497,722

COMPOSITION FOR PLASTIC MAGNETS

Michinori Tsuchida; Tokuji Abe, both of Saitama, and Hajime Kitamura, Chiba, all of Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Filed Jul. 2, 1984, Ser. No. 626,742

Claims priority, application Japan, Jul. 4, 1983, 58-121420; Aug. 17, 1983, 58-149910

Int. Cl.³ H01F *10/02*

U.S. Cl. 252—62.54 **8 Claims**

1. A plastic magnet composition which comprises:

(a) a thermoplastic resin as a binder: and

(b) a powder of a metallic or alloy magnet having a coating layer on the surface of the particles formed of a phosphorus-containing compound having at least one phosphorus-to-oxygen linkage in a molecule and uniformly blended with the thermoplastic resin.

4,497,723

PREPARATION OF ACICULAR, FERRIMAGNETIC IRON OXIDES

Manfred Ohlinger, Frankenthal; Guenter Vaeth, Limburgerhof; Peter Rudolf, Neuhofen; Wilhelm Sarnecki, Limburgerhof; Helmut Jakusch; Eberhard Koester, both of Frankenthal, and Milena Melzer, Ludwigshafen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Jun. 27, 1983, Ser. No. 508,168

Claims priority, application Fed. Rep. of Germany, Jun. 30, 1982, 3224325

Int. Cl.³ C01G *49/06, 49/08*

U.S. Cl. 252—62.56 **2 Claims**

1. A process for the preparation of an acicular ferrimagnetic iron oxide by reducing gamma-iron(III) oxide hydroxide to magnetite, at from 280° to 620° C., by means of an organic compound which is decomposable at this temperature in the presence of iron oxide, and, optionally, then oxidizing the magnetite with oxygen-containing gases, at from 150° to 450° C., to acicular ferrimagnetic iron oxide of the formula FeO_x, where x is from about 1.33 to 1.50, wherein the gamma-iron (III) oxide hydroxide is prepared in an aqueous reaction suspension by precipitation and oxidation of an aqueous iron (II) solution and wherein the organic compound used for the reduction is a non-polar glycerol ester of a fatty acid which is introduced into the aqueous reaction suspension during the preparation and growth of the gamma-iron(III) oxide hydroxide; the acicular ferrimagnetic iron oxide so prepared when incorporated into a tape effecting a magnetic tape having a narrower switching field distribution than a magnetic tape containing said acicular ferrimagnetic iron oxide prepared as above but where said organic compound is added at the end of the preparation and growth of the gamma-iron (III) oxide hydroxide.

4,497,724

SOLAR ENERGY STORAGE MATERIALS

Teijiro Kitao, Tondabayashi; Jun-ichiro Setsune, Sakai; Shoichi Ishihara, Katano, and Ryoichi Yamamoto, Neyagawa, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Apr. 29, 1983, Ser. No. 490,202

Claims priority, application Japan, May 11, 1982, 57-79351

Int. Cl.³ C09K *5/00*

U.S. Cl. 252—70 **3 Claims**

1. A solar energy storage material comprising N,N'-bis(-phenylacetyl)indigo dissolved in a polar solvent.

4,497,725

AQUEOUS BLEACH COMPOSITIONS

Eileen Smith, Chester; Doreen A. Timperley, Widnes, and Dorothy M. Titchener, Chester, all of England, assignors to Interox Chemicals Ltd., Hanover Square, England

Continuation-in-part of Ser. No. 245,140, Mar. 18, 1981, Pat. No. 4,547,199. This application Feb. 22, 1982, Ser. No. 350,572

Claims priority, application United Kingdom, Apr. 1, 1980, 8010886; Sep. 30, 1981, 8129512

The portion of the term of this patent subsequent to Aug. 31, 1999, has been disclaimed.

Int. Cl.³ C09K *15/06, 15/32;* **C11D** *3/39, 7/18*

U.S. Cl. 252—102 **17 Claims**

1. A liquid bleach composition comprising:

3% to 20% by weight hydrogen peroxide;

at least one base in an amount sufficient to render the composition alkaline; 5% to 20% by weight isopropanol;

a stabilising amount of a substituted amino compound having the formula $R—NR—(CH_2)_p—q—NR_2$ in which p is from 2 to 6, q is from 0 to 2, and R represents an acetate or methylene phosphonate group;

and water.

4,497,726

ELECTRODE MATERIAL

James E. Brule, South Windsor; James K. O'Neill, and David N. Palmer, both of Tolland, all of Conn., assignors to Combustion Engineering, Inc., Windsor, Conn.

Filed May 31, 1983, Ser. No. 499,234
Int. Cl.³ H01M *4/88*
U.S. Cl. 252—182.1 **14 Claims**

1. A cathode active material having the general formula $Li_xM_yM'_zO_{2-n}F_n$ wherein M is selected from the group consisting of metallic ions having a valence of +1 other than lithium and metallic radicals having a valence of +1; M' is selected from the group consisting of Fe, Co and Ni; x is 0.01 to 0.99 and y is 0.99 to 0.01, respectively; z is 0.8 to 1.2; and n is zero to 0.1.

10. A cathode active material according to claim 1 which is $Li_{0.5}Na_{0.5}CoO_2$.

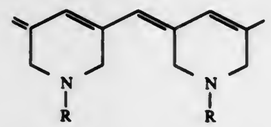
4,497,727

POLY(DIPROPARGYLAMINE)AND DERIVATIVES THEREOF PER SE AND P-DOPED AND PROCESSES FOR PREPARING SAME

Yoshiyuki Okamoto, Fort Lee, N.J., and Edward F. Hwang, Brooklyn, N.Y., assignors to W. R. Grace & Co., New York, N.Y.

Filed Feb. 13, 1984, Ser. No. 579,407
Int. Cl.³ H01B *1/00*
U.S. Cl. 252—500 **14 Claims**

1. The process of forming an electrically conductive polymeric dipropargylamine or derivative compound having recurring structural units of the formula:



wherein R is H, C_2H_5, $(CH_3)_3C$ or



and having a conductivity at room temperature of at least $10^{-7}ohm^{-1}cm^{-1}$ which comprises doping said polymeric compound with an electron acceptor dopant.

4,497,728

CONDUCTIVE PYROLYTIC PRODUCT AND COMPOSITION USING SAME

Susumu Yoshimura, and Matsuaki Murakami, both of Kawasaki, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Japan

Division of Ser. No. 247,316, Mar. 25, 1981, Pat. No. 4,401,590. This application May 19, 1983, Ser. No. 496,300
Claims priority, application Japan, Mar. 26, 1980, 55-39305; Apr. 14, 1980, 55-49376; Aug. 11, 1980, 55-110556; Aug. 11, 1980, 55-110567; Aug. 13, 1980, 55-112162
Int. Cl.³ C08G *73/08*
U.S. Cl. 252—514 **7 Claims**

1. A conductive composition comprising 10 to 50 weight percent of a film-forming polymer binder and a balance of a powder of a pyrolytic product obtained by thermally treating polyoxadiazole at a temperature ranging from 600° C. to 1000° C. in vacuo or in an inert atmosphere, the thermal treatment being maintained for a time sufficient to provide a pyrolytic product having a specific resistance of 10^{-1} ohm-cm or below.

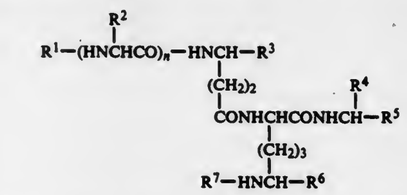
4,497,729

PEPTIDE, PROCESS FOR PREPARATION THEREOF AND USE THEREOF

Yoshihiko Kitaura, Sakurai; Osamu Nakaguchi, Toyonaka; Keiji Hemmi, Suita; Satoshi Yonishi, Kadoma, and Hidekazu Takeno, Tenri, all of Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

Filed Nov. 19, 1981, Ser. No. 322,902
Claims priority, application United Kingdom, Dec. 1, 1980, 8038509; Apr. 13, 1981, 8111584
Int. Cl.³ C07C *103/52*
U.S. Cl. 260—112.5 R **9 Claims**

1. A compound of the formula or its pharmaceutically acceptable salt:



wherein

R^1 is heptanoyl, stearoyl, 2-hyroxypropionyl or 2-acetoxypropionyl,

R^2 is hydrogen or methyl,

R^3 is carboxy, benzyloxycarbonyl or hydroxymethyl,

R^4 is hydrogen or methyl,

R^5 is carboxy or hydroxymethyl,

R^6 is carboxy, methoxycarbonyl, 3-t-butoxycarbonylcarbazoyl or hydroxymethyl,

R^7 is hydrogen, 3-t-butoxycarbonyl or benzyloxycarbonyl, and

n is an integer 0 or 1, with the proviso that at least one of R^3, R^5 and R^6 is hydroxymethyl.

4,497,730

METHOD FOR OBTAINING PERIPLASMIC PROTEINS FROM BACTERIAL CELLS USING CHLOROFORM

Giovanna F. Ames, Berkeley, and Sydney G. Kustu, Davis, both of Calif., assignors to The United States of America as represented by the Department of Health and Human Services, Washington, D.C.

Filed Apr. 3, 1984, Ser. No. 596,636
Int. Cl.³ C07G *7/00*; A23J *1/18*
U.S. Cl. 260—112 R **4 Claims**

1. A method of extracting periplasmic protein comprising treating without homogenizing a cellular suspension of an organism possessing said periplasmic protein with a periplasmic protein releasing volume only of chloroform as an organic solvent for a sufficient time to release said protein and then separating said protein from said cellular suspension.

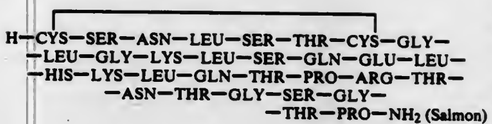
4,497,731

GLYCINE 8-DES-TYROSINE 22 CALCITONIN

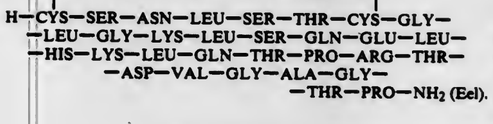
Ronald C. Orlowski, Frankfort, and Jay K. Seyler, Bourbonnais, both of Ill., assignors to Armour Pharmaceutical Company, Tarrytown, N.Y.

Filed Apr. 4, 1983, Ser. No. 481,618
Int. Cl.³ C07C *103/52*
U.S. Cl. 260—112.5 T **4 Claims**

1. A peptide having the structure:



or



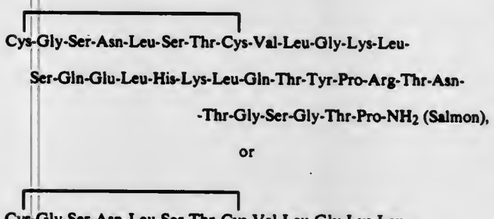
4,497,732

1A-ENDO-GLYCINE-CALCITONIN

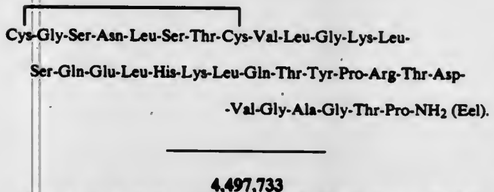
Jay K. Seyler, Bourbonnais; Glenn L. Stahl, Bradley, and Ronald C. Orlowski, Frankfort, all of Ill., assignors to Armour Pharmaceutical Company, Tarrytown, N.Y.

Filed Oct. 21, 1983, Ser. No. 544,183
Int. Cl.³ C07C *103/52*
U.S. Cl. 260—112.5 T **4 Claims**

1. A peptide having the structure:



or

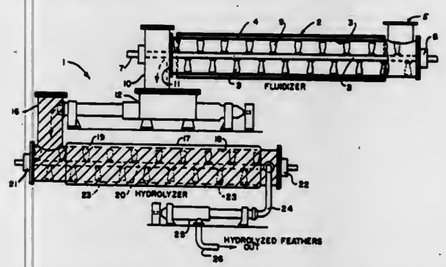


4,497,733

APPARATUS FOR HYDROLYZING KERATINACEOUS MATERIAL

Rowland Retrum, 2231 Sherman St., Longmont, Colo.

Division of Ser. No. 197,262, Oct. 15, 1980, Pat. No. 4,378,311, which is a continuation-in-part of Ser. No. 968,479, Dec. 11, 1978, Pat. No. 4,231,926. This application Sep. 13, 1982, Ser. No. 417,513
Int. Cl.³ A23J *1/10*; C08H *1/06*; C01B *15/037*
U.S. Cl. 260—123.7 **4 Claims**



1. An apparatus for continuously hydrolyzing keratinaceous material comprising a first vessel, entry means connected with the said first vessel for continuously delivering the material into the same, agitating means provided in said first vessel for simultaneously violently agitating and moving said material through said vessel, said agitating means being rotational and capable of revolving at speeds of between about 100 to 150 rpm, heating means operatively associated with said first vessel and capable of heating any material traversing therethrough up to a temperature of less than 212° F. and without any significant build-up of pressure within said vessel, a second vessel, pump means interconnecting between the said first and second vessels and when operative capable of continuously transferring the fluidized material from the first said vessel and into the second said vessel, another agitating means provided in said second vessel and capable of revolving for agitating the material pumped therein, another heating means operatively associated with the said second vessel and capable of heating the material traversing therethrough to a temperature of between about 250° F. to 365° F. while creating a pressure therein of between about 15 to 150 psig, said pump means circumventing the passage of any second vessel generated pressure into the first said vessel, and another pump means connecting with the said second vessel and when operative providing for the continuous discharge of the now hydrolyzed material and some pressure from the said second vessel.

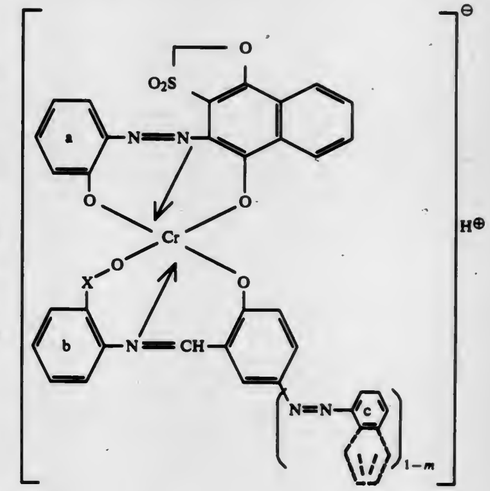
4,497,734

ASYMMETRICAL 1:2 CHROMIUM COMPLEXES DERIVED FROM AZO AND AZOMETHINE DYES

Winfried Mennicke, Leverkusen, Fed. Rep. of Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Aug. 3, 1982, Ser. No. 404,805
Claims priority, application Fed. Rep. of Germany, Aug. 25, 1981, 3133505
Int. Cl.³ C09B *45/06, 45/16*; D06P *1/10, 3/32*
U.S. Cl. 534—695 **6 Claims**

1. A dyestuff of the formula



in the free-acid form,

wherein

x=CO or direct bond,

m=0 or 1,

Y=H or NO_2

ring a is unsubstituted or substituted by SO_3H, sulfamoyl, Cl or NO_2 ring b is unsubstituted or substituted by SO_3H, sulfamoyl, Cl, NO_2 or CH_3 ring c is unsubstituted or substituted by SO_3H, sulfamoyl, Cl, CH_3or OCH_3.

4,497,735

ARYLIDE AZOPIGMENTS FORMED BY COUPLING A DIAZORYL COMPOUND WITH AN OMEGA-AMMONIUMACETOACTIC ACID DERIVATIVE

Steffen C. Olsen, Farum, and Arne Vinther, Koge, both of Denmark, assignors to Kemisk Vaerk Koge A/S, Koge, Denmark

Filed Sep. 28, 1982, Ser. No. 425,829

Claims priority, application United Kingdom, Oct. 5, 1981, 8129997

Int. Cl.[3] **C09B** *29/01, 29/33, 35/10;* **D06P** *1/44*

U.S. Cl. 534—603 **2 Claims**

1. An azopigment which is the coupling product of 3,3'-dichlorobenzidine tetrazonium chloride and omega-trimethylammonium acetoacetanilide or a mixture of omega-trimethylammonium acetoacetonilide and acetoanilide.

2. An azopigment which is the coupling agent of 4-methyl-2-nitroaniline diazonium chloride and dimethylcocosammonium chloride in admixture with acetoanilide.

4,497,736

AZO DYESTUFFS

Winfried Kruckenberg, and Karl H. Schündehütte, both of Leverkusen, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

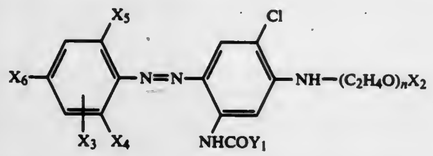
Filed Nov. 17, 1978, Ser. No. 962,253

Claims priority, application Fed. Rep. of Germany, Nov. 19, 1977, 2751784

Int. Cl.[3] **C09B** *29/01, 29/085;* **D06P** *1/18, 3/54*

U.S. Cl. 534—855 **2 Claims**

1. Azo dyestuffs of the formula



wherein

X_2 denotes hydrogen, C_1–C_4-n-alkyl or C_1–C_4-alkylcarbonyl,

X_3 denotes hydrogen or Cl,

X_4 denotes hydrogen, Cl, Br or CN,

X_5 and X_6 independently of one another denote Cl, Br, NO_2, CN, CF_3, C_1–C_2-alkylsulphonyl or hydrogen, but do not simultaneously denote hydrogen,

Y_1 denotes methyl, ethyl, or propyl and

n denotes the numbers 4, 5 or 6.

4,497,737

METAL CAGE COMPLEXES AND PRODUCTION THEREOF

Alan M. Sargeson; Anthony J. Herit, both of Curtin, and John M. Harrowfield, Kardinya, all of Australia, assignors to The Australian National University, Australia

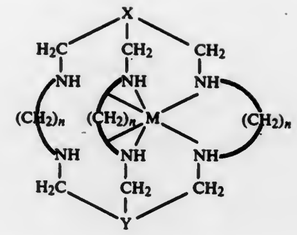
Continuation of Ser. No. 954,314, Oct. 24, 1978, abandoned. This application Mar. 8, 1982, Ser. No. 355,663

Claims priority, application Australia, Oct. 26, 1977, PD2201; Oct. 26, 1977, PD2202

Int. Cl.[3] **C07D** *487/08*

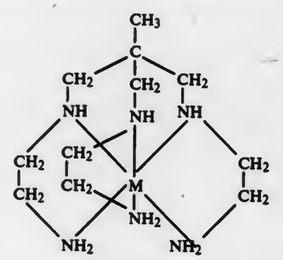
U.S. Cl. 260—239 BC **4 Claims**

1. A metal ion coordination complex of the formula:



in which n represents 2; M represents a metal ion having at least two oxidation states in which it forms stable coordination complexes selected from the group consisting of ions of Co, Rh, Pt, Cr, Cu, Re, Mo, W, Ni, V and Fe; X represents =C—CH_3; and Y represents =N or =C—R''' wherein R''' represents hydrogen, halogen, nitro, nitroso, amino, hydroxy or alkyl having 1 to 6 carbon atoms.

4. A process for the preparation of a complex according to claim 1 wherein X represents =C—CH_3, which comprises the steps of reacting a metal chelate of 1,9-diamino-5-(methyl)-5-(4-amino-2-azabutyl)-3,7-diazanonane of the formula:



in which M is as defined in claim 1, with formaldehyde and a nucleophile capable of yielding a capping group of the formula =N or =C—R^4, wherein R^4 is NO_2.

4,497,738

ANALOGOUS COMPOUNDS OF CEPHALOSPORINS, PROCESSES FOR THE PREPARATION THEREOF AND PHARMACEUTICAL COMPOSITION COMPRISING THE SAME

Masashi Hashimoto, Takarazuka, and Matsuhiko Aratani, Suita, both of Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

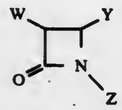
Division of Ser. No. 128,507, Mar. 10, 1980, Pat. No. 4,339,449. This application Mar. 15, 1982, Ser. No. 358,431

Claims priority, application United Kingdom, Mar. 27, 1979, 7910719

Int. Cl.[3] **C07D** *205/08, 513/04;* **C07F** *1/110*

U.S. Cl. 260—239 A **4 Claims**

1. A compound of the formula:



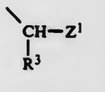
(II)

in which

W is an acylamino group,

Y is —S—Ag or —S—R^5, wherein R^5 is an acyl group,

Z is a group of the formula:



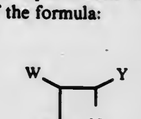
wherein

R^3 is carboxy or esterified carboxy group, and

Z^1 is isocyano,

or pharmaceutically acceptable salts thereof.

2. A compound of the formula:



in which

W is an acylamino group,

Y is —S—Ag or —S—R^5, wherein R^5 is an acyl group,

Z is a group of the formula:

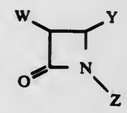
wherein

R^3 is carboxy or esterified carboxy group, and

Z^1 is azido,

or pharmaceutically acceptable salts thereof.

3. A compound of the formula:



in which

W is an acylamino group,

Y is —S—Ag or —S—R^5, wherein R^5 is an acyl group,

Z is a group of the formula:

wherein

R^3 is carboxy or esterified carboxy group, and

Z^1 is amino,

or pharmaceutically acceptable salts thereof.

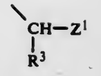
4. A compound of the formula:

in which

W is an acylamino group,

Y is —S—Ag or —S—R^5, wherein R^5 is an acyl group,

Z is a group of the formula:



wherein

R^3 is carboxy or esterified carboxy group, and

Z^1 is formamido,

or pharmaceutically acceptable salts thereof.

4,497,739

SYNTHESIZING THIOCARBAMIC ACID ESTERS

William Giroldini, and Carlo Neri, both of S. Donato Milanese, Italy, assignors to Anic S.p.A., Palermo, Italy

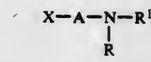
Filed Feb. 3, 1983, Ser. No. 463,553

Claims priority, application Italy, Feb. 9, 1982, 19518 A/82

Int. Cl.[3] **C07C** *155/02;* **C07D** *213/02*

U.S. Cl. 260—239 BF **13 Claims**

1. A process for the preparation of esters of thiocarbamic acids comprising the step of reacting carbon monoxide and organic disulphides having the formula R''—S—S—R''', wherein R'' and R''', are equal to or different from one another, are aliphatic or aromatic hydrocarbon radicals, with amine compounds having the general formula:



wherein R and R^1, are equal to or different from one another, and can be hydrogen, alkyl, aryl, or alkaryl radicals with the proviso that at least one of R and R^1 is hydrogen, A is an unsubstituted arylene radical, or an arylene radical that is substituted with halogens, hydrocarbon radicals, alkoxy groups or a straight or branched chain alkylene radical having from 1 to 15 carbon atoms; and X is hydrogen, $—NH_2$, or H_2N—Z in which the bivalent function Z is phenylene or C_{1-4} alkylene in the presence of a catalyst consisting of a metallic selenide.

4,497,740

2-AZIDOMETHYL-1,4-BENZODIAZEPINE COMPOUNDS

Horst Zeugner, Hanover, Fed. Rep. of Germany; Dietmar Römer, Allschwil, Switzerland; Hans Liepmann, Hanover, and Wolfgang Milkowski, Burgdorf, both of Fed. Rep. of Germany, assignors to Kali-Chemie Pharma GmbH, Hanover, Fed. Rep. of Germany

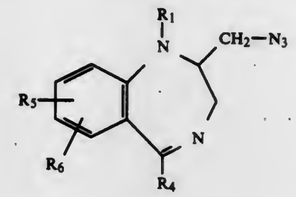
Filed Jun. 8, 1982, Ser. No. 386,303

Claims priority, application Fed. Rep. of Germany, Jun. 19, 1981, 3124013

Int. Cl.[3] **C07D** *401/04, 403/04, 405/04, 409/04*

U.S. Cl. 260—244.4 **1 Claim**

1. A 2-azidomethyl-1H-2,3-dihydro-1,4-benzodiazepine compound corresponding to the general formula IV

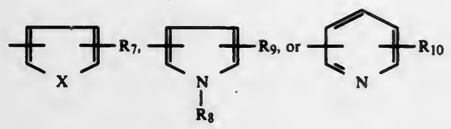


IV

wherein

R_1 is hydrogen, lower alkyl, lower alkenyl or cyclopropylmethyl;

R_3 is



a b c

wherein

X is oxygen or sulphur;

R_7 is hydrogen, halogen, lower alkyl, lower alkoxy or nitro;

R_8 is hydrogen or lower alkyl;

R_9 is hydrogen or lower alkyl;

R_{10} is hydrogen, chlorine or lower alkyl;

R_5 is hydrogen, halogen, lower alkyl, lower alkoxy, hydroxyl, lower alkylthio, nitro, trifluoromethyl, cyano, amino, lower mono- or dialkylamino, lower monoalkylanoylamino, lower N-alkyl-N-alkanoylamino or lower alkanoyloxy; and

R_6 is hydrogen, halogen, lower alkyl, or lower alkoxy; or

R_5 and R_6 are bonded to adjacent carbon atoms and together denote methylenedioxy or ethylenedioxy;

and the optical isomers and acid addition salts of said compound.

4,497,741

WATER-SOLUBLE ZINC AND ALUMINIUM PHTHALOCYANINES

Gerd Hölzle, Liestal; Mirella Miotto, Basel; Gerhard Reinert, Allschwil, and Rudolf Polony, Basel, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

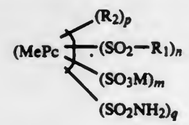
Filed Dec. 1, 1982, Ser. No. 445,784

Claims priority, application Switzerland, Dec. 9, 1981, 7871/81

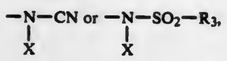
Int. Cl.³ C09B *47/04*

U.S. Cl. 260—245.77 **8 Claims**

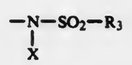
1. A phthalocyanine compound of the formula



wherein MePc is the zinc or aluminum phthalocyanine ring system, M is hydrogen or the equivalent of a salt-forming cation, R_1 is M or a group of the formula



wherein X is hydrogen or ammonium or the equivalent of a monovalent, divalent or trivalent metal ion, and R_3 is C_1-C_8-alkyl, unsubstituted or substituted by hydroxy, alkoxy, halogen, cyano, or carbalkoxy, aminocarbonyl or dialkylamino; aryl, unsubstituted or substituted by alkyl or alkoxy, nitro, haloalkyl, halogen, alkoxycarbonyl, cyano, alkylsulfonyl, acylamino, carboxy and derivatives thereof, sulfo and derivatives thereof, acyloxy, trifluoromethyl or dialkylamino, or an unsubstituted or substituted or fused 5- or 6-membered aromatic heterocyclic ring containing one or two nitrogen, oxygen or sulfur heteroatoms which may be unsubstituted or substituted in the same manner as the aryl groups R_3; each R_2 is independently halogen, aryl or cyano, n has any value from 1 to 4, each of m and q has any value from 0 to 3 and p has any value from 0 to 4, while the sum of n+m and n+q in each case is 1 to 4 and q is only different from 0 if R_1 is a group of the formula



and m is 0.

4,497,742

ISOMERIZATION OF β-LACTAM COMPOUNDS

Setsuo Harada, Kawanishi; Shigetoshi Tsubotani, Suita, and Mitsuko Asai, Takatsuki, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

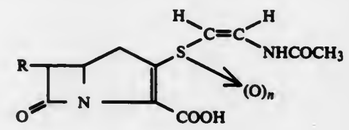
Filed Feb. 24, 1982, Ser. No. 351,927

Claims priority, application Japan, Mar. 4, 1981, 56-31866; Jan. 22, 1982, 57-9249

Int. Cl.³ C07D *487/04*; A61K *31/40*

U.S. Cl. 260—245.2 T **3 Claims**

1. A process for the production of a compound of the formula



wherein R is a group of the formula

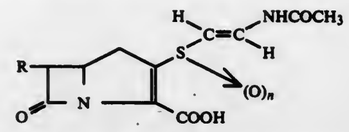


wherein

R_1 is H or methyl,

R_2 is (1) H, (2) OH, (3) R_3COO— in which R_3 is R_4 or —NHR_4 wherein R_4 is (a) alkyl of 1 to 6 carbons, (b) alkenyl of up to 6 carbons, (c) phenyl, or (d) alkyl of 1 to 6 carbons substituted by phenyl, lower alkyl phenyl, C_{1-4} alkoxyphenyl, halophenyl or phenyloxy or (4) R_5O_3SO— wherein R_5 is H or lower alkyl, and

n is 0 or 1 or a physiologically acceptable salt thereof which comprises subjecting a compound of the formula



wherein R and n are as defined above to isomerization by treatment in an organic solvent which is nonpolar or of weak polarity or such solvents containing a small proportion of an organic solvent of strong polarity, said treatment being with a chloride or bromide of a quaternary ammonium compound having a total of 18 to 30 carbon atoms for the four substituents, the treatment being carried out at a temperature of from about room temperature up to about the boiling point of the solvent.

4,497,743

ORGANOSOLUBLE SALTS OF MANGANESE, PROCESS OF PREPARATION OF SAME

Guy C. S. Brisset, 16 rue des Sittelles, St. Just 27200 Vernon, and Michel C. Mas, 7 rue J. F. Millet, 78200 Mantes La Ville, both of France

Filed Jun. 29, 1981, Ser. No. 278,304

Int. Cl.³ C07F *13/00*

U.S. Cl. 260—429 R **7 Claims**

1. An organosoluble salt of manganese useful as a combustion additive to liquid fuels and as a drying additive for liquid paints and varnishes, consisting of a complex organometallic salt being the reaction product of an organic or organometalloidic acid having at least one acid function and having from 8 to 30 carbon atoms in each molecule, said acid being selected from the group consisting of oleic acid, linoleic acid, fatty acids of tall oil, resin acids, dodecylbenzene sulfonic acid, dinonylphenoxy phosphoric acid and napthenic acids, reacted with a complex manganous ammine wherein the ammine is derived from ammonia and the ratio of the number of acid equivalents to the number of manganese atoms is between 0.2 and 2.0.

4,497,744

GENTISIC ACID SALTS AS RADIOGRAPHIC SCANNING AGENT STABILIZERS

Mahdi B. Fawzi, Cincinnati, Ohio, assignor to Mallinckrodt, Inc., St. Louis, Mo.

Division of Ser. No. 892,245, Mar. 31, 1978, Pat. No. 4,233,284. This application Nov. 3, 1980, Ser. No. 202,962

Int. Cl.³ C07F *7/22*

U.S. Cl. 260—429.7 **2 Claims**

1. The water-soluble compound stannous gentisate.
2. The water-soluble compound chromous gentisate.

4,497,745

COMPOSITIONS, WHICH PROMOTE PLANT GROWTH AND PROTECT PLANTS BASED ON OXIDE ETHERS AND OXIME ESTERS

Henry Martin, Allschwil, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

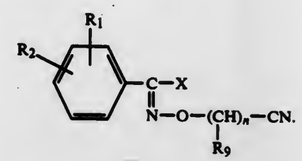
Division of Ser. No. 129,499, Mar. 11, 1980, Pat. No. 4,466,822, which is a division of Ser. No. 881,953, Feb. 27, 1978, abandoned. This application Sep. 30, 1982, Ser. No. 430,061

Claims priority, application Switzerland, Mar. 2, 1977, 2606/77; Feb. 8, 1978, 1348/78

Int. Cl.³ C07C *121/66*

U.S. Cl. 260—465 D **3 Claims**

1. A compound of the formula



wherein

R_1 is hydrogen, halogen or nitro,

R_2 is hydrogen or halogen,

X is —$COOCH_3$, —$COOC_2H_5$, —$CONH_2$ or —$CONHCH_3$,

n is the integer 1 or 2, and

R_9 is hydrogen or methyl.

4,497,746

BENZAMIDOSULFENYLCARBAMOYL HALIDES

Jozef Drabek, Oberwil, Switzerland, and Manfred Böger, Weil am Rhein, Fed. Rep. of Germany, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

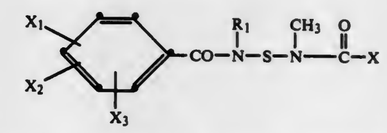
Division of Ser. No. 305,306, Sep. 24, 1981, Pat. No. 4,413,008. This application Sep. 23, 1982, Ser. No. 422,332

Claims priority, application Switzerland, Oct. 2, 1980, 7362/80; Jun. 2, 1981, 3597/81

Int. Cl.³ C07C *83/10*

U.S. Cl. 260—544 C **2 Claims**

1. A compound of the formula



wherein R_1 is C_1-C_{10} alkyl, X is fluorine or chlorine, and each of X_1, X_2 and X_3 is hydrogen, halogen, C_1-C_4 alkyl or C_1-C_4 haloalkyl.

4,497,747

PROCESS FOR MAKING ACETIC ANHYDRIDE

Wilhelm Vogt, Hürth; Hermann Glaser, Erftstadt, and Erhard Jägers, Bornheim, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Jul. 19, 1983, Ser. No. 515,283

Claims priority, application Fed. Rep. of Germany, Aug. 21, 1982, 3231154

Int. Cl.³ C07C *51/54, 51/56*

U.S. Cl. 260—546 **4 Claims**

1. A process for making acetic anhydride by reacting methyl acetate or dimethylether with carbon monoxide unter practically anhydrous conditions at temperatures of 120° to 270° C., under pressures of 1 to 500 bars in the presence of a catalyst system containing nickel or a nickel compound, an organic iodine or bromine compound as well as a tertiary or quaternary organic phosphorus compound, which comprises using a catalyst system containing a titanium or zirconium compound as an additional constituent.

4,497,748

PREPARATION OF LITHIUM INITIATOR FOR THE PREPARATION OF STAR POLYMERS

Francis J. Vitus; Ivan G. Hargis, both of Tallmadge; Russell A. Livigni, and Sundar L. Aggarwal, both of Akron, all of Ohio, assignors to The General Tire & Rubber Company, Akron, Ohio

Division of Ser. No. 282,671, Jul. 13, 1981, Pat. No. 4,409,368. This application Sep. 22, 1982, Ser. No. 421,699

Int. Cl.³ C07F *1/02*

U.S. Cl. 260—665 R **10 Claims**

1. The method which comprises under an inert atmosphere adding with agitation a tertiary alkyl amine to a RLi compound in a hydrocarbon solvent at a temperature sufficiently low to prevent thermal decomposition of the RLi compound, said tertiary amine having from 2 to 4 carbon atoms in the alkyl group, said R being selected from the group consisting of normal, secondary and tertiary alkyl and cycloalkyl radicals having from 2 to 20 carbon atoms and mixtures thereof, and the mol ratio of said tertiary amine to the RLi compound being about 4:1, and then adding to the resulting mixture with agitation in the same temperature range a diethylenically unsaturated aromatic compound selected from the group consisting of divinyl benzene and diisopropenyl benzene and mixtures thereof in a hydrocarbon solvent, the mole ratio of the RLi compound to the aromatic compound being about 1:0.83, the rate of addition of said aromatic compound to said mixture

being sufficient to provide without substantial polymerization a hydrocarbon soluble, gel free and stable initiator suitable for anionic polymerization having an average of from about 4 to 9 C-Li sites and a VPO $\overline{Mn}$ of from about 750 to 4,000.

4,497,749

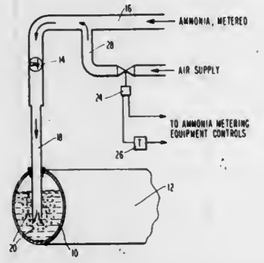
CHECK VALVE FOR AMMONIA INJECTOR APPARATUS

Theodore R. Strauss, Wayne, N.J., assignor to Pennwalt Corporation, Philadelphia, Pa.

Filed Dec. 1, 1983, Ser. No. 556,802

Int. Cl.³ C02F *1/50*; F16K *15/14*

U.S. Cl. 261—64 B **1 Claim**



1. Injection apparatus for injecting gas under pressure into water flowing in a conduit, said apparatus including

pipe means for transporting said pressurized gas into said water,

a check valve mounted within said pipe means above said conduit, said check valve comprising

a cylindrical body portion having a plurality of spaced recessed annuli in circumscribed relationship therearound,

an axially disposed bore in said body communicating with said gas transported within said pipe means, said bore extending downwardly from an upper portion of said body to a lower portion where lowermost of said annuli circumscribes said body,

a plurality of spaced ports disposed in said body communicating between said bore and each of said annuli,

each of said annuli characterized by sharp right angle edges defining its outermost and innermost diameter and being devoid of taper therebetween,

an O-ring disposed around each of said annuli in pressure sealing relationship, each of said O-rings effecting line contact only with said outermost sharp edges of each of said annuli, each of said O-rings having a thickness diameter slightly greater than width of said recessed annuli,

whereby said pressurized gas stretches said O-rings to place them in tension to permit passage of said pressurized gas at points along said line contact between said O-rings and recessed annuli,

means to shut-down flow of gas in said pipe means, and

other means for automatically feeding pressurized purge air into said pipe means upstream of said check valve upon said shut-down.

4,497,750

FUEL IMPACT DEVICE

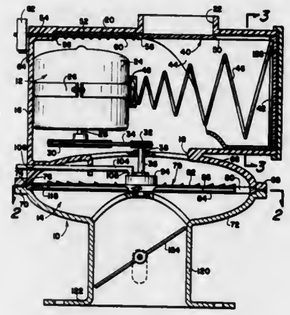
Edward Simonds, 1505 E. Kenosha, Broken Arrow, Okla. 74012

Continuation of Ser. No. 420,357, Sep. 17, 1982, abandoned. This application Jun. 18, 1984, Ser. No. 621,149

Int. Cl.³ F02M *17/16*

U.S. Cl. 261—64 C **7 Claims**

1. A fuel impact device for an internal combustion engine comprising air chamber means, air-fuel mixture chamber means in open communication with the air chamber means of the internal combustion engine, air valve means provided in the air chamber means for selectively admitting air into the interior thereof, rotatable fuel accelerator means journalled between the air chamber means and air-fuel mixture chamber means, internal fuel receiving chamber means provided in the fuel accelerator means, impact ring means disposed around the fuel accelerator means and concentrically arranged with respect thereto to provide an air passageway therebetween, fuel inlet means provided in the fuel accelerator means and in intimate communication with the fuel receiving chamber means for delivery of the fuel directly thereto, fuel discharge means provided around the outer periphery of the fuel accelerator means for radially outward discharge of the fuel from the fuel receiving chamber means for impinging fuel against the impact ring means, air foil means on the fuel accelerator means extending into the air passageway for providing a void area in the air moving therethrough at the point wherein the fuel is



discharged, and the air valve means comprises housing means slidably disposed within the air chamber means and having port means providing open and closed positions for the air valve for controlling the quantity of air admitted into the air chamber upon reciprocation of the housing means within the air chamber, the housing means having one end open for receiving a helical spring means therein and one end closed for engagement by the helical spring means for constantly urging the housing means toward the closed position therefor, the helical spring means being responsive to the demand of the internal combustion engine for reciprocation the housing means within the air chamber for admitting the optimum quantity of air into the air chamber in accordance with the engine demand.

4,497,751

ZIG-ZAG PROFILE PACKING AND METHOD OF MAKING

Raymond Pluss, Klein Andelfingen, Switzerland, assignor to Sulzer Brothers Limited, Winterthur, Switzerland

Filed Jul. 14, 1982, Ser. No. 398,186

Claims priority, application Switzerland, Jul. 30, 1981, 4924/81

Int. Cl.³ B01F *3/04*

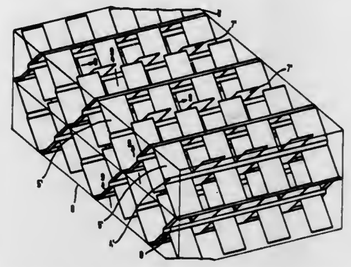
U.S. Cl. 261—94 **13 Claims**

12. A layer having a zig-zag shaped profile to define a plurality of flank planes with a plurality of contiguous transverse rows of pairs of deflecting surfaces and a plurality of bridges connecting said rows of deflecting elements to each other, each said deflecting surface of a respective row being disposed in angular relation to an adjacent deflecting surface of said row with every other deflecting surface of a row projecting from said flank planes in parallel relation to the adjacent flank plane.

13. A process for making a regular packing comprising the steps of

forming a flat sheet with a plurality of transverse rows of spaced apart tabs to define an alternating sequence of integral deflecting surfaces and bendable deflecting surfaces;

deforming the flat sheet to form a zig-zag shaped profile having a plurality of flank planes with two adjacent rows of said surfaces being disposed in a respective flank plane; and



bending each tab of each row outwardly of said respective flank plane into parallel relation to an adjacent flank plane.

4,497,752

X-SHAPED PACKING LAYERS AND METHOD OF MAKING

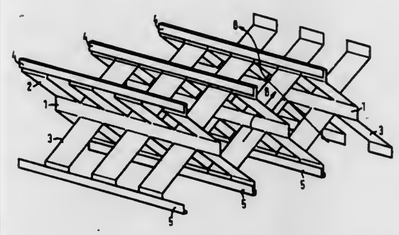
Max Huber, Winterthur, Switzerland, assignor to Sulzer Brothers Limited, Winterthur, Switzerland

Filed Jul. 9, 1982, Ser. No. 396,720

Claims priority, application Switzerland, Jul. 30, 1981, 4926/81

Int. Cl.³ B01F *3/04*

U.S. Cl. 261—95 **6 Claims**



1. A packing for a mass transfer, direct heat exchange and mixing comprising a plurality of X-shaped profiled layers disposed at the outer longitudinal edges thereof in side-by-side parallel relation with each other, each said layer having a centrally disposed bridge, a first row of deflecting surfaces extending from one side of said bridge in alternating angular relation and a second row of deflecting surfaces extending from an opposite side of said bridge in alternating angular relation.

6. A process of making a multi-layer packing comprising the steps of

forming a plurality of flat sheet-like bodies each with a centrally disposed bridge, a first row of discrete deflecting surfaces extending from one side of said bridge and a second row of discrete deflecting surfaces extending from an opposite side of said bridge;

bending alternating deflecting surfaces in each said row of each body relative to said respective bridge to define generally X-shaped profiles; and

disposing said profiles at the outer longitudinal edges thereof in contiguous side-by-side parallel relation to define a plurality of open-ended crossing flow channels.

4,497,753

CORRUGATED SHEET PACKING AND METHOD OF MAKING

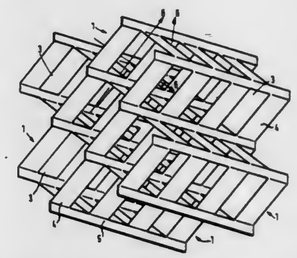
Felix Streiff, Winterthur, Switzerland, assignor to Sulzer Brothers Limited, Winterthur, Switzerland

Filed Jul. 13, 1982, Ser. No. 397,775

Claims priority, application Switzerland, Jul. 30, 1981, 4925/81

Int. Cl.³ B01F *3/04*

U.S. Cl. 261—95 **5 Claims**



1. A packing comprising a plurality of layers defining crossing deflecting surfaces disposed at an inclination to a given flow direction therethrough, each said layer being of zig-zag shape defining a plurality of flanks with alternating troughs and apices and having a plurality of longitudinal rows of alternating deflecting surfaces and gaps and a plurality of longitudinal bridges connecting said rows of deflecting surfaces; said deflecting surfaces and gaps being disposed in and across said flanks and said bridges being alternately in said troughs and said apices between a respective gap and a transversely adjacent deflecting surface, at least two of said layers being disposed one above another to define crossing flow channels.

5. A process of forming a packing comprising the steps of

forming a flat sheet-like body with a plurality of longitudinal rows of alternating deflecting surfaces and gaps and a plurality of longitudinal bridges connecting said rows;

shaping said flat body into a corrugated later having said rows within inclined flanks of said shaped layer with each deflecting surface and each gap of a respective row extending across a respective flank and said bridges being disposed at alternating troughs and apices thereof between a respective gap and a transversely adjacent deflecting surface; and

placing a plurality of said corrugated layers in contiguous relation with said layers being disposed one above the other to form a packing with flow channels.

4,497,754

CASTING PLASTIC LENSES FROM THERMOHARDENING MONOMER WITH COMPENSATION FOR POLYMER EXPANSION AND SHRINKAGE

Giorgio M. Padoan, Milan, Italy, assignor to Societa' Italiana Lenti S.I.L.-S.r.l., Pordenone, Italy

Continuation of Ser. No. 61,882, Jul. 30, 1979, abandoned. This application Mar. 5, 1981, Ser. No. 240,825

Int. Cl.³ B29D *11/00*

U.S. Cl. 264—1.4 **13 Claims**

1. A process of continuous compensation casting a lens of a resinous thermohardening plastics material, said process comprising the steps of:

(1) forming a tubular sleeve of a substantially nondeformable plastic material which is chemically compatible with the thermohardening plastics resin and which sleeve is thermally stable at polymerization temperatures;

(2) positioning two mold halves within said sleeve at a predetermined distance apart from each other defining, together with the adjacent internal lateral wall of the sleeve be-

tween the two mold halves, a cavity with a diameter the same as each of the mold halves,

each mold half retained in position within the sleeve by friction between the mold half rim and the adjacent sleeve wall with which it is in contact;

(3) providing a compensation reservoir external of the cavity and in fluid communication therewith through at least one preformed passageway therebetween;

(4) introducing a flowable, catalyst-containing thermohardening, homogeneously-polymerizing monomer into the cavity via the preformed passageway and completely filling the cavity, the compensation reservoir and the preformed passageway therebetween;

(5) heating the thus formed and filled mold assembly for a period of time to initiate polymerization of the thermohardening monomer,

wherein initially the monomer so heated expands and flows from the cavity to the compensation reservoir,



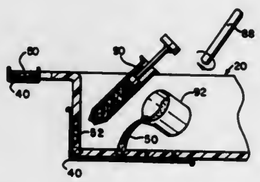
then later during the polymerization the polymerizing monomer contracts and flows from the compensation reservoir into the cavity as required to compensate for monomer shrinkage within the mold, until the gel stage is reached,

the heating being continued until the gel stage of polymerization is reached and flow between the compensation reservoir and the cavity stops;

(6) continuing the heating of the mold assembly until the monomer is completely polymerized, while concurrently moving the mold halves towards each other as required to compensate for the continuing shrinkage of the polymerizing monomer, the shrinkage of the monomer under polymerization from the gel stage to final polymerization being solely compensated by moving the mold halves towards each other; and thereafter

(7) removing the two mold halves from the so produced lens when polymerization of the monomer is completed.

4,497,755
METHOD FOR REPAIRING ARTICLES
Dever J. Korsyn, 904 69th Ave., Philadelphia, Pa. 19126
Filed Aug. 31, 1982, Ser. No. 413,264
Int. Cl.³ B29H *5/16*; B29D *11/00*
U.S. Cl. 264—1.7 **6 Claims**



1. A method for repairing a broken plastic article adapted for diffuse light transmission, the article having a body broken to define an area having at least one open void through the article and cracks adjacent the void, the void and cracks to be filled and supported, the method comprising the steps of:

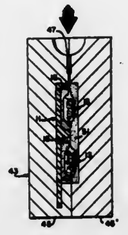
placing a form on a surface of the broken plastic article, the form covering a first side of said open void;

preparing an adhesive sealing compound having a dye for diffuse light transmission and a curing agent to promote curing by exothermic reaction, the adhesive sealing compound being a type that becomes thinner upon exothermic heating prior to gelation;

applying the sealing compound to the void from a side opposite the form, heat generated by the exothermic reaction thinning the compound and the compound expanding in the void and cracks, the thinned compound flowing freely into and filling the void and cracks; and,

removing the form after the compound has cured whereby said area, filled by said dyed compound, diffuses light in a manner substantially indistinguishable from remaining portions of the article.

4,497,756
METHOD OF MAKING A PHOTOFLASH ARTICLE USING INJECTION MOLDING
Andre C. Bouchard, Peabody; George J. English, Reading; Harold H. Hall, Jr., Marblehead, and Thomas J. Sentententes, Wakefield, all of Mass., assignors to GTE Products Corporation, Stamford, Conn.
Filed Oct. 5, 1981, Ser. No. 308,637
Int. Cl.³ B29C *6/00*
U.S. Cl. 264—1.9 **7 Claims**



1. A method of making a photoflash article including a substrate member and a plurality of electrically-activated photoflash lamps each including a glass envelope and a pair of lead-in wires projecting therefrom, said method comprising:

injection molding an insulative substrate member defining a plurality of open-sided compartments therein;

providing a pair of openings within said substrate adjacent each of said open-sided compartments;

inserting each of said pairs of lead-in wires within a respective pair of said openings within said substrate to orient each of said photoflash lamps within a respective one of said compartments such that the glass envelope of each of said lamps is spacedly positioned from the walls of said substrate, said lead-in wires being inserted through the open end of each of said respective compartments and passing through said openings and thereafter being bent back against an exterior surface of said substrate;

positioning said insulative member having said photoflash lamps oriented therein within an injection mold apparatus;

injecting a predetermined quantity of a thermoplastic or thermosetting resin capable of forming a light-transmitting polymer member upon solidification thereof within said mold apparatus to occupy each of said compartments and totally surround the glass envelopes of each of said photoflash lamps, said thermoplastic or thermosetting resin being injected at a temperature within the range of about 200 to about 300 degrees Farenheit and at a pressure of from about 2000 to about 8000 pounds per square inch, said lead-in wires bent against said substrate assisting in retaining said glass envelopes in said spaced positioning relationship during said injecting of said resin;

solidfying said quantity of resin to form said light-transmitting polymer about each of said glass envelopes, said resin bonding to said substrate member to define said photoflash article; and

removing said article from said mold apparatus.

4,497,757
ENERGY EFFICIENT HYDRATION PROCESS
Wayne E. Beimesch, Covington, Ky., and Thomas C. Hortel, Cincinnati, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio
Filed Jan. 31, 1983, Ser. No. 462,293
Int. Cl.³ B29C *6/00, 23/00*
U.S. Cl. 264—13 **13 Claims**

1. An energy efficient process for hydrating a mixture of materials in a spray tower comprising:

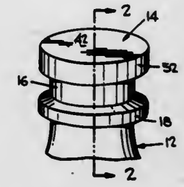
A. forming a water-wet mixture of hydratable sodium sulfate and a nonhydratable material at a temperature which is higher than the 32° C., temperature of hydration of sodium sulfate;

B. forming the mixture of (A) into spheroidal units of from 50 to 2,000 microns via a spray nozzle;

C. decreasing the temperature of the units of (B) to 12°–22° C. via inlet air;

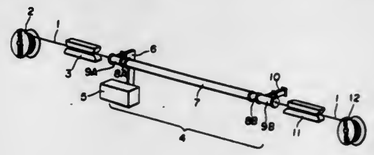
D. drying the units of (C) at a temperature high enough to remove free water and water of hydration for a final moisture content of less than about 1%.

4,497,758
METHOD OF FORMING BOTTLE NECK FINISH FOR ACCEPTING A SNAP-IN CLOSURE
Richard E. Clark, Merrimack, N.H., assignor to The Continental Group, Inc., Stamford, Conn.
Division of Ser. No. 259,205, Apr. 30, 1981,. This application Jun. 16, 1983, Ser. No. 505,037
Int. Cl.³ B06B *3/00*
U.S. Cl. 264—23 **2 Claims**



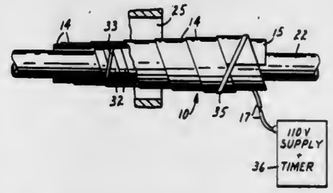
1. A method of adapting a tubular neck portion of a plastic container for the reception of a closure, said method comprising the step of supporting the container, providing a tool having an end bore of a size to receive in telescoped relation a free end of a container neck portion and a central sizing plug in said end bore, telescoping the tool and the container neck portion with an extreme end of the container neck portion engaging an end wall of the end bore, and continuing the telescoping of the tool and the container neck portion with the free end of the container neck portion being gradually radially inwardly deformed to form a radially inwardly directed flange and the flange is shaped about the centerpost.

4,497,759
DRAWING OF POLYOXYMETHYLENE USING DIELECTRIC HEATING
Koichi Nakagawa, Ibaraki; Osamu Maeda, Seki, and Shinzo Yamakawa, Katsuta, all of Japan, assignors to Nippon Telegraph & Telephone Public Corporation, Musashino, Japan
Filed Dec. 23, 1982, Ser. No. 452,862
Claims priority, application Japan, Dec. 24, 1981, 56-208031; Dec. 24, 1981, 56-208032; Dec. 13, 1982, 57-218152
Int. Cl.³ B29C *17/02*
U.S. Cl. 264—26 **6 Claims**



6. A process for producing an ultrahigh-modulus polymer wherein a rod or tube of polyoxymethylene is drawn under dielectric heating, comprising the step of continuously drawing said rod or tube at a highest ambient temperature ranging within 120° to 170° C. at a feed speed per furnace length of not more than 0.3 $min.^{-1}$ while maintaining the product of the oscillation frequency and the square of the electric field strength within a range of from 9.8×10^{13} to 7.4×10^{14} $Hz\cdot V^2/cm^2$ and maintaining the ratio of the take-up speed to feed speed at a ratio of not less than 12 times.

4,497,760
CABLE SHEATH REPAIR METHOD
Mark D. Sorlien, White Bear Lake, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed Mar. 2, 1983, Ser. No. 471,519
Int. Cl.³ B29C *27/24*; B32B *35/00*
U.S. Cl. 264—36 **1 Claim**



1. A method of repairing damage to the sheath of a communications cable, comprising the steps of:

applying a spacer material to the cable,

wrapping a heat shrinkable tape around the communications cable in a spiral starting on said spacer with partial overlapping of the adjacent turns and in sufficient length along the cable to bridge across the damaged area of the sheath.

removing said spacer material,

providing a flexible strip heater having a base with a uniform width along a majority of its length, a resistance heating element insulated within said base and extending along the length of said base and across a uniform portion of its width, and an insulating layer overlying only a portion of the width of said base along the length thereof and having a width equal to that of said portion containing said resistance heating element, said insulating layer having a generally rectangular transverse cross-section.

wrapping said flexible strip heater around said heat shrinkable material in a spiral with overlapping of the heater portion having said insulating layer on the portion of the previous turn not having said insulating layer to cause said

insulating layer to substantially abut in adjacent turns of the heater,

sliding said spiral wound heater and heat shrinkable tape together along the cable to accurately position said spiraled tape to bridge the damaged area of the sheath,

activating said heating element to cause said heat shrinkable tape to shrink tightly onto said communications cable to cover the damaged portion of the sheath, and

removing said flexible strip heater.

4,497,761

PROCESS FOR THE PRODUCTION OF SINTERED MAGNESITE FROM MAGNESIUM HYDROXIDE

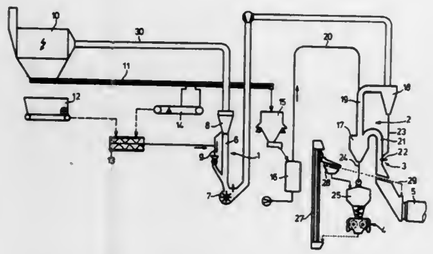
Hans-Gerd Schulte, Ennigerloh, Fed. Rep. of Germany, assignor to Krupp Polysius AG, Beckum, Fed. Rep. of Germany

Filed May 7, 1981, Ser. No. 261,733

Claims priority, application Fed. Rep. of Germany, Jun. 2, 1980, 3020881

Int. Cl.³ C04B *33/32, 35/04*

U.S. Cl. 264—66 **16 Claims**



1. A process for the production of sintered magnesite from magnesium hydroxide filter cake feedstock, said process comprising the successive steps of (1) reducing the moisture content of said feedstock to below its thixotropy value; (2) size reducing said feedstock to produce powder-form material having a particle size distribution lying in the shaded area of the particle size diagram of FIG. 2; (3) calcining said powder-form material at a temperature of between about 650° to 1050° C. to produce dehydrated powder; (4) briquetting sid powder at a temperature of between about 400° to 800° C. to form briquettes; and (5) sintering said briquettes in a sintering zone at a temperature of between about 1800° to 2000° C.

4,497,762

METHOD AND APPARATUS FOR THE PRODUCTION OF JOINTING BANDS WITH EMBEDDED REINFORCING PROFILES WHICH RUN AT RIGHT ANGLES TO THE LONGITUDINAL AXIS OF THE BAND

Winfried Meister, Hordenbachstrasse 70, 5600 Wuppertal, Fed. Rep. of Germany, assignor to Winfried Meister, Fed. Rep. of Germany

Filed Mar. 10, 1983, Ser. No. 474,022

Claims priority, application Fed. Rep. of Germany, Mar. 15, 1982, 3209357

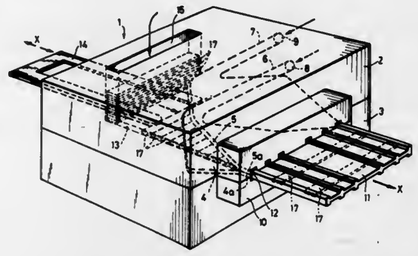
Int. Cl.³ B29F *3/10*

U.S. Cl. 264—172 **5 Claims**

1. A method of extrusion for the production of a plastic band profile with reinforcing profiles disposed and enclosed at right angles to the longitudinal axis of the band and arranged at a distance one from the other, whereby two streams of plastic are brought together at a sharp angle to the longitudinal axis of extrusion and where the profiles are strokwise pushed from behind and in the direction of extrusion into the region of the angle where the two streams meet and where the profiles are enveloped and taken with the plastic streams and extruded into the shape of the band profile, characterized in that:

the two plastic streams are produced independently one from the other in two parallel planes, one lying above the other and the flow parameters of the two plastic streams being controllable independently one from the other; and the two streams are pre-profiled before they meet and while they are still in a plastic condition whereby the strands which are produced from the streams possess a width which conforms with the width of the final band profile and possess a height which provides a small over-dimension with respect to one-half the thickness of the profile band.

3. Extrusion apparatus for the production of a plastic band profile according to the method whereby two streams of plastic material are brought together at a sharp angle to the longi-



tudinal axis of extrusion, the extrusion apparatus comprising an extruder head divided longitudinally into two halves and stream channels one running above and one below the longitudinal plane division of the extruder head, the stream channels running together at a sharp angle to the plane of the longitudinal division and in the region of the angle where the stream channels meet is a slot-like channel of a pusher arrangement in the direction of extrusion ending in front of the region of the angle, characterized in that the two stream channels **4, 5** lead from respective extrusion channels **6, 7** which leads from a side face of the extruder head **1** and on the inlet opening **8, 9** of which an extruder may be connected.

4,497,763

METHOD FOR INJECTION MOULDING COATED PARTS FROM PLASTICS MATERIAL

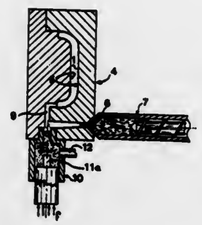
Bernard Monnet, Bellignat, France, assignor to Pont-A-Mousson S.A., Nancy, France

Filed Jul. 1, 1981, Ser. No. 279,380

Claims priority, application France, Jul. 21, 1980, 80 16085

Int. Cl.³ B29C *5/08*; B29D *9/00*; B29F *1/00*

U.S. Cl. 264—255 **2 Claims**



1. A method for the injection molding of coated parts from plastics material wherein a plastics material is injected into a mold cavity comprising introducing a charge of liquid coating material having a relatively low viscosity through an orifice into a conduit connected to the bottom of a mold cavity and closing said orifice, then injecting a plastics material having a viscosity much greater than the viscosity of the liquid coating material into said conduit at a point in said conduit below said coating material such that the injection of said plastics material into the mold cavity forces the liquid coating material upwardly into the mold cavity ahead of said plastics material, the liquid coating material being maintained in contact with said plastics material by means of gravity and rising in the cavity with the plastics material so that the well of the cavity will be uniformly coated with a thin film of said coating material.

4,497,764

EPOXY RESIN COMPOSITIONS OF ENHANCED CREEP RESISTANCE

S. Frank Rey, Houston, Tex., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

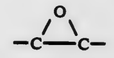
Filed Sep. 30, 1982, Ser. No. 428,832

Int. Cl.³ E04B *1/54*; F16B *12/06*

U.S. Cl. 264—261 **4 Claims**

1. A method of filling the voids between the surface of a support floor and a contiguous bottom surface of a planar member supporting heavy equipment comprising the steps of (1) grouting fully said voids with an epoxy resin composition comprising:

(a) an epoxy resin having at least two



groups per molecule;

(b) a reactive diluent represented by the diglycidyl ether of cyclohexane dimethanol;

(c) a converter represented by triethylene tetraamine in sufficient amount to cure said epoxy resin at about room temperature; and,

(d) a major amount of an aggregate having a particulate size ranging from 5 to 400 mesh;

(2) curing said composition to hardness.

4,497,765

PROCESS FOR MAKING A CLOSURE

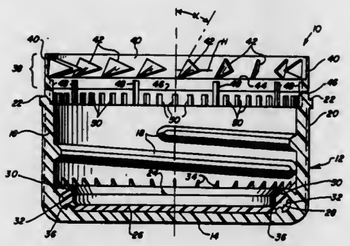
Sheldon L. Wilde; Thomas J. McCandless, both of Crawfordsville, and Robert M. Saunders, Ladoga, all of Ind., assignors to H-C Industries, Inc., Crawfordsville, Ind.

Continuation-in-part of Ser. No. 77,584, Sep. 21, 1979, Pat. No. 4,343,754. This application Jun. 22, 1982, Ser. No. 390,346

The portion of the term of this patent subsequent to Aug. 10, 1999, has been disclaimed.

Int. Cl.³ B29C *13/02*; B29D *9/08*

U.S. Cl. 264—268 **52 Claims**



1. A process for making a composite closure for a container, comprising the steps of:

forming a plastic cap having a top wall portion, an internally threaded annular skirt portion, and an inwardly extending, annular liner-retaining lip;

depositing a quantity of moldable plastic in said cap; and

forming a liner including a generally inwardly facing sealing surface with said moldable plastic so that said moldable plastic flow against said lip and said lip retains said liner within said cap.

4,497,766

METHOD AND APPARATUS FOR MOLDING PLASTIC WHEELS

Jan G. Olsson, SjögÅngen 6, 421 71 Västra Frölunda, and Lars Erik Samuelsson, Hedängen 5, 433 70 Partille, both of Sweden

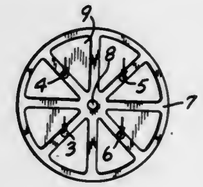
PCT No. PCT/SE82/00083, § 371 Date Dec. 13, 1982, § 102(e) Date Dec. 13, 1982, PCT Pub. No. WO82/03594, PCT Pub. Date Oct. 28, 1982

PCT Filed Mar. 23, 1982, Ser. No. 453,889

Claims priority, application Sweden, Apr. 14, 1981, 8102395

Int. Cl.³ B29C *1/00*

U.S. Cl. 264—328.8 **2 Claims**



1. A method of manufacturing a wheel of plastic material, for vehicles or the like, said wheel having an even number of spokes in excess of two, a hub and a rim, said spokes, hub and rim together constituting an integral unit, comprising the steps of:

preparing a mold corresponding in shape to said wheel so as to have a cavity comprising spoke portions, a hub and a rim and having inlets located at points in every second spoke portion, and injecting the plastic material into said inlets, whereby the flows of injected material join each other in the spoke portions free from inlets and adjacent the rim.

2. A mold for manufacturing a wheel of plastic material, said wheel having spokes, a hub and a rim forming an integral unit, said mold having a cavity of a form corresponding to the wheel with an even number of spoke-forming portions in excess of two, and with inlets emptying into every second spoke-forming portion at a location so that flows of plastic material injected into said inlets will meet in the spoke forming portions free from inlets and adjacent the rim.

4,497,767

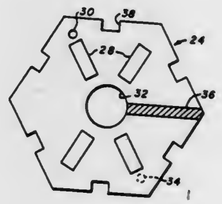
COMPRESSION HUB WITH EDDY CURRENT PREVENT MEANS

Albert L. Gaines, West Simsbury, Conn., assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed Feb. 11, 1980, Ser. No. 120,192

Int. Cl.³ G21B *1/00*

U.S. Cl. 376—142 **3 Claims**



1. A compression hub for a fusion reactor system for purposes of providing resistance to the forces tending to draw the magnets in the fusion reactor system together toward a common point comprising a multiplicity of compression plates arranged in a layered assembly and interconnected so as to form a unitary structure, each of said compression plates being

of a polygonal shape and having a first opening formed at the center thereof, each of said compression plates further having a second opening operative as a flow passage for coolant formed therein adjacent one of the corners defined by the polygonal shape of each of said compression plates, a first set and a second set of shear members associated with each of said compression plates, said first set of shear members including a first shear member supported on one side of said first opening of each of said compression plates and a second shear member supported on another side of said first opening of each of said compression plates, said second set of shear members including a third shear member supported on one side of said first opening of each of said compression plates and a fourth shear member supported on another side of said first opening of each of said compression plates, each of said compression plates having an interruption formed therein extending from said first opening formed therein to the circumference of said compression plate, said interruption having a piece of insulation positioned therein and dimensioned so as to completely fill said interruption, said insulation filled interruption of each of said compression plates being operative to impede the circulation through each of said compression plates as well as through the entire compression hub of eddy currents induced therein, said multiplicity of compression plates when arranged in a layered assembly being positioned relative to each other such that said first set of shear members of each of said compression plates lie in a first common plane that passes through said first opening of each of said compression plates and extends the length of the compression hub, said second set of shear members of each of said compression plates lie in a second common plane that extends the length of the compression hub and intersects said first common plane at the center of said first opening formed in each of said compression plates, said second opening of each adjacent pair of said multiplicity of compression plates lie in a third common plane that intersects both said first common plane and said second common plane at the center of said first opening formed in said adjacent pair of compression plates, said interruption formed in each of said compression plates defines a fourth common plane that extends the length of the compression hub and intersects said first common plane, said second common plane and said third common plane at the center of said first opening formed in each of said compression plates.

4,497,768

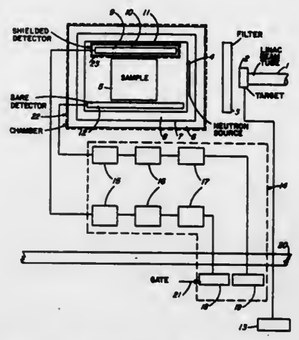
APPARATUS AND METHOD FOR QUANTITATIVELY EVALUATING TOTAL FISSILE AND TOTAL FERTILE NUCLIDE CONTENT IN SAMPLES

John T. Caldwell, Los Alamos; Walter E. Kunz, Santa Fe, both of N. Mex.; Michael R. Cates, Oak Ridge, Tenn., and Larry A. Franks, Santa Barbara, Calif., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jul. 7, 1982, Ser. No. 395,893
Int. Cl.³ G21C *17/00*
U.S. Cl. 376—153 **19 Claims**

1. A method for quantitatively evaluating total fissile and total fertile nuclide content in samples, which comprises the steps of:

a. generating repetitively pulsed gamma radiation;
b. directing said gamma radiation onto a partially transparent target which generates photoneutrons while allowing a substantial portion of said gamma radiation to pass through;
c. thermalizing said photoneutrons such that their reaction probability with fissile isotopes is substantially enhanced;
d. causing said gamma radiation and said thermalized photoneutrons to impinge upon a sample;
e. measuring the flux of said thermalized photoneutrons in the vicinity of the sample during time intervals in between the termination of a particular gamma radiation pulse and the commencement of the following one;
f. measuring the intensity of said gamma radiation in the vicinity of the sample;
g. measuring prompt and delayed fast neutron emission from the sample resulting from photofission of fertile and fissile nuclides interacting with said impinging gamma radiation, and from fission of fissile nuclides capturing said thermalized photoneutrons during said time intervals;
h. accumulating a plurality of said prompt and delayed fast



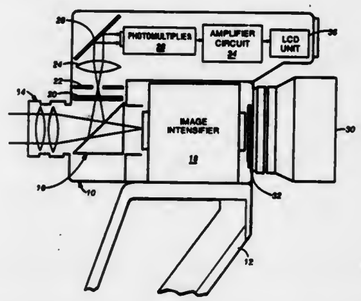
neutron emission measurements, and a plurality of said thermalized neutron flux measurements until statistically significant measurements are obtained; and
i. relating said accumulated emitted prompt and delayed fast neutron measurements normalized by said accumulated thermalized neutron flux measurements and said intensity of said gamma radiation to known gamma and neutron cross sections for the fissile and fertile nuclides contained in the sample to obtain the quantitative assay.

4,497,769

PORTABLE INSTRUMENT FOR INSPECTING IRRADIATED NUCLEAR FUEL ASSEMBLIES

Nicholas Nicholson; Edward J. Dowdy; David M. Holt, all of Los Alamos, and Charles J. Stump, Jr., Santa Fe, all of N. Mex., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed May 13, 1982, Ser. No. 377,773
Int. Cl.³ G21C *17/00*; G01T *1/22*
U.S. Cl. 376—257 **12 Claims**



1. An apparatus for inspecting irradiated nuclear fuel assemblies in a water-filled storage pond by measurement of induced Cerenkov radiation, comprising:

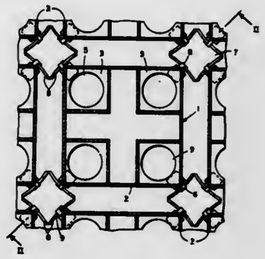
field lens means for providing a beam containing an image of a selected field of view;
beam splitting means for dividing said beam into first and second substantially identical sub-beams;
image intensifying means for electronically amplifying said first sub-beam and forming an amplified image viewable in real time of said field of view; and
photometer means positioned to receive said second sub-beam and provide an electrical signal representative of the integrated intensity of said sub-beam, said photometer means including digital readout means for providing a numerical display of the value of said intensity.

4,497,770

STORAGE STRUCTURE FOR NUCLEAR WASTE

Friedrich Krieger, Würzburg, Fed. Rep. of Germany, assignor to Salzgitter AG, Salzgitter, Fed. Rep. of Germany

Filed Apr. 29, 1981, Ser. No. 258,831
Int. Cl.³ G21C *19/40*
U.S. Cl. 376—272 **8 Claims**



1. A storage structure for storing waste of nuclear plants comprising a plurality of tubular waste storage members, each of said plurality of tubular members being adapted to form one or a plurality of waste storing chambers wherein

(a) each of said plurality of tubular storage members is provided near the bottom thereof with at least three horizontal bolts for locking and supporting the storage members in a fixed position for storing waste of all nuclear plants the longitudinal axes of the bolts intersecting at a common point of said axes; wherein
(b) a plurality of support plates for each of said plurality of tubular storage members is provided at the lower end of each of said plurality of storage members; wherein
(c) each of said plurality of support plates has a plurality of upstanding portions equal in number to the number of bolts on one of said plurality of storage tubes; wherein
(d) each of said plurality of upstanding portions of said plurality of support plates is provided with an open recess for insertion into one of said plurality of bolts; wherein
(e) each recess is wide at the open end thereof and bounded by downward slanting surfaces of decreasing spacing; and wherein
(f) each recess has a lower closed end which forms a substantially circular bolt-bearing surface coaxial with one of said plurality of bolts
(g) wherein the longitudinal axis of each bolt intersects the center longitudinal axis of said tubular storage member, and wherein each bolt is disposed at a corner of said tubular storage member.

4,497,771

LOW TANTALUM CONTENT COBALT-BASE ALLOY

Robert E. Spencer, and Donald L. Clarke, both of Newark, Ohio, assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Mar. 7, 1983, Ser. No. 472,702
Int. Cl.³ C22C *19/07*
U.S. Cl. 420—440 **10 Claims**

1. A composition of matter consisting essentially of the following elements in the following amounts expressed in weight percent:

Chromium—from about 25 to about 36,
Nickel—from about 3.5 to about 13,
Wolfram—from about 3 to about 10.5,
Tantalum—up to about 1.2,
Zirconium—from about 0.005 to about 0.2,
Silicon—from about 0.05 to about 2,
Carbon—from about 0.35 to about 0.95,
Boron—from about 0.001 to about 0.1,
Iron—from about 0.01 to about 12,
Cobalt—balance,

the weight ratio of zirconium to boron being within the range of from about 0.05 to about 35.

4,497,772

REACTIVE METAL-PALLADIUM-COPPER-NICKEL BRAZING ALLOYS

Howard Mizuhara, Hillsborough, Calif., assignor to GTE Products Corporation, Stamford, Conn.

Continuation-in-part of Ser. No. 422,625, Sep. 24, 1982,. This application Mar. 14, 1983, Ser. No. 475,265
Int. Cl.³ C22C *19/00, 9/06*
U.S. Cl. 420—457 **4 Claims**

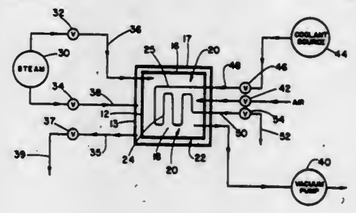
1. A ductile brazing foil having a composition consisting essentially of from about 0.05% to about 5% by weight of a reactive metal selected from the group consisting of titanium, vanadium, zirconium and mixtures thereof, from about 5% by weight to about 30% by weight of palladium and the balance is a mixture of copper and nickel wherein the minimum amount of copper is about 20% by weight of the total alloy, the minimum amount of nickel is about 105 by weight of the total alloy, the maximum amount of copper is about 70% by weight of the total alloy and the maximum amount of nickel is about 50% by weight of the total alloy.

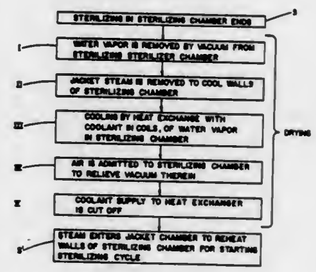
4,497,773

PROCESS AND APPARATUS FOR SHORTENING THE DRYING STAGE OF A STEAM STERILIZATION CYCLE

Christopher J. Kuelzow, Little Silver; Edward M. Kackos, and Francis J. Murray, both of Belmar, all of N.J., assignors to Vernitron Corporation, Lake Success, N.Y.

Continuation-in-part of Ser. No. 241,247, Mar. 3, 1981, abandoned. This application Sep. 6, 1983, Ser. No. 529,494
Int. Cl.³ A61L *2/00*
U.S. Cl. 422—26 **3 Claims**





1. A process in a sterilization cycle for reducing the drying

time of steam sterilized wrap articles enveloped by water vapor in a sterilizing chamber having walls surrounded by a jacket chamber containing steam, the wrap articles being supported and spaced from the chamber floor, comprising the simultaneous steps of:

withdrawing steam from said jacket chamber to cool said walls of said sterilizing chamber;

removing water and water vapor by vacuum from said sterilizing chamber; and

circulating cold coolant in a heat exchanger located inside said sterilizing chamber completely below the wrap articles therein, so that heat exchange takes place in said sterilizer and said coolant condenses said water vapor to water in said sterilizing chamber below and out of direct contact with the wrap articles and in the vicinity of said heat exchanger thereby minimizing the time period required to dry said wrap articles.

4,497,774

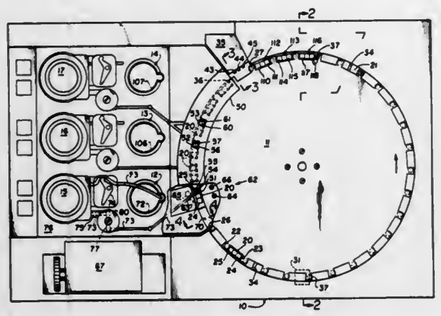
COAGULATION INSTRUMENT FOR PERFORMING CLOTTING TESTS

Richard E. Scordato, Scarsdale, N.Y., assignor to Medical Laboratory Automation, Inc., Mount Vernon, N.Y.

Continuation of Ser. No. 275,352, Jun. 19, 1981, abandoned. This application Mar. 8, 1983, Ser. No. 473,235

Int. Cl.³ G01N *35/06, 33/86*

U.S. Cl. 422—73 **9 Claims**



1. A coagulation instrument adapted to randomly perform different clotting time tests on plasma samples in accordance with a test code provided on the cuvette into which a plasma sample is introduced, said instrument comprising: sensing means for reading a test code on a coded cuvette; a first dispensing station at which one or more reagents can be dispensed, said first dispensing station having guide means with a plurality of nozzle guides therein; a test station at which one or more reagents can be dispensed and at which clotting of a reagent plasma mixture is detected, said test station having guide means with a plurality of nozzle guides therein; means for moving coded cuvettes sequentially from said sensing means to said first dispensing station and thereafter to said test station; first reservoir and dispensing means adapted to dispense a reagent at said first dispensing station; first pump means for delivering a predetermined volume of reagent from said first reservoir means at said first dispensing station; second reservoir and dispensing means adapted to dispense a reagent at said first dispensing station or at said test station; second pump means for delivering a predetermined volume of reagent from said second reservoir means at said first dispensing station or at said test station; third reservoir and dispensing means adapted to dispense a reagent at said test station; third pump means for delivering a predetermined volume of reagent from said third reservoir means at said test station; said first, second, and third dispensing means each having separate dispensing nozzles with said first dispensing nozzle being adapted to be connected to and cooperate with the first dispensing station guide means, the second dispensing nozzle being adapted to be connected to and cooperate with the first dispensing station guide means or the test station guide means, and the third dispensing nozzle being adapted to be connected to and cooperate with the test station guide means; circuit means responsive to the dispensing of a reagent into a plasma sample at said test station for detecting clot formation in the reagent plasma mixture and for measuring the time period between reagent dispensing at said test station and clot formation; and means responsive to the code sensed on a coded cuvette by said sensing means for controlling said first pump means to either dispense or not dispense a reagent to a cuvette from said first reservoir means when the cuvette is moved to said first dispensing station and for controlling said second pump means to either dispense or not dispense a reagent to a cuvette from said second reservoir means when the cuvette is moved to said first dispensing or test station depending on which station guide means the second dispensing nozzle is connected to and for controlling said third pump means to dispense a reagent from said third reservoir means when a cuvette is moved to said test station, the arrangement being such that when reagents are added to a cuvette at said first dispensing station and at said test station in response to the code on the cuvette an APTT test or a double reagent PT test is performed and when a reagent is added to a cuvette only at said test station in response to the code on the cuvette a single reagent PT test is performed.

4,497,775

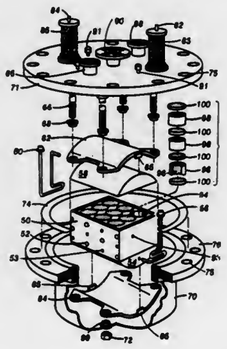
APPARATUS FOR STORING HYDROGEN ISOTOPES

John W. McMullen; Michael G. Wheeler, both of Los Alamos, N. Mex.; Hatice S. Cullingford, Houston, Tex., and Robert H. Sherman, Los Alamos, N. Mex., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Aug. 10, 1982, Ser. No. 406,828

Int. Cl.³ G21F *9/02*

U.S. Cl. 422—159 **7 Claims**



1. Apparatus for storing hydrogen isotopes as hydrides without requiring any external cooling means, said apparatus comprising:

(a) a copper block having a multiplicity of first boreholes extending therethrough, into which hydriding material is to be placed, said copper block having a mass sufficiently large to safely absorb the heat of hydriding given off upon complete hydriding of said hydriding material, a pair of copper plenum chambers covering the openings of said first boreholes at opposite ends of said block, a pair of thick stainless steel end clamps cooperably shaped to conform to and reinforcably back said copper plenum chambers, and means for clamping said end clamps together so as to compress and contain said plenum chambers and said copper block therebetween, whereby the copper block and copper plenum chambers are provided with sufficient yield strength to safely contain pressurized gas at elevated operating temperatures;

(b) an external heating means for adjustably heating said copper block, wherein said external heating means is in operable communication with said copper block;

(c) a sensing means in operable communication with said copper block and with said external heating means, wherein said sensing means is used for detecting whether hydriding or dehydriding is taking place;

(d) a first conduit means in operable communication with a first one of said plenum chambers, wherein said first conduit means is operably connected to a first end of each of said first boreholes in said copper block;

(e) a second conduit means in operable communication with a second one of said plenum chambers, wherein said second conduit means is operably connected to a second end of each of said first boreholes in said copper block; and

(f) a support means for maintaining said hydriding material within said first boreholes and for allowing hydrogenous gases to pass through said first boreholes.

4,497,776

ARRANGEMENT FOR INTERCONNECTING CONDUITS

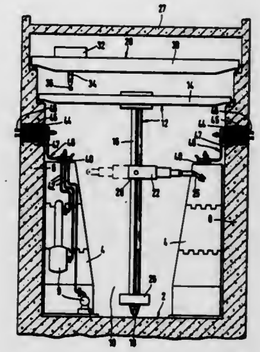
Klaus Blaseck, Burgdorf, Fed. Rep. of Germany, assignor to Deutsche Gesellschaft für Wiederaufarbeitung von Kernbrennstoffen mbH, Hanover, Fed. Rep. of Germany

Filed Sep. 9, 1983, Ser. No. 531,179

Claims priority, application Fed. Rep. of Germany, Sep. 17, 1982, 3234513

Int. Cl.³ G21F *9/14*

U.S. Cl. 422—159 **7 Claims**



1. In a processing cell such as a large-area cell or the like for reprocessing irradiated nuclear reactor fuel elements, the large-area cell having an interior wall which is penetrated from the outside by the end portions of a plurality of conduits and the cell containing a rack in which process components and connecting conduits for the latter are arranged, a conduit interconnecting arrangement for interconnecting the connecting conduits of the rack with respective ones of the conduit end portions penetrating the interior wall of the cell, the conduit interconnecting arrangement comprising:

two terminal blocks each having a plurality of passages formed therein;

a plurality of conduit segments tightly connecting said blocks with each other so as to communicate with corresponding ones of said passages in each of said blocks;

the plurality of conduits outside of the cell being arranged so as to cause the respective conduit end portions thereof penetrating the cell wall to define a first predetermined pattern;

the free ends of the passages in one of the blocks terminating in a pattern corresponding to said first pattern;

first interface means for joining said free ends of said one block with corresponding ones of the wall conduit end portions;

the connecting conduits of the rack being arranged to cause the respective conduit end portions thereof to define a second predetermined pattern;

the free ends of the passages of the other one of said blocks terminating in a pattern corresponding to said second pattern;

second interface means for joining said free ends of said other block with corresponding ones of the rack conduit end portions;

said two terminal blocks and said conduit segments conjointly defining a portable unit removable from and returnable to a rest position whereat the unit connects the wall conduit end portions with respective ones of the rack conduit end portions;

first centering means for centering said one block with respect to the wall conduit end portions so as to bring the passages of the one block into alignment with corresponding ones of the wall conduit end portions when said unit is placed in said rest position; and,

second centering means for centering said other one of said blocks with respect to the rack conduit end portions so as to bring the free ends of the passages of said other block into alignment with corresponding ones of the rack conduit end portions when said unit is placed in said rest position.

4,497,777

APPARATUS FOR PRODUCING MONOCRYSTALLINE SILICON

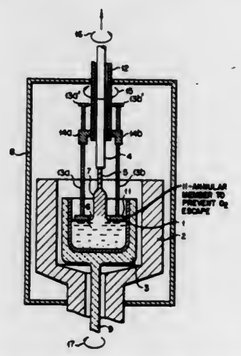
Masakatu Kojima, Yokosuka, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Apr. 22, 1982, Ser. No. 370,913

Claims priority, application Japan, Apr. 28, 1981, 56-63249

Int. Cl.³ C30B *15/00*

U.S. Cl. 422—249 **2 Claims**



1. An apparatus for producing a pull of monocrystalline silicon containing a high, uniform concentration of oxygen comprising:

a crucible for holding silicon melt;

means for rotating said crucible;

a heater means arranged outside said crucible for heating the silicon melt held in said crucible;

a buoyant, quartz annular member to be floated on the silicon melt, said annular member being capable of both supplying oxygen to the silicon melt to increase the concentration of oxygen in the melt and preventing the escape of oxygen from the silicon melt;

said quartz annular member having an aperture which is larger than the diameter of the pull of monocrystalline silicon to be produced so that the pull of monocrystalline silicon will not contact or react with the annular member and having an outer periphery slightly smaller than the inner periphery of the crucible to permit the annular member to slide within the crucible;

pulling means for dipping a monocrystalline seed in the

silicon melt through the aperture of said quartz annular member, rotating the monocrystalline seed while it is in the melt, and pulling the monocrystalline seed out of the melt as it is rotated to form a pull of monocrystalline silicon containing a high, uniform concentration of oxygen;

annular member rotation means independent of said silicon melt to rotate the quartz annular member in a direction opposite to the direction of rotation of the monocrystalline seed to obtain a more uniform temperature profile and oxygen distribution in the silicon melt; and wherein the diameter of the aperture of said annular member is not less than 1.2 times the diameter of the pull of monocrystalline silicon to be produced.

4,497,778

MICROBIAL LEACHING OF SULPHIDE-CONTAINING ORES

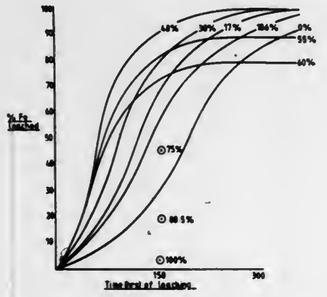
Frederick D. Pooley, Holmacre, United Kingdom, assignor to University College Cardiff Consultants Limited, Cardiff, United Kingdom

Continuation-in-part of Ser. No. 365,958, Jun. 4, 1982, abandoned. This application Feb. 7, 1984, Ser. No. 577,884

Claims priority, application United Kingdom, Apr. 6, 1981, 8110736; Apr. 7, 1981, 8110861; Mar. 3, 1982, 8208091; Mar. 30, 1982, 8209248

Int. Cl.³ C01G *5/00*

U.S. Cl. 423—27 **19 Claims**



1. A process of extracting metals from a material containing at least 10% by weight of pyrite and selected from the group consisting of ores containing sulphide, concentrates of such ores and mixtures of such ores and/or concentrates by microbial leaching which comprises roasting the material before said microbial leaching to convert part of the pyrite to pyrrhotite and thus remove part of the sulphur which is present as pyrite with substantially no metal oxide formation, the conversion corresponding to removal of at least 10% but not more than 50% of the sulphur present in the pyrite, and only thereafter leaching the thus roasted ore by treatment with bacteria, to extract said metals.

4,497,779

PRODUCTION OF POTASSIUM HEXAFLUOTITANATES USING DILUTE HYDROFLUORIC ACID

Marcy J. Kramer, Arvada, Colo.; William C. Warneke, Lakeland, Fla.; Gustavo A. Meyer, Creve Coeur, Mo., and Mahesh C. Jha, Arvada, assignors to Amax Inc., Greenwich, Conn.

Filed Oct. 14, 1983, Ser. No. 541,830

Int. Cl.³ C01G *23/02*

U.S. Cl. 423—72 **11 Claims**

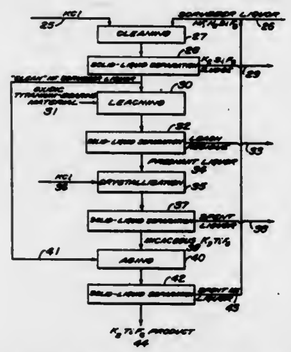
1. A process for the recovery of fluorine from waste solutions of dilute aqueous hydrofluoric acid and for the production of a commercially useful product of K_2TiF_6 which comprises,

providing a waste solution of said dilute hydrofluoric acid containing silicon in the form of H_2SiF_6as in impurity, the amount of HF in said solution ranging from about 3% to about 38% by weight,

adding to said solution a source of potassium ions at least stoichiometrically sufficient to precipitate said silicon as K_2SiF_6 and stoichiometrically sufficient for the subsequent production of K_2TiF_6,

separating said precipitated K_2SiF_6 from said solution to provide a substantially clean waste solution,

mixing said clean waste solution with an amount of an oxidic titanium material containing about 25% to 60% by weight of titanium to form a slurry thereof,



the amount of HF in said solution being at least stoichiometric to the amount of titanium present and ranging up to about 25% of stoichiometric excess sufficient to effect the dissolution of said titanium-containing material,

subjecting said contained titanium material to dissolution at a temperature ranging from about 100° F. to boiling in the presence of said potassium ions while vigorously stirring said slurry at a temperature within said range for a time at least sufficient to effect dissolution of substantially all of said contained titanium and form a pregnant liquor thereof,

causing said titanium to crystallize from said solution as K_2TiF_6 by cooling to ambient temperature, and then separating said solution from said crystals of K_2TiF_6.

4,497,780

METHOD AND APPARATUS FOR REMOVING ARSENIC FROM AN ARSENIC-CONTAINING MATERIAL

Ihsan Barin, Aachen-Lau; Michael Gamroth, Cologne, both of Fed. Rep. of Germany; Rolf Hesse, Mexico City, Mexico, and Soegianto Wirosoedirdjo, Cologne, Fed. Rep. of Germany, assignors to Klockner-Humboldt-Deutz AG, Fed. Rep. of Germany

Continuation of Ser. No. 230,429, Feb. 2, 1981, abandoned. This application Nov. 1, 1983, Ser. No. 546,647

Claims priority, application Fed. Rep. of Germany, Feb. 1, 1980, 3003635

Int. Cl.³ C01B *27/00, 29/00*

U.S. Cl. 423—88 **4 Claims**

1. A method for the removal of arsenic compounds from an arsenic-containing material which comprises:

calcining said arsenic-containing material in the presence of carbon in a reducing atmosphere to drive off a gas consisting mainly of As_4,

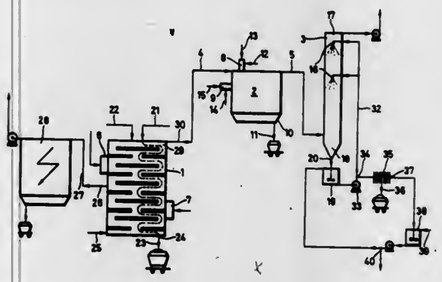
delivering the gaseous As_4 into a reaction space,

introducing controlled amounts of a sulfur carrier with oxygen and a carbon carrier with oxygen into said reaction space,

maintaining a temperature between 900° and 1200° K. in said reaction space with oxygen potentials and sulfur potentials

therein leading to the reaction of As_4 in a gas/gas reaction to form As_4S_4,

cooling the gaseous As_4S_4 in a cooling zone by contact with a wash water to form a solid arsenic sulfide (As_2S_3) concentrate which precipitates in said wash water,



filtering out the precipitated arsenic sulfide from the wash water, and

chemically neutralizing the separated wash water.

4,497,781

MANUFACTURE OF MAGNESIUM HYDROXIDE

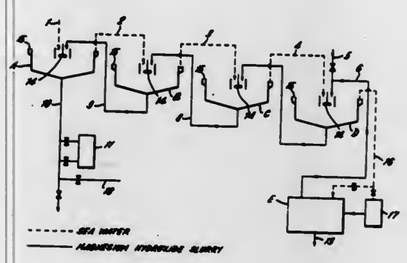
Gerald Spoors, Peterlee, and Kenneth W. Pearce, Hartlepool, both of England, assignors to Steetley Refractories Limited, England

Filed Nov. 16, 1982, Ser. No. 442,114

Claims priority, application United Kingdom, Nov. 17, 1981, 8134642

Int. Cl.³ C01F *5/22*

U.S. Cl. 423—164 **8 Claims**



1. A method for making magnesium hydroxide which comprises treating brine with an adsorptive magnesium hydroxide in an amount such that the ratio of $Mg(OH)_2$ to Mg^{++} in the brine, expressed as gMgO/l, is between 1.5:1 to 2:1, whereby at least part of the boron ions contained in the brine are adsorbed on to the adsorptive magnesium hydroxide, the brine being mixed countercurrently with the adsorptive magnesium hydroxide in a series of stages such that at each stage the brine is successively contacted with adsorptive magnesium hydroxide from a succeeding stage and there is recovered from the final stage a brine of reduced boron ion content, reacting the brine of reduced boron ion content with alkali to precipitate a low boron magnesium hydroxide and recovering the low boron magnesium hydroxide.

4,497,782

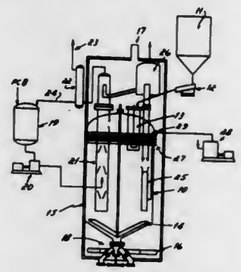
METHOD FOR DESTROYING TOXIC ORGANIC CHEMICAL PRODUCTS

Samuel G. Howell, 4666 Aston Dr., Cincinnati, Ohio 45244, and William R. Birchall, 55596 Country Club Rd., South Bend, Ind. 46619, assignors to S. Garry Howell; Lloyd Watson, both of Cincinnati, Ohio; William R. Birchall, South Bend, Ind. and Larry Allen, Ft. Mitchell, Ky.

Continuation-in-part of Ser. No. 437,434, Oct. 28, 1982,. This application Jan. 16, 1984, Ser. No. 570,853

Int. Cl.³ C01D *3/00*

U.S. Cl. 423—184 **15 Claims**



1. In a method for destroying a toxic organic chemical product wherein said toxic product is contacted with a molten mixture of an alkali metal hydroxide and an alkali metal nitrate to form an alkali metal salt as a product of reaction with said hydroxide, an organic intermediate reaction product also being produced,

the improvement which comprises,

maintaining a mol ratio of said nitrate to said hydroxide in said molten mixture of at least 2:1, the proportion of said nitrate in said mixture further being sufficiently high to provide a low viscosity of said mixture so that a large portion of said alkali metal salt settles as solid salt particles to the bottom of said molten mixture,

reacting said organic intermediate rection product with said nitrate to form CO, CO_2, or a mixture thereof, and water, and

removing said solid salt particles from said molten mixture at the bottom thereof.

4,497,783

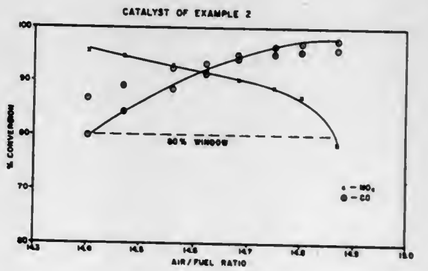
EXHAUST EMISSION CATALYST

William A. Barber, Stamford, Conn., assignor to American Cyanamid Company, Stamford, Conn.

Continuation-in-part of Ser. No. 293,644, Aug. 17, 1981, abandoned. This application Aug. 5, 1982, Ser. No. 405,469

Int. Cl.³ B01D *53/36*

U.S. Cl. 423—213.5 **9 Claims**



1. In a process of catalytic conversion of internal combustion engine exhaust, including catalytic oxidation of CO and hydro-

carbon components and catalytic reduction of NO_x components in said emissions, wherein the catalyst comprises platinum with or without palladium and with or without rhodium on a refractory support in amounts effective for the defined oxidation and reduction, the improvement wherein the AF window for said catalyst is broadened by at least 0.25 AF unit by presence in said catalyst of at least one member selected from the group consisting of sodium and potassium.

4,497,784

SOLUTION REMOVAL OF HCN FROM GASEOUS STREAMS, WITH HYDROLYSIS OF THIOCYANATE FORMED

Zaida Diaz, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Nov. 29, 1983, Ser. No. 556,255
Int. Cl.[3] C01C *3/00, 1/02;* C01B *17/16*
U.S. Cl. 423—236 **6 Claims**

1. A process for removing hydrogen cyanide from a gaseous stream containing hydrogen cyanide comprising

(a) contacting said gaseous stream in a contact zone with a solution containing ammonium polysulfide under conditions to convert hydrogen cyanide, and producing a solution containing ammonium polysulfide and ammonium thiocyanate, and a gas stream having reduced hydrogen cyanide content;

(b) removing solution containing ammonium polysulfide and ammonium thiocyanate from the contact zone, and hydrolyzing the ammonium thiocyanate in the removed solution to produce ammonia, hydrogen sulfide, and carbon dioxide.

4,497,785

PRODUCTION OF RARE EARTH COMPOUNDS

George L. Tilley, Costa Mesa, and Allen W. Doty, Diamond Bar, both of Calif., assignors to Union Oil Company of California, Los Angeles, Calif.

Filed Nov. 18, 1983, Ser. No. 553,436
Int. Cl.[3] C01F *17/00*
U.S. Cl. 423—263 **42 Claims**

1. A method for preparing high-density rare earth carbonate which comprises admixing, with agitation, an aqueous solution containing rare earth ions and an aqueous solution containing bicarbonate or carbonate ions, in the presence of added rare earth carbonate crystals, and separating rare earth carbonate from the aqueous solution.

4,497,786

DEAGGLOMERATION OF POROUS SILICEOUS CRYSTALLINE MATERIALS

Pochen Chu, West Deptford, N.J.; Albin Huss, Jr., Chadds Ford, and James C. Vartuli, West Chester, both of Pa., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Jul. 27, 1983, Ser. No. 517,598
Int. Cl.[3] C01B *33/28*
U.S. Cl. 423—329 **9 Claims**

1. In a method for preparing a porous crystalline zeolite wherein a mixture containing sources of an alkali metal oxide, an oxide of silicon, an organic cation and water in predetermined ratios is maintained at a predetermined temperature until said zeolite is crystallized and said zeolite is subsequently separated from said mixture, the improvement comprising after crystallization is complete increasing the temperature of said mixture by an increase of between about 50° and about 100° F. for a period of time sufficient to effect deagglomeration of said zeolite prior to separating said crystallized zeolite from said mixture.

4,497,787

BRANCHED POLYCARBOSILANES AND THEIR USE IN THE PRODUCTION OF SILICON CARBIDE

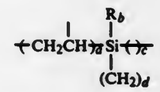
Curtis L. Schilling, Jr., Croton-On-Hudson; Thomas C. Williams, Ridgefield, and John P. Wesson, Croton-On-Hudson, all of N.Y., assignors to Union Carbide Corporation, Danbury, Conn.

Division of Ser. No. 361,106, Mar. 23, 1982, Pat. No. 4,414,403, which is a continuation-in-part of Ser. No. 272,900, Jun. 18, 1981, abandoned, which is a continuation-in-part of Ser. No. 209,151, Nov. 21, 1980, abandoned. This application Sep. 21, 1983, Ser. No. 534,299
Int. Cl.[3] C10B *31/36*
U.S. Cl. 423—345 **2 Claims**

1. A process for producing silicon carbide which comprises pyrolyzing in an inert atmosphere a branched polycarbosilane which has been produced by reacting, with an active metal in an inert solvent at an elevated temperature, a compound system having at least two different monomers of the formula (I)

$$(CH_2{=}CH)_aR_bSiX_c(CH_2X)_d \qquad (I)$$

wherein R is lower alkyl, X is halo, a is 0 or 1, b is 0–3, c is 0–4, d is 0–4, a+b+c+d totals 4, a+d totals at least 1, and where at least one of said monomers is characterized by a+c+d totals 3 or 4, said compound system being selected such that its average molar functionality is at least 2.3, a plurality of silyl units are branching sites in the polymer backbone, and the formation of silicon-carbon bonds is favored, said branched polycarbosilane comprising more than one unit of the formula



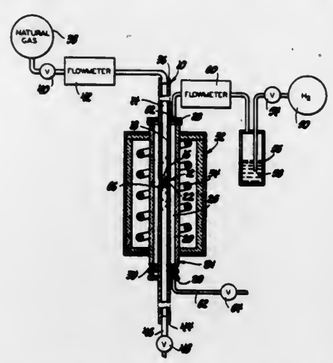
where R is a lower alkyl, a is 0 or 1, b is 0–3 , C is 0–4, d is 0–4 and a+b+c+d totals 4, with the provisos that, in different units, a, b, c, d and R may differ, but that, in at least one unit, a+d must total 1 or more and, in at least 1 unit, a+c+d must total 3 or more.

4,497,788

PROCESS FOR GROWING GRAPHITE FIBERS

John R. Bradley, Centerline, Mich.; James M. Burkstrand, Plymouth, Minn., and Gary G. Tibbetts, Birmingham, Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Oct. 18, 1982, Ser. No. 434,734
Int. Cl.[3] D01F *9/12;* C01B *31/04*
U.S. Cl. 423—447.3 **6 Claims**



1. A process for manufacturing graphite fibers of a type suitable for use as filler in plastic composites, said process comprising flowing a predominantly methane gas over a first surface of a suitable chromium-containing iron-base alloy initially bearing a thin oxide of a type that naturally forms when exposed to air at ambient temperatures and thereafter over a second surface formed of an iron-base metal and initially bearing a predominantly iron oxide formed by heating the iron-base metal while exposed to air, and

heating said gas stream and said surfaces, while continuing said gas flow, at an elevated temperature and for a time sufficient to grow said graphite fibers on the second surface.

4,497,789

PROCESS FOR THE MANUFACTURE OF CARBON FIBERS

William R. Sawran, Russell, Ky.; Frank H. Turrill, Huntington, W. Va.; John W. Newman; Norman W. Hall, both of Ashland, Ky., assignors to Ashland Oil, Inc., Ashland, Ky.

Continuation-in-part of Ser. No. 331,443, Dec. 14, 1981, abandoned, which is a continuation-in-part of Ser. No. 963,080, Nov. 22, 1978, abandoned, which is a continuation of Ser. No. 838,897, Oct. 3, 1977, abandoned. This application Dec. 3, 1982, Ser. No. 446,535
Int. Cl.[3] D01F *9/14*
U.S. Cl. 423—447.4 **35 Claims**

1. A process for the production of pitch fibers which are precursors readily convertible to carbon fibers or graphite fibers, comprising in combination the steps of:

(a) obtaining a petroleum pitch derive from residuum from the catalytic cracking of petroleum, said pitch containing from about 20% to 40% alpha hydrogens and from 2% to about 15% of beta hydrogen atoms based on the total weight of the hydrogens in said pitch, said pitch having a softening point of at least about 250° C., a xylene insolubles content of about 15 to about 40% by weight, a quinoline insolubles content of about 0 to about 5% by weight, a sulfur content of about 0.1 to about 4% by weight, a coking value of about 65 to about 90 wt% and a mesophase content of about 0 to about 5% by weight;

(b) melting said pitch and forming fibers therefrom; and

(c) stabilizing said fibers by contact with oxidant for a time less than about 100 minutes at a temperature above about 285° C.

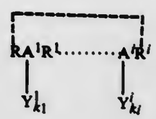
4,497,790

METHOD FOR FORMING CATIONIC TECHNETIUM COMPLEXES USEFUL AS RADIODIAGNOSTIC AGENTS

Manuel S. Rodriguez, Houston, Tex., assignor to E. I. du Pont de Nemours and Company, Inc., Wilmington, Del.

Filed Sep. 3, 1982, Ser. No. 414,608
Int. Cl.[3] A61K *43/00, 49/00*
U.S. Cl. 424—1.1 **14 Claims**

1. A method for preparing cationic lipophilic technetium complexes for radiodagnostic imaging, said method comprising (1) admising ^{99m}Tc-pertechnetate with a target-seeking ligand or aqueous salt thereof, said ligand having the following structure:



wherein:

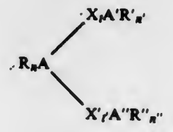
i is an integer from 1 to 6;

R, R^1, R^2, R^3, R^4, R^5, and R^6 are each independently selected from hydrogen or substituted or unsubstituted alkyl, aryl, alkylaryl, arylalkyl, monocycloalkyl, polycycloalkyl, heterocyclic and carbocyclic groups, and R plus R^i may be taken together to form a cyclic compound or separately to form a linear compound;

Y^1, Y^2, Y^3, Y^4, Y^5 and Y^6 are independently selected from hydrogen or substituted or unsubstituted alkyl, aryl, alkylaryl, arylalkyl, monocycloalkyl, polycycloalkyl, heterocyclic and carbocyclic groups;

A^1, A^2, A^3, A^4, A^5 and A^6 are each, independently, a donor atom having a free-electron pair available for complexing with Tc-99m or Tc-99 to form a cationic complex; and

k^1, k^2, k^3, k^4, k^5 and k^6 are each independently zero or one; or

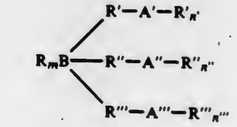


II

wherein:

R, R' and R" are independently selected from hydrogen or substituted or unsubstituted alkyl, aryl, alkylaryl, arylalkyl, monocylcloalkyl, polycycloalkyl, heterocyclic and carbocyclic groups;

X and X' are saturated or unsaturated alkyl groups; A, A' and A" are independently selected from the group of donor atoms having a pair of electrons available for complexing with Tc-99m or Tc-99 to form a cationic complex; t and t' are independently 0 or 1; n is 0, 1 or 2; and n' and n" are independently the integer 1 or 2; or



III

wherein

R, R', R" and R"' are independently selected from hydrogen or substituted or unsubstituted alkyl, aryl, alkylaryl, arylalkyl, monocycloalkyl, polycycloalkyl, heterocyclic and carbocyclic groups;

A', A" and A"' are independently selected from the group of donor atoms having a pair of electrons available for complexing with Tc-99m or Tc-99 to form a cationic complex;

B is an atom from the group of donor atoms having a pair of electrons available for complexing with Tc-99m or Tc-99, boron, or from the elements of Group IV A of the periodic table;

m is 0 or 1; and

n, n', n" and n"' are independently the integer 1 or 2; and

(2) heating the admixture to a temperature greater than 100° C. for a suitable length of time to complete the labelling reaction.

4,497,791

METHOD FOR LABELING PHAGOCYTIC CELLS

Ronald C. Gamble, Pasadena; George W. Tin, Arcadia, and Lawrence E. Williams, San Dimas, all of Calif., assignors to Vestar Research Incorporated, Pasadena and City of Hope National Medical Center, Duarte, both of, Calif.

Filed Feb. 10, 1983, Ser. No. 465,502
Int. Cl.[3] A61K *43/00, 49/00*
U.S. Cl. 424—1.1 **25 Claims**

1. A process for labeling cells comprising incubating cells capable of phagocytosis with labeled micellular particles having an amine on the surface thereof, for a time sufficient to permit uptake of the micellular particles by the cells.

4,497,792

SPECIMEN EMBEDDING COMPOSITION

E. Melvin Gindler, Union City, Calif., assignor to Sherwood Medical Company, St. Louis, Mo.

Filed Dec. 18, 1981, Ser. No. 332,038
Int. Cl.³ G01N 33/48
U.S. Cl. 424—3 5 Claims

1. A method of preparing a histological tissue specimen for sectioning on microtome for histological analysis comprising the steps of infiltrating the specimen with a melt of an embedding composition including a paraffin surface active compatibilizer selected from the group consisting of alkylphenylpolyethylene glycol, alklpolyethylene glocol, a sorbitan ester or molten paraffin-soluable fatty acid ester of an alcohol or polyalcohol, and a copolymer of ethylene and vinyl acetate, the amount of said copolymer being sufficient to increase the hardness of the composition, said compatibilizer being soluble in molten paraffin in an amount effective to reduce turbidity of the composition when in the molten state.

4,497,793

MICROENCAPSULATED NATURALLY OCCURING PYRETHRINS

Joseph Simkin, Miami, Fla., assignor to Pennwalt Corporation, Philadelphia, Pa.

Continuation-in-part of Ser. No. 177,213, Aug. 11, 1980, abandoned. This application Feb. 25, 1983, Ser. No. 470,014
Int. Cl.³ A01N 25/28; A61K 9/52, 9/58; B01J 13/02
U.S. Cl. 424—32 10 Claims

1. A process for microencapsulating naturally-occurring pyrethrins with a polyamide-polyurea shell by interfacial condensation of complementary, organic, di- or polyfunctional polycondensate-forming intermediates reacting to form a polyamide-polyurea condensate, comprising

(a) forming a suspension in an aqueous emulsion of

(i) the naturally-occurring pyrethrin to be microencapsulated;

(ii) at least one isocyanate; and

(iii) at least one acyl halide; with at least one of said isocyanate or said acyl halide being polyfunctional; and then

(b) adding to the aqueous emulsion of (a), with agitation under reaction conditions, at least one amine at such a rate as to maintain the concentration of unreacted amine below 1000 parts per million of total weight of (a) and (b), to provide substantially non-agglomerated, free-flowing microcapsules of said pyrethrin having a shell of polyamide-polyurea.

7. A persistent, naturally-occurring pyrethrin insecticide which has been microencapsulated according to the process of claim 1.

4,497,794

ERYTHROMYCIN/BENZOYL PEROXIDE COMPOSITION FOR THE TREATMENT OF ACNE

Robert W. Klein, Blue Bell, Pa., and Mary E. Foxx, Plainsboro, N.J., assignors to Dermik Laboratories, Inc., Blue Bell, Pa.

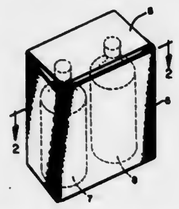
Continuation of Ser. No. 214,124, Dec. 8, 1980, abandoned, which is a continuation-in-part of Ser. No. 843,007, Oct. 17, 1977, abandoned, which is a continuation of Ser. No. 637,613, Dec. 4, 1975, abandoned. This application Jan. 3, 1983, Ser. No. 455,283
The portion of the term of this patent subsequent to Jun. 7, 2000, has been disclaimed.
Int. Cl.³ A61K 31/78, 31/71, 31/075
U.S. Cl. 424—81 7 Claims

1. A therapeutic aqueous gel composition comprising:

about 2.5 to about 15% by weight of micronized benzoyl peroxide having particle size of less than about 150 microns;

about 0.5 to about 5% of an erythromycin compound selected from the group consisting of erythromycin and its stearate, and glucoheptonate derivatives; and

a stabilizing agent which comprises about 0.1 to about 6% by weight of dioctyl sodium sulfosuccinate;



wherein the amount of said peroxide is about one-half to about thirty times the weight of said erythromycin compound.

4,497,795

METHOD OF REGULATING APPETITE AND EFFICIENCY OF FOOD UTILIZATION EMPLOYING INTERFERON

Joseph M. Cummins, Amarillo, Tex., assignor to The Texas A&M University System, College Station, Tex.

Filed Dec. 13, 1982, Ser. No. 448,951
Int. Cl.³ A61K 45/02
U.S. Cl. 424—85 18 Claims

1. A method for increasing efficiency of food utilization of a warm-blooded vertebrate comprising administration to the warm-blooded vertebrate of a biologically active interferon in an amount effective to increase the efficiency in utilizing food for the warm-blooded vertebrate.

4,497,796

GENE TRANSFER IN INTACT MAMMALS

Winston A. Salser; Martin J. Cline, both of Pacific Palisades, and Howard D. Stang, Van Nuys, all of Calif., assignors to The Regents of the University of California, Berkeley, Calif.

Continuation of Ser. No. 134,234, Mar. 26, 1980, Pat. No. 4,396,601. This application Dec. 8, 1982, Ser. No. 447,858
The portion of the term of this patent subsequent to Aug. 2, 2000, has been disclaimed.
Int. Cl.³ A61K 35/12
U.S. Cl. 424—95 7 Claims

1. A method for enhancing the genetic capability of a mammalian host by employing mammalian cells having exogenous genetic material capable of expression which comprises:

isolating regenerative mammalian parent cells from a mammlian source compatible with said host;

combining said regenerative mammalian parent cells with DNA including at least one gene capable of providing a selective advantage over the parent cell due to a naturally occurring deficiency or external stress inducement, said combining being under conditions where said DNA is introduced into said parent cell to produce modified cells; and

introducing said modified cells into a compatible mammalian host under naturally occurring deficiency conditions or external stress induced conditions in said host providing said selective advantage, whereby said modified cells regenerate in said host at the source of said cells.

4,497,797

β-GALACTOSIDASE INHIBITOR GT-2558 AND ITS DERIVATIVES

Mitsuo Ebata; Yukio Miyake, and Yoshimi Kawamura, all of Osaka, Japan, assignors to Shionogi & Co., Ltd., Osaka, Japan

Continuation-in-part of Ser. No. 311,326, Oct. 14, 1981, abandoned. This application Jun. 29, 1982, Ser. No. 393,506
Claims priority, application Japan, Oct. 27, 1980, 55-150927
Int. Cl.³ A61K 35/00; C12P 1/06
U.S. Cl. 424—118 4 Claims

1. GT-2558-A with the following properties or a pharmaceutically acceptable salt thereof:

a. m.p.
106°–108° C.

b. Molecular weight (mass spectrum)
Maximum mass m/e=302

c. Elemental analysis
Found: C,41.34; H,6.16; N,7.43; O,45.06 (%)

d. IR
ν_{max}^{KBr} 3400, 2900, 1640, 1565, 1505, 1455, 1415, 1360, 1300, 1270, 1160, 1110, 1075, 1035, 955, 930, 890, 855, 795 cm^{-1}

e. NMR
FIG. 1 and FIG. 2

f. β-Galactosidase inhibitory activity

Enzyme	pH at	Origin	IC_{50}
Taka β-galactosidase	5.0	*Aspergillus oryzae*(Sankyo)	0.0018 mcg
Taka β-galactosidase	4.5	*Aspergillus oryzae*(Sankyo)	0.0045
Galantase	4.5	*Aspergillus oryzae*(Tokyo Tanabe)	0.0045
Bovine β-galactosidase	7.2	Bovine liver (Sigma)	26.6

g. Specific β-galactosidase inhibitory activity
136,700 IU/mg (IC_{50} 0.0018 mcg).

4,497,798

APPETITE SUPPRESSANT

Teresa C. Lambert, R.D. #4, Red Lion, Pa. 17356

Filed Jun. 20, 1983, Ser. No. 506,004
Int. Cl.³ A61K 33/14, 31/19
U.S. Cl. 424—153 1 Claim

1. A method for effecting appetite suppression utilizing an appetite suppressant beverage comprised of a compound of potassium combined with a flavoring agent compound together dissolved and diluted in a liquid medium, said beverage to be ingested orally by a human at times of hunger pang sensation for effecting extended duration physiological elimination thereof to thereby aid in repressing between-meal impulsive eating and appetite reduction at times of habitual meal taking.

4,497,799

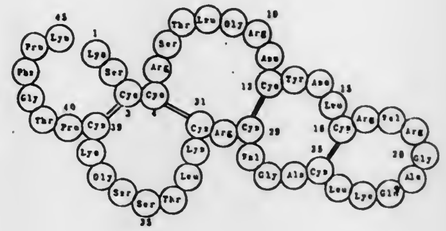
POLYPEPTIDE CARCINOSTATIC AGENT

Hajime Yoshizumi; Kunao Toyoshima; Akira Hakura, and Toshihiro Nakanishi, all of Osaka, Japan, assignors to Suntory Ltd., Osaka, Japan

Filed Nov. 9, 1981, Ser. No. 319,755
Int. Cl.³ A61K 37/00; C07C 103/52
U.S. Cl. 514—9 5 Claims

1. A method for inhibiting growth of transplanted tumors in mice comprising:

administering to said mice an antitumor effective amount of a composition comprising: (a) a polypeptide having the formula:



wherein the abbreviations, Ala, Arg, Asn, Cys, Gln, Gly, Leu, Lys, Phe, Pro, Ser, Thr, Tyr and Val represent the L-form residues of alanine, arginine, asparagine, ½ cysteine, glutamine, glysine, leucine, lysine, phenylalanine, proline, serine, threonine, tyrosine, and valine, respectively; and the designation "=" represents —S—S—bond and the arabic numbers adjacent to the amino acid cords depict the amino acid sequential arrangement as enumerated from the N-terminal.

4,497,800

STABEE LIQUID DIET COMPOSITION

Dalmon M. Larson, and Jorge Reyes, both of Evansville, Ind., assignors to Mead Johnson & Company, Evansville, Ind.

Filed Jul. 6, 1982, Ser. No. 395,515
Int. Cl.³ A61K 31/00, 47/00; A23L 1/30; A23J 1/00
U.S. Cl. 514—2 15 Claims

1. A liquid ready-to-use food composition comprising a high nitrogen nutritionally complete elemental diet containing

(a) from 30 to 43 grams per liter diet of a protein equivalent component comprising about 97 parts by weight of a protein hydrolysate supplemented with about 1 part by weight each of L-methionine, L-tyrosine, and L-tryptophan;

(b) from 1.5 to 10 grams per liter diet of a suitable lipid;

(c) from 180 to 240 grams per liter diet of a carbohydrate component which is comprised of maltodextrin with a DE (dextrose equivalent) between 7 and 24 and modified corn starch with the maltodextrin comprising at least 85% of said carbohydrate component;

(d) nutritionally significant amounts of essential vitamins and minerals;

(e) from 0.1 to 1.5 gram per liter diet of an emulsion stabilizer comprising carrageenan and diacetyl tartaric acid esters of mono- and diglycerides;
(f) an edible organic or mineral acid in an amount sufficient to adjust the pH to a value between about 4.0 and 5.7; and
(g) from 800 to 850 gram per liter diet of water wherein said diet is sterilized with retention of physical and nutritional stability.

4,497,801

NEW PEPTIDES, PROCESS FOR PREPARATION THEREOF AND USE THEREOF

Masashi Hashimoto, Takarazuka; Keiji Hemmi, Suita, and Daijiro Hagiwara, Moriguchi, all of Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

Filed Sep. 6, 1983, Ser. No. 529,646
Claims priority, application Japan, Sep. 17, 1982, 57-162873; Nov. 25, 1982, 57-207335
Int. Cl.³ A61K *37/00*; C07C *103/52*
U.S. Cl. 514—15 **4 Claims**

1. A peptide, wherein the peptide is represented by the following formula: H-Lys-Leu-Lys-Ser-Glu-OH and its pharmaceutically acceptable salt.

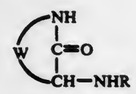
4,497,802

N-ACYL GLYCOPEPTIDE DERIVATIVES

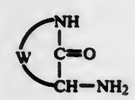
Manuel Debono, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Filed Oct. 21, 1983, Ser. No. 544,336
Int. Cl.³ A61K *37/00*; C07C *103/52*; A61K *35/00*
U.S. Cl. 514—8 **38 Claims**

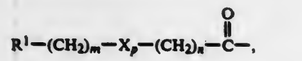
1. A compound of the formula

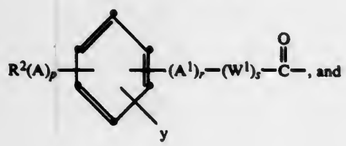


wherein W is the remaining portion of a glycopeptide antibiotic selected from A35512 factors A, B, C, E and H, A35512B pseudoaglycone, A41030 factors A, B, C, D, E, F and G, A47934, ristocetin A, ristocetin A pseudoaglycone, actaplanin factors A, B_1, B_2, B_3, C_{1a}, C_{2a}, C_3, D_1, D_2, E_1, G, K, L, M, N and O and actaplanin pseudoaglycone which have the common formula:

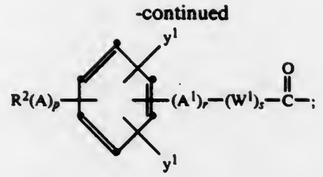


and R is an acyl group selected from:

(a) 

(b) 

-continued

(c) 

p, r, and s are 0 or 1; m and n are integers from 0 to 10; R^1 is hydrogen, halo, C_1–C_4-alkyl, C_3–C_8-cycloalkyl, phenyl, C_5–C_8-cycloalkenyl, naphthyl, indenyl, tetralinyl, decalinyl, adamantyl, a monocyclic heterocyclic ring system comprising 3 to 8 atoms in the ring or a bicyclic heterocyclic ring system comprising 6 to 11 atoms, provided that at least 1 atom of the ring system is carbon and at least 1 atom of the ring system is a heteroatom selected from O, N, and S; and wherein R^1 and the connecting alkyl groups $-(CH_2)_m-$ and $-(CH_2)_n-$ are optionally substituted by one or two halo, methyl, ethyl, methoxy, amino, N-protected-amino, methylamino, dimethylamino, acetoxy, acetamido, carbomethoxy, or hydroxyl groups, provided that, if the substituent is other than halo or alkyl, there can be no more than one substituent on any connecting $-CH_2-$ group; X is O, S, —NH—, $-N(CH_3)-$, $-C{\equiv}C-$, —CH=CH—, $-C(CH_3)=CH-$, $-CH=C(CH_3)-$ or $-C(CH_3)=C(CH_3)-$;

R^2 is hydrogen, C_1–C_{18}-alkyl or C_2–C_{18}-alkenyl;

A is divalent oxygen, sulfur, sulfinyl or sulfonyl;

A^1 is divalent oxygen, sulfur, sulfinyl, sulfonyl or —NH—;

Y is hydrogen, chloro, bromo, iodo, nitro, C_1–C_3-alkyl, hydroxy, C_1–C_3-alkoxy, mercapto, C_1–C_3-alkylthio, carbamyl or C_1–C_3-alkylcarbamyl;

Y^1 is chloro, bromo or iodo; and

W^1 is C_1–C_{10}-alkylene or C_2–C_{10}-alkenylene; provided that (1) if r=0, s must=0; (2) the sum of the carbon atoms in the R^2 and W groups must be greater than 4, but cannot exceed 21; (3) when Y is mercapto, A and A^1 cannot be sulfinyl or sulfonyl; and (4) when A and A^1 are sulfinyl or sulfonyl, they must be in equal oxidation states; and its salts.

4,497,803

INCLUSION COMPOUND OF LANKACIDIN-GROUP ANTIBIOTIC AND USE THEREOF

Setsuo Harada, Kawanishi, and Junya Okada, Hirakata, both of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Filed Apr. 6, 1983, Ser. No. 482,553
Claims priority, application Japan, Apr. 12, 1982, 57-61343
Int. Cl.³ A61K *31/715, 31/71*; C07B *37/16*
U.S. Cl. 514—450 **6 Claims**

1. An inclusion compound of a lankacidin-group antibiotic selected from the group consisting of lankacidin A, lankacidin C, lankacidin C 8-ester, lankacidinol and a mixture of said lankacidin-group antibiotics with β- or γ-cyclodextrin.

6. A method for the treatment of swine dysentery which comprises administering to swine an amount effective for the treatment of swine dysentery of an inclusion compound as defined in claim 1.

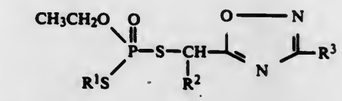
4,497,804

INSECTICIDAL, ACARICIDAL, AND NEMATICIDAL O-ETHYL S-ALKYL S-(1,2,4-OXADIAZOL-5-YL-METHYL) PHOSPHORODITHIOLATE DERIVATIVES, COMPOSITIONS, AND METHODS OF USE

Akio Kudamatsu, Kawasaki; Toyohiko Kume, and Shinichi Tsuboi, both of Hino, all of Japan, assignors to Nihon Tokushu Noyaku Seizo K.K., Tokyo, Japan

Filed Nov. 12, 1982, Ser. No. 441,144
Claims priority, application Japan, Dec. 7, 1981, 56-195603
Int. Cl.³ C07F *9/165*; C07D *271/06*; A61K *33/42*
U.S. Cl. 514—92 **14 Claims**

1. An organophosphate of the formula



wherein

R^1 is an alkyl group containing 3 to 4 carbon atoms or an alkoxyethyl group having an alkoxy moiety containing 1 to 4 carbon atoms,

R^2 is a hydrogen atom or methyl group, and

R^3 is an alkyl group containing 1 to 4 carbon atoms or a phenyl group which may be substituted by at least one member selected from the group consisting of a halogen atom, a trifluoromethyl group, a nitro group, an alkyl group containing 1 to 4 carbon atoms, and an alkoxy group containing 1 to 4 carbon atoms.

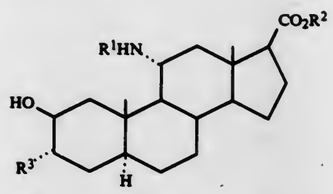
4,497,805

11α-AMINO-ANDROSTANES

Gordon H. Phillipps, Wembley; David C. Humber, Ealing; George B. Ewan, Northolt; Barry A. Coomber, Pinner, and Anthony J. Pateman, Uxbridge, all of England, assignors to Glaxo Group Limited, London, England

Continuation of Ser. No. 383,210, May 28, 1982, abandoned.
This application Mar. 16, 1983, Ser. No. 475,899
Claims priority, application United Kingdom, May 29, 1981, 8116410
The portion of the term of this patent subsequent to Oct. 12, 1999, has been disclaimed.
Int. Cl.³ A01N *45/00*; C07J *3/00*
U.S. Cl. 514—172 **18 Claims**

1. Compounds of the formula



(I)

wherein R^1 is a C_{1-8} alkyl group or a C_{3-7} cycloalkyl group;

R^2 is a C_{1-6} alkyl group or a C_{3-7} cycloalkyl group;

R^3 is a hydroxy group or a group of formula $-OR^4$ or $-OCOR^5$ where

R^4 is an alkyl or alkenyl group which may contain up to 6 carbon atoms (or such a group substituted by halogen, C_{1-6} alkoxy, carboxy, phenyl, phenyl substituted by nitro, halo, C_{1-4} alkoxy or C_{1-4} alkyl), a C_{3-7} cycloalkyl group, a phenyl group (or such a group substituted by nitro, halo, C_{1-4} alkoxy or C_{1-4} alkyl), or a carbon-attached 5–7 membered heterocyclic ring in which the hetero atom is selected from nitrogen, oxygen and sulphur, and

R^5 is a hydrogen atom or a group R^4 as defined above;

and the D-homo analogues thereof having the group $-CO_2R^2$ (wherein R^2 is as defined above) at the 17aβ-position, and salts thereof.

8. Pharmaceutical compositions comprising at least one compound of formula (I) or D-homo analogue thereof as claimed in claim 1 or a physiologically acceptable salt thereof in admixture with one or more pharmaceutical carriers or excipients.

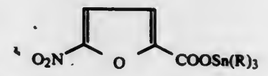
4,497,806

TRIORGANOTIN COMPOUNDS, ANTIFUNGAL AND ANTIBACTERIAL COMPOSITIONS CONTAINING SAME, AND METHOD OF USING SAME

Eugene J. Kupchik, Howard Beach, and Michael A. Pisano, East Norwich, both of N.Y., assignors to St. John's University, Jamaica, N.Y.

Filed Feb. 22, 1983, Ser. No. 468,727
Int. Cl.³ A61K *31/555*; C07D *307/42*
U.S. Cl. 514—189 **25 Claims**

1. A triorganotin 5-nitro-2-furoate represented by Formula (I)



(I)

wherein R, which may be the same or different, is selected from the group consisting of an alkyl group, a cycloalkyl group containing from 5 to 8 carbon atoms, an aryl group containing from 6 to 12 carbon atoms and and aralkyl group containing from 7 to 12 carbon atoms.

8. An antifungal or antibacterial composition comprising, as an active ingredient, an antifungally or antibacterially effective amount of at least one triorganotin 5-nitro-2-furoate of claim 1 and an acceptable carrier or diluent.

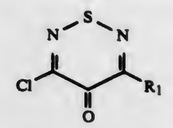
4,497,807

THIADIAZINONE PLANT DISEASE CONTROL AGENTS

Robert C. Portnoy, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Mar. 31, 1978, Ser. No. 892,405
Int. Cl.³ A01N *43/88*
U.S. Cl. 514—222 **12 Claims**

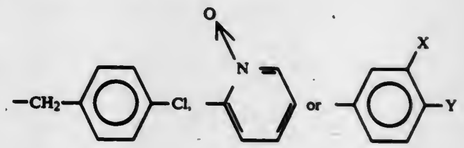
1. An agricultural composition consisting essentially of a diluent, surfactant or mixtures thereof and a fungicidally effective amount of a compound of the formula



wherein

R_1=SR_2,

R_2=alkyl of 1 to 6 carbon atoms,



X=H or Cl

Y=H, Cl or alkyl of 1 to 4 carbon atoms

provided that when X=Cl, then Y=Cl.

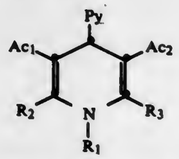
4,497,808

N-OXIDE COMPOUNDS USEFUL IN THE TREATMENT OF CARDIOVASCULAR AILMENTS

Markus Zimmermann, Riehen, and Hans Kühnis, Basel, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Dec. 27, 1982, Ser. No. 453,393
Claims priority, application Switzerland, Dec. 30, 1981, 8359/81; Apr. 14, 1982, 2255/82
Int. Cl.³ A61K *31/44*; C07D *213/89, 491/048*
U.S. Cl. 514—222 **12 Claims**

1. A compound of the formula I



(I)

in which Py represents N-oxidopyridyl that is unsubstituted or substituted by lower alkyl, lower alkoxy, lower alkylthio, lower alkylsulphinyl, lower alkylsulphonyl and/or halogen, R_1 represents hydrogen, lower alkyl, di-lower alkylamino-lower alkyl, lower alkyleneamino-lower alkyl, morpholino-lower alkyl, thiomorpholino-lower alkyl, piperazino-lower alkyl or 4-lower alkylpiperazino-lower alkyl, one of the radicals R_2 and R_3 represents lower alkyl and the other represents hydrogen, lower alkyl, hydroxy-lower alkyl, lower alkoxy-lower alkyl, gem-di-lower alkoxy-lower alkyl, halo-lower alkyl, oxo-lower alkyl, lower alkoxycarbonyl-lower alkyl, carbamoyl-lower alkyl, N-lower alkylcarbamoyl-lower alkyl, N,N-di-lower alkylcarbamoyl-lower alkyl, cyano-lower alkyl, amino-lower alkyl, lower alkylamino-lower alkyl, di-lower alkylamino-lower alkyl, lower alkyleneamino-lower alkyl, morpholino-lower alkyl, thiomorpholine-lower alkyl, piperazino-lower alkyl, 4-lower alkylpiperazino-lower alkyl, lower alkoxyimino-lower alkyl, in which lower alkoxy and imino substituents are attached to the same carbon atom, hydroxyimino-lower alkyl, lower alkoxyimino-lower alkyl, lower alkoxycarbonyl, carbamoyl, N-lower alkylcarbamoyl, N,N-di-lower alkylcarbamoyl, cyano, amino, lower alkylamino, di-lower alkylamino-lower alkylamino, lower alkyleneamino-lower alkylamino, morpholino-lower alkylamino, di-lower alkylamino, lower alkyleneamino, (2-oxo-1-imidazolidinyl)-lower alkyleneamino, morpholino, thiomorpholino, piperazino, 4-lower alkylpiperazino, 4-lower alkanoylpiperazino, 4-benzoylpiperazino, 4-furoylpiperazino or 4-thienoylpiperazino, it being possible for an amino group R_2 or R_3 also to be bonded to a lower alkyl radical R_1 and to form together with that radical a 1-aza-lower alkylene radical the nitrogen atom of which is bonded to the 2- or 6-ring carbon atom of the 1,4-dihydropyridine ring, or, if R_2 or R_3 represents hydroxy-lower alkyl, for this hydroxy-lower alkyl, together with the adjacent acyl radical Ac_1 or Ac_2, to form a 2-oxa-1-oxo-lower alkylene radical, the carbonyl group of which is bonded to the 3- or 5-ring carbon atom of the 1,4-dihydropyridine ring, and each of the radicals Ac_1 and Ac_2, independently of the other, represents lower alkanoyl, benzoyl that is unsubstituted or substituted by lower alkyl, lower alkoxy and/or halogen, lower alkylsulphonyl, phenylsulphonyl that is unsubstituted or substituted by lower alkyl, lower alkoxy and/or halogen, lower alkoxycarbonyl, hydroxy-lower alkoxycarbonyl, lower alkoxy-lower alkoxycarbonyl, amino-lower alkoxycarbonyl, lower alkylamino-lower alkoxycarbonyl, di-lower alkylamino-lower alkoxycarbonyl, N-lower alkyl-N-phenyl-lower alkylamino-lower alkoxycarbonyl, lower alkyleneamino-lower alkoxycarbonyl, morpholino-lower alkoxycarbonyl, thiomorpholino-lower alkoxycarbonyl, piperazino-lower alkoxycarbonyl, 4-lower alkylpiperazino-lower alkoxycarbonyl, phenyl-lower alkoxycarbonyl that is unsubstituted or substituted by lower alkyl, lower alkoxy and/or halogen carbamoyl, N-lower alkylcarbamoyl, N,N-di-lower alkylcarbamoyl, N,N-lower alkylenecarbamoyl, morpholinocarbonyl, thiomorpholinocarbonyl, piperazinocarbonyl or 4-lower alkylpiperazinocarbonyl, or salts of such compounds having salt-forming groups.

11. A method for the treatment of cardiovascular conditions such as high blood pressure, vascular constrictions, Angina pectoris and its sequelae and cardiac insufficiency which comprises administering of a therapeutically effective amount of a compound of the formula I as claimed in claim 1, with the exception of those in which R_2 or R_3 represents hydroxy-lower alkyl, and this hydroxy-lower alkyl together with the adjacent acyl radical Ac_1 or Ac_2 forms a 2-oxa-1-oxo-lower alkylene radical, the carbonyl group of which is bonded to the 3- or 5-ring carbon atom of the 1,4-dihydropyridine ring, or a pharmaceutically acceptable acid addition salt of such compound having salt-forming groups, to a host in need thereof.

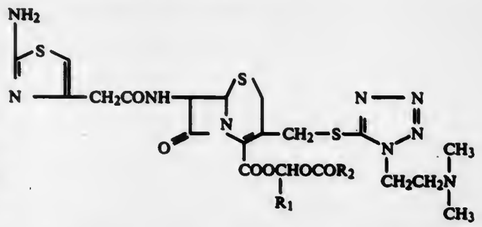
4,497,809

CEPHALOSPORIN DERIVATIVES

Yoshinobu Yoshimura; Naoru Hamaguchi, both of Osaka, and Takatsuka Yashiki, Hyogo, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

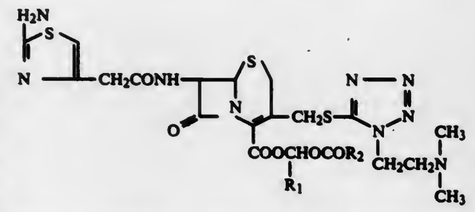
Filed Apr. 20, 1983, Ser. No. 486,820
Claims priority, application Japan, Apr. 30, 1982, 57-73729
Int. Cl.³ A61K *31/545*; C07D *501/56*
U.S. Cl. 514—206 **12 Claims**

1. A compound of the formula:



wherein R_1 is methyl or ethyl; and R_2 is a straight-chain or branched alkyl group of 5 to 7 carbon atoms or its pharmaceutically acceptable salt.

12. A pharmaceutical composition comprising a compound of the formula:



wherein R_1 is methyl or ethyl; and R_2 is a straight-chain or branched alkyl group of 5 to 7 carbon atoms, or its pharmaceutically acceptable salt as an effective ingredient.

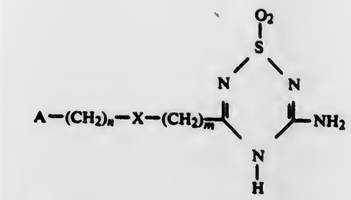
4,497,810

THIATRIAZINE DIOXIDES AS GASTRIC ANTI-SECRETORY AGENTS

Jacob M. Hoffman, Jr., North Wales, Pa., assignor to Merck & Co., Inc., Rahway, N.J.

Filed Oct. 14, 1983, Ser. No. 541,834
Int. Cl.³ C07D *285/00, 417/12, 417/06*; A61K *31/54*
U.S. Cl. 514—222 **9 Claims**

1. A compound having the formula:



I

wherein:
n is 0 or 1;
m is 2 to 4;
X is oxygen, sulfur, or methylene;
A is phenylene, furan, thiophene, pyrrole, oxazole, oxadiazole, thiadiazole, thiazole, triazole, pyrazole, imidazole, pyridine, pyrimidine, pyrazine, benzofuran, benzoxazole, or benzimidazole, which may be substituted with diloweralkylaminoloweralkyl, or guanidino wherein the alkyl groups contain 1 to 8 carbon atoms;
and, the pharmaceutically acceptable salts thereof.

5. A composition useful for suppressing gastric acid secretions in an animal with excess gastric acid secretions which comprises an inert carrier and an antisecretorily effective amount of a compound of claim 1.

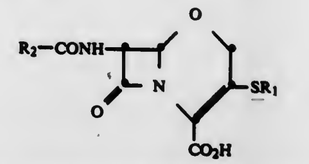
4,497,811

1-OXADETHIACEPHALOSPORIN COMPOUND AND ANTIBACTERIAL AGENT CONTAINING THE SAME

Seiji Shibahara, No. 3-18-30, Tsukushino, Machida-shi, Tokyo; Tsuneo Okonogi, No. 2-5-11-403, Susukino, Midori-ku, Yokohama-shi, Kanagawa; Yasushi Mural, No. 2-37-19, Futaba, Yokosuka-shi, Kanagawa; Shunzo Futkatsu, No. 1-13, Ichigayata-machi, Shinjiku-ku, Tokyo; Taro Nilda, No. 127, Nakakibougsoka, Asahi-ku, Yokohama-shi, Kanagawa, and Tadashi Wakazawa, No. 2602-53, Kamariya-cho, Kanazawa-ku, Yokohama-shi, Kanagawa, all of Japan

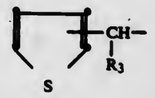
Filed Jul. 1, 1983, Ser. No. 510,132
Int. Cl.³ C07D *498/04*; A61K *31/535*
U.S. Cl. 424—248.51 **2 Claims**

1. A compound of the formula:

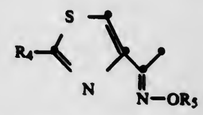


(I)

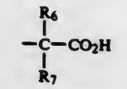
wherein R_1 represents an alkyl group of 1 to 4 carbon atoms and R_2 is a group of the formula:



in which R_3 is a hydrogen atom or carboxyl group, or a group of the formula:

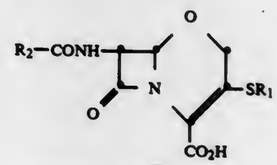


in which R_4 is a hydrogen atom or amino group, and R_5 represents an alkyl group of 1 to 4 carbon atoms or a group of the formula:



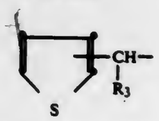
where R_6 and R_7 may be the same or different and each is a hydrogen atom or an alkyl group of 1 to 4 carbon atoms, or a non-toxic salt or non-toxic ester of said compound.

2. An antibacterial agent which comprises as the active ingredient an antibacterially effective amount of one or more of a compound of the formula:

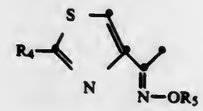


(I)

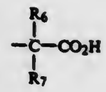
wherein R_1 represents an alkyl group of 1 to 4 carbon atoms and R_2 is a group of the formula:



in which R_3 is a hydrogen atom or carboxyl group, or a group of the formula:



in which R_4 is a hydrogen atom or amino group, and R_5 represents an alkyl group of 1 to 4 carbon atoms or a group of the formula:



where R_6 and R_7 may be the same or different and each is a hydrogen atom or an alkyl group of 1 to 4 carbon atoms, or a non-toxic salt or non-toxic ester thereof and a solid or liquid excipient.

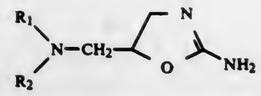
4,497,812

2-AMINO-5-AMINOMETHYL-2-OXAZOLINES, COMPOSITIONS AND USE

Marie-Hélène Crounet, Bordeaux; Claude Fenlou, Pessac; Christian Jarry, Artigues près Bordeaux; Gisèle Prat, Talence, and Henri Poutaguier, Pessac, all of France, assignors to Societe Cortial, S.A., Paris, France

Filed Oct. 5, 1983, Ser. No. 539,286
Claims priority, application France, Oct. 5, 1982, 82 16782; May 19, 1983, 83 08477
Int. Cl.³ C07D *263/28, 295/12*; A61K *31/42, 31/535*
U.S. Cl. 514—211 **8 Claims**

1. A compound having the general formula:



wherein R_1 and R_2 independently represent an alkyl radical of C_1 to C_4, or a carbocyclic alkyl radical having less than 4 rings, or a carbocyclic radical having less than 4 rings;

R_1 and R_2 can form, with the nitrogen atom to which they are attached, a 4 to 7 member heterocycle containing 1 or 2 nitrogen atoms, and either 1 or 0 oxygen atoms, said heterocycle can be substituted by R with R being an alkyl radical of C_1 to C_4, a carbocyclic alkyl radical having less than 4 rings, allyl, a 5 or 6 member heterocycle containing 1 nitrogen, or a carbocyclic radical having less than 4 rings substituted or not by one or more substituents such as halogen, trihalomethyl alkyl of C_1 to C_4, alkyloxy of C_1 to C_4, or hydroxy.

4. A pharmaceutical or veterinary composition characterized in that it contains as active principle at least a product as in claim 1 in association with a pharmaceutical vehicle or suitable excipient.

4,497,813

DERIVATIVES OF 3-AMINOPROPANE-1,2-DIOL

Franz Ostermayer, and Markus Zimmermann, both of Riehen, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

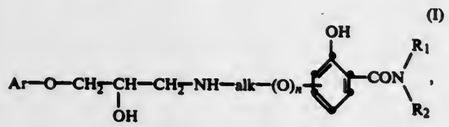
Continuation-in-part of Ser. No. 255,414, Apr. 20, 1981, abandoned, which is a continuation-in-part of Ser. No. 181,581, Aug. 27, 1980, abandoned, which is a continuation-in-part of Ser. No. 122,640, Feb. 19, 1980, abandoned. This application May 14, 1982, Ser. No. 378,165

Claims priority, application Switzerland, Mar. 1, 1979, 2037/79

Int. Cl.³ C07C *103/26*; A61K *31/605*

U.S. Cl. 514—166 **36 Claims**

1. A compound of the formula



(I)

in which Ar is unsubstituted or substituted phenyl, naphthyl, 1,2,3,4-tetrahydro-5-naphthyl, pyridyl, pyridazinyl, pyrimidinyl, pyrazinyl, thienyl, thiazolyl, thiadiazolyl, indolyl, quinolinyl, isoquinolinyl, [3,4-dihydro-2-(1H)-quinolinolyl,][2-oxobenzimidazol-4-yl,]naphthyridinyl or benzofuranyl, and where said group Ar is substituted there are one or at most three substituents selected from lower alkyl, lower alkenyl or lower alkoxy, lower alkenyloxy, lower alkynyl, lower alkynyloxy, cyano and/or nitro, and/or, as substituents bonded directly or to the above-mentioned lower alkyl, lower alkenyl or lower alkoxy, one or more of lower alkanoyl, cycloalkyl, lower alkoxycarbonyl, carbamoyl, lower alkylcarbamoyl, di-lower alkylcarbamoyl or (hydroxy-lower alkyl)-carbamoyl, lower alkylsulphinyl, lower alkylsulphonyl, sulphamoyl or lower alkylsulphamoyl; or halogen bonded directly to said group Ar, or halogen bonded to said lower alkyl or, in a position higher than the 1-position, halogen bonded to said lower alkoxy; or hydroxy, bonded directly or bonded to said lower alkyl; as substituents not bonded directly to said group Ar, lower alkoxy, cycloalkyl-lower alkoxy, phenyl-lower alkoxy, lower alkanoyloxy, lower alkylthio, amino, lower alkylamino, di-lower alkylamino, alkyleneamino or oxa-alkyleneamino, pyrrol-1-yl, lower alkanoylamino, lower alkoxycarbonylamino, ureido, ureido substituted by one or two lower alkyl, by hydroxy-lower alkyl or by cycloalkyl or lower alkylsulphonylamino, n is the number 0 or 1; alk is alkylene having from 2 to 4 carbon atoms, the nitrogen atom and the oxygen atom or, if n is zero, the phenyl radical being separated from one another by 2 or 3 carbon atoms, and R_1 and R_2 independently represent hydrogen or lower alkyl, or together represent piperidino, or pharmaceutically acceptable, non-toxic acid addition salts thereof.

4,497,814

2-(PYRIDINYL)-1,2,4-TRIAZOLO[1,5-a]PYRIMIDINES AND DERIVATIVES USEFUL IN INCREASING CARDIAC CONTRACTILITY

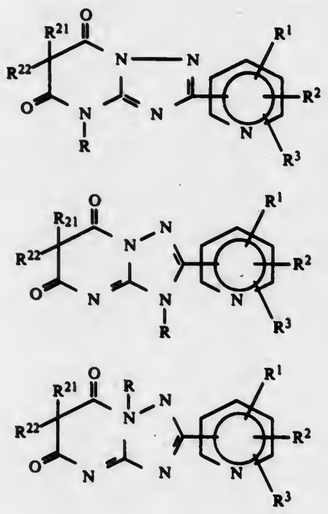
Joseph T. Witkowski, Morris Township, Morris County, N.J., assignor to Schering Corporation, Kenilworth, N.J.

Filed Aug. 16, 1982, Ser. No. 408,359

Int. Cl.³ A61K *31/505*; C07D *487/04*

U.S. Cl. 514—258 **26 Claims**

1. A compound selected from the group consisting of



wherein

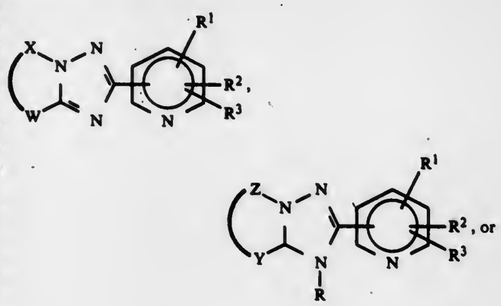
R is hydrogen, lower alkyl or lower aralkyl;

R^1,R^2 and R^3 are independently selected from hydrogen, halogen, hydroxy, lower alkoxy, lower alkyl and amino;

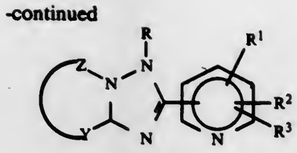
R^{21} and R^{22} are independently lower alkyl;

and the pharmaceutically acceptable salts thereof.

23. A pharmaceutical composition comprising a pharmaceutically acceptable carrier and an amount effective in increasing cardiac contractility of a compound of the formula selected from the group consisting of

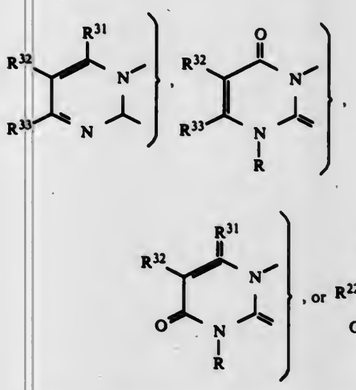


-continued

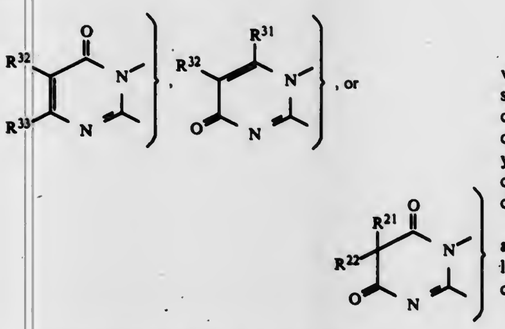


wherein

W and X together with the carbon and nitrogen of the triazolo ring are joined to form a heterocyclic ring selected from the group consisting of



Y and Z together with the carbon and nitrogen of the triazolo ring are joined to form a heterocyclic ring selected from the group consisting of



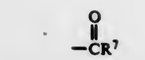
R is hydrogen, lower alkyl or lower aralkyl;

R^1, R^2 and R^3 are independently selected from hydrogen, halogen, hydroxy, lower alkoxy, lower alkyl and amino;

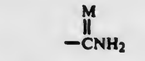
R^{31}, R^{32} and R^{33} are independently selected from hydrogen, lower alkyl, hydroxy, cyano, —NR^4R^5 wherein R^4 is hydrogen, lower alkyl, or



wherein R^6 is lower alkyl, and R^5 is hydrogen, lower alkyl, or together with R^4 is joined to form a ring containing 4 to 6 carbon atoms,



wherein R^7 is hydroxy, lower alkoxy, or —NR^8R^9 wherein R^8 and R^9 are independently selected from hydrogen or lower alkyl;



wherein M is sulfur or NH; R^{21} and R^{22} are independently selected from hydrogen or lower alky;

and the pharmaceutically acceptable salts thereof.

4,497,815

1-(N-SUBSTITUTED CARBAMOYL)-5-FLUOROURACIL DERIVATIVES AND THE CARCINOSTATIC AGENTS CONTAINING SAME AS ACTIVE INGREDIENTS

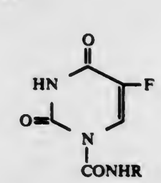
Shoichiro Ozaki, 60-397, Takahama-cho 1-chome, Matsuyama, Ehime-ken, Japan; Tomonori Hoshiko, Matsuyama, and Tomio Ogasawara, Iyo, both of Japan, assignors to Shoichiro Ozaki, Matsuyama, Japan

Filed Jan. 5, 1983, Ser. No. 455,863

Int. Cl.³ A61K *31/505*; C07D *239/55*

U.S. Cl. 517—274 **12 Claims**

1. A 1-(N-substituted carbamoyl)-5-fluorouracil derivative having the formula:



(1)

wherein R is a 4-alkoxycyclohexyl group-containing radical selected from the group consisting of 2,3,4-trimethoxycyclohexylethyl, 2,3,4-trimethoxycyclohexyl, 2,4-dimethoxycyclohexylmethyl, 3,4-dimethoxycyclohexylethyl, 2,4-dimethoxycyclohexyl, 2,4,5-trimethoxycyclohexyl, 3,4-dimethoxycyclohexylmethyl, 3,4,5-trimethoxycyclohexyl, 4-ethoxycyclohexyl and 4-ethoxycyclohexylmethyl.

2. A carcinostatic agent comprising therapeutically effective amount of a compound as claimed in claim 1 together with at least one pharmaceutically-acceptable, substantially nontoxic common auxiliary and/or additive substance.

4,497,816

7-(4-PYRIDYL)-1,8-NAPHTHYRIDINE DERIVATIVES AND THEIR ANTIBACTERIAL COMPOSITIONS

Jun-ichi Matsumoto, Ikoma; Yoshiro Nishimura, Suita, and Shinichi Nakamura, Takatsuki, all of Japan, assignors to Dainippon Pharmaceutical Co., Ltd., Osaka, Japan and Laboratorie Roger Bellon, Neuilly sur Seine, France

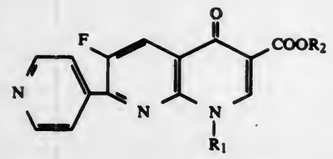
Filed Aug. 1, 1983, Ser. No. 519,513

Claims priority, application Japan, Jul. 30, 1982, 57-134205

Int. Cl.³ A61K *31/435*; C07D *471/04*

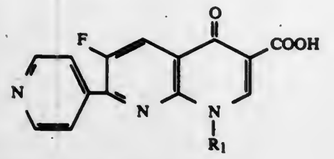
U.S. Cl. 514—300 **5 Claims**

1. A 7-(4-pyridyl)-1,8-naphthyridine compound of the formula



wherein R_1 is a hydrogen atom, an ethyl or vinyl group, and R_2 is a hydrogen atom or a lower alkyl group having 1 to 6 carbon atoms,
or a salt thereof.

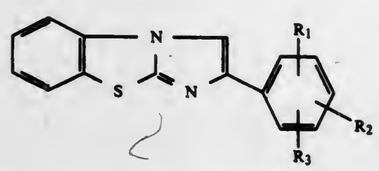
5. A pharmaceutical composition comprising an antibacterially effective amount of a 7-(4-pyridyl)-1,8-naphthyridine compound of the formula



wherein R_1 is an ethyl or vinyl group,
or a non-toxic pharmaceutically acceptable salt thereof, and a non-toxic pharmaceutically acceptable carrier therefor.

4,497,817
2-PHENYLIMIDAZO [2,1-b]BENZOTHIAZOLE DERIVATIVES
Kiyoshi Murase, Saitama; Toshiyasu Mase, Chiba, and Kenichi Tomioka, Saitama, all of Japan, assignors to Yamanouchi Pharmaceutical Co., Ltd., Tokyo, Japan
Continuation of Ser. No. 176,907, Aug. 11, 1980, abandoned. This application Apr. 26, 1983, Ser. No. 487,357
Claims priority, application Japan, Aug. 21, 1979, 54-106438; Nov. 9, 1979, 54-145077; Nov. 16, 1979, 54-148441
Int. Cl.³ C07D *277/60*; A61K *31/425*
U.S. Cl. 548—150 **11 Claims**

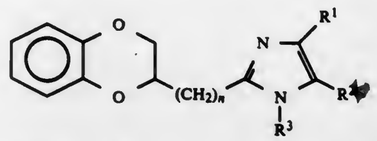
1. A compound of the formula



wherein R_1 is hydroxy, nitro or methoxycarbonyl, R_2 is hydroxy, chloro or hydrogen and R_3 is chloro or hydrogen wherein when R_1 is nitro or methoxycarbonyl R_2 and R_3 are hydrogen and wherein when R_1 and R_2 are hydroxy R_3 is hydrogen.

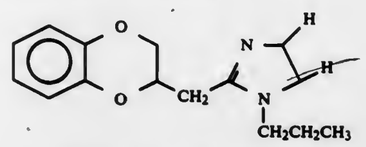
4,497,818
2-(1,4-BENZODIOXAN-2-YLALKYL)IMIDAZOLES USEFUL AS ANTIHYPERTENSIVES AND PLATELET AGGREGATION INHIBITORS
Arthur F. Kluge, Los Altos; Arthur M. Strosberg, Portola Valley, both of Calif.; Roger L. Whiting, and George A. Christie, both of Edinburgh, Scotland, assignors to Syntex (U.S.A.) Inc., Palo Alto, Calif.
Continuation-in-part of Ser. No. 185,832, Sep. 10, 1980, Pat. No. 4,302,469. This application Aug. 5, 1981, Ser. No. 290,126
The portion of the term of this patent subsequent to Nov. 24, 1998, has been disclaimed.
Int. Cl.³ C07D *231/10*
U.S. Cl. 514—397 **9 Claims**

1. A method for treating essential hypertension in human beings which method comprises administering to a subject in need of such treatment a therapeutically effective amount of the compound of formula



wherein R^1, R^2 and R^3 are independently selected from the group consisting of hydrogen and alkyl (1–6C), and wherein n is either 0, 1, or 2, and the pharmaceutically acceptable acid addition salts thereof.

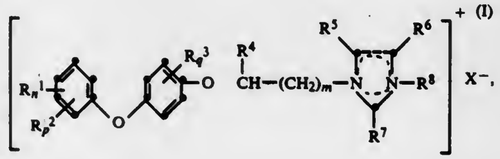
9. The compound of the formula



namely 1-n-propyl-2-(1,4-benzodioxan-2-ylmethyl)imidazole and the pharmaceutically acceptable acid addition salts thereof.

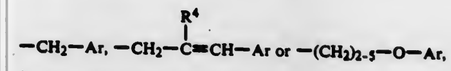
4,497,819
DIBENZOFURANYLOXYALKYLIMIDAZOLIUM SALTS, THEIR PREPARATION AND THEIR USE AS MICROBICIDES
Costin Rentzea, Heidelberg; Norbert Meyer, Ladenburg; Hubert Sauter, Mannheim; Eberhard Ammermann, Ludwigshafen, and Ernst-Heinrich Pommer, Limburgerhof, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany
Filed May 5, 1983, Ser. No. 491,651
Claims priority, application Fed. Rep. of Germany, May 13, 1982, 3217963
Int. Cl.³ A61K *31/415*; C07D *405/12*
U.S. Cl. 514—397 **4 Claims**

1. A dibenzofuranyloxyalkylimidazolium salt of the formula



where R^1, R^2 and R^3 are identical or different and are each

halogen, unsubstituted or halogen-substituted alkyl or alkoxy, each of 1 to 4 carbon atoms, cyano or nitro, R^4, R^5, R^6 and R^7 independently of one another are each hydrogen or alkyl of 1 to 4 carbon atoms, R^8 is alkyl, alkenyl or alkynyl, each of not more than 6 carbon atoms,

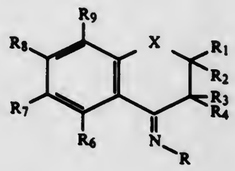


Ar is naphth-1-yl, naphth-2-yl, biphenylyl or phenyl, and the phenyl radical can be substituted by fluorine, chlorine, bromine, nitro, trifluoromethyl, cyano or alkyl, alkenyl or alkoxy of not more than 5 carbon atoms, m is 1, 2, 3 or 4, n, p and q are each 0, 1, 2 or 3, and X is an anion of a monobasic, non-phytotoxic acid or one equivalent of an anion of a polybasic, non-phytotoxic acid.

3. A composition for crop protection
having fungicidal and bactericidal properties comprising inert additives and, as active ingredient, a dibenzofuranyloxyalkylimidazolium salt as claimed in claim 1.

4,497,820
SUBSTITUTED IMINODERIVATIVES OF DIHYDROBENZOPYRAN AND DIHYDROBENZOTHIOPYRAN
Lucio Merlini; Alessandro Rossi, and Metilde Buonamici, all of Milan, Italy, assignors to Farmitalia Carlo Erba S.p.A., Milan, Italy
Filed May 4, 1983, Ser. No. 491,386
Claims priority, application United Kingdom, May 6, 1982, 8213109
Int. Cl.³ A61K *31/35, 31/38*; C07D *311/68, 335/06*
U.S. Cl. 514—432 **15 Claims**

1. A compound having the following general formula (I)



(I)

wherein
X is —O— or —S—;
each of R_1, R_2 and R_3, being the same or different, is hydrogen, C_1–C_{10} alkyl or phenyl; or R_1 and R_2, taken together, form a C_3–C_7 cycloalkyl ring;
R_4 is hydrogen or C_1–C_6 alkyl;
R_6 is —OR_{10} or —SR_{10}, wherein R_{10} is hydrogen or C_1–C_6 alkyl;
R_5 is C_1–C_{10} alkyl, C_2–C_{10} alkenyl or C_3–C_7 cycloalkyl, wherein the alkyl, alkenyl and cycloalkyl groups are unsubstituted or substituted by one or more substituents chosen from the group consisting of halogen, oxo, —OR_{10}, —SR_{10}, —COR_{10}, —$OCOR_{10}$, —$COOR_{10}$ and

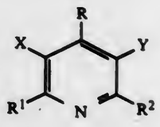


wherein each of the groups R_{10}, being the same or different, is as defined above;
one of R_7, R_8 and R_9 is C_1–C_{12} alkyl and the others, which may be the same or different, are hydrogen or C_1–C_{12} alkyl, and the pharmaceutically acceptable salts thereof.

11. A pharmaceutical composition containing a suitable carrier and/or diluent and, as an active principle, a compound of formula (I), according to claim 1, or a pharmaceutically acceptable salt thereof.

4,497,821
MEDICAMENTS HAVING ANTIHYPOXIC AND ISCHAEMIA-PROTECTIVE ACTIVITY
Egbert Wehinger; Horst Meyer, both of Wuppertal, and Ulrich Benz, Duesseldorf, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany
Filed Feb. 28, 1983, Ser. No. 470,883
Claims priority, application Fed. Rep. of Germany, Mar. 13, 1982, 3209276
Int. Cl.³ A61K *31/34, 31/38, 31/42, 31/44, 31/47, 31/415, 31/425, 31/475, 31/495, 31/505*
U.S. Cl. 514—302 **12 Claims**

1. A method of controlling damage to the central nervous system of a patient requiring such treatment which comprises administering to such patient a central nervous system-controlling effective amount of a pyridine derivative of the formula

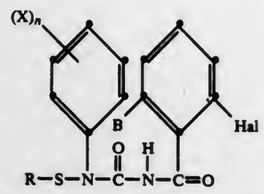


in which
R represents an aryl radical or a thienyl, furyl, pyrryl, imidazolyl, oxazolyl, isoxazolyl, thiazolyl, benzimidazolyl, benzoxazolyl, benzisoxazolyl, and benzoxadiazolyl radical, the aryl radical and the heterocycles optionally containing 1 to 2 identical or different substituents from the group comprising phenyl, alkyl, alkoxy, alkylene, dioxyalkylene, halogen, trifluoromethyl, polyfluoroalkoxy, nitro, cyano, azido or SO_m-alkyl (m = 0 to 2),
R^1 and R^2 are identical or different and represent hydrogen, a straight-chain or branched alkyl radical, an aryl radical or an aralkyl radical or represent an acyloxyalkyl or a hydroxyalkyl group, or represent an alkylene chain, which, together with X or Y, forms a 5 to 7-membered ring which contains a carbonyl group and optionally an oxygen or nitrogen atom, and
X and Y are identical or different and represent the nitrile group or represent the radical —CO—R^3, R^3 representing a straight-chain, branched or cyclic alkyl radical, an aryl radical or an aralkyl radical, or X and Y represent the group —$COOR^4$, R^4 representing a hydrogen atom, a straight-chain, branched or cyclic, saturated or unsaturated hydrocarbon radical, which is optionally interrupted by an oxygen atom in the chain and/or is optionally substituted by halogen, cyano, hydroxyl, acyloxy, pyridyl, aryl or aryloxy, it being possible for the aryl groups in turn to be substituted by alkyl, fluorinated alkyl, alkoxy, halogen or nitro, or by an amino group which is optionally substituted by two identical or different substituents from the group comprising alkyl, aryl or aralkyl, or
X and Y represent the group —SO_2R^5, R^5 representing a lower alkyl radical or a phenyl radical optionally substituted by halogen, trifluoromethyl, alkoxy or alkyl,

or a salt thereof.

4,497,822
INSECTICIDAL
N-BENZOYL-N'-PHENYL-N'-(R-THIO)UREAS
Martin Anderson, Whitstable, United Kingdom, assignor to Shell Oil Company, Houston, Tex.
Filed Apr. 14, 1983, Ser. No. 484,773
Claims priority, application United Kingdom, Apr. 23, 1982, 8211783
Int. Cl.³ C07C *83/10*; A01N *37/18*
U.S. Cl. 514—592 9 Claims

1. A compound of the formula:



wherein Hal is a halogen atom; B is a hydrogen or halogen atom; X is halogen, cyano, lower haloalkyl, lower haloalkoxy, or phenoxy substituted by one or more of nitro, cyano, halogen, lower haloalkyl, and lower haloalkoxy; n is one, two or three; and R is lower haloalkyl, or phenyl optionally substituted by one or more of nitro, lower alkyl, and halogen.

4. A method for controlling insects at a locus which comprises applying to said locus an effective amount of a compound of claim 1.

4,497,823
THERAPEUTIC METHOD TO REDUCE PAIN AND INFLAMMATION
William T. Moore, Box 76, Old Chimney Farm, Carversville, Pa. 18913, and John W. Albright, 7 Pendleton Dr., Cherry Hill, N.J. 08003
Continuation-in-part of Ser. No. 439,620, Nov. 5, 1982, abandoned. This application Mar. 29, 1983, Ser. No. 480,018
Int. Cl.³ A61K *31/265*
U.S. Cl. 514—512 5 Claims

1. A method of treating pain, infection, trauma, or inflammation in the dermal or sub-dermal tissue of a subject by topical administration to the skin area proximate said tissue of a therapeutically effective amount of a medicament consisting essentially of propylene carbonate.

4,497,824
METHOD OF CHEMICALLY DEBRIDING ULCERATED NECROTIC TISSUE
Thomas L. Schulte, 218 Family Farm Dr., Woodside, Calif. 94062
Continuation-in-part of Ser. No. 456,896, Jan. 10, 1983, , which is a continuation-in-part of Ser. No. 276,566, Jun. 23, 1981, Pat. No. 4,369,190. This application Jan. 17, 1984, Ser. No. 571,417
Int. Cl.³ A61K *31/10, 31/235*
U.S. Cl. 514—166 9 Claims

1. A method for promoting the healing of an abnormal, ulcerated necrotic tissue on skin or mucous membrane of a patient which comprises applying topically to the affected area of the patient an amount of biphenamine, as an aqueous mixture comprising a pharmaceutically acceptable carrier, effective to promote debridement of necrotic tissue from the affected area, thereby promoting the healing of the affected area.

4,497,825
PROCESS FOR THE PREPARATION OF BETAINES
Volkbert Bade, Essen, Fed. Rep. of Germany, assignor to Th. Goldschmidt AG, Essen, Fed. Rep. of Germany
Continuation of Ser. No. 158,462, Jun. 11, 1980, abandoned. This application Nov. 16, 1982, Ser. No. 442,847
Claims priority, application Fed. Rep. of Germany, Jun. 30, 1979, 2926479
Int. Cl.³ C11D *3/26*; A61K *31/205, 7/08*
U.S. Cl. 514—556 10 Claims

1. A process for the preparation of betaines having the formula

$$R^1CONH(CH_2)_xN^{\oplus}R^2R^3(CH_2)_yCOO^{\ominus}$$

in which
R^1 is the alkyl residue of a fatty acid with 6 to 18 carbon atoms,
R^2 and R^3 are the same or different and represent alkyl residues with 1 to 4 carbon atoms,
x=2 or 3, and
y=1, 2, or 3,
comprising quaternizing fatty acid amides having the formula

$$R^1CONH(CH_2)_xNR^2R^3$$

with ω-halogenalkylcarboxylic acids having the formula

$$X(CH_2)_yCOOH$$

in which X is a halogen residue or salts of said acids in aqueous solution wherein the entire course of the quaternizing reaction is carried out in an alkaline solution having a pH of from 7.5 to 10.5 measured at 98° C.

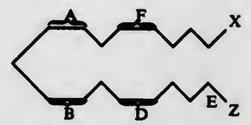
4,497,826
ANTIPARKINSONIAN AGENT
Hirotaro Narabayashi, 5-12-8, Nakameguro, Meguro-ku, Tokyo-to; Tomoyoshi Kondo, 2-12-3, Sugamo, Toshima-ku, Tokyo-to; Akira Hayashi, 9-5, Tsukumodai 3-chome, Suita-shi, Osaka-fu, and Tomokazu Suzuki, 9-30-307, Okamoto 4-chome, Higashinada-ku, Kobe-shi, Hyogo-ken, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka; Hirotaro Narabayashi; Tomoyoshi Kondo, both of Tokyo; Akira Hayashi, Osaka and Tomokazu Suzuki, Hyogo, all of, Japan
Filed Sep. 8, 1982, Ser. No. 415,907
Claims priority, application Japan, Sep. 22, 1981, 56-150082
Int. Cl.³ A61K *31/15, 31/195*
U.S. Cl. 514—567 10 Claims

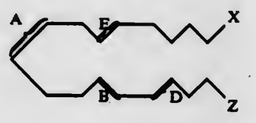
5. A method for treating parkinson's disease in a patient for whom treatment with L-DOPA and a decarboxylase inhibitor is substantially ineffective, which comprises administering a pharmaceutically effective amount of DL- or L-threo-3,4-dihydrophenylserine or a pharmaceutically acceptable acid addition salt thereof and a decarboxylase inhibitor selected from the group consisting of carbidopa, benserazide, the hydrochloride of benserazide and methyldopa to a patient suffering from parkinson's disease, said decarboxylase inhibitor being used in an amount of 0.025 to 0.5 mole to 1 mole of the DL- or L-threo-3,4-dihydroxyphenylserine.

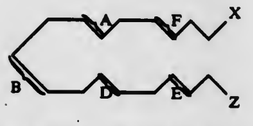
6. A method according to claim 5, wherein DL- or L-threo-3,4-dihydroxyphenylserine or said salt thereof is orally administered in an amount of from 0.1 to 4 g per day.

4,497,827
ARACHIDONIC ACID ANALOGUES AS ANTI-INFLAMMATORY AND ANTI-ALLERGIC AGENTS
Peter H. Nelson, Los Altos, Calif., assignor to Syntex (U.S.A.) Inc., Palo Alto, Calif.
Filed Aug. 30, 1982, Ser. No. 412,477
Int. Cl.³ C07C *103/133*; A61K *31/16*
U.S. Cl. 514—381 60 Claims

1. A compound chosen from those represented by the formulas


(1)

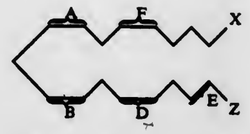

(2)

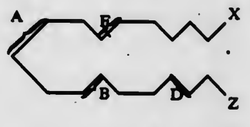

(3)

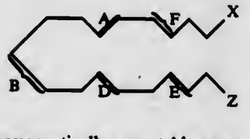
and their pharmaceutically acceptable, non-toxic salts wherein
A is C═C or C≡C;
B is C═C or C≡C;
D is C—C, C═C, or C≡C;
E is C—C, C═C, or C≡C;
F is C—C, C═C, or C≡C;
Z is CH_3, CH_2CH_3, $—CH_2CH_2CH_3$; $CH_2CH_2CH_2CH_3$; and
X is C(O)NHOH.

34. A method for preventing or treating inflammation and/or pain and allergic reactions in mammals which method comprises administering to a subject in need of such treatment a therapeutically effective amount of a compound of claim 1 or a pharmaceutically acceptable, non-toxic salt thereof.

35. A compound chosen from those represented by the formulas


(1)


(2)


(3)

and their pharmaceutically acceptable, non-toxic salts wherein
A is C═C or C≡C;
B is C═C or C≡C;
D is C—C, C═C, or C≡C;
E is C—C, C═C, or C≡C;
F is C—C, C═C, or C≡C;
Z is CH_3, CH_2CH_3, $—CH_2CH_2CH_3$; $CH_2CH_2CH_2CH_3$; X is $CONH_2$ and at least one of A, B, D, or F is C≡C.

4,497,828
3-NITRO-4-METHYLBENZENE SULFON-2-CHLORO-4-NITROANILIDE AND FUNGICIDAL COMPOSITION FOR THE CONTROL OF PLANT DISEASES CONTAINING SAME
Takeo Yoshimoto, Yokohama; Keiichi Igarashi, Musashino; Hideo Yamazaki, Yokohama; Yoshio Takasawa, Ayase, and Hirohisa Yanagita, Chigasaki, all of Japan, assignors to Mitsui Toatsu Chemicals, Incorporated, Tokyo, Japan
Filed Dec. 30, 1982, Ser. No. 454,628
Claims priority, application Japan, Jan. 5, 1982, 57-45
Int. Cl.³ C07C *143/79*; A01N *41/06*
U.S. Cl. 514—603 5 Claims

1. 3-nitro-4-methylbenzene sulfon-2-chloro-4-nitroanilide.

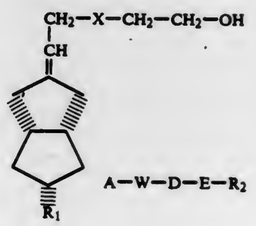
5. A method of controlling clubroot disease of Brassica spp. which comprises, prior to the planting of a crop of the genus Brassica, applying 3-nitro-4-methyl-benzene sulfon-2-chloro-4-nitroanilide to the field in an amount of 5 to 20 kilograms per hectare.

4,497,829
PROCESS FOR PREPARING PERFLUOROCHEMICAL EMULSION ARTIFICIAL BLOOD
Henry A. Sloviter, Philadelphia, Pa., assignor to The University of Pennsylvania, Philadelphia, Pa.
Division of Ser. No. 402,451, Jul. 27, 1982, Pat. No. 4,423,077. This application Aug. 19, 1983, Ser. No. 524,793
Int. Cl.³ A61K *31/13, 31/02*
U.S. Cl. 514—672 12 Claims

1. A process for preparing a stable emulsion comprising:
(a) dispersing purified lipid in a physiologically acceptable aqueous medium by sonication;
(b) adding perfluoro compound to the dispersion formed in (a);
(c) sonicating the mixture of lipid and perfluoro compound formed in (b) to form an emulsion of lipid-coated particles of perfluoro compound; and
(d) centrifuging the emulsion formed in (c) to separate oversize particles.

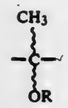
4,497,830
CARBACYCLINS, THEIR PREPARATION AND PHARMACOLOGICAL USE
Werner Skuballa; Bernd Radüchel; Helmut Vorbrueggen; Jorge Casals-Stenzel; Ekkehard Schillinger; Gerda Manneemann, and Bob Nieuweboer, all of Berlin, Fed. Rep. of Germany, assignors to Schering Aktiengesellschaft, Berlin and Bergkamen, Fed. Rep. of Germany
Filed May 24, 1982, Ser. No. 381,609
Claims priority, application Fed. Rep. of Germany, May 22, 1981, 3121155
Int. Cl.³ C07C *33/12*; A01K *31/557*
U.S. Cl. 514—277 23 Claims

1. A compound of the formula

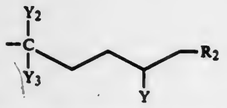


wherein

X is oxygen or $-CH_2-$;
A is CH_2-CH_2, trans$-CH=CH-$ or $C\equiv C-$;
W is -CH(OR)-or



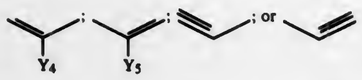
wherein in the latter group OR may be in the α- or β-position;
-D-E-R_2 has the structure



wherein Y_2 and Y_3 are independently each H or C_{1-4}-alkyl and



represents



wherein Y_4 is C_{1-5}-alkyl; and Y_5 is H or C_{1-5}-alkyl and is different from R_2;
R_1 is OR;
R_2 is H; C_{1-10}-alkyl; C_{1-10}-alkenyl; C_{1-10}-alkyl or C_{1-10}-alkenyl, each substituted by C_{4-10}-aryl or substituted C_{4-10}-aryl as defined below; C_{4-10}-cycloaklyl; C_{4-10}-cycloalkyl substituted by C_{1-4}-alkyl; C_{4-10}-aryl; C_{4-10}-aryl substituted by 1 to 3 halogen atoms, a phenyl group, 1 to 3 alkyl groups each of 1 to 4 carbon atoms, or a chloromethyl, fluoromethyl, trifluoromethyl, carboxyl, C_1–C_4-alkoxy or hydroxy group; or an aromatic heterocycle or 5 or 6 ring atoms, one of which is O, N or S, the remainder being carbon atoms; and
R is H or tetrahydropyranyl, tetrahydrofuranyl, α-ethoxyethyl, trimethylsilyl, dimethyl-tert-butylsilyl, tribenzylsilyl or an acyl group of a C_{1-15}-hydrocarbon carboxylic or sulfonic acid.

4,497,831
POLYOXYETHYLENE DERIVATIVES AS ANTIPRURITIC ECTOPARASITICIDE
Myron J. Lover, Mountainside; Arnold J. Singer, South Orange; Donald M. Lynch, Waldwick, and William E. Rhodes, III, Cranford, all of N.J., assignors to Block Drug Company, Inc., Jersey City, N.J.
Division of Ser. No. 4,229, Jan. 17, 1979, Pat. No. 4,372,977, which is a continuation of Ser. No. 802,012, May 31, 1977, abandoned. This application Sep. 30, 1982, Ser. No. 429,444
Int. Cl.³ A01N *31/14*
U.S. Cl. 514—717 **6 Claims**

1. A method of killing lice or their ova which comprises applying to a human or animal host in need of such control, as the only toxicant an effective toxic amount of at least one aryl alkyl ether derivative of polyoxyethylene having an HLB of about 2.5–13.5, the aryl alkyl moiety containing 8 to 14 carbon atoms.

4,497,832
CHEWING GUM COMPOSITION HAVING ENHANCED FLAVOR-SWEETNESS
S. Rao Cherukuri, Towaco, N.J.; Kenneth P. Bilka, Floral Park, and Frank Hriscisce, Astoria, both of N.Y., assignors to Warner-Lambert Company, Morris Plains, N.J.
Filed Apr. 18, 1983, Ser. No. 485,684
Int. Cl.³ A23G *3/30*
U.S. Cl. 426—5 **15 Claims**

1. A sugar containing chewing gum composition, which comprises a chewing gum base having incorporated therein a sweetener, and a flavoring agent sorbed in the microporous channels of water-soluble spherical particles having a bulk density of about 3.0 to about 6.0 lbs./cu. ft.

4,497,833
MYCOSTATIC WHEY AND PROCESS OF MANUFACTURE
Thomas M. Anderson, Emeryville, Calif., assignor to Stauffer Chemical Company, Westport, Conn.
Filed May 20, 1982, Ser. No. 379,841
Int. Cl.³ A23C *21/02*; C12P *7/52*
U.S. Cl. 426—41 **4 Claims**

1. In a process for the manufacture of fermented whey having mycostatic activity in which the fermenting agent is a bacterium, and wherein said fermentation is conducted at a temperature, for a sufficient period of time, and in a medium conductive to fermentation, for substantially all of said whey to be converted into the fermented form, the improvement of using as the fermenting agent the bacterium *Propionibacterium acidi-propionici* #B 3568.

4,497,834
METHOD OF MAKING A DAIRY-BASED FOOD PRODUCT
Frank E. Barta, 2307 Fillmore St. Northeast, Minneapolis, Minn. 55418
Filed Aug. 30, 1982, Ser. No. 412,762
Int. Cl.³ A23C *9/12, 20/00*
U.S. Cl. 426—42 **14 Claims**

1. A method of making a dairy-based food product which method comprises:
(A) condensing fatted or defatted milk to produce a mixture having substantially the proportion of milk solids and moisture desired in the final food product and reducing the concentration of lactose to below about 15 percent by weight at which crystallization occurs by hydrolysis or by ultra-filtration or molecular sieving,
(B) cooking the condensed milk of a sufficient solids level and heating at a temperature and for a time effective to produce a gel-like consistency,
(C) agitating and blending the cooked milk mixture into a uniform homogeneous mass, and
(D) packaging the resulting product and cooling.

4,497,835
ARTIFICIALLY SWEETENED BEVERAGE MIXES AND PROCESS THEREFOR
Winston Adolph A., Fayetteville, N.Y., assignor to Alberta Gas Chemicals, Incorporated, Parsippany, N.J.
Filed Jan. 10, 1983, Ser. No. 456,986
Int. Cl.³ A23L *2/00, 1/30, 1/27, 1/236*
U.S. Cl. 426—72 **23 Claims**

22. A method of manufacturing pre-sweetened, sugar-free powdered beverages which contains a mix which comprises hydrolyzed cereal solids, a food acid selected from the group consisting of citric, malic, and fumaric acids and mixtures thereof, a flavor, a clouding agent, vitamin C, aspartame, and a color, wherein the ratio of the combined weight of the natural cereal solids and the food acids to the weight of aspartame, is between from about 10:1 to about 20:1, comprising the steps:

(a) preblending all of the ingredients in the mix until the blend is uniform and free of balls of aspartame,
(b) feeding the blend through an agglomerator wherein the particles are uniformly wetted by spraying with live steam whereby the hydrolyzed cereal solids and food acids, which preferentially absorb the moisture, are partially dissolved and form a layer around each particle of aspartame, and
(c) drying and cooling the agglomerated particles to provide a free flowing blend.

4,497,836
MODIFIED WHEY PRODUCT AND PROCESS INCLUDING ULTRAFILTRATION AND DEMINERALIZATION
Robert F. Marquardt, Danville; Harold T. Pederson, Jr., Livermore, and Leo H. Francis, Burlingame, all of Calif., assignors to Dairy Technology Ltd., Baraboo, Wis.
Filed Aug. 6, 1982, Ser. No. 405,995
Int. Cl.³ A23C *21/00*
U.S. Cl. 426—239 **7 Claims**

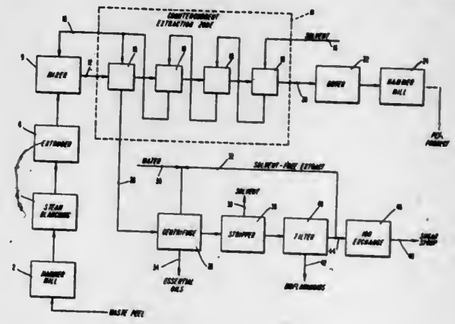
1. A process for producing a whey derived product having a substantially undenatured whey protein content substantially greater than the protein content of raw edible source whey and a mineral salt content that is less than that of such whey comprising, the steps of subjecting edible whey to membrane ultrafiltration to produce a protein-rich retentate fraction and a lactose-rich permeate fraction, the permeate fraction having a mineral salt content of about 9–12%, dry solids basis, derived from the source whey, subjecting the permeate to demineralization to reduce its mineral salt content about 0.15–0.6%, dry solids basis, and blending the demineralized permeate with the protein-rich retentate fraction in such proportions as to provide desired lactose and mineral salt contents in the blended product.

4. A process for preparing a modified whey product, which comprises
separating a feed whey comprising protein, water, lactose and mineral salts by ultrafiltration to produce a protein-rich fraction and a permeate fraction including a substantial portion of the water, lactose and mineral salts;
demineralizing the permeate fraction to reduce its mineral salt content; and
blending the demineralized permeate fraction with the protein rich fraction forming the modified whey product wherein the mineral salt content is less than that of the feed whey and the protein is unaffected by the demineralization and is heat stable.

4,497,837
METHOD FOR ELECTROSTATIC, EPOXY COATING OF STEEL DRUM INTERIORS AND PRODUCT THEREOF
Donald E. Oswald, Arroyo Grande, Calif., assignor to Kaiser Steel (Delaware), Inc., Fontana, Calif.
Continuation of Ser. No. 917,807, Jun. 22, 1978, abandoned, which is a continuation-in-part of Ser. No. 759,342, Jan. 14, 1977, abandoned. This application Apr. 13, 1982, Ser. No. 368,033
Int. Cl.³ B65D *90/02, 85/72*; B05D *1/06*
U.S. Cl. 426—398 **10 Claims**

2. A steel drum container intended for use in packaging corrosive materials having an adherent, durable internal coating for which said coating is a cured epoxy resin having a thickness ranging from 1.5 to 3.0 mils and is applied to the shell and lids comprising the parts of said steel container exposed to said corrosive materials, wherein said container parts are successively subjected to a primer coat of iron phosphate, heated to a surface temperature within the range of 180° to 220° F., electrostatically spray coated with an epoxy resin powder that melts and fuses to a thickness of 1.5 to 3.0 mils, and is subjected to a temperature within the range of 390° to 420° F. for a period of 5 to 12 minutes to enable the coat to set and cure and to form a non-corrosive adherent durable internal coating, said coating being resistant to rupture or cracking and resistant to penetration by said corrosive materials.

4,497,838
PROCESS FOR THE PRODUCTION OF USEFUL PRODUCTS FROM ORANGE PEEL
James M. Bonnell, Bradenton, Fla., assignor to Tropicana Products, Inc., Bradenton, Fla.
Continuation of Ser. No. 349,605, Feb. 17, 1982, abandoned, which is a continuation-in-part of Ser. No. 99,007, Nov. 30, 1979, abandoned. This application Apr. 20, 1983, Ser. No. 486,829
Int. Cl.³ A23L *1/28*; C11B *9/02*
U.S. Cl. 426—429 **15 Claims**



1. A process for the recovery of useful products from citrus fruit peels comprising:
subjecting the citrus fruit peel to countercurrent solvent extraction in a solvent extraction zone with a solution comprising a non-aqueous water-miscible solvent selected from the group consisting of lower alcohols, lower ketones, and mono and dialkyl ethers of ethylene glycol, said solution as it is fed to said solvent extraction zone comprising said water-miscible solvent in substantially undiluted form, said peel being contacted with said solution for a period of time sufficient to provide an aqueous extract containing substantially all of the sugars, essential oils and bioflavanoids from the peel which are present therein;
removing said solvent-extracted peel from contact with said solution;
drying the solvent-extracted peel to produce a solid product which is high in cellulose and pectin;
diluting said extract from the solvent extraction step with sufficient aqueous diluent to render insoluble the essential oils contained in the extract;
separating the essential oils from the extract;
removing the non-aqueous solvent from the extract to render insoluble the bioflavanoids present in the extract;
separating the insoluble bioflavanoids from the extract; and
purifying the resulting extract to produce a sugar syrup product.

4,497,839
METHOD OF PROCESSING UNMILLED RICE WITH CHAFFS ATTACHED THERETO
Motoichi Hashimoto, Nota Mansion 304, 2-49 Haramachi, Shinjuku-ku, Tokyo, Japan
Filed Oct. 26, 1983, Ser. No. 545,652
Claims priority, application Japan, Nov. 2, 1982, 57-191924
Int. Cl.³ A23L *1/10*; A23P *1/00*
U.S. Cl. 426—482 **7 Claims**

1. A method of processing unmilled rice and rice with chaffs attached thereto to produce a rice product having high nutritive value comprising immersing the unmilled rice with chaffs about to be sprouted in water for a predetermined time; freeing the rice of water affixed thereto; roasting the rice in a kiln to a moisture content of 13 to 18 weight percent at a temperature in

the range of 90° to 170° C.; thereafter steaming the rice for a period of time of about 20 minutes at a temperature in the range of 100° to 120° C.; pressuring the steamed rice by rolls, and freeing the rolled rice of peeled-off chaffs.

4,497,840

CEREAL FOODS MADE FROM OATS AND METHOD OF MAKING

Max R. Gould, Homosassa Springs, Fla.; David P. Bone, and Fu H. Hsieh, both of Palatine, Ill., assignors to The Quaker Oats Company, Chicago, Ill.

Continuation of Ser. No. 278,167, Jun. 29, 1981, abandoned. This application Aug. 23, 1983, Ser. No. 525,670

Int. Cl.³ A23J *1/12*; A23B *4/04*

U.S. Cl. 426—560 **15 Claims**

9. An edible, pre-cooked, ready to eat cereal food readily hydratable with hot or cold water and having a moisture content of not more than about 10% comprising shaped pieces of oat bran having a crude fiber content at least about 150% greater than the crude fiber content of the original oat kernels, said bran having been cooked with water under conditions to effect gelatinization of the starch therein and to render the cooked oat bran pliable and shapable and hydratable with water without heating.

4,497,841

LOW CALORIE DESSERT MIXES AND PRODUCTS PREPARED THEREFROM

John A. Wudel, Orem, and Lavar C. McMillan, Murray, both of Utah, assignors to Wudel Inc., Orem, Utah

Continuation-in-part of Ser. No. 357,839, Mar. 15, 1982, abandoned. This application Mar. 15, 1983, Ser. No. 475,501

Int. Cl.³ A23G *9/02*

U.S. Cl. 426—565 **46 Claims**

1. A liquid dessert mix suitable for freezing having a solids content of between about 24 and 49% by weight wherein the percent by weight solids comprises about:

(a) 2 to 25% butterfat,

(b) 8 to 15% nonfat milk solids selected from the group consisting of nonfat dry milk, dry buttermilk, whey, whey protein concentrate, sodium caseinate, low lactose skim milk powder and mixtures thereof wherein at least 10% by weight of said non fat milk solids consists of a whey protein concentrate having a protein content of between 25 and 75% by weight:

(c) 7 to 18% of a fructose-based sweetener containing at least 75% by weight fructose selected from the group consisting of substantially pure crystalline fructose, frutose noncarbohydrate sweetener combinations and fructose carbohydrate combinations,

(d) 0 to 1.5% egg yolk solids, and

(e) 0.5 to 2.5% of a stabilizer and emulsifier wherein the stabilizer contains from about 20 to 50% by weight of a microcrystalline cellulose.

4,497,842

BEVERAGES OBTAINED FROM ALCOHOLIC TREATMENT OF ROASTED CITRUS FRUIT PEELS

Joseph R. Ehrlich, 1793 Riverside Dr., New York, N.Y. 10034, and Hildegard Hess, 2730 Bennett Ave., New York, N.Y. 10040

Continuation of Ser. No. 340,327, Jan. 18, 1982, abandoned. This application Mar. 3, 1983, Ser. No. 471,820

Int. Cl.³ C12G *3/00*

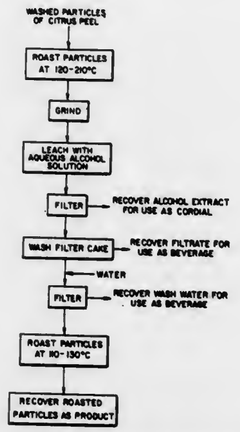
U.S. Cl. 426—592 **6 Claims**

1. A method of making a beverage product, which comprises:

a. roasting citrus fruit peel particles at a temperature of from about 120° to about 210° C.;

b. admixing from about 4 to about 6 parts by weight of aqueous ethanol per part by weight of said roasted particles for up to several minutes, said aqueous ethanol comprising from about 30 to about 75 parts by weight of ethanol and about 75 to about 35 parts by weight of water;

c. separating said particles from the mixture of particles and liquid obtained from step (b);



d. washing said separated particles with at least 15 parts by weight of water per part by weight of said particles; and

e. collecting spent wash water recovered from step (d) as a beverage.

4,497,843

STABLE LIQUID OIL-IN-WATER EMULSION AND PROCESS

Werner Errass, Riehen, and Eduard Waldmeier, Allschwil, both of Switzerland, assignors to Societe d'Assistance Technique pour Produits Nestle S.A., Lausanne, Switzerland

Filed Dec. 6, 1983, Ser. No. 558,487

Claims priority, application Switzerland, Jul. 15, 1983, 3883/83

Int. Cl.³ A23D *5/00*

U.S. Cl. 426—602 **7 Claims**

1. An oil-in-water emulsion comprising from 10 to 50% of oil, from 0.3 to 0.7% by weight of *Carraghenan iota* and from 0.1 to 0.4% by weight of *Gummi arabicum*, said emulsion being in the form of drops of oil having a diameter of from 0.5 to 4 mm which are suspended individually in a stable manner in an acid aqueous phase.

4. A process for the production of an oil-in-water emulsion according to claim 1, which comprises the steps of producing an aqueous phase by adding from 1.5 to 3.4% by weight of an edible acid, from 0.4 to 0.9% by weight of *Carraghenan iota*, from 0.15 to 0.5% by weight of *Gummi arabicum*, salt and seasoning to water, thickening said *Carraghenan iota* by heating said aqueous phase, cooling said aqueous phase to from 15° to 25° C. and mixing said aqueous phase with oil to form said emulsion.

4,497,844

METHOD FOR PRODUCING A RESTRUCTURED FOOD PRODUCT

Jaxon O. Hice, and Gerald J. Webb, both of Charlotte, N.C., assignors to Fryday Corporation, Charlotte, N.C.

Division of Ser. No. 169,285, Aug. 18, 1980, Pat. No. 4,303,008. This application Aug. 14, 1981, Ser. No. 292,873

Int. Cl.³ A23L *1/33*; A23P *1/00*

U.S. Cl. 426—643 **6 Claims**

1. A method of producing a restructured food product from small pieces of said food product, said method comprising the steps of:

(a) comminuting a food product to form a paste having a fluent consistency;

(b) providing a pair of opposed movable surface portions formed to provide a mold cavity therebetween, and moving said surface portions into contact with one another to close said mold cavity;

(c) injecting said paste into said mold cavity under a high pressure through an opening in at least one of said surface portions and closing said opening to seal said mold cavity, said injection of said paste into said mold cavity being carried out at a flow rate that is rapid enough to prevent premature cooking of portions of said paste within said mold cavity;

(d) maintaining said paste in said mold cavity at a pressure above a predetermined level while simultaneously maintaining the walls of said mold cavity within a temperature range that is high enough to rapidly cook said paste and low enough to prevent volatiles and aromatics in said paste from being driven off; and

(e) separating said opposed surfaces and removing said cooked food product from said mold cavity.

4,497,845

ACIDULATED MEAT EMULSION

Phillip J. Percel, Parma; Douglas W. Perkins, Medina, and Anthony V. Petricca, Rocky River, all of Ohio, assignors to SCM Corporation, New York, N.Y.

Filed Mar. 11, 1982, Ser. No. 356,940

Int. Cl.³ A23L *1/31*

U.S. Cl. 426—646 **4 Claims**

1. A meat emulsion comprising a particulate meat acidulant for dispersion in said meat emulsion, in preserving and/or texturizing amounts, for acidulating the same, said acidulant consisting essentially of

(a) a solid acid core particle and

(b) a continuous, substantially impervious coating on said acid core particle, said coating being a water soluble, film-forming, edible, bland, starch hydrolysate or protein, said starch hydrolysate or protein having a water solubility sufficient to produce a pumpable solution at about 30–40% solids concentration, based on solution weight;

said acidulant having a particle size not substantially in excess of about 20 mesh, U.S. Standard Sieve;

the weight ratio of solid acid core particle to starch hydrolysate or protein coating being in the range of about 90-50:10-50.;

said starch hydrolysate or protein being spray applied to the solid acid core particle in a fluid bed spray applicator.

4,497,846

SUGARLESS HARD CANDY

Bernard Boursier, Haisnes; Guy Bussiere, La Gorgues; Francis Devos, Hazebrouck, and Michel Hughette, Merville, all of France, assignors to Roquette Freres, Lestrem, France

Filed Apr. 28, 1983, Ser. No. 489,468

Claims priority, application France, Apr. 30, 1982, 82 07586

Int. Cl.³ A23G *3/00*; A23L *1/09*

U.S. Cl. 426—660 **14 Claims**

1. Sugarless hard candy essentially consisting of hydrogenated starch hydrolysate, prepared from a starch hydrolysate having a DE of 42 to 60, and of gum arabic in an amount of between 1% and 8% by weight with respect to the finished product, and/or CMC in an amount comprised between 0.2 and 2% by weight with respect to the finished product.

4,497,847

PROCESS FOR COATING SOLID PHARMACEUTICAL PREPARATIONS AND COATED PREPARATIONS THUS OBTAINED

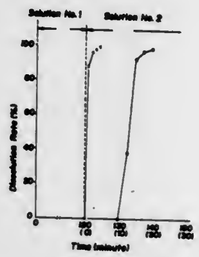
Kozo Kurihara; Izuo Ichikawa; Hisanori Nakane, and Yoshihiko Ikegami, all of Hiromachi, Japan, assignors to Sankyo Company, Limited, Tokyo, Japan

Filed Oct. 11, 1983, Ser. No. 540,718

Claims priority, application Japan, Oct. 12, 1982, 57-177595

Int. Cl.³ A61K *9/38*

U.S. Cl. 427—3 **14 Claims**



1. A process for coating a solid pharmaceutical preparation in which an aqueous suspension of a film-forming enteric polymer and a plasticizer therefor is applied to a surface of said preparation and the aqueous phase is removed, wherein the plasticizer is selected from monoesters, diesters and mixtures thereof of glycerol with a saturated aliphatic carboxylic acid having from 6 to 10 carbon atoms.

4,497,848

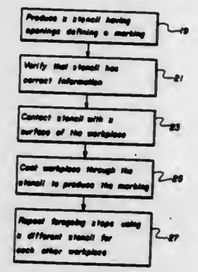
STENCILLING A UNIQUE MACHINE-READABLE MARKING ON EACH OF A PLURALITY OF WORKPIECES

Anthony S. Baran, East Hempfield Township, Lancaster County, Pa., assignor to RCA Corporation, New York, N.Y.

Filed Oct. 28, 1983, Ser. No. 546,513

Int. Cl.³ B05D *5/12*; B23K *9/00*; B41C *1/14*

U.S. Cl. 427—106 **20 Claims**



13. A method for depositing a different desired bar-code marking on each of a plurality of glass workpieces comprising

A. providing a strip of sheet material,

B. using a focused laser beam, burning openings through said strip to produce a plurality of stencils for stencilling said desired bar-code markings, said stencils being in a sequential arrangement in said strip,

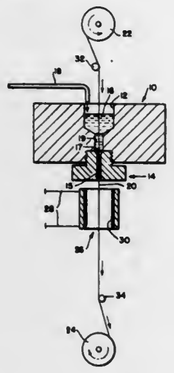
C. verifying that said stencils are for said desired markings,

D. advancing a succession of workpieces to which a bar-code marking is to be applied.

E. contacting one of said stencils with the surface of one of said succession of workpieces,

F. applying paint through the openings in said stencil while it is contacting said surface,
G. removing said stencil from said surface,
H. and repeating steps E, F and G for each of the remaining plurality of workpieces using a different one of said plurality of stencils for each workpiece.
14. The method defined in claim 13 wherein said workpiece is a glass envelope part for a cathode-ray tube.

4,497,849
PROCESS FOR POLYMER COATING ELECTRICAL CONDUCTORS
Howard C. Hughes, 105 Cedar St., Cornwall, Pa. 17016, and Roy D. Bertolet, 653 W. Main St., Palmyra, Pa. 17078
Filed Sep. 26, 1983, Ser. No. 534,936
Int. Cl.³ B05D *5/12*
U.S. Cl. 427—120 **2 Claims**

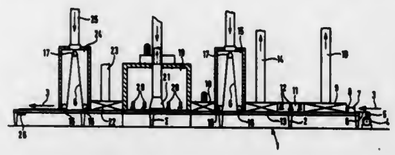


1. A process for polymer coating metallic helically coiled electrical conductors for pacemaker leads with an adherent polymer coating consisting of the steps dissolving a polyether or polyester segmented polyurethane polymer in dimethlyacetamide or dimethyl-formamide to provide a solution of the polymer, maintaining a pool of the solution in a container, a bottom outlet orifice in the container sized to freely receive the conductor and a film of the solution of the desired thickness, threading the helically coiled conductor to pass downwardly through the container, to effect coating of the helically coiled conductor with the solvent dissolved polymer as it passes through the orifice, adjusting the viscosity of the polymer/solvent solution to provide 10–30% weight/volume of polymer in accordance with the conductor diameter, speed of coating and orifice diameter to provide the desired coating thickness, directing the helically coiled conductor after passing through the orifice through a heated chamber heated to about 150° F. but less than about 165.5° F. to about 166° F. to evaporate the volatile solvent and dry the polymer on the helically coiled conductor.

4,497,850
METHOD FOR SURFACE TREATMENT OF A MAGNETIC AMORPHOUS ALLOY
Akimi Umezono; Hironobu Kawasaki; Takashi Sato, and Tomohiko Hayashi, all of Kawasaki, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan
Filed May 11, 1984, Ser. No. 609,140
Claims priority, application Japan, May 14, 1983, 58-84505
Int. Cl.³ H01F *10/02*
U.S. Cl. 427—127 **8 Claims**

1. A method for surface treatment of a magnetic amorphous alloy comprising the steps of:
applying, on a surface of the magnetic amorphous alloy, a predetermined amount of an acidic aqueous solution containing chromic acid, phosphoric acid, and a fluorine compound; and
drying and baking the acidic aqueous solution, thereby forming, on the magnetic amorphous alloy, a film substantially comprised of a chromium and a phosphoric compound.

4,497,851
METHOD FOR THE FABRICATION OF TRANSFERABLE ENAMEL SHEET
Hubertus M. de Vroom, Warmond, Netherlands, assignor to Nordipa AG, Schwerzenbach, Switzerland
Division of Ser. No. 315,295, Oct. 27, 1981, Pat. No. 4,451,522, which is a continuation-in-part of Ser. No. 205,301, Nov. 10, 1980, abandoned. This application Sep. 30, 1982, Ser. No. 431,232
Claims priority, application Netherlands, Oct. 29, 1980, 8005935
Int. Cl.³ B41M *3/12*
U.S. Cl. 427—147 **5 Claims**



1. A method for the fabrication of a transferable enamel sheet formed as a laminate, comprising the steps of applying a release layer on one side of a web-type carrier sheet, applying a neutralization layer comprising a wax consisting of a mixture of branched and unbranched hydrocarbon chains with an average length of 30 carbon atoms and a COOH group at several places on the chain on the coated side of said carrier sheet, applying a pressure-sensitive adhesive layer on said neutralization layer, curing said adhesive layer, applying an enamel layer on said adhesive layer, and curing said enamel layer.

4,497,852
MARINE ANTI-FOULING COATING COMPOSITION
Thomas A. Lane, 314 Foggy Ridge Pkwy., Lutz, Fla. 33549; Murray Rosen, 10000 W. Bay St., Seminole, Fla. 33542, and Maxie E. Quinn, 1933 W. Arvis Cir., Clearwater, Fla. 33516
Filed Nov. 3, 1982, Ser. No. 439,017
Int. Cl.³ B05D *5/00*
U.S. Cl. 427—287 **20 Claims**

1. A single component coating composition having optically clear film characteristics particularly suitable for preventing growth of fouling organisms on marine structures, said composition comprising:
a hydroxy functional acrylic polymer;
a biologically active organotin polymer of the formula

$$R_3Sn—OOCR'$$

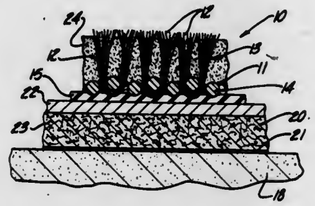
wherein R is selected from the group consisting of lower alkyl, phenyl and benzyl and R' is a polymerizable radical selected from the group consisting of vinyl, methyl vinyl and vinylphenyl;
a polyol reactive polyisocyanate; and
a reaction inhibiting solvent medium comprising a mixture of at least one low molecular weight ketone and a co-solvent selected from the group consisting of hydroxyethers, linear alcohols and isopropyl alcohol.
12. The process of protecting marine structures against the growth of fouling organisms which comprises treating said structures with a hydrophobic polymeric film, said film produced by removal of solvent from a single component composition produced by comingling
a hydroxy functional acrylic polymer;

a biologically active organotin polymer of the formula

$$R_3Sn—OOCR'$$

wherein R is selected from the group consisting of lower alkyl, phenyl and benzyl and R' is a polymerizable radical selected from the group consisting of vinyl, methylvinyl and vinylphenyl;
a polyol reactive polyisocyanate; and
a reaction inhibiting solvent medium comprising a mixture of at least one low molecular weight ketone and a co-solvent selected from the group consisting of hydroxyethers, linear alcohols and isopropyl alcohol.

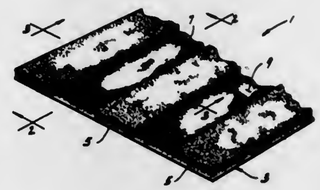
4,497,853
SYNTHETIC TURF CARPET GAME PLAYING SURFACE
Seymour A. Tomarin, Box 730, St. Catharines, Ontario, Canada (L2R 6Y6)
Filed Feb. 9, 1984, Ser. No. 578,727
Int. Cl.³ A01N *3/00*; A41G *1/00*
U.S. Cl. 428—17 **8 Claims**



1. A game playing surface, such as for golf, formed of a synthetic pile carpet positioned upon a stabilized support base surface, comprising:
a relatively thick mat laid upon said support base surface, with said mat being formed of loosely felted, somewhat springy, coarse coconut hair fibers, so that the mat resiliently resists compacting;
a filling of generally coarse sand granules which substantially fill the interstices between the mat fibers, wherein the filled mat forms a shock absorbent, compact resistant layer over the support base surface;
a pile carpet laid over said mat, with the carpet formed of generally equal length, upwardly extending, synthetic fibers fastened at their lower ends to a carpet primary base sheet, so that the fibers give a substantially grass-like appearance;
a uniform thickness coating of sand-like granules covering the carpet primary base sheet and covering the fibers for a substantial portion of their heights, such as close to their upper free ends, and with the coating substantially filling the interstices between the fibers.

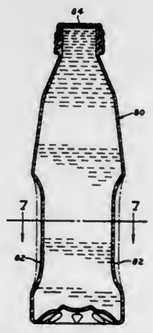
4,497,854
ARTIFICIAL CROSS-COUNTRY SKI SURFACE WITH PAIR OF BENT OVER SKI TRACKS
Ed M. Milner, 411 Clark, Kirkwood, Mo. 63122, and John R. Mykrantz, 2329 N. Ballas, St. Louis, Mo. 63131
Filed Mar. 16, 1984, Ser. No. 590,509
Int. Cl.³ A01N *3/00*
U.S. Cl. 428—17 **19 Claims**

1. An artificial surface for simulated cross-country skiing comprising an elongate flat flexible base and a multiplicity of extruded strips of synthetic resin material forming relatively stiff smooth-surfaced blade-like members secured to and substantially covering one face of the base, said blade-like members projecting generally perpendicularly from said one face of the base except in two generally parallel spaced-apart zones extending longitudinally of the base, said blade-like members in said zones being bent over in one direction extending generally lengthwise of the base to provide a pair of generally parallel ski tracks along the base, said bent-over blade-like members having outer end portions angling away from the base and terminating in tips pointing in said one direction, said base being



adapted to be placed on the ground with said blade-like members facing upwardly and said bent-over blade-like members pointing in a direction opposite the direction of ski movement along said tracks.

4,497,855
COLLAPSE RESISTANT POLYESTER CONTAINER FOR HOT FILL APPLICATIONS
Purushottam D. Agrawal, South Windsor, Conn., and John F. Mandell, Wayland, Mass., assignors to Monsanto Company, St. Louis, Mo.
Division of Ser. No. 123,000, Feb. 20, 1980, Pat. No. 4,318,882. This application May 6, 1981, Ser. No. 261,061
Int. Cl.³ B65D *1/02*
U.S. Cl. 428—35 **16 Claims**



1. A collapse-resistant, molecularly oriented, heat set polyester container having at least one preselected inwardly thermoelastically deformable region for at least partially relieving negative pressure tending to collapse the container when hot filled, sealed and the contents allowed to cool.

4,497,856
MULTI-LAYERED HOLLOW CONTAINER
Nobuyuki Iwasawa, Yokohama, and Keiji Kazato, Chiba, both of Japan, assignors to Toppan Printing Co. Ltd., Japan
Filed Dec. 22, 1982, Ser. No. 452,195
Int. Cl.³ B65D *11/00*
U.S. Cl. 428—35 **5 Claims**

1. A multi-layered container comprising an inner layer, an outer layer, and an intermediate layer therebetween, said inner layer comprising a thermoplastic ethylene-tetrafluoroethylene alternating copolymer resin, said outer layer comprising a polyolefin, and said intermediate layer comprising from about 30 to about 80% by weight of ethylene-vinyl acetate copolymer graft-modified with an unsaturated glycidyl compound, from about 5 to about 35% by weight of a gum rubber com-

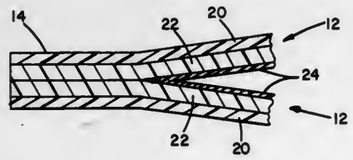
pound, and from about 10 to about 50% by weight of a polyolefin.

4,497,857

FLEXIBLE HEAT-SEALABLE SHEET AND BAG MADE THEREFROM

Laszlo J. Bonis, Swampscott, Mass., assignor to Composite Container Corporation, Medford, Mass.

Filed Oct. 31, 1983, Ser. No. 547,136
The portion of the term of this patent subsequent to Jan. 25, 2000, has been disclaimed.
Int. Cl.³ B32B *27/00*
U.S. Cl. 428—35 **8 Claims**



1. A flexible bag made of two coextruded sheets heat-sealed to each other at bond regions, said heat-sealed sheets each comprising

an outer structural layer,

a heat-sealing layer on said structural layer, and

a nonsticky cover layer on said heat-sealing layer at regions other than said bond regions, said cover layer being sufficiently thin and being made of material with strength and melt characteristics appropriate so that exposure and bonding of said heat-sealing layers to each other occurred at said bond regions when heat-sealing temperature and pressure were applied to said bond regions.

5. A method of making a flexible heat-sealable multilayered object comprising coextruding a multilayered sheet comprising

a structural layer,

a heat-sealing layer on said structural layer, and

a nonsticky cover layer on said heat-sealing layer, said cover layer being sufficiently thin and being made of material with strength and melt characteristics appropriate to cause exposure and bonding of said heat-sealing layer when heat-sealing temperature and pressure are applied to a bond region of said sheet, and to cause the sheet to have nonsticky surfaces before heat-sealing and after heat-sealing at regions other than said bond region further comprising heat sealing said sheet to an identical sheet to form a flexible bag.

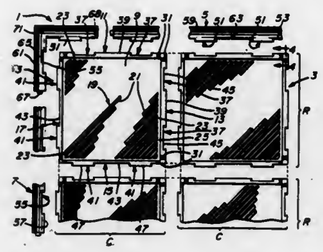
4,497,858

TILE FOR AN ENTRANCE MAT

André Dupont, 409 Marquette St., Longueuil, Canada J4K 4G8 and Paul Laurent, 841 Hélène Boulé St., Boucherville, Canada J4B 5V6

Filed Sep. 9, 1983, Ser. No. 530,760
Int. Cl.³ B32B *3/10*
U.S. Cl. 428—44 **10 Claims**

1. A tile having a flat imperforate base with a top surface and a shape defined by straight sides, said tile comprising low straight walls protruding from said top surface along each side of the base, said wall forming the entire perimeter of the base to hold water on the base, means for use in removably connecting the tile to adjacent identical tiles to form a mat with the outside surface of a straight wall of the tile abutting the outside surfaces of the straight walls of adjacent tiles, scraper members upstanding from and uniformly distributed over said top surface within the confines of said wall, the scraper members comprising a series of spaced-apart ribs extending across the base, the ends of each rib being spaced a short distance from the nearest wall, trough areas between and around said scraper members and between said scraper members and said walls to allow water to flow between said scraper members and reach said walls, and water-directing means formed through each straight wall, said water directing means being located between the corners defined by the junctions of successively



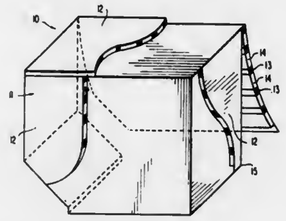
adjacent straight walls, said water-directing means positioned for alignment with the water-directing means of adjacent connected tiles for directing water out of the tile to adjacent tiles when the water reaches a certain level on the top surface of the base.

4,497,859

INSULATING INSERT FOR STORAGE OR TRANSPORTATION CONTAINER

Hansjörg W. Baumann, Mühlau, Switzerland, assignor to Lonza Ltd., Gampel, Switzerland

Filed Oct. 14, 1983, Ser. No. 541,903
Claims priority, application Switzerland, Nov. 26, 1982, 6885/82
Int. Cl.³ E04B *1/74*
U.S. Cl. 428—71 **2 Claims**



1. Mobile and collapsible insulating insert for a storage and transportation container, consisting of (i) a hood, which consists of connected outside surfaces made of non-foamed, flexible material, the mass and contours of which correspond to the inside surfaces of the container, and which is provided with pockets of non-foamed, flexible material, projecting into the inside of the hood, disposed closely one beside the other, and extending over the length of the outside surfaces, said pockets being filled tightly and alternatingly with open-celled foam plastic cores and closed foam plastic cores, and which has a releasable closing arrangement, which permits connection temporarily of at least one of the outside surfaces to the adjacently-located outside surfaces of (ii) an insulating bottom plate and (iii) a fluid-tight bottom trough, which is attached between the bottom of the storage and transportation container and the bottom plate of the insulating insert.

4,497,860

IMAGEABLE PRISMATIC ARRAY

Harold E. Brady, Jr., St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Dec. 18, 1978, Ser. No. 970,548
Int. Cl.³ G02B *27/10*
U.S. Cl. 428—156 **9 Claims**



1. An article suitable for the preparation of projection transparencies capable of providing a projected image based on non-diffused refraction of light comprising a sheet of transparent thermoplastic material having molded on one side thereof a linear prism array having sufficient molding stresses locked therein to exhibit a variation of at least 0.2 between the maximum and minimum optical density viewed through two polarized sheets with their axes of polarization perpendicular to each other wherein a linear prism array is on one side of the sheet and a diffraction grating is on the other side.

4,497,861

WATER-REPELLENT, ABRASION RESISTANT COATINGS

John F. Kistner, Oakdale, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed May 20, 1983, Ser. No. 496,572
Int. Cl.³ B32B *3/00, 9/04, 27/38*
U.S. Cl. 428—201 **13 Claims**

1. A developed photographic image having adhered to the outer surface thereof an abrasion-resistant, water-repellent layer comprising the reaction product of:

(1) more than 60% by weight of an epoxy-terminated silane,

(2) 15 to 30% by weight of limonene monoxide, and

(3) less than 10% by weight of a material copolymerizable with epoxy groups, other than limonene monoxide.

4,497,862

MOISTURE VAPOR PERMEABLE SHEET MATERIALS

George Cloca, Coatesville; George F. Feeley, Downington, both of Pa.; Joseph B. Brabson, Wilmington, Del., and Peter Barth, Neuwied, Fed. Rep. of Germany, assignors to Seton Company, Newark, N.J.

Division of Ser. No. 314,536, Oct. 26, 1981, Pat. No. 4,415,628.
This application Aug. 8, 1983, Ser. No. 521,147
Int. Cl.³ B32B *27/34, 27/40*
U.S. Cl. 428—220 **19 Claims**

1. A moisture vapor permeable sheet material comprising: a homogeneous mixture of a synthetic polymeric material and a protein, said sheet material being moisture vapor permeable and nonpenetrable by liquid water, and said protein being selected from the group consisting of collagen and elastin and derivatives of collagen and elastin.

2. The sheet material of claim 1 having a thickness of up to 5 mils.

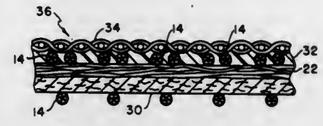
4,497,863

LAMINATED WEFT INSERTION FABRIC

Jerry A. Cogan, Jr., Spartanburg, S.C., assignor to Milliken Research Corporation, Spartanburg, S.C.

Filed Mar. 7, 1984, Ser. No. 587,154
Int. Cl.³ B32B *7/00*
U.S. Cl. 428—253 **5 Claims**

1. A laminated fabric comprising a shell fabric laminated to a substrate fabric, said substrate fabric being a warp knit fabric having a face side and a rear side, a plurality of rows of continuous filament textured polyester weft yarn laid in on one side of said knit fabric, a layer of non-woven fabric adjacent said weft yarn and a plurality of wales of a chain stitched polyester spaced along the course direction of said substrate fabric and being knit through said non-woven fabric and holding said



non-woven fabric and said weft yarns in position, said non-woven fabric containing at least 65% by weight of polypropylene fibers to provide insulating properties to said substrate fabric.

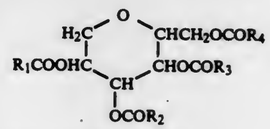
4,497,864

MAGNETIC RECORDING MEDIUM

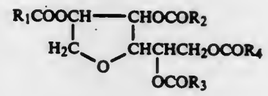
Katsumi Ryoke; Nobutaka Yamaguchi; Takashi Yoneyama, and Eiichi Tadokoro, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jul. 6, 1983, Ser. No. 511,359
Claims priority, application Japan, Jul. 6, 1982, 57-117402
Int. Cl.³ G11B *5/70, 5/72*
U.S. Cl. 428—323 **13 Claims**

1. A magnetic recording medium comprising a support base having coated thereon a magnetic layer comprised of ferromagnetic powders dispersed in a binder, and at least one of anhydrosorbitol fatty acid non-hydroxy ester compounds represented by the formula selected from the group consisting of (I), (II) and (III):

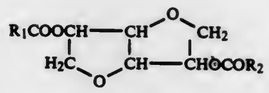


(I)



(II)

and



(III)

wherein R_1, R_2, R_3 and R_4 each represents a saturated alkyl group having 1 to 22 carbon atoms or an alkylene group having 2 to 22 carbon atoms.

4,497,865

POLYETHYLENE TEREPHTHALATE FILM, PROCESS FOR THE PRODUCTION THEREOF AND MAGNETIC RECORDING MEDIUM THEREFROM

Satoyuki Minami; Kazuhiro Tanaka, and Takeshi Nishioka, all of Ohtsu, Japan, assignors to Toray Industries, Inc., Tokyo, Japan

Filed Sep. 28, 1982, Ser. No. 425,960
Claims priority, application Japan, Feb. 17, 1982, 57-22593; Mar. 5, 1982, 57-33801
Int. Cl.³ G11B *5/68*
U.S. Cl. 428—336 **9 Claims**

1. A magnetic recording medium comprising a polyethylene terephthalate film having the sum of F-5 values in longitudinal

and transverse directions of 3500 to 5000 kg/cm^2, absolute heat shrinkage in longitudinal and transverse directions at 100° C. of up to 2.5% and an amorphous orientation factor of −1.5 to 0.5 and magnetic layer(s) formed on at least one surface of the film,

said film being obtained by subjecting a polyethylene terephthalate sheet to multi-stage longitudinal stretching, transverse stretching and biaxial restretching, wherein the total stretching ratio is at least 27.

4,497,866

SUCKER ROD

De Witt R. Petterson, Dover; John Skelton, Sharon, and David S. Brookstein, Needham, all of Mass., assignors to Albany International Corp., Menands, N.Y.

Continuation-in-part of Ser. No. 297,761, Aug. 31, 1981, abandoned. This application Aug. 23, 1983, Ser. No. 525,646

Int. Cl.^{3} B32B *15/00*; B25G *3/00*; D02G *3/00*

U.S. Cl. 428—365 **7 Claims**



1. A rod assembly comprising in combination a core component and a sheath component and having an elongate cross section, said sheath component consisting of an anisotropic interlaced assembly of non-metallic filamentary elements embedded in a polymeric matrix whereby the bending stiffness for deformations about an axis parallel to the major axis of the elongate cross section is less than the bending stiffness of the same core and sheath components in a radially symmetrical configuration, and in which said core and sheath components have load-elongation characteristics so that the ratio of the strain to the strain to break in the sheath is essentially equal to the ratio of the strain to the strain to break in the core throughout the working load range.

4,497,867

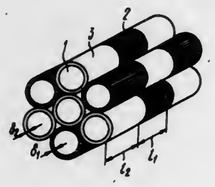
MULTIWIRE TWISTED CONDUCTOR AND DEVICE FOR COATING TWISTED CONDUCTOR WIRES

Diamar I. Bely; Valentin P. Mardanov, both of Moskovskoi; Gennady I. Meschanov, Moscow; Izyaslav B. Peshkov, Moscow; Anatoly P. Povelichenko, Moscow, and Jury M. Timoshin, Moskovskoi, all of U.S.S.R., assignors to Vsesojuzny Nauchno-Issiefovatelsky, Proektno-Konstruktorsky I Tekhnologichesky Institut Kabelnoi Promyshlennosti "VNIIKP", U.S.S.R.

Filed Feb. 14, 1983, Ser. No. 466,358

Int. Cl.^{3} B32B *15/00*; H01B *5/00*

U.S. Cl. 428—385 **8 Claims**



1. An elongate multiwire twisted conductor, comprising:

a plurality of wires, each having a coating through substantially the full length thereof;

said coating serving to permit soldering and protection of said wire against corrosion;

said coating of at least one, but not all, of said wires, in substantially any conductor cross section substantially transverse to the axis of said multiwire twisted conductor, comprising a fluxing composition; and

said coating of all other said wires in said substantially transverse cross section comprising a fusible, metallic soldering material.

3. An elongate multiwire twisted conductor comprising:

a plurality of wires, each having a coating through substantially the full length thereof;

said coating serving to permit soldering and protection of said wire against corrosion; and

said coating consisting of alternating areas of a fluxing composition coating and a fusible, metallic soldering material coating through substantially the full length of said wires.

4,497,868

VERY FINE DENIER SYNTHETIC FIBERS

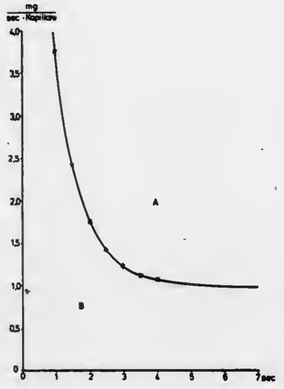
Ulrich Reinehr; Toni Herbertz, both of Dormagen; Hermann J. Jungverdorben, Grevenbroich, and Joachim Dross, Dormagen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Division of Ser. No. 213,531, Dec. 4, 1980, Pat. No. 4,400,339. This application Feb. 22, 1983, Ser. No. 468,620

Claims priority, application Fed. Rep. of Germany, Dec. 21, 1979, 2951803

Int. Cl.^{3} D02G *3/00*

U.S. Cl. 428—400 **3 Claims**



1. Synthetic fibers and filaments which consist essentially of acrylonitrile polymers containing at least 40 percent by weight of acrylonitrile units, have an individual as-spun denier of 3 dtex at the most, the surface of which has longitudinal striae and furrows which run parallel to the fiber axis.

4,497,869

FORMED PRODUCT OF VERMICULITE AND METHOD FOR PRODUCING THE SAME

Osami Kamigaito; Haruo Doi, both of Nagoya, and Yoshiaki Fukushima, Aichi, all of Japan, assignors to Kabushiki Kaisha Toyota Chuo Kenkyusho, Japan

Filed Mar. 15, 1983, Ser. No. 476,014

Claims priority, application Japan, Mar. 19, 1982, 57-45448

Int. Cl.^{3} B32B *3/26*

U.S. Cl. 428—402 **23 Claims**

1. A vermiculite product comprising thin leaves of vermiculite containing cations of at least one element (selected from the group consisting of copper, aluminum, manganese, a Group II element of the Periodic Table, a Group IV element of the Periodic Table and a Group VIII element of the Periodic Table) substituted for exchangeable cations retained therein, said substituted cations being substantially uniformly distributed on surfaces of said thin leaves and among layers thereof.

4,497,870

MAGNETO-OPTICAL RECORDING MEDIUM

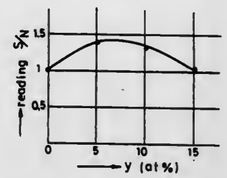
Yoshihiko Kudo, Moriguchi; Hidetsugu Kawabata; Masahiro Birukawa, both of Hirakata; Noriaki Hara, Kadoma, and Akira Muto, Sakai, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Apr. 6, 1983, Ser. No. 482,709

Claims priority, application Japan, Apr. 7, 1982, 57-58868

Int. Cl.^{3} H01F *10/02*

U.S. Cl. 428—457 **5 Claims**



1. A magneto-optical recording medium comprising a magneto-optical recording medium having a high crystallization temperature, high stability and excellent signal-to-noise characteristics suitable for thermo-magnetic recording and magneto-optical reading, said recording medium comprising a non-magnetic substrate having thereon at least one layer of an amorphous rare-earth-3d-transition-metal alloy having a uniaxial magnetic anisotropy, wherein said alloy has a composition expressed by the general formula:

$$(R_xM_{1-x})_{1-y}Ge_y$$

wherein R is at least one rare-earth metal, M is at least one 3d transition metal, and X and Y are in the ranges of $0.1<x<0.4$ and $0<y<0.2$, respectively.

4,497,871

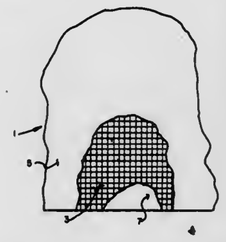
RECONSTITUTED LEATHER AND METHOD OF MANUFACTURING SAME

Edward W. Henke, 916 Woodshire La., St. Louis, Mo. 63141

Filed Apr. 27, 1983, Ser. No. 489,001

Int. Cl.^{3} B32B *9/02, 25/02, 25/12, 31/26*

U.S. Cl. 428—473 **20 Claims**



1. Reconstituted leather comprising a mass of fibrous leather and a binder, said binder comprising natural rubber and an evaporatable solvent capable of dissolving, at least in part, said natural rubber, said fibrous leather being mixed with said binder, and said binder and said fibrous leather being formed into a desired sheet-like form, said solvent being an aromatic hydrocarbon liquid solvent, with the ratio of natural rubber to liquid solvent ranging between about 5–30 parts rubber to about 95–70 parts solvent, by volume.

4,497,872

SEALED IDENTIFICATION CARD WITH BLOCKING LAYERS

Joachim Hoppe, Munich, and Wolfgang Gauch, Otterfing, both of Fed. Rep. of Germany, assignors to GAO Gesellschaft fur Automation und Organisation mbH, Fed. Rep. of Germany

Continuation of Ser. No. 420,869, Sep. 21, 1982, abandoned. This application Mar. 12, 1984, Ser. No. 586,884

Claims priority, application Fed. Rep. of Germany, Sep. 28, 1981, 3138559

Int. Cl.^{3} B32B *27/06*

U.S. Cl. 428—483 **6 Claims**



1. A multilayered identification card having an inner layer made of polyvinyl chloride and cover films on each side of the inner layer in the form of compound films having the structure polyvinyl chloride/blocking layer/polyvinyl chloride, wherein the thickness of said blocking layer is small compared to that of the card, whereby said blocking layer prevents the penetration of plasticizers into the inner layer of the card without adversely affecting the embossing properties of the card.

4,497,873

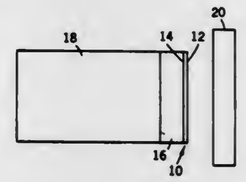
ISENTROPIC COMPRESSIVE WAVE GENERATOR IMPACT PILLOW AND METHOD OF MAKING SAME

Lynn M. Barker, Albuquerque, N. Mex., assignor to The United States of America as represented by the Department of Energy, Washington, D.C.

Filed Jan. 6, 1983, Ser. No. 456,147

Int. Cl.^{3} B22F *3/00, 3/26, 5/00, 7/00*

U.S. Cl. 428—547 **19 Claims**



1. A thin pillow member of substantially uniform thickness having an attachment surface for attaching the pillow member to an impactor member and an opposite impactor surface for impacting a target in an isentropic compressive wave generator, said pillow member comprising material at the impactor surface of low shock impedance and graduating substantially uniformly over the thickness of the pillow member to a material of high shock impedance at the attachment surface.

4,497,874

COATED CARBIDE CUTTING TOOL INSERT

Thomas E. Hale, Warren, Mich., assignor to General Electric Company, Detroit, Mich.

Filed Apr. 28, 1983, Ser. No. 489,287

Int. Cl.^{3} B22F *3/00, 5/00, 7/00*

U.S. Cl. 428—551 **15 Claims**

1. A cobalt cemented carbide insert having at least one

surface adapted to be a wear resistant surface, said wear resistant surface comprising:

(a) a cobalt enriched zone extending in depth from 0–75μ and containing essentially metallic cobalt in an amount of at least about 2 times the average amount in the substrate;

(b) the enriched zone being discontinuous in cobalt on its outer surface, by having cobalt dispersion therein similar to that cobalt dispersion just below its surface; and

(c) a thin first layer of TiN deposited on said surface.

11. A cobalt cemented carbide insert having at least one



surface adapted to be a wear resistant surface, said wear resistant surface comprising:

(a) a cobalt enriched zone extending in depth from 0–75μ and containing essentially metallic cobalt in an amount of at least about 2 times the average amount in the substrate;

(b) the enriched zone being discontinuous in cobalt on its outer surface, by having cobalt dispersion therein similar to that cobalt dispersion just below its surface;

(c) a decarburization layer on said cobalt enriched surface comprising a mixture of Ti, TiC, TiCN; and

(d) a thin first layer of TiN deposited on said surface.

4,497,875

CERAMIC SUBSTRATE WITH METAL PLATE

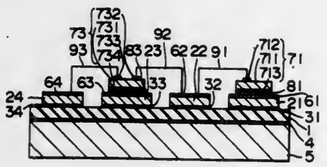
Hideo Arakawa; Keiichi Kuniya; Akio Chiba, and Seiki Shimizu, all of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 8, 1983, Ser. No. 464,945

Claims priority, application Japan, Feb. 10, 1982, 57-18790

Int. Cl.³ B32L *15/00*

U.S. Cl. 428—620 **16 Claims**



1. A ceramic substrate with a metal-containing plate comprising a metal-containing plate comprised mainly of copper, an insulation plate consisting of a sintered ceramic material and a brazing layer interposed between said metal-containing plate and said ceramic insulation plate for bonding said plates to each other, said brazing layer consisting of a mixture of copper oxide and copper.

4,497,876

CORROSION RESISTANT METAL COMPOSITE WITH ZINC AND CHROMIUM COATING

William E. Kidon, 12444 Pearl Rd., Chardon, Ohio 44024

Filed Mar. 16, 1983, Ser. No. 475,735

Int. Cl.³ C25D *5/12*

U.S. Cl. 428—624 **13 Claims**

1. A corrosion-resistant coated metal substrate having a coating including a metallic laminate protective composite containing adjacent layers of dissimilar metals, with said coating composite comprising:

(a) a metallic undercoating layer of a metal dissimilar from the metal of said substrate and free from other metals except in trace amounts;

(b) a metallic zinc layer on said undercoating layer and dissimilar from said undercoating metal; and,

(c) a heat-curable, substantially resin free topcoat layer from composition curable to a water resistant protective coating, said topcoat layer containing from about 20 to about 500 milligrams per square foot of chromium, as chromium, in non-elemental form, and with there being more than about 20 weight percent of said chromium as hexavalent chromium, said composition containing hexavalent-chromium-providing-substance in liquid medium.

4,497,877

METAL ARTICLE LAYERED WITH A NICKEL-PHOSPHORUS ALLOY AND A PROTECTIVE COATING

Gerrit Krijl, and Renaat E. Van de Leest, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed May 3, 1983, Ser. No. 491,101

Claims priority, application Netherlands, May 6, 1982, 8201849

Int. Cl.³ C25D *3/04*; B32B *9/00*

U.S. Cl. 428—628 **2 Claims**

1. A metal article which is coated with a layer consisting of a nickel-phosphorus alloy, which layer is coated on its outer surface by a protective layer, characterized in that the protective layer consists of a nickel-free conversion layer of a hydrated basic chromium phosphate which comprises the components $CrPO_4$ and $Cr(OH_3)$, wherein $Cr_2(SO_4)$, may be present and in which the weight ratio Cr:P:S=1:(0.2–1.5):(0–0.5).

4,497,878

PHOTOMASK MATERIAL

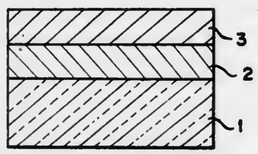
Takashi Hatano, and Akira Maruyama, both of Hino, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Aug. 6, 1982, Ser. No. 405,724

Claims priority, application Japan, Aug. 19, 1981, 56-130460

Int. Cl.³ B32B *15/04, 15/00*

U.S. Cl. 428—698 **7 Claims**



1. A photomask material comprising a substrate and a mask layer provided on said substrate, said mask layer consisting of a layer containing a lower metal oxide, a lower metal nitride or a combination of said lower metal oxide and said lower metal nitride, and a layer containing a mixture of a higher metal oxide and a higher metal nitride of the same metal or a layer containing a higher metal nitride of the same metal.

4,497,879

ELECTROCHEMICAL STORAGE CELL

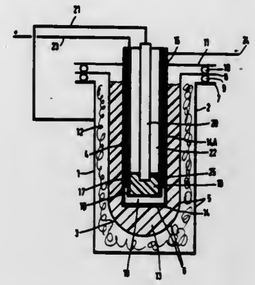
Hans-Hermann Lücke, Walldorf, and Jens-Christian Jessen, Eppelheim, both of Fed. Rep. of Germany, assignors to Brown, Boveri & Cie Aktiengesellschaft, Manheim, Fed. Rep. of Germany

Filed Jun. 2, 1983, Ser. No. 500,332

Claims priority, application Fed. Rep. of Germany, Jun. 3, 1982, 3220903; Jun. 16, 1982, 3222525

Int. Cl.³ H01M *10/39, 10/50*

U.S. Cl. 429—62 **3 Claims**



1. Electrochemical storage cell of the alkali metal and chalcogen type with an anode chamber and a cathode chamber, each chamber provided with a current collector, the two chambers separated from each other by an alkali-ion-conducting solid electrolyte as well as bounded at least in some areas by a metallic housing, two electric terminals, one of said two electric current collectors is shaped as a tube closed at one end with its closed end in the interior of the cup-shaped solid electrolyte, a second electrically conducting tube is arranged within said tube, an electrically conducting plug of a fusible alloy closes off the lower end of the second tube which is spaced a pre-settable distance from the closed end of the first tube to provide a space between the ends of the first and second tubes related to the size of the plug that the melted plug will fill the space with only the two tubes connected via the alloy in an electrically conducting manner, an insulating material is arranged between the inside surfaces of the first tube and the outside surfaces of the second tube in its upper part, a cylindrical conducting rod is arranged within the second tube, said rod having its lower end disposed in a recess of the plug closing-off the second tube and is connected to the latter in an electrically conducting manner, insulating material is arranged between the rod and the second tube, the rod is connected in an electrically conducting manner to the metallic housing of the storage cell, and one of said two electric terminals of the storage cell is formed by the second tube, and the other electric terminal is the first tube.

4,497,880

RECOMBINATION DEVICE FOR STORAGE BATTERIES

Helmut Kraft, Liederbach, and Konstantin Ledjeff, Bad Krozingen, both of Fed. Rep. of Germany, assignors to The United States of America as represented by the Department of Energy, Washington, D.C.

Filed Mar. 11, 1983, Ser. No. 474,386

Claims priority, application Fed. Rep. of Germany, May 13, 1982, 3218016

Int. Cl.³ H01M *2/12*

U.S. Cl. 429—86 **5 Claims**

1. A gas recombination device connected to receive gas discharge including hydrogen, oxygen and metal hydrides from a storage battery, said device comprising,

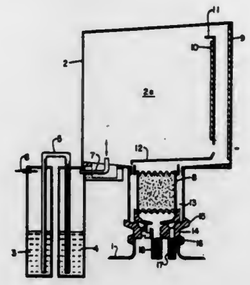
interconnection means for gas flow between the storage battery and the recombination device;

means for absorbing metal hydrides from the gas discharge flow communicating with the interconnection means;

catalytic means supported within the recombination device for recombining hydrogen with oxygen gas to form water;

a gas-tight enclosure containing the catalytic means in gas flow communicating with the storage battery; and

a liquid level seal and pressure difference limiting means connected to the interior of the gas-tight enclosure, the seal means including a first vertical, partially liquid-filled chamber, the first chamber connected in gas flow communication with the gas-tight enclosure, a second vertical,



partially liquid-filled chamber, said second chamber is open at its upper portion to the atmosphere outside the gas-tight enclosure, an inverted U-shaped overflow tube disposed with its open end portions near the bottom portions respectively of the first and of the second partially liquid-filled chambers wherein the pressure within the gas-tight enclosure is limited in respect to the outside atmospheric pressure by the level of liquid in said chambers.

4,497,881

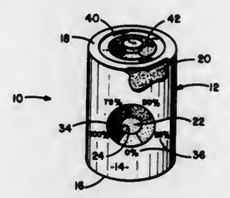
BATTERY CHARGE INDICATOR

Renee Z. Bertolino, 1648 Spruce St., S. Pasadena, Calif. 91030

Filed Jan. 31, 1983, Ser. No. 462,264

Int. Cl.³ H01M *10/48*

U.S. Cl. 429—91 **12 Claims**



1. An improved electrical storage cell for generating electrical charge in response to a chemical reaction comprising:

a housing having a side region and two end regions;

a charge producing compound in the housing, the charge producing compound being free of charge indicating additives, but itself changing color as the cell charge is depleted;

window means in the housing whereby the charge producing compound can be viewed by a user, the remaining charge of the storage cell being indicated by the color of the charge Producing compound.

4,497,882

METHOD OF PREPARING AN ARTICLE WHICH IS RESISTANT TO CORROSIVE ATTACK BY MOLTEN POLYSULFIDE SALTS

Mati Mikkor, Ann Arbor, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Feb. 6, 1984, Ser. No. 577,471
Int. Cl.[3] H01M 2/02
U.S. Cl. 429—163 16 Claims

1. A method of preparing an article which is electronically conductive and resistant to corrosive attack by molten polysulfide salts, which method comprises the steps of:

(a) providing a sheet of graphite foil;

(b) coating said graphite foil with amorphous pyrolytic or glassy carbon to fill any openings in and/or through said graphite foil;

(c) coating a thin layer of aluminum metal onto at least one side of said graphite foil coated with said amorphous carbon;

(d) providing an electronically conductive material having an aluminum surface; and

(e) bonding said aluminum metal coated side of said graphite foil coated with said amorphous carbon to an aluminum surface of an electronically conductive material, thereby to form an electronically conductive article resistant to corrosive attack by molten polysulfide salts.

4,497,883

BATTERY HAVING CATHODE OF SHEET LOADED WITH GRAPHITE AND CARBON SHEET ANODE

James G. Murray, East Brunswick, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Apr. 29, 1983, Ser. No. 489,872
Int. Cl.[3] H01M 10/40
U.S. Cl. 429—194 10 Claims

1. An apparatus which is capable of being electrically charged to obtain a rechargeable battery, said apparatus comprising a conductive sheet containing particles of graphite, a conductive sheet containing high surface area carbon, and an electrolyte comprising a metal salt and a non-aqueous solvent; in which said graphite containing sheet is the cathode and said high surface area carbon is the anode in the battery in its charged state.

4,497,884

METHOD FOR THE PRODUCTION OF A SELF-SUPPORTING MASK

Frank Schmidt, and Horst Tyrroff, both of Dresden, German Democratic Rep., assignors to VEB Zentrum für Forschung Und Technologie Mikroelektronik, Dresden, German Democratic Rep.

Filed Sep. 22, 1982, Ser. No. 421,542
Claims priority, application German Democratic Rep., Oct. 1, 1981, 233773
Int. Cl.[3] G03F 9/00
U.S. Cl. 430—5 5 Claims

1. A method for the production of a self-supporting spacing mask for reducing particle radiation-projection systems, comprising depositing a sufficiently finely structured nickel layer galvanically on a support substrate, whereby the structure is produced by means of a pattern and subsequently depositing an insulating layer on at least one auxiliary layer, and transferring the pattern structure onto the insulating layer, and galvanizing and separating the nickel layer system from the substrate and isolating the residual insulating layer so that the produced mask may be clamped into a frame, said pattern for producing the mask being in the form of a nuclear filter, said pattern having statistically distributed pores, the diameter P of which in association with the scale of reduction M of the particle radiation projection system yields a value of P/M=0.05 to 0.2 μm and the mean spacing of which is maximally 0.2 μm.

4,497,885

PRESSURE-FIXABLE MICROCAPSULE TONER

Hisayuki Ushiyama, Hiratsuka; Ichiro Ohsaki, Kawasaki; Masanori Takenouchi, Urawa, and Toshiaki Nakahara, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 12, 1984, Ser. No. 588,805
Claims priority, application Japan, Mar. 17, 1983, 58-44651
Int. Cl.[3] G03G 9/14
U.S. Cl. 430—106.6 11 Claims

1. A microcapsule toner for pressure fixing, comprising a core material containing a pressure-fixable component and a magnetic material, a first shell layer comprising a formaldehyde copolymer resin and a second shell layer comprising a polymer soluble in an organic solvent.

4,497,886

ELECTROPHOTOGRAPHIC LIQUID DEVELOPER FOR THE REVERSAL DEVELOPMENT OF NEGATIVELY-CHARGED IMAGES

Heinz Herrmann, and Hans-Joachim Schlosser, both of Wiesbaden, Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Aug. 19, 1983, Ser. No. 524,590
Claims priority, application Fed. Rep. of Germany, Aug. 25, 1982, 3231505
Int. Cl.[3] G03G 9/12
U.S. Cl. 430—115 5 Claims

1. An electrophotographic liquid developer for the reversal development of negatively charged charge images, comprising an electrically insulating carrier liquid of high electrical resistivity and a low dielectric constant, a pigment or dye, a resinous binder, a charge controller comprising a copolymer of N-vinyl-2-pyrrolidone and a methacrylic acid ester, and a poly-N-vinyl-2-pyrrolidone which has been alkylated with an α-olefin, wherein said alkylated poly-N-vinyl-2-pyrrolidone is present in an amount between 0.005 and 1 percent by weight.

4,497,887

THERMAL DEVELOPMENT TYPE DIAZO COPYING MATERIAL WITH HYDROPHOBIC RESIN ENCAPSULATED COUPLER PARTICLE

Nobuyoshi Watanabe, Numazu, and Tsutomu Matsuda, Sunto, both of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Jun. 2, 1982, Ser. No. 384,308
Claims priority, application Japan, Jun. 9, 1981, 56-88530
Int. Cl.[3] G03C 1/60, 1/58
U.S. Cl. 430—138 12 Claims

1. A thermally developable diazotype copying material comprising a support material and a photosensitive layer formed on said support material, said photosensitive layer consisting essentially of a diazonium compound suitable for use in a two component diazotype copying material, an azo coupling component and a thermo-fusible auxiliary coloring agent wherein said auxiliary coloring agent is at least one member selected from the group consisting of fatty acid amides having the formula

$$RCONH_2$$

wherein R is a saturated or unsaturated aliphatic hydrocarbon group having 5 to 24 carbon atoms, and N-substituted fatty acid amides having the formulas

$$R^1CONHR^2 \text{ and}$$

$$R^3NHCOR^4$$

wherein R^1 and R^3 each is a saturated or unsaturated aliphatic hydrocarbon group having 5 to 24 carbon atoms, and R^2 and R^4 each is alkyl having 1 to 5 carbon atoms, phenyl, substituted phenyl, cyclohexyl or substituted cyclohexyl, and wherein said coupling component is in the form of coupler particles encapsulated with a hydrophobic polymeric material to form capsules, said polymeric material having a softening point in the range of from 50° to 150° C. and being selected from the group consisting of hydrophobic polyester resins, hydrophobic cellulose resins, hydrophobic polyamide resins and hydrophobic polyurethane resins.

4,497,888

LIGHT-SENSITIVE O-QUINONEDIAZIDE PRINTING PLATE WITH OXONOL DYE

Akira Nishioka, Shizuoka; Yoshimasa Aotani, Kanagawa, and Kotaro Yamasue, Shizuoka, all of Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jun. 21, 1983, Ser. No. 506,268
Claims priority, application Japan, Jun. 23, 1982, 57-107996
Int. Cl.[3] G03C 1/60, 1/94; G03F 7/08
U.S. Cl. 430—165 6 Claims

1. In a light-sensitive printing plate precursor capable of forming a positive working lithographic printing plate having high color stain resistance and high image contrast, comprising:

an aluminum support base having a grained and anodized surface; and

a positive working light-sensitive composition comprising an o-quinonediazide compound in admixture with a dye provided on said surface, said o-quinonediazide compound being present in an amount of 10 to 50 wt % based on the total weight of said composition;

the improvement is characterized in that said dye comprises an oxonol dye, which provides the stain resistance and the contrast upon light image exposure and development, present in an amount of 0.3 to 15 wt % based on the total weight of said composition.

4,497,889

RELEASE COMPOUND IN NEGATIVE ACTING PHOTOPOLYMERIZABLE ELEMENT

Stephen J. Fuerniss, Sayre, Pa., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 358,702, Mar. 16, 1972, abandoned. This application Oct. 24, 1983, Ser. No. 544,036
Int. Cl.[3] G03C 1/90, 1/68
U.S. Cl. 430—260 9 Claims

1. In a solvent-developable negative acting radiation sensitive photopolymerizable element comprising a support bearing a layer of negative acting photopolymerizable composition, useful in making printed circuits, and a cover sheet, said composition comprising:

(a) at least one addition polymerizable ethylenically unsaturated compound having a boiling point above 100° C. at normal pressure;

(b) an organic free radical-generating addition polymerization initiator activatable by actinic radiation in the ultraviolet-to-visible region of the spectrum and

(c) a macromolecular organic polymeric binder, the improvement rendering the composition readily releasable from the cover sheet which comprises a release compound or mixture of the formula A-B wherein

A is substituted or unsubstituted alkyl or alkenyl of 6 to 24 carbon atoms, and

B is selected from the group consisting of an unsubstituted 5 or 6 atom aromatic or nonaromatic heterocyclic radical containing 2 or 3 heteroatoms taken from N, O, S or combination thereof, a heterocyclic radical having as the sole heterocyclic nucleus a 5 or 6 atom aromatic or nonaromatic heterocyclic nucleus containing 2 or 3 heteratoms taken from N,O,S or combination thereof, said nucleus substituted with a six carbon fused aromatic ring containing no substituents other than hydrogen,

an alkali metal salt of a β amino carboxylic acid or a bis alkali metal salt of a β, β' amino dicarboxylic acid, wherein said release compound or mixture is present in said negative acting photopolymerizable composition in an effective amount sufficient to lower peel force to a value not greater than 75 grams.

4,497,890

PROCESS FOR IMPROVING ADHESION OF RESIST TO GOLD

John N. Helbert, Scottsdale, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Apr. 8, 1983, Ser. No. 483,088
Int. Cl.[3] H01L 21/312
U.S. Cl. 430—296 8 Claims



1. A process for increasing the adhesion of a polymeric resist to a gold metallization surface which comprises the steps of:

applying to the gold metallization surface a layer of chelating silane; and

applying the polymeric resist to the layer of chelating silane.

4,497,891

DRY-DEVELOPED, NEGATIVE WORKING ELECTRON RESIST SYSTEM

Leon H. Kaplan, Yorktown Heights, and Richard D. Kaplan, Wappingers Falls, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 25, 1983, Ser. No. 545,032
Int. Cl.[3] G03C 5/00
U.S. Cl. 430—296 4 Claims

1. A process for producing a resist pattern, said process being characterized by the steps of:

(1) coating a substrate with a resist comprising from 70 to 50% by weight of novolac resin and from 30 to 50% by weight of a poly(ether pentene sulfone);

(2) pattern-wise exposing said resist to an electron beam;

(3) baking said resist, and

(4) dry developing the system by exposure to oxygen plasma operating in a directional mode.

4,497,892

METHOD FOR FORMING MULTIPLE IMAGES ON A PHOTOGRAPHIC FILM

Jeff L. Anderson, Cambridge, Ohio, assignor to NCR Corporation, Dayton, Ohio

Filed Jun. 13, 1983, Ser. No. 503,446
Int. Cl.[3] G03B 21/14
U.S. Cl. 430—347 5 Claims

1. A method for displaying a plurality of photographic images comprising the steps of:

heating a sheet of dielectric material to an electret forming temperature;

applying an electrical potential to the heated dielectric material in a first direction along one surface of the material establishing a plane of polarization in the material corresponding to said first direction;

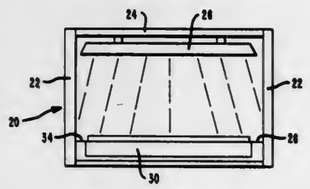
rotating the material 90°;

positioning an image-bearing mask on the dielectric material to form a first image on a first portion of the dielectric

material and a second image on the remaining portion of the dielectric material;

heating the first portion of the dielectric material to an electret-forming temperature;

applying an electrical potential to the first portion of the heated dielectric material in a second direction which is at an angle to the plane of polarization of the remaining portion of the dielectric material establishing a plane of



polarization along said one surface of the material in the first portion of the material corresponding to said second direction;

and applying a polarized light having a plane of polarization which extends in a direction which corresponds to either of the planes of polarization of the first or remaining portion of the sheet of material for projecting either the first image or the second image onto a receiving surface.

4,497,893

SILVER HALIDE COLOR REVERSAL PHOTOGRAPHIC MATERIAL

Naoyasu Deguchi; Koji Kameyama, and Taku Nakamura, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jan. 31, 1984, Ser. No. 575,601
Claims priority, application Japan, Jan. 31, 1983, 58-14304
Int. Cl.³ G03C *7/00, 1/76*
U.S. Cl. 430—359 **19 Claims**

1. A silver halide color reversal photographic material which comprises a support having on the one side thereof a blue-sensitive silver halide emulsion layer, a green-sensitive silver halide emulsion layer and a red-sensitive silver halide emulsion layer, and on the other side thereof a gelatin-containing backing layer, said backing layer containing a gelatin of an isoelectric point of 5.5 or more and further containing a cationic polymer.

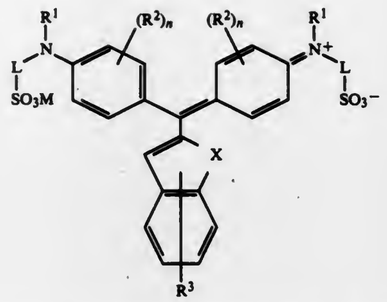
4,497,894

COLORED SILVER HALIDE PHOTOGRAPHIC PHOTOSENSITIVE MATERIALS

Akira Itoh, and Akira Takemura, both of Nagaokakyo, Japan, assignors to Mitsubishi Paper Mills, Ltd., Tokyo, Japan

Filed Sep. 19, 1983, Ser. No. 533,818
Claims priority, application Japan, Sep. 22, 1982, 57-166353
Int. Cl.³ G03C *1/84, 1/16*
U.S. Cl. 430—522 **6 Claims**

1. A silver halide photographic photosensitive material which comprises a support, a silver halide emulsion layer and a protective colloid layer, at least one of the emulsion layer and the colloid layer containing a dye represented by the following formula:



(1)

(wherein R^1 represents hydrogen atom, an alkyl group, an aryl group or an alkenyl group; R^2 represents an alkyl group, an alkoxy group, an aryloxy group, an alkenyl group, a halogen atom; n is 0, 1 or 2; R^3 represents hydrogen atom, an alkyl group, an alkenyl group, a halogen atom, nitro group, cyano group, SO_2R^4 or COR^4 wherein R^4 is hydroxyl group, an alkyl group or an aryl group; L represents an alkylene group; M represents hydrogen atom or other inorganic or organic cation; and X represents oxygen atom or sulfur atom).

4,497,895

METHOD FOR PREPARING SILVER HALIDE PHOTOGRAPHIC EMULSION

Syoji Matsuzaka; Takeo Koitabashi; Yoshihiro Haga; Akio Suzuki, and Hiroaki Shiozawa, all of Hino, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Jul. 30, 1982, Ser. No. 403,479
Claims priority, application Japan, Aug. 7, 1981, 56-123070
Int. Cl.³ G03C *1/02*
U.S. Cl. 430—569 **12 Claims**

1. In a method for preparing a silver halide photographic emulsion by a double-jet process using an ammoniacal silver nitrate solution which forms silver halide, the improvement comprising maintaining the ratio between the maximum and minimum solubility of the silver halide in said silver halide photographic emulsion within the range of up to 3.0 after 1/10 of the total amount of the solution containing silver halide has been used in the process, wherein the solubility of the silver halide is maintained within the range of 1×10^{-3} to 1×10^{-6} mole/l.

4,497,896

FERMENTATION OF GLUCOSE WITH RECYCLE OF NON-FERMENTED COMPONENTS

Per G. Assarsson, Toronto, and Joseph H. Nagasuye, Mississauga, both of Canada, assignors to St. Lawrence Technologies Limited, East Mississauga, Canada

Filed Jul. 19, 1982, Ser. No. 399,228
Int. Cl.³ C12P *7/06, 7/10*
U.S. Cl. 435—161 **7 Claims**

1. A process for producing ethanol which comprises:

(a) continuously moving a slurry of carbohydrate material through a confined tubular preheat zone and transferring sufficient heat to the slurry whereby it passes through a gelation stage and forms into a hot free flowing liquid and immediately forcing said hot liquid through a restrictive opening and into a confined tubular reaction zone accompanied by a sudden decrease in pressure at a rate so that the carbohydrate material is made highly reactive and continuously moving the highly reactive carbohydrate material, together with an acid hydrolyzing agent, through the tubular reaction zone as a single hydrolysis stage to produce a hydrolyzate in fluid form containing at least 85% glucose,

(b) fermenting the glucose-containing fluid to form a fermentation product containing ethanol,

(c) distilling the fermentation product to separate ethanol from a distillation residue containing non-fermented carbohydrate materials and

(d) passing at least part of the obtained distillation residue containing non-fermented carbohydrate materials through the single hydrolysis state (a) whereby a portion of said non-fermented materials is hydrolyzed to a fermentable glucose-containing liquid.

4,497,897

LIQUID PROTEINASE CONCENTRATE AND METHOD FOR PREPARATION

Jens H. Ellertsen, Virum; Arne D. Fog, Ballerup, and Keith Gibson, Hvidovre, all of Denmark, assignors to Novo Industri A/S, Denmark

Filed Dec. 9, 1982, Ser. No. 448,374
Int. Cl.³ C12N *9/96;* C11D *7/42*
U.S. Cl. 435—188 **7 Claims**

1. A liquid enzyme concentrate comprising:

the proteinase from Subtilisin Carlsberg in concentration of from 0.5–6.5 Anson Units per gram of concentrate;

propylene glycol in an amount of 60–85% and water in an amount of 10–35% by wt.;

calcium ion in concentration of about 0.04–0.5% by wt.;

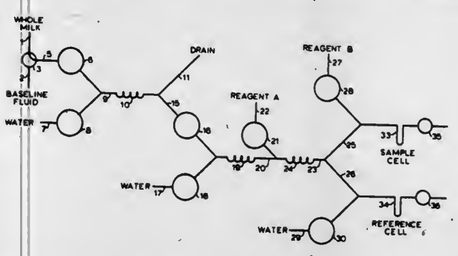
a water soluble carboxylate in concentration of 0.1–1.0 mol/kg selected from the group consisting of formate, acetate, propionate and mixtures thereof, the pH being in the range of 5–8.

4,497,898

SPECTROPHOTOMETRIC METHOD FOR SIMULTANEOUSLY ANALYZING PROTEIN AND FAT CONTENTS IN MILK

Maynard E. Anderson, Hallsville; Robert T. Marshall, Columbia, and Mark M. Hulse, Fulton, all of Mo., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Aug. 25, 1982, Ser. No. 411,196
Int. Cl.³ G01N *33/04, 33/06*
U.S. Cl. 436—23 **3 Claims**



1. A method for the simultaneous determination of both the protein and fat contents of milk, said method comprising the steps of:

a. providing a homogeneous dilute milk sample;

b. dividing said sample into a sample stream and a reference stream;

c. adding a color-developing reagent to said sample stream and reacting said reagent with the milk protein in said sample stream to impart a color thereto, wherein the intensity of said color is a function of the milk protein concentration;

d. adjusting the solids concentration in said reference stream to correspond to that in the reagent-containing sample stream by dilution with an appropriate amount of water;

e. simultaneously passing first and second light beams from a common source through said sample and reference streams, respectively, wherein said beams have a wavelength absorbable by the color imparted to said sample stream;

f. continuously monitoring the intensity of said common light source by passing a third light beam from said source through a path of nonfluctuable transmissibility to a third detector;

g. providing a nonturbid, protein-free fluid as a baseline fluid;

h. dividing said baseline fluid into a first baseline stream having added thereto an amount of color-developing reagent equivalent to that added to the sample stream and a second baseline stream having added thereto an amount of water equivalent to that added to the reference stream;

i. comparing the relative transmittance of said first and second beams at the time they are passed through said sample and reference streams to the relative transmittance of said first and second beams at the time they are simultaneously passed through said first and second baseline streams, and computing the protein content as a function of the ratio of said relative transmittances;

j. comparing the relative transmittance of said second and third beams at the time said second beam is passing through said reference stream to the relative transmittance of said second and third beams at the time said second beam is passing through said second baseline stream, and computing the fat content as a function of the ratio of said relative transmittances.

4,497,899

IMMUNOASSAY FOR *CHLAMYDIA TRACHOMATIS* ANTIGENS

Alan S. Armstrong, Waukegan; John E. Herrmann, Hawthorn Woods, and Lawrence V. Howard, Vernon Hills, all of Ill., assignors to Abbott Laboratories, North Chicago, Ill.

Continuation-in-part of Ser. No. 367,697, Apr. 12, 1982, abandoned. This application Mar. 28, 1983, Ser. No. 479,414
Int. Cl.³ G01N *33/54, 33/56*
U.S. Cl. 436—510 **14 Claims**

1. A method for determining *Chlamydia trachomatis* antigen in a clinical specimen comprising:

(a) lysing *Chlamydia trachomatis* cells in the specimen to release *Chlamydia trachomatis* antigen;

(b) coating a bare solid support with *Chlamydia trachomatis* antigen in the specimen;

(c) separating the antigen coated solid support from the specimen;

(d) treating the antigen coated solid support with chlamydial antibody to form an antigen-chlamydial antibody complex on the solid support;

(e) separating the antigen-chlamydial antibody complex from unbound chlamydial antibody;

(f) treating the antigen-chlamydial antibody complex with a labeled antiglobulin to form an antigen-chlamydial antibody-labeled antiglobulin complex on the solid support;

(g) separating the antigen-chlamydial antibody-labeled antiglobulin complex from unbound labeled antiglobulin; and

(h) determining the labeled antiglobulin bound to the antigen-chlamydial antibody complex as a measure of the *Chlamydia trachomatis* antigen in the specimen.

4,497,900
IMMUNOASSAY FOR *NEISSERIA GONORRHOEAE* ANTIGENS

Dinah Abram, Highland Park; Alan S. Armstrong, Waukegan; John E. Herrmann, Hawthorn Woods, and Chung-Mei Ling, Chicago, all of Ill., assignors to Abbott Laboratories, North Chicago, Ill.

Continuation-in-part of Ser. No. 367,698, Apr. 12, 1982, abandoned. This application Mar. 28, 1983, Ser. No. 479,413
Int. Cl.³ G01N *33/54, 33/56*
U.S. Cl. 436—511 **15 Claims**

1. A method for determining *Neisseria gonorrhoeae* antigen in a clinical specimen comprising:
(a) lysing *Neisseria gonorrhoeae* cells in the specimen to release *Neisseria gonorrhoeae* antigen;
(b) coating a bare solid support with the *Neisseria gonorrhoeae* antigen;
(c) separating the antigen coated solid support from the specimen;
(d) treating the antigen coated solid support with gonococcal antibody to form antigen-gonococcal antibody complex on the solid support;
(e) separating the antigen-gonococcal antibody complex from unbound gonococcal antibody;
(f) treating the antigen-gonococcal antibody complex with labeled antiglobulin, to form an antigen-gonococcal antibody-labeled antiglobulin complex on the solid support;
(g) separating the antigen-gonococcal antibody-labeled antiglobulin complex from unbound labeled antiglobulin; and
(h) determining the labeled antiglobulin bound to the antigen-gonococcal antibody complex as a measure of the *Neisseria gonorrhoeae* antigen in the specimen.

4,497,901
FORSTERITE-CARBON REFRACTORY

Yuzo Ohtsuki; Nobiru Komatsu, both of Tokai; Akira Watanabe, and Gouji Saeki, both of Okayama, all of Japan, assignors to Nippon Steel Corporation, Tokyo and Kyushu Refractories Co., Ltd., Okayama, both of, Japan

Filed Jan. 6, 1983, Ser. No. 456,291
Int. Cl.³ C04B *35/56*
U.S. Cl. 501—90 **2 Claims**

1. Forsterite-carbon refractory which consists essentially of 5-50 weight % forsterite material, 5-30 weight % carbonaceous material, 0.5-10 weight % silicon carbide, and magnesia refractory material.

4,497,902
COMPOSITION FOR REMOVING SULFUR OXIDES FROM A GAS

Ralph J. Bertolacini, Naperville; Eugene H. Hirschberg, Park Forest, and Frank S. Modica, Downers Grove, all of Ill., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Division of Ser. No. 29,264, Apr. 11, 1979, abandoned. This application Sep. 27, 1983, Ser. No. 536,246
Int. Cl.³ B01J *29/06, 21/10, 23/10*
U.S. Cl. 502—65 **20 Claims**

1. A particulate solid comprising an inorganic oxide composition in association with at least one free or combined rare earth metal selected from the group consisting of lanthanum, cerium, praseodymium, samarium and dysprosium, wherein said inorganic oxide composition comprises at least one member selected from the group consisting of $MgAl_2O_4$ and mixtures of alumina with magnesium oxide and the ratio by weight of inorganic oxide composition to rare earth metal or metals is from about 1.0 to about 1,000.

9. A composition of matter comprising a particulate physical mixture of:
(a) a particulate solid cracking catalyst for cracking hydrocarbons comprising a crystalline aluminosilicate zeolite distributed throughout a porous matrix; and
(b) a particulate solid other than said cracking catalyst comprising an inorganic oxide composition in association with at least one free or combined rare earth metal selected from the group consisting of lanthanum, cerium, praseodymium, samarium and dysprosium, wherein said inorganic oxide composition comprises at least one member selected from the group consisting of $MgAl_2O_4$ and mixtures of alumina with magnesium oxide, the particulate solid other than cracking catalyst contains at least about 40 weight percent of said inorganic oxide composition, the ratio by weight of inorganic oxide composition to rare earth metal or metals is from about 1.0 to about 1,000, and said particulate solid other than cracking catalyst comprises from about 0.1 to about 50 weight percent of said particulate physical mixture.

4,497,903
ACTIVATED COBALT-SUBSTITUTED LAYERED ALUMINOSILICATE FOR SYNTHESIS GAS CONVERSION

Charles L. Kibby, Gibsonia, and Thaddeus P. Kobylinski, Prospect, both of Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Filed Dec. 17, 1982, Ser. No. 451,612
Int. Cl.³ B01J *21/12, 21/16*
U.S. Cl. 502—85 **5 Claims**

1. A synthesis gas conversion catalyst obtainable by the multi-stage activation of a layered aluminosilicate having cobalt incorporated into the crystal lattice and having the general formula:

$$Al_{4-n-x}CO_{3/2n}O_8(OH,F)_4Si_{8-y}Al_yO_{12}.(3x+y)NH_4^+.zH_2O$$

where n is between about 0.02 and about 4; x is up to about 1; n+x is between about 0.02 and about 4; y is between about 0.05 and about 2; and z is up to about 10; said activation procedure comprising the steps:
(a) heating the layered aluminosilicate in a reducing atmosphere at a temperature between about 500° and about 750° C. until a significant amount of the cobalt is reduced;
(b) heating the reduced aluminosilicate in an oxidizing atmosphere at a temperature between about 100° and about 600° C. until a significant amount of the cobalt is oxidized, and
(c) heating the oxidized aluminosilicate in a reducing atmosphere at a temperature between about 200° and about 500° C. until a significant quantity of the cobalt is reduced.

4,497,904
CATALYSTS FOR THE POLYMERIZATION AND COPOLYMERIZATION OF ETHYLENE AND POLYMERIZATION PROCESSES USING THESE CATALYSTS

Alain Blaya; Pierre Crouzet, both of Martigues; Stylianos Sandis, Lavera, and Jean C. Bailly, Martigues, all of France, assignors to BP Chimie Societe Anonyme, Paris, France

Filed Jun. 16, 1983, Ser. No. 504,985
Claims priority, application France, Jun. 24, 1982, 82 11055; Jun. 24, 1982, 82 11053
Int. Cl.³ C08F *4/02*
U.S. Cl. 502—104 **13 Claims**

1. Catalysts which can be used for the polymerisation and copolymerisation of ethylene, characterised in that they comprise a support essentially based on magnesium chloride, or magnesium chloride and an aluminium chloride derivative, occurring in the form of spheroidal particles having a mean diameter by mass comprised between 10 and 100 microns and a particle size distribution such that the ratio of the mean diameter by mass, Dm, to the mean diameter by number, Dn, is less than or equal to 3.0, on which support there is precipitated a compound of a transition metal of Groups IV, V and VI of the Periodic Table of Elements, known for its catalytic properties in respect of the polymerisation and copolymerisation of ethylene.

7. Catalysts in accordance with claim 1, characterised in that the precipitation of a titanium compound is carried out on the support.

8. Process for the preparation of catalysts defined in claim 7, characterised in that:
the precipitation is achieved by the reaction of reduction of a titanium compound at maximum valency of the formula $Ti(OR_7)_{(4-n)}X_n$ in which R_7 is an alkyl group containing 2 to 6 carbon atoms, X is a chlorine or bromine atom, and n is an integer or fraction from 1 to 4 inclusive, by means of a reducing agent chosen from among the organomagnesium compounds of the formula R_8MgR_9 in which R_8 and R_9 are identical or different alkyl groups containing from 2 to 12 carbon atoms, organo-zinc compounds of the formula $Zn(R_{10})_{(2-y)}X_y$ in which R_{10} is an alkyl group having 2 to 12 carbon atoms, X is chlorine or bromine and y equals 0 or 1 or a fraction less than 1, and organoaluminium compounds of the formula $Al(R_{11})_{(3-x)}X_x$ in which R_{11} is an alkyl group having 2 to 12 carbon atoms, X is chlorine or bromine and x is 0 or an integer or fraction not greater than 2;
the said reaction of reduction is performed in the presence or absence of an electron donor compound chosen from among organic compounds comprising at least one atom of oxygen, sulphur, nitrogen and/or phosphorus;
the relative quantities of the various compounds (support, titanium compound, organo-magnesium or organo-zinc or organo-aluminium compound, electron donor) are, by molar ratios, such that:
support:titanium compound is comprised between 1 and 50,
organo-magnesium or organo-zinc or organo-aluminium compound:titanium compound is less than 3,
electron donor compound:titanium compound is comprised between 0 and 5.

4,497,905
OLEFIN POLYMERIZATION CATALYST COMPOSITIONS AND POLYMERIZATION PROCESS

Kenzie Nozaki, El Cerrito, Calif., assignor to Shell Oil Company, Houston, Tex.

Filed Oct. 13, 1983, Ser. No. 541,625
Int. Cl.³ C08F *4/64*
U.S. Cl. 502—107 **28 Claims**

1. A method for producing an improved olefin polymerization catalyst component, which method comprises:
(a) halogenating a magnesium compound of the formula MgR'R" where R' is an alkoxide or aryloxide group and R" is an alkoxide or aryloxide group or halogen, with a tetravalent titanium halide in the presence of a halohydrocarbon and an electron donor, therein forming a halogenated product;
(b) recovering said halogenated product;
(c) washing said recovered halogenated product with a wash liquid selected from the group consisting of inert hydrocarbon liquids and halohydrocarbons; and
(d) contacting the resulting washed product with thionyl chloride at a temperature of about 40° to about 140° C.

4,497,906
SOLID CATALYST COMPONENT FOR OLEFIN POLYMERIZATION

Katsumi Hanji, Funabashi, and Kiyoshi Kawai, Toyonaka, both of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Feb. 10, 1983, Ser. No. 465,674
Claims priority, application Japan, Feb. 16, 1982, 57-24076; Feb. 16, 1982, 57-24077
Int. Cl.³ C08F *4/62, 4/64, 4/68*
U.S. Cl. 502—110 **24 Claims**

24. A process for the preparation of a solid catalyst component for olefin polymerization, which comprises reacting (A) a silicon compound selected from the group consisting of (1) halogen-containing silicon compounds, (2) silicon compounds having a monomeric unit



(wherein R^1 and R^2 may be the same or different, R^1 represents an alkyl, aryl, cycloalkyl, alkoxy, or aryloxy group, or a hydrogen atom, and R^2 represents an alkyl, aryl, or cycloalkyl group or a hydrogen atom) and a polymerization degree of 2 to 10,000, (3) silanols of the general formula $R^3{}_lSi(OH)_{4-l}$ (wherein R^3 represents an alkyl, aryl, or cycloalkyl group or a hydrogen atom, and l is 1, 2 or 3) or condensation products thereof, (4) silicon compounds represented by the general formula $R^4{}_mSi(OR^5)_{4-m}$ (wherein R^4 represents an alkyl, aryl, cycloalkyl, or alkenyl group or a hydrogen atom, R^5 represents an alkyl or aryl group or a fatty acid moiety, and m is 1, 2 or 3, and (5) silicon compounds or polymers thereof represented by the general formula $[SiO_a(OR^6)_b]_n$ (wherein R^6 presents an alkyl, cycloalkyl, aralkyl, or aryl group or a fatty acid moiety, a and b are each a number defined by the formula $0 \leqq a \leqq 1$ or $2 \leqq b \leqq 4$, and n is an integer of from 1 to 10,000) with
(B) a compound of a transition metal of Groups IVa, Va and VIa of the periodic table to form a reaction mixture (I); then reacting the reaction mixture (I) with
(C) an organomagnesium compound selected from organomagnesium compounds or hydrocarbon-soluble complexes thereof with an organometallic compound capable of solubilizing said organomagnesium compounds, to form an intermediate product (II); and containing the intermediate product (II) with
(D) an organoaluminum halide represented by the general formula $R^7{}_cAlX_{3-c}$ (wherein R^7 represents an organic group having 1 to 20 carbon atoms, X represents a halogen atom, and c is a number defined by the formula $0<c<3$) to form a hydrocarbon-insoluble product (III) suitable for use as the solid catalyst component.

4,497,907
COPRECIPITATED SI-AL-METAL-PARTICLE CATALYST

Albert P. Hallun, and Allan E. Barnett, both of Westfield, N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Jun. 16, 1982, Ser. No. 388,967
Int. Cl.³ B01J *37/02, 21/12*
U.S. Cl. 502—235 **34 Claims**

1. A calcined support catalyst composed of:
(a) one or more metals which are catalytically active for the hydrogenation of organic compounds,
(b) alumina and silica at a weight ratio of 0.45:1 to 1:0.45 respectively; and
(c) solid porous particles, the catalyst being characterized as having a B.E.T. total surface area ranging from about 150 to about 350 m^2/g wherein the total amount of catalytically active metal in the catalyst ranges from about 10 wt.% to about 70 wt.%, and wherein the catalyst has been prepared by; (aa) coprecipitating ions of one or more catalytically active metals, aluminum ions and silicate ions, with the solid porous particles, (bb) drying the coprecipitated catalyst and (cc) calcining the dried coprecipitated catalyst at a temperature from about 300° C. to 450° C.

4,497,908

COPPER-ALKALI METAL-RUTHENIUM/SILICA CATALYST FOR CONVERTING SYNGAS TO LINEAR ALPHA-OLEFINS

Robert M. Lewis, Houston, and Lynn H. Slaugh, Cypress, both of Tex., assignors to Shell Oil Company, Houston, Tex.

Filed Mar. 23, 1984, Ser. No. 529,673
Int. Cl.³ B01J 21/08, 23/58, 23/72
U.S. Cl. 502—245 5 Claims

1. A copper-alkali metal-ruthenium supported on silica catalyst composition useful for converting syngas to linear alpha-olefins in high yields which catalyst is prepared by a process which comprises:

(a) impregnating a porous silica support with a solution consisting essentially of soluble copper, alkali metal and ruthenium salts,

(b) drying and calcining the impregnated support in an oxidizing or neutral atmosphere at a temperature ranging from about 200° C. to about 800° C., and then

(c) reducing the impregnated support in a reducing atmosphere at a temperature ranging from about 200° C. to about 800° C.

4,497,909

HYDROGENATION PROCESS

Takuji Itoh, and Ikuo Akitsuki, both of Saitama, Japan, assignors to Toa Nenryo Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 142,970, Apr. 22, 1980, abandoned, which is a division of Ser. No. 7,140, Jan. 29, 1979, Pat. No. 4,218,308, which is a continuation of Ser. No. 690,265, May 26, 1976, abandoned, which is a division of Ser. No. 607,091, Aug. 22, 1975, abandoned. This application Aug. 6, 1981, Ser. No. 290,629
Claims priority, application Japan, Nov. 25, 1974, 79-135374
Int. Cl.³ B01J 21/12, 23/38
U.S. Cl. 502—262 9 Claims

1. A catalyst comprising a catalytic metal or compound thereof on a porous silica/alumina carrier having a silica content of less than about 40% by weight of the carrier and having a specific surface area of at least about 200 m^2/g and a bulk density of less than about 0.6 g/ml and being further characterized in that:

(a) pores having a diameter smaller than 600 Å occupy at least 90% of the total pore volume; and

(b) pores having a diameter of from 150 to 600 Å occupy at least about 40% of the total volume of the pores having a diameter smaller than 600 Å.

2. The catalyst of claim 1 wherein pores having a diameter of smaller than 600 Å occupy at least 95% of the total pore volume.

3. The catalyst of claim 2 wherein pores having a diameter of from 150 to 600 Å occupy from about 50 to about 80% of the total volume of the pores having a diameter smaller than 600 Å.

4. The catalyst of claim 3 wherein the silica content of the carrier ranges from about 5 to about 40% by weight of the carrier.

5. The catalyst of claim 4 wherein the catalytic metal or compound thereof comprises at least one metal or an oxide of a metal selected from the noble metals of Group VIII of the Periodic Table.

4,497,910

PROCESS FOR METHANE SYNTHESIS BY CATALYTIC REDUCTION OF CARBON MONOXIDE IN AQUEOUS PHASE

Dang V. Quang, Paris; André Sugier, Rueil Malmaison; Dominique Commereuc, Meudon, and Yves Chauvin, Le Pecq, all of France, assignors to Institut Francais du Petrole, Rueil Malmaison, France

Filed Jul. 28, 1982, Ser. No. 402,673
Claims priority, application France, Jul. 28, 1981, 81 14811; Mar. 25, 1982, 82 05274
Int. Cl.³ C07C 1/04
U.S. Cl. 518—700 12 Claims

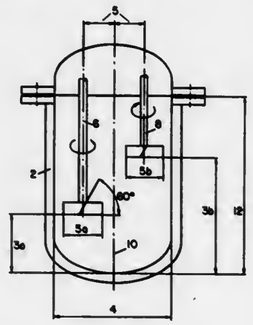
1. A process for the catalytic synthesis of methane, comprising the step of contacting a mixture of carbon oxides and hydrogen, in the presence of liquid water, with a catalyst comprising ruthenium deposited on a carrier formed of vegetable charcoal having a surface area of 200–1500 m^2/g or alumina containing 2–50% by weight of silica.

4,497,911

PRODUCTION OF FINE PARTICULATE, EXPANDABLE STYRENE POLYMERS WITH IMPROVED PROPERTIES

Josef K. Rigler, Recklinghausen; Karl Trukenbrod, and Franz-Michael Bollenrath, both of Marl, all of Fed. Rep. of Germany, assignors to Chemische Werke Hüls AG, Marl, Fed. Rep. of Germany

Filed Jul. 8, 1982, Ser. No. 396,245
Claims priority, application Fed. Rep. of Germany, Jul. 30, 1981, 3130014; Jan. 3, 1982, 3202159
Int. Cl.³ C08F 12/08, 2/18, 2/44; C08J 9/20
U.S. Cl. 521—56 11 Claims



1. A process for the production of fine particulate, expandable styrene polymers of uniform cell structure in a reactor having a given diameter and a vertical axis of symmetry, consisting essentially of the following sequential steps:

(a) filling said reactor to a height of from 0.5 to less than 1.5 times said reactor diameter with styrene or a mixture thereof with at least one monomer copolymerizable therewith in an aqueous suspension in the presence of monomer-soluble, radical-forming initiators and dispersing agents and producing a top surface of said aqueous suspension in contact with a gas phase;

(b) stirring said aqueous suspension with a stirrer parallel to said axis of symmetry and flow impeding means parallel to said stirrer;

(c) polymerizing said styrene or mixture thereof to a monomer conversion of 70 to 85% of polymer beads with said stirring;

(d) adding 3 to 15% by weight of liquid hydrocarbon expanding agents having 5 or more carbon atoms based on the weight of said styrene or mixture thereof;

(e) vigorously stirring said polymer beads being charged with and during addition of said expanding agents with the least possible contact in time and space of said polymer beads and with said gas phase and producing a balance of horizontal and vertical mixing with turbulent flow, said top surface of the stirred aqueous suspension having substantially a topology free of a funnel shape; and

(f) completing the polymerization cycle.

4,497,912

FINE PARTICULATE, EXPANDABLE STYRENE POLYMERS SUITABLE FOR THE PRODUCTION OF RAPIDLY MOLD-EJECTED CELLULAR BODIES

Dirk Reese, Marl, and Josef K. Rigler, Recklinghausen, both of Fed. Rep. of Germany, assignors to Chemische Werke Hüls AG, Marl, Fed. Rep. of Germany

Filed Jun. 18, 1984, Ser. No. 621,270
Claims priority, application Fed. Rep. of Germany, Jul. 14, 1983, 3325392
Int. Cl.³ C08J 9/20
U.S. Cl. 521—59 4 Claims

1. In the method for producing particulate molding compositions for the production of foamed articles by polymerizing styrene monomer in aqueous suspension under intensive mechanical stirring in the presence of an expanding agent and in the presence of water-insoluble high molecular weight compound which is oluble in the styrene monomer and forms a discontinuous phase with the polymer produced, the improvement comprising as said high molecular weight compound a polyoctenamer having a concentration of 0.01 to 2.0 percent by weight based on the styrene.

4,497,913

PROCESS FOR PREPARING A STABLE DISPERSION OF A POLYMER IN A POLYOL AND ITS USE IN THE PRODUCTION OF HIGH RESILIENCE POLYURETHANE FOAM

Maurice C. Raes, Branford; James M. O'Connor, Clinton, and Michael L. Rosin, Madison, all of Conn., assignors to Olin Corporation, New Haven, Conn.

Filed May 31, 1983, Ser. No. 499,651
Int. Cl.³ C08G 18/65, 18/66; C08K 5/05, 5/06
U.S. Cl. 521—137 26 Claims

14. A process for preparing a high resilience polyurethane foam comprising reacting an organic polyisocyanate with a polyol reactant in the presence of a foaming agent and a reaction catalyst, said polyol reactant comprising a stable dispersion of a polymer in a polyol and optionally an additional polyol and containing at least about 60 percent of primary hydroxyl groups, said foam exhibiting a Sag factor in excess of about 2.2, said dispersion being prepared by reacting an organic polyisocyanate with a short-chain polyol in a high molecular weight polyol, wherein:

(a) said short-chain polyol is free of an amine group and has an average molecular weight of about 400 or less and an average functionality of about 2 to about 4 and is selected from the group consisting of low molecular weight diols, polyether diols, triols, tetrols, ester diols, ester triols, ester tetrols, diethoxylated diols, diethoxylated triols, diethoxylated tetrols, triethoxylated diols, triethoxylated triols, triethoxylated tetrols, tetraethoxylated diols, tetraethoxylated triols and tetraethoxylated tetrols;

(b) said high molecular weight polyol is a polyoxyalkylene polyether polyol having an average molecular weight of at least about 1,500, an average functionality of about 2 to about 8 and from about 35 to about 80 percent of primary hydroxyl groups, based on the total number of hydroxyl groups present therein;

(c) the molar ratio of said organic polyisocyanate to said short-chain polyol ranges from about 0.7 to about 1.0;

(d) the organic polyisocyanate/short-chain polyol reaction product constitutes from about 10 to about 30 percent by weight based on the total weight of said organic polyisocyanate, said short-chain polyol and said high molecular weight polyol;

(e) the ratio of the content of primary hydroxyl groups in said short-chain polyol to that in said high molecular weight polyol is defined by the following relationship

$$R = \frac{\Sigma_i (W_{s,i} \times N_{s,i} \times P_{s,i})}{\Sigma_i (W_{H,i} \times N_{H,i} \times P_{H,i})}$$

wherein

$W_{s,i}$ is the weight of each short-chain polyol,

$N_{s,i}$ is the hydroxyl number of each short-chain polyol,

$P_{s,i}$ is the percent of primary hydroxyl groups in each short-chain polyol,

$W_{H,i}$ is the weight of each high molecular weight polyol,

$N_{H,i}$ is the hydroxyl number of each high molecular weight polyol, and

$P_{H,i}$ is the percent of primary hydroxyl groups in each high molecular weight polyol,

said ratio being at least about 3.5; and

(f) said reaction is carried out in the presence of a small proportion of water to reduce the viscosity of said dispersion, said proportion ranging from about 0.1 to about 0.5 percent by weight based on the total weight of said organic polyisocyanate, said short-chain polyol and said high molecular weight polyol.

4,497,914

BREATHABLE OSTOMY GASKET COMPOSITION

Douglas Allen, Jr., Belle Mead, and Eric Flam, East Brunswick, both of N.J., assignors to C. R. Bard, Inc., Murray Hill, N.J.

Filed Jul. 16, 1982, Ser. No. 398,913
Int. Cl.³ C08L 75/04
U.S. Cl. 523—105 12 Claims

1. A polymeric composition, for providing an elastomeric adhesive, breatheable, cohesive, conformable, body fluid generally non-degradable shaped ostomy gasket for use in adherent contact with the skin, which comprises a product derived from the generally non-aqueous reaction of an organic polyisocyanate, and a polyoxyalkylene polyol moiety comprising a mixture of a major portion of polyol having a diol functionality and a minor portion of polyol of at least triol functionality, and having incorporated into the polyol moiety prior to the generally non-aqueous reaction of the polyisocyanate and the polyol moiety a hydrophilic filler wherein there is provided a polymeric matrix characterized by the physical encapsulation of the hydrophilic filler within the polymeric matrix.

4,497,915

MOLDING COMPOSITIONS CONTAINING TRIKETOIMIDAZOLIDINE PRECONDENSATES, THEIR USE, AND A PROCESS FOR PREPARING A TRIKETOIMIDAZOLIDINE PRECONDENSATE COMPOSITE SUITABLE FOR THIS PURPOSE

Ernst Höroldt, Kelkheim; Kurt Kraft, Weisbaden, and Jürgen Ritz, Mainz, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed Aug. 31, 1982, Ser. No. 413,471
Claims priority, application Fed. Rep. of Germany, Sep. 2, 1981, 3134736
Int. Cl.³ C08K 3/34, 3/10, 3/8
U.S. Cl. 523—156 16 Claims

1. A molding composition comprising

(a) 2,4,5-triketoimidazolidine precondensates having terminal groups selected from oxamide esters groups, urethane groups, isocyanate groups and combinations thereof in the form of an amorphous precondensate as a reactive filler,

(b) a customary filler selected from the group consisting of organic fillers, inorganic fillers and combinations thereof, and

(c) at least one further reactive component of a binder which is a polymerization resin having functional groups.

4,497,916

ADHESIVE COMPOSITION ADAPTED FOR SETTING AT A TIME LATER THAN THE TIME OF APPLICATION

Bernard Cooke, Mullingan, and Peter Wrobel, Dublin, both of Ireland, assignors to Loctite (Ireland) Limited, Dublin, Ireland

Filed Aug. 22, 1983, Ser. No. 525,351
Int. Cl.³ B32B 7/12; F16B 39/00; C09J 5/02; C08K 9/10
U.S. Cl. 523—176 18 Claims

1. A curable composition convertible by heating and subsequent cooling from a storage-stable mobile state to a storage-stable non-mobile state in which state the composition requires a further stimulus to cause it to cure, the composition comprising a mobile slurry adapted for application to a substrate, the slurry having a liquid continuous phase and a solid particulate disperse phase, and in which composition the liquid continuous phase comprises a mixture of conventional adhesive or other curable composition ingredients, and the solid disperse phase comprises an organic substance having the following essential properties:

(a) a melting point or range above ambient temperature;

(b) substantial insolubility in the continuous phase at and below ambient temperature; and

(c) substantial solubility in the continuous phase at temperatures above the melting point, or in and above the melting range,

the proportion of the disperse phase to the continuous phase being such that the solution formed by heating, the composition becomes non-mobile and substantially nontacky on cooling it to ambient temperature.

4,497,917

LATEX COMPOSITION COMPRISING CORE-SHELL POLYMER PARTICLES

Donald A. Upson, Webster, and Diane E. Kestner, Hilton, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Sep. 29, 1982, Ser. No. 427,066
Int. Cl.³ C08L 23/00, 31/02; C08F 10/00
U.S. Cl. 523—201 10 Claims

1. A latex composition comprising a continuous aqueous phase having dispersed therein core-shell polymer particles characterized in that the core polymer represents 80–95 weight percent of the entire particle and has a glass transition temperature greater than 70° C., and the shell polymer represents 5–20 weight percent of the entire particle and has a glass transition temperature from 25° C. to 60° C.

2. An element comprising a support and a coalesced continuous layer comprising from 80–95 weight percent of a first polymer having a glass transition temperature greater than 70° C. and from 5–20 weight percent of a second polymer having a glass transition temperature from about 25° C. to 60° C.

4,497,918

THIXOTROPIC UNSATURATED POLYESTER COMPOSITIONS AND METHODS

Satish K. Wason, Churchville, Md., assignor to J. M. Huber Corporation, Borger, Tex.

Continuation of Ser. No. 342,668, Jan. 25, 1982, abandoned, which is a continuation-in-part of Ser. No. 212,461, Dec. 3, 1980, abandoned. This application Jul. 18, 1983, Ser. No. 514,848
Int. Cl.³ C08K 7/00
U.S. Cl. 523—220 16 Claims

1. A thixotropic unsaturated polyester resin, said unsaturated polyester resin being thixotropic by reason of having dispersed therein a thixotropic agent selected from the group consisting of a precipitated silicon dioxide and a mixture of a precipitated silicon dioxide and fumed silica, being the sole thrixotropic agent contained in said polyester resin.

4,497,919

EMULSION POLISH COMPOSITIONS

Stephen I. Varga, Evanston, and Donald P. Mattz, Chicago, both of Ill., assignors to Turtle Wax, Inc., Chicago, Ill.

Filed Sep. 22, 1983, Ser. No. 534,788
Int. Cl.³ C09G 1/04, 1/08, 1/10, 1/12
U.S. Cl. 524—10 18 Claims

1. A water-in-oil emulsion composition suitable for treating natural and synthetic leather articles comprising:

(a) a wax mixture of about 1 part by weight mineral ester wax having an acid value of about 0 to about 55, about 4 parts by weight partly saponified mineral ester wax having an acid value of about 10 to about 45, about 1.5 parts by weight insect wax having an acid value of about 0.2 to about 24;

(b) a film-forming agent that is a curable material selected from the group consisting of a cyclized rubber, an acrylic ester polymer, a drier-modified alkyl resin, an aminofunctional silicone, and mixtures thereof;

(c) a film-modifying agent that is a surfactant selected from the group consisting of a surface-active aminofunctional silicone resin, a linear arylalkyl modified polydialkyl siloxane, a linear alkylated copolymer of vinylpyrrolidone with a long chain C_{12} to C_{22} alpha olefin, and mixtures thereof;

(d) a nonionic, emulsifying agent having an HLB value of about 10 to about 15 and selected from the group consisting of an oil-soluble polyglycerol ester of a hydrophobic fatty acid capable of forming a water-in-oil emulsion, a water-soluble C_8 to C_{18} alkylphenol ether with ethylene oxide having an average number of ethylene oxide units of about 5 to about 70, and mixtures thereof;

(e) about 0.05 to about 0.15 weight percent of an effective amount of an anionic, water-soluble and hydrocarbon insoluble dispersing agent;

(f) about 0.01 to about 0.5 weight percent of a thickening agent selected from the group consisting of a colloidal alkali metal aluminum silicate, a colloidal alkaline earth metal aluminum silicate, a water-soluble nonionic ester of cellulose, a water-soluble anionic ester of cellulose, a water-soluble nonionic ether of cellulose, a water-soluble anionic ether of cellulose, and mixtures thereof;

(g) about 4 to about 20 weight percent of an organic solvent selected from the group consisting of a liquid aliphatic hydrocarbon, a liquid aromatic hydrocarbon, and an oleoresinous liquid, said solvent having an average kauri-butanol value about 50, and mixtures thereof;

(h) an effective amount of a preservative; and

(i) about 25 to 75 weight percent of deionized water;

wherein the wax mixture, the film-forming agent, the film-modifying agent and the nonionic emulsifying agent are present in amounts effective to produce a high gloss that is substantially self-polishing.

4,497,920

SYSTEM FOR BONDING ADDITIVES TO RESIN PARTICLES AND RESULTING COMPOSITION

Lowell S. Thomas, and William P. Paige, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Dec. 17, 1982, Ser. No. 450,716
Int. Cl.³ C08L 5/00; C08J 3/20; C08K 5/49
U.S. Cl. 524—57 9 Claims

1. A carbonate polymer composition in the form of an additive concentrate comprising a carbonate polymer carrier resin having dispersed therein a powdered or crystalline additive and a functionally effective amount of a color and heat stable bonding agent comprising a mixture of

(a) an epoxidized vegetable oil or a bis(dioxaphosphorinane), and

(b) an esterified polysaccharide.

4,497,921

SULFUR STABILIZED OXIDIZED POLYOLEFIN AND ASPHALT COMPOSITION

Irving B. Chang, and Robert E. Beckwith, Jr., both of Morristown, N.J., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Filed Sep. 2, 1983, Ser. No. 528,826
Int. Cl.³ C08L 95/00
U.S. Cl. 524—59 6 Claims

1. A composition comprising asphalt, 1 to 25 weight percent based on the weight of the asphalt of oxidized polyethylene having a Brookfield viscosity at 149° C. of from 100 to 40,000 centipoises, from 0.1 to 10 percent by weight based on the weight of the asphalt of sulfur; 0 to 40 percent by weight based on the weight of the asphalt of an initial viscosity modifier and, 0 to 150 percent by weight based on the weight of the asphalt of a filler.

4,497,922

COMPOSITIONS OF MATERIALS FOR FORMING PROTECTIVE FILM IN SEMICONDUCTOR DEVICE

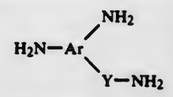
Hidetaka Sato; Shunichiro Uchimura; Isao Uchigasaki, all of Hitachi, and Daisuke Makino, Mito, all of Japan, assignors to Hitachi Chemical Company, Ltd., Tokyo, Japan

Filed Jun. 6, 1983, Ser. No. 501,151
Claims priority, application Japan, Jun. 11, 1982, 57-101027
Int. Cl.³ C08K 5/34
U.S. Cl. 524—104 15 Claims

1. A composition of materials for forming a protective film in a semiconductor device, said film preventing soft errors due to α-rays, which comprises:

(i) a polyamide acid-silicone intermediate obtained by reacting

(a) a purified diaminoamide compound of the formula:



wherein Ar is an aromatic residue; Y is SO_2 or CO, and one of amino groups and the Y—NH_2 group are positioned at ortho position each other,

(b) a purified diaminosiloxane,

(c) a purified diamine, and

(d) a purified aromatic tetracarboxylic acid dianhydride, and

(ii) a purified inert solvent.

4,497,923

SHEAR THICKENING OF ORGANIC DILUENTS VIA INTERPOLYMER COMPLEXES

Robert D. Landberg, Bridgewater; Dennis G. Peiffer, East Brunswick; Ilan Duvdevani, Leonia, and Robert R. Phillips, Spring Lake Heights, all of N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Nov. 2, 1983, Ser. No. 547,904
Int. Cl.³ C08J 3/08, 3/10; C08K 5/01, 5/04
U.S. Cl. 524—107 15 Claims

1. A process for forming a shear thickening organic liquid having a viscosity of at least about 10 cps which includes the steps:

(a) forming a first solution of an organic liquid and a substantially neutralized sulfonated polymer having a sulfonate content of from about 4 to about 200 milliequivalents per 100 grams of said polymer, said sulfonated polymer having a molecular weight of about 1,000 to about 10,000 and having a polymeric backbone selected from the group consisting of polystyrene, poly-t-butylstyrene, ethylene propylene terpolymer, styrenemethylmethacrylate copolymer, polyisobutylene Butyl rubber or polyvinyltoluene, said organic liquid of said first solution being selected form the group consisting of aliphatic hydrocarbons, aromatic hydrocarbons, cyclic aliphatic ethers, aliphatic ethers, chlorinated hydrocarbons, organic ketones or organic aliphatic esters and mixtures thereof, the concentration of said neutralized sulfonated polymer in said first solution being about 0.001 to about 5 g/dl;

(b) forming a second solution of an organic liquid and an amine containing polymer which contains basic nitrogen atoms, wherein the basic nitrogen content ranges from about 4 to about 500 milliequivalents per 100 grams of polymer, the concentration of said amine containing polymer in said second solution being about 0.001 to about 5.0 g/dl, said organic liquid of said second solution being selected form the group consisting of aliphatic hydrocarbons, aromatic hydrocarbons, cyclic aliphatic ethers, aliphatic ethers, chlorinated hydrocarbons, organic ketones or organic aliphatic esters and mixtures thereof; and

(c) mixing said first and second solutions to form an organic liquid having an interpolymer complex of said neutralized sulfonated polymer and said amine containing polymer dissolved therein, a molar ratio of said neutralized sulfonated polymer to said amine containing polymer being about 0.1 t about 20.0, wherein said complex is present at a level of form 0.01% to about 10% and the viscosity of said solution increases by at least 10% as shear rate increases.

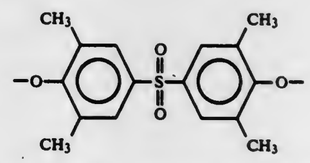
4,497,924

AROMATIC POLYFORMAL BLENDS

Lloyd M. Robeson, Whitehouse Station; James E. Harris, Piscataway, and Louis M. Maresca, Belle Mead, all of N.J., assignors to Union Carbide Corporation, Danbury, Conn.

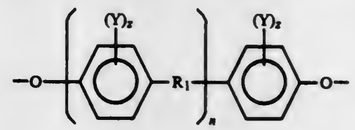
Filed Apr. 18, 1983, Ser. No. 485,949
Int. Cl.³ C08K 5/51
U.S. Cl. 524—151 21 Claims

1. A moldable and compatible blend of 5 to 95 weight percent aromatic polyformal comprising from about 20 weight percent to 100 weight percent of repeating units (I) having the formula



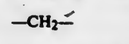
(I)

and from 0 weight percent to about 80 weight percent of repeating units (II) having the formula



(II)

in which the repeating units (I) or the repeating units (I) and the repeating units (II) are connected by interbonding units (III) having the formula



(III)

wherein Y is selected from alkyl groups of 1 to 4 carbon atoms, chlorine or bromine, each z, independently, has a value of from 0 to 4 inclusive, n has a value of 0 or 1, and R_1 is a divalent saturated or unsaturated aliphatic hydrocarbon radical, O, CO, SO_2, S or a direct bond, with the proviso that when R_1 is SO_2 then repeating unit (II) is not the same as repeating unit (I), and

95 to 5 weight percent of a styrene copolymer or terpolymer, vinyl chloride containing polymers or mixtures thereof.

11. A blend as defined in claim 1 wherein a triarylphosphate ester is added at a weight percent of 2 to 12.

4,497,925

FLAME RESISTANT THERMOPLASTIC BLENDS OF POLYPHENYLENE OXIDE, POLYOLEFIN AND HYDRATED ALUMINA

Visvaldis Abolins, Delmar, N.Y.; Joseph E. Betts, Westport, Conn., and Fred F. Holub, Schenectady, N.Y., assignors to General Electric Company, Pittsfield, Mass.

Continuation of Ser. No. 111,961, Jan. 14, 1980, abandoned. This application Aug. 17, 1981, Ser. No. 293,242

Int. Cl.³ C08L *23/02, 83/04*

U.S. Cl. 524—269 **16 Claims**

1. A thermoplastic (non-thermosetting) composition comprising (a) a normally flammable polyolefin resin and (b) a blend of (i) hydrated alumina, (ii) polydiorganosiloxane and (iii) polyphenylene oxide, said blend being present in an amount effective to improve the flame resistance of the polyolefin resin.

4,497,926

ELASTOMER BASED ADHESIVE COMPOSITIONS

Lester T. Toy, Fremont, Calif., assignor to Raychem Corporation, Menlo Park, Calif.

Continuation of Ser. No. 335,137, Dec. 28, 1981, abandoned. This application Mar. 6, 1984, Ser. No. 586,638

Int. Cl.³ C08L *93/00*; C09U *7/02*; B32B *31/00*

U.S. Cl. 524—271 **17 Claims**

1. An adhesive composition consisting essentially of a substantially solvent-free admixture of:

(a) 100 parts by weight of an elastomer selected from the group consisting of polar elastomers and unsaturated elastomers which have at least 5 mole percent unsaturation, said elastomer being a non-crystalline elastomer or an elastomer which has a slow rate of crystallization such that after a time period of at least 100 hours has elapsed following subjecting the elastomer to a temperature of 70° C. for 30 minutes, the elastomer has a room temperature Shore A hardness of less than 60;

(b) 5 to 200 parts by weight of a tackifier;

(c) 0.5–20 parts by weight of an oxide of a metal of Group Ia, IIa, IIb, IVa or VIIb of the Periodic table; and

(d) 0–100 parts by weight of a plasticizer;

said adhesive composition exhibiting a flow of at least 30% at 97° C. under a compressive load of 50 grams.

4,497,927

TIRE TREAD ADHESIVES

Wun T. Tai, Palos Hills, and Kenneth G. Phillips, River Forest, both of Ill., assignors to Nalco Chemical Company, Oak Brook, Ill.

Continuation-in-part of Ser. No. 415,496, Sep. 7, 1982,. This application Jun. 15, 1984, Ser. No. 621,297

Int. Cl.³ C08K *5/01*

U.S. Cl. 524—475 **12 Claims**

1. A tire tread cement comprising a water-in-oil emulsion having an oil continuous phase containing:

Ingredients	Weight %
(a) Vulcanizable rubber compound	0.5–15.0
(b) Organic hydrocarbon liquid solvent having a B.P. greater than 230° F.	1.0–50.0
(c) Water	20.0–80.0
(d) Surfactant having an HLB between about 3.6–18	0.1–10.0
(e) Tackifier	0.0–10.0
(f) Plasticizer	0.0–10.0

and wherein the hydrocarbon liquid solvent has dissolved therein the vulcanizable rubber compound forming the oil continuous phase.

4,497,928

MOLDABLE POLYBLEND CONTAINING POLY(ARYLENE SULFIDE)

Barry D. Dean, Broomall, Pa., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed Jun. 25, 1984, Ser. No. 624,306

Int. Cl.³ C08J *5/12*; C08L *81/00*

U.S. Cl. 524—502 **12 Claims**

1. A moldable polyblend comprising a physical mixture of from about 99 to about 1% by weight of a poly(arylene sulfide) with from about 1 to about 99% by weight of a copolymer containing recurring units of a vinyl aromatic monomer and recurring units of a maleimide monomer.

4,497,929

LATEX COMPOSITIONS COMPRISING LOADABLE POLYMERIC PARTICLES

James W. Brown, Spencerport; Tsang J. Chen, Rochester, both of N.Y., and Michael A. Schen, Amherst, Mass., assignors to Eastman Kodak Company, Rochester, N.Y.

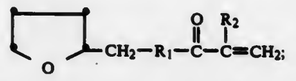
Filed Jul. 19, 1982, Ser. No. 399,404

Int. Cl.³ C08L *41/00, 43/00*

U.S. Cl. 524—547 **15 Claims**

1. A latex composition comprising an aqueous continuous phase having dispersed therein at least 0.5 weight percent of polymer particles characterized in that the polymer is loadable and has recurring units derived from components a, b and c wherein

component a is 30 to 98 weight percent of a tetrahydrofurfuryl monomer having the structure:



in which

R_1 represents O or NH; and

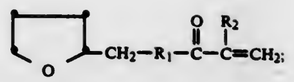
R_2 represents H or lower alkyl of about 1 to 6 carbon atoms;

component b is 2 to 10 weight percent of a monomer selected from the group consisting of hydroxyethyl acrylate, hydroxyethyl methacrylate, hydroxypropyl methacrylate, hydroxypropyl acrylate, 3-chloro-2-hydroxypropyl acrylate, 3-chloro-2-hydroxypropyl methacrylate, 2,2-dimethylhydroxypropyl acrylate, 5-hydroxypentyl acrylate, diethylene glycol monoacrylate trimethylolpropane monoacrylate, pentaerythritol monoacrylate, 2,2-dimethyl-3-hydroxypropyl acrylate, 5-hydroxypentyl methacrylate, diethylene glycol monomethacrylate, trimethylolpropane monomethacrylate, pentaerythritol monomethacrylate, N-methylolmethacrylamide, N-ethyl-N-methylolmethacrylamide, N-ethyl-N-methylolacrylamide, N,N-dimethylolacrylamide, N-ethanolacrylamide, N-propanolacrylamide, N-methylolacrylamide and 2-acrylamido-2-methylpropane sulfonate; and

component c is 0 to 65 weight percent of a hydrophobic monomer selected from the group consisting of vinylidene chloride, styrene, vinyl chloride, vinyl acetate, acrylates and methacrylates.

2. A latex composition comprising an aqueous continuous phase having dispersed therein at least 0.5 weight percent of polymer particles characterized in that the polymer is loaded with a hydrophobe and has recurring units derived from components a, b and c wherein

component a is 30 to 95 weight percent of a tetrahydrofurfuryl monomer having the structure:



in which

R_1 represents O or NH; and

R_2 represents H or lower alkyl of about 1 to 6 carbon atoms;

component b is 2 to 10 weight percent of a monomer selected from the group consisting of hydroxyethyl acrylate, hydroxyethyl methacrylate, hydroxypropyl methacrylate, hydroxypropyl acrylate, 3-chloro-2-hydroxypropyl acrylate, 3-chloro-2-hydroxypropyl methacrylate, 2,2-dimethylhydroxypropyl acrylate, 5-hydroxypentyl acrylate, diethylene glycol monoacrylate trimethylolpropane monoacrylate, pentaerythritol monoacrylate, 2,2-dimethyl-3-hydroxypropyl acrylate, 5-hydroxypentyl methacrylate, diethylene glycol monomethacrylate, trimethylolpropane monomethacrylate, pentaerythritol monomethacrylate, N-methylolmethacrylamide, N-ethyl-N-methylolmethacrylamide, N-ethyl-N-methylolacrylamide, N,N-dimethylolacrylamide, N-ethanolacrylamide, N-propanolacrylamide, N-methylolacrylamide and 2-acrylamido-2-methylpropane sulfonate; and

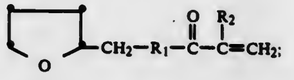
component c is 0 to 65 weight percent of a hydrophobic monomer selected from the group consisting of vinylidene chloride, styrene, vinyl chloride, vinyl acetate, acrylates and methacrylates.

9. A process of preparing a loadable latex composition comprising the steps of:

I. dissolving a polymerization initiator and an emulsifying agent in water

II. mixing

a. 30 to 95 weight percent of a tetrahydrofurfuryl monomer having the structure:



in which

R_1 represents O or NH; and

R_2 represents H or lower alkyl of about 1 to 6 carbon atoms;

b. 2 to 10 weight percent of a monomer selected from the group consisting of hydroxyethyl acrylate, hydroxyethyl methacrylate, hydroxypropyl methacrylate, hydroxypropyl acrylate, 3-chloro-2-hydroxypropyl acrylate, 3-chloro-2-hydroxypropyl methacrylate, 2,2-dimethylhydroxypropyl acrylate, 5-hydroxypentyl acrylate, diethylene glycol monoacrylate trimethylolpropane monoacrylate, pentaerythritol monoacrylate, 2,2-dimethyl-3-hydroxypropyl acrylate, 5-hydroxypentyl methacrylate, diethylene glycol monomethacrylate, trimethylolpropane monomethacrylate, pentaerythritol monomethacrylate, N-methylolmethacrylamide, N-ethyl-N-methylolmethacrylamide, N-ethyl-N-methylolacrylamide, N,N-dimethylolacrylamide, N-ethanolacrylamide, N-propanolacrylamide, N-methylolacrylamide and 2-acrylamido-2-methylpropane sulfonate; and

c. 0 to 65 weight percent of a hydrophobic monomer selected from the group consisting of vinylidene chloride, styrene, vinyl chloride, vinyl acetate, acrylates and methacrylates.

10. A process of preparing a latex composition comprising a loaded polymer, comprising the steps of:

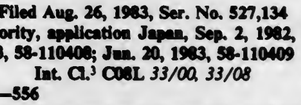
I. preparing a latex composition comprising a loadable polymer;

II. preparing a solution of a hydrophobe dissolved in a water-miscible organic solvent and;

III. gradually adding the latex composition of I to the solution II;

characterized in that the polymer has recurring units derived from components a, b and c wherein:

a. 30 to 95 weight percent of a tetrahydrofurfuryl monomer having the structure:



in which

R_1 represents O or NH; and

R_2 represents H or lower alkyl of about 1 to 6 carbon atoms;

b. 2 to 10 weight percent of a monomer selected from the group consisting of hydroxyethyl acrylate, hydroxyethyl methacrylate, hydroxypropyl methacrylate, hydroxypropyl acrylate, 3-chloro-2-hydroxypropyl acrylate, 3-chloro-2-hydroxypropyl methacrylate, 2,2-dimethylhydroxypropyl acrylate, 5-hydroxypentyl acrylate, diethylene glycol monoacrylate trimethylolpropane monoacrylate, pentaerythritol monoacrylate, 2,2-dimethyl-3-hydroxypropyl acrylate, 5-hydroxypentyl methacrylate, diethylene glycol monomethacrylate, trimethylolpropane monomethacrylate, pentaerythritol monomethacrylate, N-methylolmethacrylamide, N-ethyl-N-methylolmethacrylamide, N-ethyl-N-methylolacrylamide, N,N-dimethylolacrylamide, N-ethanolacrylamide, N-propanolacrylamide, N-methylolacrylamide and 2-acrylamido-2-methylpropane sulfonate; and

c. 0 to 65 weight percent of a hydrophobic monomer selected from the group consisting of vinylidene chloride, styrene, vinyl chloride, vinyl acetate, acrylates and methacrylates.

4,497,930

PROCESS FOR PRODUCING HIGHLY WATER ABSORPTIVE POLYMER

Harumasa Yamasaki; Takatoshi Kobayashi, and Yuzo Sumida, all of Wakayama, Japan, assignors to Kao Corporation, Tokyo, Japan

Filed Aug. 26, 1983, Ser. No. 527,134

Claims priority, application Japan, Sep. 2, 1982, 57-153097; Jun. 20, 1983, 58-110408; Jun. 20, 1983, 58-110409

Int. Cl.³ C08L *33/00, 33/08*

U.S. Cl. 524—556 **11 Claims**

1. A process for producing a highly water absorbent polymer, which comprises:

polymerizing a hydrophilic, carboxylic acid monomer or salt thereof, which monomer is dissolved in water, to obtain a hydrous hydrophilic polymer;

then dehydrating said hydrous hydrophilic polymer until the water content thereof is from 10 to 40 wt.%, based on the total amount of said hydrous hydrophilic polymer,

then adding to said hydrous hydrophilic polymer an effective amount of a crosslinking agent having at least two functional groups in the molecule, which functional groups are capable of reacting with carboxyl and carboxylate groups, and effecting crosslinking of said hydrous hydrophilic polymer.

4,497,931

ANTIOXIDANTS AND LITHIUM ION

Samuel D. Hollis, Savannah, Ga., assignor to Union Camp Corporation, Wayne, N.J.

Division of Ser. No. 292,441, Aug. 14, 1981, abandoned, which is a continuation-in-part of Ser. No. 183,354, Sep. 2, 1980, Pat. No. 4,284,543. This application Jul. 1, 1983, Ser. No. 509,929
Int. Cl.³ C08K 3/22, 3/26, 5/09, 3/10
U.S. Cl. 524—570 3 Claims

1. A method of stabilizing an autooxidizable organic polymer selected from the group consisting of a polyolefin and a polyamide, which comprises; incorporating in the polymer a stabilizing proportion of a composition which consists essentially of an antioxidant and an ionic form of lithium, by forming a molten admixture of said polymer, antioxidant and ionic form of lithium.

4,497,932

AQUEOUS DISPERSIONS OF POLYURETHANES FROM OLIGO URETHANES HAVING UNSATURATED TERMINAL GROUPS

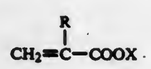
Aldo Trovati, Novara, Italy, assignor to RESEM, S.p.A., Milan, Italy

Filed Jan. 30, 1983, Ser. No. 509,654
Claims priority, application Italy, Jul. 1, 1982, 22178 A/82
Int. Cl.³ C08L 75/04
U.S. Cl. 524—591 6 Claims

1. A process for producing stable aqueous dispersions of polyurethanes containing in the macromolecule hydrophile ionic groups, as "internal" surfactants, both of anionic and cationic nature, which are present in quantities equal to 10–60 meq/100 g of dry polyurethane, said process consisting of the following operating steps:

(a) a mixture consisting of a diol containing ionizable groups, i.e. groups which can be turned into hydrophile anionic or cationic groups, and of an essentially linear macroglycol, having a molecular weight ranging between 500 and 5000, of at least one of the polyolpolyether and polyol-polyester types, is reacted at a temperature not higher than 100° C., with an excess of a diisocyanate (—NCO/—OH ratio in equivalents between 1.2 and 2), thereby obtaining a prepolymer containing free isocyanic groups;

(b) the polyisocyanic prepolymer is then converted to an oligourethane containing vinylic unsaturated terminal groups, by reaction with a compound containing hydroxyl radicals, which are reactive towards the isocyanic group, and having the general formula:



where R is H or CH_2, X is a hydroxyalkyl radical;

(c) the obtained oligourethane is subjected to salification treatments in order to convert the ionizable groups into hydrophile cations or anions, respectively of quaternary ammonium kind or of carboxylic, sulphonic, phosphonic group kind;

(d) the oligourethane containing the hydrophile cationic and anionic groups, is subjected to polymerization treatment of the terminal unsaturated groups, in an aqueous dispersion, in the presence of radicalic catalysts at a temperature not higher than 100° C., so as to obtain an aqueous dispersion of polyurethane having a pre-established reticulation degree, that can be regulated by means of a possible addition of comonomers in the polymerization step.

4,497,933

EMULSIFIER-FREE AND SOLVENT-FREE ALKYD RESIN WATER LACQUERS

Manfred Gorzinski, Duesseldorf; Hans-Christoph Wilk, Neuss; Herbert Fischer, Duesseldorf, and Bernd Wegemund, Haan, all of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf, Fed. Rep. of Germany

Filed Dec. 15, 1983, Ser. No. 561,808
Claims priority, application Fed. Rep. of Germany, Dec. 16, 1982, 3246614
Int. Cl.³ C09D 3/64; C08G 63/20
U.S. Cl. 524—604 13 Claims

1. A process for the preparation of an aqueous alkyd resin composition comprising the steps of

(a) reacting together (i) from about 8 to about 16 mole % of at least one straight chain or branched chain fatty acid, (ii) from about 25 to about 45 mole % of at least one dihydroxy compound, and (iii) from about 14 to about 28 mole % of at least one polyhydroxy compound having at least three hydroxy groups, to form a product having an acid number <5;

(b) reacting the product of step (a) with from about 13 to about 25 mole % of at least one dicarboxylic acid or dicarboxylic acid anhydride or short chain esters or semi-esters thereof and from about 8 to about 15 mole % of at least one tricarboxylic acid or tricarboxylic acid anhydride until a product having an acid number of not more than about 40 is obtained; and

(c) dissolving the product from step (b) in water by the addition of a solubilizing quantity of an amino alcohol containing more than 2 hydroxy groups.

4,497,934

METHOD FOR THE PRODUCTION OF MELAMINE/ALDEHYDE FILAMENTS

William E. Streetman, Williamsburg, Va., assignor to American Cyanamid Company, Stamford, Conn.

Filed May 2, 1984, Ser. No. 606,429
Int. Cl.³ C08L 61/28
U.S. Cl. 525—58 10 Claims

1. A continuous method for the preparation of a melamine-aldehyde filament which comprises:

(a) charging a crystalline melamine compound and a solid aldehyde generating compound into a single pass reactor at a temperature ranging from about 120° C. to about 180° C. for from about 30 seconds to about 5 minutes to form a molten liquid having a melt viscosity ranging from about 1000–5000 poises,

(b) immediately extruding said molten liquid through a spinnerette into a reaction chamber, the first ⅓ of which is maintained at a temperature ranging from about 80°–300° C., the second ⅓ of which is maintained at a temperature ranging from about 150°–400° C. and the third ⅓ of which is maintained at a temperature ranging from about 185°–400° C., in the presence of air, and

(c) recovering the resultant filament.

4,497,935

ELASTOMER TOUGHENED POLYIMIDE ADHESIVES

Anne K. St. Clair, and Terry L. St. Clair, both of Poquoson, Va., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Division of Ser. No. 308,201, Oct. 2, 1981, Pat. No. 4,389,504. This application Jan. 28, 1983, Ser. No. 461,788
Int. Cl.³ C08F 283/04, 283/12; C08G 77/32
U.S. Cl. 525—181 10 Claims

1. An improved adhesive composition comprising a rubber toughened addition type polyimide and consisting of a rubber-modified amic acid prepolymer adhesive formed as the reaction product of an aromatic diamine and an aromatic amine-terminated elastomer combined in a solvent or solvent mixture at room temperature with an aromatic dianhydride reactive endcapping mixture,

said aromatic dianhydride reactive endcapping mixture including one or more dianhydrides selected from the group consisting of:

3,3',4,4'-benzophenone tetracarboxylic acid dianhydride, 4,4'-oxydiphthalic anhydride, 2,2-bis(3-4-dicarboxyphenyl)hexafluoropropane dianhydride, bis(3,4-dicarboxyphenyl)sulfone dianhydride, and bis-4-(3',4'-dicarboxyphenoxy)diphenyl sulfone dianhydride,

and mixed with one or more reactive endcapping agents selected from the group of reactive endcapping agents consisting of:

5-norbornene-2,3'-dicarboxylic anhydride, 4-vinylphthalic anhydride, and 4-ethynylphthalic anhydride.

4,497,936

ELASTOMER-ETHYLENE COPOLYMER HOT MELT SYSTEMS

Jean M. Tancrede, Baton Rouge, La., and Anthony J. Berejka, Huntington, N.Y., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Apr. 11, 1983, Ser. No. 483,492
Int. Cl.³ C08L 33/06, 45/00
U.S. Cl. 525—222 6 Claims

1. An adhesive composition comprising:

(a) an ethylene-vinyl acetate copolymer having a vinyl acetate content of from 10 to 20% by weight and a melt index of from 1500 to 3,500; and,

(b) an olefin elastomer which has a Mooney viscosity of 250° F. of less than about 70 and is present in amount of from 15 to 60 parts by weight per 100 parts by weight of the elastomer and the normally adhesive copolymer together.

4,497,937

POLYMERS CONTAINING ORGANOTIN COMPOUNDS AND PAINT ON THE BASIS THEREOF

Jacob P. van der Klooster, Papendrecht, and Johannes P. M. van Oosterbos, Maassluis, both of Netherlands, assignors to DSM Resins, B.V., Zwolle, Netherlands

Filed Mar. 21, 1983, Ser. No. 477,402
Claims priority, application Netherlands, Mar. 22, 1982, 8201172
Int. Cl.³ G08F 8/42
U.S. Cl. 525—333.1 20 Claims

1. A polymer containing organotin compounds suitable for application as a paint binder, said polymer composed of:

a cyclized rubber polymer having a plurality of pendant phenolate groups of an organotin phenolate, said polymer carbon-carbon bonded to the phenolic residue of said organotin phenolate, said organotin phenolate having the general formula:

$R_3—Sn—O—Z$

wherein in said formula R represents a hydrocarbon group containing from 1 to 15 carbon atoms that is bonded directly to the tin (Sn) and Z represents a phenolic compound containing from 6 to 15 carbon atoms.

4,497,938

THERMOSETTING COATING COMPOSITION - V

Panagiotis I. Kordomenos, Mt. Clemens, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Dec. 27, 1983, Ser. No. 566,066
Int. Cl.³ C08L 63/02, 61/28
U.S. Cl. 525—514 20 Claims

1. An organic solvent based, thermosetting composition comprising:

(A) crosslinkable hydroxy functional epoxy ester resin having a number average molecular weight (Mn) between about 1,000 and about 5,000, said resin being the reaction product of hydroxy functional secondary amine in approximately 1 to 1 molar equivalent ratio with diepoxide comprising the reaction product of diepoxide reactant with dicarboxylic acid reactant; and

(B) polyfunctional, hydroxy-reactive crosslinking agent selected from aminoplast crosslinking agent, blocked polyisocyanate crosslinking agent comprising at least two isocyanate groups blocked by reaction with an active hydrogen bearing blocking agent, and a compatible mixture of any of them, said crosslinking agent being included in an amount such that at the cure temperature of the composition said crosslinking agent will provide between about 0.5 and about 1.6 hydroxy reactive groups per hydroxy group contributed by said epoxy ester resin.

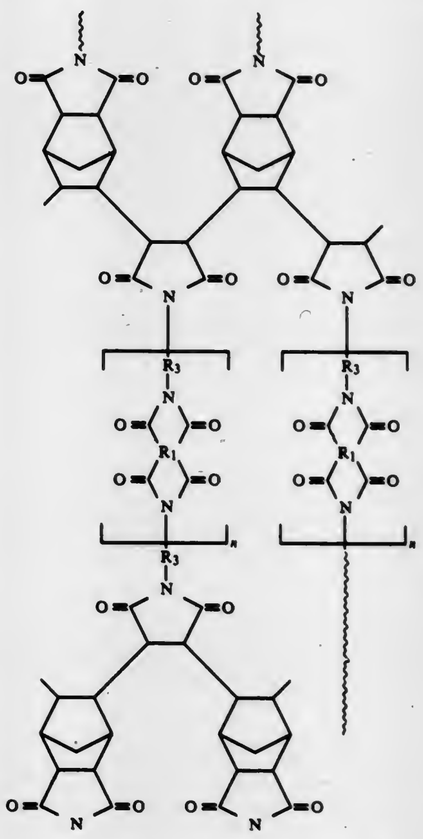
4,497,939

CHEMICAL APPROACH FOR CONTROLLING NADIMIDE CURE TEMPERATURE AND RATE WITH MALEIMIDE

Richard W. Lauver, Rocky River, Ohio, assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Division of Ser. No. 516,217, Jul. 22, 1983,. This application Dec. 14, 1983, Ser. No. 561,429
Int. Cl.³ C08F 22/40
U.S. Cl. 526—262 2 Claims

1. A composition of the formula:



wherein n is an integer of 1 to 20, made by the process comprising increasing the amount of maleic end-capped prepolymer

reactant relative to the amount of norbornenyl end-capped prepolymer reactant and copolymerizing the reactants at temperatures under 300° C.

4,497,940

CHEMICAL APPROACH FOR CONTROLLING NADIMIDE CURE TEMPERATURE AND RATE

Richard W. Lauver, Rocky River, Ohio, assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Division of Ser. No. 516,217, Jul. 22, 1983,. This application Dec. 14, 1983, Ser. No. 561,435

Int. Cl.³ C08F *22/40*

U.S. Cl. 526—262 **4 Claims**

1. A composition comprising a mixture of a phenyl group containing maleic end-capped prepolymer reactant and a phenyl containing norbornenyl end-capped prepolymer reactant capable of copolymerizing at temperatures below 300° C. wherein at least one phenyl group on at least one member of the group consisting of maleic end-capped prepolymer reactant, norbornenyl end-capped prepolymer reactant, or mixtures thereof has at least one electronegative electron-withdrawing substituent.

4,497,941

ETHYLENE COPOLYMERS FOR HOT MELT SYSTEMS

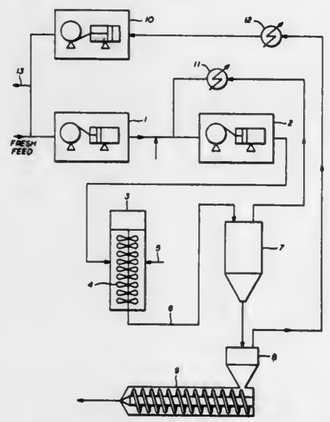
Giorgio Aliani, Waterloo; Jacques B. Lechat, Wezembeek-Oppem, and Jozef A. F. Smits, Berchem, all of Belgium, assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Sep. 30, 1982, Ser. No. 429,481

Claims priority, application United Kingdom, Oct. 16, 1981, 8131337

Int. Cl.³ C08F *218/02*

U.S. Cl. 526—331 **14 Claims**



1. A wax-free hot melt composition comprising a base polymer component and a tackifier, in which the base polymer component consists essentially of at least one ethylene-vinyl acetate copolymer having a vinyl acetate content of from 11 to 40% by weight (based on the copolymer) and a melt index of from 700 to 10,000.

4,497,942

PROCESS FOR HYDROLYZING CHLOROSILANES

Yaw D. Yeboah, Schenectady, and Michael P. Venditti, Clifton Park, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Dec. 14, 1983, Ser. No. 561,262

Int. Cl.³ C08G *77/06*

U.S. Cl. 528—12 **2 Claims**

1. A process which comprises,

(1) introducing organochlorosilane and hydrochloric acid in a proportion of from about 10 to 50 moles of water, per mole of organochlorosilane into a static tubular reactor having elements capable of directing material flow radially towards the reactor wall and back to the elements, where the resulting fluid material is conveyed through the reactor at a rate sufficient to achieve a degree of turbulent mixing capable of substantially converting the organochlorosilane to organopolysiloxane within 60 seconds or less, and where the hydrochloric acid is used at a concentration sufficient to generate anhydrous HCl as a by-product,

(2) recovering the organopolysiloxane and anhydrous HCl from (1).

4,497,943

ORGANOCYCLOPOLYSILOXANE AND A ROOM TEMPERATURE CURABLE COMPOSITION CONTAINING SAME

Toshio Takago; Osamu Sodeyama, and Masami Terashima, all of Gunma, Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

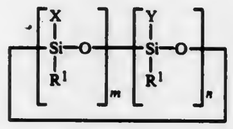
Filed Apr. 21, 1983, Ser. No. 487,203

Claims priority, application Japan, Apr. 26, 1982, 57-69838

Int. Cl.³ C08G *77/06*

U.S. Cl. 528—22 **17 Claims**

1. An organocyclopolysiloxane represented by the general formula



in which

X is an alkenyloxy group of the formula —OCR^3=CH—R^2,

Y is a trimethylsiloxy group of the formula —O—$Si(CH_3)_3$,

R^1 is monovalent hydrocarbon group having from 1 to 8 carbon atoms,

R^2 and R^3 are each independently a hydrogen atom or a substituted or unsubstituted monovalent hydrocarbon group having from 1 to 6 carbon atoms,

m is 2 or 3, and

n is a positive integer with the proviso that m+n is equal to 4.

4,497,944

PROCESS FOR PRODUCING POLYAMIDE-IMIDE RESIN

Hiroshi Nishizawa, Kitaibaraki, and Yoshiyuki Mukoyama, Hitachi, both of Japan, assignors to Hitachi Chemical Company, Ltd., Tokyo, Japan

Filed Nov. 4, 1982, Ser. No. 439,200

Claims priority, application Japan, Nov. 6, 1981, 56-178767

Int. Cl.³ C08G *73/14*

U.S. Cl. 528—49 **21 Claims**

1. A process for producing a polyamide-imide resin which comprises:

reacting an aromatic diisocyanate with a tricarboxylic acid anhydride in approximately equimolar amounts in the

presence of a basic solvent while adjusting the resin content at 40% by weight or more, and

adding at least one compound having one active hydrogen atom selected from the group consisting of a lactam, a lactam and an oxime, and a lactam and an alcohol before, during or after the reaction to adjust the reduced viscosity of the resin to 0.27 or lower.

4,497,945

TOUGH EPOXY POLYMERS FORMABLE BY REACTION INJECTION MOLDING

Robert J. Salloum, Troy, and Richard P. Atkins, Rochester, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Jun. 20, 1983, Ser. No. 505,706

Int. Cl.³ C08G *59/42, 59/62;* C08J *5/00*

U.S. Cl. 528—94 **5 Claims**

1. A method of forming a tough impact resistant epoxy article by reaction injection molding of an epichlorohydrin-bisphenol A epoxy resin, comprising

prereacting a poly(oxypropylene) diol or triol having a molecular weight of about 1,000 to about 3,000 with a chemical excess of an anhydride curing agent for said epoxy to form a prepolymer in which the original hydroxyl groups of said diol or triol are each capped by reaction with a said anhydride molecule, and thereafter

rapidly mixing said prepolymer with suitable amounts of a said epoxy resin and an imidizole catalyst and adding said mixture to a heated mold to polymerize said mixture and therein form said article.

4,497,946

EPOXY PHOSPHATE-CARBOXYL COPOLYMERS AND AQUEOUS COATINGS CONTAINING THE SAME

Kazys Sekmakas, Palatine, and Raj Shah, Schaumburg, both of Ill., assignors to DeSoto, Inc., Des Plaines, Ill.

Filed Apr. 13, 1983, Ser. No. 484,509

Int. Cl.³ C08G *59/00, 65/28*

U.S. Cl. 528—99 **14 Claims**

1. An epoxy phosphate-carboxyl copolymer substantially free of epoxy functionality and formed by copolymerizing monoethylenically unsaturated monomers, including carboxyl-functional monomer, in an organic solvent solution containing an epoxy-functional epoxy phosphate, there being at least 5% of carboxyl-functional monomer and at least 10% of total monomer present in the copolymer.

4,497,947

POLYCARBONATE COMPOSITIONS HAVING IMPROVED HEAT DEFLECTION TEMPERATURE

John R. Sanderson, Austin, Tex., and Sivaram Krishnan, Pittsburgh, Pa., assignors to Mobay Chemical Corporation, Pittsburgh, Pa.

Continuation of Ser. No. 385,132, Jun. 3, 1982, abandoned. This application Dec. 5, 1983, Ser. No. 557,990

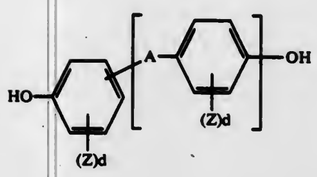
Int. Cl.³ C08G *63/62*

U.S. Cl. 528—174 **6 Claims**

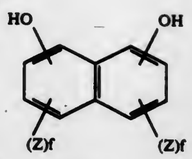
1. An aromatic copolycarbonate molding composition comprising the reaction product of solely

(i) an aromatic diphenol conforming to the structural formulae (1) or (2)

(1)

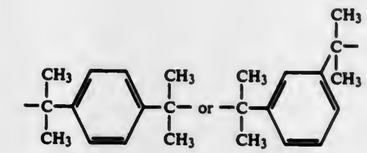


(2)



wherein

A denotes an alkylene group with 1 to 8 carbon atoms, an alkylidene group with 2 to 8 carbon atoms, a cycloalkylene group with 5 to 15 carbon atoms, a cycloalkylidene group with 5 to 15 carbon atoms, a carbonyl group, an oxygen atom, an —SO— or a radical of the general formula



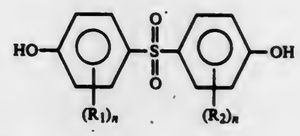
e denotes the number 0 or 1;

Z denotes a C_1–C_4 alkyl and if several Z radicals are substituents in one aryl radical, they may be identical or different;

d denotes 0 to 4;

f denotes 0 to 3;

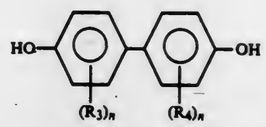
(ii) an aromatic sulfonyl diphenol conforming to



wherein

n denotes 0 to 2 and R_1 and R_2 independently denote H or a C_1–C_4 alkyl;

(iii) a dihydroxybiphenyl conforming to



wherein

R_3 and R_4 independently are H or a C_1–C_4 alkyl and n is 0 to 2;

(iv) a monophenol and

(v) a carbonic acid derivative.

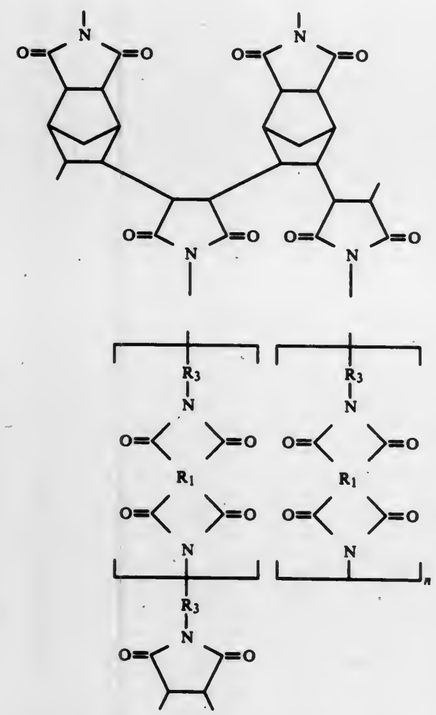
4,497,948

CHEMICAL APPROACH FOR CONTROLLING NADIMIDE CURE TEMPERATURE AND RATE WITH MALEIMIDE

Richard W. Lauver, Rocky River, Ohio, assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

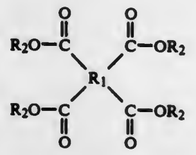
Division of Ser. No. 516,217, Jul. 22, 1983,. This application Dec. 14, 1983, Ser. No. 561,431
Int. Cl.³ C08G *69/02*
U.S. Cl. 528—342 **10 Claims**

1. A process for the production of a polyimide of the general formula:



wherein R_1 is a tetravalent arene radical and R_3 is a divalent arene radical, comprising the steps of: copolymerizing a maleic end capped prepolymer reactant with a stoichiometric amount of norborneny end-capped prepolymer reactant at temperatures under 300° C. and wherein the prepolymer reactants are generated by heating a solution of solvent and from about 30 percent to about 70 percent by weight of a mixture of compounds of the formulae:

(a)

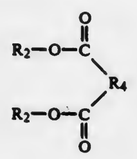


wherein R_1 is a tetravalent arene radical and at least two of R_2 are alkyl with the remainder being hydrogen:
and

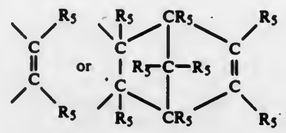
(b) $H_2N—R_3—NH_2$

wherein R_3 is a divalent arene radical: and

(c)



wherein R_2 is defined as in (a) and at least one R_2 in (c) being alkyl, and R_4 is



wherein R_5 is hydrogen or lower alkyl of 1–4 carbons, and wherein the ratio of (a):(b):(c) is n:(n+1):2, wherein n has a value from 1–20, to obtain curable polyimide prepolymers and including the step of promoting Diels-Alder retrogression of the norbornenyl end-capped prepolymer reactant by adding to the norbornenyl reactant a chemical modifier having at least one aromatic ring containing at least one electronegative substituent.

4,497,949

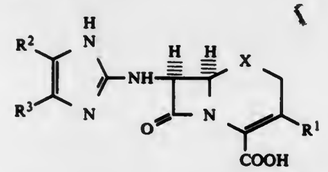
PROCESS FOR THE MANUFACTURE OF CEPHALOSPORIN DERIVATIVES

Frank Loftus, Macclesfield, England, assignor to Imperial Chemical Industries PLC, London, England

Filed Jun. 14, 1982, Ser. No. 388,167
Int. Cl.³ C07D *501/36;* A61K *31/425*
U.S. Cl. 544—27 **5 Claims**

1. A process for the manufacture of a cephalosporin derivative of the Formula I:

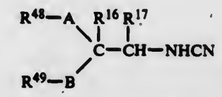
I



in which
X is sulphur, oxygen or sulphinyl;
R^1 is hydrogen, chlorine, methyl, acetoxymethyl, methoxymethyl, hydroxymethyl, azidomethyl, aminomethyl, benzoyloxy methyl, acetylaminomethyl, carbamoyloxymethyl, 2-(1-methyltetrazol-5-ylthio)-trans-vinyl, 1-methyl-1H-tetrazol-5-ylthiomethyl, 1-carboxymethyl-1H-tetrazol-5-ylthiomethyl, 1-(2-dimethylamino)ethyl-1H-tetrazol 5-ylthiomethyl, 1-sulphomethyl-1H-tetrazol-5-ylthiomethyl, 1-isopropyl-1H-tetrazol-5-ylthiomethyl, 1-(2,2,2-trifluoro)ethyl-1H-tetrazol-5-ylthiomethyl, 1-phenyl-1H-tetrazol-5-ylthiomethyl, 1-(2-methylthio)ethyl-1H-tetrazol-5-ylthiomethyl, 1,3,4-thiadiazol-2-ylthiomethyl, 5-methyl-1,3,4-thiadiazol-2-ylthiomethyl, 1,2,3-thiadiazol-5-ylthiomethyl, 1H-1,2,3-triazol-4-ylthiomethyl, 5-trifluoromethyl-1H-1,2,4-triazol-3-ylthiomethyl, 4,6-dimethylpyrimid-2-ylthiomethyl, 2-thiazolin-2-ylthiomethyl, benzoxazol-2-ylthiomethyl, benzthiazol-2-ylthiomethyl, 2-carboxyphenylthiomethyl, (6-carboxymethyl-7-hydroxypyrrolo[1,2-b]pyridazin-2-yl)thiomethyl, 2-methylthio-

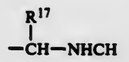
1,3,4-thiadiazol-5-ylthiomethyl, 2-mercapto-1,3,4-thiadiazol-5-ylthiomethyl, 2-acetylamino-1,3,4-thiadiazol-5-ylthiomethyl, 5-methyl-1,2,4-thiadiazol-2-ylthiomethyl, 2-sulphomethyl-1,2,4-oxadiazol-5-ylthiomethyl, 4-methyl-5-(3-carboxypropyl)thiazol-2-ylthiomethyl, 2H-2-methyl-1,2,3-triazol-4-ylthiomethyl, 1H-1,2,4-triazol-2-ylthiomethyl, 4,5-dihydro-6-hydroxy-4-methyl-5-oxo-1,2,4-triazin-3-ylthiomethyl, 2,5-dihydro-6-hydroxy-2-methyl-5-oxo-1,2,4-triazin-3-ylthiomethyl, 1-oxidopyrid-2-ylthiomethyl, imidazo[4,5-b]pyrid-2-ylthiomethyl or imidazo[4,5-d]pyrimidin-2-ylthiomethyl; and
R^2 and R^3 are hydrogen;
which comprises reacting a compound of the formula XXXIII:

XXXIII



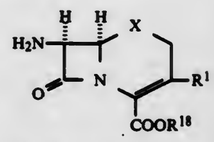
in which R^{16} and R^{17} are hydrogen, A and B are oxygen and R^{48} and R^{49} are joined to form an ethylene or propylene chain which is optionally substituted by one or two 1–6C alkyl radicals or R^{48} and R^{49}, which may be the same or different, are 1–6C alkyl or 1–6C alkanoyl radicals, or R^{48} and R^{49} are joined to form a 1,3,5-trioxane ring which is substituted on the remaining two carbon atoms by radicals of the formula XXXIV:

XXXIV



with a compound of the Formuls X^1:

X^1



in which X and R^1 have the meanings stated above and R^{18} is hydrogen, t-butyl, diphenylmethyl, benzyl, p-nitrobenzyl, p-methoxybenzyl or 2,2,2-trichloroethyl.

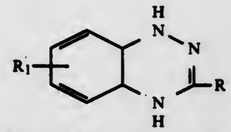
4,497,950

BENZOTRIAZINE COMPOUNDS

Emmett S. McCaskill, Wellesley, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Division of Ser. No. 450,373, Jan. 31, 1983, Pat. No. 4,420,551. This application Sep. 28, 1983, Ser. No. 536,788
Int. Cl.³ C07D *253/08*
U.S. Cl. 544—183 **2 Claims**

1. A compound represented by the formula



wherein R is, alkoxy having from 1 to 6 carbon atoms or phenyl, R_1 is —COOH, $—NH_2$ or $—NHSO_2R_2$, and R_2 is alkyl having from 1 to 6 carbon atoms.

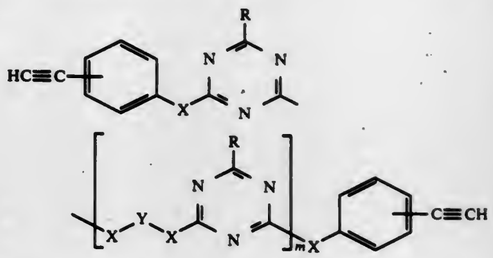
4,497,951

ETHYNYL-PHENYLENE-SUBSTITUTED-1,3,5-TRIAZINE DERIVATIVES AND PROCESS FOR THEIR PRODUCTION

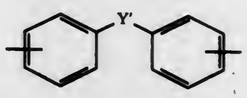
Thomas W. Giants, Santa Monica, Calif., assignor to Hughes Aircraft Company, El Segundo, Calif.

Division of Ser. No. 326,792, Dec. 3, 1981, Pat. No. 4,442,278. This application Apr. 21, 1983, Ser. No. 487,336
Int. Cl.³ C07D *253/04, 403/10, 403/12, 403/14*
U.S. Cl. 544—206 **9 Claims**

1. An oligomer of the formula



where m is zero or 1; R is lower alkyl, lower alkoxy, phenyl, or phenoxy; X is selected from the group consisting of a single bond; —O—; —S—; —N(—R')— where R' is H, lower alkyl, or phenyl; -phenylene-; -biphenylene-; $—(CH_2)_n—$ where n is an integer from 1 to about 4; $—C(C_nH_{2n+1})_2—$ where n is an integer from 1 to about 4; $—C(Ar)_2—_n$ where n is an integer from 1 to about 4 and Ar is phenyl; Y is



where Y' is selected from the group consisting of a single bond, —C(=O)—, $—S(O_2)—$, —S—, —O—, or $—C(CF_nH_{3-n})_2—$ where n ranges from 0 to 3.

4,497,952

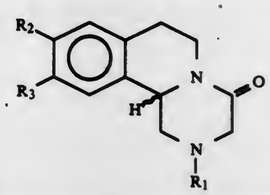
PROCESS FOR THE PRODUCTION OF (±)-4-OXO-1,2,3,6,7,11b-HEXAHYDRO-4H-PYRAZINO[2,1-A]ISOQUINOLINE DERIVATIVES

Choong S. Kim; Nam J. Lee, and Joong H. Kim, all of Seoul, Rep. of Korea, assignors to Korea Advanced Institute of Science and Technology, Seoul, Rep. of Korea

Filed Jul. 8, 1983, Ser. No. 511,999
Claims priority, application Rep. of Korea, Jul. 8, 1982, 1982-3036; May 30, 1983, 1983-2413
Int. Cl.³ C07D *471/04, 241/08*
U.S. Cl. 544—344 **13 Claims**

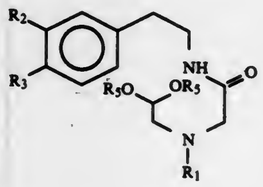
1. A process for the production of (±)-4-oxo-1,2,3,6,7,11b-hexahydro-4H-pyrazino[2,1-a]isoquinolines of formula I:

I

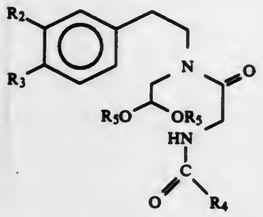


which comprises an intramolecular cyclization reaction of a compound of formula II or III, in an acid medium, wherein said acid is at least one member selected from the group con-

sisting of sulfuric acid, hydrochloric acid, phosphoric acid, polyphosphoric acid (PPA), formic acid, acetic acid, trichloroacetic acid, trifluoroacetic acid, methanesulfonic acid, p-toluene-sulfonic acid and boron trifluoride etherate, with or without organic solvent,



II



III

wherein R_1 represents hydrogen, a loweralkyl or R_4CO; R_2 and R_3 each independently represent hydrogen, a loweralkyl or alkoxy; R_4 represents hydrogen, a loweralkyl, cyclopropyl, cyclobutyl, cyclopentyl, cyclohexyl, phenyl or phenyl substituted by one or more of the radicals selected from the group consisting of C_1–C_6 alkyl, halogen, nitro and C_1–C_6 alkoxy, and R_5 represents methyl, ethyl or methylene.

4,497,953

IMIDO, AMIDO AND AMINO DERIVATIVES OF MERCAPTOACYL PROLINES AND PIPECOLIC ACIDS

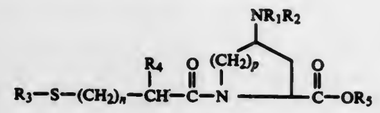
John Krapcho, Somerset, and Peter C. Wade, Pennington, both of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Division of Ser. No. 286,921, Jun. 1, 1981, Pat. No. 4,390,695, which is a division of Ser. No. 162,341, Jun. 23, 1980, Pat. No. 4,310,461. This application Jan. 3, 1983, Ser. No. 454,936

Int. Cl.³ C07D *401/04, 403/04*

U.S. Cl. 546—99 **13 Claims**

1. A compound having the formula



wherein R_1 and R_2 together with the nitrogen atom to which they are attached are 2H-isoindol-2-yl-1,3-dione, hexahydro-2H-isoindol-2-yl-1,3-dione, 1,1,3-trioxo-1,2-benzisothiazol-2-(3H)-yl, or 1,3-dihydro-1,3-dioxo-2H-benz[de]isoquinolin-2-yl;

R_3 is hydrogen, alkyl, aryl, arylalkyl, alkanoyl or arylcarbonyl;

R_4 is hydrogen, alkyl, alkylthio, or trifluoromethyl;

R_5 is hydrogen, alkyl, or arylalkyl;

n is 0, 1 or 2; and

p is 1 or 2;

or a non-toxic, physiologically acceptable salt thereof, or symmetrical dimer thereof; wherein the term "aryl" refers to phenyl, 1-napththyl, 2-naphtyl, or pheny substituted with halogen, alkyl, alkoxy, alkylthio, hydroxy, alkanoyl, nitro, amino, dialkylamino, phenyl or trifluoromethyl groups; the term "alkanoyl" refers to groups having up to 9 carbon atoms; and the terms "alkyl" and "alkoxy" refer to groups having 1 to 8 carbon atoms.

4,497,954

CYCLOPENTANONE DERIVATIVES

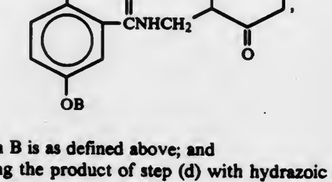
Elden H. Banitt, Woodbury, Minn., assignor to Riker Laboratories, Inc., St. Paul, Minn.

Filed Nov. 15, 1983, Ser. No. 551,965

Int. Cl.³ C07D *211/76*

U.S. Cl. 546—221 **2 Claims**

1. A process for preparing a compound of the formula



wherein B' is hydrogen or $—CH_2CF_3$, comprising the steps of:

(a) converting 2-oxocyclopentanecarboxylic acid ethylene ketal to 2-oxocyclopentanecarboxamide ethylene ketal;

(b) reducing the product of step (a) to (2-oxocyclopentane)-methylamine ethylene ketal;

(c) reacting the product of step (b) with a reactant of the formula

wherein B is benzyl or $—CH_2CF_3$, to provide a product of the formula

wherein B is as defined above;

(d) hydrolyzing the product of step (c) to provide a product of the formula

wherein B is as defined above; and

(e) reacting the product of step (d) with hydrazoic acid to provide said compound;

with the provisos that when B is benzyl, step (e) provides said compound wherein B' is hydrogen, and when B is $—CH_2CF_3$, step (e) provides said compound wherein B' is $—CH_2CF_3$.

4,497,955

PREPARATION OF 2-CHLORO-5-TRICHLOROMETHYL PYRIDINE FROM LOWER CHLORINATED BETA-PICOLINES

Michael J. Marinak, Kelso, and John L. Simonson, Longview, both of Wash., assignors to Kalama Chemical, Inc., Kalama, Wash.

Filed Sep. 24, 1982, Ser. No. 422,755

Int. Cl.³ C07D *213/61*

U.S. Cl. 546—345 **10 Claims**

1. The process of producing 2-chloro-5-trichloromethyl pyridine from mixtures containing lower chlorinated beta-picolines selected from the group consisting of 3-trichloromethyl pyridine, 2-chloro-5-dichloromethyl pyridine, and mixtures thereof, said process comprising non-catalytic liquid phase chlorination of such lower chlorinated beta-picolines at a temperature of from about 130° C. to about 160° C. for a time to substantially maximize the 2-chloro-5-trichloromethyl pyridine content of the chlorinated product.

4,497,956

MANUFACTURE OF ANTIBIOTICS

Brian E. Looker, Greenford, England, assignor to Glaxo Group Limited, London, England

Filed Nov. 12, 1982, Ser. No. 441,250

Claims priority, application United Kingdom, Nov. 13, 1981, 8134358

Int. Cl.³ C07D *277/40*

U.S. Cl. 548—194 **5 Claims**

1. Crystalline ethyl(Z)-2-(2-t-butoxycarbonylprop-2-oxyimino)-2-(2-triphenylmethylaminothiazol-4-yl)acetate in association with 0.4 to 2 moles of methanol per mole of ester.

4,497,957

PROCESS FOR PREPARING OPTICALLY ACTIVE TRYPTOPHANS

Mamoru Nakai; Tokio Ohshima; Tomio Kimura; Tetsuo Omata, and Noritada Iwamoto, all of Ube, Japan, assignors to Ube Industries, Ltd., Yamaguchi, Japan

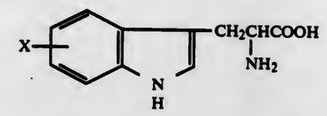
Continuation-in-part of Ser. No. 276,057, Jun. 22, 1981, abandoned. This application Jun. 25, 1982, Ser. No. 391,997

Claims priority, application Japan, Jun. 24, 1980, 55-84618

Int. Cl.³ C07D *209/20*

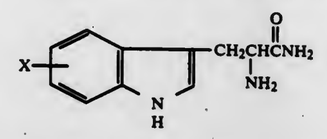
U.S. Cl. 548—496 **11 Claims**

1. A process for preparing optically active L-tryptophans having the formula,



wherein X represents hydrogen, hydroxyl group, halogen atoms, lower alkyl groups or lower alkoxy groups comprising the steps of:

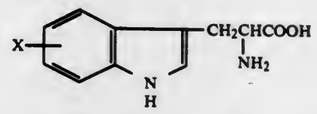
(a) interacting DL-tryptophan amides having the formula,



wherein X is as defined above with (i) a cultivation mixture of a microorganism capable of producing amidase, (ii) a culture broth or cells separated from the cultivation mixture, (iii) the amidase isolated from the culture broth or cells, or (iv) immobilized preparations of the cultivation mixture, the culture broth or cells, or the amidase, said microorganism being selected from the group of genera Trichoderma, Rhodotorula, Nocardia, Mycobacterium, Bacillus, Rhizopus, Candida, Streptomyces, Aerobacter, Pseudomonas, Gibberella, Torulopsis, Enterobacter, and Trichosporon, whereby the asymmetric hydrolysis of L-tryptophan amides is effected; and

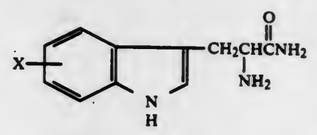
(b) separating the resultant L-tryptophanes from the asymmetrically hydrolyzed mixture.

5. A process for preparing optically active D-tryptophans having the formula,



wherein X represents hydrogen, hydroxyl group, halogen atoms, lower alkyl groups or lower alkoxy groups comprising the steps of:

(a) interacting DL-tryptophan amides having the formula,



wherein X is as defined above with (i) a cultivation mixture of a microorganism capable of producing amidase, (ii) a culture broth or cells separated from the cultivation mixture, (iii) the amidase isolated from the culture broth or cells, or (iv) immobilized preparations of the cultivation mixture, the culture broth or cells, or the amidase, said microorganism being selected from the group of genera Trichoderma, Rhodotorula, Nocardia, Mycobacterium, Bacillus, Rhizopus, Candida, Streptomyces, Aerobacter, Pseudomonas, Gibberella, Torulopsis, Enterobacter, and Trichosporon, whereby the asymmetric hydrolysis of L-tryptophan amides is effected;

(b) separating the resultant L-tryptophans obtained from the asymmetric hydrolysis of L-tryptophan amides, and;

(c) hydrolyzing the resultant D-tryptophan amides.

4,497,958

PROCESS FOR OXIDIZING A CARBOXYLIC ANHYDRIDE WITH HETEROGENEOUSLY PREPARED VANADIUM-PHOSPHORUS-OXYGEN CONTAINING CATALYST COMPOSITION

Tai-Cheng Yang, Mahwah; Krishna K. Rao, Paterson, and I-der Huang, Upper Saddle River, all of N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.Y.

Division of Ser. No. 381,206, May 24, 1982, Pat. No. 4,439,921. This application Oct. 3, 1983, Ser. No. 538,119

Int. Cl.³ C07D *307/60, 307/89, 307/92*

U.S. Cl. 549—239 **3 Claims**

1. A process for oxidizing in the vapor phase at least one feed hydrocarbon to a carboxylic anhydride which comprises contacting the feed hydrocarbon, under conditions and in a manner sufficient to form at least one carboxylic anhydride, with a catalyst composition comprising vanadium, phosphorus, and oxygen, said catalyst composition being prepared by the process which comprises:

(a) admixing to form a heterogeneous suspension at least one pentavalent vanadium compound with at least one organic alcohol in a manner and under conditions sufficient to condition said vanadium compound and reduce at least a portion of the pentavalent vanadium to a +4 valence state;

(b) admixing at least one organic alcohol, said conditioned

vanadium compound and at least one phosphorus containing compound, in a manner and under conditions sufficient to form a heterogeneous suspension of a vanadium-phosphorus-oxygen containing catalyst precursor composition having a vanadium valence of from about 3.9 to about 4.7, and a phosphorus to vanadium atomic ratio of from about 0.5:1 to about 2:1;

(c) separating said catalyst precursor composition from said admixture; and

(d) activating said catalyst precursor composition in the absence of air alone by contacting it with an atmosphere comprising a mixture of air and at least one hydrocarbon.

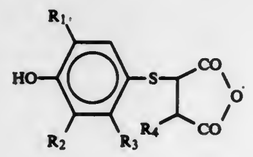
4,497,959

SUBSTITUTED (4-HYDROXYPHENYLTHIO) SUCCINIC ANHYDRIDE OR SUCCINATE STABILIZERS

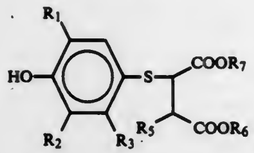
John D. Spivack, and Stephen D. Pastor, both of Spring Valley, N.Y., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Feb. 3, 1983, Ser. No. 463,176
Int. Cl.³ C07D 307/64
U.S. Cl. 549—253 **16 Claims**

1. A compound of formula I or II



(I)



(II)

wherein

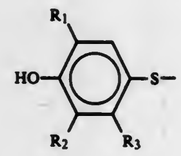
R_1 and R_2 are independently alkyl of 1 to 18 carbon atoms, cycloalkyl of 5 to 6 carbon atoms, phenyl or phenyl substituted by alkyl of 1 to 12 carbon atoms, aralkyl of 7 to 9 carbon atoms or said aralkyl substituted by alkyl of 1 to 12 carbon atoms;

R_2 may also represent hydrogen;

R_3 is hydrogen or methyl;

R_4 is hydrogen, alkyl of 1 to 6 carbon atoms, or phenyl;

R_5 is hydrogen, alkyl of 1 to 6 carbon atoms, alkylthio of 1 to 18 carbon atoms, phenylthio, or a group of the structure



where

R_1, R_2 and R_3 are defined above; and

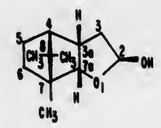
R_6 and R_7 are independently hydrogen, alkyl of 1 to 30 carbon atoms, alkyl of 2 to 4 carbon atoms substituted by alkenoyloxy of 3 to 4 carbon atoms, phenyl or phenyl substituted by alkyl of 1 to 12 carbon atoms.

4,497,960

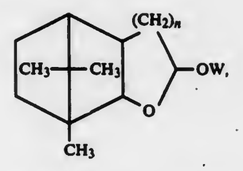
CHIRAL, OPTICALLY ACTIVE COMPOUNDS USEFUL AS PROTECTIVE GROUPS FOR HYDROXY, THIOL AND AMINO COMPOUNDS

Christian Noe, Larochegasse 20/7, A-1130 Vienna, Austria

Filed Dec. 6, 1982, Ser. No. 446,944
Claims priority, application Austria, Dec. 18, 1981, 5453/81
Int. Cl.³ C07D 311/94, 307/93
U.S. Cl. 549—386 **12 Claims**

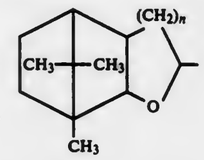


1. Chiral, optically active (R)-enantiomer or (S)-enantiomer of the general formula

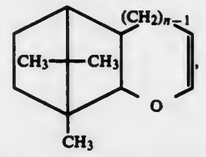


(Ia)

wherein W represents H, alkyl, cycloalkyl or



and n=1 or 2, or the anhydro compound of the general formula



(Va)

wherein n has the same meaning as in the hydrated form of formula Ia.

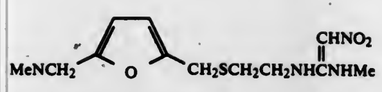
4,497,961

PROCESS FOR THE PREPARATION OF RANITIDINE

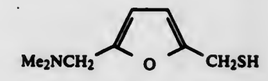
John W. Clitherow, Hertfordshire, England, assignor to Glaxo Group Limited, London, United Kingdom

Continuation of Ser. No. 223,484, Jan. 8, 1981, abandoned. This application Dec. 9, 1982, Ser. No. 448,075
Claims priority, application United Kingdom, Jan. 8, 1980, 800581; Dec. 8, 1980, 803936
Int. Cl.³ C07D 307/52
U.S. Cl. 549—495 **8 Claims**

1. A process for the preparation of the furan derivative of formula (I)

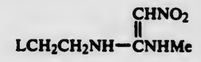


which comprises reacting a thiol of formula (II)



(II)

with an alkylating agent of formula (III)



(III)

where L is a halogen atom.

4,497,962

PREPARATION OF POLYSILOXANE/POLYOXYALKYLENE COPOLYMER USEFUL AS STABILIZERS IN MAKING POLYURETHANE FOAMS

Armand de Montigny, Leverkusen; Hans-Walter Illger, Roesrath; Alberto C. Gonzalez-Doerner, Leverkusen, and Hans-Heinrich Moretto, Cologne, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Division of Ser. No. 165,571, Jul. 2, 1980, Pat. No. 4,355,171. This application Jun. 15, 1982, Ser. No. 388,565
Claims priority, application Fed. Rep. of Germany, Jul. 21, 1979, 2929588
Int. Cl.³ C07F 7/08, 7/18
U.S. Cl. 556—446 **1 Claim**

1. A polyorganopolysiloxane of the formula

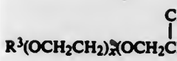
$$(R^1Si(OSiR_2)_n)_mZ_{m-1}(OR^2)_{m+2}$$

in which

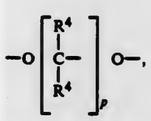
R is an optionally halogen-substituted alkyl group with up to 4 C atoms,

R^1 is the substituent R or a phenyl radical,

R^2 is an aliphatic, optionally unsaturated radical with up to 18 C atoms or a group of the formula



Z is



R^3 is a hydrocarbon radical with up to 4 C atoms,

R^4 each independently is R^3,

n is from 3 to 30,

m is above 1 up to 15,

x is from 0 to 68,

y is from 0 to 52,

x+y is from 1 to 68, and

p is from 2 to 12.

4,497,963

PROCESS FOR THE PREPARATION OF AN ALIPHATIC, CYCLOALIPHATIC, AND/OR ALIPHATIC-CYCLOALIPHATIC DI- AND/OR POLYURETHANE

Franz Merger, Frankenthal, and Friedrich Towae, Ludwigshafen, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Mar. 31, 1980, Ser. No. 135,259
Claims priority, application Fed. Rep. of Germany, Apr. 30, 1979, 2917490
Int. Cl.³ C07C 125/073
U.S. Cl. 560—115 **11 Claims**

1. A process for the preparation of an aliphatic, cycloaliphatic, and/or aliphatic-cycloaliphatic di- and/or polyurethane comprising the steps of

A. reacting a primary aliphatic, cycloaliphatic, and/or aliphatic-cycloaliphatic di- and/or polyamine with an O-alkyl carbamate in the presence of an alcohol at temperatures of 160° C. to 300° C., and

B. separating the ammonia and other by-products from the aliphatic and/or cycloaliphatic di- and/or polyurethane.

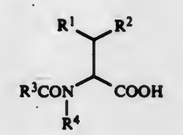
4,497,964

PROCESS FOR PRODUCTION OF N-ACYL-α-AMINO ACIDS

Iwao Ojima, and Kenji Hirai, both of Sagamihara, Japan, assignors to Sagami Chemical Research Center, Tokyo, Japan

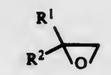
Filed Nov. 15, 1982, Ser. No. 441,853
Claims priority, application Japan, Nov. 17, 1981, 56-183146
Int. Cl.³ C07C 51/12
U.S. Cl. 562—406 **15 Claims**

1. A process for producing an N-acyl-α-amino acid of the formula



(I)

wherein R^1, R^2, R^3 and R^4, independently of each other, represent hydrogen; alkyl or cycloalkyl of up to 20 carbon atoms which may be substituted by halogen, benzyloxy, phenoxy, p-methoxyphenoxy, o-chlorophenoxy, naphthoxy, phenyl, tolyl, xylyl, anisyl or p-dimethylaminophenyl; or an aryl or heteroaromatic group which may be substituted by benzyloxy, hydroxyl, halogen, dimethylamino, acetylamino, methylthio, ethylthio, phenylthio of benzylthio, said aryl or heteroaromatic group being phenyl, naphthyl, furyl, pyrrolyl, pyridinyl, thienyl or indolyl, which comprises reacting an oxirane of the formula



(II)

wherein R^1 and R^2 are as defined above, an amide compound of the formula

$$R^3CONHR^4 \quad \text{(III)}$$

wherein R^3 and R^4 are as defined above, and carbon monoxide in the presence of hydrogen, a cobalt-containing catalyst, and a promoter comprising a compound containing a metal selected from Groups I, II, III and IV of the periodic table.

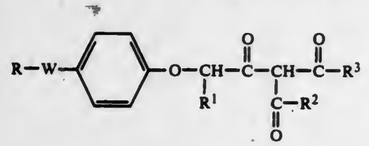
4,497,965

SUBSTITUTED PHENOXYALKANETRIONES

Shy-Fuh Lee, Sunnyvale, Calif., assignor to Zoecon Corporation, Palo Alto, Calif.

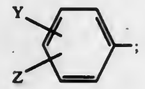
Division of Ser. No. 405,852, Aug. 6, 1982, Pat. No. 4,448,966.
This application Mar. 1, 1984, Ser. No. 585,050
Int. Cl.³ C07C *49/603*
U.S. Cl. 568—325 **6 Claims**

1. A compound of the following formula (A):



(A)

wherein,
R is



R^1 is hydrogen or lower alkyl;
R^2 is lower alkyl;
R^3 is lower alkyl;
W is oxygen, sulfur or amino; and
each of Y and Z is independently selected from hydrogen, lower alkyl, lower haloalkyl, lower alkoxy, lower haloalkoxy, halogen, nitro and cyano.

4,497,966

PROCESS FOR THE PREPARATION OF NITROPHENYLALKANOLS

Robert van Helden, and Petrus A. Kramer, both of Amsterdam, Netherlands, assignors to Shell Oil Company, Houston, Tex.

Filed Sep. 7, 1983, Ser. No. 529,910
Claims priority, application United Kingdom, Sep. 14, 1982, 8226198; European Pat. Off., Jul. 29, 1983, 83201131
Int. Cl.³ C07C *79/24*
U.S. Cl. 568—705 **8 Claims**

1. A process for the preparation of nitrophenylalkanols comprising the hydroxyalkylation of nitrotoluene(s) by the reaction with an aldehyde containing from 1 to 8 carbon atoms in the presence of a solid catalyst prepared by impregnating alumina with a solution containing an alkali metal carbonate or an alkali metal compound which is converted by heating into an alkali metal carbonate, followed by heating at a temperature at which the carbonate loses carbon dioxide.

4,497,967

PROCESS FOR THE PREPARATION OF ETHANOL FROM METHANOL, CARBON MONOXIDE AND HYDROGEN

Chee-Gen Wan, Fort Lee, N.J., assignor to The Halcon SD Group, Inc., New York, N.Y.

Filed Jun. 15, 1984, Ser. No. 621,271
Int. Cl.³ C07C *29/136*
U.S. Cl. 568—885 **7 Claims**

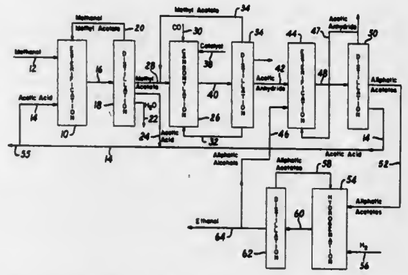
1. A process for the preparation of ethanol from methanol, carbon monoxide and hydrogen feedstocks, comprising the steps of

(a) reacting methanol and acetic acid in a first esterification zone to form methyl acetate;

(b) reacting the formed methyl acetate with carbon monoxide in a carbonylation zone to form acetic anhydride;

(c) reacting the formed acetic anhydride with at least one lower aliphatic alcohol in a substantially anhydrous second esterification zone to form the corresponding lower aliphatic acetates and acetic acid;

(d) reacting the formed lower aliphatic acetates with hydrogen in a substantially anhydrous hydrogenation zone to form both ethanol and also the corresponding aliphatic alcohols from the acetates;



(e) separating the formed alcohol into a first ethanol product stream and a second stream comprising the formed corresponding aliphatic alcohols; and

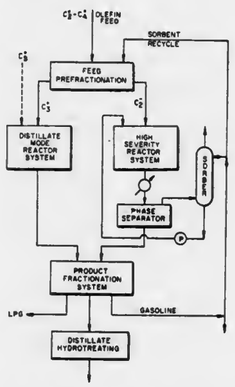
(f) recycling the second stream to the second esterification zone.

4,497,968

MULTISTAGE PROCESS FOR CONVERTING OLEFINS OR OXYGENATES TO HEAVIER HYDROCARBONS

Bernard S. Wright, East Windsor; Hartley Owen, Belle Mead, and Chung H. Hsia, Matawan, all of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Apr. 11, 1984, Ser. No. 598,955
Int. Cl.³ C07C *1/00*
U.S. Cl. 585—304 **9 Claims**



1. A continuous catalytic process for converting olefinic feedstock comprising ethylene and C_3^+ olefins to heavier liquid hydrocarbon product comprising the steps of

(a) prefractionating the olefinic feedstock to obtain a gaseous stream rich in ethylene and a liquid stream containing C_3^+ olefin;

(b) heating and contacting the liquid stream from the prefractionating step with shape selective medium pore zeolite oligomerization catalyst in a distillate mode catalytic reactor system at elevated temperature and pressure to provide a heavier hydrocarbon effluent stream comprising distillate, gasoline and lighter hydrocarbons;

(c) fractionating the effluent stream to recover distillate, gasoline and lighter hydrocarbons;

(d) recycling at least a portion of the recovered gasoline as a first liquid sorbent stream to prefractionating step (a);

(e) further reacting the recycled gasoline together with sorbed C_3^+ olefin in the catalytic reactor system of step (b);

(f) combining said ethylene-rich gaseous stream from step (a) with a liquid hydrocarbon stream containing heavier liquid hydrocarbons;

(g) contacting the combined ethylene-rich stream at elevated temperature and pressure in a high severity reaction zone with shape selective medium pore zeolite oligomerization catalyst to convert at least a portion of the olefinic components to heavier hydrocarbons;

(h) cooling oligomerization reaction effluent from step (g) to condense at least a portion of said heavier hydrocarbons;

(i) separating the cooled and partially condensed effluent stream from step (h) into a vapor stream comprising unreacted light olefin and a condensed liquid hydrocarbon stream;

(j) fractionating said condensed liquid hydrocarbons from step (i) to provide a second liquid recycle sorbent stream and at least one product hydrocarbon stream;

(k) contacting the vapor stream from separation step (i) under sorption pressure conditions with cooled recycle sorbent stream to sorb said unreacted light olefin into the second sorbent stream; and

(l) recycling the second sorbent stream rich in olefin for further conversion with said olefinic feedstock in step (g).

4,497,969

PROCESS FOR THE PRODUCTION OF CATALYSTS BASED ON CRYSTALLINE ALUMINOSILICATES AND THE USE OF CATALYST SO PRODUCED

William J. Ball, Capel, and David G. Stewart, Epsom, both of England, assignors to The British Petroleum Company p.l.c., London, England

Division of Ser. No. 396,361, Jul. 8, 1982, Pat. No. 4,452,908.
This application Mar. 27, 1984, Ser. No. 578,426
Claims priority, application United Kingdom, Jul. 8, 1982, 8122768; Jul. 8, 1982, 8123619
Int. Cl.³ C07C *3/10*
U.S. Cl. 585—415 **1 Claim**

1. In a process for the production of aromatic hydrocarbons at elevated temperature and in the vapor phase by contacting a C_2 to C_{12} aliphatic hydrocarbon feedstock with a catalyst, the improvement which comprises employing as the catalyst a crystalline aluminosilicate having a silica to alumina molar ratio greater than 12:1 which crystalline aluminosilicate is obtained by mixing a source of silica, a source of alumina, a source of alkali metal, water and a source of ammonium ions in the absence of an alcohol or an alkylene oxide in the molar proportions expressed in the case of the silica and alumina sources in terms of the equivalent moles of the oxide, in the case of the alkali metal source in terms of the equivalent moles of the hydroxide, MOH, and in the case of the source of ammonium ions in terms of free ammonia:

$SiO_2:Al_2O_3$ greater than 12:1
$MOH:Al_2O_3$ in the range from 1:1 to 20:1
$SiO_2:NH_3$ in the range from 1:1 to 200:1, and
$H_2O:MOH$ in the range from 30:1 to 300:1,

maintaining the mixture at elevated temperature for a period such that crystallisation occurs, recovering the crystalline aluminosilicate so-formed, cation-exchanging the recovered crystalline aluminosilicate with either gallium or aluminum cations and/or impregnating the recovered crystalline aluminosilicate with a solution of a gallium or aluminum compound and finally calcining the exchanged and/or impregnated crystalline aluminosilicate characterised in that

either the recovered crystalline aluminosilicate or the cation-exchanged crystalline aluminosilicate or the metal impregnated crystalline aluminosilicate is washed with a solution containing either an organic base, a carboxylic acid, an alcohol, a glycol, a phenol or an ester.

4,497,970

AROMATICS PRODUCTION

Dennis Young, Staines, England, assignor to The British Petroleum Company p.l.c., London, England

Filed Apr. 8, 1983, Ser. No. 483,102
Claims priority, application United Kingdom, Apr. 29, 1982, 8212526
Int. Cl.³ C07C *2/00, 5/32*
U.S. Cl. 585—417 **9 Claims**

1. A process for converting a feedstock consisting essentially of methane or ethane into aromatic hydrocarbons by bringing at a temperature of from about 350° to 500° C. a mixture in a fluid phase of said feedstock and an oxidizing agent selected from the group consisting of nitrous oxide, sulfur trioxide, hydrogen peroxide, ozone, nitric oxide, and nitrogen oxyfluoride into contact with a solid acidic catalyst having Bronsted acid sites.

4,497,971

OXIDATIVE DEHYDROGENATION AND CRACKING OF PARAFFINS WITH A PROMOTED COBALT CATALYST

Alan D. Eastman; Jack P. Guillory; Charles F. Cook, and James B. Kimble, all of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Nov. 16, 1983, Ser. No. 552,557
Int. Cl.³ C07C *5/333*
U.S. Cl. 585—658 **48 Claims**

1. A process for the catalytic oxidative dehydrogenation of a paraffin having from 2 to 5 carbon atoms comprising the step of contacting said paraffin under suitable oxidative dehydrogenation conditions with a catalyst composition comprising cobalt; phosphorus; at least one promoter selected from the group consisting of zinc, titanium, zirconium, niobium, indium, lead and bismuth; at least one alkali metal; and oxygen, wherein said catalyst composition is calcined in an inert atmosphere.

4,497,972

PROCESS FOR THE SEPARATION OF ETHYLBENZENE

Richard W. Neuzil, Downers Grove, and Simon H. Hobbs, Oak Park, both of Ill., assignors to UOP Inc., Des Plaines, Ill.

Filed Oct. 11, 1983, Ser. No. 540,931
Int. Cl.³ C07C *7/13;* C10G *25/03*
U.S. Cl. 585—828 **6 Claims**

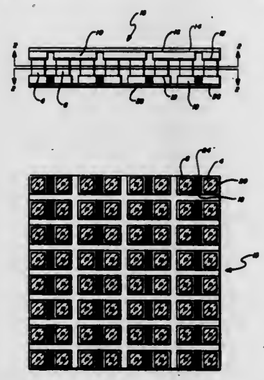
1. A process for separating ethylbenzene from a feed mixture containing ethylbenzene and at least one xylene isomer which comprises contacting said mixture with an adsorbent comprising X structured zeolite containing barium cations at exchangeable cationic sites and which contains from about 3.0 to 6.0 wt% H_2O measured by loss on ignition at 350° C., said contacting being at ethylbenzene adsorption conditions to adsorb said ethylbenzene in the adsorbent, removing the unadsorbed portion of said feed mixture from said adsorbent containing at least one xylene isomer and recovering adsorbed ethylbenzene from said adsorbent by contacting said adsorbent with benzene desorbent at desorption conditions and withdrawing from said adsorbent a stream comprising ethylbenzene and benzene.

4,497,973

THERMOELECTRIC DEVICE EXHIBITING DECREASED STRESS

Donald L. Heath, Leonard, and Der-Jeou Chou, Sterling Heights, both of Mich., assignors to ECD-ANR Energy Conversion Company, Troy, Mich.

Filed Feb. 28, 1983, Ser. No. 470,154
Int. Cl.[3] H01L *35/28*
U.S. Cl. 136—212 15 Claims



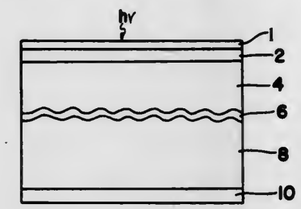
1. A new and improved thermoelectric device providing both structural integrity and relief of stress across the device, notwithstanding the application of thermally cycled temperature differentials across said device, said device comprising:
a. a plurality of thermoelectric elements;
b. first and second electrical coupling means on opposite respective sides of said thermoelectric elements for interconnecting said elements electrically in accordance with a predetermined pattern;
c. a first rigid substrate afixed to said first coupling means on the side thereof opposite said thermoelectric elements, to provide structural integrity, and;
d. flexile stress relieving means associated with said second electrical coupling means, for permitting said elements, said substrate, and said coupling means to expand and contract responsive to thermal cycling of said device.

4,497,974

REALIZATION OF A THIN FILM SOLAR CELL WITH A DETACHED REFLECTOR

Harry W. Deckman, Clinton; Horst Witzke, and Christopher Wronski, both of Princeton, all of N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Nov. 22, 1982, Ser. No. 443,197
Int. Cl.[3] H01L *31/06*
U.S. Cl. 136—259 10 Claims



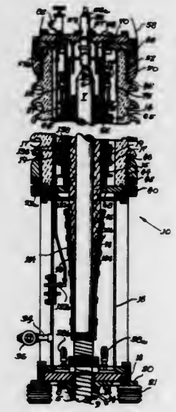
1. An optically enhanced photovoltaic device comprising:
(a) A layer of semiconductor material contacted on its upper and lower major surfaces by respective top and bottom layers of transparent electrical conductors each having a top and bottom surface with at least one of said surfaces being textured so as to scatter incident light randomly;
(b) a layer of transparent dielectric material fixed to said bottom surface of said bottom layer of said transparent electrical conductor;
(c) a metal layer fixed to said layer of transparent dielectric material such that radiation incident on said top layer of transparent conductor and which passes through said bottom layer of transparent conductor and said layer of transparent dielectric material is reflected by said metal layer.

4,497,975

RESISTOR AND CAPACITOR GRADED TERMINATION

Jorgen Selsing, Oak Forest, Ill., assignor to G & W Electric Company, Blue Island, Ill.

Filed Nov. 12, 1982, Ser. No. 440,842
Int. Cl.[3] H02G *15/30, 15/072*
U.S. Cl. 174—19 4 Claims



1. A termination of a prepared end of a cable, the cable having a conductor, an insulating layer therearound and a grounded outer shield, the termination being adapted when constructed of sufficient size for shielding the cable when carrying DC power in the high potential range whereat power losses in DC transmission approach or become less than power losses in AC transmission, the termination comprising
an outer annular insulator,
a plurality of annular capacitors stacked axially within said insulator and defining an axial passageway for receiving the prepared end of the cable therethrough, said capacitors each comprising a strip of dielectric material and a strip of metal wound as alternate layers coaxial with said insulator, said capacitors providing sufficient capacitance for relieving electrical stress resulting from transient AC currents attendant a cable carrying the high potential DC power,
electrically and thermally conductive rings interposed between adjacent ones of said stacked capacitors, said rings having interior diameters substantially matched to the interior diameters of said capacitors, exterior diameters at least about as great as the exterior diameters of said capacitors, and tab means extending outward of said stacked capacitors for connection to resistors,
at least two resistors electrically connected to said tab means and interconnecting, in parallel, successive stacked rings so as to provide a highly resistive pathway from the conductor to ground to relieve the electrical stress of the high potential DC power, said resistors each having a ceramic core and a semiconductive film spiralled therearound, and
liquid dielectric contained within said outer annular insulator and immersing said resistors and said capacitors.

4,497,976

METHOD FOR EMITTING ADDITIONAL INFORMATION IN CONJUNCTION WITH MESSAGE SIGNALS TO BE TRANSMITTED OVER A DATA SWITCHING CENTER

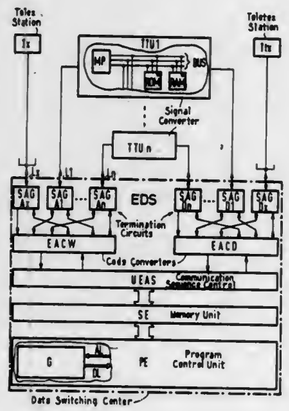
Norbert Torggler, Munich, and Dietmar Franz, Puchheim, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Feb. 15, 1983, Ser. No. 466,628

Claims priority, application Fed. Rep. of Germany, Feb. 25, 1982, 3206796

Int. Cl.³ H04L *13/08*

U.S. Cl. 178—3 **2 Claims**



1. In a method of transmitting message signals between a teleprinter (i.e. telex) station which transmits and receives in accordance with a first transmission procedure and a teletex station which transmits and receives in accordance with a different, second transmission procedure, the method being of the type in which transmission occurs via at least one signal converter which comprises a memory and which converts received message signals of one transmission procedure into message signals of the other transmission procedure, and in which the signal converter is connected to a data switching center, the improvement therein comprising the steps of:

after occupation of the signal converter by the telex station and storage of message signals sent by the telex station in the memory of the signal converter, transmitting additional information from the data switching center to the signal converter; storing the additional information in the memory of the signal converter;

establishing a connection between the signal converter and the teletex station; and reading the stored message signals and additional information and transmitting the same to the teletex station.

4,497,977

AUTOMATIC COORDINATE DETERMINING DEVICE HAVING ELECTROSTATIC SHIELDING

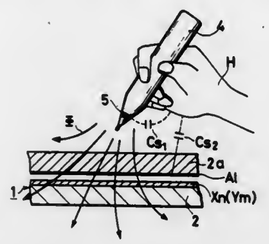
Yasuhiro Saito, and Takaomi Tatemichi, both of Tokyo, Japan, assignors to Kabushiki Kaisha Daini Seikosha, Tokyo, Japan

Filed Mar. 3, 1983, Ser. No. 471,821

Int. Cl.³ G08C *21/00*

U.S. Cl. 178—19 **4 Claims**

1. An automatic coordinate determining device, comprising: a coordinate tablet having a plurality of separate parallel spaced conductive lines, a probe positionable relative to said coordinate tablet at a coordinate position and having an inductive exciting winding for inductively coupling with said conductive lines, an oscillatory signal generator for magnetizing said inductive exciting winding, scanning detecting means for scanning said conductive lines successively and detecting the induced signal, operation control means for operating the probe coordinate in accordance with the induced signal, a thin film member composed of a non-magnetic conductive substance provided above the upper surface of said coordinate



tablet, and means for connecting the electric potential of said thin film member to the ground terminal of said scanning detecting means.

4,497,978

METHOD AND APPARATUS FOR PREVENTING OVERLOADING OF THE CENTRAL CONTROLLER OF A TELECOMMUNICATION SYSTEM

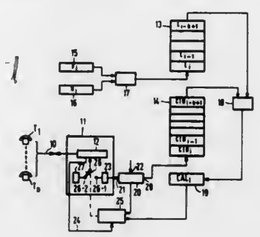
Frederik C. Schoute; Adrianus W. Doorduin, and Jacobus L. M. Hooijmans, all of Hilversum, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jun. 15, 1983, Ser. No. 504,102

Claims priority, application Netherlands, Jun. 15, 1982, 8202419

Int. Cl.³ H04M *15/10*

U.S. Cl. 179—9 **9 Claims**



1. A method of preventing overloading of the central controller of a telecommunication system, more specifically a telephone exchange, comprising the following steps:

1. determining the number of calls which were in the process of being set-up in a first period of a predetermined duration;
2. determining the total demand on the capacity of the central controller in the said first period by the number of calls in the process of being set up determined in step 1, and the remaining tasks of the central controller;
3. estimating the maximum number of calls which can be in the process of being set-up at a maximum load of the central controller in a second period of a predetermined duration;
4. determining for each newly offered call in the said second period whether thereby the instantaneous number of calls in the process of being set-up reaches the maximum number determined in step 3;
5. accepting the offered call if and for so long as the number determined in step 3 has not been reached;
6. rejecting the offered call if this was the case; and
7. repeating the steps 1 to 6, inclusive in a subsequent first period for calls to be offered in a subsequent second period.

4,497,979

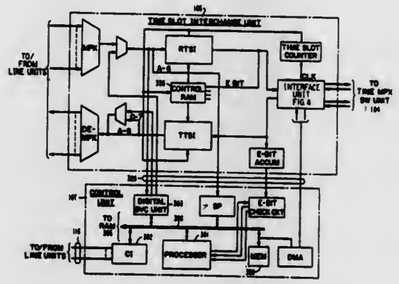
METHOD FOR PROCESSING ESSENTIAL LINES IN A COMMUNICATION SYSTEM

James J. Phelan, Downers Grove, Ill., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Jan. 27, 1984, Ser. No. 574,661

Int. Cl.³ H04Q *3/64*

U.S. Cl. 179—18 D **6 Claims**



1. For use in a telecommunication system having a switching system serving a plurality of customer stations wherein said stations are grouped according to at least two classes of service, a method for preferentially serving at least one of said station groups comprising the steps of

entering in a first queue in response to each request for service from individual ones of said stations the station identity and time of arrival of each said service request,

examining each entry in the first queue to ascertain the length of time said entry is in said first queue,

identifying the class of service of entries in the first queue that have remained in the first queue in excess of a predetermined threshold time,

placing in a second queue only those identified entries having a particular class of service, and

serving the stations entered in the second queue at a different rate than the stations entered in the first queue.

4,497,980

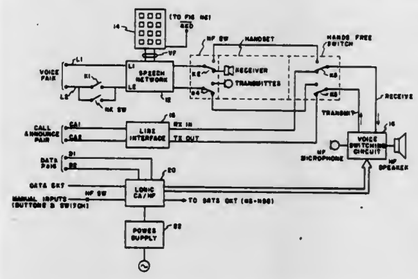
HANDSFREE CIRCUIT FOR TELEPHONE INSTRUMENT

Patrick R. Gorman, and William O. Stottlemyer, both of Corinth, Miss., assignors to ITT Corporation, New York, N.Y.

Filed Jun. 16, 1983, Ser. No. 505,428

Int. Cl.³ H04M *9/08*

U.S. Cl. 179—81 B **6 Claims**



1. A telephone instrument having a handset mode of operation using a handset having a transmitter and receiver, a handfree mode of operation using a microphone and loudspeaker responsive to the operation of at least one switch at said instrument, and a call announce mode of operation using at least said loudspeaker of said instrument in response to a signal from a telephone system to which said instrument is connected; said instrument including a speech network powered from a two wire speech pair of a line to said telephone system to provide gain regulation and a hybrid for a speech path of said instrument, a transmit path for transmitting voice signals from said microphone, and a receive path for transmitting voice signals toward said loudspeaker means for switching said speech network between connection to said handset and connection to said transmit and receive paths, a voice switching network with inputs from both said transmit and receive paths for switching one of said transmit and receive paths to an operative status and the other of said transmit and receive paths to an attenuated status responsive to a comparison of the amplitudes of speech signals in said transmit and receive paths, means in said instrument for operating said means for switching to enable said transmit and receive paths for bidirectional signal transmission through said voice switching network and for inactivating said handset transmitter and receiver, and means in said instrument responsive to signals from said system for enabling at least said receive path for coupling to said speech network for reception of speech signals for said call announce mode.

4,497,981

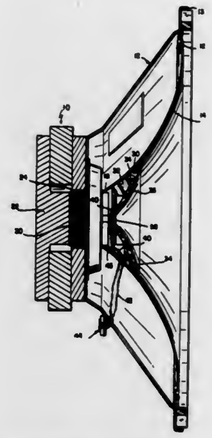
MULTI-DRIVER LOUDSPEAKER

William N. House, Bloomington, Ind., assignor to Harman International Industries Incorporated, Northridge, Calif.

Filed Jun. 1, 1982, Ser. No. 383,603

Int. Cl.³ H04R *1/24, 9/06, 17/00*

U.S. Cl. 179—115.5 PS **12 Claims**



1. A multi-driver loudspeaker combination comprising: a first transducer of the dynamic radiator type designed to reproduce sound in the lower portion of the audio frequency range, said radiator including a diaphragm; a piezoelectric transducer designed to reproduce sound in the upper portion of the audio frequency range, intermediate mounting means mounted on the diaphragm for supporting the piezoelectric transducer, said piezoelectric transducer being positioned within the periphery of the said diaphragm, said piezoelectric transducer being mounted through the intermediate mounting means upon said diaphragm and freely movable therewith in an unrestrained manner.

4,497,982

INPUT UNIT

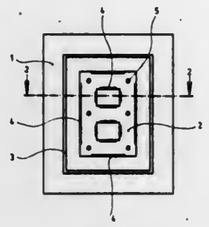
Dieter Michalski, Berlin, Fed. Rep. of Germany, assignor to ITT Industries, Inc., New York, N.Y.

Filed Oct. 17, 1979, Ser. No. 85,607

Claims priority, application Fed. Rep. of Germany, Oct. 13, 1978, 2844575

Int. Cl.³ H01H *13/70*

U.S. Cl. 200—5 R 3 Claims



1. An input unit for translating human hand movements into electrical signals indicative of alpha-numeric symbols comprising, in combination:

a generally flat block of insulating material;

a plurality of guide grooves in the upper surface of said block said grooves being arranged in a pattern indicative of the segments of an alpha-numeric character;

a plurality of contact elements respectively provided in each of said grooves and being responsive to physical contact stimulus provided by the human hand; and

means for coupling each of said contact elements to an external electrical circuit.

4,497,983

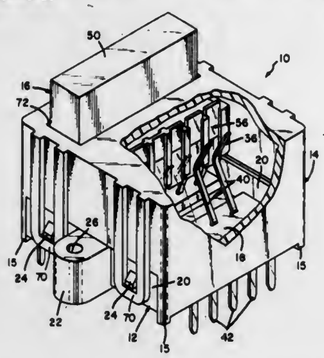
ELECTRICAL HOOK SWITCH

Michael D. Galloway, Middletown; David J. Gingerich, Swatara, and David T. Shaffer, Harrisburg, all of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed May 23, 1983, Ser. No. 497,381

Int. Cl.³ H01H *9/00, 15/06, 27/00*

U.S. Cl. 200—5 R 18 Claims



1. An electrical switch of the type comprising a dielectric base member having parallel rows of a series of stationary electrical contact members mounted in the base member such that the electrical contact members are arranged as opposing pairs of contact sections of opposite sides of a plane extending between the parallel rows of the series of contact members, a movable contact assembly movably mounted between a cover member and the base member with pairs of the contact sections engaging respective contact segments of the movable contact assembly, each of the contact segments including a metal section and a dielectric section to electrically connect the contact sections together when the metal sections are moved to contact-operating positions and to electrically disconnect the contact sections when the dielectric sections are moved to noncontact-operating positions, and an operating member for operating the movable contact assembly to the contact-operating and noncontact-operating positions, characterized in that:

said contact segments being planar and said opposing pairs of contact sections continuously engaging respective contact segments on opposite sides thereof as said movable contact assembly moves between the contact-operating and noncontact-operating positions or is maintained at the contact-operating or noncontact-operating positions to electrically connect or disconnect the opposing pairs of contact sections;

said operating member and said movable contact assembly are connected together to move said movable contact assembly relative to said opposing pairs of contact sections when said operating member is moved between the contact-operating and noncontact-operating positions; and

spring means engaging said operating member to maintain the operating member in a normally inoperative position.

4,497,984

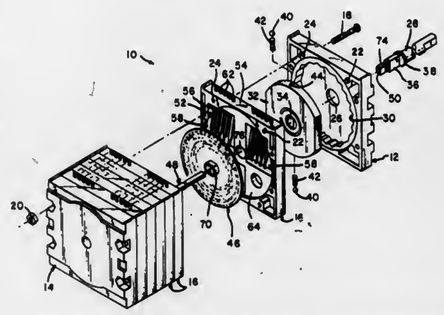
ROTARY SWITCH ASSEMBLY

John J. Ashman, Harrisburg, and David W. Rupnik, Mechanicsburg, both of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Jul. 8, 1983, Ser. No. 511,828

Int. Cl.³ H01H *19/08*

U.S. Cl. 200—11 DA 10 Claims



1. A rotary switch assembly of the type comprising stacked dielectric housing members, a cavity is formed between pairs of the housing members, rotary printed circuit boards are disposed in respective cavities and have profiled openings mounted on a profiled section of a shaft, electrical brush contact members are mounted in at least one of the pairs of the housing members, spring contact sections of the contact members electrically engage a surface of the printed circuit boards forming electrical circuits based upon the positions to which the printed circuit boards have been selectively moved, characterized in that:

bushing members are located on the respective printed circuit boards and have profiled bores substantially coincident with the profiled openings of the printed circuit boards increasing the area of engagement on the shaft for rotating and accurately positioning the printed circuit boards relative to the brush contact members and adjacent bushing members engage one another to accurately position the printed circuit boards in their respective cavities.

4,497,985

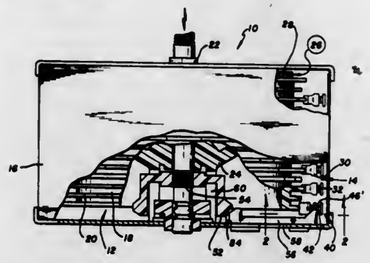
LINE AND PROGRAM SWITCH ASSEMBLY FOR A TIMING MECHANISM

Harry I. Courter, Indianapolis, and Leroy A. Perry, Danville, both of Ind., assignors to Emhart Industries, Inc., Indianapolis, Ind.

Filed Jun. 27, 1983, Ser. No. 507,738

Int. Cl.³ H01H *7/00*

U.S. Cl. 200—38 R 1 Claim



1. A timing mechanism comprising a program cam and switch assembly selectively opening and closing electrical circuits to provide variable programs, power drive means applying power driven rotation to said cam assembly, and an electrical power line switch included as part of said program cam and switch assembly comprising

a power line switch including a line switch electrical contact blade electrically adapted to be connected to a main power supply,

a manually operable actuator means engaging said line switch electrical contact blade,

a program electrical contact blade of said program cam and switch assembly biased by a cam of said program cam and switch assembly, and

at least one electrical contact blade carried between said line switch electrical contact blade and said program electrical contact blade.

4,497,986

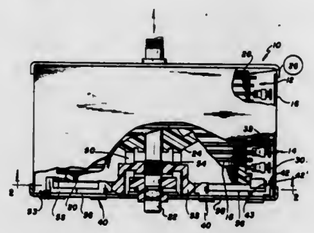
LINE SWITCH ASSEMBLY FOR A TIMING MECHANISM

David E. Zink, Indianapolis, and Garry A. Stout, Bargersville, both of Ind., assignors to Emhart Industries, Inc., Indianapolis, Ind.

Filed Sep. 19, 1983, Ser. No. 533,114

Int. Cl.³ H01H *43/10*

U.S. Cl. 200—38 R 2 Claims



1. A timing mechanism comprising a program cam and switch assembly selectively opening and closing electrical circuits to provide variable circuits, power drive means applying power driven rotation to said cam assembly and an electrical power line switch assembly comprising:

(a) a first movable electrical contact blade engaging a cam,

(b) a cooperating second movable electrical contact blade having a distal end carried by a first slider,

(c) electrical contacts carried by said first and second movable electrical contact blades,

(d) a stop means carried by said cam,

(e) a second slider engaging said stop means, and

(f) manual actuator means engaging said first and second sliders to actuate same simultaneously.

4,497,987

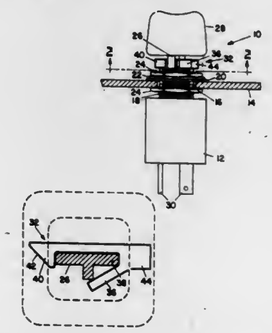
KEYBOARD SPACER

Aleksandras A. Melys, Hillside, N.J., assignor to Sweda International, Inc., Pine Brook, N.J.

Filed Apr. 6, 1981, Ser. No. 251,410

Int. Cl.³ H01H *9/28*

U.S. Cl. 200—42 R 10 Claims



1. A keyboard spacer for inhibiting the depression of a push button of a keyboard switch having a key stem, comprising:

a trunk portion, the thickness of which inhibits the depression of said push button switch mounted upon said keyboard;

a first resilient arm portion extending from said trunk portion for yieldably engaging said key stem as said spacer is inserted between said push button and said keyboard;

a second latching arm portion extending from said trunk portion and engaging said key stem for latching said spacer between said push button and said keyboard wherein said first resilient arm portion retains said spacer in said latched position.

4,497,988

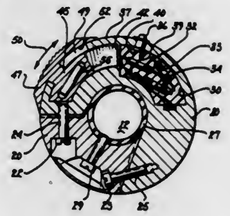
HANDLEBAR SWITCH

Peter K. Brown, P.O. Box 155, Williams, Ariz. 86046

Filed Dec. 13, 1982, Ser. No. 432,336

Int. Cl.³ H01H *9/06*; B62J *3/00*

U.S. Cl. 200—61.85 11 Claims



1. A switch for mounting about the longitudinal axis of a handlebar comprising:

a. a thin, flat, switch body having an opening passing therethrough to accomodate a handlebar; said body, when mounted on a handlebar, having a ratio of thickness mea-

sured parallel to the longitudinal axis of said handlebar, to width measured perpendicular to the longitudinal axis of said handlebar of from 0.5 to 0.06, and preferably approximately 0.17;

b. said body having a removable segment to permit, when removed, said handlebar to be inserted in said opening, said body encircling said handlebar when said segment is replaced;

c. means defining a cavity in said body;

d. a magnetically operable reed switch mounted in said cavity;

e. sealing means for hermetically sealing said cavity;

f. a permanent magnet movably mounted in said body adjacent said cavity; and

g. means for moving said permanent magnet and reed switch toward and away from each other to cause said reed switch to open and close.

4,497,989

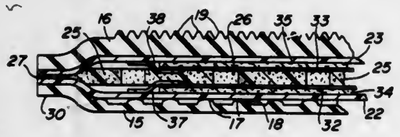
ELECTRIC MAT SWITCH

Norman K. Miller, Concord Industrial Park, Concordville, Pa. 19331

Filed Jan. 20, 1984, Ser. No. 572,589

Int. Cl.³ H01H *3/14*

U.S. Cl. 200—86 R **12 Claims**



1. An electric mat switch comprising a pair of facing spaced generally congruent flexible outer wear layers fabricated of weldable material, a pair of facing spaced flexible inner moisture barrier layers between and generally congruent to said outer wear layers and fabricated of weldable material, a pair of facing spaced flexible conductor layers between said moisture barrier layers generally similar to and smaller than said moisture barrier layers and spaced inwardly from the margins thereof, and a resiliently compressible apertured separator layer of weldable material interposed between said conductor layers and generally congruent to said moisture barrier and wear layers; the overlying margins of said wear layers, moisture barrier layers and separator layer being welded together to locate and retain each conductor layer between the separator layer and a respective moisture barrier layer.

4,497,990

VACUUM SWITCH TUBE

Gerhard Peche, Romrod, and Günter Bialkowski, Berlin, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

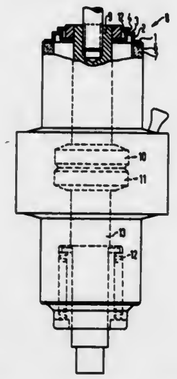
Filed Apr. 25, 1983, Ser. No. 488,187

Claims priority, application Fed. Rep. of Germany, Apr. 30, 1982, 3216251

Int. Cl.³ H01H *33/66*

U.S. Cl. 200—144 B **6 Claims**

1. Vacuum switch tube, comprising a housing, a stationary and an axially movable contact being mutually aligned in said housing, a bellows vacuum-tightly connecting said movable contact to said housing, a stud bolt being connected to said stationary contact for mounting the switch tube, a ceramic tube being connected to said housing and having a given breaking pressure, a flange being concentric with said stud bolt, said flange being mechanically fixed and vacuum-tightly connected with said stud bolt, said flange being resiliently and vacuum-tightly connected with said ceramic tube for carrying said housing, and said flange being formed of a ring being easily elastically deformable in axial direction, a cylindrical wall being integral with said ring and a soldering flange integral with said cylindrical wall, a hard solder connection with a given breaking pressure connecting said soldering flange to said ceramic tube, said flange having a modulus of elasticity permitting said flange to be elastically deformed upon the exertion of pressure on said ceramic tube in axial direction and perpendicular to axial direction and preventing the breaking



force of said ceramic tube and said solder connection from being reached during said elastic deformation, said easily elastically deformable ring having first and second sides, said first side being integral with said cylindrical wall, and including a cylindrical part being integral with said easily elastically deformable ring at said second side thereof, and a housing ring being attached to said stud bolt and being vacuum-tightly welded to said cylindrical part.

4,497,991

GAS-BLAST SWITCH

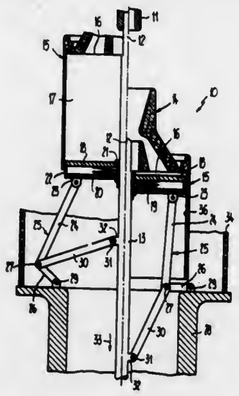
Christian Sturzenegger, Wettingen, and Johann Blatter, Schönenwerd, both of Switzerland, assignors to Sprecher & Schuh AG, Aarau, Switzerland

Filed Oct. 17, 1983, Ser. No. 542,581

Claims priority, application Switzerland, Oct. 25, 1982, 6190/82

Int. Cl.³ H01H *33/70*

U.S. Cl. 200—148 A **6 Claims**



1. A gas-blast switch comprising:

a stationary contact element;

drive means for carrying out at least a cut-off stroke;

a movable contact element coupled to said drive means;

a blast nozzle having an inlet;

said blast nozzle surrounding said movable contact element and being conjointly movable therewith;

a pump cylinder enclosing a pump chamber containing an extinguishing gas;

said inlet communicating with said pump chamber;

said pump cylinder being conjointly movable with said blast nozzle to pressurize said pump chamber during said cut-off stroke;

said pump cylinder having opposite ends;

said pump cylinder being bounded by said blast nozzle at one of its ends;

a spring-biased pump piston bounding said pump cylinder at said other end thereof and being displaceable from an initial position by ascending pressure in said pump chamber;

at least one spring acting upon said pump piston;

shock absorbing means operatively associated with said pump piston; and

said spring acting upon said pump piston and said shock absorbing means being successively arranged such that said shock absorbing means becomes effective at the end of a stroke performed by said spring.

4,497,992

AIR CIRCUIT BREAKER

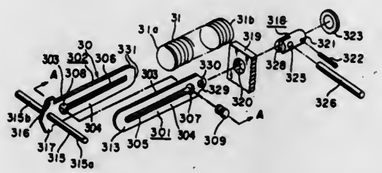
Toshihiko Kodera; Kiyoshi Eguchi; Takayoshi Ishikawa; Yasushi Genba; Shigemi Tamaru, and Susumu Satou, all of Fukuyama, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 25, 1983, Ser. No. 460,790

Claims priority, application Japan, Jan. 28, 1982, 57-10973[U]

Int. Cl.³ H01H *3/30*

U.S. Cl. 200—153 SC **4 Claims**



1. An air circuit breaker including an energy accumulating spring, a pair of contact points, and transmitting means for compressing said energy accumulating spring, for transmitting a compression force of said energy accumulating spring during expansion thereof to close said pair of contact points, and for causing pivoting of said energy accumulating spring during said compression and expansion, comprising:

an energy accumulating spring adapted to be compressed for storing energy therein and expanded for closing said pair of contact points;

a second spring holder operatively associated with said transmitting means, said second spring holder comprising means for axially supporting said energy accumulating spring during an axial compression thereof to preclude a non-axial displacement of said energy accumulating spring due to pivoting thereof, said second spring holder comprising means for compressing said energy accumulating spring while said second spring holder and said energy accumulating spring are simultaneously subjected to pivoting; said second spring holder further comprising

a rectangularly shaped plate,

a pin affixed in and extending through said rectangularly shaped plate and having first and second ends adapted to support a first end of said energy accumulating spring, said pin comprising a pivotal connection between said second spring holder and said transmitting means, and

first and second projected pieces extending from said rectangularly shaped plate proximal said transmitting means and adapted to support said first end of said energy accumulating spring;

said first and second projected pieces and said first and second ends of said pin comprising means for simultaneously cooperating with said energy accumulating spring to transmit a compression force transmitted by said transmitting means; and

a first spring holder comprising means for precluding said non-axial displacement of said energy accumulating spring due to pivoting thereof,

wherein said compression force stored in said energy accumulating spring is transmitted to said transmitting means during said expansion of said energy accumulating spring to close said pair of contact points.

4,497,993

DOOR LOCK APPARATUS OF ELECTRIC COOKER

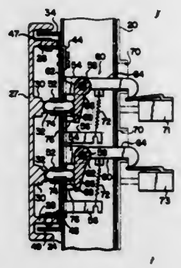
Shuki Aoyama, Aichi, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Jul. 13, 1983, Ser. No. 513,287

Claims priority, application Japan, Jul. 16, 1982, 57-123966; Jul. 19, 1982, 57-109154[U]

Int. Cl.³ H05B *6/76*

U.S. Cl. 219—10.55 C **9 Claims**



1. An electric cooking apparatus comprising:

a housing;

a heating chamber provided in said housing;

a door mounted on said housing;

means for providing heating energy to said heating chamber;

a switch for controlling the power supply to said providing means; and

means for locking said door, said locking means including an operation member pivotally supported on said door;

a hook pivotally mounted on said door to oppose said operation member and for engaging with said housing to lock said door in a closed position, thereby enabling said switch to turn on;

a biasing member for biasing said hook to a position at which said hook engages with said housing;

a pusher having two ends and abutting against said operation member at one end and against said hook at the other end to pivot said hook upon the movement of said operation member so as to release engagement between said hook and said housing; and

pusher guide means supported by said door, said guide means for slidably supporting said pusher; wherein

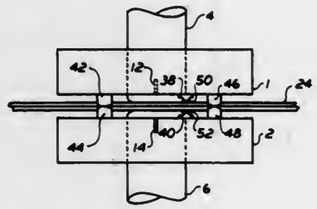
said operation member includes means defining an arcuated pressing surface which abuts against one end of said pusher to urge said pusher along the axis thereof upon the pivotal movement of said operation member, and wherein said hook includes means defining an arcuated action surface which abuts against the other end of said pusher and to which said pusher transmits a force only along an axis parallel with a reference axis of said pusher.

4,497,994

CONTACT DEVICE FOR RESISTANCE SPOT WELDER

Roy E. Flemm, New Kensington, and James R. Morran, Apollo, both of Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.

Filed Feb. 9, 1983, Ser. No. 465,317
Int. Cl.³ B23K 11/30
U.S. Cl. 219—109 1 Claim



1. Means for making electrical contact with a pair of spot welding electrodes and workpiees engaged by the electrodes during a welding process, said means comprising:

two rigid insulating blocks adapted for mounting on the outside surfaces of respective electrodes of the electrode pair;

means for securing the blocks on and releasing the blocks from the electrodes;

a first electrical conductor integral with each of said blocks and disposed for physically engaging and electrically contacting the respective electrode when the blocks are mounted on the electrodes;

a second electrical conductor integral with each block and disposed for physically engaging and electrically contacting an exposed surface of the respective workpiece engaged by the respective electrode;

further electrical conductors integral with each block disposed to transfer electrical signals directed to the first and second electrical conductors of one block to the other block; said further conductors of the respective blocks being disposed in electrical contact with each other when the second conductors of the blocks engage the respective workpieces;

said electrical conductors extending in a direction substantially perpendicular to the axes of the electrodes when the blocks are mounted thereon; and

means integral with the conductors for respectively electrically connecting the electrical conductors to circuit means located externally of the blocks such that the voltage drop that occurs between the electrodes and between the surfaces of the workpieces when welding current is applied to the workpieces by the electrodes can be measured.

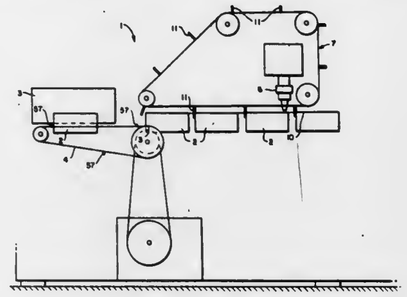
4,497,995

APPARATUS FOR CONTINUOUSLY ADVANCING AND WELDING METAL CAN BODIES AND THE LIKE

Carl J. Nilsen, Hopatcong, N.J., assignor to SWS Incorporated, Landing, N.J.

Filed Apr. 15, 1982, Ser. No. 368,869
Int. Cl.³ B23K 27/00
U.S. Cl. 219—121 LC 50 Claims

1. Apparatus for continuously forming and laser welding can bodies and the like comprising forming means for successively forming flat sheets of metal into generally tubular shaped sheets of metal having longitudinally extending edges to be welded, advancing means for successively advancing said generally tubular shaped sheets of metal from said forming means to a first position in a direction toward a laser welding means such that said generally tubular shaped sheets of metal are individually engaged and driven by said advancing means from said forming means to said first position so as to be moving at a predetermined speed at said first position, additionally advancing means for continuously advancing the successive moving, generally tubular shaped sheets of metal from said first position to a second position without stopping and at a



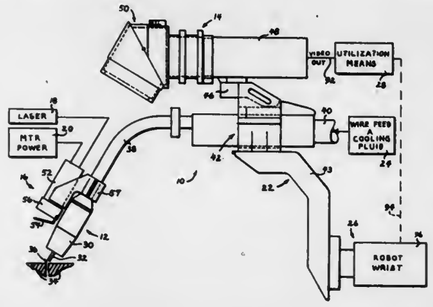
substantially constant speed, and laser welding means arranged for welding the longitudinally extending edges of the generally tubular shaped sheets of metal as they are advanced by said additional advancing means.

4,497,996

ARC WELDING SYSTEM WITH VISION

Charles J. Libby, Jr., West Roxbury, and Barry Gaiman, Bedford, both of Mass., assignors to Automatix Incorporated, Billerica, Mass.

Filed Jan. 18, 1983, Ser. No. 459,019
Int. Cl.³ B23K 9/12
U.S. Cl. 219—124.34 10 Claims



1. An arc welding apparatus comprising:

A. a movable arc welding torch means;

B. a conical beam generating apparatus comprising:

(1) means for generating a beam of collimated light;

(2) a rotatable reflective cylinder means having a concave reflective surface;

(3) means for rotating said reflective cylinder means;

(4) beam directing mirror means secured with respect to and rotatable with said rotatable reflective cylinder means for directing said beam of collimated light to said reflective surface to produce a conical beam of light having an angular arc that (i) is a function of the radius of the concave reflective surface and the width of the collimated light beam impinging thereon and (ii) illuminates at least a portion of the object to be welded, said conical beam generating apparatus being positioned with respect to and movable with said movable arc welding torch means;

C. means for optically and physically shielding said beam generating apparatus from the welding arc created by said

movable arc welding torch means during welding of the object;

D. means for imaging at least part of the light beam illuminated portion of the object to be welded on an array of photosensitive elements to produce corresponding signals; and,

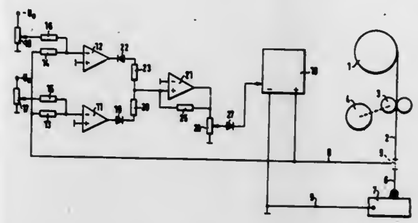
E. utilization means responsive to said signals for controlling the movement of said movable arc welding torch means.

4,497,997

METHOD AND APPARATUS FOR METAL ARC WELDING WITH CONSTANT CURRENTS

Peter W. Bodewig, Ratingen, Fed. Rep. of Germany, assignor to UTP Schweissmaterial GmbH & Co., Bad Krozingen, Fed. Rep. of Germany

Filed May 20, 1983, Ser. No. 496,394
Claims priority, application Fed. Rep. of Germany, May 26, 1982, 3219726
Int. Cl.³ B23K 9/09
U.S. Cl. 219—137 PS 15 Claims



1. A metal arc welding method, wherein current is supplied to a consumable electrode for welding a workpiece, comprising the steps of:

when the arc voltage reaches a predetermined low level, setting the arc current at a high constant value which ensures burn-off of the electrode; and

when the arc voltage reaches a predetermined high level, setting the arc current at a low constant value to maintain the arc.

4,497,998

TEMPERATURE STABILIZED STOP-RESTART OSCILLATOR

Burnell G. West, Fremont, Calif., assignor to Fairchild Camera and Instrument Corp., San Jose, Calif.

Filed Dec. 23, 1982, Ser. No. 452,606
Int. Cl.³ H05B 1/00
U.S. Cl. 219—210 4 Claims

1. A temperature stabilized oscillator comprising:

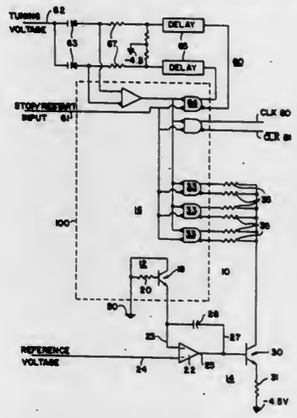
an oscillator for generating a clock signal;

a gate connected to the oscillator for switchably connecting the clock signal from the oscillator to at least one output terminal, the gate being fabricated in an integrated circuit;

at least one additional gate for heating the integrated circuit connected between the oscillator and a first node, each of the at least one additional gate being also fabricated in the integrated circuit;

a temperature sensor disposed in the integrated circuit for producing signals varying in response to variations in temperature of the integrated circuit; and

a control circuit coupled to the temperature sensor, the first node, and a source of electrical potential, for controlling



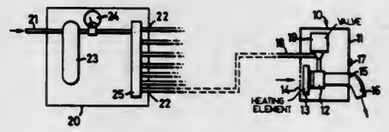
operation of each of the at least one additional gate in response to the signals from the temperature sensor.

4,497,999

WARM-AIR HAND DRYING APPARATUS USING AN INDUCED HEATED AIR FLOW

John W. Postbeschild, Witney, England, assignor to Smiths Industries Public Limited Company, London, England

Filed Feb. 16, 1983, Ser. No. 467,049
Claims priority, application United Kingdom, Mar. 2, 1982, 8206095
Int. Cl.³ F24H 7/04; H05B 1/00
U.S. Cl. 219—365 8 Claims



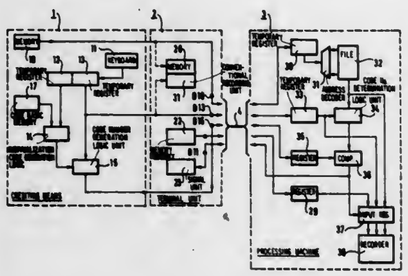
1. A warm-air drying installation comprising a plurality of warm-air hand drying apparatuses, a source of compressed gas, and distributing means connected to the source of compressed gas and having a plurality of outlets for compressed gas each of which is connected to a respective one of the plurality of apparatuses through a supply line, each said apparatus comprising an air moving device operable by the compressed gas, said air moving device having an air inlet through which ambient air enters the air moving device and is entrained by the compressed gas, and an air outlet through which the entrained ambient air flows and is discharged into the hands of the user, and each said apparatus including heating means located at the air inlet of said air moving device for heating the ambient air flowing through the air moving device.

4,498,000

SECURITY METHOD AND DEVICE FOR COMMUNICATING CONFIDENTIAL DATA VIA AN INTERMEDIATE STAGE

Dominique Decavele, Chevreuse, and Jean-Pierre Fournier, Paris, both of France, assignors to Transac-Alcatel, Paris, France

PCT No. PCT/FR81/00173, § 371 Date Aug. 12, 1982, § 102(e) Date Aug. 12, 1982, PCT Pub. No. WO82/02446, PCT Pub. Date Jul. 22, 1982
PCT Filed Dec. 30, 1981, Ser. No. 414,255
Claims priority, application France, Jan. 7, 1981, 81 00128
Int. Cl.³ G06K *5/00*
U.S. Cl. 235—380 **8 Claims**



1. A security method for confidential digital data communication via an intermediate stage in a system which allows the exchange of transaction data in a transaction between bearers of crediting means (1) and centralized processing machines (3) via non-supervised specific terminal units (2) in which method any communication between a bearer and a processing machine entails communication of the identity of the crediting means used by the bearer to the centralized processing machine by connection of said crediting means to a specific terminal unit and the communication of the holder's specific confidential code to the system by manual insertion of said code by the bearer where the crediting means is linked to the terminal unit, said method further including the following steps:

determining via the crediting means a first code number for identifying the holder and approving the transaction by combining the transaction data relating to the bearer by means of an individualization code supplied by the crediting means on receiving the holder's confidential code; and

communicating the first code number, the transaction data and identity of the specific terminal unit to the centralized processing machine by said specific terminal unit on the basis of the data received from the crediting means and of data which is inherent to said specific terminal unit.

4,498,001

TRANSIMPEDANCE AMPLIFIER FOR OPTICAL RECEIVERS

Lanny S. Smoot, East Orange, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Jul. 26, 1982, Ser. No. 401,521
Int. Cl.³ H01J *40/14*
U.S. Cl. 250—214 A **12 Claims**

8. An improved transimpedance amplifier for converting an incoming optical signal to a corresponding electrical signal comprising:

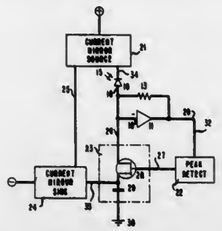
a photodetector for receiving the optical signal and generating a corresponding electrical current with AC and DC components,

an amplifier with an input connected to said photodetector and an output,

means comprising a current mirror connected to the photodetector for sensing and sinking the DC component,

means connected to the output of the amplifier for sensing the AC component,

an impedance means which simultaneously provides an AC path responsive to the AC sensing means to divert the AC



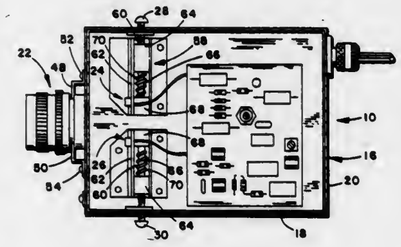
component away from the input of the amplifier and a DC path responsive to the DC sensing and sinking means to divert the DC component of the input current away from the input of the amplifier.

4,498,002

PHOTOELECTRIC INSTRUMENT FOR OBSERVING A VIEWING CORRIDER OF INTEREST

Aris Tekirdaglis, 1231 W. Grant Ave., Wilmington, Calif. 90744

Filed May 3, 1982, Ser. No. 374,335
Int. Cl.³ G01V *9/04*; G08B *13/18*
U.S. Cl. 250—221 **12 Claims**



1. An instrument for detecting changes in a viewing area of interest, comprising:

a hollow, enclosed case,

a lens mounted on said case and positioned to view an area including an area of interest and to project an image into said case,

a track located in said case transverse to the direction of image projection from said lens,

a pair of travelers independently moveable along said track,

means for separately adjusting the position of each traveler on said track from outside of said case,

separate photoelectric sensor means mounted within said case on each of said travelers,

differential amplification means coupled to both of said photoelectric sensor means,

means for defining a reference output from said differential amplification means, adjustable from outside of said case, and

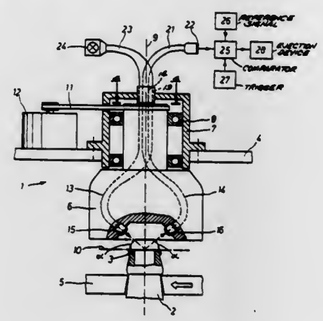
signaling means coupled to said differential amplification means and responsive to departure from said reference output of the output from said differential amplification means.

4,498,003

DEVICE FOR TESTING THE RIMS OF BOTTLE APERTURES FOR FLAWS

Johannes Cibis, Mintraching, Fed. Rep. of Germany, assignor to Krones A.G. Hermann Kronseder Maschinenfabrik, Neutraubling, Fed. Rep. of Germany

Filed Nov. 19, 1982, Ser. No. 443,094
Claims priority, application Fed. Rep. of Germany, Nov. 27, 1981, 3147086
Int. Cl.³ G01N *21/90*
U.S. Cl. 250—223 B **9 Claims**



1. A device for testing the sealing surface surrounding the apertures of bottles for flaws, comprising:

a rotor and means for driving said rotor such that its axis of rotation is substantially perpendicular to the plane of said sealing surface during a test cycle,

means mounted to said rotor and operative to project a beam of light onto said sealing surface and means mounted to said rotor for receiving light reflected from said sealing surface that is being tested for flaws, the optical axes of said light projecting and light receiving means lying in a common scanning plane which is substantially perpendicular to the sealing surface plane and which axes intersect the sealing surface plane within a first inspection field tangentially to the sealing surface plane and wherein the two optical axes are inclined at the same acute angle relative to said plane, and

a photosensitive element optically coupled to said means for receiving the reflected light and being operative to produce electric signals that are proportional in amplitude to the intensity of the reflected light which intensity depends on whether or not there is a flaw in said sealing surface.

4,498,004

FIBER OPTICAL MEASURING DEVICE, EMPLOYING A SENSOR MATERIAL WITH A NON-LINEAR INTENSITY RESPONSE CHARACTERISTIC FOR MEASURING PHYSICAL QUANTITIES

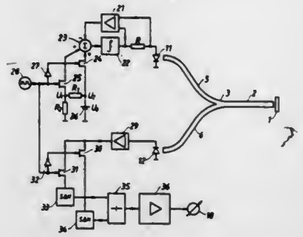
Morgan Adolfsson; Torgny Brogardh; Sture Göransson, and Christer Ovrén, all of Västerås, Sweden, assignors to ASEA Aktiebolag, Västerås, Sweden

Filed May 17, 1982, Ser. No. 379,026
Claims priority, application Sweden, May 18, 1981, 8103100
Int. Cl.³ G02B *5/14*
U.S. Cl. 250—227 **12 Claims**

1. A measuring device for measuring a physical and/or chemical quantity comprising a measuring transducer and an evaluating electronic unit interconnected by a light-conducting fiber means, said evaluating electronic unit comprising a light source means for transmitting light via said fiber means to at least one sensor element forming a part of said measuring transducer, said evaluating electronic unit also comprising light detector means for detecting light emitted from said sensor element, wherein

said at least one sensor element possesses a non-linear relationship between the intensity of the light incident upon it and the intensity of the light emitted from it,

said light source means is emitting light at least at two different light intensities, and



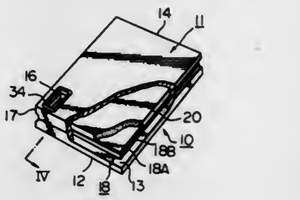
said detector means measuring the light emitted from said sensor element in response to the different incident light intensities.

4,498,005

CASSETTE HAVING RADIATION IMAGE STORAGE MEDIUM

Hiroshi Oono, and Tsutomu Teshima, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Nov. 9, 1982, Ser. No. 440,377
Claims priority, application Japan, Nov. 14, 1981, 56/182703
Int. Cl.³ H05B *33/00*
U.S. Cl. 250—327.2 **6 Claims**



1. A cassette for use in a radiation image recording and readout system comprising:

a storage medium including a layer of stimulable phosphor for storing therein a latent image formed by an imagewise radiation, a layer of light absorbing material absorbing stimulative rays for said stimulable phosphor layer, and an identification provided on the layer of light absorbing material to be sensable for identifying said storage medium; and

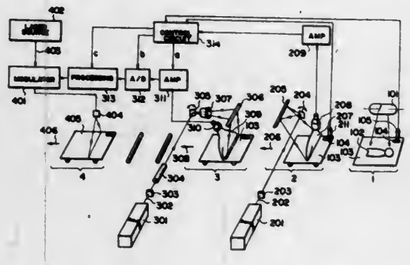
casing means for enclosing said storage medium therein, said casing means having two main surfaces, one of which transmits the imagewise radiation impinging thereon to the layer of stimulable phosphor, and the other of which opposes the layer of light absorbing material;

said casing means having an opening provided in said other main surface substantially in correspondence in position with the identification so as to enable sensing of the identification through the opening from the outside of the cassette.

4,498,006
RADIATION IMAGE READ-OUT METHOD AND APPARATUS

Kazuo Horikawa, and Satoshi Arakawa, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Nov. 15, 1982, Ser. No. 441,984
Claims priority, application Japan, Nov. 13, 1981, 56-181831
Int. Cl.³ G03C 5/16
U.S. Cl. 250—327.2 7 Claims



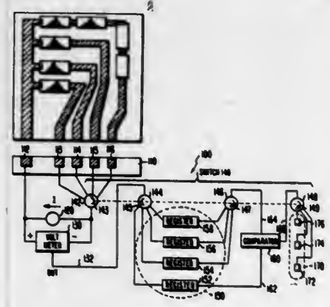
1. In a radiation image read-out method in which a stimulable phosphor sheet carrying a radiation image stored thereon is exposed to a stimulating ray which causes the stimulable phosphor sheet to emit light in the pattern of the stored image, and the emitted light is photoelectrically read out,

the radiation image read-out method comprising: conducting a preliminary read-out by exposing the stimulable phosphor sheet to the stimulating ray having stimulation energy lower than stimulation energy of a stimulating ray used in a final read-out, measuring the interval between the radiation image recording on the stimulable phosphor sheet and the preliminary read-out, determining decay characteristics of light emitted from the stimulable phosphor sheet upon exposure thereof based on said interval measured, correcting the image input information detected by said preliminary read-out according to said decay characteristics determined, setting the final read-out conditions and/or the image processing conditions based on the corrected image input information, and conducting the final read-out.

4,498,007
METHOD AND APPARATUS FOR NEUTRON RADIATION MONITORING

Alfred Schwarzmann, Mount Laurel, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Jun. 22, 1982, Ser. No. 390,869
Int. Cl.³ G01T 3/00, 3/08
U.S. Cl. 250—390 10 Claims



1. A method of determining whether a neutron radiation monitor has been exposed to at least a predetermined cumulative neutron flux value, said radiation monitor including a neutron radiation sensor and at least one calibration resistor the value of said at least one resistor having been trimmed to provide a known relationship to the resistance value of said sensor after said sensor has been exposed to said predetermined neutron flux, said method comprising the steps of:

passing a predetermined current through said neutron radiation sensor;

measuring the voltage across said sensor when passing said predetermined current therethrough to provide a measured sensor voltage;

passing said predetermined current through said at least one trimmed calibration resistor;

measuring the voltage across said at least one trimmed calibration resistor when passing said predetermined current therethrough to provide a measured resistor voltage;

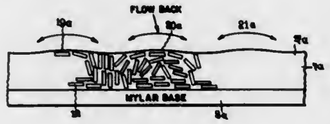
comparing said measured sensor voltage and said measured resistor voltage; and

providing an indication that said predetermined flux value has been exceeded if said measured resistor voltage is greater than said measured sensor voltage.

4,498,008
X-RAY IMAGE CONVERTER DEVICES UTILIZING RARE EARTH OXYHALIDE PHOSPHORS

Jacob G. Rabatin, Montville, Ohio, assignor to General Electric Company, Schenectady, N.Y.

Filed Apr. 8, 1983, Ser. No. 483,342
Int. Cl.³ G01J 1/58
U.S. Cl. 250—486.1 17 Claims



1. An improved X-ray image converter which includes a phosphor layer of plate-like phosphor crystals having the structural formula:

$$LnOX:T_x$$

wherein

Ln is one or more of La and Gd,

X is one or more of Cl and Br, and

T_x is an activator ion selected from Tb and Tm, including mixtures thereof,

said phosphor layer being formed with the plate-like crystals being aligned generally parallel to the longitudinal axis of said phosphor layer at both surface regions while the intermediate phosphor crystals are aligned generally perpendicular to said longitudinal axis.

4,498,009
OPTICAL LITHOGRAPHIC SYSTEM HAVING A DYNAMIC COHERENT OPTICAL SYSTEM

George O. Reynolds, Waban, Mass., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Sep. 22, 1982, Ser. No. 421,625
Int. Cl.³ B23K 9/00; H01L 21/26
U.S. Cl. 250—452.1 6 Claims

1. An optical lithographic system comprising:

A. a first substrate;

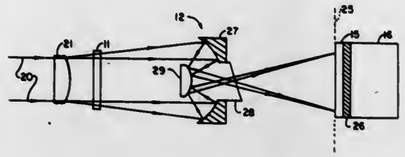
B. an ultraviolet source of illumination;

C. a dynamic coherent optical condenser coupled to receive said illumination from said ultraviolet source, said condenser having a frequency cutoff typical of an incoherent optical condenser and which has high contrast and resolution typical of a coherent optical condenser;

D. a mask including a desired image to be exposed on said first substrate;

E. an ultraviolet sensitive photoresist layer on said first substrate whose sensitivity is substantially matched to that of said ultraviolet source of illumination;

F. a reflective optical imaging system for imaging a representation of said mask onto said photoresist layer, said



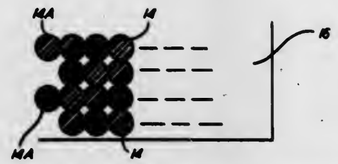
optical imaging system comprising a Cassagrain-type telescope design having a primary focusing mirror with a central obscuration, wherein the diameter of said obscuration is less than one-third the diameter of said primary focusing mirror; and

G. means for focusing said representation of said mask produced by said optical system onto said photoresist layer to within a predetermined depth of focus.

4,498,010
VIRTUAL ADDRESSING FOR E-BEAM LITHOGRAPHY

Charles S. Biechler, Hayward; Allen M. Carroll, Berkeley; Richard E. Graves, Fremont, and Steven A. Lyons, Oakland, all of Calif., assignors to The Perkin-Elmer Corporation, Norwalk, Conn.

Filed May 5, 1983, Ser. No. 491,678
Int. Cl.³ H01J 37/302, 37/317
U.S. Cl. 250—492.2 11 Claims



1. In the fabrication of integrated circuits in a particle beam apparatus, the steps in the process comprising,

forming a particle beam of the desired diameter thus defining the width of a pixel,

providing a resist material to be irradiated by said beam on a substrate,

forming pixels by directing said beam onto said resist material,

controlling said beam as it forms said pixels to form a plurality of adjacent lines of pixels which lines define a feature of a predetermined length and width,

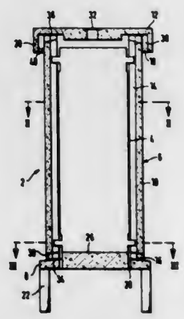
controlling said beam as it forms said area to form pixels adjacent said feature to change said feature by approximately ½ a pixel width when said resist material is developed, and finally,

developing said resist material.

4,498,011
DEVICE FOR RECEIVING, MOVING AND RADIATION-SHIELDING OF VESSELS FILLED WITH EXPENDED REACTOR FUEL ELEMENTS

Hans P. Dyck, Burgdorf; Klaus Janberg, Ratingen; Wolfgang Richter, Lautzen, and Harry Spilker, Graben-Neudorf, all of Fed. Rep. of Germany, assignors to Deutsche Gesellschaft fur Wiederaufarbeitung, Fed. Rep. of Germany

Filed May 8, 1981, Ser. No. 261,750
Claims priority, application Fed. Rep. of Germany, May 9, 1980, 3017767
Int. Cl.³ G21F 5/00
U.S. Cl. 250—507.1 1 Claim



1. A device for receiving, moving, and radiation shielding of vessels filled with expended reactor fuel elements, comprising a protective concrete container having a base; a cylindrical protective jacket, the inner diameter of which is somewhat greater than the diameter of the vessel holding the fuel elements to provide an annular space therebetween; a cover; lateral air inlet ducts at the lower rim of the jacket in communication with the atmosphere and said annular space; and lateral air outlet ducts in the region of the upper rim of the jacket below the cover in communication with the atmosphere and said annular space, characterized in that

said base consists of a movable pallet separate from said jacket having a central platform for supporting said fuel element vessel, said jacket resting upon the margin of said base surrounding said platform,

said base carries centering means to properly position said jacket on said base, and is supported by legs to permit underrun for lifting,

said air outlet ducts have two inclined segments joined at an apex within the wall of said jacket, an inner segment opening into said annular space and an outer segment opening to the atmosphere, said inner segment being longer than and extending below said outer segment,

said cover is in the form of a hood having a downwardly-turned flange spaced from and surrounding said jacket and extending below said outlet ducts.

4,498,012
ABSOLUTE RADIOMETRIC DETECTOR

C. Richard Duda, El Segundo, Calif., assignor to United Detector Technology, Hawthorne, Calif.

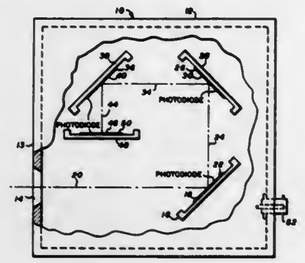
Filed Feb. 2, 1983, Ser. No. 463,258
Int. Cl.³ G01J 1/42
U.S. Cl. 250—578 8 Claims

1. A radiometric detector comprising:

an enclosure having means through which a light beam can enter said enclosure;

a plurality of light sensitive devices which produce electrical signals responsive to impinging light, the devices being positioned within the interior of the enclosure in a manner allowing said light beam to impinge upon a surface of one

of said devices and the light reflected from said surface of one of said devices to impinge on a surface of another of said devices, with any of such light reflected therefrom impinging on still another of said devices with such arrangement similarly established for each of said devices



except for the last in the plurality of devices to be impinged by such reflected light, said last device being positioned such that light reflected by it is reflected back in the direction of said impinging light; and

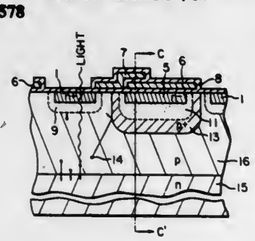
an output means for providing external access to an electrical signal produced by said devices.

4,498,013

SOLID STATE IMAGE SENSOR EXHIBITING REDUCED IMAGE SMEARING EFFECTS

Takao Kuroda, Osaka; Kenju Horii, Shiga, and Shigenori Matsumoto, Osaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Mar. 30, 1982, Ser. No. 363,518
Claims priority, application Japan, Mar. 30, 1981, 56-47834
Int. Cl.³ H01L 27/14
U.S. Cl. 250—578 **5 Claims**



1. A solid state image pickup device comprising, on a major surface of a semiconductor substrate, a plurality of photoelectric, transducers, signal readout means for reading out a signal charge stored in each of said plurality of photoelectric transducers and an impurity concentration in a first substrate region enclosing said readout means adjacent to said photoelectric transducers and which is higher than an impurity concentration in a second substrate region under said photoelectric transducers.

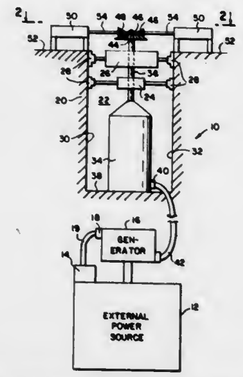
4,498,014

ELECTRIC GENERATING SYSTEM

Daniel Reyes, 233 Broadway, Room 3615, Brooklyn, Nebr.W YORK 10007

Filed Mar. 29, 1983, Ser. No. 460,675
Int. Cl.³ F01D 15/10
U.S. Cl. 290—4 **3 Claims**

1. An electric generating system which comprises:
(a) an external power source;
(b) an expansion engine connected to the power source;
(c) a large generator electrically connected to output of the expansion engine;
(d) a housing having a well;
(e) a pair of bearings mounted to side walls of the well;
(f) a motor having a drive shaft, the motor mounted vertically at bottom of the well, electrically connected to output of the generator with the drive shaft rotatably mounted in the bearings having an end extending therefrom;
(g) a large bevel gear driven by the drive shaft of the motor;
(h) a plurality of small bevel gears, each small bevel gear radially aligned and driven by the large bevel gear; and



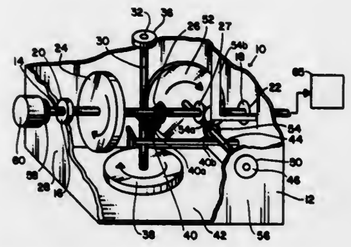
(i) a plurality of small generators, each small generator having a driven shaft affixed to a small bevel gear and mounted to the housing around the well to produce a distributed output of electrical power from such generator wherein each of the driven shafts of the small generators is pivotable so that each driven shaft can go to an up position to disengage the small bevel gear from the large bevel gear making each of the small generators inoperative when needed.

4,498,015

FLYWHEEL DEVICE FOR A MOVING VEHICLE

Mario H. Gottfried, Mexico City 21, D F/0400, Mexico

Filed Dec. 13, 1982, Ser. No. 449,487
Int. Cl.³ B60L 11/16
U.S. Cl. 290—15 **9 Claims**



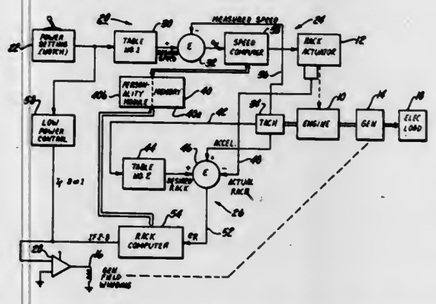
9. An energy storage device comprising:
a first flywheel mounted on a first shaft extending in a first plane between a first bearing and a second bearing;
an enclosure with a wall in which said first bearing is embedded and with an opening through a wall on the opposite side of said enclosure in which said second bearing is attached to said enclosure and through which said first shaft protrudes;
a second flywheel mounted on a second shaft extending in a second plane perpendicular to said first plane between a third bearing and a fourth bearing, said third and fourth bearings being embedded in the walls of said enclosure;
a third flywheel mounted on a third shaft extending in a third plane perpendicular to said second plane and perpendicular to said first plane between a fifth bearing and a sixth bearing, said fifth and sixth bearings being embedded in the walls of said enclosure;
a first beveled gear mounted on said first shaft meshing with a second beveled gear mounted on said second shaft, whereby rotary motion and torque of said first shaft is transmitted to said second shaft; and
a third beveled gear mounted on said first shaft meshing with a fourth beveled gear mounted on said third shaft, whereby rotary motion and torque of said first shaft is transmitted to said third shaft.

4,498,016

LOCOMOTIVE GOVERNOR CONTROL

Walter E. Earleson; Dennis M. King, both of Peoria, and Michael E. Moncelle, Normal, all of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Aug. 4, 1983, Ser. No. 520,372
Int. Cl.³ F02C 9/04
U.S. Cl. 290—40 R **22 Claims**



1. A control system for an engine-generator unit (10,14) of the type having a fuel delivery control (12) and a field current controller (28), comprising:
a power selector (22) having a plurality of selectable power settings;
speed calculator means (24) for deriving a speed error signal as a function of the power selector setting and the actual engine speed and for applying an output which is a function of the speed error signal to the fuel delivery controller (12); and
rack calculator means (26) for deriving a rack error signal as a function of actual engine speed and actual fuel delivery controller setting and for applying an output to the field current controller (28) which is a function of the rack error signal.

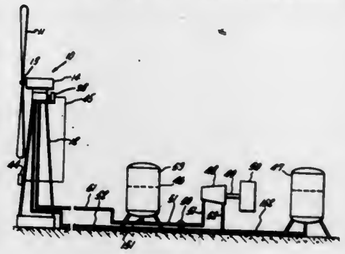
4,498,017

GENERATING POWER FROM WIND

William E. Parkins, 20120 Wells Dr., Woodland Hills, Calif. 91364

Continuation-in-part of Ser. No. 450,462, Dec. 16, 1982, , which is a continuation-in-part of Ser. No. 385,330, Jun. 4, 1982,. This application Apr. 21, 1983, Ser. No. 487,099
Int. Cl.³ F03D 17/02, 49/02; F04B 49/00
U.S. Cl. 290—44 **30 Claims**

1. Apparatus for regulating the rotation of a wind responsive rotor of a wind machine comprising rotatable shaft means driven by a rotor thereby to be rotatable in response to wind action on the rotor, the shaft means being adapted to activate multistage pump means, each stage having intake means coupling a common fluid intake line with the stage and discharge means coupling a common fluid discharge line with the stage, first constricting means located in a discharge line from the stages, control means to regulate controllably the operative positions of the intake means or discharge means on selected stages and the first constricting means thereby to change the pumping status of the stages effectively pumping fluid between the intake line and discharge line, fluid being adapted to pass



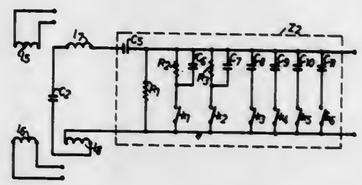
into and from all the selected stages thereby to vary controllably the torque on said shaft for a given shaft power transmitted thereby to permit regulation of the rotor rotational speed.

4,498,018

BALANCING IMPEDANCE INCLUDED IN A FORK

Bengt G. Löfmark, Skärholmen, Sweden, assignor to Telefonaktiebolaget LM Ericsson, Stockholm, Sweden

Filed Nov. 4, 1982, Ser. No. 439,028
Claims priority, application Sweden, Nov. 24, 1981, 8106977
Int. Cl.³ H04B 1/58
U.S. Cl. 307—17 **6 Claims**



1. A balance impedance in a transformer hybrid circuit, said circuit including a two-wire path including a capacitor and, connected to said capacitor, a two-wire line including a line capacitance and a terminating resistance, a first and a second four-wire path and a balancing path, a balancing impedance connected to said balancing path, said balancing impedance including a first capacitor (C5) whose capacitance corresponds to said two-wire line capacitance and to said capacitance in the two-wire path, a first resistor, said first capacitor being connected in series with said first resistor (R1) whose value corresponds to said terminating resistance, a plurality of branches each including a capacitor (C6, C7, . . .) connected in parallel with said first resistor and switch means (k1, k2, . . .) included in said branches for selectively connecting each of said

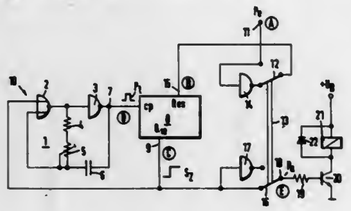
branches to said first capacitor, at least one of said branches including further resistor (R2, R3) connected in parallel with the capacitor in said one branch for simulating the line capacitance.

4,498,019

SWITCHING CIRCUIT WITH A TIME DELAY DEVICE

Hermann Berger, Heidelberg, Fed. Rep. of Germany, assignor to Chemie Und Filter GmbH, Verfahrenstechnik KG, Heidelberg, Fed. Rep. of Germany

Filed Jun. 2, 1983, Ser. No. 500,268
Claims priority, application Fed. Rep. of Germany, Jun. 5, 1982, 3221364
Int. Cl.³ H01H *43/00*
U.S. Cl. 307—132 E **4 Claims**



1. A switching circuit having a time delay device whose output signal actuates a load element with a delay relative to an input control signal arriving from input means, the time delay device comprising:
a pulse generator,
a pulse counter having a counter input which receives pulses from the pulse generator, the pulse counter further having an output which is arranged to transmit a counter output signal after the counter input receives a predetermined number of pulses, and the pulse counter also having a resetting input which receives the input control signal,
a holding circuit for maintaining the counter output signal up to the time of resetting and renewed start of the counting operation,
an inverting device for the input control signal,
a signal inverter for the counter output signal, and
a switch mode selection device arranged to assume first and second positions, the switch mode selection device including a first contact which connects the resetting input of the pulse counter with an output of the inverting device in the first position and, in the second position, connects the resetting input directly with the input means, the switch mode selection device further including a second contact which connects the output of the pulse counter directly with a control input of the load element in the first position and, in the second position, connects the output of the pulse counter with the control input through the signal inverter.

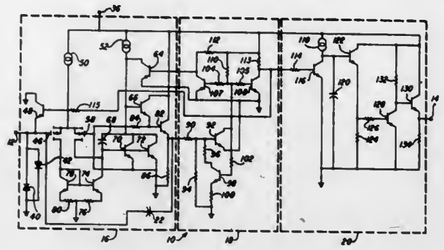
4,498,020

CURRENT TO FREQUENCY CONVERTER

William H. Giolma, and John D. Morgan, both of Dallas, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Oct. 19, 1981, Ser. No. 312,441
Int. Cl.³ H03K *3/01, 5/24*
U.S. Cl. 307—261 **10 Claims**

1. A current to frequency converter having an input terminal with an input current applied thereto, comprising:
(a) a first means having first and second inputs and an output, with said first input connected to said input terminal and with said second input connected to a constant voltage level and a feedback capacitor connected between said first input and said output for producing an output voltage level having a rate of change from a first to a second predetermined voltage level proportional to the magnitude of said input current;
(b) a second means for selectively connecting said input terminal to said constant voltage level in response to an output signal;
(c) a third means for selectively altering the energy on said feedback capacitor to change the said output voltage level at said output from said second predetermined voltage



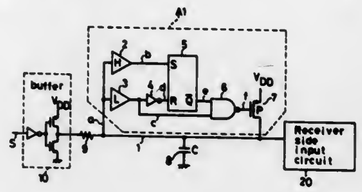
level to said first predetermined voltage level in response to said output signal; and
(d) a fourth means connected to said output to provide said output signal when said output voltage level is at said second predetermined voltage level until said output voltage level is at said first predetermined voltage level for producing a plurality of output signals at a frequency proportional to the magnitude of said input current.

4,498,021

BOOSTER FOR TRANSMITTING DIGITAL SIGNAL

Masaru Uya, Kadoma, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Jul. 13, 1982, Ser. No. 397,871
Int. Cl.³ H03K *5/12, 6/04*
U.S. Cl. 307—443 **9 Claims**



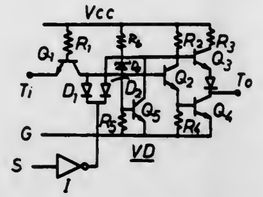
1. A digital signal transmission circuit comprising:
a detection means for receiving voltages of a signal line for transmitting digital voltage signals and detecting whether an instantaneous signal line voltage is in a specified voltage range which is between a predetermined first voltage and a predetermined second voltage, said second predetermined voltage being higher than said first predetermined voltage, lower than said predetermined first voltage, or higher than said predetermined second voltage, and
a current injection means which injects current into said signal line under control of the output of said detection means, in a manner that said current injection means injects currents into said signal line when said signal voltage on said signal line is in said specified voltage range, said current being injected after said signal voltage is detected to be within said specified voltage range and the signal voltage has increased from a voltage lower than said first predetermined voltage.

4,498,022

TRISTATE OUTPUT BUFFER WITH HIGH-IMPEDANCE STATE RESPONSIVE TO INCREASE IN POWER SUPPLY VOLTAGE

Kazumi Koyama, Takarazuka; Toshitaka Fukushima, and Yuichi Kawabata, both of Yokohama, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Dec. 11, 1981, Ser. No. 329,925
Claims priority, application Japan, Dec. 25, 1980, 55-184562
Int. Cl.³ H03K *3/013, 19/088, 19/092*
U.S. Cl. 307—473 **19 Claims**



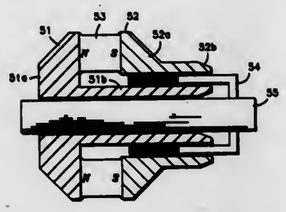
1. An output buffer circuit operative upon the supply of a power source voltage and capable of three-output states including a high level, a low level and a high impedance, the high and low levels being produced in response to an input signal, comprising:
output means, operatively connected to receive the power source voltage and to a ground terminal, for generating the three output states where only one is generated at a time; and
a detector circuit, operatively connected to receive the power source voltage, for detecting a rise in the power source voltage and forcing said output means to generate the high impedance output state irrespective of the input signal when the rise in the power source voltage is detected.

4,498,023

VOICE COIL LINEAR MOTOR WITH INTEGRAL CAPACITOR

Roger P. Stout, Mesa, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Oct. 31, 1983, Ser. No. 546,775
Int. Cl.³ H02K *41/00*
U.S. Cl. 310—14 **12 Claims**



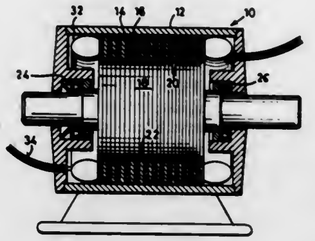
1. A voice coil motor having fixed pole pieces and a movable armature wherein said armature comprises:
a cylindrical, electrically conductive member of varying height located adjacent at least one of said pole pieces, said member and at least one of said pole pieces forming a capacitor.

4,498,024

SYNCHRONOUS ELECTRODYNAMIC MACHINE WITH PERMANENT MAGNETS AND COOLED BY A LIQUID

Antonio Moretti, Bonnelles, and Louis Banon, Paris, both of France, assignors to Regie Nationale des Usines Renault, Paris, France

Filed Apr. 21, 1983, Ser. No. 487,015
Claims priority, application France, Apr. 23, 1982, 82 06987
Int. Cl.³ H02K *9/00*
U.S. Cl. 310—54 **9 Claims**



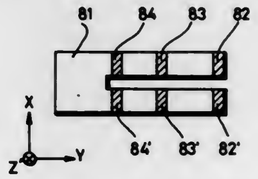
1. A synchronous electrodynamic machine comprising:
(a) a hollow cylindrical housing having an end wall at each end thereof;
(b) a stator mounted in said housing, said stator having an inner cylindrical wall which is continuous and smooth and a plurality of axial cooling channels extending through said stator in parallel to said inner cylindrical wall;
(c) a bearing centrally mounted in each end wall of said housing;
(d) a rotor mounted in said bearings for rotation within said stator, said rotor having an outer cylindrical wall which is continuous and smooth, said rotor being sized, shaped, and positioned such that there is a narrow, symmetrical, annular gap between the outer cylindrical wall of said rotor and the inner cylindrical wall of said stator, said rotor comprising a plurality of radially disposed permanent magnets;
(e) an inlet for cooling fluid in one of said end walls;
(f) an outlet for the cooling fluid in the other of said end walls; and
(g) means for introducing the cooling fluid into said housing through said inlet, for causing the cooling fluid to flow continuously in a single axial direction through said annular gap and said axial cooling channels, and for causing the cooling fluid to flow out of said housing through said outlet.

4,498,025

TUNING FORK

Kunihiro Takahashi, Tokyo, Japan, assignor to Seiko Instruments & Electronics Ltd., Tokyo, Japan

Filed Nov. 20, 1981, Ser. No. 323,488
Claims priority, application Japan, Dec. 12, 1980, 55-175604; Jul. 2, 1981, 56-104304
Int. Cl.³ H01L *41/08*
U.S. Cl. 310—312 **20 Claims**



1. A tuning fork type resonator utilizing coupling between

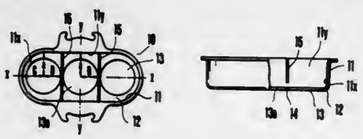
the flexural mode of vibration and the torsional mode of vibration, comprising: a tuning fork body having a pair of vibratable arms; a first mass deposited on an intermediate portion between the free end and the fixed end of each arm, the first masses being positioned on the intermediate portions of the arms at positions wherein addition or reduction of the amount of the first masses does not effect a change of the frequency of the torsional mode of vibration and does effect a variation of the frequency of the flexural mode of vibration; and a second mass deposited at least on one other portion of each arm, the second masses being positioned at positions wherein addition or reduction of the amount of the second masses effects a variation of the frequency of the torsional mode of vibration.

4,498,026

ELECTRON GUN FOR COLOR PICTURE TUBE

Masaaki Yamauchi, Tougane; Minoru Yabe, Mobara; Shoji Shirai, Koganei; Hidemasa Komoro, Chiba, and Kenichi Matsuda, Mobara, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jan. 31, 1983, Ser. No. 462,450
Claims priority, application Japan, Feb. 3, 1982, 57-14991
Int. Cl.³ H01J *29/50, 29/56*
U.S. Cl. 313—414 **3 Claims**



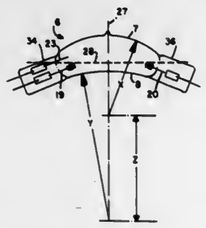
1. In an electron gun for a color picture tube comprising opposing cup-shaped electrodes each having a plurality of openings laterally aligned in a row, said electrodes being combined such that said openings face each other to form electron lenses, the improvement wherein, in at least one of said electrodes, said openings are formed in a flat bottom wall of said electrode, a bridge portion between adjacent openings has a width 0.5 to 1.5 times a thickness of said bottom wall, and corrective plate electrodes are arranged to oppose said bridge portions with a predetermined distance therefrom inside said electrode.

4,498,027

ARC DISCHARGE LAMP WITH IMPROVED STARTING CAPABILITIES, IMPROVED EFFICACY AND MAINTENANCE, AND LINE-OF-SIGHT ARCHED ARC TUBE FOR USE THEREWITH

Robert J. Karlotski, Hillsboro; Ronald C. Lekebush, Goffstown, and Joseph S. Kulik, Jr., Allenstown, all of N.H., assignors to GTE Products Corporation, Stamford, Conn.

Filed Jun. 11, 1982, Ser. No. 387,407
Int. Cl.³ H01J *61/30, 61/32*
U.S. Cl. 313—634 **6 Claims**



1. A line-of-sight arched arc tube for horizontal operation having improved starting capabilities, improved efficacy, and improved lumen maintenance, said arc tube comprising:

(a) a hermetically sealed and light-emitting body with enclosed cavity, said body having a central portion and opposed ends, said central portion being arched with said arch being uppermost when said arc tube is positioned for horizontal operation, said central portion having two opposed walls forming the upper and lower walls of said arch, said upper wall having a greater degree of curvature than said lower wall, said lower wall having a degree of curvature greater than zero at all points thereon;

(b) a primary electrode sealed in each end of said body, said primary electrodes protruding into said body cavity and being positioned therein such that there is a straight line-of-sight between said electrodes without being impeded by said lower wall of said arch of said body;

(c) a fill within said body cavity, said fill being an electric-arc generating and sustaining medium; and

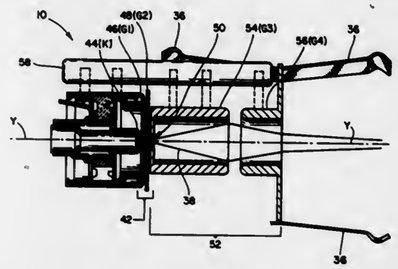
(d) an arc discharge extending between said primary electrodes during full operating temperature and pressure, said arc discharge assuming an arched position substantially parallel to said upper wall, said arc discharge being the sole light-producing means within said arc tube.

4,498,028

ULTRA-SHORT LOBI ELECTRON GUN FOR VERY SHORT CATHODE RAY TUBES

Richard M. Gorski, Chicago, Ill., assignor to Zenith Electronics Corporation, Glenview, Ill.

Filed Sep. 28, 1981, Ser. No. 306,449
Int. Cl.³ H01J *29/46, 29/56*
U.S. Cl. 315—15 **1 Claim**



1. For use in a very short, high-brightness vehicular cathode ray tube having an associated power supply for developing a predetermined pattern of supply voltages, an ultra-short high-performance electron gun having a series of electrodes aligned on an axis for receiving said voltages to produce a finely focused beam of electrons focused on said screen, said gun comprising:

lower end means having a cathode for developing an electron beam, said lower end means further including:

at least one apertured plate grid electrode for forming, in conjunction with said cathode, said beam;

at least one apertured plate prefocusing electrode for receiving a relatively low prefocusing voltage from said power supply for developing, in conjunction with said grid electrode, a crossover in said beam;

main focus lens means for receiving, focusing and accelerating said beam including:

cylindrical focusing electrode means for receiving a relatively intermediate beam focusing voltage approximating 1700 volts from said power supply for focusing a beam spot of minimum size on said screen, the spacing between said focusing electrode and said prefocusing electrode, and the relative difference in potential therebetween, being effective to develop a weak electrostatic field for forming a steeply expanding beam having an entry angle greater than one hundred milliradians;

cylindrical accelerating electrode means for receiving a relatively high beam accelerating voltage from said power supply for accelerating said electron beam, the ratio of the potentials of said voltage on said accelerating electrode means and the potential on said focusing electrode means being greater than six to one for forming a relatively strong electrostatic field therebetween;

said gun electrodes having approximately the following dimensions and spacings:

	Inch
G1 aperture diameter	0.025
G1 thickness, at aperture	0.007
G1–G2 spacing	0.008
G2 thickness, at aperture	0.010
G2 aperture diameter	0.025
G2–G3 spacing	0.010
G3 aperture diameter	0.025
G3 length	0.300
G3 lens diameter	0.148
G3–G4 spacing	0.050
G4 lens diameter	0.148

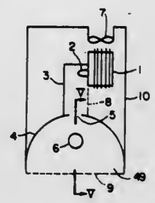
such that said weak electrostatic field between said prefocusing electrode and said focusing electrode is effective to produce said steeply expanding beam for optimally filling said main focus lens means, and said relatively strong electrostatic field between said focusing electrode means and said accelerating electrode means is effective to produce a finely focused electron beam notwithstanding the ultra-short length of said gun.

4,498,029

MICROWAVE GENERATED PLASMA LIGHT SOURCE APPARATUS

Kenji Yoshizawa; Hitoshi Kodama; Yoshibumi Minowa; Hirotsugu Komura, all of Hyogo, and Hiroshi Ito, Kanagawa, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 242,075, Mar. 9, 1981, abandoned. This application Jul. 2, 1984, Ser. No. 625,565
Claims priority, application Japan, Mar. 10, 1980, 55-29911
Int. Cl.³ H01J *7/46, 19/80*
U.S. Cl. 315—39 **15 Claims**



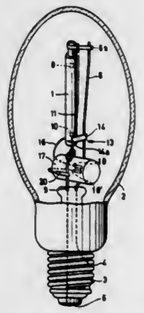
1. A microwave generated plasma light source apparatus comprising: a microwave generator; a microwave cavity having a light reflecting member forming at least a portion of said cavity, said microwave generator being coupled through a feeding opening in said cavity to said cavity; a member transparent to light and opaque to microwaves disposed across an opening of said cavity opposite said feeding opening; a waveguide for guiding microwaves generated by said microwave generator to said feeding opening of said cavity; and an electrodeless discharge bulb disposed at a position in said cavity such that said cavity operates as a resonant cavity at least when said bulb is emitting light, said bulb encapsulating at least one discharge light emissive substance and having a shape and being sufficiently small that said bulb functions substantially as a point light source, said bulb being made of transparent quartz glass and having an inner diameter such that a ratio of an outer surface area of said bulb to the microwave input power is from 1.5 mm^2/W to 15 mm^2/W, the weight of said bulb with respect to the microwave input power being no more than 3.0×10^{-2} g/W, said microwave generator comprising means for generating microwaves intermittently with a rest interval of no more than 5 msec.

4,498,030

HIGH-PRESSURE SODIUM VAPOR DISCHARGE LAMP WITH BIMETALLIC ELEMENT

Karel J. Govaerts, and Louis J. Dehouwer, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 12, 1982, Ser. No. 441,185
Claims priority, application Netherlands, Dec. 17, 1981, 8105687
Int. Cl.³ H01J *7/44*
U.S. Cl. 315—60 **1 Claim**



1. A high-pressure sodium vapor discharge lamp comprising a discharge vessel having a ceramic wall, first and second main electrodes between which the discharge path extends, a bimetallic switch and a glow starter, said glow starter having a terminal which is connected to a contact point of said bimetallic switch, said glow starter, in the inoperative condition of the lamp, being connected electrically in parallel to said discharge path by means of said bimetallic switch and, in the operative condition of the lamp, being switched off electrically by means of said bimetallic switch, said contact point of said bimetallic switch connected to said terminal of said glow starter being disposed on said wall of said discharge vessel, said discharge vessel comprising an external ignition electrode which, in the inoperative condition of the lamp, engages said discharge vessel for the greater part and which, in the operative condition, is removed from said discharge vessel for the greater part by means of said bimetallic switch.

4,498,031

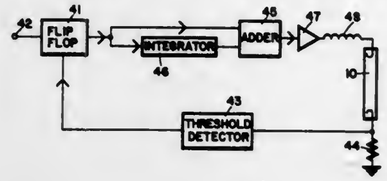
VARIABLE FREQUENCY CURRENT CONTROL DEVICE FOR DISCHARGE LAMPS

Edward H. Stupp, Spring Valley, N.Y., and Mark W. Fellows, Monroe, Conn., assignors to North American Philips Corporation, New York, N.Y.

Filed Jan. 3, 1983, Ser. No. 455,395
Int. Cl.³ H05B *37/02*
U.S. Cl. 315—307 **5 Claims**

1. A circuit for controlling a gas discharge lamp comprising, a variable frequency waveform generator having input means for connection to a source of supply voltage, a non-resonant coupling network including a reactive ballast impedance coupled between an output of said waveform generator and said discharge lamp, means responsive to the current flowing through said discharge lamp for monitoring the level of said lamp current, and frequency control means having an input

coupled to said current monitoring means and an output coupled to said waveform generator for supplying a frequency control signal thereto so as to alter the frequency of the waveform generator as a function of the lamp current and in a sense to regulate the lamp current within predetermined limits, wherein said frequency control means comprises a threshold



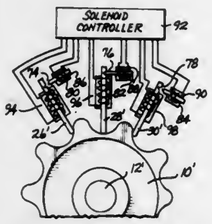
detector for deriving trigger pulses at first and second levels of lamp current, and said waveform generator comprises a trapezoidal waveform generator coupled to the output of the threshold detector for supplying a trapezoidal waveform signal to said ballast impedance and to said discharge lamp connected in series circuit.

4,498,032

HIGH TORQUE DIGITAL STEPPING MOTOR AND CONTROL

George T. Pinson, Huntsville, Ala., assignor to The Boeing Company, Seattle, Wash.

Filed Jul. 12, 1982, Ser. No. 397,605
Int. Cl.[3] H02K *37/00*
U.S. Cl. 318—37 19 Claims



1. A digital command stepping motor, comprising:

a cam mounted for rotation about an axis, said cam having a circular peripheral portion presenting a radially outwardly directed, smoothly undulating cam surface, defined by alternating peak and valley regions;

a set of three linear actuators disposed radially outwardly from said cam surface, each said actuator comprising a radially extending push rod having an end portion in contact with said cam surface, means for forcibly driving its push rod endwise against said cam surface, and means for removing the drive force from its push rod; and

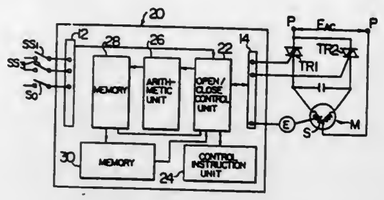
said actuators being spaced relative to said cam surface such that when the push rod of any one actuator is fully extended and in contact with the bottom of a valley region, the push rod of the second actuator is in a partially extended position against a sloping surface between a peak and a valley, and the push rod of the third actuator is in a partially extended position against an oppositely sloping surface between a peak and a valley, so that the cam wheel can be rotated in position in either direction, by operating the actuators to drive the push rod which is in contact with the sloping surface which trails the direction of desired rotation while removing any radially inwardly directed force on the push rods of the other two actuators.

4,498,033

AUTOMATIC DOOR ACTUATOR

Hiroshi Aihara, Suita; Akira Matumura, Ibaraki; Hiroshi Takemura, Neyagawa; Rikiya Kobashi, Amagasaki; Keisuke Satomi, and Hiroe Ishibashi, both of Kobe, all of Japan, assignors to Hokuyo Automatic Co., Ltd., Osaka, Japan

Filed Aug. 5, 1982, Ser. No. 405,702
Claims priority, application Japan, Aug. 11, 1981, 56-126222
Int. Cl.[3] H02P *1/04*
U.S. Cl. 318—261 6 Claims



1. An automatic door actuator which is energized by an external power supply in response to turning-on of a power switch and which comprises a door, motor means coupled to said door to open and close said door, semiconductor controlled rectifying means for selectively connecting said motor means to the external power supply at a controlled phase angle to control a rotating velocity of said motor means, and control means operable, when activated, to supply a trigger signal at a controlled phase angle to said semiconductor controlled rectifying means to activate said semiconductor controlled rectifying means; wherein said actuator further comprises:

arithmetic means for calculating a weight of said door, distance of movement of said door and braking points of said door through learn control of door actuation which is effected once every time said power switch is turned on and irrespective of the on-off condition of said start switch;

first memory means for storing results of calculation by said arithmetic means;

second memory means for previously storing various phase angles for starting operation, for deceleration braking operation, and for predetermined low velocity control, corresponding to various weights of said door; and

said control means being responsive to said first memory means to read out from said second memory means the phase angles for starting operation, for deceleration braking operation and for predetermined low velocity control corresponding to the actual weight of said door determined in said learn control to thereby supply the trigger signal to said semiconductor controlled rectifying means in accordance with the read-out phase angles corresponding to the actual door weight and the distance of movement of said door and the braking points of said door determined in said learn control.

4,498,034

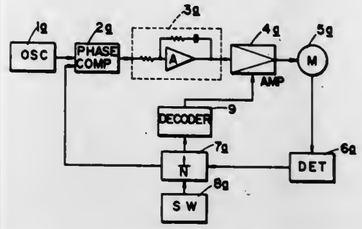
MOTOR SPEED CONTROL CIRCUIT

Masami Shirakawa, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Continuation-in-part of Ser. No. 948,406, Oct. 4, 1978, abandoned. This application Oct. 29, 1980, Ser. No. 202,061
Claims priority, application Japan, Oct. 11, 1977, 52-121765
Int. Cl.[3] H02P *5/40*
U.S. Cl. 318—314 7 Claims

1. In combination with an electric motor; a motor speed control circuit comprising a phase-locked loop composed of a plurality of components including means for producing a speed signal having a frequency proportional to the speed of said motor, a frequency-divider operative to divide said speed signal by a selected dividing ratio, a reference oscillator for

supplying a reference oscillating signal, a phase comparator for comparing the phase of said reference oscillating signal to that of the frequency-divided speed signal and to produce an error signal as a function of the phase difference therebetween, filter means for filtering said error signal, and amplifier means for amplifying said filtered error signal to produce a motor control signal, said motor control signal being supplied to said motor; selecting means for selecting the dividing ratio of said frequency divider and thereby select the rotational speed of said



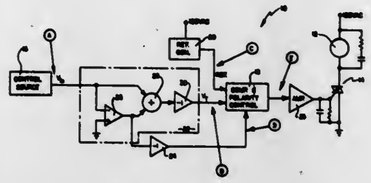
motor; means for producing an output signal corresponding to said selected dividing ratio; and means for supplying said output signal to one of said phase comparator, filter means and amplifier means for varying the gain thereof in accordance with said dividing ratio of the frequency-divider to a value which compensates for changes in the overall gain of said loop resulting from changes in rotational speed of the motor so that said overall gain of said phase-locked loop is maintained substantially constant regardless of said rotational speed of the motor.

4,498,035

CONTROL CIRCUIT FOR LINEARLY CONTROLLING THE SPEED AND DIRECTION OF AN AC POWERED DC MOTOR IN ACCORDANCE WITH THE MAGNITUDE AND POLARITY OF A DC REFERENCE SIGNAL

Pavlo Bobrek, 11 Potter St., Willimantic, Conn. 06226

Continuation of Ser. No. 219,505, Dec. 23, 1980, abandoned. This application Dec. 15, 1983, Ser. No. 562,037
Int. Cl.[3] H02P *5/12*
U.S. Cl. 318—345 D 5 Claims



1. A control circuit for controlling the speed and direction of an AC powered DC motor in a linear relationship to the magnitude and polarity of a DC reference signal, comprising:

triggerable bidirectional current conducting means adapted to be connected in series with a DC motor across an AC voltage supply source; and

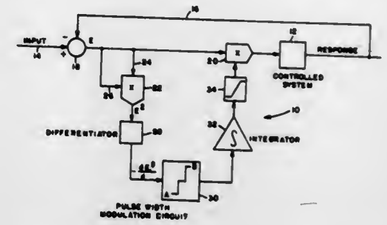
control means for triggering said bidirectional means into conduction for energizing said DC motor at a selected firing angle of said AC source during the positive or negative half cycle thereof in such a way that the firing angle is linearly related to the magnitude and polarity of said DC reference signal, said control means including signal transfer means responsible to said DC reference signal for providing therefrom a DC threshold signal which is always inverted in magnitude but not inverted in polarity relative to said DC reference signal.

4,498,036

ADAPTIVE CONTROL SYSTEM

Robert M. Salemka, Kalamazoo, Mich., assignor to Pneumo Corporation, Boston, Mass.

Filed Aug. 15, 1983, Ser. No. 522,979
Int. Cl.[3] G05B *13/00*
U.S. Cl. 318—561 16 Claims



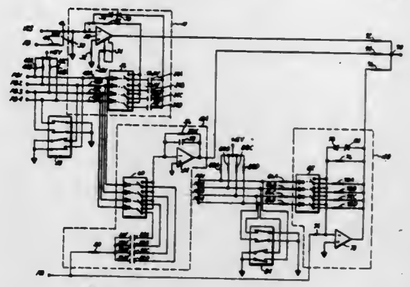
1. An adaptive control method for controlling a parameter of a process or mechanism comprising the steps of measuring the value of the parameter, comparing the measured value with a desired value to obtain an error signal, squaring the error signal, taking the time derivative of the error signal squared, comparing the length of time that the time derivative of the error signal squared has a positive value to the length of time the time derivative of the error signal squared has a negative value to obtain a gain control signal, applying the error signal to the system through an amplifier whose gain is controlled by said gain control signal to adjust the parameter desired to be controlled.

4,498,037

VELOCITY SERVO CONTROLLER

Saeid M. Razavi, St. Paul, Minn., assignor to Electro-Craft Corporation, Hopkins, Minn.

Filed Sep. 22, 1983, Ser. No. 534,801
Int. Cl.[3] G05B *13/00*
U.S. Cl. 318—561 13 Claims



1. In a two-degree of freedom velocity servo controller for a motor, a compensation network comprising, in combination:

first compensation means connected for receiving an error signal representing a difference between a velocity feedback signal and a velocity command signal and for providing a modified output signal to a summing point;

second compensation means connected for receiving the velocity feedback signal and for providing a modified output signal to the summing point;

bandwidth adjustment means operatively coupled to the first and second compensation means for adjusting the bandwidth of the servo controller without varying a damping factor of the controller; and

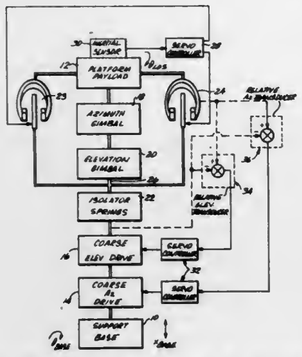
damping adjustment means operatively coupled to the second compensation means for adjusting the damping factor

of the servo controller without varying the bandwidth of the controller.

4,498,038
STABILIZATION SYSTEM FOR SOFT-MOUNTED PLATFORM

Richard M. Malueg, 1301 Hidden Springs La., Glendora, Calif. 91740

Filed Feb. 15, 1983, Ser. No. 466,377
Int. Cl.³ B64C *17/02*
U.S. Cl. 318—648 **13 Claims**



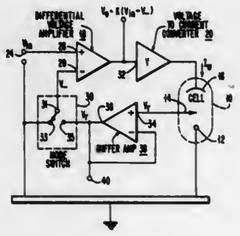
1. Apparatus for stabilizing the motion of an inertial load relative to a supporting member, comprising:

an intermediate frame member, compliant isolation means connecting the intermediate frame member to the supporting member for providing limited translational motion of the intermediate member relative to the supporting member, pivot means connecting the load to the intermediate frame member, the pivot means allowing rotation of the load relative to the intermediate frame member about at least two mutual perpendicular axes of revolution, actuator means connected to the load and to the intermediate frame member for rotating the load relative to the intermediate frame member about each of said axes of revolution, and means for controlling said actuator means to adjust the angular position of the load relative to the intermediate frame about both said two axes of revolution.

4,498,039
INSTRUMENT FOR USE WITH AN ELECTROCHEMICAL CELL

Ronald K. Galwey, Los Gatos, and Kay K. Kanazawa, San Jose, both of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 18, 1979, Ser. No. 49,525
Int. Cl.³ G05F *1/46*
U.S. Cl. 323—234 **3 Claims**



3. An instrument for use with an electrochemical cell having a counter electrode, a reference electrode and a grounded working electrode, said instrument operating in either a galvanostatic mode or a potentiostatic mode and comprising:

a terminal connected to an external voltmeter;

differential amplifier means having an inverting input, a non-inverting input connected to an external voltage source and an output;

a voltage to current converter having an input connected to said amplifier means output and an output connected to the counter electrode, said converter having a current output that is linearly proportional to the voltage input;

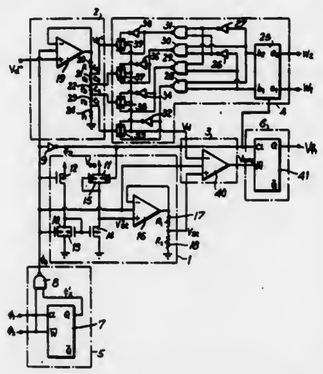
buffer amplifier means having a non-inverting input connected to the reference electrode, an inverting input connected to said terminal and an output connected to said terminal; and

switch means that is connected between said differential amplifier means inverting input, said terminal and ground wherein said inverting input is connected to said terminal when operating in a potentiostatic mode and wherein said inverting input is connected to ground when operating in a galvanostatic mode.

4,498,040
REFERENCE VOLTAGE CIRCUIT

Asakawa Tatsushi, and Morozumi Shinji, both of Suwa, Japan, assignors to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan

Continuation of Ser. No. 150,485, May 16, 1980, Pat. No. 4,377,781, which is a continuation of Ser. No. 900,214, Apr. 26, 1978, Pat. No. 4,258,310. This application Nov. 30, 1982, Ser. No. 445,402
Claims priority, application Japan, Apr. 26, 1977, 52-48290; Apr. 26, 1977, 52-48291
The portion of the term of this patent subsequent to Mar. 24, 1998, has been disclaimed.
Int. Cl.³ G05F *3/20*
U.S. Cl. 323—299 **8 Claims**

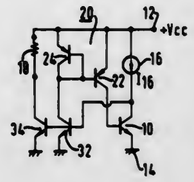


1. A reference voltage circuit to which a source voltage is applied comprising at least first and second pairs of complementary coupled P-channel and N-channel MOS transistors, said P-channel transistors in said first pair being coupled in series with said N-channel transistor in said first pair, said P-channel transistor in said second pair being coupled in series with said N-channel transistor in said second pair, at least one of said transistors in said first pair of complementary coupled P-channel and N-channel transistors having a different threshold voltage than the like polarity transistor in the second pair of complementary coupled P-channel and N-channel transistors, said first and second pairs of complementary coupled P-channel and N-channel MOS transistors defining at least a first predetermined voltage having a magnitude that is related to the difference in threshold voltages between said respective like polarity transistors in said first and second pairs, said predetermined voltage being substantially independent of variations in temperature and minor variations in said source voltage, said first and second pairs of complementary coupled P-channel and N-channel MOS transistors producing a set reference output voltage at said predetermined voltage in response to said source voltage, said at least first and second pairs of complementary coupled P-channel and N-channel MOS transistors being integrated into a single circuit chip.

4,498,041
CONSTANT CURRENT SOURCE CIRCUIT

Hisao Kuwahara, Kamakura, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kanagawa, Japan

Filed Sep. 1, 1983, Ser. No. 528,591
Claims priority, application Japan, Sep. 1, 1982, 57-151917
Int. Cl.³ G05F *3/20*
U.S. Cl. 323—316 **6 Claims**



1. A constant current source circuit for providing a current to a load comprising:

a power source voltage supply terminal which is designed to receive a DC power source voltage;

a reference potential terminal;

a current source;

a first transistor connected at its collector to said power source voltage supply terminal via said current source and at its emitter to said reference potential terminal;

a current mirror circuit;

a second transistor connected at its collector to the base of said first transistor via said current mirror circuit and at its emitter to said reference potential terminal, the base of said second transistor being connected to the collector of said first transistor, to effect a closed feedback loop through said second transistor, said mirror circuit and said first transistor for maintaining a constant current to the load; and

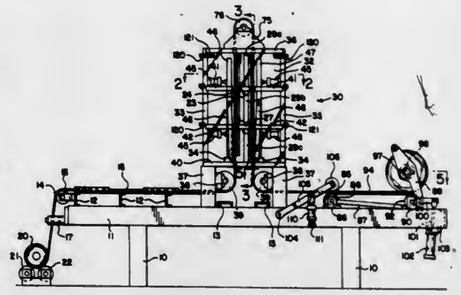
a third transistor connected between said power source voltage supply terminal and said reference potential terminal via output terminals to which the load is designed to be connected, the base of said third transistor being connected to be driven by a current proportional to a current of said second transistor.

4,498,042
MAT TESTING APPARATUS

Clifford A. Landsness, and Thomas M. Buehrle, both of Akron, Ohio, assignors to The B. F. Goodrich Company, New York, N.Y.

Filed Nov. 15, 1982, Ser. No. 441,146
Int. Cl.³ G01R *31/12*
U.S. Cl. 324—54 **9 Claims**

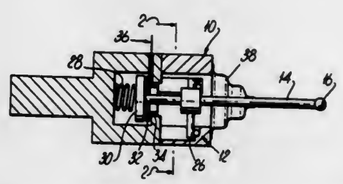
1. An apparatus for the testing of the electrical non-conductivity of an electrically non-conductive matting sheet material comprising support means having a forward portion and a rearward portion, a take-up roll maounted adjacent to said rearward portion of said support means for winding up said matting as said matting is directed thereto, at least a pair of flat electrode plates mounted on said support means intermediate of said forward and rear portions, power operated means mounted on said support means and interconnected to one of said pair of electrode plates for moving said one plate into a closely adjacent position to the other one of said plates to provide a small gap between said plates for testing electrical conductivity of said matting in said gap, means for applying a voltage to said one plate, gauge means connected to said other plate for registering a flow of voltage to said other plate from said one plate, means on said support means for feeding matting sheet material from a supply roll on said forward portion of said support means to between said electrode plates and for directing said matting material from between said electrode plates to said take-up roll, and at least one of said electrode plates being removably supported to provide the substituting of a different width electrode plate to facilitate the testing of different widths of matting sheet material between said electrode plates.



4,498,043
PROBES FOR MEASURING APPARATUS

Geoffrey L. Heathcote, Cropston, and Alan C. Hollowell, Rothwell, both of England, assignors to The Rank Organisation Limited, London, England

Filed Jun. 23, 1982, Ser. No. 391,350
Claims priority, application United Kingdom, Jun. 23, 1981, 8119369
Int. Cl.³ G01R *27/26*
U.S. Cl. 324—61 P **8 Claims**



1. Measuring apparatus for detecting at what point in space contact is established between a stylus and a test surface of an object, said apparatus comprising a probe comprising a support, a stylus member having a sensing tip, three spaced seatings on the support defining a stable rest position for the stylus member, means normally urging the stylus member toward said seatings and into said stable rest position, the stylus member being displaced from said stable rest position when the stylus contacts the test surface of the object and being relocated into said stable rest position when contact with the object is broken, a capacitative transducer having a first part carried by the support and a second part carried by the stylus member, and a detector circuit connected to said transducer to detect a change in capacitance due to displacement of the stylus member out of its stable rest position.

4,498,044

METHOD AND CIRCUITRY FOR MEASURING THE IMPEDANCE OF A SENSOR

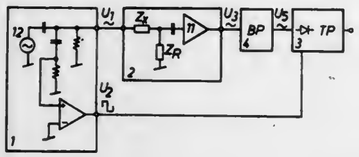
Petr Horn, Oberhasli, Switzerland, assignor to Novasina AG, Zurich, Switzerland

Filed May 11, 1982, Ser. No. 377,070

Claims priority, application Switzerland, May 18, 1981, 3218/81

Int. Cl.³ G01R 27/02

U.S. Cl. 324—65 R 8 Claims



1. Method of measuring the impedance of a sensor by a sine-shaped AC voltage of defined frequency comprising the steps of

generating a square wave voltage in synchronism with the sine-shaped AC voltage;

applying the sine-shaped AC voltage to a measuring circuit containing said impedance;

modifying the resulting AC voltage proportional to said impedance in a selective circuit of a defined phase-frequency- and amplitude-frequency characteristic, thereby bringing said AC voltage into a defined phase relation to said square wave voltage;

rectifying the modified AC voltage and transforming it into a DC voltage proportional to said impedance in a rectifier- and low-pass circuit, said rectifying and transforming step being affected by intermittently short-circuiting a grounded resistor of said rectifier- and low-pass circuit by means of a switch controlled by said square wave voltage.

4,498,045

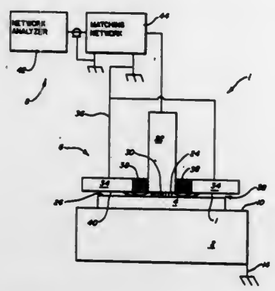
APPARATUS AND METHOD FOR DETERMINING SURFACE CONTOUR OF PIEZOELECTRIC WAFERS

Lawrence N. Dworsky, Northbrook, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Filed May 27, 1982, Ser. No. 382,426

Int. Cl.³ G01N 27/00

U.S. Cl. 324—71.5 19 Claims



1. An apparatus for determining the surface contour of a substantially flat wafer of piezoelectric material having a slight convexity in its opposing faces by measuring a frequency response of the wafer in a plurality of locations, comprising:

a base for supporting the wafer, said base including means for coupling the wafer to ground;

probe means for applying a localized electrical field to a plurality of locations on one face of the wafer; and

means for measuring the frequency response of the wafer at each of said locations.

4,498,046

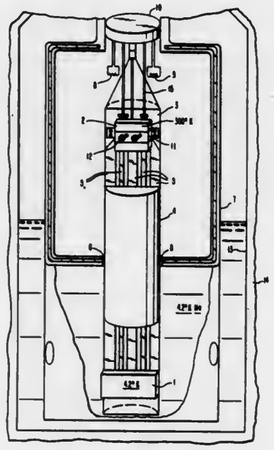
ROOM TEMPERATURE CRYOGENIC TEST INTERFACE

Sadeg M. Faris; Paul A. Moskowitz; Arthur Davidson, all of Yorktown Heights, and George A. Sai-Halasz, Mt. Kisco, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 18, 1982, Ser. No. 434,770

Int. Cl.³ G01R 5/00; F25B 19/00

U.S. Cl. 324—158 F 6 Claims



1. A test device for a high speed ambient temperature range operating electronic device, having test operating electronics and display devices, a holder for the ambient temperature range operating electronic device, a cryogenic temperature operating sampling device and a holder for the cryogenic temperature operating sampling device in a cryogenic environment, the environment maintained by a dewar,—characterized by—

(a) channel means forming an open pass-through channel between ambient temperature environment and cryogenic environment;

(b) a pass-through plug having two portions complementary for part of the plug length for forming a removable pass-through plug which is operative to seal said channel means to maintain separation between the cryogenic environment and the ambient temperature range environment, which pass-through plug has first and second non-complementary extensions to serve as first and second chip mounting stations;

(c) said pass-through plug having, on at least one of its portions, a planar transmission line of multiple conductors connecting said first chip mounting station to said second chip mounting station;

(d) said pass-through plug having its complementary portions sealable by electrically insulating low heat transfer sealant;

(e) plug sealing means associated with said complementary portions of said pass-through plug to provide a seal for the cryogenic environment with respect to the ambient environment;

(f) electrical connecting means at said first station to connect a cryogenic-temperature-operating chip to said operating electronics and to said planar transmission line; and

(g) electrical connecting means at said second station to connect an ambient temperature-operating chip temporarily to said operating electronics and to said planar transmission line.

4,498,047

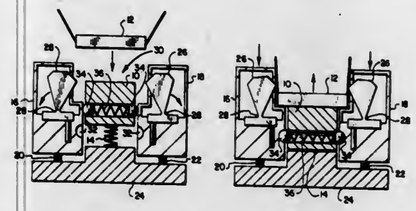
INTEGRATED CIRCUIT MOUNTING APPARATUS

Donald L. Hexamer; Randy D. Spence, both of Dallas, and Johnny Hesselberg, Garland, all of Tex., assignors to Custom Automation Designs, Inc., Garland, Tex.

Filed Nov. 29, 1982, Ser. No. 444,971

Int. Cl.³ G01R 31/02; H05K 1/02

U.S. Cl. 324—158 F 13 Claims



1. An integrated circuit mounting apparatus for utilization in testing integrated circuit devices comprising:

a stage element movable between a first position and a second position and having an upper surface suitable for supporting an integrated circuit device having a plurality of conductive leads disposed along the periphery thereof;

biasing means for urging said stage element into said first position;

restraining means for temporarily restraining said stage element in said second position;

a plurality of conductive elements disposed adjacent to the periphery of said stage element wherein movement of said stage element into said second position will permit said plurality of said conductive elements to contact said plurality of conductive leads at a point above the upper surface of said stage element and wherein movement of said stage element into said first position will permit said integrated circuit device to be lifted from said upper surface of said stage element; and

releasing means for selectively releasing said stage element from said second position.

4,498,048

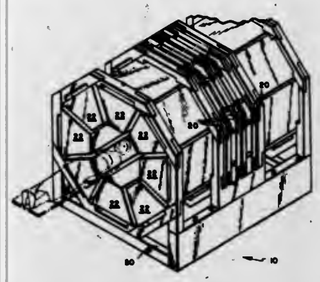
NMR IMAGING APPARATUS

Denny L. Y. Lee, Andover, and Robert D. Hay, Concord, both of Mass., assignors to E. I. Du Pont de Nemours and Company, Inc., Wilmington, Del.

Continuation of Ser. No. 422,370, Sep. 23, 1982, abandoned. This application Mar. 12, 1984, Ser. No. 587,848

Int. Cl.³ G01R 33/08

U.S. Cl. 324—307 8 Claims



1. An NMR imaging apparatus having a desired imaging volume for imaging of biological tissue, said apparatus comprising bias means for generating a bias field, means for generating gradient fields, and radio frequency means for applying a pulse of electromagnetic radiation to the biological tissue and for detecting the resultant signals emitted from said tissue;

wherein said bias means comprises a plurality of dipole ring magnets, each dipole ring magnet comprising a plurality of segments, each segment comprising an oriented, anisotropic permanent magnet material arranged in a ring so that there is a substantially continuous ring of permanent magnet material;

wherein the inner radius of at least one dipole ring magnet is different from the inner radius of an adjacent dipole ring magnet.

4,498,049

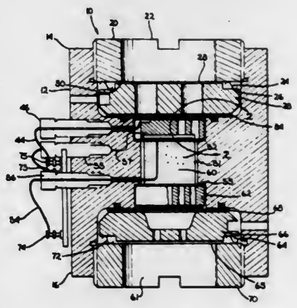
RADIATION COMPENSATOR FOR GAS SENSORS

Fred Rudek, Mission Viejo, Calif., assignor to Exo Sensors, Inc., Laguna Hills, Calif.

Filed Mar. 11, 1982, Ser. No. 357,309

Int. Cl.³ G01N 27/02

U.S. Cl. 324—443 16 Claims



1. A device for detecting the partial pressure of a gas within an environment which produces anomalies, comprising:

housing means disposed within the gas;

first electrode means disposed within said housing means;

second electrode means disposed within said housing means;

first connection means coupling said first electrode means to said second electrode means producing a first electrical potential indicative of the partial pressure of the gas to be detected including any environmentally induced anomalies;

third electrode means dispose within said housing means electrically isolated from said first and second electrode means and isolated from the gas to be detected;

second connection means coupling said third electrode means to said first electrode means producing a second electrical potential indicative of environmentally induced anomalies;

whereby when said second potential is subtracted from said first potential, a signal representative of the partial pressure of the gas will be produced.

4,498,050

DEMODULATION DEVICE FOR COMPOSITE PSK-PSK MODULATED WAVES

Yasuharu Yoshida, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed May 4, 1983, Ser. No. 491,487

Claims priority, application Japan, May 7, 1982, 57-75323

Int. Cl.³ H03D 3/00, 3/06

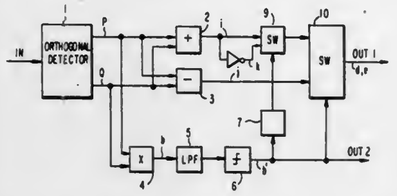
U.S. Cl. 329—110 4 Claims

1. A demodulating device for demodulating a composite PSK-PSK modulated wave comprising a 2^n-phase (n being a positive integer) PSK modulated wave carrying a main signal and a 2-phase modulated wave carrying a subdata signal having a data rate no faster than that of said main data signal, said subdata signal including a frame signal, comprising:

a phase synchronizing demodulator for providing two orthogonally demodulated signals in response to said composite PSK-PSK modulated wave;

first means connected to said phase synchronizing demodulator for reproducing said subdata signal from said two orthogonally demodulated signals;

second means for extracting said frame signal from the reproduced subdata signal and discriminating the phase



locked state in said phase synchronizing demodulator in response to said reproduced subdata signal and the extracted frame signal; and

third means connected to said phase synchronizing demodulator and said second means for reproducing said main data from said two orthogonally demodulated signals in response to said frame signal and said reproduced subdata signal.

4,498,051

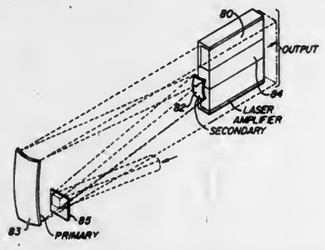
HIGH ENERGY LASER

Robert O. Hunter, 1811 Verano Pl., Irvine, Calif. 92664, and David L. Fried, 5362 S. Ohio St., Yorba Linda, Calif. 92686

Division of Ser. No. 23,987, Mar. 26, 1979, Pat. No. 4,337,437. This application Jul. 9, 1981, Ser. No. 281,638

Int. Cl.³ H01S *3/05, 3/10*

U.S. Cl. 330—4.3 **29 Claims**



1. Process for passing and amplifying discrete pulses of light comprising the step of

providing a first mirror array of discrete mirrors

introducing a series of light pulses at along non-intersecting paths to each said mirror of said first mirror array;

providing a telescope including a primary optic and a secondary optic;

aligning each said mirrors of said first mirror array to each reflect light to said secondary optic for passage through said telescope to said primary along paths which intersect but have differing angularities from the light of all other said paths;

providing a laser amplifier having an amplifying optic path therethrough for amplifying all of said series of light pulses in sequence upon passage through said telescope; and

providing a second scrambler mirror array of discrete mirrors

aligning each said mirror of said second mirror array to direct light from said telescope and amplifier with discrete output paths from one another.

4,498,052

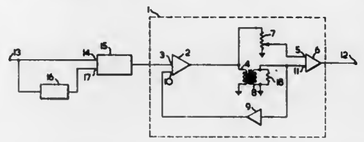
SIGNAL DETECTING CIRCUIT

Noel O. Fothergill, Lerici, Italy, assignor to Her Majesty the Queen in right of Canada, as represented by the Minister of National Defence, London, England

Filed Dec. 23, 1976, Ser. No. 756,613

Int. Cl.³ H03F *1/26, 1/30*

U.S. Cl. 330—149 **13 Claims**



1. A low amplitude signal detecting circuit comprising:

(a) a first operational amplifier having a pair of inputs, including means for applying the signal to be detected to one of the inputs,

(b) a metal core transformer having a pair of windings, one winding being connected to the output of the first operational amplifier,

(c) a second operational amplifier having a pair of inputs, and an output for providing an enhanced output of the signal to be detected;

(d) amplitude control means connecting one of the inputs of the second operational amplifier to the output of the first operational amplifier, and the other of the inputs to the secondary winding of the transformer, and

(e) means for feeding back an A.C. component of the output signal from the operational amplifier from the second winding of the transformer to the second input of the first operational amplifier out of phase with the signal at the first input of the first operational amplifier.

4,498,053

CURRENT AMPLIFIER

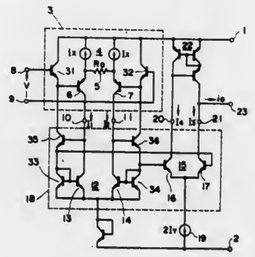
Masayuki Katakura, Yokohama, and Takumi Tenma, Atsugi, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Jun. 22, 1983, Ser. No. 506,700

Claims priority, application Japan, Jun. 28, 1982, 57-109753

Int. Cl.³ H03F *3/45*

U.S. Cl. 330—261 **19 Claims**



1. A current amplifier for use with an input voltage comprising:

converting means for converting said input voltage to output currents and including first and second transistors each having base, emitter and collector electrodes, said base electrodes of said first and second transistors being respectively connected to first and second input terminals receiving said input voltage, third and fourth transistors

each having base, emitter and collector electrodes, said base electrodes of said third and fourth transistors being respectively connected to said emitter electrodes of said first and second transistors, each of said third and fourth transistors supplying one of said output currents, resistor means connected between said emitter electrodes of said third and fourth transistors, and bias current means for supplying a bias current to said resistor means; and

multiplier means for multiplying said output currents from said converting means and including current inverting means and feedback means connected between said converting means and said current inverting means.

4,498,054

DIFFERENTIAL AMPLIFIER CIRCUIT

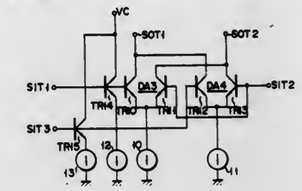
Hirokazu Fukuda, Yokohama, and Masaru Hashimoto, Ayase, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Aug. 26, 1983, Ser. No. 526,822

Claims priority, application Japan, Aug. 31, 1982, 57-150987

Int. Cl.³ H03F *3/45*

U.S. Cl. 330—261 **8 Claims**



1. A differential amplifier circuit comprising:

first differential amplifier means having first and second input terminals and an output terminal;

second differential amplifier means having a first input terminal and an output terminal connected to the first input terminal and output terminal of said first differential amplifier means, respectively, and a second input terminal;

first and second current source means respectively connected to said first and second differential amplifier means, for supplying first and second drive currents to said first and second differential amplifier means, the sum of the first and second drive currents being kept constant;

first and second transistors having bases respectively connected to the second input terminals of said respective first and second differential amplifier means;

third and fourth current source means respectively connected to the emitter-collector paths of said first and second transistors, for supplying third and fourth drive currents in a predetermined ratio to said second and first drive currents, respectively.

4,498,055

CIRCUIT ARRANGEMENTS FOR MODIFYING DYNAMIC RANGE

Ray M. Dolby, 50 Walnut St., San Francisco, Calif. 94118

Continuation-in-part of Ser. No. 300,741, Sep. 10, 1981, , which is a continuation-in-part of Ser. No. 292,958, Aug. 14, 1981, abandoned, and Ser. No. 275,382, Jun. 19, 1981, abandoned, and Ser. No. 275,205, Jun. 19, 1981, abandoned, and Ser. No. 275,204, Jun. 19, 1981, abandoned, and Ser. No. 180,771, Aug. 22, 1980, abandoned, and Ser. No. 163,950, Jun. 30, 1980, abandoned. This application Dec. 1, 1981, Ser. No. 325,530

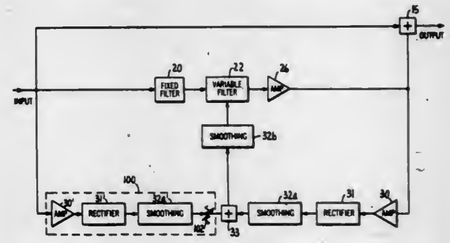
Int. Cl.³ H03G *3/30*; H03F *1/26*

U.S. Cl. 330—284 **42 Claims**

1. A circuit arrangement for modifying the dynamic range of an input signal, comprising:

frequency selective circuit means for dividing the frequency spectrum in which the input signal lies into pass-band and stop-band regions, and

dynamic modification means for modifying the dynamic range of signal components in the pass-band region in



response to signal components lying in the pass-band and stop-band regions, the dynamic modification means being less responsive to stop-band signal components as the level of the input signal rises.

4,498,056

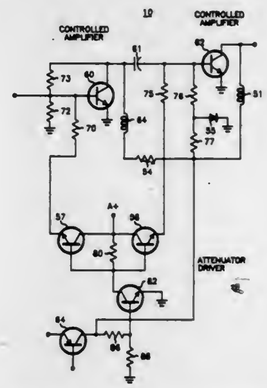
SIGNAL AMPLIFIER AND INTEGRAL SIGNAL SHUNT ATTENUATOR

Peter A. Kwitkowski, and David R. Pacholok, both of Elgin, Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jul. 28, 1983, Ser. No. 518,232

Int. Cl.³ H03F *3/04*

U.S. Cl. 330—296 **15 Claims**



1. An amplifier and integral signal shunt attenuator, comprising:

an amplifying device normally biased for signal amplification having means for inputting a signal and means for outputting an amplified signal, having a signal transfer impedance between the input and output means, and having a signal shunt impedance across the input means;

means for disabling the amplifying function of the device; and

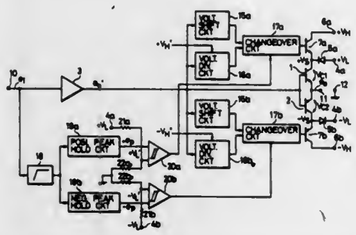
means for rebiasing the device,

whereby the device may be rebiased to lower the shunt impedance with respect to the transfer impedance such that an undesirable signal may no longer be fed-through the transfer impedance but may be substantially shunted across the relatively low shunt impedance.

4,498,057
POWER AMPLIFIER WITH POWER SUPPLY SWITCHING

Masao Noro, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan

Filed Dec. 23, 1982, Ser. No. 452,866
Claims priority, application Japan, Dec. 25, 1981, 56-211480
Int. Cl.³ H03F *3/30*
U.S. Cl. 330—297 **20 Claims**



1. A power amplifier with power supply switching, comprising:

a first amplifying device having a control signal input terminal, a power supply input terminal, and an output terminal, said power supply input terminal being applied with a first power supply voltage;

a second amplifying device having a control signal input terminal, a power supply input terminal, and an output terminal, said power supply input terminal being coupled to a second power supply voltage, whose absolute value is lower in magnitude than an absolute value of said first power supply voltage, via switching means and the output terminal of said first amplifying device, said control signal input terminal being coupled to an input terminal of the amplifier which is applied with an input signal to be amplified, and said output terminal being coupled to a load via an output terminal of the amplifier;

voltage shifting means for shifting a voltage corresponding to said input signal by a first predetermined voltage;

first voltage dividing means for dividing a voltage difference between said voltage corresponding to the input signal and constant voltage having an absolute value greater than said second power supply voltage; and

control means for selectively supplying to the control input terminal of said first amplifying device a shifted output of said voltage shifting means or a divided output of said first voltage dividing means, in response to the magnitude of the frequency of said input signal when the voltage of said input signal is greater than a predetermined value.

4,498,058
LOW INPUT CAPACITANCE AMPLIFIER

Vernal M. Benrud, Eagan, Minn., assignor to Sperry Corporation, New York, N.Y.

Filed May 17, 1982, Ser. No. 378,556
Int. Cl.³ H03F *1/38, 3/16*
U.S. Cl. 330—300 **5 Claims**

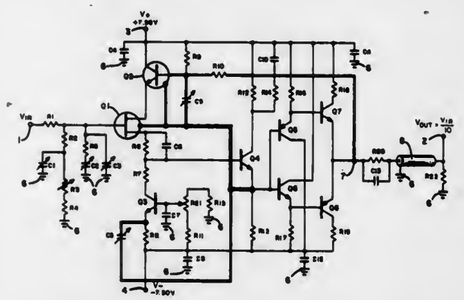
3. In an amplifier apparatus wherein an input signal is received at the gate junction of a field effect transistor operative as a source follower in the drive of next transistor amplifier stages, a method of mitigating the capacitance seen by said input signal which comprises:

positively directly feeding back as direct current a first portion of an amplified said input signal from at least one of said next transistor amplifier stages as a first control signal;

regulating responsively to said first control signal the voltage at the drain of said field effect transistor to be a constant separation from said gate of said field effect transistor, which constant voltage separation is consistent with said operation of said field effect transistor as a source follower; and

directly feeding back as direct current a second portion of the amplified said input signal from at least one of said next transistor amplifier stages to a case of said input field effect transistor;

whereby said constant voltage separation between said gate



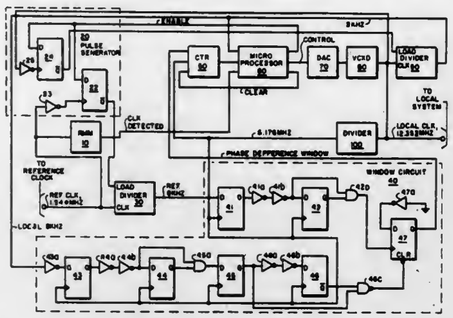
and said drain of said field effect transistor, while said source voltage of said field effect transistor does follow said gate voltage in said source follower operation, results in mitigating the effect of field effect transistor junction capacitances seen by said input signal;

whereby the guard circuit created thereby minimizes the junction to external circuitry capacitances seen by said input signal.

4,498,059
CIRCUIT TO MINIMIZE LOCAL CLOCK FREQUENCY DISTURBANCES WHEN PHASE LOCKING TO A REFERENCE CLOCK CIRCUIT

Ivan L. Edwards, Westmont; Robert C. McLaughlin, Bloomingdale, and Max S. Macrander, Warrenville, all of Ill., assignors to GTE Automatic Electric Incorporated, Northlake, Ill.

Filed Jun. 23, 1983, Ser. No. 507,437
Int. Cl.³ H03L *7/10*
U.S. Cl. 331—1 A **30 Claims**



1. A clock signal phase locking arrangement for use in a switching system which includes a source of reference clock signals, said phase locking arrangement comprising:

a control circuit operative to provide a plurality of local clock frequency control signals, said control circuit being connected to said reference clock signal source and further operative in response to an absence of said reference clock signals for a predetermined time to maintain the local clock frequency control signal in its current state;

a local clock circuit connected to said control circuit and operative in response to said plurality of local clock frequency control signals to provide a plurality of local clock signals, each having a frequency associated with a different one of said control signals;

said control circuit being further operative in response to detection of said reference clock signals after said absence to generate first and second synchronization signals;

a first frequency divider connected to said source of reference clock signals and said control circuit, and operative in response to said first synchronization signal to provide counted down reference clock signals of a characteristic frequency;

a second frequency divider connected to said local clock circuit and said control circuit, and operative in response to said second synchronization signal to provide counted down local clock signals of said characteristic frequency; and

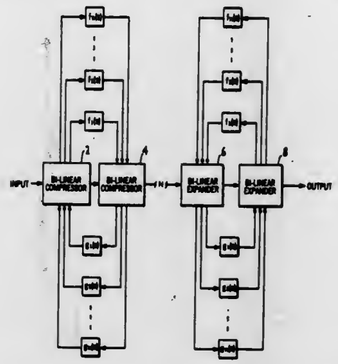
a phase difference measurement circuit, connected to said first and second frequency dividers, and said control circuit, and operative in response to said counted down reference clock signals and said counted down local clock signals to provide a phase difference signal representative of the phase difference between each of said counted down reference clock signals and an associated one of said counted down local clock signals;

said control circuit being further operative in response to each of said phase difference signals to provide an associated one of said control signals of a characteristic representative of the duration of said phase difference signal, whereby the frequency of said local clock circuit is adjusted to eliminate the difference in phase between said counted down local clock signals and said counted down reference clock signals.

4,498,060
CIRCUIT ARRANGEMENTS FOR MODIFYING DYNAMIC RANGE USING SERIES ARRANGED BI-LINEAR CIRCUITS

Ray M. Dolby, 50 Walnut St., San Francisco, Calif. 94118

Continuation of Ser. No. 325,529, Dec. 1, 1981, abandoned, which is a continuation-in-part of Ser. No. 300,741, Sep. 10, 1981, which is a continuation-in-part of Ser. No. 292,958, Aug. 14, 1981, abandoned, and Ser. No. 275,382, Jun. 19, 1981, abandoned, and Ser. No. 275,205, Jun. 19, 1981, abandoned, and Ser. No. 275,204, Jun. 19, 1981, abandoned, and Ser. No. 180,771, Aug. 22, 1980, abandoned, and Ser. No. 163,950, Jun. 30, 1980, abandoned. This application Mar. 20, 1984, Ser. No. 591,575
Int. Cl.³ H04B *1/64*
U.S. Cl. 333—14 **14 Claims**



8. A circuit for modifying the dynamic range of an input signal, comprising

first circuit means having a characteristic in which only a portion thereof has a changing gain between low and high input levels,

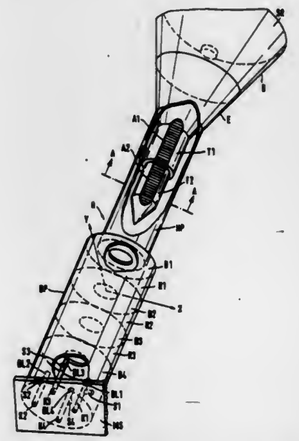
at least one second circuit means which also has such a characteristic within a frequency range common to the circuit means, in series with the first circuit means, the changing gain portions of the characteristics of the circuit means being staggered within a frequency range common to the circuit means such as to provide a change of gain over a wider range of input levels than for any one of the circuit means individually, and an increased difference between the gains at low and high input levels, but with a maximum overall compression or expansion ratio which is substantially no greater than that of any single circuit means, by virtue of the staggering, and

at least one coupling circuit means coupling signal components from one of the circuit means to another of the circuit means for modifying the action of the said other circuit means in response to coupled signal components from said one circuit means.

4,498,061
MICROWAVE RECEIVING DEVICE

Günther Mörz, Ludwigsburg, and Wilhelm Milcz, Remshalden, both of Fed. Rep. of Germany, assignors to Licentia Patent-Verwaltungs-GmbH, Frankfurt, Fed. Rep. of Germany

Filed Mar. 5, 1982, Ser. No. 355,116
Claims priority, application Fed. Rep. of Germany, Mar. 7, 1981, 3108758
Int. Cl.³ H01P *1/17*; H01Q *13/02, 19/19*
U.S. Cl. 333—21 A **22 Claims**



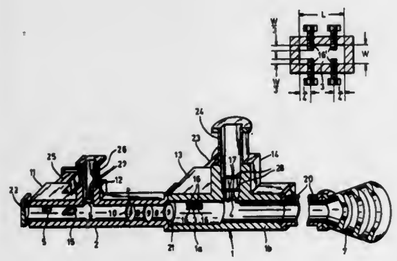
1. In a receiver for counterclockwise and clockwise circularly polarized microwave signals comprising a receiving antenna with a feeder system including a feeder waveguide, a polarization converter for converting received circular to linear polarized signals, a polarization filter and a converter circuit means, connected to the output of said feeder system, for converting the microwave signals of both polarization directions from the high frequency to the intermediate frequency plane; the improvement wherein: a portion of said feeder waveguide belonging to said feeder system of said receiving antenna is a bandpass filter which is effective for both said polarization directions, and a further portion of said feeder waveguide is a highpass filter whose cutoff frequency is such that a sufficiently high stopband isolation exists for the oscillator signal of said converter circuit means; said converter circuit means is disposed on a microstripline substrate whose input is connected with the output of said feeder waveguide; said input of said microstripline substrate comprises means disposed on said substrate for coupling the energies of the waveguide modes of both polarization directions out of said feeder waveguide and into said converter circuit means; and said polarization converter is directly integrated in said feeder waveguide.

4,498,062

WAVEGUIDE STRUCTURE FOR SEPARATING MICROWAVES WITH MUTUALLY ORTHOGONAL PLANES OF POLARIZATION

Piercarlo Massaglia; Enrico Pagana, and Dario Savini, all of Turin, Italy, assignors to Sip - Societa Italiana Per L'Esercizio Telefonico p.A., Turin, Italy

Filed Mar. 25, 1983, Ser. No. 478,864
Claims priority, application Italy, Mar. 25, 1982, 67377 A/82
Int. Cl.³ H01P *1/213, 1/16*
U.S. Cl. 333—135 **12 Claims**



3. A waveguide structure for the separation of linearly polarized microwaves including a pair of lower-frequency carriers and a pair of higher-frequency carriers, the carriers of each pair having mutually orthogonal planes of polarization,

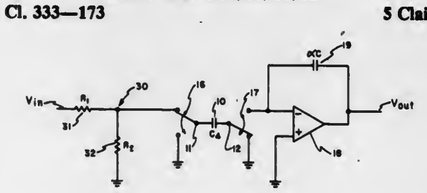
comprising a first and a second orthogonal transducer of circular cross-section axially adjoining each other, said second transducer having a short-circuited end remote from said first transducer and an inner diameter small enough to prevent propagation of said pair of lower-frequency carriers while accommodating said pair of higher-frequency carriers, said first transducer having a mean inner diameter exceeding that of said second transducer and having an open extremity and joining said second transducer at an annular shoulder reflecting said pair of lower-frequency carriers while giving passage to said pair of higher-frequency carriers, said first transducer being provided with first and second axially extending peripheral slots of generally rectangular configuration each longitudinally bisected by an axial plane perpendicular to the plane of polarization of a respective lower-frequency carrier, said first and second slots giving access to a first and a second branch guide of rectangular cross-section enabling propagation of the respective lower-frequency carrier in the TE_{10} mode, said second transducer being provided with third and fourth axially extending peripheral slots of rectangular configuration longitudinally bisected by the axial planes respectively bisecting said first and second slots, said third and fourth slots giving access to a third and a fourth branch guide of rectangular cross-section enabling propagation of a respective higher-frequency carrier, said first and second slots being each partly traversed by conductor means extending over a major portion of the slot width at locations spaced by about one fourth of the slot length from each end thereof for suppressing propagation of the correspondingly polarized higher-frequency carrier in the TE_{20} mode in the respective branch guide, said second slot lying closer to said shoulder than to said first slot, said fourth slot lying closer to said short-circuited end than to said third slot, said first transducer having a portion of enlarged inner diameter extending between said first slot and said shoulder.

4,498,063

SWITCHED CAPACITOR FILTER HAVING A REDUCED CAPACITANCE

Takayoshi Makabe; Yoshiaki Kuraishi; Kenji Nakayama, and Tadakatsu Kimura, all of Tokyo, Japan, assignors to Nippon Electric Co., Ltd. and Nippon Telegraph & Telephone Public Corporation, both of Tokyo, Japan

Filed Jan. 17, 1983, Ser. No. 458,748
Claims priority, application Japan, Jan. 21, 1982, 57-8202
Int. Cl.³ H03H *19/00, 11/12*
U.S. Cl. 333—173 **5 Claims**



1. A switched capacitor filter comprising voltage dividing means responsive to a filter input signal for producing a filter output signal V_{out}, said filter having a transfer function V_{out}/V_{in} which is specified by a z-transform related to a unit capacitance C and which is given by:

$$V_{out}/V_{in}=1[\alpha z^{\frac{1}{2}}(1-z^{-1})]$$

where α represents a capacitance ratio determined in relationship to said unit capacitance and z is equal to $e^{j2\pi f/fc}$ and where fc represents a sampling frequency and f represents a frequency of said filter input signal, said filter comprising:

a first resistor having a first resistance of R_1, a first resistor terminal supplied with said filter input signal, and a second resistor terminal;

a second resistor having a second resistance of R_2, a third resistor terminal connected in common to said second resistor terminal, and a fourth resistor terminal to be grounded;

a first capacitor having a first and a second electrode and a first capacitance given by:

$$C(R_1+R_2)/R_2;$$

first switching means connected to said first and said second electrodes for switching said input signal to produce a switched signal at a sampling frequency;

an operational amplifier having an amplifier input signal supplied with sid switched signal and an amplifier output signal for said filter output signal; and

an integrating capacitor connected between said amplifier input terminal and said amplifier output terminal and having a capacitance equal to C.

4,498,064

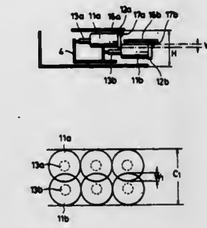
PUSHBUTTON TUNER WITH STAGGERED TUNING COILS

Takao Chaki, Tokyo, Japan, assignor to Clarion Co., Ltd., Tokyo, Japan

Filed Nov. 4, 1982, Ser. No. 439,112
Claims priority, application Japan, Nov. 6, 1981, 56-164913[U]
Int. Cl.³ H03J *5/32*
U.S. Cl. 334—7 **4 Claims**

1. A pushbutton tuner comprising a plurality of tuning coils supported in a casing and each having a tuning core movable therein for varying the frequency thereof with a terminal board secured to said coils and connected to a circuit board, the improvement of said tuning coils being arranged in vertically-spaced pairs and having horizontally-extending axes with

adjacent coils in respective pairs being in end-to-end relation and having overlapping height portions when viewed from the



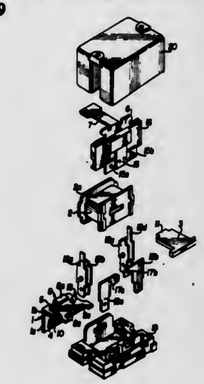
ends of said coils to minimize the space requirement for the coils in the casing.

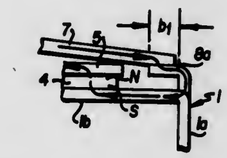
4,498,065

ELECTROMAGNETIC RELAY

Mitsuki Nagamoto, Tsu; Yukio Hashiya, Ise, and Junji Kawaharada, Ichishi, all of Japan, assignors to Matsushita Electric Works, Ltd., Osaka, Japan

Filed Mar. 15, 1982, Ser. No. 357,818
Claims priority, application Japan, Jul. 22, 1981, 56-114761
Int. Cl.³ H01H *51/22*
U.S. Cl. 335—79 **7 Claims**





1. An auto-holding type electromagnetic relay comprising:

a main yoke; said main yoke including a perpendicular part and a horizontal part integral with said perpendicular part, said horizontal part extending from one end of said perpendicular part at substantially a right angle to form inner and outer surfaces for each of said respective parts;

a hinge type electromagnet comprising an exciter coil mounted on the inner surface of said perpendicular part, so that said horizontal part extends over said exciter coil;

an iron core inserted in said exciter coil, said iron core being mounted by one of its ends on the inner surface of said perpendicular part;

a permanent magnet having upper and lower surfaces and mounted on the outer surface of said horizontal part by its lower surface such that it is in parallel arrangement with the electromagnet and its magnetic orientation is perpendicular to said horizontal part;

an auxiliary yoke having upper and lower surfaces and mounted by its lower surface on the upper surface of said permanent magnet, the end of said auxiliary yoke furthest from said perpendicular part of said main yoke being adapted to form an armature support;

an "L" shaped armature having an upper end and a lower end and inner and outer surfaces, said armature being pivotably mounted on said armature support by its upper end, the inner surface of the lower end of said armature facing the unmounted end of said iron core;

a contact on the outer surface of said armature;

a main yoke projection extending from the same end of said perpendicular part as said horizontal part and integral therewith, said main yoke projection having a perpendicular projection part extending from and in the same direction as the perpendicular part of said main yoke, and a horizontal projection part extending from the end of said perpendicular projection part furthest from the perpendicular part of said main yoke, said horizontal projection part extending substantially in the same direction as the horizontal part of said main yoke, thus forming substantially a right angle between said horizontal projection part and said perpendicular projection part to form inner and outer surfaces for each of said respective projection parts, said horizontal projection part and said perpendicular projection part being struck from the horizontal part of the main yoke and thus being integral with said main yoke;

an armature projection extending from the upper end of said armature at substantially a right angle and integral therewith;

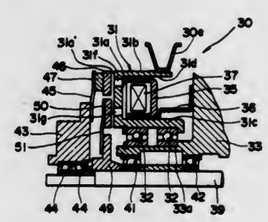
said armature being so mounted on said auxiliary yoke that said armature projection extends over the outer surface of the horizontal projection part of said main yoke projection and is capable of making contact therewith by pivoting of said armature on said armature support.

4,498,066

ELECTROMAGNETIC DEVICE

Takahisa Fujiwara; Masaaki Narihisa, both of Ise, and Katsuyuki Tamai, Yokohama, all of Japan, assignors to Shinko Electric Co., Ltd. and Isuzu Motors Limited, both of Tokyo, Japan

Filed Aug. 24, 1983, Ser. No. 525,894
Claims priority, application Japan, Sep. 10, 1982, 57-158434
Int. Cl.³ H01F *7/08*
U.S. Cl. 335—281 **5 Claims**



1. An electromagnetic device comprising:

(a) an electromagnet including an electrical coil;

(b) means for selectively applying excitation current to said coil in a higher-magnitude mode and a lower-magnitude mode;

(c) first and second spring-loaded armatures; and

(d) an annular member made of a material of high permeability and having one surface disposed in closely spaced, opposed relation to said coil, said annular member having a pair of radially spaced first and second circumferential magnetic resistance portions, said first and second arma-

tures being disposed in opposed relation to said first and second magnetic resistance portions, respectively, at least one of said first and second magnetic resistance portions being interrupted by circumferentially spaced magnetic bridge portions having such a size as to allow a predetermined amount of magnetic flux to pass therethrough to attract one of said first and second armatures, disposed in opposed relation to the other of said first and second magnetic resistance portions, into contact with the other surface of said annular member when the excitation current of lower magnitude is applied to said coil, said first and second armatures being spaced so closely from the other surface of said annular member that when the excitation current of higher magnitude is applied to said coil, the magnetic flux passes through said first and second armatures, thereby attracting them into contact with the other surface of said annular member.

4,498,067

SMALL-SIZE INDUCTOR

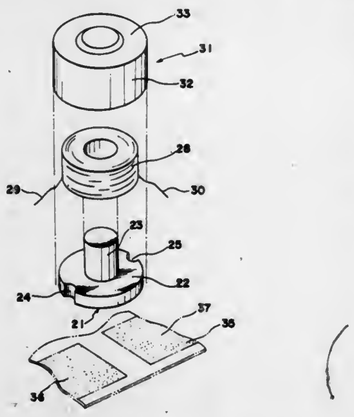
Takashi Kumokawa; Minoru Tamada, both of Yokaichi; Ichiji Shimamoto, and Kiyoko Uda, both of Shiga, all of Japan, assignors to Murata Manufacturing Co., Ltd., Japan

Filed Oct. 14, 1982, Ser. No. 434,264

Claims priority, application Japan, Apr. 20, 1981, 56-57230[U]

Int. Cl.³ H01F *15/02, 15/10*

U.S. Cl. 336—65 **10 Claims**



1. A small-size inductor comprising:

a base member defined by a base plate having first and second opposite faces separated by at least one side surface which lies generally perpendicular to said first and second faces, a core projection extending from said first face of said base plate generally perpendicular to said first face, and first and second terminals deposited in a spaced relation with each other on said second face of said base plate, said first and second terminals being located on said second face only and being entirely spaced from the outer periphery of said second face, said base plate having at least first and second recesses formed in its peripheral face, said first and second recesses extending to said first and second terminals, respectively;

a coil mounted on said core projection, said coil having first and second lead wires extending therefrom, said first lead wire extending through said first recess and connected to said first terminal and said second lead wire extending through said second recess and connected to said second terminal; and

a cap member fittingly mounted on said base member to enclose said coil in a cavity defined by said cap member and the base member, said cap member being formed of a metallic magnetic material having a permeability greater than that of said base member, said cap member including a top plate in contact with a top surface of said core projection and further including at least one side wall extending down from said top plate and tightly contacting said at least one side surface along substantially the entire perimeter thereof.

4,498,068

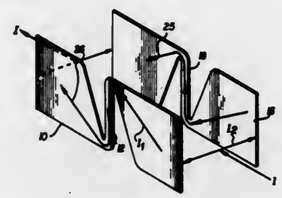
MAGNETIC ARC EXTINGUISHED FUSIBLE ELEMENTS

Aldino J. Gaia, St. Louis, Mo., assignor to McGraw-Edison Company, Rolling Meadows, Ill.

Filed Dec. 13, 1982, Ser. No. 448,959

Int. Cl.³ H01H *85/04*

U.S. Cl. 337—293 **12 Claims**



1. A fuse element having electro-magnetic arc extinguishing characteristics, including in combination: bifurcated electrically conductive means; and first and second terminal means at opposite ends, respectively, of said bifurcated electrically conductive means for connecting said bifurcated electrically conductive means into an electrical circuit;

said bifurcated electrically conductive means comprising, between said first and second terminal means, at least one first weak spot and at least one second weak spot, said weak spots comprising fusible material and at least portions of said first and second weak spots being disposed substantially parallel to each other;

said first and second weak spots being arranged such that current flow, between said first and second terminal means, in said parallel portion of one of said first and second weak spots is opposite in direction to current flow in said parallel portion of the other of said first and second weak spots; whereby a magnetic force of repulsion is generated between said first and second weak spots, thereby to lengthen arcs formed in said weak spots by an overcurrent passing therethrough.

4,498,069

ELECTRIC SWITCHES ACTUATED BY BIMETALS FOR ONE OR SEVERAL TEMPERATURES OF RESPONSE

Ciro Calenda; Pietro De Filippis, both of Aversa, and Amedeo Salvatore, Napoli, all of Italy, assignors to Texas Instruments Incorporated, Dallas, Tex.

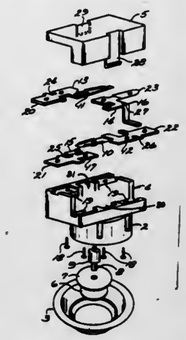
Filed Dec. 27, 1982, Ser. No. 453,553

Claims priority, application Italy, Dec. 4, 1981, 49846A/81

Int. Cl.³ H01H *37/52*

U.S. Cl. 337—354 **4 Claims**

1. An electrical switch comprising a base made of a single piece having a first substantially cylindrical part and having an integral second part disposed at one end of the first cylindrical base part, at least one thermally responsive dished bimetallic disk mounted at an opposite end of the first cylindrical base part to move with snap action between original and inverted dished configurations in response to selected changes in temperature, a metal cap fitted over said opposite end of the first cylindrical base part for mounting the disk on the base part to be disposed adjacent an object whose temperature is to be monitored, fixed contact means disposed on said second base part, movable contact means disposed on said second base part to be movable into and out of engagement with said fixed contact means between open and closed circuit positions and to be biased into one of said circuit positions, motion transmitting means slidably mounted for movement along the axis of said first cylindrical base part between the disc and movable contact means for moving said movable contact means to the other of said circuit positions, and rivet means securing the fixed and movable contact means to the second base part, characterized in that the rivet means extend axially through said first cylindrical part of the base, the rivet means having



head means at one end securing said fixed and movable contact means to said second base part and the rivet means having head means at an opposite end accommodated in recesses which open into said opposite end of said first cylindrical part of the base under said bimetallic disk in electrically isolated relation to said disc and cap to be protected by the disk and cap to be inaccessible from outside the switch.

4,498,070

SEMI-CONDUCTOR TRANSDUCER AND METHOD OF MAKING THE SAME

Irving R. Lirman, 1516 Palisades Dr., Pacific Palisades, Calif. 90272

Filed Jun. 30, 1983, Ser. No. 509,359

Int. Cl.³ H01C *13/00*; G01L *1/22*

U.S. Cl. 338—42 **16 Claims**



1. A semi-conductor pressure transducer, comprising:

a thin silicon block having substantially parallel, flat upper and lower surfaces;

said lower surface being relieved to define a hemitoroidally-shaped cavity extending partially through said block, the cavity surfaces defining an unrelieved peripheral portion and a generally centrally located push rod, said push rod and said peripheral portion being integral with said block and having outer surfaces which are substantially coplanar;

a plurality of spaced strain gages mounted on said upper surface; and

a thin flat diaphragm of an electrically inert material bonded to the unrelieved portions of the lower surface of said block, said diaphragm electrically isolating said silicon base and said gages from pressure acting on the surface of said diaphragm opposite the surface to which said block is bonded.

4,498,071

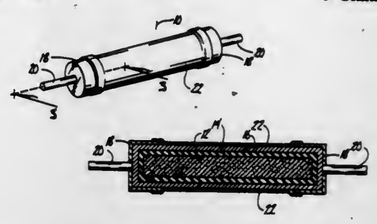
HIGH RESISTANCE FILM RESISTOR

Charles T. Plough, Jr., and Ralph D. Hight, both of Norfolk, Nebr., assignors to Dale Electronics, Inc., Columbus, Nebr.

Filed Sep. 30, 1982, Ser. No. 431,274

Int. Cl.³ H01C *1/012*

U.S. Cl. 338—308 **9 Claims**



1. A high resistance film resistor comprising:

a ceramic substrate having a supporting surface;

a dielectric film coated on said supporting surface of said substrate, said dielectric film having a rough surface facing away from said substrate and being substantially rougher than said supporting surface of said substrate, said dielectric film being substantially nitride material;

a thin metal film forming a resistance element coated on said rough surface of said dielectric film, said dielectric film providing a barrier against diffusion of impurities from said substrate into said resistance element and providing electrical stability to said resistance element, whereby the sheet resistance of said resistance element is of a value a plurality of times greater than the sheet resistance obtained by placing said thin film directly on said supporting surface of said substrate.

4,498,072

A/D CONVERTER HAVING A SELF-BIAS CIRCUIT

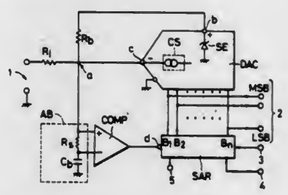
Masaru Moriyama, Yamato, Japan, assignor to Victor Company of Japan, Limited, Japan

Filed Jun. 7, 1982, Ser. No. 386,786

Claims priority, application Japan, Jun. 8, 1981, 56-87819

Int. Cl.³ H03K *13/02*

U.S. Cl. 340—347 AD **7 Claims**



1. An A/D converter comprising:

(a) a comparator for comparing an input analog signal with a reference signal to produce an output signal when said analog signal is greater than said reference signal, said comparator having two input terminals respectively receiving said input analog signal and said reference signal;

(b) a successive approximation register responsive to clock pulses and to said output signal from said comparator for producing a digital signal having a predetermined number of bits;

(c) a D/A converter responsive to said digital signal to produce an output analog signal;

(d) an offset bias circuit for producing a predetermined offset bias voltage;

(e) a summing circuit for supplying said comparator with the summation of said input analog signal, said output analog

signal from said D/A converter and said offset bias voltage; and

(f) a self-bias circuit connected to said two input terminals of said comparator for changing said reference signal in accordance with said summation,

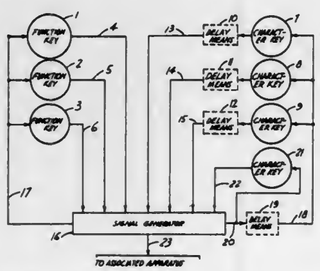
said self-bias circuit comprising a resistor interposed between said two input terminals of said comparator, and a capacitor interposed between one of said two input terminals and ground.

4,498,073

KEYBOARD WITH SIMULTANEOUS OPERATIONS

Charles B. Fisher, 2850 Hill Park Rd., Montreal, Quebec, Canada (H3H 1T1), and Sidney T. Fisher, 400 Prince Arthur, Montreal, Quebec, Canada

Filed Dec. 7, 1983, Ser. No. 559,031
Int. Cl.³ G08C *9/00*
U.S. Cl. 340—365 S **1 Claim**



1. A keyboard which comprises:

a first plurality of keys designated function keys, such as space, shift or delete keys, each of which when depressed by a key-stroke generates and delivers a signal which is capable of being processed and when transmitted is capable of causing associated apparatus to perform the function corresponding to said depressed function key, during a first period of time, following said depression of said function key, having initial and final instants, and

a second plurality of keys designated character keys, such as keys for letters, numerals, punctuation points and symbols, each of which when depressed generates and delivers a signal which is capable of being processed and when transmitted is capable of causing associated apparatus to perform the character corresponding to said depressed character key, during a second period of time, following said depression of said character key, having initial and final instants;

wherein the improvement comprises delay means, which delays delivery of said signals from at least one of said character keys, and

said delay means, having a value of delay which, when one of said function keys is depressed simultaneously with one of said character keys by a first key-stroke, causes said initial instant of said second period of time to occur later than said final instant of said first period of time, and causes said final instant of said second period of time to occur earlier than the initial instant of a signal caused by a second key-stroke, said first and said second key-strokes occurring successively separated by the minimum interval of time permitted in operation of said keyboard with said associated apparatus, and

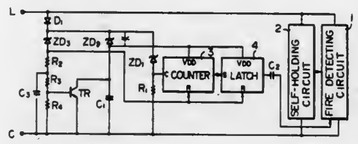
means for generation of said signals from said keys in a form suitable for said associated apparatus.

4,498,074

SELECTIVELY TESTABLE FIRE DETECTOR

Isao Sasaki, Tokyo, Japan, assignor to Nittan Company, Limited, Tokyo, Japan

Filed Feb. 24, 1982, Ser. No. 351,916
Claims priority, application Japan, Feb. 25, 1981, 56-25495
Int. Cl.³ G08B *29/00*
U.S. Cl. 340—514 **6 Claims**



1. A fire detector including:

a fire detecting circuit supplied with a fire voltage through a pair of lines;

a self-holding circuit connected to said lines in parallel with said fire detecting circuit and connected to said fire detecting circuit for it to be activated by an output signal from said fire detecting circuit;

a counter connected between said lines and operative to count pulses superimposed on said first voltage and to provide an output signal upon reaching a pre-set count of said pulses;

a latch circuit connected to said counter and operated by said output signal thereof, said latch circuit having an output connected to said fire detecting circuit to activate said fire detecting circuit upon activation of said latch circuit; and,

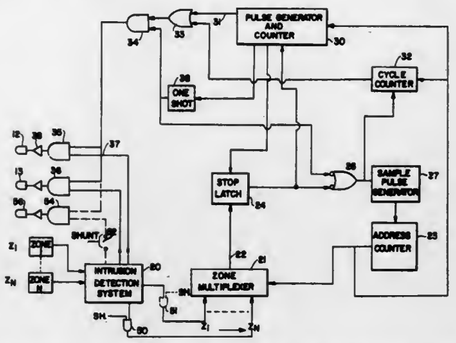
a re-set signal generating circuit connected between said lines and responsive to a voltage higher than said first voltage and said superimposed pulses, said re-set circuit having an output connected to said counter and said latch circuit and which is operative to re-set said counter and said latch circuit upon detection of said higher voltage.

4,498,075

FAULT INDICATOR APPARATUS FOR A MULTI-ZONE INTRUSION SYSTEM

Raymond Gaudio, Maspeth, N.Y., assignor to Napco Security Systems, Inc., Copiague, N.Y.

Filed Sep. 23, 1982, Ser. No. 421,860
Int. Cl.³ G08B *25/00*
U.S. Cl. 340—525 **12 Claims**



10. A method of indicating which ones of a plurality of zones being monitored is providing a status being monitored, comprising the steps of:

(a) providing a signal for all zones being monitored having said status;

(b) providing a number of pulses indicative of an assigned number for each zone;

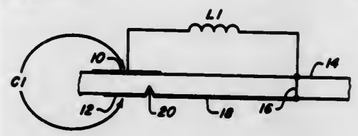
(c) pulsing an indicator ON and OFF according to said number of pulses for each zone in a continuous sequence, whereby said pulsing provides a first number of ON and OFFS for a first zone and a second number of ON and OFFS for another zone and so on with each number of ON and OFFS capable of being physically counted to indicate said zone.

4,498,076

RESONANT TAG AND DEACTIVATOR FOR USE IN AN ELECTRONIC SECURITY SYSTEM

George J. Lichtblau, 13 Tannery Hill Rd., Ridgefield, Conn. 06877

Filed May 10, 1982, Ser. No. 376,777
Int. Cl.³ G08B *13/24*
U.S. Cl. 340—572 **25 Claims**



1. For use in an electronic security system which includes means for providing in a controlled area an electromagnetic filed of a frequency which is swept within a predetermined range and means for detecting the presence of a resonant tag circuit having a resonant frequency within said range, a resonant tag circuit comprising:

a planar substrate of dielectric material;

a tuned circuit on said substrate in planar circuit configuration and resonant at said frequency;

said tuned circuit having a pair of conductive areas in alignment on respective opposite surfaces of the substrate to define a capacitor of the tuned circuit;

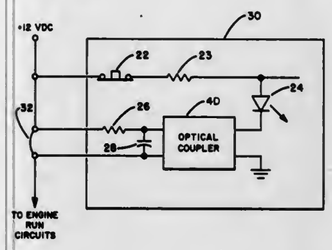
means within the conductive areas defining a path between the conductive areas and through the substrate at which an arc discharge will preferentially occur in response to an electromagnetic field at said frequency of sufficient energy, and operative to destroy the resonant properties of the tuned circuit.

4,498,077

ANNUNCIATOR

Patrick L. Richardson, Los Angeles, Calif., assignor to Carrier Corporation, Syracuse, N.Y.

Filed May 23, 1983, Ser. No. 497,441
Int. Cl.³ G08B *21/00*
U.S. Cl. 340—648 **4 Claims**



1. Apparatus for providing a persistent indication of the cause of an engine failure/shutdown in an engine having a source of electrical power and a first electrical path containing a plurality of engine safety devices each having a normally closed position in which electric power is conducted and an open position in which the passage of electrical power is blocked comprising:

a normally closed, manually actuated switch means adapted to be connected to the source of electrical power;

a plurality of LED means;

a plurality of optical coupler means each of which has two electrical paths a first one of which is adapted to be connected across one of said engine safety devices and to the source of electrical power to establish a parallel electrical path across the respective engine safety device with the parallel electrical path being shunted when the respective engine safety device is in the closed position; and

circuit means for forming a second electrical path between said switch means and ground and including a plurality of branches each defining an electrical path each of which includes one of said plurality of LED means and a second one of said two electrical paths of one of said plurality of optical coupler means whereby the opening of an engine safety device removes the shunt across said first one of the two electrical paths of the corresponding optical coupler means causing actuation of said corresponding one of said optical coupler means which causes the completion of a circuit containing the corresponding second one of said two electrical paths and the corresponding LED means which lights and remains lit until said switch means are opened.

4,498,078

SEWING MACHINE WITH A VOICE WARNING DEVICE

Motokazu Yoshimura; Michitaka Takiguchi; Fujio Horie, and Koichi Hirata, all of c/o Brother Kogyo Kabushiki Kaisha, 35, 9-chome, Horita-dori, Mizuho-ku, Nagoya-shi, Aichi-ken, Japan

Filed Jan. 4, 1982, Ser. No. 336,944
Claims priority, application Japan, Jan. 23, 1981, 56-9157; Jan. 29, 1981, 56-12032
Int. Cl.³ G08B *21/00*
U.S. Cl. 340—679 **5 Claims**

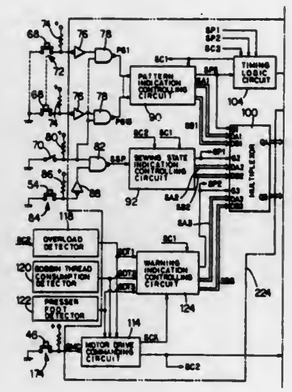
1. A sewing machine having manual means and drive means responsive to the operation of the manual means for actuating stitch forming instrumentalities to form a stitch pattern, said sewing machine comprising:

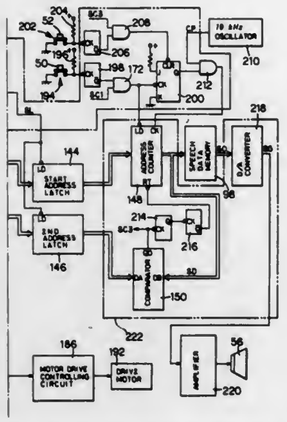
(a) means for detecting an abnormal condition which prevents the operation of said instrumentalities and then generating a signal;

(b) memory means for permanently storing at least one group of speech data;

(c) means for controlling said memory means to output said

group of speech data in response to the operation of said manual means while said signal is present; and





(d) means for speaking a warning statement concerning said abnormal condition responsive to the output of said group of speech data.

4,498,079

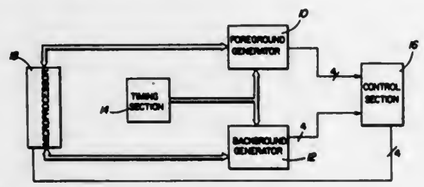
PRIORITIZED OVERLAY OF FOREGROUND OBJECTS LINE BUFFER SYSTEM FOR A VIDEO DISPLAY SYSTEM

Atish Ghosh, Glendale Hts., and John Pasierb, Bartlett, both of Ill., assignors to Bally Manufacturing Corporation, Chicago, Ill.

Continuation-in-part of Ser. No. 294,438, Aug. 20, 1981, Pat. No. 4,398,189. This application Aug. 8, 1983, Ser. No. 520,762

Int. Cl.³ G09G *1/16*

U.S. Cl. 340—725 **33 Claims**



1. A video game system comprising:

input means for providing an output signal responsive to an external player provided stimulus;

display means for providing a raster scan video display, comprising a plurality of display lines each having a plurality of display segments, responsive to picture signals;

foreground means for storing object information in a foreground memory in the form of blocks of foreground data, each such block corresponding to a display segment of the video display;

background means for storing background information in background memory in the form of blocks of background data, each such block corresponding to a display segment of the video display;

buffer means for selectively storing foreground data, corresponding to a plurality of adjacent display lines on the monitor screen during active video display of a picture containing one of said adjacent display lines;

selection means for selectively storing object information representing at least two different objects at the same location in the buffer means, overwriting the object information first stored at said location in said buffer means with the non-zero part of the object information stored second in said location in said buffer means;

control means for providing picture signals to the display means responsive to said buffer means and said input means.

4,498,080

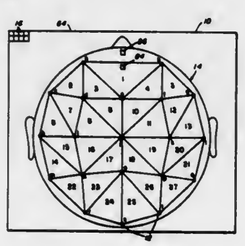
APPARATUS AND METHOD FOR TOPOGRAPHIC DISPLAY OF MULTICHANNEL DATA

Norman D. Culver, Spotswood, N.J., assignor to Braintech, Inc., South Plainfield, N.J.

Division of Ser. No. 221,830, Dec. 31, 1980, Pat. No. 4,417,591. This application Nov. 17, 1983, Ser. No. 552,502

Int. Cl.³ G09G *1/02*

U.S. Cl. 340—728 **9 Claims**



1. A system for displaying data comprising a source of multichannel input data signals derived from a matrix, signal processing electronic circuitry, and a video display for displaying a topographic map of display data, the topographic display comprising a display matrix of a plurality of display elements, the number of display elements being an order of magnitude greater than the number of channels of input data, the signals processing electronic circuitry comprising:

a digital random access data memory for storing an input data signal from each input channel as an addressable data word;

a pointer generator for generating a set of addresses of predetermined data words in the data memory for each element of the display matrix;

data memory access circuitry for receiving the addresses generated by the pointer generator and accessing the predetermined data words;

a coefficient generator for generaing a predetermined coefficient associated with each data word accessed by the access circuitry; and

a display data generator for multiplying each accessed data word for each element of the display matrix with its associated coefficient and summing the resultant products to

provide a display data signal for that element of the display.

4,498,081

DISPLAY DEVICE FOR DISPLAYING BOTH VIDEO AND GRAPHIC OR CHARACTER IMAGES

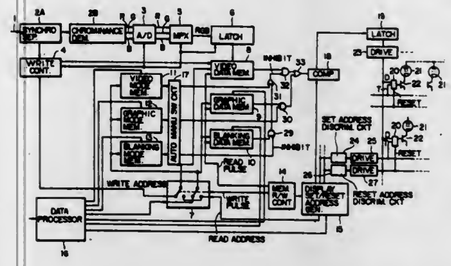
Nobuo Fukushima, and Noriyuki Tomimatsu, both of Nagasaki, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Nagasaki, Japan

PCT No. PCT/JP80/00172, § 371 Date Jul. 20, 1981, § 102(e) Date Jul. 20, 1981, PCT Pub. No. WO82/00557, PCT Pub. Date Feb. 18, 1982

PCT Filed Jul. 25, 1980, Ser. No. 287,757

Int. Cl.³ G09G *3/12*

U.S. Cl. 340—793 **15 Claims**



1. A display device for displaying pictures and graphs on a display board in which a number of display elements are arranged in matrix form, CHARACTERIZED in that said device comprises: a synchronizing separator circuit for separating a composite video signal including synchronizing signals into said synchronizing signals and a video signal of a brightness signal and/or color signals; an analog-to-digital (A/D) converter for converting said video signal into a digital signal; a video data memory for storing said video digital signal provided by said A/D converter, in accordance with said synchronizing signals; a blanking data memory for storing data blocking an output of said video data memory for every display unit; a graphic data memory for storing characters and graphs; a video mode memory, a graphic mode memory and a blanking mode memory for respectively storing data blocking outputs of said video data memory, blanking data memory and graphic data memory for each of a plurality of areas which form the entire area of said display board; a memory controller for controlling the read and write operations of said video data memory, blanking data memory, graphic data memory, video mode memory, graphic mode memory and blanking mode memory; a comparator in which a reference brightness signal in response to a pulse width modulation signal reading timing according to data in each memory is compared with the brightness of a data signal delivered out of each memory and said data signal is modulated into a pulse width modulation signal; and a drive circuit for receiving said pulse width modulation signal, to drive a flip-flop provided for every display unit, so that pictures, characters and graphs are displayed as desired on said display screen.

4,498,082

METHOD AND APPARATUS FOR LOCATING A DISCONTINUITY IN A DATA TRANSMISSION RING

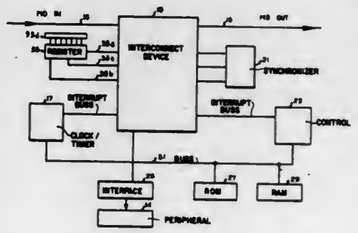
Peter J. Aldridge, Apperley, and Stephen J. Harris, Cheltenham, both of England, assignors to Allied Corporation, Morris Township, Morris County, N.J.

Filed Jan. 25, 1982, Ser. No. 342,564

Claims priority, application United Kingdom, Jan. 30, 1981, 8103166

Int. Cl.³ H04Q *9/00*

U.S. Cl. 340—825.16 **16 Claims**



1. A method of locating a discontinuity in a data transmission ring having a plurality of stations randomly receiving and transmitting data along the said ring, comprising the steps of:

(a) sensing the occurrence of valid data and invalid data at said stations,

(b) at said stations, comparing the number of said valid data occurrences to said invalid data occurrences,

(c) producing an invalid data indication, at respective stations, in response to said invalid data occurrences exceeding said valid data occurrences,

(d) at respective stations having said invalid data indication, initiating the transmission of a stream of valid data,

(e) at respective stations receiving said stream of valid data and responsive to said stream of valid data, removing said invalid data indication and at respective stations not receiving said stream of valid data, retaining said invalid data indication,

(f) at said stations retaining said invalid data indication, and responsive to said retained invalid data indication, transmitting the address of said station,

(g) locating said discontinuity relative to the said address of said station.

4,498,083

MULTIPLE INTERFERENCE NULL TRACKING ARRAY ANTENNA

Frank S. Gutleber, Little Silver, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Mar. 30, 1983, Ser. No. 480,533

Int. Cl.³ G01S *3/16, 3/28*

U.S. Cl. 343—380 **15 Claims**

1. An array antenna for cancelling undesired signals received thereby, comprising:

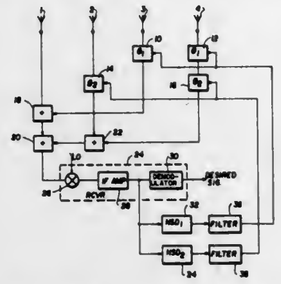
a plurality of antenna elements;

means for varying the phase of signals received by one half of the number of said plurality of antenna elements relative to the other half of said antenna elements in response to a control signal to provide a mutual 180° phase difference between pairs of elements for at least one undesired signal arriving at a certain space angle relative to an axis of said antenna;

receiver means coupled to said antenna elements and including means for detecting and providing an output signal of said undesired signal; and

means responsive to the amplitude of said undesired output signal for generating said control signal whereby said phase varying means varies said phase of said received

signals by said halves of antenna elements until said 180° phase difference is provided and a corresponding null of



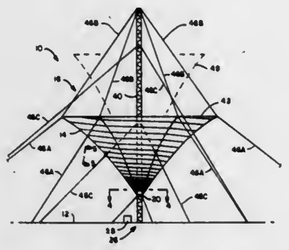
said output signal occurs and said undesired signal is thereby cancelled.

4,498,084

FOUR WIRE DUAL MODE SPIRAL ANTENNA

William L. Werner, Cupertina, and Raymond H. DuHamel, Mountain View, both of Calif., assignors to Granger Associates, Santa Clara, Calif.

Filed Dec. 30, 1982, Ser. No. 454,693
Int. Cl.³ H01Q *1/36, 11/10*
U.S. Cl. 343—792.5 **16 Claims**



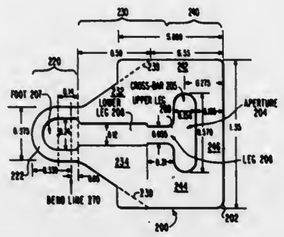
1. An antenna, comprising: first, second, third and fourth wire radiators; means for supporting said radiators in electrically insulated relationship to one another above a horizontal ground plane and around the outer surface of an imaginary inverted cone having its apex located a fixed distance above said plane and its central axis extending vertically upward therefrom, said first, second, third and fourth radiators being supported so as to define successively interlaced first, second, third and fourth conical spiral windings, respectively, beginning at the lowermost ends of the radiators adjacent the apex of said cone, said lowermost ends being circumferentially spaced 90° from each other about said central axis; means for providing first and second alternating currents having the same amplitude and a given frequency but 180° out of phase with one another; and means for simultaneously electrically connecting said first current to the lowermost ends of said first and second radiators and said second current to the lowermost ends of said third and fourth radiators, whereby to cause said radiators to produce a high angle radiation pattern relative to said horizontal ground plane.

4,498,085

FOLDED DIPOLE RADIATING ELEMENT

Alfred Schwarzmann, Mount Laurel, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Sep. 30, 1982, Ser. No. 428,585
Int. Cl.³ H01Q *9/28*
U.S. Cl. 343—795 **12 Claims**



1. A radiation structure for operation over a range of frequencies comprising:

a one piece radiating element in the form of a wide, thin electrical conductor, said conductor having first, second and third sections, said third section being wider than said first section and said second section connecting said first section to said third section;

said first section adapted for connection to a feed circuit;

said third section having a width of about ½ of a wavelength at a frequency within said range of frequencies and comprising a folded dipole having first and second feed points;

said third section having a first elongated slot to define the inner periphery of said folded dipole;

said conductor having a second elongated slot in communication with and extending from said first slot through said second section to said first section to space apart said first and second feed points of said folded dipole and to separate said second section into first and second spaced apart transmission line members, said first and second transmission line members coupling said first section to said feed points of said folded dipole;

said element being free of ground conductors extending parallel to said second and third sections; and

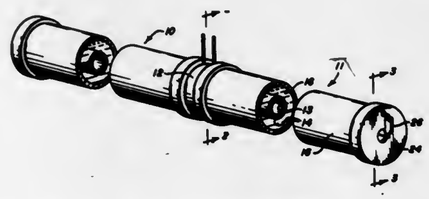
said first slot being less than ½ of a wavelength long at a frequency within said range of frequencies.

4,498,086

BROAD BAND LIQUID LOADED DIPOLE ANTENNA

Sheldon S. Sandler, Lexington, Mass., assignor to Geo-Centers, Inc., Newton Upper Falls, Mass.

Filed Feb. 10, 1983, Ser. No. 465,623
Int. Cl.³ H01Q *9/16*
U.S. Cl. 343—807 **2 Claims**



1. A broad band dipole antenna comprising

(a) a pair of elongate electrically conductive elements having adjacently disposed inner ends,

(b) an insulative sleeve disposed over and substantially coextensive with each of the elongate elements,

(c) an electrically non-conductive jacket disposed around and substantial coextensive with each of the elongate elements,

(d) an electrically conductive liquid filling the space between the insulative sleeve and the jacket,

(e) an electrically conductive member disposed adjacent the outer end of each elongate element, the electrically conductive member being insulated from the elongate element and in electrical contact with the conductive fluid,

(f) electrically resistive means connected between the outer end of the elongate element and the electrically conductive member and,

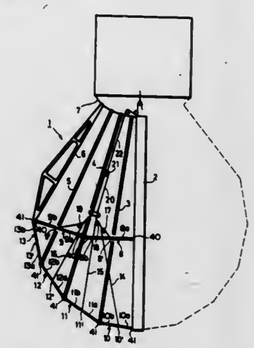
(g) means providing external electrical connections to the inner ends of the elongate elements.

4,498,087

APPARATUS FOR UNFOLDING AN ANTENNA NETTING REFLECTOR

Herbert Imbiel, Haar, and Henning Herbig, Holzkirchen, both of Fed. Rep. of Germany, assignors to Messerschmitt-Boelkow-Blohm Gesellschaft mit beschraenkter Haftung, Munich, Fed. Rep. of Germany

Filed Jun. 11, 1982, Ser. No. 387,547
Claims priority, application Fed. Rep. of Germany, Jun. 25, 1981, 3124907
Int. Cl.³ H01Q *15/20*
U.S. Cl. 343—915 **14 Claims**



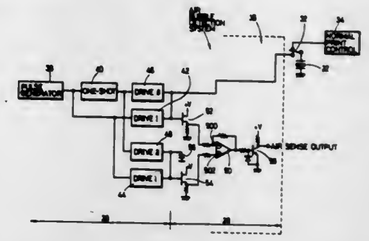
1. An apparatus for unfolding an antenna reflector which is initially in a folded condition, comprising support means (7), a plurality of ribs pivoted to said support means and extending substantially radially outwardly from said support means, lever means (8, 9) each having two lever sections forming a pair and a respective buckling joint (8', 9') operatively interconnecting said lever sections at one end of each lever section for unfolding the corresponding lever means in but one direction, said buckling joints snapping into a locked position when the respective lever means is in a fully stretched out position, pivot means operatively connecting the other end of each lever section to a respective one of said ribs so that two ribs interconnected by a pair of lever sections also form a pair (2, 4; 4, 6) of ribs, block and tackle means including cables (14, 16) and sheaves (17, 19) for guiding said cables, and means operatively connecting said cables to said buckling joints (8', 9') for applying a force to said lever sections for bringing said lever sections into said fully stretched out position, thereby causing an unfolding of said antenna reflector.

4,498,088

INK JET AIR BUBBLE DETECTION

Yoshio Kanayama, Nabari, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jul. 22, 1982, Ser. No. 400,925
Claims priority, application Japan, Jul. 28, 1981, 56-118762
Int. Cl.³ G01D *15/18*
U.S. Cl. 346—140 R **4 Claims**



1. In an ink jet system printer of the ink on demand type which includes a printer head comprising a pressure chamber of which one end is provided with an orifice means for emitting ink droplets therethrough, and the other end is connected to an electro-mechanical transducer for suddenly reducing the volume of the pressure chamber for producing droplets, the improvement comprising:

an air bubble detection system for detecting air bubbles contained in ink liquid disposed in said pressure chamber, said air bubble detection system comprising;

drive means for activating said electro-mechanical transducer for creating an initial oscillation in said ink liquid disposed in said pressure chamber;

sensing means for sensing a residual oscillation of said ink liquid after termination of said initial oscillation and for providing an output signal indicating said residual oscillation; and

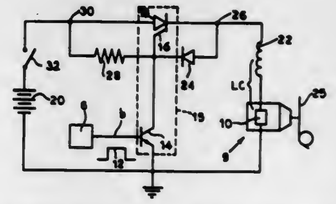
amplifier means for amplifying said output signal developed from said sensing means.

4,498,089

CONTROL SYSTEM FOR INK JET PRINTING ELEMENT

Alessandro Scardovi, Ivrea, Italy, assignor to Ing. C. Olivetti & C., S.p.A., Ivrea, Italy

Filed Jul. 15, 1983, Ser. No. 514,304
Claims priority, application Italy, Jul. 16, 1982, 67907 A/82
Int. Cl.³ G01D *15/16*
U.S. Cl. 346—140 R **25 Claims**



1. A control system for a selective ink jet printing element operating through a nozzle (7) of a container (3) actuated by a piezoelectric transducer (10), the system comprising an oscillatory circuit (22, 10) including the transducer (10) and an arhythmic pulse generator (G) for selectively exciting the oscillatory circuit, characterised by circuit means (15, 24, 28) causing the oscillatory circuit (22, 10) to generate in response to each exciting pulse (12) a single oscillation wherein both the voltage (V_c) and current (I) value and their derivatives with

respect to time vary continuously, whereby the formation of harmonics in the oscillatory circuit is substantially excluded.

4,498,090

ELECTROSTATIC PRINTING APPARATUS

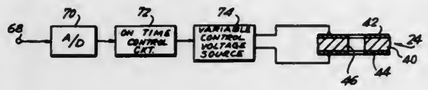
Shigemichi Honda, Tokyo; Akio Hitachi, Inagi; Kiyosuke Suzuki, Kitamoto, and Kiyotaka Dochi, Tokyo, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Feb. 18, 1982, Ser. No. 349,776

Claims priority, application Japan, Feb. 18, 1981, 56-22392; Feb. 18, 1981, 56-21702[U]

Int. Cl.³ G01D *15/06*

U.S. Cl. 346—159 **6 Claims**



1. Electrostatic printing apparatus of the ion-flow type for printing an image on a record medium in response to an information signal, comprising:

ion generator means for generating ions;

back electrode means for producing a bias potential to cause said generated ions to flow from said ion generator means toward said back electrode means onto said record medium;

means for intermittently advancing said record medium past said back electrode means;

control electrode means interposed between said ion generator means and said record medium for controlling the flow of ions therebetween and including at least one aperture, defined by a surrounding surface, and through which said ions are adapted to flow; and

control signal generator means for supplying a control signal to said control electrode means to cause the latter to produce an electric field substantially parallel to said bias potential in order to direct the flow of said ions through said at least one aperture in a stream substantially out of contact with said surrounding surface, and to control the amount of said ions flowing through each aperture to one of at least three different amounts in response to said information signal, said control signal generator means supplying said control signal to said control electrode means so as to cause the latter to control the time, during each interval when the intermittently advanced record medium is at rest, within which ions flow through each aperture to one of at least three different times in response to said information signal.

4,498,091

HEAT-SENSITIVE RECORDING SHEET

Noboru Yamato; Toshimi Satake; Toshiaki Minami, and Fumio Fujimura, all of Tokyo, Japan, assignors to Jujo Paper Co., Ltd., Tokyo, Japan

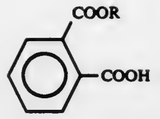
Filed Mar. 15, 1984, Ser. No. 590,199

Claims priority, application Japan, Mar. 15, 1983, 58-41436

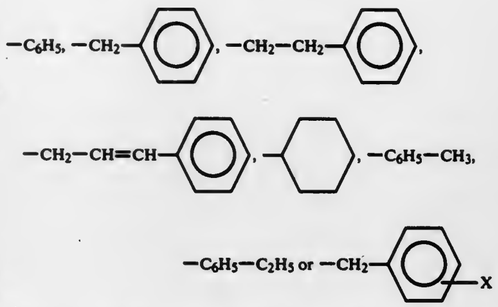
Int. Cl.³ B41M *5/18*

U.S. Cl. 346—216 **6 Claims**

1. Heat-sensitive recording sheet having a color-forming layer comprising (1) a colorless or pale colored chromogenic dyestuff and (2) a color developing material which is a phthalic acid monoester of the general formula:



in which R is a saturated alkyl group of 4 to 20 carbon atoms,



where X is an alkyl group, a halogen or an alkoxy group.

4,498,092

SEMICONDUCTOR PHOTOELECTRIC CONVERSION DEVICE

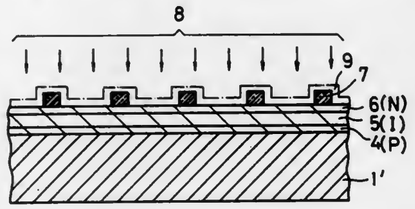
Shunpei Yamazaki, Tokyo, Japan, assignor to Semiconductor Energy Laboratory Co., Ltd., Japan

Filed Sep. 14, 1981, Ser. No. 301,595

Claims priority, application Japan, Sep. 16, 1980, 55-128110

Int. Cl.³ H01L *45/00*

U.S. Cl. 357—2 **7 Claims**



1. A semiconductor photoelectric conversion device comprising:

a substrate having a conductive surface; a semiconductor layer laminate member formed on the substrate; and

an electrode connected to the semiconductor layer laminate member in a manner to make an ohmic contact therewith;

wherein the semiconductor layer laminate member is comprised of a P (or N) type first semiconductor layer, an I type second semiconductor layer formed on the first semiconductor layer to define therebetween a PI (or NI) junction, and an N (or P) type third semiconductor layer formed on the second semiconductor layer to define therebetween an NI (or PI) junction, providing a vertical PIN (or NIP) type structure; and

wherein one or more of the first, second and third semiconductor layers are each formed of a mixture of a non-crystalline semiconductor and a microcrystalline semiconductor which is a crystalline semiconductor having a particle size of 5 to 200 Å and is dispersed in the non-crystalline semiconductor with such a distribution of the degree of crystallization that it varies at mean pitches of 5 to 500 Å and 50 Å to 10μ in the direction of the thickness and the surface of the layer(s), respectively, the mixture being doped with dangling bond neutralizers.

4,498,093

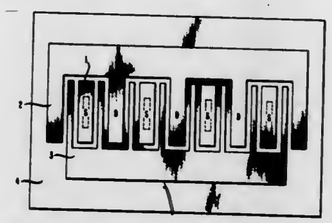
HIGH-POWER III-V SEMICONDUCTOR DEVICE

Christopher L. Allyn, Morristown; Peter G. Flahive, New Providence; David E. Iglesias; Wolfgang O. W. Schlosser, both of Basking Ridge, and Stuart H. Wemple, Chatham Township, Morris County, all of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Sep. 14, 1981, Ser. No. 302,030

Int. Cl.³ H01L *29/80*

U.S. Cl. 357—22 **7 Claims**



1. Unipolar semiconductor device for the amplification of an AC electrical signal having a frequency which is here specified in units of gigahertz, which is here designated as f, and which is less than or equal to 25 gigahertz, said device comprising

a supported active layer which consists essentially of a doped III-V semiconductor material,

source means for providing free carriers to a first region of said active layer,

drain means for removing free carriers from a second region of said active layer,

a gate contact on a third region of said active layer, said third region being intermediary to said first region and said second region and said gate contact being for impressing said AC signal on said third region so as to control AC current at said drain means,

said device being characterized in that normalized gate resistance is greater than or equal to 0.75 ohm millimeter between a first point of said gate corresponding to maximum AC current and a second point of said gate corresponding to zero AC current, whereby said device is capable of having, at said drain means, a power output which is greater than or equal to 0.7–0.025f watts per millimeter of total device gate width.

4,498,094

JUNCTION FIELD EFFECT TRANSISTOR HAVING A SUBSTANTIALLY QUADRATIC CHARACTERISTIC

Jacobus Houthoff, and Johannes J. Sips, both of Nijmegen, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 150,269, May 15, 1980, abandoned. This application Jun. 16, 1982, Ser. No. 388,827

Claims priority, application Netherlands, May 29, 1979, 7904200

Int. Cl.³ H01L *29/80*

U.S. Cl. 357—22 **6 Claims**

1. A junction field effect transistor, which comprises:

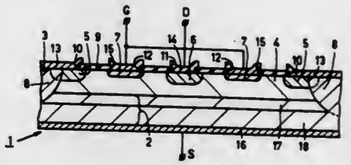
a semiconductor body having a semiconductor substrate of a first conductivity type;

a semiconductor surface region of a second conductivity type opposite to that of the first and located on a first major surface of said substrate;

surface-adjoining source and drain zones of said second conductivity type in said surface region and a channel region of said second conductivity type therebetween;

a surface-adjoining gate region of said first conductivity type in said surface region and between said source and drain zones which forms a rectifying junction with said channel region; and

means for maintaining the value of the quantity β substantially constant over a range of gate-to-source voltage of from zero volts to pinch off, comprising, in combination, a sub-region of the semiconductor substrate of the first conductivity type located at said first major surface and adjacent said channel region, and having a doping concentration which is less than that of the remainder of said substrate and at most approximately equal to that of the adjacent part of the channel region, and means for electrically connecting said surface-adjoining source zone and the underlying semiconductor substrate.



4,498,095

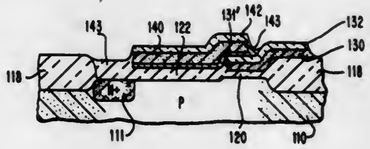
SEMICONDUCTOR STRUCTURE WITH IMPROVED ISOLATION BETWEEN TWO LAYERS OF POLYCRYSTALLINE SILICON

Paul L. Garbarino, Ridgefield, Conn.; Stanley R. Makarewicz, New Windsor, and Joseph F. Shepard, Hopewell Junction, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 902,127, May 2, 1978, Pat. No. 4,251,571. This application Oct. 14, 1980, Ser. No. 196,244

Int. Cl.³ H01L *29/78*

U.S. Cl. 357—23 **3 Claims**



1. A semiconductor field effect device comprising:

a semiconductor substrate having a first region and a second region;

a very thin gate insulating layer having a 250–500 angstrom thickness of silicon dioxide formed on said first and second regions of the substrate;

a first polycrystalline silicon electrode having at least one vertical surface covering the gate insulating oxide layer in said first region;

a composite silicon dioxide insulating layer formed over the oxide in said second region and over said first polycrystalline silicon electrode particularly at the vertical surface(s) of said first polycrystalline silicon electrode providing a sidewall of said composite insulating layer, said composite insulating layer consisting of a second layer of silicon dioxide formed by in situ partial conversion of said first polycrystalline silicon electrode and said thin oxide on said second region of the substrate and a layer of chemical vapor deposited silicon dioxide covering said second layer of silicon dioxide; and

a second polycrystalline silicon electrode formed over the composite silicon dioxide insulating layer overlying said second region and over at least a portion of said composite insulating layer overlying said first electrode.

4,498,096

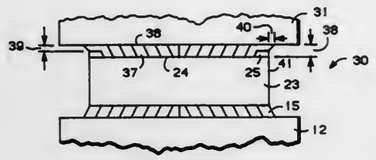
BUTTON RECTIFIER PACKAGE FOR NON-PLANAR DIE

David L. Addie, Chandler, and Kenneth A. Ellsworth, Gilbert, both of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 229,696, Jan. 30, 1981, abandoned. This application Sep. 12, 1983, Ser. No. 531,622

Int. Cl.³ H01L *23/48, 29/34, 29/48*

U.S. Cl. 357—67 **9 Claims**



1. An axial lead semiconductor device comprising:
first and second leads having, respectively, substantially planar first and second contact members;
a semiconductor die having first and second faces, with a raised dielectric region of a predetermined height on at least said first face;
solder means having a tensile strength less than 4560 psi (31 MPa) substantially uniformly interconnecting said first face and said substantially planar first contact member;
wherein said solder means extends over a portion of said raised dielectric region and has on said raised dielectric region a first thickness;
wherein said solder means has a second thickness measured between said first face and said first contact member which exceeds said predetermined height of said raised dielectric region by an amount equal to said first thickness; and
attachment means interconnecting said second face and said substantially planar second contact member.

4,498,097

COLOR TELEVISION SIGNAL PRODUCING DEVICE CAPABLE OF COMPENSATING THE COLOR SIGNAL

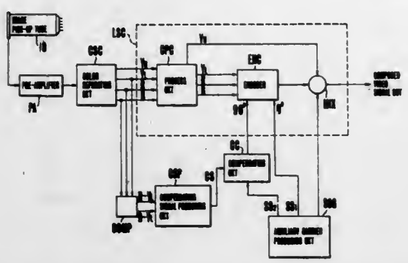
Ryo Fujimoto, Kanagawa, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 21, 1982, Ser. No. 420,622

Claims priority, application Japan, Oct. 7, 1981, 56-159956

Int. Cl.³ H04N *9/535*

U.S. Cl. 358—12 **5 Claims**



1. A color television signal producing device comprising:
generating means for generating two auxiliary sub-carriers of the same frequency but having a phase difference of 90° C.;
a carrier color signal producing means for modulating the two sub-carriers with an input color signal into the carrier color signal;
detecting means for detecting a predetermined color phase of said input color signal; and
control means for variably controlling amplitude and/or color phase of the at least one of the carriers in response to the output of said detecting means.

4,498,098

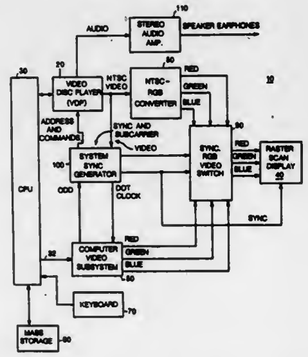
APPARATUS FOR COMBINING A VIDEO SIGNAL WITH GRAPHICS AND TEXT FROM A COMPUTER

Douglas E. Stell, Acton, Mass., assignor to Digital Equipment Corporation, Maynard, Mass.

Filed Jun. 2, 1982, Ser. No. 384,439

Int. Cl.³ H04N *9/535*

U.S. Cl. 358—22 **9 Claims**



1. Apparatus for combining video signals from a video source with computer-generated text and graphics signals provided from a computer video output subsystem, for display together, in overlay, on a raster scan video display device, comprising:
A. the video signals containing synchronization signals;
B. means for converting the format of at least one of said video signals and computer-generated text and graphics signals to the non-phase modulated format of the other if both are not already in that format, or to a preselected non-phase modulated format if neither is in a non-phase modulated format;
C. slave synchronization means for generating slave synchronization signals responsive to the synchronization signals contained in the video signals;
D. a video switch connected between the inputs of the display device, on the one hand, and the non-phase modulated versions of the video signals and the computer-generated text and graphics signals, on the other hand, for selectively supplying to the display device, for each pixel, either the video signals or the computer-generated signals; and
E. the slave synchronization signals being supplied to the computer video output subsystem as a clock for controlling the rate and time at which it supplies pixel information to the video switch, and to the video switch to control the time at which it switches between the video signals and the computer-generated signals,
whereby the video switch and the computer video output subsystem are synchronized to the video signals, to track jitter in the video signals and ensure that registration is maintained between the video signals and the computer-generated signals.

4,498,099

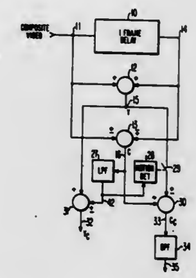
APPARATUS FOR FRAME-TO-FRAME COMB FILTERING COMPOSITE TV SIGNAL

Dalton H. Pritchard, Princeton, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Nov. 26, 1982, Ser. No. 444,381

Int. Cl.³ H04N *9/535*

U.S. Cl. 358—31 **5 Claims**



1. A comb filter for processing TV signals comprising:
a delay means for delaying said TV signal by one image period;
first means for combining said TV signal and delayed TV signal from said delay means to produce the sum thereof corresponding substantially to a first component from said TV signal;
second means for combining said TV signal and delayed TV signal from said delay means to produce the difference thereof corresponding substantially to a second component from said TV signal;
filter means having an input terminal coupled to said second means, and having an output terminal, said filter means having a transfer characteristic for substantially rejecting said second component of said TV signal; and
third means for combining the first component of signal with filtered signal from the output terminal of said filter means to correct the first component of signal for errors therein due to interimage motion.

4,498,100

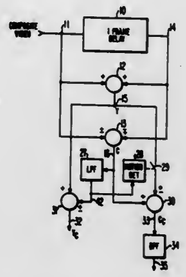
APPARATUS FOR FRAME-TO-FRAME COMB FILTERING COMPOSITE TV SIGNAL

Richard M. Bunting, Cranbury, N.J., and Alfonse Acampora, Staten Island, N.Y., assignors to RCA Corporation, New York, N.Y.

Filed Nov. 26, 1982, Ser. No. 444,724

Int. Cl.³ H04N *9/535*

U.S. Cl. 358—31 **8 Claims**



1. A frame-to-frame comb filter for separating chrominance and luminance signal components from a composite video signal to produce comb filtered chrominance and luminance components, improved to correct the combed chrominance component during periods of interframe scene motion; wherein the improvement comprises:
means for detecting interframe scene motion and generating a control signal responsive thereto;
means responsive to said control signal, said comb filtered chrominance component and said combed filtered luminance component for combining the comb filtered luminance component with the comb filtered chrominance component during motion periods; and
means for filtering the combined signal to pass only the chrominance frequency spectrum and produce a motion corrected chrominance signal.

4,498,101

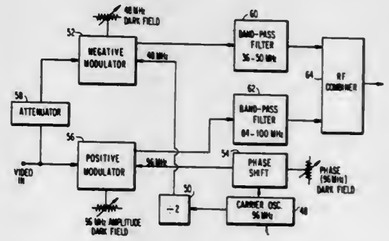
LIGHT VALVE PROJECTION SYSTEM WITH IMPROVED VERTICAL RESOLUTION

Thomas T. True, Camillus; William E. Good, Liverpool, and William C. Bates, Baldwinsville, all of N.Y., assignors to General Electric Company, Portsmouth, Va.

Filed Dec. 22, 1982, Ser. No. 452,162

Int. Cl.³ H04N *9/31*

U.S. Cl. 358—62 **8 Claims**



1. Light valve projection apparatus including electron beam means for scanning a raster of orthogonally related diffraction gratings on a light modulating fluid to diffract incident light into different spectral colors for projection onto a viewing surface, said electron beam means including vertical and horizontal deflection means and modulating means connected to said vertical and horizontal deflection means for controlling the depth of the grooves in said diffraction gratings thereby controlling the diffraction of said incident light into different spatial directions and angular deviations permitting control of the color components, said modulating means comprising:
carrier signal generating means for generating a plurality of carrier signals each having a different frequency, the frequency of each carrier signal being higher than any video signal to be reproduced, to diffract light of a predetermined spectral color,
first modulator means connected to receive at least one of said carrier signals and at least one video signal corresponding to at least one predetermined spectral color for modulating the carrier signal with the video signal and applying the modulated signal to said horizontal deflection means,
second modulator means for receiving a second one of said carrier signals and a second video signal corresponding to a second predetermined spectral color for modulating the carrier signal with the video signal and applying the modulated signal to said vertical deflection means, said second one of said carrier signals including a fundamental signal and a phase controlled harmonic signal, said second modulator means positively modulating said harmonic signal and negatively modulating said fundamental signal and combining the modulated harmonic and fundamental signals to produce a resultant modulated signal, the ratio of the positive modulation of said harmonic signal to the

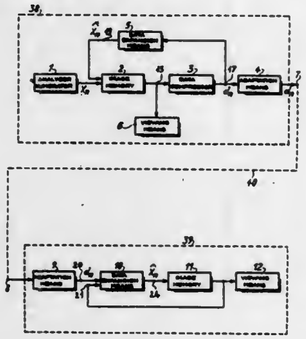
negative modulation of the fundamental signal being different than unity.

4,498,102

METHOD AND APPARATUS FOR A TRANSMISSION SYSTEM FOR TRANSMITTING AN IMAGE AT A REDUCED OUTPUT

Christian Richard, and Jean Y. Catros, both of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Apr. 12, 1982, Ser. No. 367,387
Claims priority, application France, Apr. 14, 1981, 81 07458
Int. Cl.³ H04N *1/00*
U.S. Cl. 358—133 **10 Claims**



1. Method of transmitting an image at reduced output comprising for each image the steps of:
analyzing the image in two fields;
numbering its values of luminosity;
coding the values of luminosity other than those of a given sequence by differential coding with temporal inter-field prediction, consisting in coding the value of luminosity of a running point as function of one of the adjacent points belonging to the same line on the one hand, and of adjacent points belonging to the preceding line of the other field of the same image, on the other hand;
coding the values of the given sequence which are intended for initialization of coding and decoding, by another type of coding;
transmitting all coded values;
decoding the coded values intended for initialization by the inverse method of the other type of coding;
decoding the other coded values by the inverse method of differential coding with inter-field prediction;
and resetting an image from the group of decoded values.

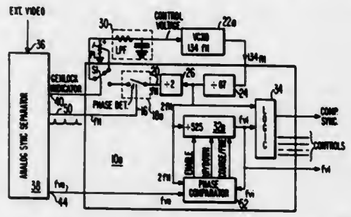
4,498,103

SLOW GENLOCK CIRCUIT

Felix Aschwanden, Thalwil, Switzerland, assignor to RCA Corporation, New York, N.Y.

Filed Sep. 13, 1982, Ser. No. 417,525
Int. Cl.³ H04N *5/04*; H03L *7/00*
U.S. Cl. 358—148 **4 Claims**

2. Apparatus comprising:
input means for receiving an external synchronization signal;
reference signal generating means for generating a reference signal;
dividing means coupled to said reference signal generating means for frequency dividing said reference signal by a selectable division ratio to produce an internal synchronization signal;
comparing means coupled to said input means and to said dividing means for phase comparing said internal synchronization signal with said external synchronization signal to indicate the presence of phase-lock between said internal synchronization signal and said external synchronization signal, and in the absence of said phase-lock to indicate the magnitude of the phase difference between said internal synchronization signal and said external synchronization signal by a short path, said comparing means including means for setting said selectable division ratio to an initial division ratio during intervals when said presence of phase-lock is indicated, and for changing said selectable division ratio in said dividing means to a second division ratio during intervals when said magnitude exceeds a pedetermined amount for providing fast progress towards



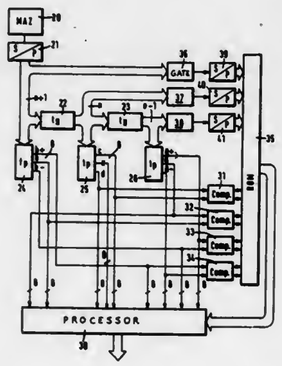
locking of said internal synchronization signal to said external synchronization signal, and for changing said selectable division ratio to a third division ratio intermediate said intial and second division ratios during intervals when said magnitude is less than said predetermined amount to slow the locking of said internal synchronization signal to said external synchronization signal until phase locking of said internal synchronization signal to said external synchronization signal is achieved and thereafter changing said division ratio back to said initial division ratio.

4,498,104

METHOD AND APPARATUS FOR CONCEALING ERRORS IN A DIGITAL TELEVISION SIGNAL

Axel Schulz, Bickenbach, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed May 26, 1982, Ser. No. 382,385
Claims priority, application Fed. Rep. of Germany, May 30, 1981, 3121599
Int. Cl.³ H04N *5/14*
U.S. Cl. 358—160 **6 Claims**



1. Method of concealing errors in a digital video signal comprising the steps of:
making available simultaneously by a signal delay network the value of a digital signal representing a first picture point currently being reproduced and signals representing all the picture points immediately adjacent to said first picture point;
subjecting said signal representing said first picture point to an error detecting test;

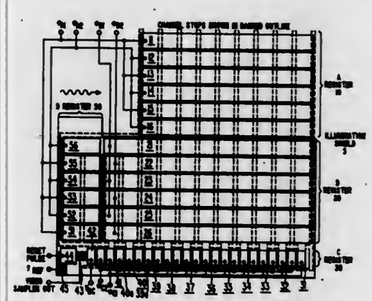
at least in the event that said error detecting test detects the presence of error in said signal representing said first picture point, comparing the signal values representing the members of each and every pair adjacently straddling said first picture point, determining in each case whether the members of a pair of said signal values differ by more than a predetermined amount, and providing comparison result signals representative of said determinations;
in the event that said error detecting test detects the presence of an error in said signal representing said first picture point, causing the exclusion from further processing regarding said first picture point of all signals representing picture point pairs found by said comparison and determination step to differ from each other by more than said predetermined amount and then causing the values of signals representative of at least one other pair of said picture points to be averaged together to produce an average value signal, and
inserting said average value signal in an output digital video signal stream in place of said digital signal representing said first picture point.

4,498,105

FIELD-TRANSFER CCD IMAGERS WITH REFERENCE-BLACK-LEVEL GENERATION CAPABILITY

Delbert D. Crawshaw, Lancaster, Pa., assignor to RCA Corporation, New York, N.Y.

Filed May 27, 1982, Ser. No. 382,423
Int. Cl.³ H04N *3/14*
U.S. Cl. 358—213 **17 Claims**



1. In a charge-coupled-device imager of the field transfer type, having an A register of parallel charge transfer channels for accumulating packets of charge at pixel sites responsive to the illumination of the charge transfer channels in said A register during integration times, having a B register of parallel charge transfer channels preceded in cascade connection by respective ones of the parallel charge transfer channels in said A register, to which charge transfer channels in the B register said packets of accumulated charge are transferred from said A register during field transfer times between said integration times, and from which charge transfer channels in said B register successive lines of those charge packets are clocked forward a line at a time during said integration times, having a C register functioning as a parallel to serial converter for successive lines of each field as they are clocked forward from the B register, thereby to form a video signal; and having means for shielding the B and C registers from illumination, the improvement for generating a reference-black-level sample in each line of said video signal responsive primarily to integrated dark currents alone and not appreciably to charges generated by photoconversion, comprising:
at least one further charge transfer channel being shielded from illumination, being of equal length with each of the charge transfer channels in said B register, being clocked in synchronism with the charge transfer channels in said B register and having a final stage connected to supply to said C register charge packets representative of said reference-black-level samples which charge packets are generated at least in part by accumulation of dark current in said at least one further charge transfer channel,

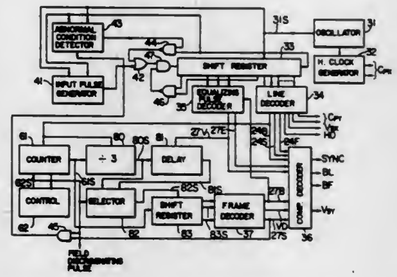
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4,498,106

PULSE GENERATOR FOR SOLID-STATE TELEVISION CAMERA

Kazuhiro Sato, Tokyo; Morishi Izumita, Inagi; Kenji Takahashi; Toshiyuki Akiyama, both of Kodaira, and Shigeki Nishizawa, Mobara, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 28, 1982, Ser. No. 402,420
Claims priority, application Japan, Jul. 29, 1981, 56-117777
Int. Cl.³ H04N *3/12*
U.S. Cl. 358—213 **5 Claims**



1. A pulse generator circuit for a solid-state television camera comprising:
first means for producing pulses of a horizontal scanning frequency, said first means including an oscillator for generating clock pulses, a shift register driven by said clock pulses, said shift register having a number of stages sufficient for dividing a frequency of the clock pulses into the horizontal scanning frequency, said shift register having an output terminal thereof connected with an input terminal thereof so as to form a ring counter circuit, and a pulse generator for generating a pulse to be applied to said input terminal of said shift register for transfer through said shift register;
second means for producing pulse trains of the horizontal scanning frequency for the television camera, said pulse trains being produced in response to a plurality of pulses extracted from the stages of said shift register having frequencies which are the same as the horizontal scanning frequency and phases which are different from each other;
third means for producing pulses for interlace scanning, said third means including a divider circuit for dividing the pulse train of the horizontal scanning frequency obtained from said second means so that said pulse train is alternately divided by two different factors n and n+1 (n being a positive integer), and delay means for delaying said pulse divided by n for one half of the horizontal scanning time period.

4,498,107

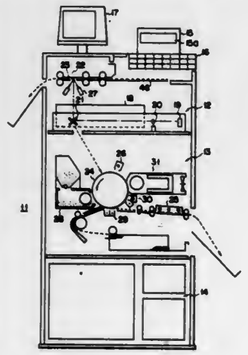
DOCUMENT INFORMATION FILING SYSTEM

Tomohisa Yoshimaru, and Kazuki Yamamoto, both of Yokohama, Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Apr. 21, 1981, Ser. No. 256,253
Claims priority, application Japan, Apr. 23, 1980, 55-54054
Int. Cl.³ H04M *1/00*
U.S. Cl. 358—256 **8 Claims**

1. A document information filing system comprising:

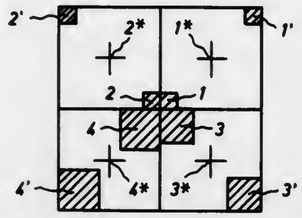
a keyboard including keys for producing index information and keys for setting operation modes of said filing system;
a scanner for optically scanning a document to be filed and providing image information corresponding thereto;
a video recorder section having associated therewith a removable multi-track recording medium means for recording a plurality of index data and units of document image information individually corresponding to said respective index data, said video recorder section including recording and reproducing means for effecting recording of information on said recording medium means and reproduction of information including index data from said recording medium means;
a control section including a first memory means for storing index data reproduced by said video recorder section and index data to be recorded on said recording medium means, a second memory means for storing names of a



plurality of operation modes of said system and information about the procedures of operation for said operation modes, and means for retrieving index data for desired image information among the index data stored in said first memory means;
a display device for displaying an operation mode name stored in said second memory means and its associated sequential procedure information for a mode set by operation of said keys for setting operation modes;
means for setting a recording and reproducing element of said recording and reproducing means for said video recorder section at a position corresponding to a particular recording medium track of said recording medium means as specified by the index data speciied by said retrieving means; and
means for outputting image information reproduced by said video recorder section one scanning line after another.

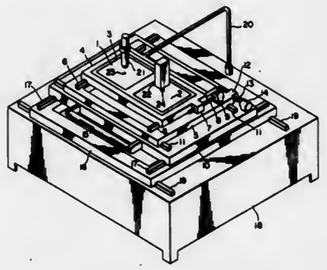
4,498,108
SCREEN FOR REPRODUCING CONTINUOUS-TONE PICTURES
Eckhard Lindemann, Raisdorf, and Wolfgang Neumann, Schleswig, both of Fed. Rep. of Germany, assignors to Dr.-Ing. Rudolf Hell GmbH, Raisdorf, Fed. Rep. of Germany
Continuation of Ser. No. 221,361, Dec. 29, 1980, abandoned, which is a continuation of Ser. No. 962,655, Nov. 21, 1978, abandoned. This application Feb. 14, 1983, Ser. No. 465,904
Int. Cl.³ H04N *1/22*
U.S. Cl. 358—283 **8 Claims**

3. A method of making a 45° screening pattern half-tone reproduction comprising, scanning an original in parallel lines to obtain data indicative of the tonal value at equally spaced regions of the original, forming in the 45° screening pattern in the reproduction a plurality of equally spaced dots of tonal values corresponding to the tonal values of the original by separately forming four adjoining quarter sections of each dot, and while forming each quarter section of a dot, substantially



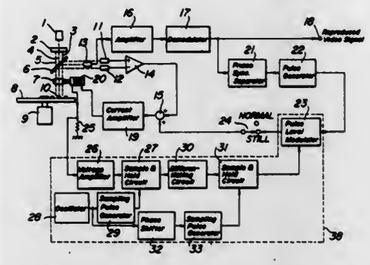
simultaneously forming a similar quarter section of a diagonally adjacent dot.

4,498,109
PICTURE OUTLINE TRACING AND RECORDING MACHINE
Takashi Sakamoto, Kyoto, Japan, assignor to Dainippon Screen Seizo Kabushiki Kaisha, Kyoto, Japan
Continuation-in-part of Ser. No. 930,382, Aug. 2, 1978, Pat. No. 4,300,170. This application Mar. 3, 1980, Ser. No. 126,439
The portion of the term of this patent subsequent to Nov. 10, 1998, has been disclaimed.
Int. Cl.³ H04N *1/22*
U.S. Cl. 358—296 **9 Claims**



1. A picture outline tracing and recording machine comprising a first support for an original picture having an outline, a second support for a recording medium, an optical head means movably positioned with respect to said first support to receive light from a spot area of said picture and having a plurality of optical detecting elements each positioned to receive light from a different portion of said spot area, said detecting elements providing output signals in response to the reception of light thereby, a processing head means movably positioned with respect to said second support to record an outline on said medium, manually operable means for displacing said processing and optical head means in common with respect to said medium and original respectively, means responsive to said output signals for producing control signals, and second means connected to receive said control signals and responsive thereto for displacing said processing and optical head means in common with respect to said medium and original respectively, whereby the total displacement of said optical head means with respect to said original picture and the total displacement of said processing head means with respect to said medium are the sum of the respective displacements effected by said manually operable means and said second means.

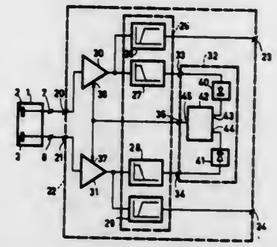
4,498,110
OPTICAL DISC REPRODUCING APPARATUS
Kenji Kimura, Tachikawa, Japan, assignor to Olympus Optical Co., Ltd., Japan
Filed Apr. 16, 1982, Ser. No. 369,087
Claims priority, application Japan, Apr. 23, 1981, 56-60628
Int. Cl.³ H04N *5/85;* **G11B** *21/10*
U.S. Cl. 358—342 **10 Claims**



1. In an apparatus for reproducing an information signal recorded on an optical disc along spiral or concentric tracks, wherein said apparatus comprises means for emitting a light beam, means for focusing the light beam onto the optical disc as a light spot, means for rotating the optical disc at a given speed, means for receiving light from said disc modulated in accordance with the information signal recorded on said disc to produce a reproduced signal, means responsive to said spot position with respect to a track for detecting a tracking error and producing a tracking error signal, means responsive to said tracking error signal for moving the light spot in a radial direction of the disc to control said tracking error, and means for producing a return signal representing the amount of movement necessary to cause said light spot to trace the same track, said means for moving said light spot in a radial direction of said disc being responsive to said return signal to move said light spot so that it returns to trace said same track, the improvement in said apparatus comprising:
means for detecting the direction and speed of movement of said light spot on said disc in response to said tracking error signal; and
means responsive to said detected direction and speed of said light spot movement for modifying said return signal to cause said light spot to trace the same track.

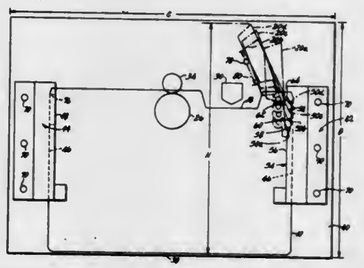
4,498,111
METHOD AND APPARATUS FOR RECORDING OR REPRODUCING STEREOPHONIC INFORMATION IN A MAGNETIC RECORD CARRIER
Albert M. A. Rijckaert, and Anthonie Walraven, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.
Filed Jul. 22, 1982, Ser. No. 401,043
Claims priority, application Netherlands, Aug. 17, 1981, 8103834
Int. Cl.³ G11B *5/43, 5/02*
U.S. Cl. 360—27 **12 Claims**

1. A methpd of reproducing information recorded in two spaced apart, parallel tracks on a magnetic record carrier on which an auxiliary signal is recorded in each of the tracks and in the area between the tracks, said auxiliary signal having a frequency content outside the frequency range of the information recorded in said tracks, said method comprising the steps of reading each of the tracks with a respective one of a pair of transducers, said transducers each supplying a readout signal having an information component representative of the information and an auxiliary signal component representative of the auxiliary signal read by the respective transducer, separating said information and auxiliary signal components from each of said readout signals so as to obtain a pair of information signals each corresponding to the information read by the respective transducer and a pair of further signals each corresponding to the auxiliary signal read by the respective transducer, and multiplying the amplitude of each of said information signals by a factor corresponding to a constant multiplied by the ratio



of the amplitude of the larger of said two further signals to the amplitude of the lower of said two further signals so as to compensate for variations of said information components due to tracking errors.

4,498,112
TAPE CARTRIDGE RECEPTACLE
Harold H. Georgens, Rancho Santa Fe, and A. Ray Brokaw, San Diego, both of Calif., assignors to Data Electronics, Inc., San Diego, Calif.
Filed Mar. 22, 1982, Ser. No. 360,696
Int. Cl.³ G11B *15/66, 23/08*
U.S. Cl. 360—96.5 **19 Claims**



1. A receptacle for receiving a tape cartridge to be inserted into a tape drive unit having a magnetic head, the cartridge having a tape contained in a housing, and a door on the housing for opening to expose a portion of the tape for contact with the head, the door being normally closed under the influence of a return spring and being rotatable against the control spring through an angle to a fully open position in which the tip of the door is farthest from the edge of the cartridge housing most remote from the door, the door also being rotatable to a partially open position in which the angle through which the door has rotated is less than the angle in the fully open position, so the tip of the door is closer to said remote edge of the cartridge housing than when the door is in the fully open position, the receptacle including means for engaging the cartridge housing to guide the cartridge into the receptacle toward the head, and a door control rail for contacting a portion of the door during guided movement of the cartridge along the guide means to rotate the door open against the bias of the door return spring, the door control rail having a front portion for engaging the door sufficiently to rotate it into its fully open position and a rear portion for engaging the door to rotate it into its partially open position during at least a latter portion of the cartridge travel toward the head to allow the cartridge door to clear the head during the latter portion of the cartridge travel and to

retain the door in its partially open position when the tape contacts the head for reducing the overall width of the tape cartridge, compared with the width as measured from the tip of the fully open door to the edge of the cartridge housing most remote from the door.

4,498,113

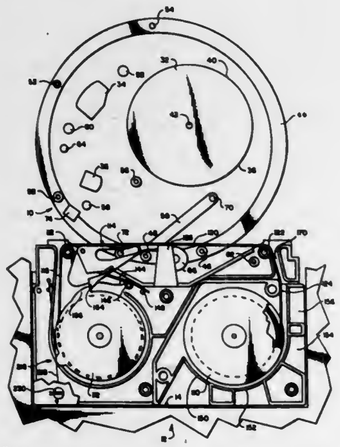
APPARATUS AND METHOD FOR CLEANING A VIDEO PLAYER/RECORDER

Eivind Clausen, and James D. Allsop, both of Bellingham, Wash., assignors to Allsop, Inc., Bellingham, Wash.

Continuation-in-part of Ser. No. 253,943, Apr. 14, 1981, abandoned, which is a continuation-in-part of Ser. No. 223,025, Jan. 6, 1981, Pat. No. 4,387,411, which is a continuation-in-part of Ser. No. 109,650, Jan. 4, 1980, abandoned. This application Dec. 21, 1981, Ser. No. 332,333

Int. Cl.³ G11B 5/41

U.S. Cl. 360—128 **31 Claims**



1. A cleaning apparatus for a playing and/or recording machine, where said machine has:

a. a structure defining a recess to receive a tape cassette, said recess having a forward portion to receive a front portion of said cassette, and a rear portion to receive a rear portion of said cassette;

b. a rotating head member having a curved peripheral surface;

c. a guide means movable between a first nonoperating position and a second operating position, said guide means arranged so that with a tape cassette in the recess, the guide means in moving from the nonoperating to the operating position engages a tape portion positioned along the front portion of the cassette and moves the tape portion outwardly from the cassette into an operating position extending in a curved path along the peripheral surface of the head;

said apparatus comprising:

a. a housing having a front portion, a back portion, first and second side portions, a top wall and a bottom wall, said housing being adapted to be positioned in the recess of the machine;

b. first and second spools rotatably mounted in the first and second side portions of the housing, respectively;

c. a cleaning ribbon having a first end portion connected to said first spool, a main cleaning portion having a front ribbon portion which extends along the front portion of the housing, and a second end portion connected between the main cleaning portion and the second spool, said ribbon having sufficient length so that the ribbon can be wound in a plurality of loop portions around either of said spools, the front ribbon portion being positioned to be engaged by the guide means so as to be extracted by the guide means from the housing to bring the main cleaning portion into cleaning engagement with the rotating head member;

d. first and second access opening means located in said housing proximate to said first and second spools and exposing ribbon loop portions wound on said first and second spools, respectively, each of said access opening means exposing segments of the ribbon loop portions wound on the spools for application of a cleaning solution on said segments in a spaced pattern along said ribbon loop portions;

whereby said ribbon loop portions can be located on either of said spools and be exposed for application of a cleaning solution, so that regardless of which spool has the ribbon unwound therefrom during a cleaning cycle, wetted ribbon portions can be placed in cleaning engagement with the head member.

4,498,114

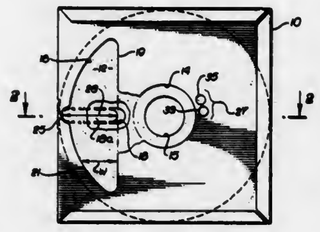
NON-ABRASIVE MAGNETIC HEAD CLEANING SYSTEM

C. Paul Davis, Woodland Hills, Calif., assignor to PerfectData Corporation, Chatsworth, Calif.

Division of Ser. No. 180,963, Aug. 25, 1980, Pat. No. 4,374,404. This application Sep. 13, 1982, Ser. No. 417,228

Int. Cl.³ G11B 5/41

U.S. Cl. 360—128 **6 Claims**



1. A device for cleaning a magnetic head in flexible disk systems, comprising:

a cleaning disk made of an absorbent and porous material and having a disk surface, and adapted to be saturated with a liquid cleaning fluid; and

a substantially flat jacket rotatably supporting said cleaning disk within its interior, said jacket including an enlarged opening in a side wall of the jacket for facilitating saturation of a substantial portion of the cleaning disk with cleaning fluid while the disk is in said jacket, wherein said opening exposes at least one eighth of the surface of the cleaning disk and is bounded by a straight portion lying along a chord of the cleaning disk and at least one additional portion generally corresponding to the periphery of the cleaning disk, said straight portion being further defined as a chord of a circle whose center coincides with the center of the cleaning disk whereby said straight portion assists in maintaining the disk planar in the area of the opening.

4,498,115

MAGNETIC-TAPE CASSETTE HAVING A CAPSTAN CLEANING DEVICE

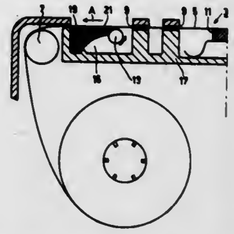
Heinrich Hofmann, Biebertal, Fed. Rep. of Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jul. 16, 1982, Ser. No. 399,032

Claims priority, application Fed. Rep. of Germany, Aug. 3, 1981, 3130696

Int. Cl.³ G11B 23/02

U.S. Cl. 360—132 **8 Claims**



1. A magnetic-tape cassette having a device for cleaning the capstan of a magnetic-tape cassette apparatus, comprising:

a housing,

two reel hubs mounted within said housing for rotation, and a length of magnetic recording tape wound on and extending between said reel hubs,

characterized in that the device comprises at least one wiper having a fixed end fixed with respect to the housing, and a free end having a wiping edge, the wiper extending from said fixed to said free ends in a direction opposite the direction of transport of the tape, to a location behind the tape near an area of contact of the magnetic tape with a capstan of a magnetic-tape apparatus into which the cassette has been inserted, said free end having a wiping edge arranged to bear against the capstan which is inserted behind the tape,

said wiper including means for resiliently urging said free end against said capstan with moderate pressure,

whereby capstan cleaning is accomplished during tape recording or playback.

4,498,116

CONTROL OF STATIC NEUTRALIZATION EMPLOYING POSITIVE AND NEGATIVE ION DISTRIBUTOR

Donald G. Saurenman, 6787 Worsham Dr., Whittier, Calif. 90602

Continuation-in-part of Ser. No. 420,904, Sep. 21, 1982, which is a continuation-in-part of Ser. No. 369,925, Apr. 19, 1982, which is a continuation-in-part of Ser. No. 290,423, Aug. 6, 1981, which is a continuation-in-part of Ser. No. 259,503, May 1, 1981, which is a continuation-in-part of Ser. No. 241,684, Mar. 9, 1981, which is a continuation-in-part of Ser. No. 124,242, Feb. 25, 1980. This application Jan. 16, 1984, Ser. No. 570,926

Int. Cl.³ H05F 3/04

U.S. Cl. 361—213 **8 Claims**

1. In apparatus for reducing static electricity in a work zone, the combination that includes:

(a) first electrical conductor means having first tips spaced therealong in a first row to dispense positive ions in response to first voltage application to the first conductor means,

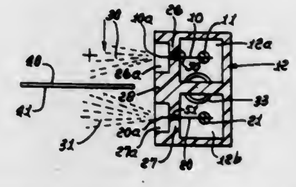
(b) second electrical conductor means having second tips spaced therealong in a second row to dispense negative ions in response to second voltage application to the second conductor means, said first and second voltages being different, and

(c) a body mounting said conductor means at locations and separations from one another characterized in that static electricity at or proximate the work to be treated is effectively reduced to non-objectionable levels when said differential voltages are applied to the conductor means,

(d) the first and second rows being parallel,

(e) the first conductor means including a first conductor having positive voltage applied thereto, and the second conductor means includes a second conductor having negative voltage applied thereto, the conductors located within said body, and including differential voltage sources connected with said conductors,

(f) said body comprising a molded plastic block having a wall defining two rows of openings therein, the conductor means defining two rows of needles on which the tips are formed, the needles penetrating through said openings,



(g) each conductor comprising a flexible cable having a conductive core and a sheath thereon, the needles sidewardly contacting the core, the flexible cables extending in parallel relation outside the body,

(h) the cables in the body extending openly in separate chambers to which pressurized gas is supplied for delivery through said openings, and the needles having ends supported entirely by the flexible cables in said chambers,

(i) there being additional small openings in said wall and between the needle opening locations, for discharging gas between the needles of each row, said additional openings being slightly larger than said needle openings.

4,498,117

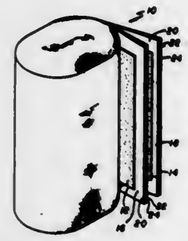
DIELECTRIC FLUID

Gerald A. Voyles, and Vandos Shedigian, both of Indianapolis, Ind., assignors to Emhart Industries, Inc., Indianapolis, Ind.

Continuation of Ser. No. 297,709, Aug. 31, 1981, abandoned. This application Nov. 25, 1983, Ser. No. 555,234

Int. Cl.³ H01G 4/22; B05D 5/12

U.S. Cl. 361—315 **6 Claims**



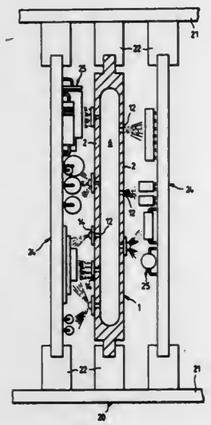
1. In a capacitor, a dielectric fluid including a mixture of a phthalate ester and isopropyl napthalene in an amount which is between 30% and 40% of said dielectric fluid by volume.

4,498,118

CIRCUIT BOARD INSTALLATION

David L. Bell, Winchester, England, assignor to BICC-Vero Electronics Limited, Merseyside, England

Filed Apr. 5, 1983, Ser. No. 482,143
Int. Cl.³ H05K 7/20
U.S. Cl. 361—384 7 Claims



1. A circuit board installation comprising a cabinet, at least one rack in the cabinet having opposed guide rails and, slidably mounted in said opposed guide rails, a plurality of circuit boards, wherein at least one substantially flat cooling module is slidably mounted in said opposed guide rails of the rack adjacent at least one circuit board, which cooling module comprises a pair of substantially flat side walls spaced apart and sealed together around their peripheral edges to form a sealed chamber, at least one inlet port in the cooling module connected to a source of pressurised cooling fluid and, in at least one of the side walls, a plurality of orifices through which pressurised cooling fluid is directed towards components of an adjacent circuit board of the installation.

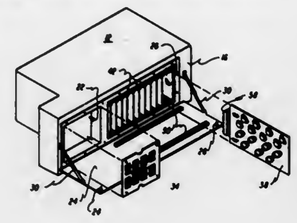
4,498,119

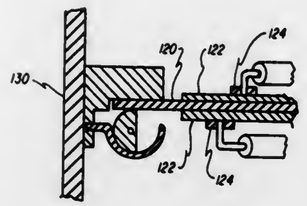
ELECTRONIC CIRCUIT BOARD AND METHOD AND APPARATUS FOR THERMAL MANAGEMENT THEREOF

Michael J. Cronin, Sherman Oaks, Calif., assignor to Lockheed Corporation, Burbank, Calif.

Filed Nov. 3, 1980, Ser. No. 203,101
Int. Cl.³ A44B 21/00
U.S. Cl. 361—386 11 Claims

1. An electronics enclosure assembly comprising:
a plurality of printed circuit boards having electrical terminals, each of said circuit boards being adapted to carry at least one heat generating electrical circuit component and including heat transfer means comprising a heat sink in electrical isolation from, but in thermal communication with, said at least one electrical circuit component;
a housing including a plurality of electrical terminals carried by the rear wall thereof and cold plate means internally thereof; said housing being adapted to receive said plurality of circuit boards;
first connector means for electrically connecting the terminals of each of said plurality of circuit boards to at least one of the terminals carried by the rear wall of said housing when said circuit boards are inserted in said housing from the front thereof; said first connector means being of the zero insertion force type;
second connector means for thermally connecting the heat transfer means of each of said plurality of circuit boards to the cold plate means of said housing, said second connector means being of the zero insertion force type;





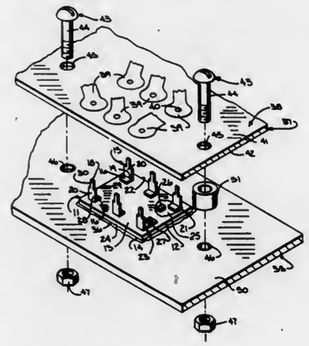
said electrical and said thermal zero insertion force connector means being manually operable from the front of said housing.

4,498,120

ELECTRICAL SUB-ASSEMBLY HAVING A LEAD FRAME TO BE COMPRESSED BETWEEN A CIRCUIT BOARD AND HEAT SINK

Lance R. Kaufman, 131 White Oak Way, Mequon, Wis. 53092

Continuation of Ser. No. 353,175, Mar. 1, 1982, abandoned. This application Jan. 17, 1984, Ser. No. 571,637
Int. Cl.³ H05K 7/20
U.S. Cl. 361—386 3 Claims



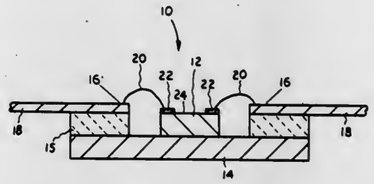
1. An electrical assembly comprising:
a heat sink;
an electrically insulating and heat conducting substrate mounted on said heat sink;
electrical means mounted on said substrate and generating heat in response to the conduction of current through said electrical means;
a printed circuit board;
mounting means compressively clamping said printed circuit board to said heat sink in spaced relation above said substrate; and
lead frame means operatively connected to said electrical means and extending between said printed circuit board and said substrate, said lead frame means
(a) spacing said printed circuit board above said substrate,
(b) receiving and transmitting compressive clamping force between said printed circuit board and said substrate and compressively forcing said substrate into intimate engagement with said heat sink to enhance heat transfer from said electrical means to said heat sink, and
(c) conducting current to said electrical means.

4,498,121

COPPER ALLOYS FOR SUPPRESSING GROWTH OF CU-AL INTERMETALLIC COMPOUNDS

John F. Breedis, Trumbull, and Julius C. Fister, Hamden, both of Conn., assignors to Olin Corporation, New Haven, Conn.

Filed Jan. 13, 1983, Ser. No. 457,605
Int. Cl.³ H01R 4/62, 9/09; H01B 1/02
U.S. Cl. 361—401 10 Claims



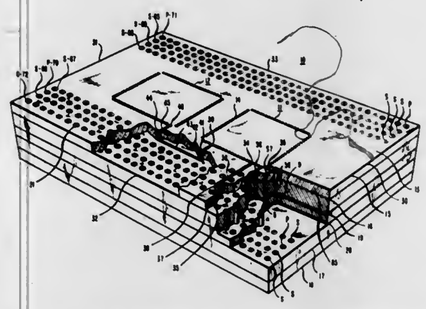
1. A circuit assembly comprising:
a leadwire formed from an aluminum containing material;
a lead frame formed from a copper containing material;
said leadwire and lead frame being bonded together, wherein the improvement comprises:
said lead frame being formed from a copper base alloy consisting essentially of at least about 15% nickel and the balance essentially copper, said copper base alloy suppressing the growth of copper-aluminum intermetallic compounds.

4,498,122

HIGH-SPEED, HIGH PIN-OUT LSI CHIP PACKAGE

Attilio J. Rainal, Convent Station, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Dec. 29, 1982, Ser. No. 454,197
Int. Cl.³ H05K 1/14
U.S. Cl. 361—414 11 Claims



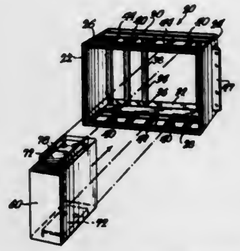
1. A multilayer, high-speed, high pin-out integrated circuit chip package comprising
plural dielectric layers,
plural signal, ground, and power contacts in contact with at least one of said dielectric layers and arranged for connection to at least one integrated circuit chip,
at least one constant potential ground plane in contact with at least one of said dielectric layers,
at least one constant potential power plane in contact with at least one of said dielectric layers,
at least one signal layer in contact with at least one of said dielectric layers and having plural conductors therethrough, each of said plural conductors having predetermined physical parameters so that the characteristic impedance of said chip package is substantially equal to a predetermined value,
means connecting said ground contacts to said ground plane and means connecting said power contacts to said power plane,
plural signal, ground, and power plated-through holes extending completely through said plural dielectric layers, said constant potential planes and said at least one signal layer, said conductors interconnecting said signal contacts and signal plated-through holes, said ground plated-through holes being connected to said ground plane, and said power plated-through holes being connected to said power plane,
said plated-through holes being adapted for electrical attachment to a circuit pack, and
said power and ground plated-through holes being located substantially symmetrically, and each of said signal plated-through holes being located proximate to a power or ground plated-through hole.

4,498,123

UNIVERSAL CIRCUIT MODULE MOUNTING STRUCTURE

Peter S. Fuss, Glen Ellyn, and Jerry J. Kosner, LaGrange, both of Ill., assignors to Tellabs, Inc., Lisle, Ill.

Filed Mar. 25, 1983, Ser. No. 478,697
Int. Cl.³ H05K 1/18
U.S. Cl. 361—427 6 Claims



1. An improved power supply for being mounted either between a pair of elongate channels spaced apart in parallel relationship or within a circuit module mounting shelf having a plurality of pairs of elongate circuit card guides, each pair of circuit card guides including a first circuit card guide at an upper end of the circuit module mounting shelf extending between a front and a rear end thereof and a second circuit card guide at a lower end of the circuit module mounting shelf extending between the front and rear ends thereof and parallel to the first circuit card guide, each circuit card guide having a longitudinal slot therein and the slots of each pair being in facing relationship, said power supply including a first pair of mounting brackets, each connectable with an associated one of the pair of elongate channels; a second pair of mounting brackets, each connectable with an associated circuit card guide of at least one pair of circuit card guides; and means for detachably securing each mounting bracket of one of said first and second pairs of mounting brackets to respective ones of upper and lower surfaces of said power supply, whereby with said first pair of mounting brackets secured to said power supply

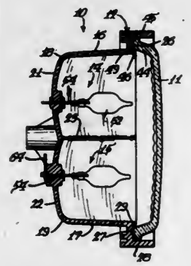
the same is mountable to and between the pair of elongate channels and with said second pair of mounting brackets secured to said power supply the same is mountable to and between at least one pair of circuit card guides in the circuit module mounting shelf, wherein said second pair of mounting brackets includes first and second generally U-shaped brackets each having a generally planar medial portion and a pair of legs extending from opposite sides of said medial portion generally perpendicular thereto and in substantially parallel relationship and said means for detachably securing fastens the medial portion of each said U-shaped bracket to a respective one of said upper and lower power supply supply surfaces with said pairs of legs of said brackets extending outwardly of said power supply, said legs of each said bracket having a spacing therebetween equal to the spacing between the longitudinal slots of adjacent pairs of circuit card guides, whereby said power supply may be mounted in said module mounting shelf by extending said legs into and through the longitudinal slots in an adjacent pair of circuit card guides.

4,498,124

DUAL HALOGEN LAMP ASSEMBLY

William Mayer, and Alton E. Runions, both of Rochester, Ill., assignors to Stewart-Warner Corporation, Chicago, Ill.

Filed Jun. 28, 1982, Ser. No. 392,337
Int. Cl.³ F21M *3/30*
U.S. Cl. 362—211 **8 Claims**



1. A dual halogen bulb rectangular lamp assembly comprising: a reflector having a first paraboloidal surface and a second paraboloidal surface positioned in the same vertical plane and below the first paraboloidal surface, halogen bulb assemblies connected permanently at the reflector in series for simultaneous energization mounted substantially centrally in each of the first and second paraboloidal surfaces of the reflector to reduce the voltage requirements of each bulb assembly, and a lens mounted over the reflector with an unobstructed area between each of the bulb assemblies and the lens.

4,498,125

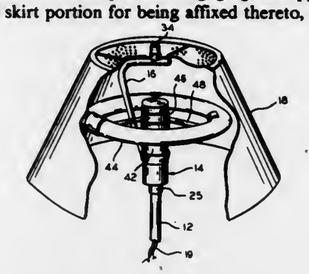
LAMP WITH ONE ARM FORK SUPPORT

Eugene J. Schumaker, Milwaukee, Wis., assignor to Adjustable Fixture Company, Milwaukee, Wis.

Filed Sep. 29, 1982, Ser. No. 427,147
Int. Cl.³ F21S *5/00*
U.S. Cl. 362—216 **6 Claims**

1. A lamp including cup means for being affixed to a support and for enclosing a lamp socket, said cup means having a skirt portion at its upper end,

an arm affixed to said cup means and having an initial portion extending upwardly and outwardly and an upper portion extending inwardly to a terminal portion vertically above the cup means, said arm being forked at its lower end to define portions engaging the opposite sides of said skirt portion for being affixed thereto, and



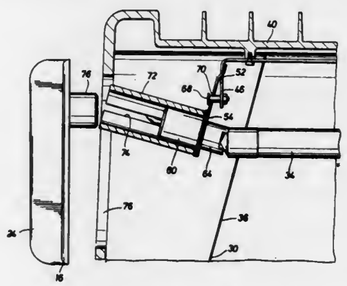
means for affixing a lamp shade to the terminal portion of said arm, said arm being the sole support for said lamp shade.

4,498,126

LIGHTING FIXTURE WITH RELAMPING SOCKET APPARATUS

José A. Hernández, San Marcos, Tex., assignor to Wide-Lite International Corporation, San Marcos, Tex.

Continuation of Ser. No. 273,362, Jun. 15, 1981, abandoned. This application Oct. 7, 1983, Ser. No. 539,898
Int. Cl.³ F21S *3/00*
U.S. Cl. 362—220 **5 Claims**



1. In combination with a lighting fixture including a housing, an elongated bulb having socket connections at both ends, and

a reflector located behind and along at least one side of the bulb,

the improvement of a relamping apparatus, comprising

said housing and reflector having an opening in the vicinity of the socket through which a hand can be inserted with a relamping bulb to position the terminal connections of the bulb into their respective receiving sockets,

a receiving socket for each of said terminal connections having a spring-loaded, movable terminal portion,

a hinged mounting for said socket nearest said opening for allowing said socket to swing away with the uncovering of said opening to permit easy relamping, and

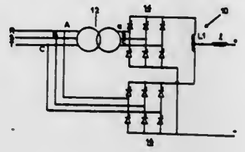
limit means for said mounting to keep said sockets sufficiently close to hold said bulb therebetween without falling out when said hand is removed.

4,498,127

STATIC CONVERTER WITH ELECTRIC VALVES COMPRISING A TWELVE-PHASE CONNECTION WITH TWO GRAETZ BRIDGES FOR THE SUPPRESSION OF HARMONICS 5 AND 7 OF NETWORK CURRENT

Jean-Noël Florina, Grenoble, France, assignor to Merlin Gerin, France

Filed Nov. 26, 1982, Ser. No. 444,525
Claims priority, application France, Nov. 30, 1981, 81 22539
Int. Cl.³ H02M *7/155*
U.S. Cl. 363—5 **8 Claims**





1. An alternating to direct current static converter including a polyphase rectifier system comprising:

a three-phase transformer having a primary winding with three-phase inputs and a secondary winding with three-phase outputs, said three-phase transformer being constructed and arranged to have predetermined winding connection and phase angle displacement such that a 150 degree phase angle displacement occurs between voltages in each phase of said primary inputs and the corresponding phase of the secondary winding outputs;

a first rectifier bridge having inputs coupled to associated ones of the phase inputs to said primary winding of said transformer and an output;

a second rectifier bridge having inputs coupled to associated ones of the phase outputs of said secondary winding and an output; and

means for coupling the outputs of said first and second rectifier bridges for providing a direct current output, said rectifier bridges being coupled to said three-phase transformer such that alternating voltages applied to the input terminals of said first rectifier bridge from the phase inputs to said primary winding are shifted 30 degrees from the voltages applied to the input terminals of the second rectifier bridge from the phase outputs of said secondary winding.

4,498,128

CURRENT LIMIT CIRCUIT IN SINGLE-ENDED FORWARD CONVERTER UTILIZING CORE RESET TO INITIATE POWER SWITCH CONDUCTION

William A. Peterson, Hanover Township, Morris County, and John C. Sines, South Somerville, both of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

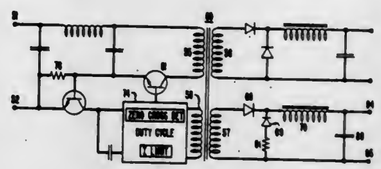
Filed Jul. 7, 1983, Ser. No. 511,525
Int. Cl.³ H02M *3/335*
U.S. Cl. 363—21 **3 Claims**

1. A forward type converter utilizing core reset techniques for controlling initiation of conduction in a power switch coupling DC voltage to a primary winding of a power transformer comprising:

the power transformer including an output winding and a control winding,

a rectifying diode coupling the output winding to a filter inductor

a flyback current path for the filter inductor operative to conduct current responsive to a filter inductor voltage when the power switch and rectifying diode are nonconducting and connected to shunt a series connection of the output winding and the rectifying diode and also connected to feed current into the filter inductor,



the flyback current path including a flyback diode having its polarity oriented to conduct when the rectifying diode is nonconducting and a current limit control resistive impedance having a impedance magnitude to limit a rate of voltage decay across the output winding during a current overload so that initiation of conduction in the power switch is delayed sufficiently to reduce the current overload,

the impedance magnitude of the current limit control resistive impedance being defined by the equation

$$R_C = (V_X + V_T)\frac{n}{I_{CL}}$$

where

R_C is a resistance of the current limit control resistive impedance,

n is a turns ratio of the control winding to the output winding

I_{CL} is a limit value of current permitted during current overload,

V_X is a voltage value across the control winding, and

V_T is an offset voltage representing a zero cross threshold voltage at which core reset occurs, and

drive means coupled to the control winding to detect occurrence of the zero cross threshold voltage and operative in responsive thereto to initiate a conduction interval of the power switch.

4,498,129

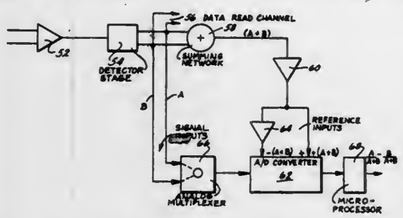
METHOD AND APPARATUS FOR NORMALIZING SERVO-POSITIONING SIGNALS

Juan F. Velazquez, Saline, Mich., assignor to Irwin Magnetic Systems, Inc., Ann Arbor, Mich.

Filed Jul. 2, 1981, Ser. No. 280,127
Int. Cl.³ G11B *5/54, 21/10*
U.S. Cl. 364—174 **12 Claims**

6. Apparatus for producing normalized positioning signals from first and second analog signals which are representative of an actual position in relation to a desired position, said apparatus comprising in combination: analog-to-digital converter means having at least one referencing input terminal and at least one conversion signal input terminal, and having an output terminal; circuit means for separately applying said first and second analog signals to said at least one conversion signal input terminal; circuit means for obtaining and applying a summation of said first and second analog signals to said at least one referencing input terminal during separate applications of said analog signals to said at least one conversion signal

input terminal, such that conversion of each such analog signal input to digital form output occurs in relation to said summation of signals as a reference value; and means for digitally processing in combination the respective reference-converted



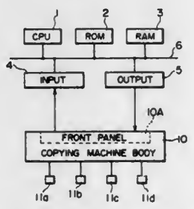
digital outputs from said analog-to-digital converter means corresponding to said separate applications to produce a resultant digital signal which represents the quotient of the difference between said first and second analog signals and the sum of such first and second analog signals.

4,498,130

APPARATUS FOR REMOTELY OPERATING OUTPUT TERMINALS OF A COPYING MACHINE OR THE LIKE DURING SELF-DIAGNOSIS

Hiroyasu Uchida, Kanagawa, Japan, assignor to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Aug. 9, 1982, Ser. No. 406,148
Claims priority, application Japan, Aug. 10, 1981, 56-124115
Int. Cl.³ G06F *15/46*
U.S. Cl. 364—188 **14 Claims**



1. An apparatus for operating output means of a copying machine during a diagnosis operating mode, said machine being capable of operating in a normal operating mode and a diagnosis mode, said machine having a controlling front panel, a plurality of said output means coupled to said front panel, said apparatus being of the type having operating means for operating said output means during said diagnosis mode in response to stop and start instruction signals and first control means at said front panel for providing said start and stop instruction signals, the improvement comprising:

second control means providing start and stop instructions signals, said second control means comprising a plurality of control elements each corresponding to a different output means, and each control element being located remote from said front panel and in the vicinity of the output means to which it corresponds; and

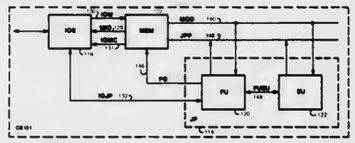
said operating means operating said output means in response to stop and start instruction signals from at least one of said first and second control means.

4,498,131

DATA PROCESSING SYSTEM HAVING ADDRESSING MECHANISMS FOR PROCESSING OBJECT-BASED INFORMATION AND A PROTECTION SCHEME FOR DETERMINING ACCESS RIGHTS TO SUCH INFORMATION

Richard G. Bratt, Wayland; Edward S. Gavrin, Lincoln, both of Mass.; Stephen I. Schleimer, Chapel Hill, N.C.; John F. Pilat; Walter A. Wallach, Jr., both of Raleigh, N.C.; Michael S. Richmond, Pittsboro, N.C.; Richard A. Belgard, Saratoga, Calif.; David A. Farber, Durham, N.C.; John K. Ahlstrom, Mountain View; Steven J. Wallach, Saratoga, both of Calif.; Lawrence H. Katz, Oregon City, Oreg.; Douglas M. Wells, Chapel Hill; Craig J. Mundie, Cary, both of N.C.; Gerald F. Clancy, Saratoga, Calif.; David H. Bernstein, Ashland, Mass.; Thomas M. Jones, Chapel Hill, N.C., and Brett L. Bachman, Boston, Mass., assignors to Data General Corporation, Westboro, Mass.

Filed May 22, 1981, Ser. No. 266,408
Int. Cl.³ G06F *9/22*
U.S. Cl. 364—200 **2 Claims**



1. In a digital computer system including processor means for performing operations on operands, memory means for storing operands and instructions for directing said operations, said memory means being organized into objects for containing operands and instructions, bus means for conducting operands and instructions between said memory means and said processor means, and I/O means for conducting operands between said digital computer system and devices external to said digital computer system, said processor means comprising:

ALU means connected to said bus means for performing said operations,

addressing means connected to said bus means for providing addresses for controlling the transfer of operands and instructions between said memory means and said processor means, each of said addresses comprising

an object field for identifying an object,

an offset field for specifying a first number of information bits of offset relative to the start of said object, and

a length field for specifying an second number of information bits of said object following said first number of information bits to be transferred between said memory means and said processor means,

and

microcode control means for storing sequences of microinstructions for controlling said processor means and responsive to said instructions for providing said sequences of microinstructions to said processor means,

said ALU means including

general register file means connected to said bus means for storing selected operands and addreses,

said general register file means comprising a plurality of vertically ordered registers vertically divided into three parallel-operating and addresed parts,

a first part of said general register file means comprising first register file means for storing object fields of said addresses,

a second part of said general register file means comprising second register file means for storing offset fields of said addresses and said operands, and

a third part of said general register file means comprising third register file means for storing length field of said addresses, and

address ALU means connected to said general register file means and to said bus means and responsive to first sequences of microinstructions for performing operations on said addresses,

said objects containing operands as data objects and instructions as procedure objects,

and said processor means including

protection means for preventing a user. currently using said digital computer system to execute a program comprising at least one procedure object, from obtaining unauthorized access to objects of another user, said protection means including

subject number memory means responsive to the operation of said processor means for storing a currently active subject number of a plurality of subject numbers,

each subject number corresponding to and identifying one of a plurality of subjects, each subject comprising the combination of (1) a user of said digital computer system, (2) a process of said digital computer system for executing a procedure of said user, and (3) the type of operation to be performed by said digital computer system in response to an instruction of a procedure of said user, and

said currently active subject number identifies (1) the user currently utilizing said digital computer system, (2) the process currently executing a procedure of said user's program, and (3) the type of operation to be performed by said digital computer system in response to a current instruction of a procedure of said user's program,

protection memory means for storing at least one access control list, each access control list corresponding to an object and comprising at least one access control entry, each access control entry corresponding to a subject having access rights to said object and containing the access rights of said subject to said object, and

access right confirmation means responsive to a currently active subject number and to the operations of said processor means for indexing said protection means in response to a current instruction of a procedure of said user's program when said said current instruction requests access to an object and for comparing the access rights of the currently active subject to the access control list associated with said object.

for designating locations in said memory means as objects for containing items of information, and

means for generating unique identifier codes, a unique identifier code being uniquely and permanently associated with a corresponding object generated by said processor means,

means for addressing said operands comprising:

name table means for storing name table entries, each name table entry corresponding to a name of a procedure and each name table entry comprising data resolvable to provide a location in said memory means of an operand referred to by said corresponding name, and

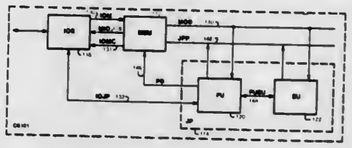
means responsive to said names for resolving each name table entry so as to provide outputs to said memory means representing locations in said memory means of said operands,

protection means for preventing a user, currently using said digital computer system to execute a program comprising a procedure object containing selected instructions, from obtaining unauthorized access to selected objects, including:

subject number memory means responsive to the operation of said processor means for storing a currently active subject number of a plurality of subject numbers,

each subject number corresponding to one of a plurality of subjects wherein each subject comprises the combination of (1) a user of said digital computer system, (2) a process of said digital computer system for executing a procedure of said user, and (3) the type of operation to be performed by said digital computer system in response to an instruction of a procedure of said user, and

said currently active subject number identifies the user



currently utilizing said digital computer system, (2) a process currently executing a procedure of said user's program, and (3) the type of operation to be performed by said digital computer system in response to a a current instruction of a procedure of said user's program,

protection memory means for storing at least one access control list, each access control list corresponding to an object and comprising at least one access control entry, each access control entry corresponding to a subject having access rights to said corresponding object and containing the access rights of said subject to said corresponding object, and

access rights means responsive to a currently active subject number and to the operation of said processor means for indexing said protection means in response to a current instruction of a procedure of said first user's program when said current instruction requests access to an object and for comparing the access rights of a currently active subject to said object,

ALU means for performing operations directed by said instructions.

first microcode means for storing first selected sequences of microinstructions for controlling operations of said ALU means directed by said instructions, said instructions being S-Language instructions having a uniform, fixed format, said first microcode means responsive to said instructions to provide corresponding first selected sequences of microinstructions to said ALU means, and

second microcode means connected to said bus means for storing second selected sequences of microinstructions for controlling internal operations of said processor means,

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4,498,132

DATA PROCESSING SYSTEM USING OBJECT-BASED INFORMATION AND A PROTECTION SCHEME FOR DETERMINING ACCESS RIGHTS TO SUCH INFORMATION AND USING MULTILEVEL MICROCODE TECHNIQUES

John K. Ahlstrom, Mountain View, Calif.; Brett L. Bachman, Boston, Mass.; Richard A. Belgard, Saratoga, Calif.; David H. Bernstein, Ashland; Richard G. Bratt, Wayland, both of Mass.; Gerald F. Clancy, Saratoga, Calif.; Edward S. Gavrin, Lincoln, Mass.; Ronald H. Gruner, Cary; Thomas M. Jones, Chapel Hill, both of N.C.; Lawrence H. Katz, Oregon City, Oreg.; Craig J. Mundie, Cary, N.C.; Michael S. Richmond, Pittsboro, N.C.; Stephen I. Schleimer, Chapel Hill, N.C.; Steven J. Wallach, Saratoga, Calif.; Walter A. Wallach, Jr., Raleigh, and Douglas M. Wells, Chapel Hill, both of N.C., assignors to Data General Corporation, Westboro, Mass.

Filed May 22, 1981, Ser. No. 266,413
Int. Cl.³ G06F *9/22*
U.S. Cl. 364—200 **47 Claims**

34. In a digital computer system including processor means for performing operations on operands and memory means for storing instructions for controlling said processor means, said memory means being organized into objects for containing said operands and instructions, said processor means comprising:

means for uniquely identifying said objects, including

memory organizing means responsive to first instructions

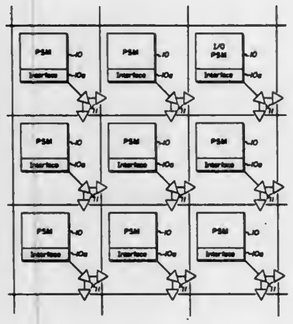
said second microcode means responsive to the operation of said processor means to provide said second selected microinstruction sequences to said ALU means.

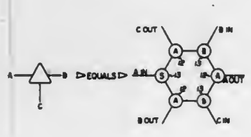
4,498,133

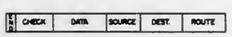
SELECTOR SWITCH FOR A CONCURRENT NETWORK OF PROCESSORS

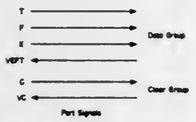
Brent C. Bolton, Austin; Gary L. Logsdon, Round Rock, both of Tex.; Carl F. Hagenmaier, Jr., Pittstown, N.J., and Jesse R. Wilson, Austin, Tex., assignors to Burroughs Corp., Detroit, Mich.

Filed Dec. 10, 1981, Ser. No. 329,423
Int. Cl.³ G06F *9/00*
U.S. Cl. 364—200 **10 Claims**









1. A selection switch for receiving data signals and a clear signal from one of a plurality of sources in a digital communication network and transmitting those signals to one of two different destinations, said network interconnecting a plurality of stations for transmission and reception of said signals, said switch comprising:

an input port to receive said data signals and said clear signals from said one of a plurality of sources;

a pair of output ports each adapted to receive said data signals and said clear signal from said input port;

selection circuit means to receive said data signals preceded by a routing bit signal specifying which of two outputs ports is to be selected for subsequent transmission and to signal the corresponding one of said output ports; and

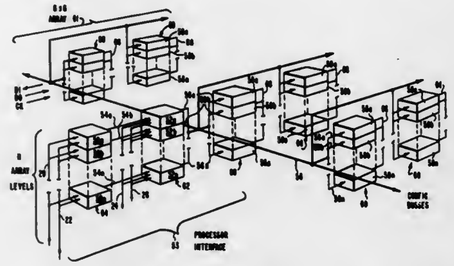
clear circuit means to receive said clear signal from another of said plurality of sources and to reset said output ports and said selection circuit means, whereby a data path established through a network of such switches can be interrupted prior to the completion of transmission of a given message from one station to another station and prior to the receiving station sending an acknowledged end of message signal back to the originating transmitting station.

4,498,134

SEGREGATOR FUNCTIONAL PLANE FOR USE IN A MODULAR ARRAY PROCESSOR

Siegfried Hansen; Jan Grinberg, both of Los Angeles, and Robert D. Etchells, Topanga, all of Calif., assignors to Hughes Aircraft Company, El Segundo, Calif.

Filed Jan. 26, 1982, Ser. No. 342,671
Int. Cl.³ G06F *15/16*
U.S. Cl. 364—200 **9 Claims**



1. In a matrix array processor, a segregratable elemental processor comprising:

(a) a plurality of modules, each including means for performing at least one of a number of generalized logic functions on data;

(b) a data bus operatively associated with each of said modules for the tranfer of data thereinbetween, said data bus including a data bus line, each of said mddules including means for transferring data to and from said data bus line at given points along said data bus line;

(c) a pseudo-module operatively associated with said data bus at a given segregation point along said data bus line, said pseudo-module including means for effectively severing said data bus line at said given segregation point so as to block the transfer of data between any of said modules associated with respective portions of said data bus line on either side of said given segregation point.

4,498,135

MICROCOMPUTER WITH ACCUMULATOR ADDRESSING

Edward R. Caudel, Houston, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Feb. 22, 1982, Ser. No. 350,957
Int. Cl.³ G06F *9/26*
U.S. Cl. 364—200 **20 Claims**

1. A microcomputer system comprising:

a microcomputer device formed in a single integrated circuit and having data input/output terminals and address output terminals;

memory means external to the microcomputer device having an address input and data output means;

input/output means separate from said microcomputer device and said memory means for transfer of information from the microcomputer device to external equipment; or for transfer of information from external equipment to the microcomputer device; external address bus means coupled to the address output terminals of the microcomputer device and to the address input of the memory means;

external data bus means coupled to the data input/output terminals of the microcomputer device and to the data output means of the memory means;

the microcomputer device comprising:

an arithmetic/logic unit having data input and data output;

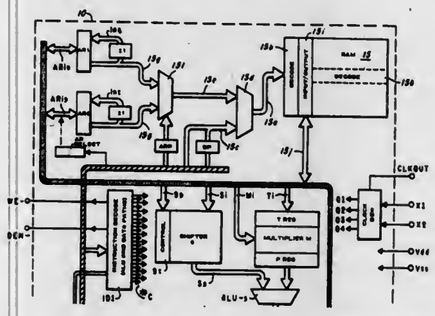
a data memory having an address input and having data input/output means;

internal data bus means coupled to the data input and data output of the arithmetic/logic unit and coupled to the data input/output means of the data memory;

an internal program memory having an address input and having an instruction output, the program memory storing instruction words;

program address means connected to the address input of the program memory means;

control means having input means to receive an instruction word, said control means generating controls at control outputs in response to said instruction word, the controls at said control outputs being coupled to the arithmetic/logic unit and to control elements included in said internal data bus means for defining operation of the arithmetic/logic unit and transfer of data to said internal data bus means and from the internal data bus means;



internal program bus means coupled to said instruction output, to said input means of said control means, and to said program address means, the internal program bus means also including control elements receiving controls from said control outputs of the control means;

bus interchange means for transferring data from the internal data bus means to the internal program bus means, and for transferring data from the internal program bus means to the internal data bus means, the bus interchange means functioning to transfer data from the output of the arithmetic/logic unit via the internal data bus means and the internal program bus means to the program address means to thereby address the internal program memory in response to one said instruction word applied to said input means of said control means and in response to the same said instruction word functioning to transfer data from the instruction output of the program memory via the internal program bus means to the internal data bus means.

4,498,136

INTERRUPT PROCESSOR

William W. Sproul, III, Reston, Va., assignor to IBM Corporation, Armonk, N.Y.

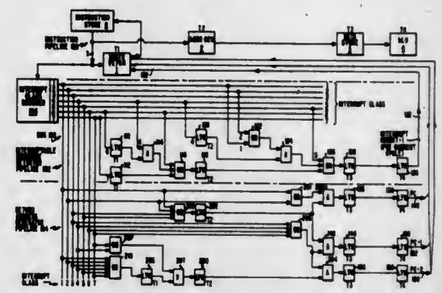
Filed Dec. 15, 1982, Ser. No. 449,923
Int. Cl.³ G06F *9/30, 9/38, 9/32*
U.S. Cl. 364—200 **2 Claims**

1. In a data processor, an interrupt processor instruction pipeline having a sequence of instruction stages which sequentially process a machine instruction in respective sequential machine cycles, output from an instruction store, comprising:

an interrupt class decoder having an input connected to the output of said instruction store, for decoding each said machine instruction into an interrupt class and outputting a signal on a corresponding one of a plurality of interrupt class output lines;

an interrupt sequence detector pipeline having a sequence of staging registers which are connected to said interrupt class output lines and which are sequentially gated in synchronism with said instruction stages of said instruction pipeline, for sequentially propagating a non-interruptible sequence indicator bit to an output line;

a register having a data input connected to an interrupt signal line, a control input connected to said output of said interruptible sequence detector pipeline and an output



connected to said instruction pipeline, for storing an interrupt signal when said noninterruptible sequence detector bit is input to said control input thereof, said interrupt signal being passed to said instruction pipeline when said detector bit is absent from said control input;

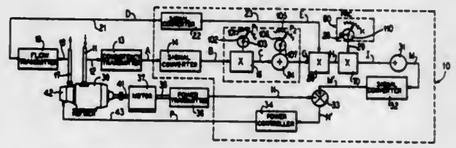
whereby interruptions of said instruction pipeline can be selectively inhibited in response to said interrupt classes of said machine instructions in said instruction pipeline.

4,498,137

PROGRAMMABLE REFINER CONTROLLER WITH HORSEPOWER-DAYS PER TON SCALING

Gary R. Flohr, Lenox, Mass., assignor to Beloit Corporation, Beloit, Wis.

Filed Apr. 21, 1982, Ser. No. 370,577
The portion of the term of this patent subsequent to Jan. 15, 1997, has been disclaimed.
Int. Cl.³ G06F *15/46;* B02C *7/14;* D21F *1/04*
U.S. Cl. 364—471 **5 Claims**



1. An apparatus for controlling a paper refiner with a load control for processing paper stock including a motor driving said refiner, comprising a consistency transmitter having a predetermined output signal range for measuring the consistency of the paper stock at the refiner and producing an analog signal, a flow transmitter for measuring flow of paper stock through said refiner, a first signal converter receiving the output of said consistency transmitter and converting it into a signal indicative of the percentage of full scale of said consistency transmitter, a first multiplier receiving the output of said first signal converter and multiplying it by a first constant P1 that is determined by the signal range for the particular consistency transmitter, means for setting said constant P1 to a scaled value, an adder receiving the output of said first multiplier and adding to it a signal proportional to a second constant P2 determined by the signal range for the particular consistency transmitter, means for setting said constant P2 to a scaled value, a second signal converter connected to said flow trans-

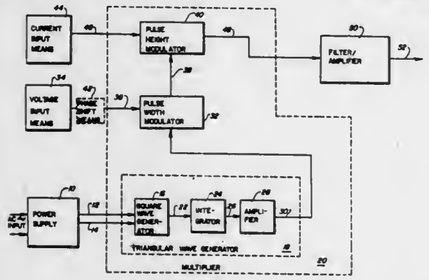
mitter and converting the flow transmitter signal into a signal indicative of percentage of full range of said flow transmitter, and a second multiplier receiving the outputs of said second converter and said adder and multiplying them together to obtain a signal indicative of tons of material per day flowing through said refiner.

4,498,138

ELECTRONIC WATT/VAR TRANSDUCER

Prentice G. Moore, Clearwater, Fla., assignor to Square D Company, Palatine, Ill.

Continuation of Ser. No. 441,832, Nov. 15, 1982, abandoned, which is a continuation of Ser. No. 194,195, Oct. 6, 1980, abandoned. This application Oct. 20, 1983, Ser. No. 543,742
Int. Cl.³ G01R *19/00;* G06G *7/16*
U.S. Cl. 364—483 **14 Claims**



1. A transducer for monitoring power in a power line and having a power supply means, said transducer comprising:

a. current input means for producing an output current representative signal proportional to the instantaneous current in the power line;

b. voltage input means for producing an output voltage representative signal proportional to the instantaneous voltage in the power line;

c. multiplier means for multiplying said voltage representative signal by said current representative signal to calculate the power in the power line, said mulitiplier means being connected to said output of said current input means and said output of said voltage input means, said multiplier means further comprising:

(1) triangular wave generating means for generating a triangular wave output, said triangular wave generating means still further comprising:

(a) squarewave generating means for producing a square waveform output and a first reference voltage and a second reference voltage, said squarewave generating means having a comparator means for driving an electronic switch means for switching said square waveform output of said squarewave generating means from the voltage level of one of said reference voltages to the voltage level of the other of said reference voltages, and having a resistive feedback means connecting said square waveform output of said squarewave generating means to an input of said comparator means;

(b) integrator means for integrating said output of said squarewave generating means with respect to time to produce a triangular wave output, said integrator means having an input connected to said square waveform output of said squarewave generating means; and

(c) amplifier means for amplifying said triangular wave output, said amplifier means having an input and a feedback means and producing said triangular waveform output, said input being connected to said triangular wave output of said integrator means, wherein the gain of said amplifier means is adjusted by connecting said triangular waveform output of said amplifier means to various points in a resistive means contained in said feedback means from said triangular waveform output to said input of said amplifier means;

(2) pulse width modulating means for modulating said triangular waveform output of said amplifier means of said triangular wave generating means by said voltage representative signal, said pulse width modulating means having two inputs and an output, said inputs being connected to said triangular waveform output of said amplifier means and to said output of said voltage input means;

(3) pulse height modulating means for modulating said current representative signal by said output of said pulse width modulating means, said pulse height modulating means having two inputs and an output, said inputs being connected to said output of said pulse width modulating means and to said output of said current input means; and,

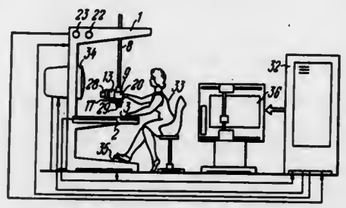
d. filter and amplifying means for filtering out alternating current components of said output of said pulse height modulating means and integrating and amplifying the remaining direct current component of said output of said pulse height modulating means to produce a highly stable direct current transducer output of improved accuracy which is directly proportional to the instantaneous power in the power line, said filter and amplifier means having an input connected to said output of said pulse height modulating means.

4,498,139

APPARATUS FOR DESIGNING THREE-DIMENSIONAL STRUCTURES

Evgeny J. Malinovsky, Moscow, U.S.S.R., assignor to Moskovskoe Nauchno-Proizvodstvennoe Objedinenie Po Stroitelnomu I Dorozhnomu Mashinostroeniju, Moscow, U.S.S.R.

Filed Oct. 9, 1981, Ser. No. 309,938
Int. Cl.³ G06B *15/46;* G06F *15/56*
U.S. Cl. 364—518 **9 Claims**



1. An apparatus for designing three-dimensional structures, comprising:

a unit for recording linear coordinates;

a movable support of said unit for recording linear coordinates;

a means for causing displacement of said unit for recording linear coordinates along linear coordinates, said means being mechanically coupled to said movable support;

a sensor of displacement along a linear coordinate X which is coupled to said means for causing displacement along linear coordinates;

a sensor of displacement along a linear coordinate Y which is coupled to said means for causing displacement along linear coordinates;

a sensor of displacement along a linear coordinate Z which is coupled to said means for causing displacement along linear coordinates;

an angle joint which is mechanically coupled to one end of said movable part opposite to the means for causing displacement;

an angle arm for causing rotation with respect to X axis in said angle joint, said angle arm being mechanically coupled to said movable support;

an angle arm for causing rotation with respect to Y axis in said angle joint, said angle arm being mechanically coupled to said angle arm for causing rotation with respect to X axis;

an angle arm for causing rotation with respect to Z axis in said angle joint, said angle arm being mechanically coupled to said angle arm for causing rotation with respect to Y axis;

a point of intersection of said X, Y, Z axes of entered coordinates of said movable support coinciding with a point of intersection of said X, Y, Z axes of said angle arm for causing rotation with respect to X axis, said angle arm for causing rotation with respect to Y axis, and said angle arm for causing rotation with respect to Z axis, respectively;

a sensor for recording a change in an angular coordinate ϕ of rotation with respect to X axis which is installed on said movable support and mechanically coupled to said angle arm for causing rotation with respect to X axis;

a sensor for recording a change in an angular coordinate ϕ_1 of rotation with respect to Y axis which is installed on said angle arm for causing rotation with respect to X axis and mechanically coupled to said angle arm for causing rotation with respect to Y axis;

a sensor for recording a change in an angular coordinate ϕ_2 of rotation with respect to Z axis which is installed on said angle arm for causing rotation with respect to Y axis and mechanically coupled to said angle arm for causing rotation with respect to Z axis; and

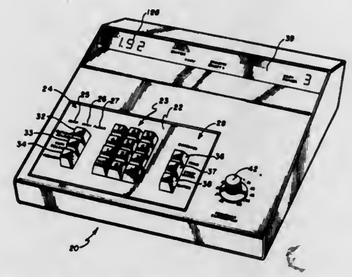
a control board which is electrically coupled to all said sensors and to said angle joint.

4,498,140

AUTOMATED SELF CALIBRATING EXPOSURE COMPUTER

Frank A. Hull, St. Paul, Minn., assignor to Chesley F. Carlson, Minneapolis, Minn.

Filed Jun. 2, 1982, Ser. No. 384,223
Int. Cl.³ G03B *27/72;* G01J *1/10*
U.S. Cl. 364—571 **38 Claims**



1. An automated self calibrating exposure computer for controlling the energization of lamps used for exposing film during graphic arts processing comprising:

means for sensing light from the lamps indicating when the lamps are energized;

means connected to the sensing means for producing a serial pulse train which relates in number of pulses to the intensity of illumination of the lamps and the time duration of the illumination for purposes of calibration and control;

processing and control means connected to the pulse producing means and the lamps for receiving input data, processing the input data and for supplying control signals to the lamps, said processing and control means comprising:

means for causing the lamps to be energized for a preselected calibration time;

means for counting the number of pulses emitted during the preselected calibration time;

means for storing the pulse count received during the preselected calibration time;

data entry means for entering input data calling for exposure times of the same duration of a longer or shorter duration than the preselected calibration time; and

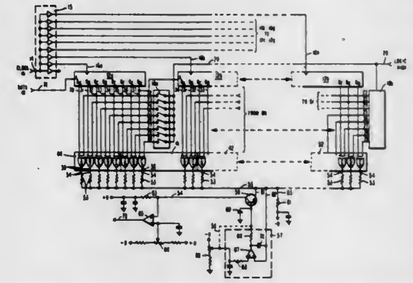
means for causing the lamps to be energized for the periods of time necessary to obtain the required exposure based on the entered data and the initial calibration.

4,498,141

HIGH SPEED CORRELATION CIRCUIT AND METHOD

J. Carl Cooper, Sunnyvale, Calif., assignor to Ampex Corporation, Redwood City, Calif.

Filed Jan. 25, 1982, Ser. No. 342,257
Int. Cl.³ G06F *15/34*
U.S. Cl. 364—728 **31 Claims**



18. A high speed correlation circuit for detecting presence of a known digital correlation word in a serial data stream, comprising:

a serial-to-parallel shift register means having an input coupled to receive and store consecutive bits of said serial data stream and to shift said stored bits by one bit position in succession when a new bit is received thereby, said shift register means having a plurality of parallel outputs each containing one bit stored in said shift register means;

a presettable memory means coupled to store respective bits of said known correlation word, said memory means having a plurality of parallel outputs each containing one bit stored in said memory means;

a plurality of logic gates each having a first input coupled to one parallel output of said shift register means and a second input coupled to a corresponding parallel output of said memory means, each logic gate having an output coupled to provide an output signal of a first known logic signal level when matching bits are obtained at its respective inputs and output signal of a second known logic signal level when its input bits do not match, respectively;

a plurality of resistors each having a first terminal coupled to an output of one said logic gate, the other terminals of said resistors being coupled to a common terminal, each said resistor having a value selected to apply an appreciable amount of current to said common terminal when one of said first or said second known logic signal level is provided by said logic gate;

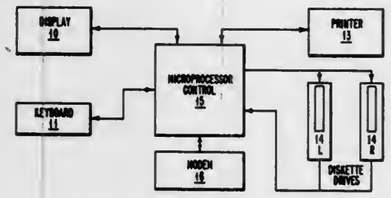
means coupled to maintain said common terminal at a predetermined constant voltage level to obtain a substantially linearly changing current thereon with the number of bit matches obtained by said logic gates;

a current-to-voltage converter means coupled to said common terminal for substantially linearly converting said current changes thereon to corresponding voltage changes; and

means coupled to an output of said current-to-voltage converter means for detecting a known voltage magnitude obtained on said common terminal in response to a prede-

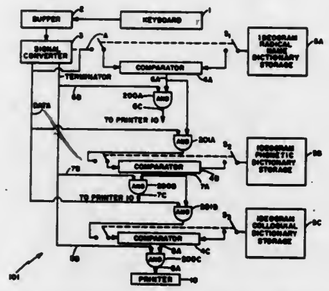
termined number of matching bits obtained by said plurality of logic gates.

4,498,142
METHOD FOR UPDATING A PROGRAM ON A COMBINED PROGRAM DISKETTE IN AN INTERACTIVE TEXT PROCESSING SYSTEM
Hira Advani, and William C. Cason, both of Austin, Tex., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Oct. 13, 1981, Ser. No. 311,113
Int. Cl.³ G06F *7/24*
U.S. Cl. 364—900 **4 Claims**



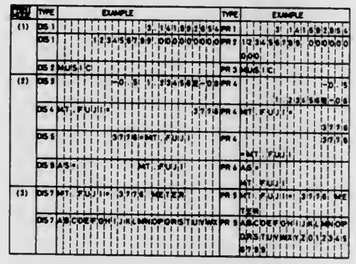
1. A method to assist the operator of an interactive text processing system to update a selected one of a plurality of text processing task programs each of which is stored on a "combined-program" diskette as a plurality of programming modules, with each module assigned to one of a plurality of sequentially numbered data sets and each further identified by a unique identifier including a portion which can identify a module which is a later revision, from a previous module, said "combined-program" diskette further including control programs to cause said text processing system to transfer program modules on said "combined-program" diskette to a new diskette and to cause said system to interact with said operator in the selection of said one selected text processing task program and the updating of said one selected text processing task programs from a revised program stored on a separate diskette, said system including a keyboard to permit interaction with said system by said operator, a display screen to permit interaction by said system with said operator, a microprocessor having a memory and at least one diskette drive for transferring data between a diskette in said drive and said memory, said method comprising;
(a) inserting said "combined-program" diskette into said diskette drive and transferring one of said control programs into said system in response to operation of said keyboard by said operator,
(b) executing said one control program to cause said system to display a menu to said operator which includes an update option that allows said selected one of said text processing task programs to be updated by replacing one or more of its programming modules with modules having later revisions stored on said separate diskette,
(c) operating said keyboard while said menu is displayed to select said update option to cause an update control program to be transferred to said system from said "combined-program" diskette,
(d) executing said update control program to cause said system to display another menu to said operator which includes a plurality of options to permit said operator to identify to said system said selected one text processing task program to be updated,
(e) operating said keyboard while said another menu is displayed to identify to said system said selected one text processing task program to be updated,
(f) further executing said update program to transfer:
(1) each said module from said "combined-program" diskette to said memory,
(2) and each module transferred in step (1) to said new diskette so that said transferred modules are stored sequentially on said new diskette in data set sequence and sequentially within each said data set by said unique identifiers,
(g) displaying to said operator at the end of the preceding step an instruction to insert said separate program diskette into said drive,
(h) inserting said separate program diskette into said drive and while said instruction is still being displayed operating said keyboard to advise said system said separate diskette has been inserted,
(i) transferring to memory from said separate program diskette each of the programming modules which collectively represent the revised version of the text processing task program being updated,
(j) comparing with said microprocessor said unique identifiers of the modules transferred from said separate program diskette to the unique identifiers of the corresponding modules transferred from said "combined-program" diskette and identifying those modules that have been revised, and
(k) recording said revised modules on said new diskette in place of said corresponding modules and at corresponding locations on said new diskette.

4,498,143
METHOD OF AND APPARATUS FOR FORMING IDEOGRAMS
Stanislaus Strzelecki, 15 Hunts La., Brooklyn, N.Y. 11201
Filed Nov. 12, 1981, Ser. No. 320,540
Int. Cl.³ B41J *1/52*
U.S. Cl. 364—900 **7 Claims**



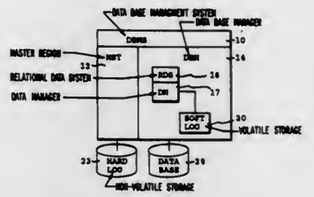
1. A system for forming ideograms, such system comprising:
a keyboard having a plurality of keys for entering characteristic radical information, phonetic information, and colloquial information pertaining to an ideogram;
storage means, for storing information for each ideogram including (1)(a) radical information, and, at least to the extent necessary for unambiguous identification of the ideogram when the radical information is known, (b) phonetic information and, at least to the extent necessary for unambiguous identification of the ideogram when the radical and phonetic information is known, (c) colloquial information, and (2) a graphic record identifier; and
control means for obtaining from the storage means the graphic record identifier for a given ideogram in response to information entered on the keyboard.

4,498,144
ELECTRONIC APPARATUS WITH A DISPLAY AND PRINTER
Isamu Haneda, Nara, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan
Filed Nov. 19, 1981, Ser. No. 323,049
Claims priority, application Japan, Nov. 19, 1980, 55-163759
Int. Cl.³ G06F *9/00*
U.S. Cl. 364—900 **4 Claims**



1. An improved electronic apparatus of the type having a visual display and a printer as output devices, the printer having a smaller capacity of characters per line than does the visual display, wherein the improvement comprises:
means for reviewing a group of characters presented for visual display and assigning the group of characters to an appropriate one of three modes, characters within the group of characters being of two types, numeric and all others, the three modes being defined as:
(1) all characters in the group of characters being of the same type;
(2) characters in the group of characters being of at least one of the two types, of a total number equal to or less than the capacity of the visual display, and being divisible into two successive portions each containing only characters of a single type and of a number equal to or less than one-half of the capacity of the visual display; and
(3) any other group of characters wherein the characters are of the two types;
means responsive to the means for reviewing for causing a group of characters assigned to mode (1) to be printed with the numeric characters abutting against a first margin of the printer and with the other characters abutting against a second, opposing margin of the printer;
means responsive to the means for reviewing for causing a group of characters assigned to mode (2) to be separated into these two portions with each of the two portions being printed on separate lines and with each portion that consists of numeric characters being printed abutting against the first margin of the printer and each portion containing other characters being printed abutted against the second margin of the printer; and
means responsive to the means for reviewing for causing a group of characters assigned to mode (3) to be printed continuously from the left margin of the printer for as many sequential lines as are necessary to complete printing of the group of characters.

4,498,145
METHOD FOR ASSURING ATOMICITY OF MULTI-ROW UPDATE OPERATIONS IN A DATABASE SYSTEM
Jerry W. Baker, Morgan Hill; Richard A. Crus, San Jose, and Donald J. Haderle, Los Gatos, all of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Jun. 30, 1982, Ser. No. 393,967
Int. Cl.³ G06F *7/00, 11/00*
U.S. Cl. 364—900 **6 Claims**

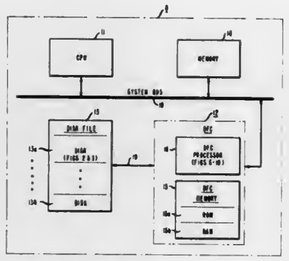


1. A method for assuring atomicity of user requested multi-row update operations to tables in a relational database, guaranteeing that for any update operation that succeeds all stated effects will have occurred and that for any update operation of the type including UPDATE, INSERT, and DELETE that fails, the system state as perceived by the user remains unchanged, comprising the steps of:
in response to an update operation request, establishing an execution module of a program containing sets of machine language code instructions implementing the update operation request with a savepoint request at the beginning of the execution module of the program;
for each set of machine language code instructions in or called by the execution module of the program which modifies the user perceived system state, selectively recording in a soft or hard log information required to reverse the update operation in order that it appears that the operation was never performed;
upon completing the execution module of the program, dropping the savepoint and causing all soft log information recorded since the savepoint to be deleted, and releasing all resources held to guarantee restoration of the user perceived system state at the time of the savepoint request;
upon detecting an error and responsive to the information selectively recorded in the soft or hard log, restoring the user perceived state to that at the time of the savepoint request.

4,498,146
MANAGEMENT OF DEFECTS IN STORAGE MEDIA
Maria N. Martinez, Prestbury, Ill., assignor to AT&T Bell Laboratories, Murray Hill, N.J.
Filed Jul. 30, 1982, Ser. No. 403,776
Int. Cl.³ G06F *13/00*
U.S. Cl. 364—900 **55 Claims**

1. Method of accessing storage media having addressable locations and having a table of addresses of defective locations associated therewith, comprising the steps of:
obtaining for execution of a job an address for accessing a location in the storage media;
reading contents of the table while executing the job to determine if the access to the media will be impacted by defective locations;

modifying the obtained address while executing the job to compensate for the impact of defective locations; and



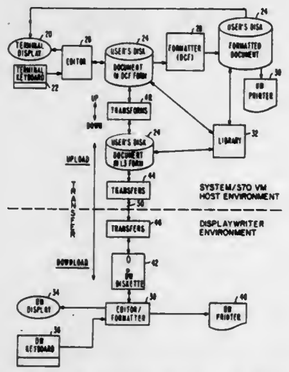
accessing the storage media location designated by the modified address while executing the job.

4,498,147

METHODOLOGY FOR TRANSFORMING A FIRST EDITABLE DOCUMENT FORM PREPARED WITH A BATCH TEXT PROCESSING SYSTEM TO A SECOND EDITABLE DOCUMENT FORM USABLE BY AN INTERACTIVE OR BATCH TEXT PROCESSING SYSTEM

Palmer W. Agnew, Owego; Anne S. Kellerman, Endicott, and Grayson W. Randall, Vestal, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 18, 1982, Ser. No. 442,927
Int. Cl.³ G06F *1/00*
U.S. Cl. 364—900 **7 Claims**



1. A method of transforming a source document, cast in a first editable form which includes a plurality of input items therein, to a target document of a second editable form which includes output items compatible therewith, said method comprising the steps of:

(a) determining a set of key state variables, from amongst all possible key state variables, that reflect and collectively identify information concerning the presence of source document control items that are read in a sequence thereof from said source document;

(b) determining criteria for compatibility of source input items to be read with source controls that have been read in a sequence and reflected in said key state variables;

(c) establishing a fixed order for all possible output items in which any necessary pair of output items in the transformation of a given input sequence will be written in said established order;

(d) defining a set of rules for each possible output item that determine whether each of said possible output items is to be written out to said target document as a function of the status of said state variables; and

(e) reading a sequence of input items from said source document in accordance with said compatibility criteria; and

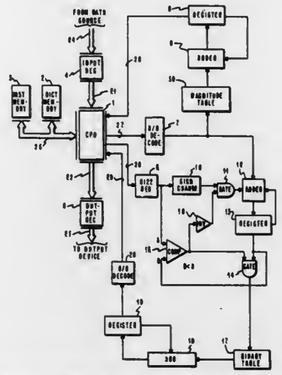
(f) writing out all eligible output items under said rules as a transform of said sequence in said fixed order of output items.

4,498,148

COMPARING INPUT WORDS TO A WORD DICTIONARY FOR CORRECT SPELLING

David Glickman, Frederick, Md., assignor to International Business Machines Corporation, Armonk, N.Y.

Continuation-in-part of Ser. No. 160,345, Jun. 17, 1980, abandoned. This application Feb. 23, 1983, Ser. No. 469,051
Int. Cl.³ G06F *15/20*
U.S. Cl. 364—900 **7 Claims**



1. In a text processing system including a mini-processor, a memory for storing instructions for controlling said mini-processor, and a dictionary memory for storing a representation for each word of a dictionary of correctly spelled words, apparatus for checking the spelling of input words by comparison to said dictionary of representations of correctly spelled words comprising:

a source of input words connected to said mini-processor

decode means connected to said mini-processor for converting each character of an input word into an output numerical representation;

a magnitude table storage means addressably connected to said decode means for outputting a magnitude value corresponding to each numerical representation output by said decode means;

a first adder means connected to said magnitude table storage means and said mini-processor for accumulating a magnitude sum of the magnitude values output by said magnitude table storage means and outputting said magnitude sum to said mini-processor for use as an address to access said dictionary memory;

a second adder means connected to said decode means for accumulating partial sums of said numerical representations output by said decode means;

binary table storage means connected to said second adder means for storing a plurality of binary numbers addressable to output one of said binary numbers for each partial sum accumulated by said second adder means;

third adder means connected to said binary table storage means for accumulating a modulo-2 sum of the output of said binary table storage means;

binary-to-decimal decode means connected to said third adder means and said mini-processor for converting the modulo-2 sum output of said third adder means from a binary number to a decimal angle value and outputting the result to said mini-processor;

means for comparing said decimal angle value to the contents of said dictionary memory at the accessed address;

means for indicating said input word is correctly spelled when said compare is equal; and

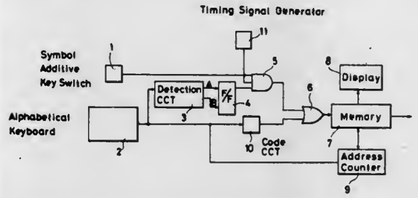
means for indicating said input word is not correctly spelled when said compare is unequal.

4,498,149

SYMBOL INPUT DEVICE FOR USE IN ELECTRONIC TRANSLATOR

Kunio Yoshida, Nara, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 201,604, Oct. 28, 1980, abandoned. This application Aug. 8, 1983, Ser. No. 521,414
Claims priority, application Japan, Oct. 29, 1979, 54-140196
Int. Cl.³ G06F *3/02*
U.S. Cl. 364—900 **7 Claims**



1. An input circuit for an electronic translator wherein a first input word represented in a first language is entered to obtain a second word represented in a second language equivalent to the first word, said input circuit comprising:

an alphabetical keyboard means comprising a plurality of letter keys, each letter key comprising means for entering key code information representative of a sole letter;

a sole symbol additive key switch for adding any one of a plurality of different specific symbols to at least two of the letters entered by the alphabetical keyboard means, and

changing means responsive to actuation of the alphabetical keyboard means and the symbol additive key switch for changing the key code of any one of the at least two letters entered by the alphabetical keyboard means to a key code representing a letter including one of said specified different symbols and said one letter, wherein said changing means comprises

key strobe signal generator means for providing key strobe signals to the alphabetical keyboard means, said keyboard means acting upon said key strobe signals to provide said key code information;

memory means for storing data corresponding to key code information representing said at least two letters;

first means for determining when key code information input by said alphabetical keyboard means is the same as said data in said memory corresponding to said key code information representing one of said at least two letters;

second means for generating information representative of any one of said plurality of different specific symbols in response to actuation of said sole symbol additive key switch; and

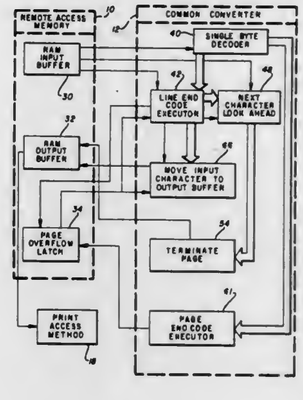
third means responsive to said first and second means for combining said information representative of any one of said plurality of different specific symbols with the key code information representing said one of said at least two letters for forming a new type of code information representative of said one letter including one of said specific symbols.

4,498,150

DOCUMENT AUTOMATIC PAGINATION

James L. Gaudet, and Rudolph E. Chukran, both of Austin, Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 274,364, Jun. 16, 1981, abandoned. This application Nov. 23, 1983, Ser. No. 554,611
Int. Cl.³ G06F *3/12*
U.S. Cl. 364—900 **10 Claims**



1. A method for automatically paginating a data stream of text in a word processing system having a printer for creating a hard copy printout, comprising the steps of:

formatting said data stream into logical pages in a memory, each logical page defined by a first and last typing line and having a plurality of line end codes;

initializing a vertical tracking register for a first typing line of a logical page to be printed by said printer on a hard copy page;

incrementing the vertical tracking register by a value representing a vertical displacement of a vertical print position of the printer when a line end code is encountered in the data stream;

when said line end code is encountered in the data stream, interrogating a page overflow latch to determine whether a page overflow condition is pending, the pending page overflow condition indicating that the vertical tracking register has reached a predetermined value corresponding to a last typing line of a logical page;

when a page overflow condition is pending, interrogating the next character in the data stream following the line end code to determine whether said next character is a graphic character;

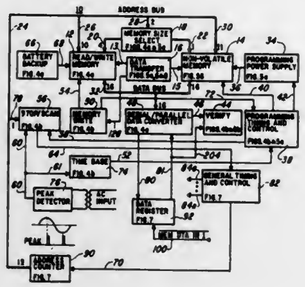
when the next character is a graphic character, copying a page end code into an output buffer ahead of said graphic character to indicate a page overflow condition, the completion of a hard copy page, and that printing of the data stream should continue on a next hard copy page; and

when said next character is a nongraphic character, indicating in the output buffer that the page overflow condition remains pending until the next graphic character is reached.

4,498,151
ON BOARD NON-VOLATILE MEMORY PROGRAMMING

Raymond W. Henry, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 141,090, Apr. 17, 1980,. This application Jan. 17, 1984, Ser. No. 556,472
Int. Cl.³ G06F 7/00
U.S. Cl. 364—900 8 Claims



1. A digital system for on board programming of a non-volatile memory comprising:

(a) A read/write memory included within said system for storing data therein,

(b) a non-volatile memory, said non-volatile memory comprised of means for programming said memory and means for writing data therein,

(c) circuit means for transferring data into and out of each of said memories, said circuit means including means for generating enabling/disabling signals to said non-volatile memory and to said read/write memory during programming of said non-volatile memory,

(d) timing means coupled to said non-volatile memory for generating a program pulse of predetermined duration to said non-volatile memory,

(e) means for generating a program voltage signal of predetermined magnitude and applying said voltage signal to said non-volatile memory, said enabling/disabling signals, program pulse and program voltage signals being generated within said system and effecting transfer of data from said read/write memory to said non-volatile memory without removing said non-volatile memory from said system,

(f) means for verifying proper programming of said non-volatile memory by the read/write memory comprising:

data circuit means coupled to said memories for transmitting the data outputs from each of said memories,

electrically energizable visual means coupled to said data circuit means,

comparator means coupled to said data circuit means for comparing the outputs for differences between the data in the non-volatile memory and the read/write memory and energizing said visual means upon detecting any of said differences, and

latching means coupled to said visual means and adapted to latch the visual means in the energized state when energized as a result of detecting any of said differences,

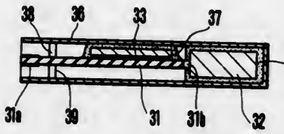
and means to vary when said program pulse signal starts within a scan of memory whereby different portions of the memory contents can be scanned to determine the exact location of any error,

and means for changing the read/write memory storage input to said comparator to a constant voltage level and comparing said non-volatile memory output to said constant voltage level to determine whether said non-volatile memory has been completely erased.

4,498,152
CASSETTE TYPE MAGNETIC BUBBLE MEMORY DEVICE

Toshio Futami; Shoji Yoshimoto, and Ryuji Yano, all of Mobara, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Apr. 5, 1983, Ser. No. 482,154
Claims priority, application Japan, Apr. 9, 1982, 57-58135
Int. Cl.³ G11C 19/08
U.S. Cl. 365—1 7 Claims

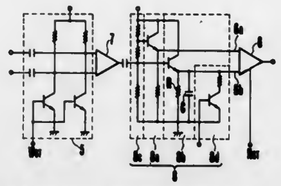


1. A cassette type magnetic bubble memory comprising: a magnetic bubble memory device mounted to extend above and below a base plate and having a magnetic bubble memory element, a pair of coils for generation of a rotating field for driving the element, and a pair of permanent magnet plates and yoke plates for applying a bias field to the element; a peripheral circuit for driving the magnetic bubble memory device; and an electric signal connector section provided on one end of the base plate and adapted to be connected to a loader, wherein an electrically conductive metal frame is provided which surrounds at least the connector section, and a resin sealing medium is provided in which at least the magnetic bubble memory device is embedded, said resin sealing medium extending continuously to transmit heat to the peripheral surface of said cassette.

4,498,153
OUTPUT SIGNAL DETECTORS OF MAGNETIC BUBBLE MEMORY DEVICES

Ryuji Yano; Shinsaku Chiba; Kazutoshi Yoshida; Kazuhiro Ishida, and Shoji Yoshimoto, all of Mobara, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 10, 1982, Ser. No. 356,641
Claims priority, application Japan, Mar. 13, 1981, 56-35330
Int. Cl.³ G11C 19/08
U.S. Cl. 365—10 2 Claims

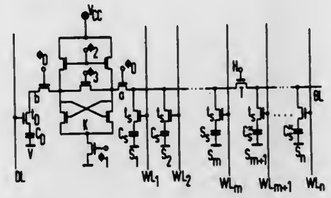


1. In a detector of a magnetic bubble memory device of the type comprising a magnetic bubble memory element having a detector, means for passing constant current through said detector so as to produce a bubble output signal according to the magnetoresistive effect of said detector, a preamplifier for amplifying said output signal, circuit means for DC regenerating and output signal of said preamplifier, and a discriminator for converting said DC regenerated signal into a logical signal, the improvement which comprises a holding circuit connected between said preamplifier and said discriminator for holding a peak value of the DC regenerated signal for a predetermined time wherein the output signal from said DC regeneration is transmitted to said holding circuit to produce a first output therefrom to be made a first input to said discriminator and the other input to said discriminator is the peak value of said output signal, said discriminator providing a threshold level set at a predetermined voltage with respect to said first input for a comparison with said second input to generate a logical signal.

4,498,154
MONOLITHICALLY INTEGRATED SEMICONDUCTOR MEMORY

Kurt Hoffmann, Taufkirchen, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Jan. 19, 1982, Ser. No. 340,781
Claims priority, application Fed. Rep. of Germany, Jan. 21, 1981, 3101802
Int. Cl.³ G11C 11/24
U.S. Cl. 365—149 16 Claims

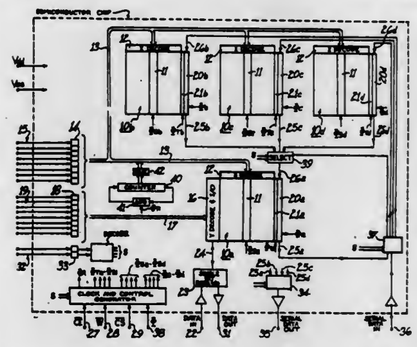


1. Monolithically integrated semiconductor memory with a matrix of identical storage cells arranged in rows and columns, each storage cell including an MOS field-effect transistor and a storage capacity in the form of an MOS capacitor and wherein also a comparator and a comparison cell identical to one of the storage cells and operatively associated with each matrix row the improvement which comprises means for bridging at least one point of interruption in the path of a bit line extending from one another of at least one adjacent storage cells in each row, said bridging means being an MOS field-effect transistor having a drain and a source and a current-carrying path bridging said at least one point of interruption.

4,498,155
SEMICONDUCTOR INTEGRATED CIRCUIT MEMORY DEVICE WITH BOTH SERIAL AND RANDOM ACCESS ARRAYS

G. R. Mohan Rao, Houston, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 97,104, Nov. 23, 1979, Pat. No. 4,347,587. This application May 24, 1982, Ser. No. 381,096
The portion of the term of this patent subsequent to Aug. 31, 1999, has been disclaimed.
Int. Cl.³ G11C 7/00
U.S. Cl. 365—189 13 Claims

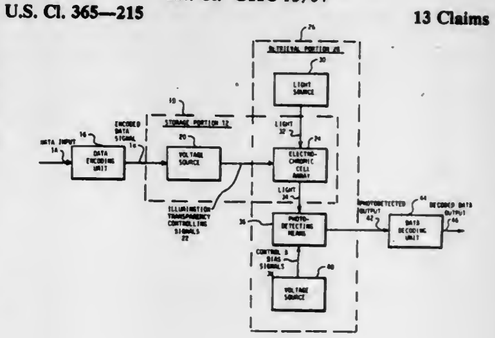


1. A memory device providing both plural-bit serial and single-bit random access, comprising a body of single crystal semiconductor material, a random-access read/write array formed in one face of said body, address terminals on said face, control terminals on said face, a serial-access data output terminal and random-access input/output terminals on said face coupled to said read/write array, first addressing means for receiving and decoding a row address from said address terminals for selecting a row in said array, second addressing means for receiving and decoding a column address from said address terminals for selecting a column or columns in said random access array, and control means for receiving input commands from said control terminals selecting between random-access or serial-access of said array, said array having serial-access register means selectively coupled to columns of said array, means to selectively clock the serial-access register means of said array, means for connecting a data output from the serial-access register means of the array to said data output terminal for serial-access of the memory device, and random-access input/output access means coupling said array to said random-access input/output terminals for said memory device.

4,498,156
ELECTROCHROMIC NONVOLATILE MEMORY DEVICE

Frank A. Pizzarello, Yorba Linda, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Sep. 24, 1981, Ser. No. 305,248
Int. Cl.³ G11C 13/04
U.S. Cl. 365—215 13 Claims



1. Apparatus for storing and retrieving data, comprising:

a plurality of electrochromic cells having electrically controllable illumination transparency;

means electrically controlling the illumination transparency of selected ones of said cells in accordance with data to be stored;

a light source which projects a flood illumination upon said plurality of electrochromic cells during data retrieval; and

a charge transfer device comprising a plurality of charge transfer device cells for photodetecting illumination from said light source and passed by said selected electrochromic cells onto said charge transfer device to effect retrieval of data stored in the illumination transparency of said plurality of electrochromic cells.

4,498,157
METHOD OF DETERMINING WEATHERING CORRECTIONS IN SEISMIC OPERATIONS

Lincoln A. Martin, Altadena, and William F. Fenley, Jr., Pasadena, both of Calif., assignors to Geophysical Systems Corporation, Pasadena, Calif.

Filed Apr. 20, 1981, Ser. No. 255,379
Int. Cl.³ G01V 1/36
U.S. Cl. 367—50 22 Claims

1. In a seismic system having at least one line of spacial source points (SPs) A,B,C, the position of each SP known; and

having at least one different line of spaced receiver points (RPs), D,E,F,G, the positions of each RP known; to the lines not colinear.

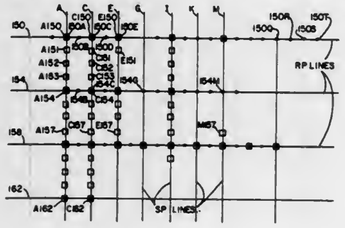
the method of determining the differential static time correction by transmission through the weathered layer, from the records from adjacent closely spaced SPs A and B, comprising the steps of;

(a) recording a first record from a first SP, A to a plurality of closely spaced RPs D,E,F,G;

(b) recording a second record from a second SP, B to a plurality of closely spaced RPs D,E,F,G;

(c) determining the horizontal distances from SP A to each of the RPs D,E,F,G,; and from SP B to each of the RPs D,E,F,G,;

(d) selecting a first pair of traces from said first and second records, in which the path lengths from adjacent SPs such as A,B, to a selected pair of RPs such as D,E, differ in



length by no more than a selected small dimension dE, for which the differential travel time in the subsurface dt, would be equal to dE/V, where V is the horizontal subweathering velocity;

(e) determining the differential travel time between the two paths from A and B to D and E, applying the time correction dt algebraically to compensate for different lengths of paths, and determining the first timing difference T1 in travel times through the weathered layer at source points A and B and RPs D and E;

(f) repeating steps (d) and (e) for a second pair of traces from the same pair of SPs A and B to a second pair of RPs, such as E and F, adjacent to said first pair; applying the proper time correction dt and determining the second time difference T2 in travel times through the weathered layer; and

(g) determining the average value TA of the time differences T1 and T2 of said plurality of pairs of paths.

4,498,158

ADDRESS DATA SEARCHING METHOD FOR DATA RECORDING MEDIUM REPRODUCING DEVICE

Tetsuo Akiyama, Saitama, Japan, assignor to Universal Pioneer Corporation, Tokyo, Japan

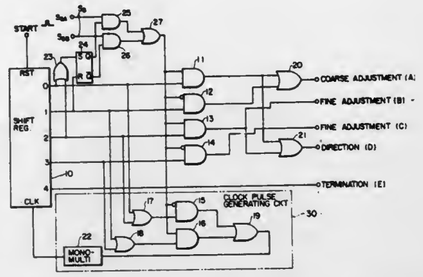
Filed Jul. 2, 1980, Ser. No. 165,441

Claims priority, application Japan, Jul. 3, 1979, 54-84704

Int. Cl.³ G11B *7/00, 17/00*

U.S. Cl. 369—32 **9 Claims**

1. A method for operating a recording medium reproducing device comprising the steps of: reading address data from a data track of a recording medium; comparing said address data read from said recording track of said recording medium with supplied address data representing a desired address upon said recording medium in a comparison means to produce an output signal representing whether said read address data is larger than, coincident with, or is smaller than said supplied address data; operating fine and coarse adjustment means to adjust the position of pick-up means relative to said data track in accordance with said output signals from said comparison means such that the direction of position adjustment of said pick-up means is reversed upon the variation of said output signals of said comparison means, said adjustment operation being switched from said coarse adjustment means to said fine adjustment means as a function of an output signal of said comparison means provided at the start of said adjustment operation and in accordance with the number of transitions in said comparison means output signal which have occurred since said start of said adjustment operation, said adjustment operation being



switched from said coarse adjustment means to said fine adjustment means independently of the magnitude of the difference between said desired address and said address data read from said recording track.

4,498,159

TRACK DEVIATION DETECTING APPARATUS

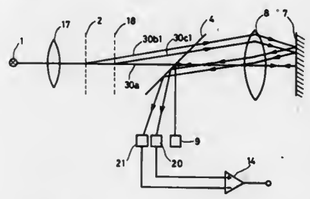
Masahiro Daimon, Amagasaki, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 10, 1983, Ser. No. 465,579

Claims priority, application Japan, Feb. 25, 1982, 57-30796

Int. Cl.³ G11B *7/00, 21/00*

U.S. Cl. 369—44 **11 Claims**



1. A track deviation detecting apparatus for use with a means for optically making a record on a recording medium having guide grooves, said apparatus comprising

two diffraction grating surfaces for producing at least two auxiliary spots serving to detect a deviation of a spot of light having its image formed on the recording medium from a track,

optical means for projecting said auxiliary spots on an unrecorded portion of the track at a position just before said spot of light as viewed in a direction opposite to the direction of travel of the track, and

optical detectors installed correspondingly to the respective auxiliary spots and adapted to detect the reflected light rays from said at least two auxiliary spots on the recording medium.

4,498,160

SIMPLIFIED RECORD PLAYER CAPABLE OF AUTOMATICALLY HOUSING REPRODUCING STYLUS UPON REMOVAL OF RECORD DISC FROM THE RECORD PLAYER

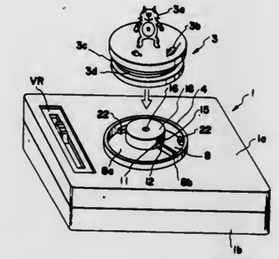
Eishi Koiki, Sagamihara, Japan, assignor to Ozen Corporation, Japan

Filed Sep. 24, 1982, Ser. No. 422,687

Claims priority, application Japan, Jun. 14, 1982, 57-101787

Int. Cl.³ G11B *3/28, 3/40*

U.S. Cl. 369—63 **4 Claims**



1. In a simplified record player comprising a record holding portion for holding a record member without permitting its rotation, a turntable attached with an integrally formed speaker in coaxial and back-to-back relation thereto is received by a center pin disposed upright on the casing at an integrally formed sleeve capable of being axially moved along said center pin, a vibrating blade attached to said speaker in a manner surrounding but without contacting said sleeve of said turn table for receiving the center pin, a sound transmitting bar extending above and along said turn table substantially connected to said speaker by being attached at its middle part to said vibrating blade, a tone arm swingably disposed on said turn table and being slidably supported by said sound transmitting bar capable of begin swung while sliding on said sound transmitting bar capable of being swung while sliding on said sound transmitting bar and with its sound reproducing stylus directed to said record member, said turn table being connected to a drive means and normally urged by spring means toward the recorded face of said record member, the improvement comprising:

a. said turn table including on its central portion a boss having a height higher than the tip end of said reproduction stylus, a guide hole on the upper central portion and a recessed portion formed in the side wall of said boss;

b. means for biasing said tone arm toward said boss such that said sound reproduction stylus can be received in said recessed portion of said boss;

c. said record member including at its central bottom portion an annular concave portion adapted to receive at least the upper portion of said boss of the turn table, and a projecting rod formed on the center portion of said concave portion of said record member and adapted to be inserted into said guide hole of said boss;

d. said record holding portion comprises means for locking said record member in an axial direction;

e. a pusher slidably attached around said center pin which is advanced by being pushed by said projecting rod;

f. a head disposed at the lower end of said pusher for urging said tone arm outward from said recessed portion of said boss by a wedge action given by an inclined surface against said biasing means after said record member has been placed on said record holding portion but immediately before said record member is fixed by said locking means; and whereby

a necessary stylus force to be imparted to said sound reproducing stylus being engaged with the recorded groove of said record member after having been pushed out from said recessed portion of said boss is assured by a cooperative action of said biasing means urging said turn table toward said recorded face and said member having been fixed to said record holding portion.

4,498,161

DISC PLAYER

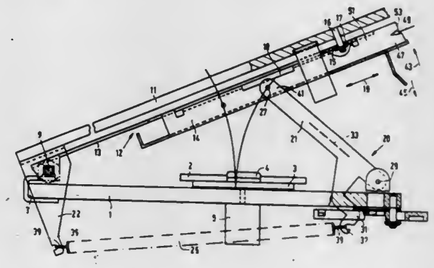
Kurt Eisemann, Berlin, Fed. Rep. of Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 28, 1983, Ser. No. 479,304

Claims priority, application Fed. Rep. of Germany, Mar. 27, 1982, 3211358; Mar. 27, 1982, 3211359

Int. Cl.³ G11B *1/00, 25/04*

U.S. Cl. 369—75.2 **8 Claims**



1. A disc player for a rigid information-carrying disc, said player comprising a turntable which is mounted for rotation on a chassis and a lid for closing said player, said player also including resilient means coupled to said lid, stop means, a latch, and a latching plate; said lid being pivotally connected to said chassis, said player including a disc loader carried by said lid, said loader when said lid is pivoted toward said turntable, acts resiliently on said turntable, said lid when closing performs a pivotal movement in respective loading and lifting stages, said lid including at least one stop element, said lid in said loading stage being pivoted towards said turntable, during which said disc loader urges the disc against said turntable, in said lifting stage consecutive to said loading stage said lid being pivoted away from said turntable by said resilient means into a final position in which said lid is positioned by said stop means, in said final position of said lid said disc loader being clear of the disc, and in which said latch which is movable relative to said chassis, moves to a position in the pivotal path of said stop element, and inhibits a return to said loading stage.

4,498,162

AUTOMATIC DISC LOADING APPARATUS

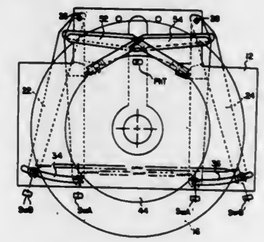
Etienne A. Schatteman, Wemmel, Belgium, assignor to Staar S.—A., Belgium

Filed Apr. 11, 1983, Ser. No. 483,698

Claims priority, application Belgium, Apr. 23, 1982, 892,952

Int. Cl.³ G11B *25/04*

U.S. Cl. 369—77.1 **17 Claims**



1. In a disc record player apparatus,

mechanism for guiding and centering disc records on a disc record drive having a vertical spindle comprising, in combination:

a horizontal plate for receiving a disc record inserted and movable along a horizontal path to a position centered on said spindle;

means on said plate for guiding inserted disc records of different size to said centered position, including:

spaced levers pivotally movable laterally outwardly from a first position straddling the center line of said path;

means resiliently urging said levers toward each other;

said levers at said first position being spaced sufficiently to engage an inserted disc record of either a small size or a large size and be moved outwardly thereby against said resilient means to guide a record of either size to centered position;

a pair of stop means mounted on said plate straddling said center line in the path of an inserted small size record to locate such a record in said centered position; and

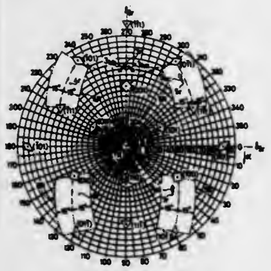
means actuated by outward movement of both said levers by a large size record for shifting said stop means out of said path to permit a large size record to move to said centered position.

4,498,163

DIAMOND PICKUP STYLUS WITH GOOD GRINDABILITY

Keiji Segawa, Sagamihara; Mikio Naoi, Tokyo, and Masaki Murakami, Sagamihara, all of Japan, assignors to Victor Company of Japan, Limited, Japan

Filed Jul. 30, 1982, Ser. No. 403,346
Claims priority, application Japan, Jul. 30, 1981, 56-119550
Int. Cl.³ G11B 9/00, 3/00
U.S. Cl. 369—126 **1 Claim**



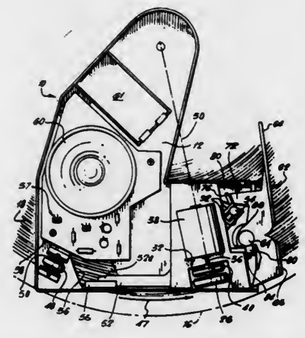
1. An electrostatic capacitance type pickup stylus for use on an information storage disc, comprising a crystal of diamond including a sliding face for slidable contact with the information storage disc, an electrode face supporting thereon a conductive electrode layer for detecting signals on the information storage disc as changes in electrostatic capacitance, a pair of first and second angularly spaced back faces adjoining said electrode face, and a pair of first and second angularly spaced guide faces adjoining each other and said first and second back faces, respectively, said sliding face being in the form of a pentagon defined by ridges respectively of said electrode face, first and second back faces, and first and second guide faces, said first and second back faces being symmetrical with respect to a line passing through a central point on the ridge of said electrode face and a junction between the ridges of said first and second guide faces, said first and second guide faces being symmetrical with respect to said line, said first back face being disposed in an area defined between $(\bar{1}11)$ and $(\bar{1}01)$ faces of the diamond crystal and in an angular interval of about ± 15 degrees across a direction from said $(\bar{1}11)$ face to said $(\bar{1}01)$ face, said second back face being disposed in an area defined between $(1\bar{1}1)$ and $(0\bar{1}1)$ faces of the diamond crystal and in an angular interval of about ± 15 degrees across a direction from said $(1\bar{1}1)$ face to said $(0\bar{1}1)$ face, said first guide face being disposed in an area defined between $(01\bar{1})$ and (010) faces of the diamond crystal and in an angular interval of about ± 15 degrees across a direction from said $(01\bar{1})$ face to said (010) face, and said second guide face being disposed in an area defined between $(10\bar{1})$ and (100) faces of the diamond crystal and in an angular interval of about ± 15 degrees across a direction from said $(10\bar{1})$ face to said (100) face.

4,498,164

RECORD PLAYERS

Steven A. Lebensfeld, 2 Fifth Ave., New York, N.Y. 10011

Filed Jul. 8, 1983, Ser. No. 512,196
Int. Cl.³ G11B 3/40
U.S. Cl. 369—177 **7 Claims**



1. A record player arranged to be placed on top of a stationary record to sweep around the record about a pivot point at the center of the record and to reproduce sound from the sound groove in the record, comprising:

a support base;

a downwardly projecting pin arranged to engage in and locate with the center of a sound record;

pivot means between said base and said pin; a pair of spaced wheels rotatably carried by the base, said wheels having axes about which said wheels are rotatable, said axes being aligned radially relative said pin, and said wheels engaging the upper surface of said record near its outer periphery to support said base above said record;

an electric drive motor for driving one of said wheels at a substantially constant speed whereby said base sweeps around the record about the pivot pin at a preset rate of rotation;

a playing arm pivotally carried by said base and having an outer trailing end;

a pickup head and needle at said outer trailing end for engaging in the sound reproduction groove of the record as said base sweeps around said record;

lifting means positioned beneath said arm for engaging and raising it so that said head and needle are above the level of said base when said device is not operating;

a control lever pivoted to said base and movable between an operating position and a non-operating position;

switch means controlled by said lever for controlling energisation of said motor when said lever is in said operating position; battery means carried by said base for powering said motor through said switch means;

a first projection formed on said lever and arranged to engage said lift-up means when said lever is in its non-operating position to raise said head clear of a record; and

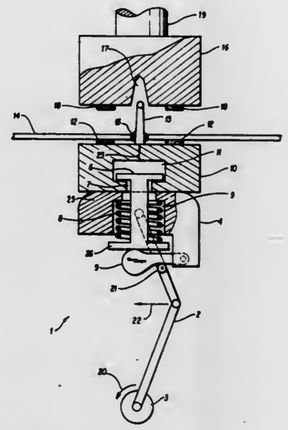
a sound reproduction means including a loudspeaker for providing a sound output from the signal provided by said pickup head.

4,498,165

APPARATUS FOR THE CENTERED MOUNTING AND UNMOUNTING ON A DEVICE SPINDLE

Richard A. Wilkinson, Jr., Boulder, Colo., assignor to Storage Technology Partners II, Louisville, Colo.

Filed Oct. 3, 1983, Ser. No. 538,403
Int. Cl.³ G11B 17/00, 17/04
U.S. Cl. 369—270 **2 Claims**



1. An apparatus for the rotational centered mounting of a disk having a center hole, said apparatus comprised of:

a disk elevating means for raising and lowering a disk hub and a support base toward and away from a spindle, said elevating means having reciprocating movement;

a spin motor;

a spindle, rotatably attached to the spin motor, said spindle having a tapered hole at the center of rotation of a mating surface of the spindle, and a ring magnet concentrically disposed on the mating surface of the spindle;

a disk support hub, said hub slidably resting upon a support base, said hub having,

a steel ring concentrically disposed on a mating surface of the hub, said hub having a tapered centering stem for the centered mounting of the disk thereon, said stem being located in the center of the mating surface of the hub, and said hub having an interior opening in a bottom surface thereof, the interior opening having a lip for rotatably retaining an upper flange of a clamping member;

a disk support base, said base being attached to the elevating means and having a center passage for reciprocative movement of the clamping member, said passage having an upper neck for retention of a spring;

said clamping member having an upper and a lower flange, the lower portion of the clamping member being disposed in the center passage of the base, such that said lower flange can thereby cooperate with the upper neck of the base to retain the spring in the base passage, and the upper portion of the flange being disposed in the hub interior opening, such that said upper flange can thereby cooperate with the lip on the hub to selectively clamp the hub to the base when the elevator means is in an unactivated position, but which releases the hub from the base when the elevating means is activated moving the clamping member to a raised position;

a spring, said spring providing a force for clamping the hub to the base, said spring being disposed around the clamping member in the passage on the base between the upper neck on the base and the lower flange on the clamping member;

a cam for reciprocatively actuating the clamping member, said cam being rotatably attached to the base and in contact with the bottom of the clamping member; and

means for activating the cam in coordination with the disk elevating means;

whereby when the elevating means is unactivated and in a lowered position, the spring forces the clamping member downward, causing the upper flange of the clamping member to cooperate with the lip of the hub to clamp the hub to the base; and

whereby when the elevating means is activated to the move upward, the hub is raised by the elevating means and the centering stem engages the tapered hole in the spindle, causing the hub to move laterally relative to the spindle, thereby centering the hub and the disk with respect to the spindle; and

whereby as the base is raised, the cam is activated, raising the clamping member relative to the base and hub so as to unclamp the hub from the base; and

whereby at the uppermost position of the elevating means movement, the magnet ring on the spindle and the steel ring on the hub magnetically clamp the disk to the spindle; and

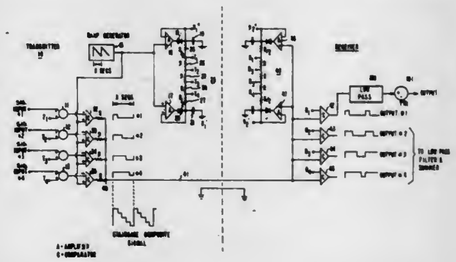
whereby when the elevating means is then lowered slightly, the hub with the disk clamped thereto separates from the base to allow the centered rotation of the hub and the disk with the spindle.

4,498,166

MULTIPLEXER AND DEMULTIPLEXER CIRCUITS FOR ANALOG SIGNALS

Anthony Esposito, 159 Connetquot Rd., Oakdale, N.Y. 11769

Filed Nov. 12, 1982, Ser. No. 440,866
Int. Cl.³ H04J 7/00
U.S. Cl. 370—9 **16 Claims**



1. A system for multiplexing a plurality of input signals to form a composite signal for transmission over a common transmission channel and for deriving replicas of said input signals at a receiver site from said composite transmitted signal, comprising

means for generating a reference signal,

detecting means responsive to the amplitude of said reference signal for generating a series of proportional reference levels each separate one indicative of and associated with a separate, one of said plurality of input signals,

a plurality of comparison means each associated with one input signal and each responsive to one separate proportional reference level to provide at an output a separate information signal indicative of the value of said input signal according to the level of said associated proportional reference,

summing means coupled to the outputs of said plurality of comparison means to provide a summed signal indicative of the sum of the outputs of said comparison means to provide a composite signal for transmission,

receiver means responsive to said transmitted composite signal including means for detecting the amplitude of said composite signal for generating a series of proportional receiver reference signals each separate one indicative of a separate input signal and including a plurality of receiver comparison means each responsive to said composite

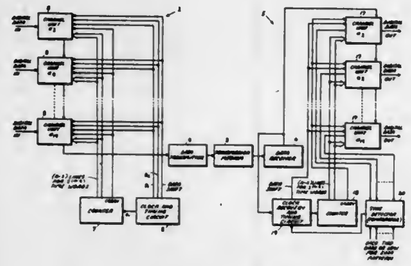
signal and one of said receiver reference signals to provide at an output a replica of one of said input signals.

4,498,167

TDM COMMUNICATION SYSTEM

James H. Bowen, Williamsburg, Va., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Mar. 1, 1982, Ser. No. 353,695
Int. Cl.³ H04Q *11/04*
U.S. Cl. 370—44 **22 Claims**



1. A time division multiplex communication system comprising:

a multiplexer to multiplex each of M digital data sources into a multiplex frame including a serial pattern of M data words each made up of n serial bits of which at least one bit is a synchronization bit, at least one other bit indicates the direction of the data transition or data level, and the remaining n−2 bits represent one of $N=(n-2)$ code words which indicates the time of transition of the digital data source relative to the time of the beginning of the multiplex frame, where M is an integer greater than one and n is an integer greater than two, said multiplexer including

first means to generate in time sequence N different code words each defining a different one of said N time slots, said first means including a first clock and timing circuit to provide first and second time shifted clock signals and a first counter coupled to said first circuit to provide said N code words, and

M second means each coupled to a different one of said M sources and to said first means to detect a data transition in said data of an associated one of said M sources, to provide an associated one of said N code words in response to detection of said data transition, to provide at least one bit indicating the direction of said transition and to provide at least one additional bit for a synchronization bit, each of said M second means being coupled in cascade with respect to each other to provide a serial time multiplexed output for said multiplexer including said associated one of said N code words, said one bit and said one additional bit from each of said M second means; and

a demultiplexer coupled to said multiplexer to demultiplex said M digital data from said multiplexed output including

third means to generate in time sequence said N code words in response to said multiplexed output,

M fourth means each coupled to said third means and in cascade with respect to each other and said multiplexed output to extract said M digital data from said multiplexed output, and

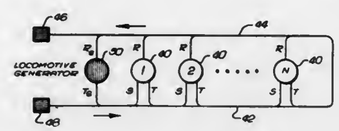
fifth means coupled to each of said M fourth means and to said third means to detect a synchronization pattern provided by each of said one additional bit to synchronize said third means to said first means.

4,498,168

COMMUNICATION NETWORK AND METHOD FOR ITS USE

Chong-Wei W. Tseng, Santa Monica, Calif., assignor to TRW Inc., Redondo Beach, Calif.

Filed Dec. 13, 1982, Ser. No. 449,083
Int. Cl.³ H04J *3/00*
U.S. Cl. 370—85 **18 Claims**



1. A data communications network, comprising:

a unidirectional data bus, including an outbound bus and an inbound bus connected in series, and bus temination means at opposing ends of said unidirectional bus;

a plurality of data stations, each having data transmitting means coupled to said outbound bus, for transmitting packets of data onto said outbound bus, sensing means also coupled to said outbound bus, for detecting the transmission of a data packet on said outbound bus from an upstream station, data receiving means coupled to said inbound bus, for receiving data addressed to the data station, and station control means, for transmitting a packet of data upon detection of a cessation of data transmission from stations upstream on said outbound bus; and

locomotive generator means, not part of any of said data stations, and having transmitting means for generating a data train preamble and transmitting it along said outbound bus, and locomotive generator control means, for initializing generation of new data train preambles in accordance with a predefined plan;

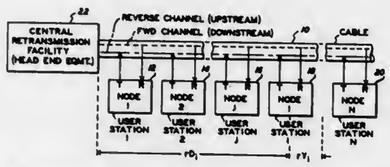
whereby each of said stations, if ready to transmit data, adds a data packet to the next passing data train upon sensing cessation of data transmission on said outbound bus, whereby each of said stations receives data packets designated to it from said inbound bus, and whereby each data train passes along said outbound bus and said inbound bus, before being absorbed by said bus termination means.

4,498,169

MULTIACCESS BROADCAST COMMUNICATION SYSTEM

John M. Rozmus, Lilburn, Ga., assignor to Scientific Atlanta, Inc., Atlanta, Ga.

Filed Mar. 14, 1983, Ser. No. 475,015
Int. Cl.³ H04J *6/00*
U.S. Cl. 370—85 **7 Claims**



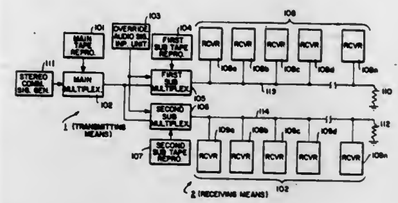
1. A communication system in which a multiplicity of communications stations are connected at a multiplicity of nodes disposed successively along a multichannel transmission medium, each of said stations having means connected to said medium for receiving messages transmitted in one of said channels along said medium from said nodes and retransmitting said messages in another of said channels to all of said nodes, for providing multiple access to said medium from said stations for the transmission of said messages without collisions, said system comprising means in each of said stations for formatting each of said messages with a portion in the heading thereof which represents the length of said message, means for transmitting said message along said one channel to said retransmitting means, means in each of said stations responsive to the length portion of a preceding received message on said other channel for providing access to said one channel of said medium after a delay from the receipt of said preceding message equal to or greater than the difference between the length of said preceding message and the propagation time in said medium from the node at which said station is connected to said retransmission means and back to said last named node.

4,498,170

TIME DIVIDED DIGITAL SIGNAL TRANSMISSION SYSTEM

Toyota Noguchi, Kyoto; Michio Okamoto, Ikoma; Tadafumi Nishimura, Takarazuka; Yukio Sugimoto, Katano; Mamoru Kaneko, and Kenjiro Nakayama, both of Neyagawa, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Apr. 23, 1982, Ser. No. 371,493
Claims priority, application Japan, Apr. 23, 1981, 56-62040
Int. Cl.³ H04J *3/12*
U.S. Cl. 370—110.1 **2 Claims**



1. A time divided digital signal transmission system comprising a transmitting means, a sub multiplexing means and a receiving means;

wherein said transmitting means comprises: a plurality of analog signal input terminals for inputting analog signals; a clock generator for generating a clock signal; a synchronous signal generator operatively coupled to said clock generator for generating a synchronous signal; a plurality of delta modulators operatively coupled to said analog signal input terminals, said clock generator, and said synchronous signal generator for converting said analog signals to digital signals under the control of said clock signal and said synchronous signal; a multiplexer operatively coupled to said delta modulators for multiplexing said digital signals so as to obtain a multiplexer digital signal;

wherein said sub multiplexing means comprises: a sub demultiplexer operatively coupled to said multiplexer for demultiplexing said multiplexed digital signal so as to obtain said digital signals; a plurality of sub analog signal input terminals for inputting sub analog signals; a sub delta modulator operatively coupled to said sub analog signal input terminals for converting said sub analog signals to sub digital signals; an override digital signal input terminal for inputting an override digital signal; a sub multiplexer operatively coupled to said sub demultiplexer, said sub delta modulator and said override digital signal input terminal for multiplexing said digital signals, said sub digital signals and said override digital signal such that said sub digital signals and said digital signals are alternately assigned to time intervals, and said override digital signal is assigned to the time intervals of said alternately assigned sub digital signals and digital signals so as to obtain a further multiplexed signal to be transmitted to said receiving means; and a sync/clock detector operatively coupled to said multiplexer for detecting and regenerating said synchronous signal and said clock signal, and also operatively coupled to said sub demultiplexer, said sub delta modulator and said sub multiplexer, so as to control said sub demultiplexer, said sub delta modulator and said sub multiplexer;

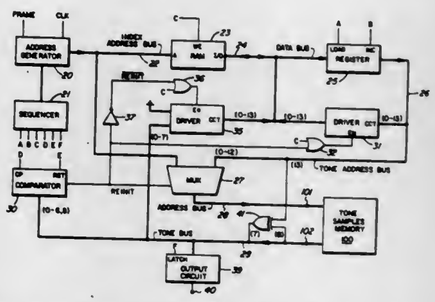
and wherein said receiving means comprises: a clock regenerator operatively coupled to said sub multiplexer for regenerating said clock signal; a synchronous signal regenerator operatively coupled to said clock regenerator for regenerating said synchronous signal; a demultiplexer operatively coupled to said sub multiplexer for demultiplexing said multiplexed digital signal so as to obtain said digital signals; and a plurality of delta demodulators operatively coupled to said demultiplexer, said clock regenerator and said synchronous signal regenerator for demodulating said digital signals under the control of said regenerated clock signal and said synchronous signal so as to obtain said analog signals.

4,498,171

TONE SOURCE FOR TELEPHONE SYSTEMS

Ernst A. Munter, Kanata, and Andreas L. Aczel, Nepean, both of Canada, assignors to Northern Telecom Limited, Montreal, Canada

Filed May 6, 1983, Ser. No. 492,205
Int. Cl.³ H04J *3/12*
U.S. Cl. 370—110.2 **3 Claims**



1. A tone source for providing a plurality of encoded tones for use in a telephone system, said tones being defined in a storage medium having an index page of stored tone index addresses for identifying first storage locations of corresponding tone samples having been sequentially stored therein, comprising:

first means for generating sequences of index addresses corresponding to address locations in the index page;

a memory means including storage locations corresponding to the index addresses, a data port, and an address port, the memory means being readable to provide an information word via the data port and writable with an information word directed thereto via the data port at a storage location defined by an instant one of the index addresses being asserted at the address port;

a register means having an output for asserting a registered information word and an input connected with the data port of the memory means, the register means being controllable to register an information word being asserted at its input, and to register an increment of said informaion word;

second means for generating a reinitialization signal in response to a predetermined charcteristic of an information word having been read from the storage medium;

switch means being operative in an absence of the reinitialization signal, for directing a registered information word to the address port of the storage medium to cause an information word of the corresponding storage location to be asserted at the data port of the storage medium, and for

directing the increment to the data port of the memory means to cause a corresponding information word to be written at a storage location being defined by the instant index address, and being alternately operative in response to a presence of the reinitialization signal for directing the instant index address to the address port of the storage medium to cause an informaion word of the corresponding storage location to be asserted at the data port of the storage medium, to cause a corresponding information word to be written at the memory means storage location being defined by the instant index address;

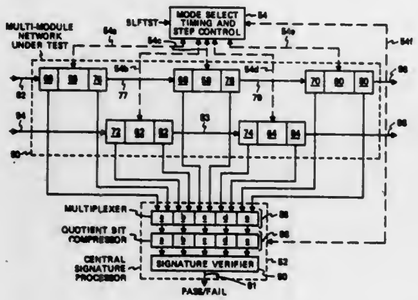
whereby tone samples are available from the storage medium for use in the telephone system.

4,498,172

SYSTEM FOR POLYNOMIAL DIVISION SELF-TESTING OF DIGITAL NETWORKS

Dilip K. Bhavsar, Liverpool, N.Y., assignor to General Electric Company, Syracuse, N.Y.

Filed Jul. 26, 1982, Ser. No. 402,161
Int. Cl.³ G01R *31/28*
U.S. Cl. 371—25 **11 Claims**



1. Apparatus for self-testing a system which includes a plurality of functional network interconnected by interface networks comprising:

a first plurality of dual mode feedback shift registers, each connected to the input of respective ones of said plurality of functional networks, each of said feedback shift registers having a first mode of operation for generating a pseudo-random binary test sequence and a second mode of operation for evaluating responses by polynomial division to produce a succession of quotient bits;

a second plurality of dual mode feedback shift registers, each connected to the output of respective ones of said plurality of functional networks and to the input of a respective one of a plurality of interface networks, each of said feedback shift registers having a first mode of operation for evaluating responses by polynomial division to produce a succession of quotient bits and a second mode of operation for generating a pseudo-random binary test sequence; and

a central signature processor comprising:

compressor means for receiving quotient bit data output from each of said feedback shift registers when evaluating responses and generating a system-response signature by recursively compressing said quotient bit data from all of said plurality of feedback shift registers by polynomial division; and

signature-verifying means for comparing said system-response signature with an expected fault-free signature and providing an output signal indicative of system status; and

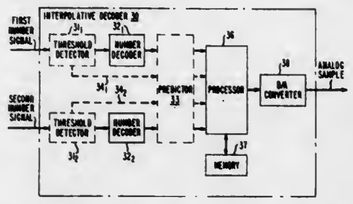
control means for controlling the mode of operation of each of said feedback shift registers.

4,498,173

TECHNIQUE FOR DIGITAL SPLIT-CHANNEL TRANSMISSION USING INTERPOLATIVE CODERS AND DECODERS

Douglas O. Reudink, Sea Girt, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Jun. 17, 1982, Ser. No. 389,448
Int. Cl.³ H04B *7/06*
U.S. Cl. 371—30 **11 Claims**



7. A decoder capable of decoding a digital split-channel signal comprising a first and a second number signal including M-bits each which forms a digital number pair signal, the first and second number signals being received over separate channels or paths and the number pair signal being a representation of a digitally encoded analog signal sample, the decoder comprising

a number decoder (32_1, 32_2) capable of determining each of the numbers received separately in the first and second number signals associated with each split-channel signal; and

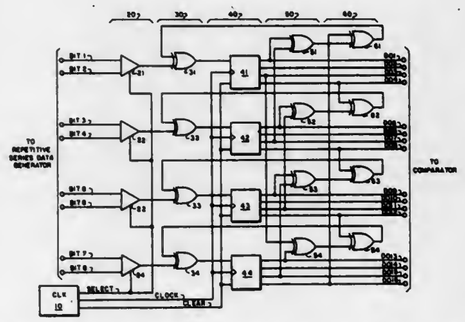
decoding means (36–38) capable of transforming each possible unique digital number pair signal into a unique analog signal sample, where predetermined ones of the possible digital number pair signals comprise first and second number signals of different values.

4,498,174

PARALLEL CYCLIC REDUNDANCY CHECKING CIRCUIT

Barry P. LeGresley, Port Moody, Canada, assignor to AEL Microtel Limited, Northlake, Ill.

Filed Aug. 25, 1982, Ser. No. 411,199
Int. Cl.³ G06F *11/10*
U.S. Cl. 371—37 **9 Claims**



1. A cyclic redundancy checking circuit for use in a data verification system including a comparator a data generator operated to provide a repetitive series of groups of parallel data bits, and a signal generator operated to periodically provide a clear signal associated with one group of said parallel data bits, said cyclic redundancy checking circuit comprising:

first coding means connected to said data generator, operable to provide a first coded signal associated with each group of parallel data bits;

first-in-first out storage means of predetermined capacity connected to said signal generator and said first coding means, said storage means initialized to a reset state in response to said clear signal, further operative to store a predetermined number of said first coded signals and further operative to provide a storage signal associated with each stored first coded signal;

second coding means connected to said storage means and said comparator, operative in response to said storage signal to provide a second coded signal; and

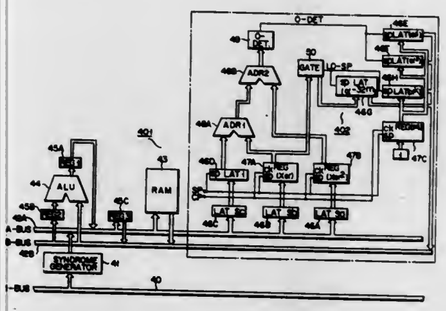
said first coding means further connected to said second coding means, operative in response to each group of parallel data bits and said second coded signal to provide said first coded signal.

4,498,175

ERROR CORRECTING SYSTEM

Masahide Nagumo, Kawasaki; Jun Inagawa, Yokohama, and Tadashi Kojima, Yokosuka, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Sep. 30, 1982, Ser. No. 430,002
Claims priority, application Japan, Jun. 15, 1982, 57-102816
Int. Cl.³ G06F *11/10*
U.S. Cl. 371—37 **4 Claims**



1. An error correcting system which receives double correction BCH codes each consisting of M data symbols and four parity symbols, each consisting of m bits and represented by the following generated polynomial:

$$g(x)=(x+1)(x+\alpha)(x+\alpha^2)(x+\alpha^3),$$

where α is the origin element of Galois field GF(2^m), and which find the roots of the following error location polynomial:

$$f(x)=x^2+\sigma_1 x+\sigma_2,$$

thereby correcting errors in the double correction BCH codes, said system comprising:

means for storing the double correction BCH codes;

syndrome generating means for generating four syndromes S_0, S_1, S_2 and S_3 from the double correction BCH codes;

error location calculating means comprising:

a first multiplying/adding section for multiplying and adding the four syndromes S_0, S_1, S_2 and S_3 to obtain three syndromes S_a, S_b and S_c which are given as follows:

$$S_a=S_1^2+S_0S_2,$$

$$S_b=S_0S_3+S_1S_2,$$

$$S_c=S_1S_3+S_2^2$$

a second multiplying/adding section for performing multiplication and addition by substituting $\alpha^0-\alpha^{M+3}$ for x in the following polynomial obtained by transforming said error location polynomial $f_{(x)}$:

$$f'_{(x)}=S_a f_{(x)}=S_a x^2+S_b x+S_c,$$

thereby obtaining two products $S_a\cdot\alpha^2$ and $S_b\cdot\alpha$ and a sum $S_a\alpha^2+S_b\alpha+S_c$, utilizing the fact that the coefficients σ_1, σ_2 of said error location polynomial $f_{(x)}$ and the three syndromes S_a, S_b and S_c have the following relations according to the theory on the correction of said double correction BCH codes:

$$\sigma_1=S_b/S_a=\alpha^i+\alpha^j,$$

$$\sigma_2=S_c/S_a=\alpha^i\alpha^j;$$

an α^i, α^j detecting section for detecting α^i and α^j which satisfy $f'_{(x)}=0$; and

a third multiplying/adding section for adding α^i and α^j and multiplying α^i by α^j, thereby finding the coefficients σ_1, σ_2 which define error locations;

error pattern calculating means comprising a fourth multiplying/adding means for obtaining an error pattern e_i from α^i and α^j by performing the following multiplication:

$$e_i=(S_0\alpha^j+S_1)(\alpha^i+\alpha^j)^{-1},$$

said equation having been derived from the following division:

$$e_i=\frac{S_0\alpha^j+S_1}{\alpha^i+\alpha^j},$$

and for obtaining another error pattern e_j by performing the following addition:

$$e_j=S_0+e_i; \text{ and}$$

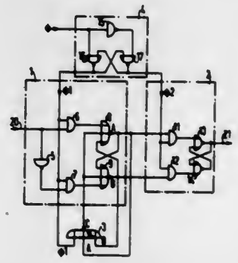
correction means for correcting the errors in said double correction codes stored by said code storing means in accordance with the coefficients σ_1, σ_2 and the error patterns e_i, e_j.

4,498,176

METHOD AND APPARATUS FOR THE ERROR-FREE SYNCHRONIZATION OF ASYNCHRONOUS PULSES

Wolfgang Wagner, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Feb. 11, 1982, Ser. No. 347,787
Claims priority, application Fed. Rep. of Germany, Feb. 19, 1981, 3106183
Int. Cl.³ H03K *3/295, 5/13*
U.S. Cl. 371—47 **8 Claims**



1. Method for the error-free synchronization of asynchronous pulses through logical interconnection of the asynchronous pulses with clock pulses of constant frequency by means of a flip-flop, which comprises comparing output voltages of the flip-flop with a predetermined threshold voltage for deter-

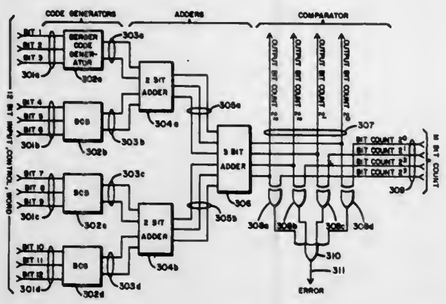
mining a metastable state of the flip-flop, and producing an inhibit signal therefrom and flipping the flip-flop into a third stable state by feeding back the inhibit signal during which its inputs are inhibited until the next clock pulse appears if a metastable state is present, for preventing an evaluation of the output voltages of the flip-flop.

4,498,177

M OUT OF N CODE CHECKER CIRCUIT

Brian R. Larson, Eagan, Minn., assignor to Sperry Corporation, New York, N.Y.

Filed Aug. 30, 1982, Ser. No. 412,487
Int. Cl.³ H03K *13/32*
U.S. Cl. 371—52 **7 Claims**



1. An M out of N code checker circuit apparatus for determining if number M bits, where M≦N and where such number M as is received by said circuit as binary-encoded first signals, is equal in number to that number of binary ones as between N binary input second signals, said circuit apparatus comprising:

code generator stage means for receiving said N binary input second signals in a plurality of parts, and for producing for each of said plurality of parts binary-encoded third signals representing the number of binary ones contained between the input signals of each respective part;

adder stage means for gathering all said binary-encoded third signals as are produced by said code generator means for each respective one of said plurality of parts, from said code generator stage means and for adding said binary-encoded third signals in order to produce as binary-encoded fourth signals that total binary ones bit count as is contained between said N binary input second signals; and

comparator stage means for receiving said binary-encoded fourth signals which represent the total binary ones bit count from said adder stage means, and for receiving said binary-encoded first signals which represent the number M, and for producing an error signal if said binary-encoded fourth signals and said binary-encoded first signals are not equal;

whereby said error signal results if said total binary ones bit count between said N binary input signals was not equal in number to M;

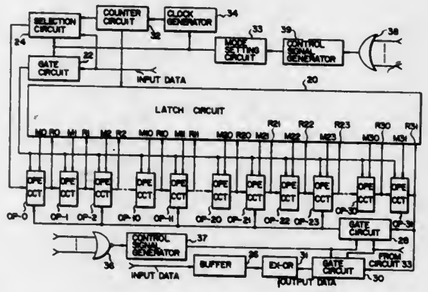
whereby said circuit apparatus thusly checks an M out of N code between said N binary input signals for any number M≦N.

4,498,178

DATA ERROR CORRECTION CIRCUIT

Masahide Ohhashi, Sagamihara, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Feb. 17, 1983, Ser. No. 467,297
Claims priority, application Japan, Feb. 26, 1982, 57-29981
Int. Cl.³ G06F *11/10*
U.S. Cl. 371—37 **6 Claims**



1. A data error correction circuit comprising:

a data input terminal;

preset data input means;

input data selection means connected to said data input terminal and said preset data input means for selecting, in a first operating mode, preset data from said preset data input means to be transferred, and for selecting, in a second operating mode, input data having check bit data attached thereto supplied to said data input terminal to be transferred;

latch means for latching a correction polynomial M(x); and

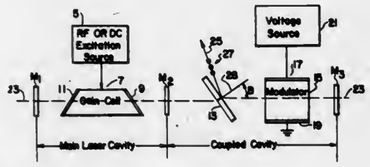
error correction means for receiving, in the first operating mode, the preset data from said preset input means, for dividing the preset data by a generator polynomial G(x) in terms of the modulo 2, and for storing remainder bit data obtained in said latch circuit as the correction polynomial M(x); and for receiving, in a second operating mode, input data having check bit data attached thereto from said data input terminal, for multiplying the input data by the correction polynomial M(x), and for dividing the input by the generator polynomial G(x) in terms of the modulo 2 to obtain a syndrome, thereby detecting and correcting an error in the input data.

4,498,179

MODULATED INFRARED LASER WITH TWO COUPLED CAVITIES

Robert J. Wayne, Berlin; Lanny M. Laughman, Bolton, both of Conn.; Robert J. Mongeon, East Longmeadow, Mass., and Peter P. Chenausky, Avon, Conn., assignors to The Unites States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jul. 30, 1982, Ser. No. 403,439
Int. Cl.³ H01S *3/10*
U.S. Cl. 372—27 **3 Claims**



1. A gas laser comprising:

a main resonant cavity including a gain cell positioned along an optical axis, a source of excitation coupled to said cell, a pair of windows at opposite ends of said gain cell providing an output of vertically polarized optical energy;

a coupled cavity axially aligned with said main cavity and including a polarization coupler angularly disposed at its Brewster angle to said axis for coupling energy out of said laser having a polarization normal to that from said gain cell, an electro-optic modulator spaced from said coupler in said coupled cavity along said axis for controlling the polarization of energy passing therethrough, a source of control voltage coupled to said modulator; and

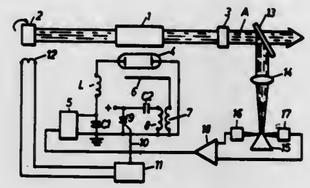
a plurality of mirrors including first and second highly reflective end mirrors positioned at the respective opposite ends of said main and coupled cavities and a third low reflectivity mirror positioned between said cavities, the reflection of energy between said coupled cavity end mirror and third mirror being of a phase to reinforce output of said gain cell in order to sustain continuous wave operation.

4,498,180

METHOD OF MAINTAINING A PREDETERMINED BEAM DIRECTION IN A LASER PULSE TRANSMITTER AND AN APPARATUS FOR CARRYING OUT THE METHOD

Anders S. Severinsson, Lindome, Sweden, assignor to Telefonaktiebolaget LM Ericsson, Stockholm, Sweden

Filed Jan. 21, 1983, Ser. No. 459,976
Claims priority, application Sweden, Jan. 29, 1982, 8200502
Int. Cl.³ H01S *3/13*
U.S. Cl. 372—29 **10 Claims**



1. A method of maintaining a predetermined beam direction in a laser pulse transmitter having a laser resonator including a laser rod (1) with a rotating prism (2) at one end and an output coupler (3) at its other end, a flash lamp (4) which is energized to emit a flash pulse for pumping the laser rod (1), comprising measuring deviation of the beam from the predetermined beam direction, and adjusting in response to the magnitude and polarity of the deviation, a working point of the laser pulse transmitter to a working point corresponding to the predetermined beam direction.

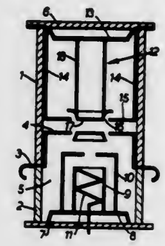
4,498,181

LASER ARRANGEMENTS

Hugh Menown, Writtle; Barry P. Newton, Boreham, and Christopher V. Neale, Hatfield Peverel, all of England, assignors to English Electric Valve Company Limited, Chelmsford, England

Continuation of Ser. No. 18,278, Mar. 7, 1979,. This application Sep. 23, 1983, Ser. No. 534,399
Claims priority, application United Kingdom, Mar. 9, 1978, 789306
Int. Cl.³ H01S *3/00*
U.S. Cl. 372—38 **6 Claims**

1. A laser arrangement including in its discharge circuit a switching thyratron having cathode means for preparing the thyratron to conduct forwardly, control grid means for triggering forward conduction of the thyratron and anode means for trapping and retaining plasma generated during a pulse of forward conduction from said anode means to said cathode means so that the switching thyratron is prepared to conduct protectively in the reverse direction when forward conduction ceases if said thyratron is subjected to a reversal of voltage



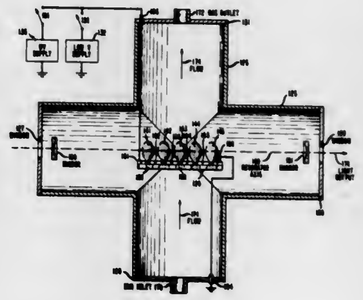
between said cathode means and said anode means, said anode means being devoid of a heater and cathode material whereby conduction in said reverse direction is prepared solely by the plasma trapped and retained by said anode means.

4,498,182

CONTINUOUS WAVE SPER LASER

John J. Macklin, Highlands; William T. Silfvast, Holmdel, both of N.J., and Obert R. Wood, II, New York, N.Y., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Jun. 18, 1982, Ser. No. 389,779
Int. Cl.³ H01S *3/03*
U.S. Cl. 372—62 **11 Claims**



1. A recombination laser comprising:

a resonant laser cavity which permits egress of lasing radiation therefrom,

excitation means for producing said lasing radiation in said resonant laser cavity;

said excitation means comprising at least two conductor strips having at least one gap, which at least one gap provides at least one intervening discharge path; and means for applying an electrical signal to said at least two conductor strips; and

a cell for containing a background gas and in which said at least two strips are located;

at least a portion of said at least two conductor strips being fabricated from a material which is converted into a plasma of ions as a result of the application of said electrical signal, which plasma cools and recombines to generate said lasing radiation; characterized in that

said applying means preionizes said at least one gap and applies an electrical signal of at least a few milliseconds duration for producing continuous wave operation of said laser, and

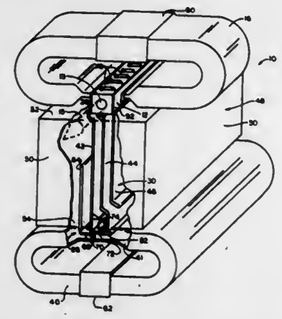
means are provided for causing said background gas to flow across said at least two strips.

4,498,183

HIGH REPETITION RATE, UNIFORM VOLUME TRANSVERSE ELECTRIC DISCHARGER LASER WITH PULSE TRIGGERED MULTI-ARC CHANNEL SWITCHING

Jeffrey I. Levatter, Encinitas, Calif., assignor to Bernard B. Katz, La Jolla, Calif.

Division of Ser. No. 100,025, Dec. 3, 1979, Pat. No. 4,370,175.
This application May 6, 1982, Ser. No. 375,750
Int. Cl.³ H01S *3/097*
U.S. Cl. 372—86 **8 Claims**



1. In an excimer gas laser including means defining an elongated laser beam generating resonant cavity chamber and a first transverse gas flow passageway, the improvement comprising:

anode means, cathode means and preionizing electrode means located in said laser beam generating chamber and interconnected to first apply an ionizing potential between said preionizing electrode means and said cathode means, and to thereafter produce a spatially uniform laser discharge between said cathode means and said anode means;

pulse triggered multichannel bar gap switch means connected to said preionizing electrode means and said anode means and located in a second gas flow passageway;

a gaseous medium flowing through said gas flow passageway, said gaseous medium being susceptible to ionizing breakdown upon application of sufficient voltage thereto; and

pulsed voltage means coupled to said pulse triggered multichannel bar gap switch means to repetitively apply brief, fast rising pulses thereto to create multichannel sparks therein only after the voltage applied has exceeded the ionizing breakdown of said gaseous medium flowing in said second gas flow passageway.

4,498,184

JINC-TRAP RESONATOR

Thomas R. O'Meara, Malibu, Calif., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Apr. 12, 1983, Ser. No. 484,327
Int. Cl.³ H01S *3/08*
U.S. Cl. 372—92 **8 Claims**

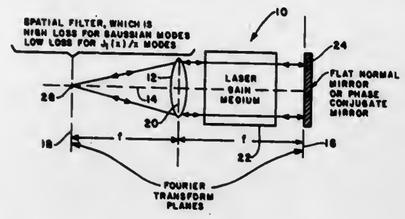
1. A Jinc-trap resonator, comprising:

(a) a Fourier transform lens defining an optical axis with right and left transform planes disposed along said axis one focal length from either side of the center of said lens;

(b) a laser gain medium disposed at a location along said optical axis between said lens and a first one of said right and left transform planes of said lens;

(c) reflecting means disposed at said first one of said transform planes of said lens; and

(d) a Jinc-trap spatial filter disposed at a second one of said right and left transform planes of said lens, whereby a Jinc



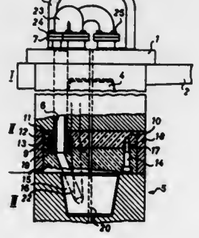
mode represented by the Bessel function $J_1(X)/(X)$ is effectively trapped at said second one of said transform planes while a corresponding transform mode that is nearly constant in amplitude and flat in phase is located at said first one of said transform planes.

4,498,185

PROCESS FOR PREVENTING BURN-OFF ON A CURRENT-CONDUCTING ELECTRODE FOR METALLURGICAL FURNACES AND ELECTRODES

Emil Elsner; Dietfried Reiber, both of Gerlafingen; Josef Messmer, and Peter Kaiser, both of Biberist, all of Switzerland, assignors to Von Roll AG, Gerlafingen, Switzerland

Filed Oct. 14, 1982, Ser. No. 434,381
Claims priority, application Switzerland, Oct. 15, 1981, 6605/81
Int. Cl.³ H05B *7/08*
U.S. Cl. 373—93 **7 Claims**



1. An electrode for electric arc furnaces for the production of iron and steel comprising, a liquid cooled upper portion adapted to be inserted into an electrode holder connected to a source of electricity and having at least said upper portion contacting said holder formed of graphite and/or carbon for the conduction of said electricity, and a lower portion forming a consumable electrode tip detachably fastened to said upper portion, said upper portion including a conduit system for cooling liquid comprising at least three copper tubes extending longitudinally through said upper portion and spaced uniformly about the central axis thereof, the upper end of one of said tubes having an inlet for cooling liquid and the upper end of another of said tubes having an outlet for cooling liquid and said remaining upper and lower ends of said tubes being serially connected to provide a continuous flow of liquid from inlet to outlet, said upper portion comprising a separable upper part, a lower part having a threaded nipple for the removable attachment of said consumable electrode tip and an intermediate part, said conduit cooling system comprising straight copper tubes embedded in said upper part and extending outwardly from the top thereof and from the bottom thereof

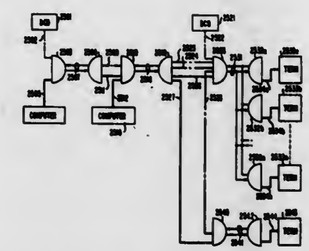
through said intermediate part, each tube having means at the top and bottom ends for securing said upper and lower parts in fixed abutment together, said conduit cooling system including shaped ducts in the lower part registering with said straight tubes to interconnect the bottom ends thereof and elbows interconnecting the tops thereof, and screw means securing said lower part to said intermediate part.

4,498,186

DATA SET DIAGNOSTIC SYSTEM

Jong-Yeong H. Hwang, Fremont, Calif.; Stevan J. Thayer, Freehold, and Bonnie A. Zimmer, Howell, both of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Division of Ser. No. 196,157, Oct. 10, 1980, Pat. No. 4,398,297.
This application May 12, 1983, Ser. No. 494,111
The portion of the term of this patent subsequent to Aug. 9, 2000, has been disclaimed.
Int. Cl.³ H03K *13/32*
U.S. Cl. 375—7 **6 Claims**



1. A method for initiating the communication of a diagnostic text from a first diagnostic communication device in a telephone voiceband data communication system to a second diagnostic communication device in said system, said system including a third diagnostic communication device which is adapted to communicate to said second device diagnostic texts received by said third device from said first device and intended for said second device, said second and third devices being co-located with respective data sets and at least one of said data sets being of the type adapted to receive input data and to transmit to the other of said data sets via a voiceband telephone channel a voiceband data signal representing said received input data, said method comprising the steps of

transmitting a select from said first device to said third device, said select comprising a first select control character, addresses respectively associated with said first and third devices, a character identifying said select as a select, and a second select control character, and

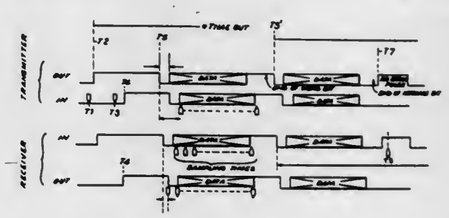
transmitting a downstream communication from said first device to said third device upon receipt by said first device from said third device of an upstream communication, said downstream communication being substantially identical to said select if said upstream communication includes a negative acknowledgement character and said downstream communication being a message if said upstream communication includes a positive acknowledgement character, said message comprising a first message control character, a header which includes an address associated with said second device and which is such as to indicate that said text is not intended for said third device, a second message control character, said text, and a third message control character.

4,498,187

ELECTRONIC POSTAGE METER HAVING PLURAL COMPUTING SYSTEMS

John H. Soderberg, Monroe, N.Y.; Alton B. Eckert, Norwalk, and Robert B. McFiggans, Stamford, both of Conn., assignors to Pitney Bowes Inc., Stamford, Conn.

Division of Ser. No. 089,413, Oct. 30, 1979, Pat. No. 4,301,507.
This application Jun. 24, 1981, Ser. No. 277,171
Int. Cl.³ G06F *15/02*; H04L *25/38*
U.S. Cl. 375—117 **30 Claims**



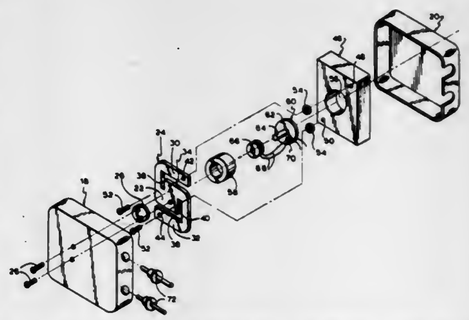
19. In a serial transmission terminal including means for transmitting messages in a format of a plurality of serially transmitted multiple bit words with each word having a start bit and a stop bit at determined signal levels, the improvement wherein said transmitting means comprises means connected to transmit the stop bit of the last word of each message with a signal level different than that of the other stop bits of the respective message.

4,498,188

ELECTRONIC STETHOSCOPE FOR MONITORING THE OPERATION OF A PROSTHETIC VALVE IMPLANTED IN A PATIENT'S HEART

Alan Hofer, Wantagh, N.Y., assignor to Stanton Magnetics, Inc., Plainview, N.Y.

Filed May 4, 1983, Ser. No. 491,547
Int. Cl.³ H04R *1/46*
U.S. Cl. 381—67 **4 Claims**



1. A stethoscope for monitoring a prosthetic valve for a heart, said stethoscope including a transducer comprising:

a casing;

a generally S-shaped spring member of magnetic material having a center portion mounted to an interior surface of said casing and a pair of free arm portions;

a weighted housing mounted to said spring member free arm portions;

a magnetic circuit mounted to said housing and adapted to move therewith, said circuit including an air gap and a coil whereby changes in said air gap induce a voltage change in an output voltage induced in said coil;

said spring including a portion disposed with respect to said housing for varying said air gap in response to movement of said housing with respect to said spring, said spring

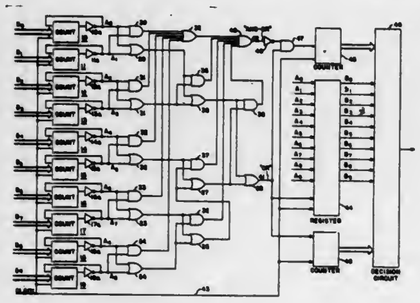
having a length and stiffness cooperating with the mass of said housing to produce a mechanical circuit having a resonant frequency substantially equal to the operating frequency of the valve to be monitored.

4,498,189

COMPARATOR SUITABLE FOR A CHARACTER RECOGNITION SYSTEM

Nobuhiko Mori, Tokyo, Japan, assignor to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Feb. 18, 1982, Ser. No. 350,037
Claims priority, application Japan, Feb. 18, 1981, 56-22563
Int. Cl.³ G06K *9/62*
U.S. Cl. 382—30 **24 Claims**



1. A method of comparing pattern signals to determine whether they are the same as or different from any of a great plurality of predetermined pattern signals, said comparison method comprising the steps of:

(a) storing incoming signals representing differences between the compared signals;

(b) clocking the stored signals to find maximum and minimum differences;

(c) detecting first and last signals to identify said maximum and minimum differences;

(d) finding and comparing the minimum with the next to minimum and the maximum with the next to the maximum; and

(e) extracting the maximums and minimums responsive to said first and last signals.

4,498,190

AQUATIC ANIMAL CONTAINING DEVICES

Fred W. Garlick, III, 3149 SE. Kensington St., Stuart, Fla. 33494

Filed Oct. 5, 1983, Ser. No. 539,177
Int. Cl.³ B65D *33/01*; A01K *63/00*
U.S. Cl. 383—28 **8 Claims**



1. A device for containing live aquatic animals comprising:

an entrance unit and

a mesh bag having an open end, a closed end and tubular central portion,

said entrance unit comprising:

a tubular member having a proximal end and a distal end joined by a central body portion, said proximal end defining a plane normal to the longitudinal axis of said member and said distal end defining a plane that is angled with respect to said axis,

a flexible flap cantilevered at one end to said central body portion of said tubular member distally of said proximal end, the other free end of said flap being substantially coincidental with the portion of said distal end most distal from said proximal end, said flap extending fully across said distal end, and

a bag holding means,

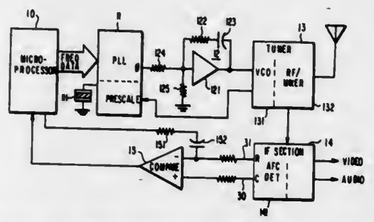
said open end of said bag being held about said central body portion of said tubular member by said holding means.

4,498,191

DIGITAL AUTOMATIC FREQUENCY CONTROL WITH TRACKING

Terrence E. Rogers, Portsmouth, Va., assignor to General Electric Company, Portsmouth, Va.

Filed Jun. 6, 1983, Ser. No. 501,685
Int. Cl.³ H03J *7/02*; H04B *1/26*
U.S. Cl. 455—164 **5 Claims**



1. In a microprocessor controlled phase locked loop tuning system of the type wherein a microprocessor is responsive to a user input frequency selection to produce an output to a programmable frequency divider in the phase locked loop which determines a nominal frequency of a local oscillator in a tuning system, said tuning system including said local oscillator and a mixer, and an intermediate frequency section tuned to an intermediate frequency, said microprocessor being connected to said intermediate frequency section for sampling said intermediate frequency to determine whether the local oscillator needs to be adjusted to accommodate a frequency offset in the recieved signal, the microprocessor using this information to generate an output to the programmable frequency divider which determines the amount of frequency offset of the local oscillator frequency away from the nominal value, the improvement comprising:

the connection between said microprocessor and said intermediate frequency section being an automatic frequency control detector means for providing either a logic "0" or a logic "1" output to said microprocessor depending on whether the output from said intermediate frequency section is above or below a predetermined threshold, said microprocessor being responsive to the output of said detector means to control the direction of change in the tuning of the local oscillator frequency during a frequency search mode of operation; and

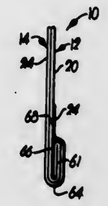
pulse coupling means connected between said microprocessor and the input of said detector means for coupling pulses from said microprocessor to said detector means during a frequency track mode of operation, said microprocessor entering said frequency track mode after the output of said detector means switches logic states a predetermined number of times.

4,498,192

BAG HAVING AN OVERLAPPED CLOSURE AND METHOD OF FABRICATING THE SAME

Arnold F. Becker, Solingen, Fed. Rep. of Germany, and Harold K. Johnson, Junction City, Kans., assignors to Mid America Machine Corp., Junction City, Kans.

Filed Jan. 28, 1983, Ser. No. 462,026
Int. Cl.³ B65D *33/24*
U.S. Cl. 383—126 **14 Claims**



1. A bag comprising:

a pair of facially opposed first and second panels each presenting an inner and an outer face;

side margin closure means for interconnecting said panels with the inner faces thereof in opposed adjacency and presenting, with said panels, at least a pair of elongated side marginal juncture lines;

end closure means for permanently closing at least one end of said bag, said end closure means including

a first, elongated, marginal, transversely extending flap secured to said first panel adjacent said one end and presenting an outer face and an inner face, said first flap extending between and being defined at its lateral ends by a pair of spaced apart cut lines, at least one of said cut lines being located substantially at and along a portion of the length of one of said juncture lines,

said first flap being double folded upon said first panel such that the outer face of the first flap engages said outer face of the first panel at a first region of said first panel, and said inner face of said first flap engages said outer face of the first panel at a second region adjacent said first region;

a second, marginal, transversely extending flap secured to said second panel and presenting an outer face and an inner face, said second flap extending laterally from and being defined at one of its lateral ends by said one cut line;

said second flap being folded over said first flap, with at least a portion of the inner face of the second flap being in engagement with said outer face of said first panel at a third region adjacent said second region; and

means for adhesively and permanently securing said second flap inner face to said third region.

8. A bag-forming tubular container, comprising:

a tubular body having—

a pair of elongated, opposed, flexible first and second panels each formed of a plurality of facially opposed plies and presenting a transverse upper terminal edge, a transverse lower terminal edge and spaced side margins extending between said upper and lower edges;

a pair of gusset panels respectively interconnected to opposed adjacent side margins of said first and second panels, each of said gusset panels having an upper terminal edge and a lower terminal edge, said gusset panels, and said first and second panels, cooperatively presenting a plurality of elongated juncture lines,

said upper terminal edges of said first, second and gusset panels cooperatively defining a substantially continuous, flush closure end; and

a pair of relatively short, laterally spaced cuts in said body extending from said closure end, said cuts being provided through only certain of said plies including the outermost ply while leaving at least one ply uncut, said cuts extending generally along the length of said panels for dividing said closure end into first and second foldable flap portions respectively including portions of said first and second panels.

11. A method of forming a bag comprising the steps of:

providing a bag-forming tube having first and second, facially opposed panels each having an outer face and an inner face, and side margin closure means for interconnectiong said panels and presenting, with the panels, at least a pair of elongated side marginal juncture lines; and

permanently closing one end of said tube to form said bag, by—

cutting said tube adjacent one end and along the length thereof and at laterally spaced locations thereon to define therebetween an elongated, marginal, transversely extending first flap secured to said first panel and having an outer face and an inner face, at least one of said cuts being located substantially at and along a portion of the length of one of said juncture lines, said first flap being defined at its lateral ends by said cut lines;

folding said first flap upon said outer face of said first panel, and securing said first flap outer face to said outer face of the first panel at a first region thereon;

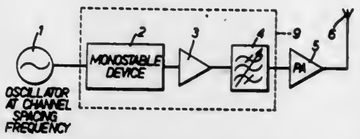
additionally folding said first flap upon said first panel until said inner face of said first flap engages said outer face of the first panel at a second region thereon adjacent said first region, and folding a second flap secured to said second panel over said first flap until a portion of the second flap overlies said first flap and extends beyond the first flap and engages said first panel outer face at a third region, and securing said second flap to said third region, said second flap extending laterally from and being defined at one of its lateral ends by said one cut line.

4,498,193

JAMMER TRANSMITTER

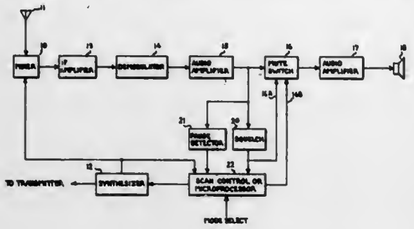
Christopher K. Richardson, Romsey, England, assignor to Plessey Overseas Limited, Ilford, England

Filed Jun. 30, 1983, Ser. No. 509,397
Claims priority, application United Kingdom, Jul. 1, 1982, 8219063; Nov. 22, 1982, 8233226
Int. Cl.³ H04K *3/00*
U.S. Cl. 455—1 **8 Claims**



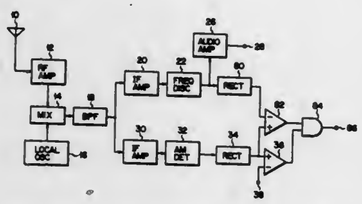
1. A jammer transmitter comprising a comb spectrum generator which includes pulse generator means adapted to produce a pulse train at a frequency corresponding to the channel spacing of signals to be jammed, and a bandpass filter which has a passband including a bandwidth occupied by the signals to be jammed and which is responsive to the pulse train for providing within this bandwidth comb generator output signals at harmonics of the pulse train frequency, said transmitter further comprising a power amplifier operative to amplify the comb generator output signals so as to produce jamming pulses and aerial means for radiating the jamming pulses, the width of the pulses of the pulse train being short enough to ensure that the harmonics of the pulse train frequency occur throughout the said bandwidth.

4,498,194
MULTIFREQUENCY SCANNING RECEIVER WITH PRIORITY FREQUENCY MONITORING
Johannes J. Vandegraaf, Lynchburg, Va., assignor to General Electric Company, Lynchburg, V.I.RGINIA
Filed Jan. 31, 1983, Ser. No. 462,313
Int. Cl.³ H03J *7/20*; H04B *1/26*
U.S. Cl. 455—166 **10 Claims**



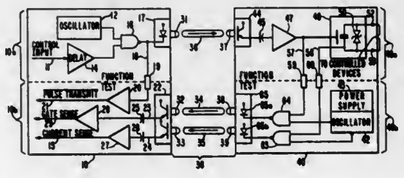
1. In a scanning radio receiver having a microprocessor for causing the receiver to switch reception to each of a plurality of radio frequency channels, one of which is a priority channel and the others of which are nonpriority channels, and for stopping said switching in response to reception of a radio frequency signal, the improvement comprising:
detector means coupled to the microprocessor for detecting the disappearance of a basebond information signal on a nonpriority channel and signalling the microprocessor to switch reception to said priority channel.

4,498,195
RADIO INTERFERENCE DETECTION DEVICE FOR USE IN A MULTI-CHANNEL ACCESS ANGLE-MODULATION RADIO SYSTEM
Tetsuo Ool, Tokyo; Hiroshi Watanabe, Sendai; Akio Gotoh, Tokyo; Shuitsu Tsutsumi, Tokyo; Ryohei Oba, Tokyo; Kolchi Ito, Tokyo, and Syouzi Huse, Tokyo, all of Japan, assignors to Nippon Telegraph & Telephone Public Corporation, Tokyo and Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, both of, Japan
Filed Mar. 4, 1983, Ser. No. 472,246
Claims priority, application Japan, Mar. 5, 1982, 57-34650; Mar. 5, 1982, 57-34651
Int. Cl.³ H04B *1/16, 1/10*
U.S. Cl. 455—205 **5 Claims**



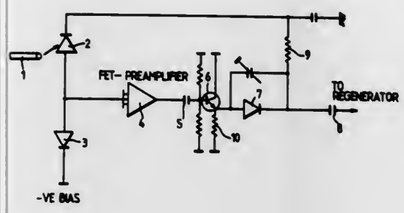
4. A radio interference detection device for use in a multi-channel access angle-modulation radio system including at least one stationary station and at least one mobile station, said device comprising:
detecting means for AM-detecting a reception signal prior to angle demodulation and for producing an AM component of the reception signal;
rectifying means for rectifying an output signal from said detecting means; and
determining means for determining a level of an output signal from said rectifying means and for detecting interference in accordance with a determination result, said determining means comprising:
angle demodulating means for angle-demodulating the reception signal;
a first comparator for comparing a DC level of an output signal from said angle demodulating means and a level of the output signal from said rectifying means;
a second comparator for producing a detection signal when the level of the output signal from said rectifying means exceeds a predetermined level; and
a gate for passing said detecting signal from said second comparator only when said first comparator produces a signal indicating that a demodulated output from said angle demodulating means is smaller than the output signal from said rectifying means.

4,498,196
TESTABLE OPTICALLY ISOLATED CONTROL CIRCUIT
Peter W. Holoyda; Dennis W. Hollenbeck, and William D. Hill, all of San Jose, Calif., assignors to General Electric Company, San Jose, Calif.
Filed Jul. 27, 1982, Ser. No. 402,368
Int. Cl.³ H04B *9/00*
U.S. Cl. 455—607 **1 Claim**



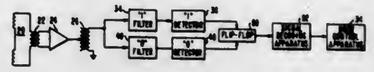
1. In a system including a control signal transmitting station physically isolated from a control signal receiving station for controlling the state of a controlled device, a method for monitoring at said transmitting station the operation of said system including the state of an operating relay for controlling said controlled device, the transmission of said control signal by said transmitting station, and the reception of said control signal by said receiving station, comprising the steps of:
1. providing transmitting means for transmitting said control signal from said transmitting station to said receiving station in response to an input signal applied to an input terminal of said transmitting station;
2. providing first sensing means for monitoring said transmitting means and providing a first monitoring signal indicative of the transmission of said control signal;
3. providing receiving means at said receiving station for receiving said control signal from said transmitting means and for changing the state of said operating relay for said controlled device in response thereto;
4. providing second sensing means for monitoring said receiving means and for transmitting a second monitoring signal indicative of the receipt of said control signal;
5. providing third sensing means for monitoring said operating relay for said controlled device and for transmitting a third monitoring signal indicative of actuation of said operating relay; and
6. applying a test control signal to said input terminal of said transmitting station of a duration sufficient to change the state of said first, second and third monitoring signals indicative of proper operation of said system but of insufficient duration to cause change of state of said controlled device whereby operation of said system is monitored and can be tested without disruption of the normal operation of said controlled device and whereby normal operation of said controlled device does not disrupt operation of said system.

4,498,197
OPTICAL RECEIVER
David P. M. Chown, Harlow, England, assignor to International Standard Electric Corporation, New York, N.Y.
Filed Jul. 7, 1982, Ser. No. 395,780
Claims priority, application United Kingdom, Jul. 7, 1981, 8120911
Int. Cl.³ H04B *9/00*
U.S. Cl. 455—619 **1 Claim**



1. An optical receiver for receiving optical energy from an optical fibre transmission link, which includes a reverse-biassed p-i-n diode onto which light from the optical fibre link is directed, so that the diode generates a photo-current whose value depends on the magnitude of the incident optical power, a forward-biassed p-i-n diode connected in series with the reverse-biassed diode so that the photo-current flows in the forward-biassed diode, an amplifier whose input is connected to the junctions between the two diodes, and a third p-i-n diode connected to the output of the amplifier so as to pass the output of the amplifier, said third p-i-n diode being forward biassed and arranged to pass the same average current as do the first two-mentioned p-i-n diodes.

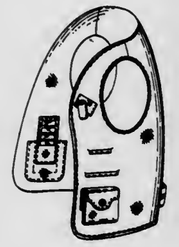
4,498,198
BINARY SIGNAL DECODING APPARATUS AND METHOD
Paul F. Buzard, Jefferson Borough, and Robert J. Harrington, Duquesne, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.
Filed Sep. 17, 1982, Ser. No. 419,373
Int. Cl.³ H03D *3/00*
U.S. Cl. 375—91 **8 Claims**



1. In apparatus for decoding an input signal word having a plurality of bits and a known transmission rate, said signal word including first and second coded message frequencies, the combination of
means for filtering and detecting a first message frequency signal having one of a high and low value in accordance with each bit of the comma free code of said first frequency,
means for filtering and detecting a second message frequency signal having one of a high and low value in accordance with each bit of the comma free code of said second frequency,
means providing a bit of a third signal for each bit of the first and second message frequency signals,
means for sampling each said bit of the third signal at a sampling rate that is a selected non-unity multiple of said transmission rate to provide a sample set for each bit of the third signal consisting of an odd plurality of samples,
means for determining the binary value of each bit of the third signal in accordance with the sum of the odd plurality of samples being greater than a predetermined number, and
means for establishing the binary value for all of the plurality of bits of the input signal word.

277,424
VEST
Gisela Beker, 1 Oceans West, 7 B5, Daytona Beach Shores, Fla. 32018
Filed Aug. 16, 1982, Ser. No. 408,707
Term of patent 14 years
U.S. Cl. D2—190





277,426
CAP
Constantine Eisinger, 7830 Aberdeen Rd., Bethesda, Md. 20814
Filed Aug. 10, 1982, Ser. No. 406,838
Term of patent 14 years
U.S. Cl. D2—246





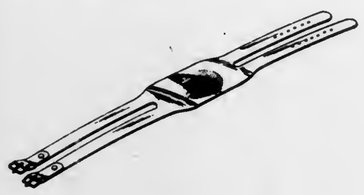
277,425
SAFETY HELMET
John B. Higginson, Sydney, Australia, assignor to Protector Safety Industries Limited, North Sydney, Australia
Filed Dec. 17, 1981, Ser. No. 331,786
Term of patent 14 years
U.S. Cl. D2—231



277,427
ATHLETIC SHOE UPPER WITH POCKET COVERING FLAP
Robert J. Gamm, St. Louis County, Mo., assignor to Kangaroos U.S.A. Inc., St. Louis, Mo.
Continuation-in-part of Ser. No. 107,093, Dec. 26, 1979, Pat. No. Des. 261,823. This application Oct. 23, 1981, Ser. No. 314,135
Term of patent 14 years
U.S. Cl. D2—309



277,428
BELT
Maud K. H. Kjellen, Malmo, Sweden, assignor to Svenska Tobaks AB, Stockholm, Sweden
Filed May 3, 1982, Ser. No. 374,194
Term of patent 14 years
U.S. Cl. D2—380



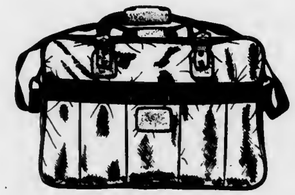
277,429
SEWING WEIGHT KIT
Jean LeBoutillier, 2465 Donavan Ave., Bellingham, Wash. 98225
Filed Oct. 26, 1981, Ser. No. 315,279
Term of patent 14 years
U.S. Cl. D3—18



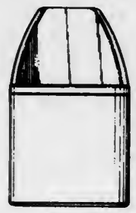
277,430
COMBINED CROCHET HOOK AND CAP
Hidekazu Okada, Ashiya, Japan, assignor to Clover Mfg. Co., Ltd., Osaka, Japan
Filed Dec. 9, 1981, Ser. No. 329,077
Claims priority, application Japan, Aug. 24, 1981, 56-37390
Term of patent 14 years
U.S. Cl. D3—28



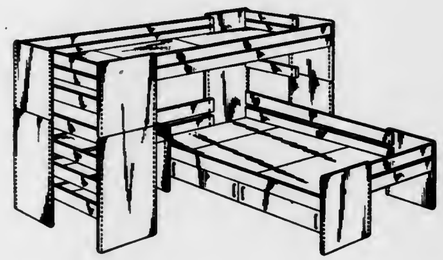
277,431
LUGGAGE
Harvey J. Bomes, Wellesey, Mass.; John J. Migliore, Barrington, R.I.; John Pulichino, Wellesey, and Jack Barber, Cambridge, both of Mass., assignors to American Tourister, Inc., Warren, R.I.
Filed Dec. 9, 1982, Ser. No. 448,053
Term of patent 14 years
U.S. Cl. D3—48



277,432
CHILD'S CHAIR
Mel Appel, Nine Nottingham Rd., Livingston, N.J. 05039, and George Kress, Scotch Plains, N.J., assignors to Mel Appel, Livingston, N.J.
Filed May 21, 1982, Ser. No. 380,683
Term of patent 14 years
U.S. Cl. D6—364



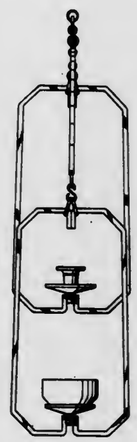
277,433
COMBINED BUNK BED, DESK AND STORAGE UNIT
James R. Hull, 148 S. Westgate Ave., Los Angeles, Calif. 90049
Filed May 24, 1982, Ser. No. 381,054
Term of patent 14 years
U.S. Cl. D6—384



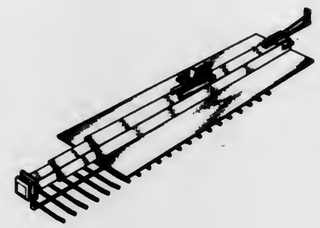
277,434
HOLDER FOR DISPOSABLE SAFETY RAZOR
Clemens A. Iten, Staunton, Va., assignor to American Safety Razor Company, Verona, Va.
Filed Sep. 10, 1982, Ser. No. 416,468
Term of patent 14 years
U.S. Cl. D6—526



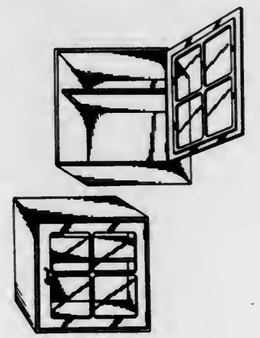
277,435
SUSPENDED HOLDER FOR PLANTS, CANDLES OR THE LIKE
David M. F. Chan, 1213 King Dr., El Cerrito, Calif. 94530, and Michael L. F. Chan, 1407 Arch St., Berkeley, Calif. 94708
Filed Sep. 15, 1983, Ser. No. 532,657
Term of patent 14 years
U.S. Cl. D6—403



277,436
EXTENDABLE TIE RACK AND COVER THEREFOR
Charles E. Benedict, Tallahassee, Fla., assignor to Telescoping Tie Racks, Inc., Winter Haven, Fla.
Filed Dec. 27, 1982, Ser. No. 453,053
Term of patent 14 years
U.S. Cl. D6—315



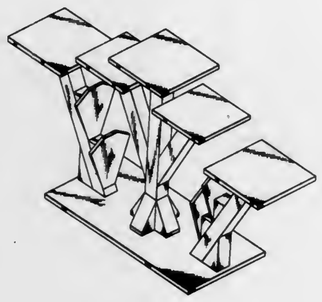
277,437
FURNITURE MODULE OR THE LIKE
Ristomatti Ratia, 198 W. Norwalk Rd., Darien, Conn. 06820, and Jukka Lehtiö, Veneenkatu 5,, SF-21200 Raisio, Finland
Filed Mar. 23, 1982, Ser. No. 361,033
Claims priority, application Finland, Oct. 2, 1981, 730/81
Term of patent 14 years
U.S. Cl. D6—470



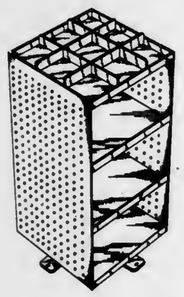
277,438
TABLE
Franco Passarello, Novara, Italy, assignor to Fratelli Saporiti Industria Arredamenti di Saporiti Sergio e Giorgio, Besnate, Italy
Filed Aug. 9, 1982, Ser. No. 406,675
Term of patent 14 years
U.S. Cl. D6—483



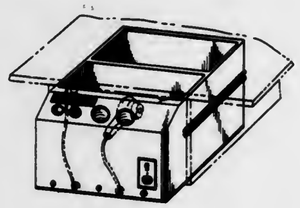
277,439
STEREO STAND
Lonzie Leath, 3810 Kimball Ridge Dr., Dallas, Tex. 75233
Filed Aug. 23, 1982, Ser. No. 410,352
Term of patent 14 years
U.S. Cl. D6—474



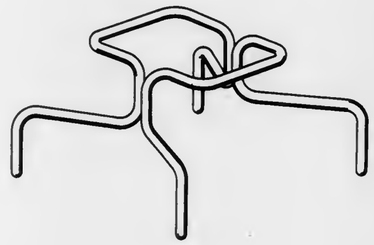
277,440
ROTATING TOOL STORAGE CABINET WITH SHELVES
Jerry G. Cartwright, Ellwood City, Pa., assignor to Wesco Manufacturing, Inc., Aurora, Ill.
Filed Aug. 23, 1982, Ser. No. 410,850
Term of patent 14 years
U.S. Cl. D6—476



277,441
STORAGE DRAWER FOR HAIR CARE IMPLEMENTS
Charles L. Handley, 6824 Orchard, Dearborn, Mich. 48126
Filed Jul. 19, 1982, Ser. No. 399,644
Term of patent 14 years
U.S. Cl. D6—510



277,442
FRAME FOR A COMBINED TABLE AND SEATING UNIT
James L. Crowell, 135 S. 18th St., Philadelphia, Pa. 19103
Filed Aug. 24, 1982, Ser. No. 411,138
Term of patent 14 years
U.S. Cl. D6—499



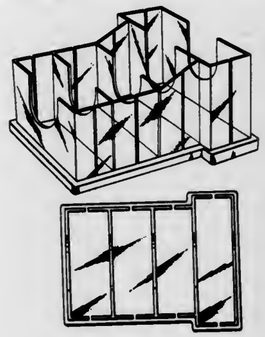
277,443
CHAIR
Edsel E. Murry, Christiana, Tenn., assignor to Samsonite Corporation, Denver, Colo.
Filed May 27, 1982, Ser. No. 382,789
Term of patent 14 years
U.S. Cl. D6—366



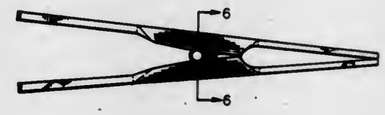
277,444
TORTE PLATE
Larry R. Laslo, New York, N.Y., assignor to American Commercial, Incorporated, Secaucus, N.J.
Filed Sep. 15, 1982, Ser. No. 418,462
Term of patent 14 years
U.S. Cl. D7—5



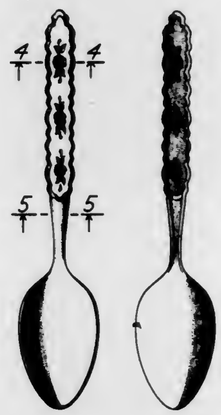
277,445
BAGEL SLICING JIG
Leonard Levine, 2978 Beechwood Blvd., Pittsburgh, Pa. 15217
Continuation-in-part of Ser. No. 455,220, Jan. 3, 1983, , and a continuation-in-part of Ser. No. 512,244, Jul. 11, 1983,. This application May 7, 1984, Ser. No. 608,036
Term of patent 14 years
U.S. Cl. D7—43



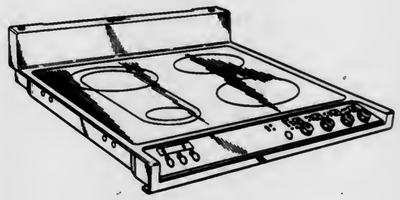
277,446
SPRING LOADED CHOP STICKS
Clive Hollinshead, 29572 Spotted Bull La., San Juan Capistrano, Calif. 92675
Filed Sep. 9, 1982, Ser. No. 416,122
Term of patent 14 years
U.S. Cl. D7—105



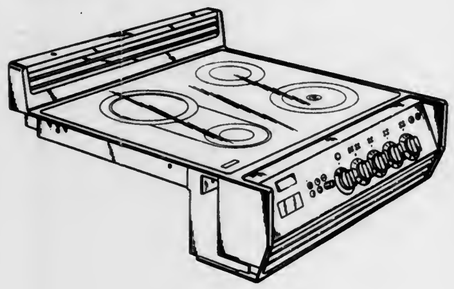
277,447
SPOON OR SIMILAR ARTICLE
Colin B. Richmond, II, Oneida, N.Y., assignor to Oneida Ltd., Oneida, N.Y.
Filed Nov. 1, 1982, Ser. No. 438,329
Term of patent 14 years
U.S. Cl. D7—137



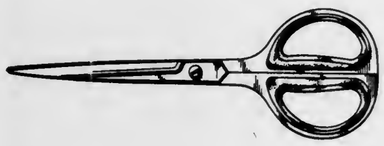
277,448
FLAT COOKING PANEL
Roland Vetter, Giengen, and Rolf Feil, Günzburg-Reisenburg, both of Fed. Rep. of Germany, assignors to Bosch-Siemens Hausgerate GmbH, Stuttgart, Fed. Rep. of Germany
Filed Apr. 22, 1982, Ser. No. 370,621
Claims priority, application Fed. Rep. of Germany, Oct. 22, 1981, MR 5381
Term of patent 14 years
U.S. Cl. D7—346



277,449
COOKING PANEL
Roland Vetter, Giengen, and Rolf Feil, Günzburg-Reisenburg, both of Fed. Rep. of Germany, assignors to Bosch-Siemens Hausgerate GmbH, Stuttgart, Fed. Rep. of Germany
Filed Jul. 9, 1982, Ser. No. 396,653
Claims priority, application Fed. Rep. of Germany, Jan. 16, 1982, MR 5401
Term of patent 14 years
U.S. Cl. D7—346



277,450
PAPER SCISSORS
Toru Hayashi, 1 Obora, Seki, Gifu, 501-32, Japan
Filed Oct. 6, 1982, Ser. No. 433,167
Term of patent 14 years
U.S. Cl. D8—57



277,451
CORDLESS JIG SAW
Edward A. Barnik, Reisterstown, Md., assignor to Black & Decker Inc., Newark, Del.
Filed Apr. 29, 1982, Ser. No. 373,229
Term of patent 14 years
U.S. Cl. D8—64



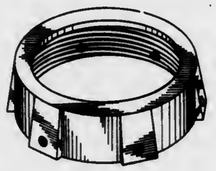
277,452
HUNTING KNIFE
Göran Ulvtorp, Kaprifolvägen 19, S-260 40 Viken, Sweden
Filed Oct. 18, 1982, Ser. No. 434,754
Claims priority, application Sweden, May 3, 1982, 82-1140
Term of patent 14 years
U.S. Cl. D8—99



277,453
HINGE PIN LOCK
Richard Wilman, 8451 W. McNab Rd., Tamarac, Fla. 33321
Filed Jun. 28, 1982, Ser. No. 392,716
Term of patent 14 years
U.S. Cl. D8—323



277,454
GROUNDING BUSHING
Ben W. Meinhardt, 6615 Hwy. 12, Maple Plain, Minn. 55359
Filed Sep. 13, 1982, Ser. No. 417,109
Term of patent 14 years
U.S. Cl. D8—397



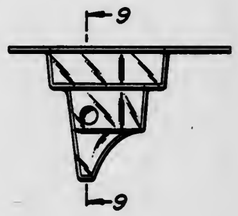
277,455
PERFUME BOTTLE
Eli Tordjman, Beverly Hills, Calif., assignor to Diamifray, Inc., Los Angeles, Calif.
Filed May 25, 1982, Ser. No. 381,974
Term of patent 14 years
U.S. Cl. D9—307



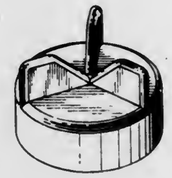
277,456
PERFUME BOTTLE
Joseph Kanoui, Geneva, Switzerland, assignor to Interdica S.A., Villars-sur-Glane, Switzerland
Continuation-in-part of Ser. No. 294,615, Aug. 20, 1981,. This application May 25, 1982, Ser. No. 381,879
Claims priority, application France, Dec. 1, 1981, 814.118
Term of patent 14 years
U.S. Cl. D9—377



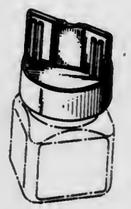
277,457
PACKAGING CONTAINER FOR A STOPCOCK OR THE LIKE
Raymond Lewandowski, New Providence, N.J., assignor to Becton, Dickinson and Company, Paramus, N.J.
Filed May 3, 1982, Ser. No. 373,942
Term of patent 14 years
U.S. Cl. D9—415



277,458
CONTAINER CLOSURE
Frank J. Neggers, Hopatcong, N.J., assignor to Warner-Lambert Company, Morris Plains, N.J.
Filed Nov. 17, 1982, Ser. No. 442,329
Term of patent 14 years
U.S. Cl. D9—443



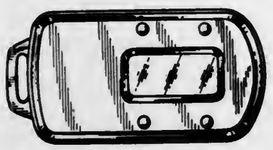
277,459
BOTTLE CAP
Ronald L. Baum, Bala Cynwyd; Abraham Leibson, Buckingham, and A. Neal Siegel, Philadelphia, all of Pa., assignors to Smith-Kline Beckman Corporation, Philadelphia, Pa.
Filed Nov. 26, 1982, Ser. No. 444,924
Term of patent 14 years
U.S. Cl. D9—443



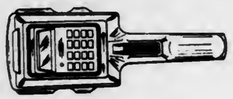
277,460
CAULKING TUBE VALVE
Kenneth Vadnais, 20322 Beatrice, Livonia, Mich. 48152
Filed Apr. 13, 1982, Ser. No. 367,890
Term of patent 14 years
U.S. Cl. D9—447



277,461
PORTABLE CHRONOMETER
Robert M. Berger, Warren, Vt., assignor to Intercon Purchasing Industries (U.S.A.) Ltd., Forest Hills, N.Y.
Filed Jul. 16, 1982, Ser. No. 398,946
Term of patent 14 years
U.S. Cl. D10—31



277,462
COMBINED FABRIC MEASURING AND COST COMPUTING DEVICE
Donald M. Jacobsen, Ladue; Tadmor Shalon, Clayton; Walter A. Thater, Kirkwood, and Steve Somogye, Jr., Jennings, all of Mo., assignors to The Measuregraph Company, St. Louis, Mo.
Filed Sep. 24, 1982, Ser. No. 422,954
Term of patent 14 years
U.S. Cl. D10—70





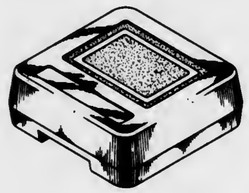
277,463
CHILD'S CLOTHES RACK AND GROWTH MEASURING AND REGISTERING UNIT
Lowell C. Bergstedt, and Marie C. Bergstedt, both of 47 Dartmouth St., San Francisco, Calif. 94134
Filed Aug. 25, 1982, Ser. No. 411,490
Term of patent 14 years
U.S. Cl. D10—71



277,464
CHILD'S CLOTHES RACK AND GROWTH MEASURING AND REGISTERING UNIT
Lowell C. Bergstedt, and Marie C. Bergstedt, both of 47 Dartmouth St., San Francisco, Calif. 94134
Filed Aug. 25, 1982, Ser. No. 411,491
Term of patent 14 years
U.S. Cl. D10—71



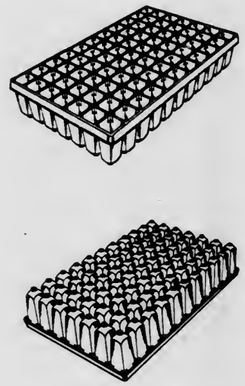
277,465
PORTABLE EMERGENCY ALARM TRANSMITTER
John B. MacDonald, Dedham, Mass., assignor to Lifeline Systems, Inc., Watertown, Mass.
Filed Jan. 10, 1983, Ser. No. 456,767
Term of patent 14 years
U.S. Cl. D10—106



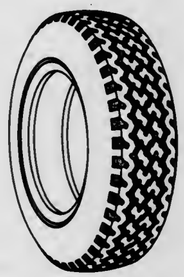
277,466
JEWELRY PIN
Edward H. Chien, Encino, Calif., assignor to Ooh La La!, Inc., Monterey Park, Calif.
Filed Nov. 26, 1982, Ser. No. 444,676
Term of patent 14 years
U.S. Cl. D11—41



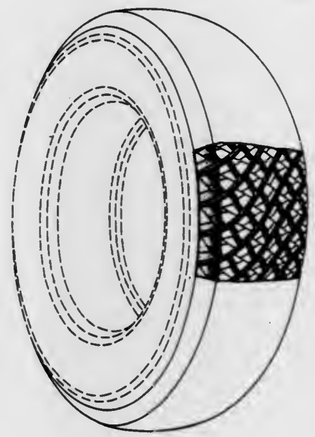
277,467
MULTIPLE PLANT CONTAINER
Tauno Turunen, Imatra, Finland, assignor to Enso-Gutzeit Oy, Imatra, Finland
Filed Dec. 15, 1982, Ser. No. 450,123
Claims priority, application Finland, Jun. 15, 1982, 530/82
Term of patent 14 years
U.S. Cl. D11—155



277,468
VEHICLE TIRE
Hideaki Nagayasu, Kakogawa, Japan, assignor to Sumitomo Rubber Industries, Ltd., Kobe, Japan
Filed Jul. 13, 1982, Ser. No. 397,867
Term of patent 14 years
U.S. Cl. D12—147



277,469
TIRE TREAD AND BUTTRESS
Ron L. Messer, Simpsonville, S.C., assignor to Compagnie Generale des Etablissements Michelin, Clermont-Ferrand, France
Filed Sep. 24, 1982, Ser. No. 423,239
Term of patent 14 years
U.S. Cl. D12—151



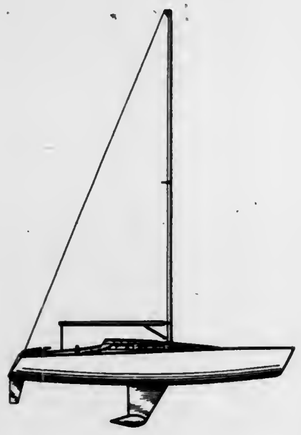
277,470
VAN RUNNING BOARD
Dominic Matti, P.O. Box 2296, Elkhart, Ind. 46515
Filed Sep. 27, 1982, Ser. No. 424,162
Term of patent 14 years
U.S. Cl. D12—203



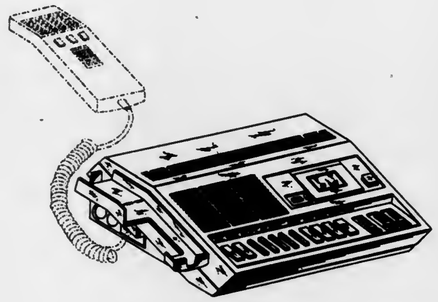
277,471
FRONT FACE OF A VEHICLE WHEEL
Hans P. Uder, Durmersheim, Fed. Rep. of Germany, assignor to Compagnie Generale des Etablissements Michelin, Clermont-Ferrand, France
Filed Jun. 23, 1982, Ser. No. 391,362
Claims priority, application France, Dec. 30, 1981, 814620
Term of patent 14 years
U.S. Cl. D12—211

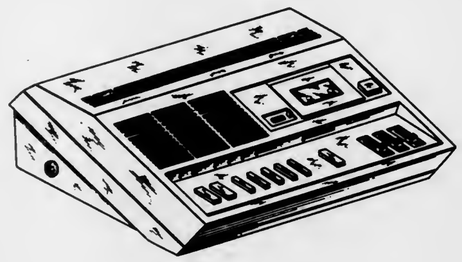


277,472
SAILBOAT
Hobart L. Alter, Capistrano Beach, Calif., assignor to Coast Catamaran Corporation, Oceanside, Calif.
Filed Aug. 9, 1982, Ser. No. 406,851
Term of patent 14 years
U.S. Cl. D12—303

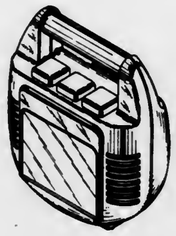


277,473
DICTATING MACHINE
Michael W. K. Young, Flushing, N.Y., assignor to North American Philips Corporation, New York, N.Y.
Filed Apr. 5, 1982, Ser. No. 365,714
Term of patent 14 years
U.S. Cl. D14—3

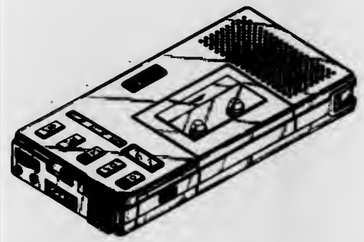




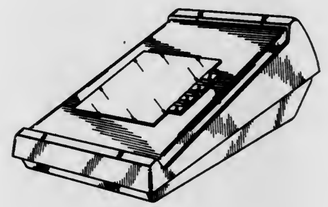
277,474
CASSETTE OPERATED MUSIC BOX
Akifumi Miura, Tokyo, Japan, assignor to Tomy Kogyo Company, Inc., Japan
Filed Jun. 7, 1982, Ser. No. 385,687
Term of patent 14 years
U.S. Cl. D14—6



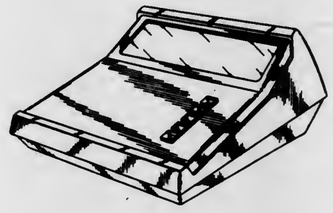
277,475
TAPE RECORDER
Kazuaki Takata, Hachioji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan
Filed Jul. 13, 1982, Ser. No. 397,822
Term of patent 14 years
U.S. Cl. D14—6



277,476
TELEPHONE DIGITAL DATA INTERFACE CONSOLE
Donald A. Foggia, Ocean, N.J., and Rolf E. Schneider, Boca Raton, Fla., assignors to Siemens Corporation, Iselin, N.J.
Filed Mar. 26, 1982, Ser. No. 362,140
Term of patent 14 years
U.S. Cl. D14—52



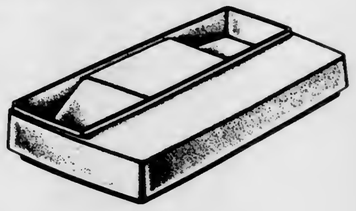
277,477
TELEPHONE BUSY LAMP FIELD CONSOLE
Donald A. Foggia, Ocean, N.J., and Rolf E. Schneider, Boca Raton, Fla., assignors to Siemens Corporation, Iselin, N.J.
Filed Mar. 26, 1982, Ser. No. 362,166
Term of patent 14 years
U.S. Cl. D14—52



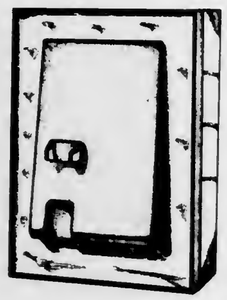
277,478
TELEPHONE ATTENDANT CONSOLE
Donald A. Foggia, Ocean, N.J., and Rolf E. Schneider, Boca Raton, Fla., assignors to Siemens Corporation, Iselin, N.J.
Filed Mar. 26, 1982, Ser. No. 362,167
Term of patent 14 years
U.S. Cl. D14—58



277,479
TELEPHONE STAND
Donald M. Genaro, Haworth, N.J.; John N. McGarvey, Drexel Hill, Pa.; Arthur L. Stern, Jr., Noblesville, Ind., and Alvin R. Tilley, Red Bank, N.J., assignors to AT&T Technologies, New York, N.Y.
Continuation-in-part of Ser. No. 455,886, Jan. 5, 1983,. This application May 29, 1984, Ser. No. 614,752
Term of patent 14 years
U.S. Cl. D14—60

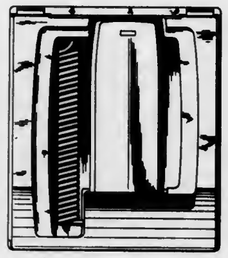


277,480
WALL TELEPHONE STAND OR SIMILAR ARTICLE
William V. Jackwicz, Spring Lake Heights; Sompoppol Jampathom, Ocean, both of N.J.; John N. McGarvey, Drexel Hill, Pa., and Alvin R. Tilley, Red Bank, N.J., assignors to AT&T Technologies, New York, N.Y.
Filed May 10, 1984, Ser. No. 608,720
Term of patent 14 years
U.S. Cl. D14—61



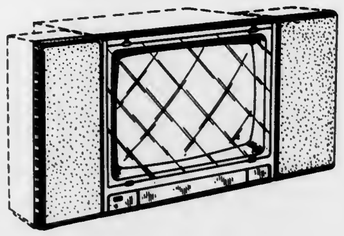


277,481
PORTABLE HOUSING FOR A TELEPHONE HANDSET
Dennis J. Gallant, Cincinnati, Ohio, and Robert T. Fussner, Brookville, Ind., assignors to Hill-Rom Company, Inc., Batesville, Ind.
Filed Jun. 11, 1982, Ser. No. 387,468
Term of patent 14 years
U.S. Cl. D14—65





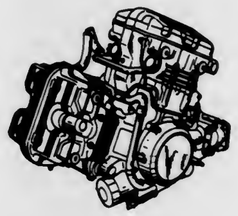
277,482
COMBINED VIDEO MONITOR AND LOUDSPEAKER SYSTEM FRONT PANEL ASSEMBLY
Hari Matsuda, Evanston; Anthony J. Cascarano, Lake Forest, and Charles M. Schwimmer, Chicago, all of Ill., assignors to International Jensen Incorporated, Schiller Park, Ill.
Filed Jun. 2, 1982, Ser. No. 384,401
Term of patent 14 years
U.S. Cl. D14—84



277,483
ANTENNA
Donald R. Newcomb, San Marcos, Tex., assignor to Butternut Electronics Co., Lockhart, Tex.
Filed Jul. 9, 1982, Ser. No. 396,709
Term of patent 14 years
U.S. Cl. D14—86



277,485
INTERNAL COMBUSTION ENGINE FOR MOTORCYCLE
Masato Iwakura, Asaka, and Mutsuo Hirose, Niiza, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Mar. 18, 1982, Ser. No. 359,503
Claims priority, application Japan, Sep. 19, 1981, 56/41637
Term of patent 14 years
U.S. Cl. D15—3



277,484
COMPUTER
Richard J. Dickinson, 36 The Paddock, Somersham, Huntingdon, Cambridgeshire, England
Filed Oct. 13, 1982, Ser. No. 434,162
Claims priority, application United Kingdom, Apr. 14, 1982, 1006157
Term of patent 14 years
U.S. Cl. D14—100

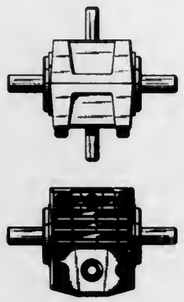


277,486
GRINDING WHEEL
Yoshikazu Yanagiura, Osaka, Japan, assignor to New Registon Co., Ltd., Kaizuka, Japan
Filed Mar. 18, 1982, Ser. No. 359,525
Term of patent 14 years
U.S. Cl. D15—126

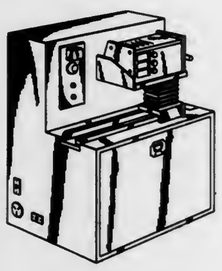




277,487
WORM GEAR
Sven Nilsson, Partille, Sweden, assignor to SKF Nova AB, Gotebort, Sweden
Filed Nov. 22, 1982, Ser. No. 443,462
Claims priority, application Sweden, Jun. 18, 1982, 82-1616
Term of patent 14 years
U.S. Cl. D15—149



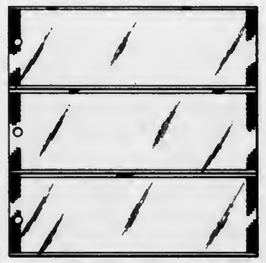
277,488
CONTACT PRINTER FOR PROOFING
Walter Loesch, Sydney, Australia, assignor to Kolorkraft Photography Pty. Ltd., New South Wales, Australia
Filed Apr. 28, 1982, Ser. No. 372,534
Term of patent 14 years
U.S. Cl. D16—29



277,489
GREETING CARD OR SIMILAR ARTICLE
Sheldon Holson, Norwalk, Conn., assignor to The Holson Company, Wilton, Conn.
Filed Jun. 20, 1983, Ser. No. 506,704
Term of patent 14 years
U.S. Cl. D19—1



277,490
EMBOSSED POCKETED ALBUM PAGE
Roger A. Wenstrom; Donald E. Irvin, and William W. Holes, all of St. Cloud, Minn., assignors to The Holes-Webway Company, St. Cloud, Minn.
Filed Sep. 30, 1982, Ser. No. 430,262
Term of patent 14 years
U.S. Cl. D19—33



277,491
RATTLE
Erik P. Tapdrup, Virum, Denmark, assignor to Interlego A.G., Baar, Switzerland
Filed Jun. 11, 1982, Ser. No. 387,522
Term of patent 14 years
U.S. Cl. D21—65



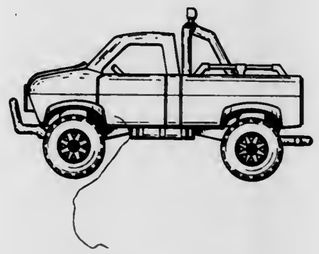
277,492
COMBINED PUZZLE AND TRAY
Pamela J. Lockhart, Sterling Heights, and Daniel J. Cooney, Birmingham, both of Mich., assignors to CPG Products Corp., Minneapolis, Minn.
Filed Jul. 12, 1982, Ser. No. 397,641
Term of patent 14 years
U.S. Cl. D21—104



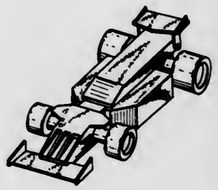
277,493
TOY VEHICLE
Ralph A. McQuarrie, Berkeley, Calif., assignor to Lucas Film, Ltd., San Rafael, Calif.
Filed Sep. 30, 1982, Ser. No. 429,775
Term of patent 14 years
U.S. Cl. D21—130



277,494
TOY PICKUP TRUCK
Karl D. Lerch, East Aurora, N.Y., assignor to The Quaker Oats Company, Chicago, Ill.
Filed Jan. 27, 1983, Ser. No. 461,610
Term of patent 14 years
U.S. Cl. D21—136



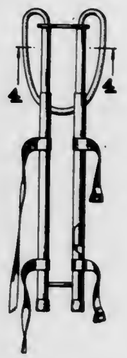
277,495
TOY RACE CAR
Andris Kalns, East Aurora, N.Y., assignor to The Quaker Oats Company, Chicago, Ill.
Filed Jan. 21, 1983, Ser. No. 459,773
Term of patent 14 years
U.S. Cl. D21—137



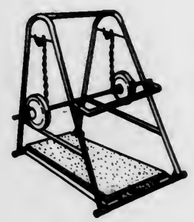
277,496
TOY DUCK
Valerie Daugherty, Alta Loma, Calif., assignor to Questor Corp., Tampa, Fla.
Filed Sep. 30, 1982, Ser. No. 431,661
Term of patent 14 years
U.S. Cl. D21—160



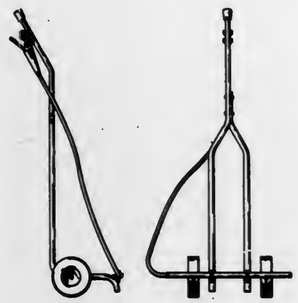
277,497
ABDOMINAL EXERCISER FOR ATTACHMENT TO CHAIR OR THE LIKE
Martin W. Johnson, R.R. #1, Box 95, Portland, N. Dak. 58274
Filed Nov. 1, 1982, Ser. No. 439,053
Term of patent 14 years
U.S. Cl. D21—191



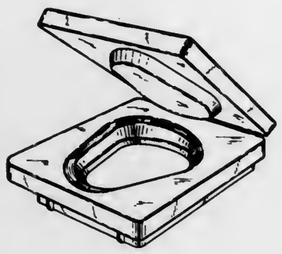
277,498
EXERCISE PLATFORM
Jack V. Miller, Sierra Madre, Calif., assignor to Gravity Guidance, Inc., Duarte, Calif.
Filed Nov. 15, 1982, Ser. No. 441,445
Term of patent 14 years
U.S. Cl. D21—191



277,499
COMBINED SPRAYER AND CADDY
Joseph J. Slager, 2212 Emerson St., Manitowoc, Wis. 54220
Filed Nov. 24, 1982, Ser. No. 444,100
Term of patent 14 years
U.S. Cl. D23—35



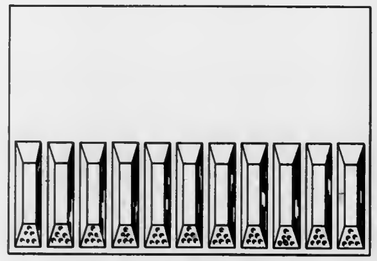
277,500
COMBINED TOILET SEAT AND COVER
Leland S. McGill, P.O. Box 11, Portage, Ind. 46368
Filed Sep. 27, 1982, Ser. No. 423,720
Term of patent 14 years
U.S. Cl. D23—71



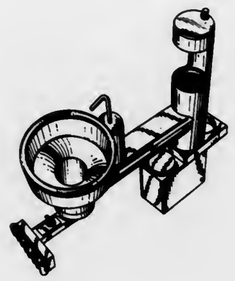
277,501
OIL-FIRED SPACE HEATER
Kazuharu Nakamura, Nagoya, Japan, assignor to Toyotomi Kogyo Co., Ltd., Aichi, Japan
Filed Oct. 12, 1982, Ser. No. 434,142
Claims priority, application Japan, Apr. 9, 1982, 57/15398
Term of patent 14 years
U.S. Cl. D23—123



277,502
ROOF EDGE VENTILATOR
Jerry Williamson, and Keith Muters, both of P.O. Box 159, Woodburn, Oreg. 97071
Filed Sep. 13, 1982, Ser. No. 418,099
Term of patent 14 years
U.S. Cl. D23—153



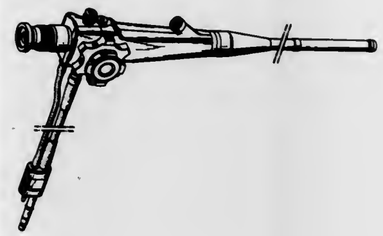
277,503
DENTAL CUSPIDOR
Danny M. Truette, Pineville, and George V. McGaha, Charlotte, both of N.C., assignors to The Pelton and Crane Company, Charlotte, N.C.
Filed Jun. 3, 1982, Ser. No. 384,802
Term of patent 14 years
U.S. Cl. D24—5



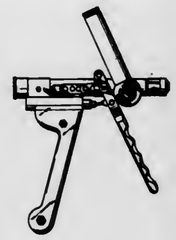
277,504
BASE FOR MATRIX BAND RETAINER
Dan W. Ericson, Ehrensvärdsgatan 6, S-212 13 Malmö, Sweden
Filed Mar. 19, 1982, Ser. No. 359,797
Claims priority, application Sweden, Sep. 21, 1981, 81-2039
Term of patent 14 years
U.S. Cl. D24—10



277,505
ENDOSCOPE
Hiroaki Kubokawa, and Koichiro Ishiwara, both of Hachioji, Japan, assignors to Olympus Optical Co., Ltd., Japan
Filed Sep. 14, 1982, Ser. No. 417,915
Claims priority, application Japan, Mar. 19, 1982, 57-11780
Term of patent 14 years
U.S. Cl. D24—17



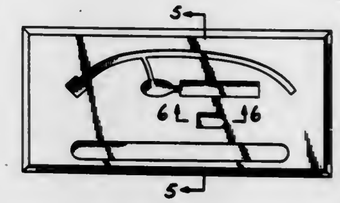
277,506
NEEDLE-LESS INJECTION INSTRUMENT
Pierre Ibis, Billere, France, assignor to Bearn Mecanique Aviation S.A., Billere, France
Filed Mar. 10, 1982, Ser. No. 356,327
Claims priority, application France, Sep. 15, 1981, 81-33-29
Term of patent 14 years
U.S. Cl. D24—24



277,507
FINGER LANCING DEVICE
Didya Levy, 2017 E. 17th St., Brooklyn, N.Y. 11229
Filed Mar. 26, 1982, Ser. No. 362,160
Term of patent 14 years
U.S. Cl. D24—28



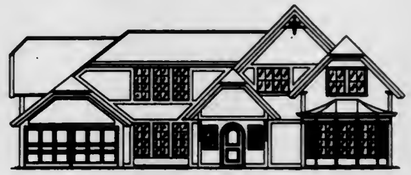
277,508
ENDOTRACHEAL INTUBATION KIT TRAY
Michael W. Clair, 8806 Willis Ave., Panorama City, Calif. 91402
Filed May 24, 1982, Ser. No. 381,550
Term of patent 14 years
U.S. Cl. D24—31



277,509
GREAT TOE METATARSAL PHALANGEAL IMPLANT
Bruce R. Lawrence, Oceanside, and James M. Christensen, San Diego, both of Calif., assignors to Sutter Biomedical Inc., San Diego, Calif.
Filed Jul. 1, 1982, Ser. No. 394,636
Term of patent 14 years
U.S. Cl. D24—33



277,510
DETACHED HOUSE
Björn Fogler, Hönö , Sweden, assignor to Classic Hus AB, Gothenburg, Sweden
Filed Nov. 10, 1982, Ser. No. 440,715
Term of patent 14 years
U.S. Cl. D25—17



277,511
OUTDOOR LIGHT
Madhu Patel, Skokie, Ill., assignor to Sears, Roebuck and Co., Chicago, Ill.
Filed Apr. 26, 1982, Ser. No. 371,714
Term of patent 14 years
U.S. Cl. D26—68



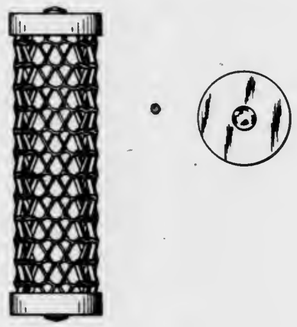
277,512
COMBINED BACKSCRUBBER AND BACK SCRATCHER WITH REMOVABLE SPONGE ELEMENT
Aldo Colognori, 69 Lawton Ave., Cliffside Park, N.J. 07010
Filed Jan. 10, 1984, Ser. No. 569,747
Term of patent 14 years
U.S. Cl. D28—63



277,513
MEDICAL FACE MASK
David E. J. Parsons; Paul D. O'Reilly, and Ronald H. Crawford, all of Basingstoke, England, assignors to Vickers P.L.C., London, England
Filed Mar. 8, 1982, Ser. No. 355,763
Claims priority, application United Kingdom, Nov. 5, 1981, 1003437
Term of patent 14 years
U.S. Cl. D29—8



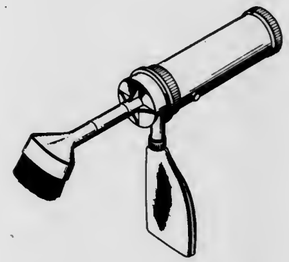
277,514
SUET FEEDER
Robert E. Bescherer, P.O. Box 23, Bristol, R.I. 02809
Filed Sep. 29, 1982, Ser. No. 426,903
Term of patent 14 years
U.S. Cl. D30—14



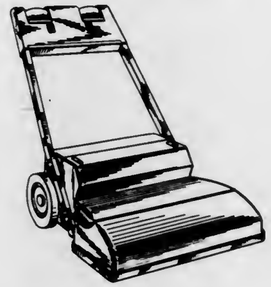
277,515
CLEANING RACK FOR SADDLES OR THE LIKE
Richard J. Secor, Rolesville, N.C. 27571
Filed Sep. 30, 1982, Ser. No. 430,277
Term of patent 14 years
U.S. Cl. D30—45



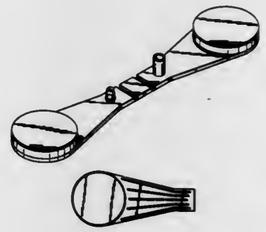
277,516
HAND-HELD VACUUM CLEANER
Glenn M. Hayden; Erik Miglins, and Larry Deovlet, all of P.O. Box 3981, Glendale, Calif. 91201
Filed May 13, 1983, Ser. No. 494,519
Term of patent 14 years
U.S. Cl. D32—18



277,517
CARPET AND RUG VACUUM CLEANER
Martin Wiese, South Bend; Thomas E. Shearer, Granger, and Dexter K. Lehman, Goshen, all of Ind., assignors to National Union Electric Corporation, Greenwich, Conn.
Filed Mar. 12, 1982, Ser. No. 357,430
Term of patent 14 years
U.S. Cl. D32—22



277,518
SPECTACLE LENS CLEANING IMPLEMENT
John G. Eggett, 124-9467 Charles Blvd., Surrey, B.C., Canada
Filed Sep. 27, 1982, Ser. No. 424,341
Term of patent 14 years
U.S. Cl. D32—35



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 5TH DAY OF FEBRUARY, 1985

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A.D. & R.E. Barker Pty. Ltd.: *See*—
Barker, Allan D., 4,497,511, Cl. 285-158.000.

A. Natterman & Cie GmbH: *See*—
Durr, Manfred; and Fribolin, Hans-Ulrich, 4,497,158, Cl. 53-428.000.

A. Nattermann & Cie GmbH: *See*—
Durr, Manfred; and Fribolin, Hans-Ulrich, 4,497,157, Cl. 53-428.000.

A/S Bergens Mekaniske Verksteder: *See*—
Longberg, Leif; and Pedersen, Hakon S., 4,497,471, Cl. 254-372.000.

Abbott Laboratories: *See*—
Abram, Dinah; Armstrong, Alan S.; Herrmann, John E.; and Ling, Chung-Mei, 4,497,900, Cl. 436-511.000.
Armstrong, Alan S.; Herrmann, John E.; and Howard, Lawrence V., 4,497,899, Cl. 436-510.000.

Abbou, Clement: *See*—
Rey, Pierre; Leandri, Jacqueline; and Abbou, Clement, 4,497,074, Cl. 3-1.000.

Abe, Hideaki: *See*—
Matsuura, Masahiro; Ichinomiya, Tsutomu; and Abe, Hideaki, 4,497,323, Cl. 128-685.000.

Abe, Tokuji: *See*—
Tsuchida, Michinori; Abe, Tokuji; and Kitamura, Hajime, 4,497,722, Cl. 252-62.540.

Abel, Donald, to Morton Glass Works. Apparatus for cutting glass into various shapes. 4,497,477, Cl. 269-303.000.

Abelein, Dewayne M.: *See*—
Mosbrucker, Gregory A.; and Abelein, Dewayne M., 4,497,337, Cl. 137-247.250.

Abolins, Visvaldis; Betts, Joseph E.; and Holub, Fred F., to General Electric Company. Flame resistant thermoplastic blends of polyphenylene oxide, polyolefin and hydrated alumina. 4,497,925, Cl. 524-269.000.

Abram, Dinah; Armstrong, Alan S.; Herrmann, John E.; and Ling, Chung-Mei, to Abbott Laboratories. Immunoassay for *Neisseria gonorrhoeae* antigens. 4,497,900, Cl. 436-511.000.

Acampora, Alfonse: *See*—
Bunting, Richard M.; and Acampora, Alfonse, 4,498,100, Cl. 358-31.000.

ACF Industries, Incorporated: *See*—
Ruhmann, Douglas C.; Vorwerk, Frederick E.; and Mundloch, James D., 4,497,258, Cl. 105-248.000.

Ackerman, Jacqueline B. Decorative dispensing container. 4,497,401, Cl. 206-131.000.

Aczel, Andreas L.: *See*—
Munter, Ernst A.; and Aczel, Andreas L., 4,498,171, Cl. 370-110.200.

Adams, Clarence R., to Boeing Company, The. Apparatus for precision grinding of end mounted objects. 4,497,139, Cl. 51-95.0LH.

Addie, David L.; and Ellsworth, Kenneth A., to Motorola, Inc. Button rectifier package for non-planar die. 4,498,096, Cl. 357-67.000.

Adjustable Fixture Company: *See*—
Schumaker, Eugene J., 4,498,125, Cl. 362-216.000.

Adkins, Richard C.; and Yost, James O., to Rolls-Royce Limited. Diffusion apparatus. 4,497,445, Cl. 239-590.000.

Adolfsson, Morgan; Brogardh, Torgny; Goransson, Sture; and Ovren, Christer, to ASEA Aktiebolag. Fiber optical measuring device, employing a sensor material with a non-linear intensity response characteristic for measuring physical quantities. 4,498,004, Cl. 250-227.000.

Advance Engineering, Inc.: *See*—
Benatar, Victor; and Wilburn, Walter R., 4,497,599, Cl. 406-132.000.

Advani, Hira; and Cason, William C., to International Business Machines Corporation. Method for updating a program on a combined program diskette in an interactive text processing system. 4,498,142, Cl. 364-900.000.

AEL Microtel Limited: *See*—
LeGresley, Barry P., 4,498,174, Cl. 371-37.000.

Agence National de Valorisation de la Recherche (ANVAR): *See*—
Rey, Pierre; Leandri, Jacqueline; and Abbou, Clement, 4,497,074, Cl. 3-1.000.

Agfa-Gevaert AG: *See*—
Reschenhofer, Rudolf; Mullritter, Ludwig; Schnall, Gunther; and Fruth, Franz, 4,497,478, Cl. 270-53.000.
Wetzel, Guenter, 4,497,481, Cl. 271-3.100.

Aggarwal, Sundar L.: *See*—
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Chang, Irving B.; and Beckwith, Robert E., Jr., 4,497,921, Cl. 524-59.000.
Beimesch, Wayne E.; and Hortel, Thomas C., to Procter & Gamble Company, The. Energy efficient hydration process. 4,497,757, Cl. 264-13.000.
Belanger, Ernest. Wind-powered water-craft. 4,497,631, Cl. 440-8.000.
Belcher, Joe D. Apparatus for applying designs to wall structure. 4,497,114, Cl. 33-41.00D.
Belgard, Richard A.: *See*—
Ahlstrom, John K.; Bachman, Brett L.; Belgard, Richard A.; Bernstein, David H.; Bratt, Richard G.; Clancy, Gerald F.; Gavrin, Edward S.; Gruner, Ronald H.; Jones, Thomas M.; Katz, Lawrence H.; Mundie, Craig J.; Richmond, Michael S.; Schleimer, Stephen I.; Wallach, Steven J.; Wallach, Walter A., Jr.; and Wells, Douglas M., 4,498,132, Cl. 364-200.000.
Bratt, Richard G.; Gavrin, Edward S.; Schleimer, Stephen I.; Pilat, John F.; Wallach, Walter A., Jr.; Richmond, Michael S.; Bel-

gard, Richard A.; Farber, David A.; Ahlstrom, John K.; Wallach, Steven J.; Katz, Lawrence H.; Wells, Douglas M.; Mundie, Craig J.; Clancy, Gerald F.; Bernstein, David H.; Jones, Thomas M.; and Bachman, Brett L., 4,498,131, Cl. 364-200.000.

Belikin, Alexandr V.: *See*—
Shemyakina, Elena V.; Dyatlova, Nina M.; Formenov, Alexandr I.; Belikin, Alexandr V.; Fridman, Alexandr Y.; Sinko, Nina I.; Erussalimchik, Iosif G.; Efimova, Galina I.; and Zavalsky, Julian P., 4,497,696, Cl. 204-46.00G.

Bell, Audrey R. Animal play and exercise structure. 4,497,279, Cl. 119-29.000.

Bell, David L., to BICC-Vero Electronics Limited. Circuit board installation. 4,498,118, Cl. 361-384.000.

Bell, Richard S., to Mighty-Mac, Inc. Exercise garment. 4,497,071, Cl. 2-94.000.

Beloit Corporation: *See*—
Flohr, Gary R., 4,498,137, Cl. 364-471.000.

Bely, Diamar I.; Mardanov, Valentin P.; Meschanov, Gennady I.; Peshkov, Izyaslav B.; Povelichenko, Anatoly P.; and Timoshin, Jury M., to Vsesojuzny Nauchno-Isslefovatelsky, Proektno-Konstruktorsky I Tekhnologichesky Institut Kabelnoi Promyshlennosti "VNIIKP". Multiwire twisted conductor and device for coating twisted conductor wires. 4,497,867, Cl. 428-385.000.

Ben-Shmuel, Dan; and Zacuto, Philip, to Heat Extractor Inc. Heat extractor. 4,497,439, Cl. 237-53.000.

Benatar, Victor; and Wilburn, Walter R., to Advance Engineering, Inc. System for preventing clogging of the outlet orifice of a dispenser tank containing powdered reagent and auxiliary tank discharge means. 4,497,599, Cl. 406-132.000.

Bendix Corporation, The: *See*—
Meyer, Helmut P.; and Isliker, Gaston R., 4,497,633, Cl. 445-7.000.

Beney, Gilbert; and Combet, Michel, to Eimco-Secoma Societe Anonyme. Drilling and bolting turret. 4,497,378, Cl. 173-32.000.

Bennett, Robert A. Device for selecting numbers randomly. 4,497,486, Cl. 273-144.00B.

Benrud, Vernal M., to Sperry Corporation. Low input capacitance amplifier. 4,498,058, Cl. 330-300.000.

Benson Engineering & Mfg., Inc.: *See*—
Youngworth, Thomas H., 4,497,182, Cl. 62-151.000.

Benz, Ulrich: *See*—
Wehinger, Egbert; Meyer, Horst; and Benz, Ulrich, 4,497,821, Cl. 514-302.000.

Bercovici, Serge, to Cegedur Societe de Transformation de l'Aluminiu, Pechiney. Method of monitoring and controlling operating parameters of a machine for the continuous casting of strips between rolls. 4,497,360, Cl. 164-454.000.

Berejka, Anthony J.: *See*—
Tancrede, Jean M.; and Berejka, Anthony J., 4,497,936, Cl. 525-222.000.

Berger, Hermann, to Chemie Und Filter GmbH, Verfahrenstechnik KG. Switching circuit with a time delay device. 4,498,019, Cl. 307-132.00E.

Bergwerksverband GmbH: *See*—
Meyer, Frank; Cornely, Wolfgang; and Mehesch, Hans, 4,497,595, Cl. 405-261.000.

Bernstein, David H.: *See*—
Ahlstrom, John K.; Bachman, Brett L.; Belgard, Richard A.; Bernstein, David H.; Bratt, Richard G.; Clancy, Gerald F.; Gavrin, Edward S.; Gruner, Ronald H.; Jones, Thomas M.; Katz, Lawrence H.; Mundie, Craig J.; Richmond, Michael S.; Schleimer, Stephen I.; Wallach, Steven J.; Wallach, Walter A., Jr.; and Wells, Douglas M., 4,498,132, Cl. 364-200.000.
Bratt, Richard G.; Gavrin, Edward S.; Schleimer, Stephen I.; Pilat, John F.; Wallach, Walter A., Jr.; Richmond, Michael S.; Belgard, Richard A.; Farber, David A.; Ahlstrom, John K.; Wallach, Steven J.; Katz, Lawrence H.; Wells, Douglas M.; Mundie, Craig J.; Clancy, Gerald F.; Bernstein, David H.; Jones, Thomas M.; and Bachman, Brett L., 4,498,131, Cl. 364-200.000.

Berthold, Robert V.: *See*—
Ward, Carl E.; and Berthold, Robert V., 4,497,650, Cl. 71-93.000.

Berti, Jerome L.; and Patchen, Paul J., to Allis-Chalmers Corp. Oil ring assembly with annular expander spring. 4,497,497, Cl. 277-163.000.

Bertolacini, Ralph J.; Hirschberg, Eugene H.; and Modica, Frank S., to Standard Oil Company (Indiana). Composition for removing sulfur oxides from a gas. 4,497,902, Cl. 502-65.000.

Bertolet, Roy D.: *See*—
Hughes, Howard C.; and Bertolet, Roy D., 4,497,849, Cl. 427-120.000.

Bertolino, Renee Z. Battery charge indicator. 4,497,881, Cl. 429-91.000.

Betts, Joseph E.: *See*—
Abolins, Visvaldis; Betts, Joseph E.; and Holub, Fred F., 4,497,925, Cl. 524-269.000.

Beuscher, Joseph J., to Brockway-Imco Inc. Blow pin assembly. 4,497,623, Cl. 425-525.000.

Bezusko, Michael J.; Liska, Daniel P.; and McGee, Joseph A., to General Motors Corporation. Heat shielded, spark plug boot assembly. 4,497,532, Cl. 339-112.00R.

Bhavsar, Dilip K., to General Electric Company. System for polynomial division self-testing of digital networks. 4,498,172, Cl. 371-25.000.

Bialkowski, Gunter: *See*—
Peche, Gerhard; and Bialkowski, Gunter, 4,497,990, Cl. 200-144.00B.

BICC Public Limited Company: *See*—
Dench, Godfrey R. M., 4,497,537, Cl. 350-96.230.

BICC-Vero Electronics Limited: *See*—
Bell, David L., 4,498,118, Cl. 361-384.000.

Biechler, Charles S.; Carroll, Allen M.; Graves, Richard E.; and Lyons, Steven A., to Perkin-Elmer Corporation, The. Virtual addressing for E-beam lithography. 4,498,010, Cl. 250-492.200.

Bilka, Kenneth P.: *See*—
Cherukuri, S. Rao; Bilka, Kenneth P.; and Hriscisce, Frank, 4,497,832, Cl. 426-5.000.

Birchall, William R.: *See*—
Howell, Samuel G.; and Birchall, William R., 4,497,782, Cl. 423-184.000.

Birukawa, Masahiro: *See*—
Kudo, Yoshihiko; Kawabata, Hidetsugu; Birukawa, Masahiro; Hara, Noriaki; and Muto, Akira, 4,497,870, Cl. 428-457.000.

Black & Decker Inc.: *See*—
Flack, John H., deceased; and Simpson, Frank F., 4,497,380, Cl. 173-117.000.

Blackwood, Rodger. Sulfur remelting. 4,497,635, Cl. 23-308.00S.

Blair, Timothy T.: *See*—
Gage, Charles A.; Blair, Timothy T.; and Morgan, Thomas W., 4,497,567, Cl. 355-3.0TR.

Blanchet, Pierre; and Recasens, Joseph, to Societe Europeenne des Produits Refractaires. Design of transverse-burner recuperative furnaces. 4,497,628, Cl. 432-179.000.

Blanrima Pty. Ltd.: *See*—
Maris, Wiltjie; and Moran, Robert, 4,497,559, Cl. 354-316.000.

Blanton, William A., to Chevron Research Company. Method and apparatus for controlled rate feeding of fluidized solids. 4,497,598, Cl. 406-114.000.

Blaseck, Klaus, to Deutsche Gesellschaft fur Wiederaufarbeitung von Kernbrennstoffen mbH. Arrangement for interconnecting conduits. 4,497,776, Cl. 422-159.000.

Blatter, Johann: *See*—
Sturzenegger, Christian; and Blatter, Johann, 4,497,991, Cl. 200-148.00A.

Blaya, Alain; Crouzet, Pierre; Sandis, Stylianos; and Bailly, Jean C., to BP Chimie Societe Anonyme. Catalysts for the polymerization and copolymerization of ethylene and polymerization processes using these catalysts. 4,497,904, Cl. 502-104.000.

Blenkinsop, Philip T. Pet door with control circuit therefor. 4,497,133, Cl. 49-31.000.

Block Drug Company, Inc.: *See*—
Lover, Myron J.; Singer, Arnold J.; Lynch, Donald M.; and Rhodes, William E., III, 4,497,831, Cl. 514-717.000.

Bobrek, Pavlo. Control circuit for linearly controlling the speed and direction of an AC powered DC motor in accordance with the magnitude and polarity of a DC reference signal. 4,498,035, Cl. 318-345.00D.

Bockris, John O'M.; and Ottagawa, Takaaki, to Texas A&M University. Lanthanum nickelate perovskite-type oxide for the anodic oxygen evolution catalyst. 4,497,698, Cl. 204-129.000.

Bodenseewerk Geratetchnik GmbH: *See*—
Scheurenbrand, Hans, 4,497,206, Cl. 73-382.00R.

Bodewig, Peter W., to UTP Schweissmaterial GmbH & Co. Method and apparatus for metal arc welding with constant currents. 4,497,997, Cl. 219-137.0PS.

Boeing Company, The: *See*—
Adams, Clarence R., 4,497,139, Cl. 51-95.0LH.
Campbell, Dennis R., 4,497,461, Cl. 244-75.00R.
Hamatani, Tomio, 4,497,462, Cl. 244-129.500.
McCarthy, Karen; and Prochaska, Charles R., 4,497,602, Cl. 410-69.000.
Pinson, George T., 4,498,032, Cl. 318-37.000.

Boger, Manfred: *See*—
Drabek, Jozef; and Boger, Manfred, 4,497,746, Cl. 260-544.00C.

Bollenrath, Franz-Michael: *See*—
Rigler, Josef K.; Trukenbrod, Karl; and Bollenrath, Franz-Michael, 4,497,911, Cl. 521-56.000.

Bolte, Steven B.; Brewington, Grace T.; Davidson, Theodore; Koehler, Richard F., Jr.; and Martin, Robert G., to Xerox Corporation. Printing machine employing an operator replaceable interposition web and photoconductive member. 4,497,570, Cl. 355-16.000.

Bolton, Brent C.; Logsdon, Gary L.; Hagenmaier, Carl F., Jr.; and Wilson, Jesse R., to Burroughs Corp. Selector switch for a concurrent network of processors. 4,498,133, Cl. 364-200.000.

Bom, Cornelis J. G.: *See*—
van der Lely, Ary; and Bom, Cornelis J. G., 4,497,446, Cl. 239-661.000.

Bone, David P.: *See*—
Gould, Max R.; Bone, David P.; and Hsieh, Fu H., 4,497,840, Cl. 426-560.000.

Bonis, Laszlo J., to Composite Container Corporation. Flexible heat-sealable sheet and bag made therefrom. 4,497,857, Cl. 428-35.000.

Bonne, Ulrich, to Honeywell Inc. Adaptive, modulating boiler control system. 4,497,438, Cl. 237-8.00R.

Bonnell, James M., to Tropicana Products, Inc. Process for the production of useful products from orange peel. 4,497,838, Cl. 426-429.000.

Booth, Ronald P., Sr., to Xerox Corporation. Copy processing system for a reproduction machine. 4,497,569, Cl. 355-14.00R.

Borchardt, John K.; and Young, Bill M., to Halliburton Company. Method of minimizing fines migration in a subterranean formation. 4,497,596, Cl. 405-263.000.

Bortolussi, Gerard, to Societe Anonyme Automobiles Peugeot; and Societe Anonyme Automobile Citroen. Bearing cap for an overhead cam-shaft of an internal combustion engine. 4,497,289, Cl. 123-90.270.

Boschetti, Enrica. Vaginal device for contraceptive control. 4,497,317, Cl. 128-127.000.

Bose, Debasis; Datta, Amitava; and DeCristofaro, Nicholas J., to Allied Corporation. Process for joining together two or more metal parts using a homogeneous low melting point copper based alloys. 4,497,429, Cl. 228-263.180.

Bose, Debasis; Datta, Amitava; and DeCristofaro, Nicholas J., to Allied Corporation. Brazing method using homogeneous low melting point copper based alloys. 4,497,430, Cl. 228-263.180.

Boser, Ronald J., to Yoshida Kogyo K.K. Method and apparatus for sewing elongated fabric piece. 4,497,270, Cl. 112-265.200.

Bouchard, Andre C.; English, George J.; Hall, Harold H., Jr.; and Sentementes, Thomas J., to GTE Products Corporation. Method of making a photoflash article using injection molding. 4,497,756, Cl. 264-1.900.

Boucher, Donald A.; and Boucher, Gilbert D., to USM Corporation. Pull through blind rivet. 4,497,603, Cl. 411-34.000.

Boucher, Gilbert D.: *See*—
Boucher, Donald A.; and Boucher, Gilbert D., 4,497,603, Cl. 411-34.000.

Bourget, Jean-Claude, to Les Cables de Lyon. Apparatus for sequentially annealing and then hardening long metal components made of fine or special steel. 4,497,474, Cl. 266-81.000.

Boursier, Bernard; Bussiere, Guy; Devos, Francis; and Hughette, Michel, to Freres, Roquette. Sugarless hard candy. 4,497,846, Cl. 426-660.000.

Bousquet, Jacques; and Guguen, Claude, to Elf France. Hydrotreatment for petroleum cuts with offretite. 4,497,703, Cl. 208-111.000.

Bowen, James H., to International Telephone and Telegraph Corporation. TDM Communication system. 4,498,167, Cl. 370-44.000.

Boyer, John. Heat exchanger. 4,497,365, Cl. 165-164.000.

BP Chimie Societe Anonyme: *See*—
Blaya, Alain; Crouzet, Pierre; Sandis, Stylianos; and Bailly, Jean C., 4,497,904, Cl. 502-104.000.

Brabson, Joseph B.: *See*—
Cioca, Gheorge; Feeley, George F.; Brabson, Joseph B.; and Barth, Peter, 4,497,862, Cl. 428-220.000.

Brace, Alan L.: *See*—
Allen, Karl D.; and Brace, Alan L., 4,497,494, Cl. 277-27.000.

Bradley, John R.; Burkstrand, James M.; and Tibbetts, Gary G., to General Motors Corporation. Process for growing graphite fibers. 4,497,788, Cl. 423-447.300.

Brady, Harold E., Jr., to Minnesota Mining and Manufacturing Company. Imageable prismatic array. 4,497,860, Cl. 428-156.000.

Braintech, Inc.: *See*—
Culver, Norman D., 4,498,080, Cl. 340-728.000.

Brandenburg, Frank J., Jr. Sun tracking solar air heating system. 4,497,311, Cl. 126-425.000.

Bratt, Richard G.; Gavrin, Edward S.; Schleimer, Stephen I.; Pilat, John F.; Wallach, Walter A., Jr.; Richmond, Michael S.; Belgard, Richard A.; Farber, David A.; Ahlstrom, John K.; Wallach, Steven J.; Katz, Lawrence H.; Wells, Douglas M.; Mundie, Craig J.; Clancy, Gerald F.; Bernstein, David H.; Jones, Thomas M.; and Bachman, Brett L., to Data General Corporation. Data processing system having addressing mechanisms for processing object-based information and a protection scheme for determining access rights to such information. 4,498,131, Cl. 364-200.000.

Bratt, Richard G.: *See*—
Ahlstrom, John K.; Bachman, Brett L.; Belgard, Richard A.; Bernstein, David H.; Bratt, Richard G.; Clancy, Gerald F.; Gavrin, Edward S.; Gruner, Ronald H.; Jones, Thomas M.; Katz, Lawrence H.; Mundie, Craig J.; Richmond, Michael S.; Schleimer, Stephen I.; Wallach, Steven J.; Wallach, Walter A., Jr.; and Wells, Douglas M., 4,498,132, Cl. 364-200.000.

Braunhut, Harold N. Universally fitting, modular ballistic garment. 4,497,069, Cl. 2-2.500.

Breckinridge, James B.; Page, Norman A.; Shack, Roland V.; and Shannon, Robert R., to United States of America, National Aeronautics and Space Administration. Optical system. 4,497,540, Cl. 350-168.000.

Breedis, John F.; and Fister, Julius C., to Olin Corporation. Copper alloys for suppressing growth of Cu-Al intermetallic compounds. 4,498,121, Cl. 361-401.000.

Brems, John H. Rotary retardation devices. 4,497,393, Cl. 188-322.500.

Breslau, Steven M., to Sima Products Corporation. Photographic slide sorter. 4,497,127, Cl. 40-367.000.

Breslin, Michael K. Apparatus and method for recovery of liquid hydrocarbons from ground water. 4,497,370, Cl. 166-372.000.

Bretherick, Leslie; and Hodgson, Philip K. G., to British Petroleum Company p.l.c., The. Compositions for use in oil recovery and method of use. 4,497,717, Cl. 252-8.55D.

Brettbacher, Franz: *See*—
Langer, Uwe; and Brettbacher, Franz, 4,497,191, Cl. 72-202.000.

Brewington, Grace T.: *See*—
Bolte, Steven B.; Brewington, Grace T.; Davidson, Theodore; Koehler, Richard F., Jr.; and Martin, Robert G., 4,497,570, Cl. 355-16.000.

Brieger, Emmet F., to Geo Vann, Inc. Packer actuated vent assembly. 4,497,366, Cl. 166-150.000.

Bright, Stephen A.: *See*—
Brun, Philip L.; and Bright, Stephen A., 4,497,624, Cl. 425-548.000.

Brisset, Guy C. S.; and Mas, Michel C. Organosoluble salts of manganese, process of preparation of same. 4,497,743, Cl. 260-429.00R.

British Petroleum Company Limited, The: *See*—
Fisher, Robert G.; Meldrum, Ian G.; Plomer, Alan J.; and Robinson, Richard A., 4,497,663, Cl. 134-4.000.

British Petroleum Company p.l.c., The: *See*—
Ball, William J.; and Stewart, David G., 4,497,969, Cl. 585-415.000.
Bretherick, Leslie; and Hodgson, Philip K. G., 4,497,717, Cl. 252-8.55D.
Young, Dennis, 4,497,970, Cl. 585-417.000.

Brockway-Imco Inc.: *See*—
Beuscher, Joseph J., 4,497,623, Cl. 425-525.000.
Grebowiec, Thaddeus J., 4,497,622, Cl. 425-525.000.

Brogardh, Torgny: *See*—
Adolfsson, Morgan; Brogardh, Torgny; Goransson, Sture; and Ovren, Christer, 4,498,004, Cl. 250-227.000.

Brokaw, A. Ray: *See*—
Georgens, Harold H.; and Brokaw, A. Ray, 4,498,112, Cl. 360-96.500.

Brookstein, David S.: *See*—
Petterson, De Witt R.; Skelton, John; and Brookstein, David S., 4,497,866, Cl. 428-365.000.

Brown, Boveri & Cie Aktiengesellschaft: *See*—
Lucke, Hans-Hermann; and Jessen, Jens-Christian, 4,497,879, Cl. 429-62.000.

Brown, James T., Jr.; and Schowengerdt, Frank D., to Colorado School of Mines. Apparatus and method for dust control by condensation enlargement. 4,497,641, Cl. 55-94.000.

Brown, James W.; Chen, Tsang J.; and Schen, Michael A., to Eastman Kodak Company. Latex compositions comprising loadable polymeric particles. 4,497,929, Cl. 524-547.000.

Brown, Peter K. Handlebar switch. 4,497,988, Cl. 200-61.850.

Brown, Wade R.; and Wasserstrom, Henry, to Coca-Cola Company, The. Disconnect arrangement for beverage dispenser valves. 4,497,343, Cl. 137-614.060.

Brown & Williamson Tobacco Corporation: *See*—
Sullivan, James W.; and Lewis, Robert T., 4,497,276, Cl. 118-694.000.

Brownline Pipe Inc.: *See*—
Galloway, Cecil, 4,497,440, Cl. 239-201.000.

Bruhmann, Werner, to Robert Bosch GmbH. Minimum-maximum speed governor for fuel-injected engines. 4,497,295, Cl. 123-374.000.

Brule, James E.; O'Neill, James K.; and Palmer, David N., to Combustion Engineering, Inc. Electrode material. 4,497,726, Cl. 252-182.100.

Brun, Philip L.; and Bright, Stephen A., to Electra Form, Inc. Injection molding machine. 4,497,624, Cl. 425-548.000.

BS&B Engineering Company Inc.: *See*—
Markus, Gerardus A., 4,497,281, Cl. 122-248.000.

Bucher, Anton, to Swiss Aluminium Ltd. Flat pallet. 4,497,260, Cl. 108-56.100.

Buck, James R. Expanding-contracting gripping device for workpiece. 4,497,498, Cl. 279-2.00R.

Budd Company, The: *See*—
Sherrow, Lionel, 4,497,512, Cl. 292-92.000.

Buderus Aktiengesellschaft: *See*—
Schreiber, Jurgen, 4,497,138, Cl. 51-3.000.

Buehrle, Thomas M.: *See*—
Landsness, Clifford A.; and Buehrle, Thomas M., 4,498,042, Cl. 324-54.000.

Bukkems, Franciscus H. J.; and Quist, Bernardus B., to Shell Oil Company. Centrifugal pump for transferring solid particles from a low pressure zone into a high pressure zone. 4,497,605, Cl. 414-218.000.

Buljan, Sergej-Tomislav: *See*—
Sarin, Vinod K.; Penty, Robert A.; and Buljan, Sergej-Tomislav, 4,497,228, Cl. 82-1.00C.

Bunting, Richard M.; and Acampora, Alfonse, to RCA Corporation. Apparatus for frame-to-frame comb filtering composite TV signal. 4,498,100, Cl. 358-31.000.

Buonamici, Metilde: *See*—
Merlini, Lucio; Rossi, Alessandro; and Buonamici, Metilde, 4,497,820, Cl. 514-432.000.

Burger, Arnulf: *See*—
Hecke, Paul; Burger, Arnulf; and Werther, Heinz-Ulrich, 4,497,081, Cl. 15-102.000.

Burkhardt, Charles E.: *See*—
Lin, Kou C.; and Burkhardt, Charles E., 4,497,449, Cl. 242-4.00R.

Burkstrand, James M.: *See*—
Bradley, John R.; Burkstrand, James M.; and Tibbetts, Gary G., 4,497,788, Cl. 423-447.300.

Buropatent AG: *See*—
Schmidt, Siegfried, 4,497,254, Cl. 104-1.00R.

Burris Company: *See*—
Burris, Donald J., 4,497,548, Cl. 350-560.000.

Burris, Donald J., to Burris Company. Variable-power riflescope with range-compensating reticle and a field stop diaphram centered off the optical axis. 4,497,548, Cl. 350-560.000.

Burroughs Corp.: *See*—
Bolton, Brent C.; Logsdon, Gary L.; Hagenmaier, Carl F., Jr.; and Wilson, Jesse R., 4,498,133, Cl. 364-200.000.

Bussiere, Guy: *See*—
Boursier, Bernard; Bussiere, Guy; Devos, Francis; and Hughette, Michel, 4,497,846, Cl. 426-660.000.

Butcher, Henry P. Dispenser for internally self-supported rolled material. 4,497,453, Cl. 242-55.530.

Buzard, Paul F.; and Harrington, Robert J., to Westinghouse Electric Corp. Binary signal decoding apparatus and method. 4,498,198, Cl. 375-91.000.

Byrd, Brian K. Breathing and relaxation programs to aid childbirth. 4,497,312, Cl. 128-1.00R.

Byrum, Barney L. Motion and orientation sensor. 4,497,118, Cl. 33-366.000.

C. R. Bard, Inc.: *See—*
Allen, Douglas, Jr.; and Flam, Eric, 4,497,914, Cl. 523-105.000.
C. Van der Lely N.V.: *See—*
van der Lely, Ary; and Bom, Cornelis J. G., 4,497,446, Cl. 239-661.000.
Cabrit, Philippe; Mourlevat, Jean; and de Saint-Palais, Jacques, to Societe Nationale Elf Aquitaine (Production). Connection-disconnection device between one rigid pipe, inside well-tubing connected to a base by an articulated coupling, and another rigid pipe fixed to this base. 4,497,510, Cl. 285-18.000.
Caffrey, Walter T.: *See—*
Nielsen, Edward M., Jr.; and Caffrey, Walter T., 4,497,083, Cl. 15-250.060.
Caldwell, John T.; Kunz, Walter E.; Cates, Michael R.; and Franks, Larry A., to United States of America, Energy. Apparatus and method for quantitatively evaluating total fissile and total fertile nuclide content in samples. 4,497,768, Cl. 376-153.000.
Calenda, Ciro; De Filippis, Pietro; and Salvatore, Amedeo, to Texas Instruments Incorporated. Electric switches actuated by bimetals for one or several temperatures of response. 4,498,069, Cl. 337-354.000.
Cameron, John K., to Raychem Corporation. Supplementary force heat-recoverable connecting device. 4,497,527, Cl. 339-30.000.
Camilo Muebles, Inc.: *See—*
Lopez, Jose A., 4,497,148, Cl. 52-126.300.
Campbell, Dennis R., to Boeing Company, The. Snubbing apparatus for an aircraft control surface actuator. 4,497,461, Cl. 244-75.00R.
Canada, Her Majesty the Queen in right of, as represented by the Minister of National Defence: *See—*
Fothergill, Noel O., 4,498,052, Cl. 330-149.000.
Cannon, David W.: *See—*
Oja, Tonis; Petersen, Gary L.; and Cannon, David W., 4,497,208, Cl. 73-584.000.
Canon Kabushiki Kaisha: *See—*
Fujimoto, Ryo, 4,498,097, Cl. 358-12.000.
Komiya, Yutaka; Kimura, Yoshimasa; and Murakami, Koichi, 4,497,568, Cl. 355-14.00R.
Suzuki, Kenji, 4,497,561, Cl. 354-406.000.
Tokuhara, Mitsuhiro; Torigai, Akiyoshi; and Morikawa, Teruo, 4,497,573, Cl. 355-58.000.
Ushiyama, Hisayuki; Ohsaki, Ichiro; Takenouchi, Masanori; and Nakahara, Toshiaki, 4,497,885, Cl. 430-106.600.
Carl-Zeiss-Stiftung: *See—*
Szenger, Franz, 4,497,522, Cl. 308-6.00C.
Carlisle Laboratories, Inc.: *See—*
Milia, Frank, 4,497,432, Cl. 229-17.00B.
Carlson, Chesley F.: *See—*
Hull, Frank A., 4,498,140, Cl. 364-571.000.
Carlson, Lee A.: *See—*
Johnson, Lewis H.; Carlson, Lee A.; and Lunt, David M., 4,497,275, Cl. 118-268.000.
Carreno, Diether E., to General Electric Company. Tapered core exit for gas turbine bucket. 4,497,613, Cl. 416-228.000.
Carrier Corporation: *See—*
Richardson, Patrick L., 4,498,077, Cl. 340-648.000.
Carrington, Donald P.; and MacKay, Andrew D., to Combustion Engineering, Inc. Rotary knife control. 4,497,229, Cl. 83-76.000.
Carroll, Allen M.: *See—*
Biechler, Charles S.; Carroll, Allen M.; Graves, Richard E.; and Lyons, Steven A., 4,498,010, Cl. 250-492.200.
Carter, William M.; and Rodgers, John M. Powered cart mounted cable puller. 4,497,470, Cl. 254-134.3FT.
Casals-Stenzel, Jorge: *See—*
Skuballa, Werner; Raduechel, Bernd; Vorbrueggen, Helmut; Casals-Stenzel, Jorge; Schillinger, Ekkehard; Mannesmann, Gerda; and Nieuweboer, Bob, 4,497,830, Cl. 514-277.000.
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Caterpillar Tractor Co.: *See—*
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Caldwell, John T.; Kunz, Walter E.; Cates, Michael R.; and Franks, Larry A., 4,497,768, Cl. 376-153.000.
Catros, Jean Y.: *See—*
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Caudel, Edward R., to Texas Instruments Incorporated. Microcomputer with accumulator addressing. 4,498,135, Cl. 364-200.000.
Cause Consequence Analysis, Inc.: *See—*
Williams, Leslie P., 4,497,442, Cl. 239-437.000.
Caussignac, Jean-Marie; and Leroy, Maurice, to L'Etat Francais. Article analyzer apparatus by silhouette projection. 4,497,576, Cl. 356-335.000.
Cavalli, Alfredo. Percolator assembly supporting structure, particularly for domestic automatic coffee percolators. 4,497,243, Cl. 99-323.000.
Cegedur Societe de Transformation de l'Aluminiu, Pechiney: *See—*
Bercovici, Serge, 4,497,360, Cl. 164-454.000.
Celler, George K.; and Robinson, McDonald, to AT&T Bell Laboratories. Process for producing dielectrically isolated silicon devices. 4,497,683, Cl. 156-603.000.
Celtite, Inc.: *See—*
Rausch, Paul G., 4,497,403, Cl. 206-219.000.
Centre de Recherches Metallurgiques-Centrum Voor Research in de Metallurgie: *See—*
Ramelot, Daniel L., 4,497,214, Cl. 73-863.120.
Chaki, Takao, to Clarion Co., Ltd. Pushbutton tuner with staggered tuning coils. 4,498,064, Cl. 334-7.000.
Chang, Irving B.; and Beckwith, Robert E., Jr., to Allied Corporation. Sulfur stabilized oxidized polyolefin and asphalt composition. 4,497,921, Cl. 524-59.000.
Charboneau, Ben J.: *See—*
Zulauf, Gary B.; and Charboneau, Ben J., 4,497,205, Cl. 73-313.000.
Charney, John G.: *See—*
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Chase, Arthur P., to CRS Group, Inc. Tunnel lining. 4,497,590, Cl. 405-152.000.
Chauvin, Yves: *See—*
Quang, Dang V.; Sugier, Andre ; Commereuc, Dominique; and Chauvin, Yves, 4,497,910, Cl. 518-700.000.
Cheadle, Brian E.; and Lee, Gordon J. Layered solid corrosion inhibitors for use in corrodible devices for automatic addition to coolant systems. 4,497,364, Cl. 165-134.00R.
Chemie Linz Aktiengesellschaft: *See—*
Schneider, Heinrich; and Hammerschmidt, Johann, 4,497,097, Cl. 28-112.000.
Chemie Und Filter GmbH, Verfahrenstechnik KG: *See—*
Berger, Hermann, 4,498,019, Cl. 307-132.00E.
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Reese, Dirk; and Rigler, Josef K., 4,497,912, Cl. 521-59.000.
Rigler, Josef K.; Trukenbrod, Karl; and Bollenrath, Franz-Michael, 4,497,911, Cl. 521-56.000.
Chen, Tsang J.: *See—*
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Chenausky, Peter P.: *See—*
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Cherukuri, S. Rao; Bilka, Kenneth P.; and Hriscisce, Frank, to Warner-Lambert Company. Chewing gum composition having enhanced flavor-sweetness. 4,497,832, Cl. 426-5.000.
Chervenak, Paul R., to Granning Suspensions, Inc. Vehicle axle suspension. 4,497,507, Cl. 280-704.000.
Chestnut, Billy D. Fisherman's accessory. 4,497,129, Cl. 43-21.200.
Chevron Research Company: *See—*
Blanton, William A., 4,497,598, Cl. 406-114.000.
Loh, William, 4,497,649, Cl. 71-88.000.
Chiba, Akio: *See—*
Arakawa, Hideo; Kuniya, Keiichi; Chiba, Akio; and Shimizu, Seiki, 4,497,875, Cl. 428-620.000.
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Chikashige, Kiyoshi: *See—*
Ouchi, Teruo; Chikashige, Kiyoshi; and Ueda, Hirohisa, 4,497,550, Cl. 350-584.000.
Chisholm, Donald M.; Newton, Colin; and Winchester, Stanley W., to Fleet, Douglas Ross, a part interest. Moulded product. 4,497,662, Cl. 106-92.000.
Chlumecky, Nicholas, to Commercial Shearing, Inc. Cribbing. 4,497,597, Cl. 405-288.000.
Cho, Soo S., to Macho Products, Inc. Unitary leg and foot protective device. 4,497,070, Cl. 2-22.000.
Choinski, Edward J., to Polaroid Corporation. Process simulator. 4,497,121, Cl. 34-23.000.
Chomerics, Inc.: *See—*
Genova, Anthony T.; Squitieri, Vincent; and Lionetta, William G., Jr., 4,497,533, Cl. 339-143.00R.
Chong, Wun C. Seam inspection apparatus. 4,497,409, Cl. 209-538.000.
Chou, Der-Jeou: *See—*
Heath, Donald L.; and Chou, Der-Jeou, 4,497,973, Cl. 136-212.000.
Chow, Ho, to Melnor Industries, Inc. Pulsating sprinkler. 4,497,441, Cl. 239-230.000.
Chown, David P. M., to International Standard Electric Corporation. Optical receiver. 4,498,197, Cl. 455-619.000.
Christiansen, Paul J., to General Motors Corporation. Unitized wheel bearing seal with multiple lips. 4,497,495, Cl. 277-50.000.
Christie, George A.: *See—*
Kluge, Arthur F.; Strosberg, Arthur M.; Whiting, Roger L.; and Christie, George A., 4,497,818, Cl. 514-397.000.
Chu, Pochen; Huss, Albin, Jr.; and Vartuli, James C., to Mobil Oil Corporation. Deagglomeration of porous siliceous crystalline materials. 4,497,786, Cl. 423-329.000.
Chukran, Rudolph E.: *See—*
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Ciba-Geigy Corporation: *See—*
Drabek, Jozef; and Boger, Manfred, 4,497,746, Cl. 260-544.00C.
Holzle, Gerd; Miotto, Mirella; Reinert, Gerhard; and Polony, Rudolf, 4,497,741, Cl. 260-245.770.
Martin, Henry, 4,497,745, Cl. 260-465.00D.
Meyer, Alfred; Kunz, Walter; Maier, Ludwig; and Rempfler, Hermann, 4,497,647, Cl. 71-76.000.
Ostermayer, Franz; and Zimmermann, Markus, 4,497,813, Cl. 514-166.000.
Spivack, John D.; and Pastor, Stephen D., 4,497,959, Cl. 549-253.000.
Szczepanski, Henry, 4,497,648, Cl. 71-88.000.
Zimmermann, Markus; and Kuhnis, Hans, 4,497,808, Cl. 514-222.000.

Cibis, Johannes, to Krones A.G. Hermann Kronseder Maschinenfabrik. Device for testing the rims of bottle apertures for flaws. 4,498,003, Cl. 250-223.00B.
Cioca, Gheorge; Feeley, George F.; Brabson, Joseph B.; and Barth, Peter, to Seton Company. Moisture vapor permeable sheet materials. 4,497,862, Cl. 428-220.000.
City of Hope National Medical Center: *See—*
Gamble, Ronald C.; Tin, George W.; and Williams, Lawrence E., 4,497,791, Cl. 424-1.100.
Clancy, Gerald F.: *See—*
Ahlstrom, John K.; Bachman, Brett L.; Belgard, Richard A.; Bernstein, David H.; Bratt, Richard G.; Clancy, Gerald F.; Gavrin, Edward S.; Gruner, Ronald H.; Jones, Thomas M.; Katz, Lawrence H.; Mundie, Craig J.; Richmond, Michael S.; Schleimer, Stephen I.; Wallach, Steven J.; Wallach, Walter A., Jr.; and Wells, Douglas M., 4,498,132, Cl. 364-200.000.
Bratt, Richard G.; Gavrin, Edward S.; Schleimer, Stephen I.; Pilat, John F.; Wallach, Walter A., Jr.; Richmond, Michael S.; Belgard, Richard A.; Farber, David A.; Ahlstrom, John K.; Wallach, Steven J.; Katz, Lawrence H.; Wells, Douglas M.; Mundie, Craig J.; Clancy, Gerald F.; Bernstein, David H.; Jones, Thomas M.; and Bachman, Brett L., 4,498,131, Cl. 364-200.000.
Clapper, David D.; and Talmadge, Thomas E. Drips-catching mats for garage floors and the like. 4,497,147, Cl. 52-105.000.
Clarion Co., Ltd.: *See—*
Chaki, Takao, 4,498,064, Cl. 334-7.000.
Clark, Richard E., to Continental Group, Inc., The. Method of forming bottle neck finish for accepting a snap-in closure. 4,497,758, Cl. 264-23.000.
Clarke, Donald L.: *See—*
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Clausen, Eivind; and Allsop, James D., to Allsop, Inc. Apparatus and method for cleaning a video player/recorder. 4,498,113, Cl. 360-128.000.
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Petersen, Jorgen H.; Clausen, Peter J. M.; and Rasmussen, Hilmar O., 4,497,625, Cl. 431-208.000.
Clemson University: *See—*
Hood, Clarence E., Jr.; Garrett, Thomas R.; and DuBose, Charles R., 4,497,265, Cl. 111-86.000.
Cline, Martin J.: *See—*
Salser, Winston A.; Cline, Martin J.; and Stang, Howard D., 4,497,796, Cl. 424-95.000.
Clitherow, John W., to Glaxo Group Limited. Process for the preparation of ranitidine. 4,497,961, Cl. 549-495.000.
Coate, William C., to Lodge & Shipley Company, The. Automatic tool changer for a lathe. 4,497,410, Cl. 211-1.500.
Coca-Cola Company, The: *See—*
Brown, Wade R.; and Wasserstrom, Henry, 4,497,343, Cl. 137-614.060.
Iwans, Robert C., 4,497,179, Cl. 62-59.000.
Sedam, Jason K., 4,497,348, Cl. 141-2.000.
Cogan, Adrian I., to GTE Laboratories Incorporated. Method of making self-aligned high-frequency static induction transistor. 4,497,107, Cl. 29-571.000.
Cogan, Jerry A., Jr., to Milliken Research Corporation. Laminated weft insertion fabric. 4,497,863, Cl. 428-253.000.
Coleco Industries, Inc.: *See—*
Mercurio, Frank, 4,497,500, Cl. 280-1.130.
Colgate-Palmolive Company: *See—*
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Combet, Michel: *See—*
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Carrington, Donald P.; and MacKay, Andrew D., 4,497,229, Cl. 83-76.000.
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Commercial Modular Systems, Inc.: *See—*
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Commercial Shearing, Inc.: *See—*
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Commereuc, Dominique: *See—*
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Fournie, Francois J. C.; and Deleuze, Christian J. A., 4,497,640, Cl. 55-16.000.
Compagnie Francaise De Produits Industriels: *See—*
Schapira, Joseph; Ken, Victor; and Dauptain, Jean-Loup, 4,497,666, Cl. 148-6.15R.
Composite Container Corporation: *See—*
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Gloystein, Jurgen, 4,497,271, Cl. 114-75.000.
Cook, Charles F.: *See—*
Eastman, Alan D.; Guillory, Jack P.; Cook, Charles F.; and Kimble, James B., 4,497,971, Cl. 585-658.000.
Cooke, Bernard; and Wrobel, Peter, to Loctite (Ireland) Limited. Adhesive composition adapted for setting at a time later than the time of application. 4,497,916, Cl. 523-176.000.
Coomber, Barry A.: *See—*
Phillipps, Gordon H.; Humber, David C.; Ewan, George B.; Coomber, Barry A.; and Pateman, Anthony J., 4,497,805, Cl. 514-172.000.
Cooper, J. Carl, to Ampex Corporation. High speed correlation circuit and method. 4,498,141, Cl. 364-728.000.
Cooperberg, Bruce; and Peck, Gene E., to Insta-Print, Inc. Diffusion-transfer processor for photomechanical reproductions. 4,497,558, Cl. 354-303.000.
Cooperman, Gene D.: *See—*
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Copeland Corporation: *See—*
Griffith, Russell W., 4,497,615, Cl. 417-310.000.
Cornely, Wolfgang: *See—*
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Corrigan, Charles E.; and Dodge, Paul R., to Garrett Corporation, The. Combustion turbine engine. 4,497,171, Cl. 60-39.750.
Courter, Harry I.; and Perry, Leroy A., to Emhart Industries, Inc. Line and program switch assembly for a timing mechanism. 4,497,985, Cl. 200-38.00R.
Cowling, Albert R., to Geotech Development Corporation. Absorbent pillow. 4,497,712, Cl. 210-691.000.
Crane Packing Limited: *See—*
Sall, Surinderpal S.; and Kemp, John, 4,497,493, Cl. 277-2.000.
Crapser, James R., to S. C. Johnson & Son, Inc. Vapor-dispensing paper roll holder. 4,497,456, Cl. 242-55.550.
Crawshaw, Delbert D., to RCA Corporation. Field-transfer CCD imagers with reference-black-level generation capability. 4,498,105, Cl. 358-213.000.
Creuzet, Marie-Helene; Feniou, Claude; Jarry, Christian; Prat, Gisele; and Pontagnier, Henri, to Societe Cortial, S.A. 2-Amino-5-aminomethyl-2-oxazolines, compositions and use. 4,497,812, Cl. 514-211.000.
Crevecoeur, Cornelis: *See—*
de Wit, Hendrik J.; Van Berlo, Albertus W. M.; and Crevecoeur, Cornelis, 4,497,699, Cl. 204-129.200.
Crippen, Henry O. Chance device. 4,497,487, Cl. 273-146.000.
Crnojevich, Ranko; Wiewiorowski, Edward I.; and Yu, Peter H., to Amax Inc. Production of metals with low selenium contents. 4,497,659, Cl. 75-109.000.
Cronin, Michael J., to Lockheed Corporation. Electronic circuit board and method and apparatus for thermal management thereof. 4,498,119, Cl. 361-386.000.
Crouzet, Pierre: *See—*
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Crus, Richard A.: *See—*
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Cullingford, Hatice S.: *See—*
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Culver, Norman D., to Braintech, Inc. Apparatus and method for topographic display of multichannel data. 4,498,080, Cl. 340-728.000.
Cummins, Joseph M., to Texas A&M University System, The. Method of regulating appetite and efficiency of food utilization employing interferon. 4,497,795, Cl. 424-85.000.
Cummins, Pamela R. Clothes hanger having shroud to maintain garments in rolled condition. 4,497,423, Cl. 223-96.000.
Curry, Hugh R. Muzzle ejecting sabot cartridge firearm system. 4,497,239, Cl. 89-198.000.
Curry, Paul V. L. Heart pacing lead. 4,497,326, Cl. 128-785.000.
Curt G. Joa, Inc.: *See—*
Joa, Curt G.; and Radzins, Edmund, 4,497,448, Cl. 241-186.400.
Custom Automation Designs, Inc.: *See—*
Hexamer, Donald L.; Spence, Randy D.; and Hesselberg, Johnny, 4,498,047, Cl. 324-158.00F.
D. M. & E. Corporation: *See—*
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Daimler-Benz Aktiengesellschaft: *See—*
Gmeiner, Gunter; Moller, Hermann; Andres, Rudolf; and Faust, Eberhard, 4,497,517, Cl. 297-231.000.
Daimon, Masahiro, to Mitsubishi Denki Kabushiki Kaisha. Track deviation detecting apparatus. 4,498,159, Cl. 369-44.000.

Dainippon Pharmaceutical Co., Ltd.: *See—*
Matsumoto, Jun-ichi; Nishimura, Yoshiro; and Nakamura, Shinichi, 4,497,816, Cl. 514-300.000.
Dainippon Screen Seizo Kabushiki Kaisha: *See—*
Sakamoto, Takashi, 4,498,109, Cl. 358-296.000.
Dairy Technology Ltd.: *See—*
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Daiwa Can Company, Limited: *See—*
Hongo, Akira; Ueda, Hideki; Nakata, Issei; Yoshida, Eiichi; Aoki, Nobuyoshi; and Suzuki, Toshimitsu, 4,497,178, Cl. 62-55.000.
Dale Electronics, Inc.: *See—*
Plough, Charles T., Jr.; and Hight, Ralph D., 4,498,071, Cl. 338-308.000.
Danfoss A/S: *See—*
Petersen, Jorgen H.; Clausen, Peter J. M.; and Rasmussen, Hilmar O., 4,497,625, Cl. 431-208.000.
Dang, Hiep D.; Beaver, Richard N.; Spillers, Frank W.; and Hazelrigg, Mark J., Jr., to Dow Chemical Company, The. Method for making double L-shaped electrode. 4,497,112, Cl. 29-825.000.
Daniel, Neville H.; and Duncan, Hugh M., to Austin Rover Group Limited. Control system for air/fuel ratio adjustment system. 4,497,297, Cl. 123-440.000.
Dasovich, Barney A. Reversible high-hat cymbal stand. 4,497,238, Cl. 84-421.000.
Data Electronics, Inc.: *See—*
Georgens, Harold H.; and Brokaw, A. Ray, 4,498,112, Cl. 360-96.500.
Data General Corporation: *See—*
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Bratt, Richard G.; Gavrin, Edward S.; Schleimer, Stephen I.; Pilat, John F.; Wallach, Walter A., Jr.; Richmond, Michael S.; Belgard, Richard A.; Farber, David A.; Ahlstrom, John K.; Wallach, Steven J.; Katz, Lawrence H.; Wells, Douglas M.; Mundie, Craig J.; Clancy, Gerald F.; Bernstein, David H.; Jones, Thomas M.; and Bachman, Brett L., 4,498,131, Cl. 364-200.000.
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Datta, Amitava: *See—*
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Davidson, Arthur: *See—*
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Davidson, Theodore: *See—*
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Davis, Alan R., to Eaton Corporation. Variable mechanical advantage shift lever. 4,497,396, Cl. 192-53.00E.
Davis, C. Paul, to PerfectData Corporation. Non-abrasive magnetic head cleaning system. 4,498,114, Cl. 360-128.000.
Davy McKee (Sheffield) Limited: *See—*
Gronbech, Robert W.; and Lister, Michael, 4,497,215, Cl. 74-89.150.
Dean, Barry D., to Atlantic Richfield Company. Moldable polyblend containing poly(arylene sulfide). 4,497,928, Cl. 524-502.000.
Dearman, Timothy C. Welder's mismatch gauge. 4,497,115, Cl. 33-174.00R.
Dearman, Timothy C. Pipefitter's protractor. 4,497,119, Cl. 33-464.000.
Deau, William J.: *See—*
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Debono, Manuel, to Eli Lilly and Company. N-Acyl glycopeptide derivatives. 4,497,802, Cl. 514-8.000.
DeBortoli, George, to Northern Telecom Limited. Distributing frame for telecommunications systems. 4,497,411, Cl. 211-26.000.
Decavele, Dominique; and Fournier, Jean-Pierre, to Transac-Alcatel. Security method and device for communicating confidential data via an intermediate stage. 4,498,000, Cl. 235-380.000.
Deckman, Harry W.; Witzke, Horst; and Wronski, Christopher, to Exxon Research & Engineering Co. Realization of a thin film solar cell with a detached reflector. 4,497,974, Cl. 136-259.000.
DeCristofaro, Nicholas J.: *See—*
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Deguchi, Naoyasu; Kameyama, Koji; and Nakamura, Taku, to Fuji Photo Film Co., Ltd. Silver halide color reversal photographic material. 4,497,893, Cl. 430-359.000.
Dehouwer, Louis J.: *See—*
Govaerts, Karel J.; and Dehouwer, Louis J., 4,498,030, Cl. 315-60.000.
Dejean, Rodrigue. Greeting card with illuminated message and design. 4,497,126, Cl. 40-124.100.
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Fournie, Francois J. C.; and Deleuze, Christian J. A., 4,497,640, Cl. 55-16.000.
Delonghi, Adriano G. A., to Fabrication De Maquinas, S.A. Non-refillable and inviolable bottle-cap. 4,497,415, Cl. 215-21.000.
Demartini, Robert J. Hangers for rain gutter devices. 4,497,146, Cl. 52-12.000.
de Montigny, Armand; Illger, Hans-Walter; Gonzalez-Doerner, Alberto C.; and Moretto, Hans-Heinrich, to Bayer Aktiengesellschaft. Preparation of polysiloxane/polyoxyalkylene copolymer useful as stabilizers in making polyurethane foams. 4,497,962, Cl. 556-446.000.
Dempsey, Edmond N., to Peerless Machine & Tool Corporation. Small press for forming sheet material. 4,497,620, Cl. 425-145.000.
Dench, Godfrey R. M., to BICC Public Limited Company. Electric and/or optical cable. 4,497,537, Cl. 350-96.230.
Dennison Manufacturing Company: *See—*
Johnson, Lewis H.; Carlson, Lee A.; and Lunt, David M., 4,497,275, Cl. 118-268.000.
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Elsner, Emil; Reiber, Dietfried; Messmer, Josef; and Kaiser, Peter, to Von Roll AG. Process for preventing burn-off on a current-conducting electrode for metallurgical furnaces and electrodes. 4,498,185, Cl. 373-93.000.
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Figini, Mario, to Ing. C. Olivetti & C., S.p.A. Electronic typewriter with means for positioning the typed member. 4,497,589, Cl. 400-706.000.
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Fog, Arne D.: *See—*
Eilertsen, Jens H.; Fog, Arne D.; and Gibson, Keith, 4,497,897, Cl. 435-188.000.
Forbes, Robert C.; and VanderKam, John, to Huffy Corporation. Recumbent tricycle. 4,497,502, Cl. 280-281.0LP.
Ford Motor Company: *See—*
Kordomenos, Panagiotis I., 4,497,938, Cl. 525-514.000.
Mikkor, Mati, 4,497,882, Cl. 429-163.000.
Schechter, Michael M., 4,497,299, Cl. 123-451.000.
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Shemyakina, Elena V.; Dyatlova, Nina M.; Formenov, Alexandr I.; Belikin, Alexandr V.; Fridman, Alexandr Y.; Sinko, Nina I.; Erusalimchik, Iosif G.; Efimova, Galina I.; and Zavalsky, Julian P., 4,497,696, Cl. 204-46.00G.
Forster, Hilmar; and Wonka, Heinz-Georg, to Scharfenbergkupplung GmbH. Mechanical central buffer coupling. 4,497,414, Cl. 213-76.000.
Fortune, William S. Tip assembly having replaceable tip. 4,497,427, Cl. 228-20.000.
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Vatsky, Joel; and Schindler, Edmund S., 4,497,263, Cl. 110-347.000.
Fothergill, Noel O., to Canada, Her Majesty the Queen in right of, as represented by the Minister of National Defence. Signal detecting circuit. 4,498,052, Cl. 330-149.000.
Fournie, Francois J. C.; and Deleuze, Christian J. A., to Compagnie Francaise de Petroles; and Commissariat a l'Energie Atomique. Process for the dehydration of gases containing hydrocarbons. 4,497,640, Cl. 55-16.000.
Fournier, Jean-Pierre: *See—*
Decavele, Dominique; and Fournier, Jean-Pierre, 4,498,000, Cl. 235-380.000.
Fowles, Tom A.; Lee, Robert; Richmond, Frank M.; and Tobiasz, Henry, to Baxter Travenol Laboratories, Inc. Separation device manufacture. 4,497,104, Cl. 29-419.00R.
Fox, Daniel J.: *See—*
Neiditch, Oscar W.; Hurdle, Edmund S.; and Fox, Daniel J., 4,497,718, Cl. 252-8.750.
Foxx, Mary E.: *See—*
Klein, Robert W.; and Foxx, Mary E., 4,497,794, Cl. 424-81.000.
Francis, Leo H.: *See—*
Marquardt, Robert F.; Pederson, Harold T., Jr.; and Francis, Leo H., 4,497,836, Cl. 426-239.000.
Francis, Mark S.: *See—*
Sheppard, Roy J. P.; Thornhill, Howard S.; and Francis, Mark S., 4,497,608, Cl. 414-726.000.
Franke, Reimar: *See—*
Hug, Franz; Johler, Franz; and Franke, Reimar, 4,497,327, Cl. 130-27.00T.
Franks, Larry A.: *See—*
Caldwell, John T.; Kunz, Walter E.; Cates, Michael R.; and Franks, Larry A., 4,497,768, Cl. 376-153.000.
Franz, Dietmar: *See—*
Torggler, Norbert; and Franz, Dietmar, 4,497,976, Cl. 178-3.000.
Franz Plasser Bahnbaumaschinen Industriegesellschaft m.b.H.: *See—*
Hansmann, Johann; and Fawcett, Frederick, 4,497,256, Cl. 104-11.000.
Theurer, Josef, 4,497,255, Cl. 104-8.000.
Freres, Roquette: *See—*
Boursier, Bernard; Bussiere, Guy; Devos, Francis; and Hughette, Michel, 4,497,846, Cl. 426-660.000.
Fribolin, Hans-Ulrich: *See—*
Durr, Manfred; and Fribolin, Hans-Ulrich, 4,497,157, Cl. 53-428.000.
Durr, Manfred; and Fribolin, Hans-Ulrich, 4,497,158, Cl. 53-428.000.
Fridman, Alexandr Y.: *See—*
Shemyakina, Elena V.; Dyatlova, Nina M.; Formenov, Alexandr I.; Belikin, Alexandr V.; Fridman, Alexandr Y.; Sinko, Nina I.; Erusalimchik, Iosif G.; Efimova, Galina I.; and Zavalsky, Julian P., 4,497,696, Cl. 204-46.00G.
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Hunter, Robert O.; and Fried, David L., 4,498,051, Cl. 330-4.300.
Frink, Shelby T., to Oime, Inc. Helicopter transportable mud pump. 4,497,614, Cl. 417-238.000.
Fruth, Franz: *See—*
Reschenhofer, Rudolf; Mullritter, Ludwig; Schnall, Gunther; and Fruth, Franz, 4,497,478, Cl. 270-53.000.
Fryday Corporation: *See—*
Hice, Jaxon O.; and Webb, Gerald J., 4,497,844, Cl. 426-643.000.
Fuchs, Gerhard; and Wabersich, Ernst, to Korf & Fuchs Systemtechnik GmbH. Nozzle assembly for a metallurgical furnace. 4,497,475, Cl. 266-270.000.
Fuerniss, Stephen J., to Du Pont de Nemours, E. I., and Company. Release compound in negative acting photopolymerizable element. 4,497,889, Cl. 430-260.000.
Fuhreck, John E.: *See—*
Mikic, Frank; Fuhreck, John E.; and Pacetti, Larry D., 4,497,405, Cl. 206-378.000.
Fuji Photo Film Co., Ltd.: *See—*
Deguchi, Naoyasu; Kameyama, Koji; and Nakamura, Taku, 4,497,893, Cl. 430-359.000.
Horikawa, Kazuo; and Arakawa, Satoshi, 4,498,006, Cl. 250-327.200.
Nishioka, Akira; Aotani, Yoshimasa; and Yamasue, Kotaro, 4,497,888, Cl. 430-165.000.
Oono, Hiroshi; and Teshima, Tsutomu, 4,498,005, Cl. 250-327.200.
Ryoke, Katsumi; Yamaguchi, Nobutaka; Yoneyama, Takashi; and Tadokoro, Eiichi, 4,497,864, Cl. 428-323.000.
Fuji Photo Optical Co., Ltd.: *See—*
Akiyama, Kazuhiro, 4,497,555, Cl. 354-173.100.
Fuji Xerox Co., Ltd.: *See—*
Uchida, Hiroyasu, 4,498,130, Cl. 364-188.000.
Fujimoto, Ryo, to Canon Kabushiki Kaisha. Color television signal producing device capable of compensating the color signal. 4,498,097, Cl. 358-12.000.
Fujimura, Fumio: *See—*
Yamato, Noboru; Satake, Toshimi; Minami, Toshiaki; and Fujimura, Fumio, 4,498,091, Cl. 346-216.000.
Fujisawa Pharmaceutical Co., Ltd.: *See—*
Hashimoto, Masashi; and Aratani, Matsuhiko, 4,497,738, Cl. 260-239.00A.
Hashimoto, Masashi; Hemmi, Keiji; and Hagiwara, Daijiro, 4,497,801, Cl. 514-15.000.
Kitaura, Yoshihiko; Nakaguchi, Osamu; Hemmi, Keiji; Yonishi, Satoshi; and Takeno, Hidekazu, 4,497,729, Cl. 260-112.50R.
Fujita, Jiro; and Yamane, Iwao, to Mitsubishi Denki Kabushiki Kaisha. Automatic sewing machine and cloth retainer therefor. 4,497,266, Cl. 112-121.110.
Fujitsu Limited: *See—*
Fukuda, Takeshi, 4,497,665, Cl. 148-1.500.
Koyama, Kazumi; Fukushima, Toshitaka; and Kawabata, Yuichi, 4,498,022, Cl. 307-473.000.
Momma, Yoshinobu; Funatsu, Tsuneo; and Sasaki, Atusi, 4,497,106, Cl. 29-571.000.
Fujiu, Takamitsu: *See—*
Ogino, Makoto; Futami, Toshihiko; Kariya, Michio; Ichimura, Takeo; and Fujiu, Takamitsu, 4,497,629, Cl. 433-201.000.
Fujiwara, Takahisa; Narihisa, Masaaki; and Tamai, Katsuyuki, to Shinko Electric Co., Ltd.; and Isuzu Motors Limited. Electromagnetic device. 4,498,066, Cl. 335-281.000.
Fukuda, Hirokazu; and Hashimoto, Masaru, to Tokyo Shibaura Denki Kabushiki Kaisha. Differential amplifier circuit. 4,498,054, Cl. 330-261.000.
Fukuda, Takeshi, to Fujitsu Limited. Method for manufacturing semiconductor device. 4,497,665, Cl. 148-1.500.
Fukuda, Yoshiaki: *See—*
Niwa, Shigeo; Sawai, Kazuhiko; Takahashi, Shinobu; Ono, Mikiya; Fukuda, Yoshiaki; Takeuchi, Hiroyasu; and Tagai, Hideo, 4,497,075, Cl. 3-1.900.
Fukushima, Nobuo; and Tomimatsu, Noriyuki, to Mitsubishi Denki Kabushiki Kaisha. Display device for displaying both video and graphic or character images. 4,498,081, Cl. 340-793.000.
Fukushima, Osamu: *See—*
Hoshino, Mitsuo; Fukushima, Osamu; and Kakuta, Toshio, 4,497,529, Cl. 339-75.00M.
Fukushima, Toshitaka: *See—*
Koyama, Kazumi; Fukushima, Toshitaka; and Kawabata, Yuichi, 4,498,022, Cl. 307-473.000.
Fukushima, Yoshiaki: *See—*
Kamigaito, Osami; Doi, Haruo; and Fukushima, Yoshiaki, 4,497,869, Cl. 428-402.000.
Fuller Company: *See—*
Nelson, Jeffrey N.; and Peters, Thomas A., 4,497,122, Cl. 34-68.000.
Funatsu, Tsuneo: *See—*
Momma, Yoshinobu; Funatsu, Tsuneo; and Sasaki, Atusi, 4,497,106, Cl. 29-571.000.
Funke, Craig D., to NRG Systems, Inc. Flue box with adjustable counterbalance cap. 4,497,310, Cl. 126-292.000.
Furze, Victor J.; and Howlett, Thomas J., to Molins PLC. Feeding stacks of sheets. 4,497,482, Cl. 271-94.000.
Fuss, Peter S.; and Kosner, Jerry J., to Tellabs, Inc. Universal circuit module mounting structure. 4,498,123, Cl. 361-427.000.
Futami, Toshihiko: *See—*
Ogino, Makoto; Futami, Toshihiko; Kariya, Michio; Ichimura, Takeo; and Fujiu, Takamitsu, 4,497,629, Cl. 433-201.000.
Futami, Toshio; Yoshimoto, Shoji; and Yano, Ryuji, to Hitachi, Ltd. Cassette type magnetic bubble memory device. 4,498,152, Cl. 365-1.000.
Futkatsu, Shunzo: *See—*
Shibahara, Seiji; Okonogi, Tsuneo; Murai, Yasushi; Futkatsu, Shunzo; Niida, Taro; and Wakazawa, Tadashi, 4,497,811, Cl. 424-248.510.
G. D Societa' per Azioni: *See—*
Mattei, Riccardo, 4,497,143, Cl. 51-248.000.
G & W Electric Company: *See—*
Selsing, Jorgen, 4,497,975, Cl. 174-19.000.
Gage, Charles A.; Blair, Timothy T.; and Morgan, Thomas W., to Xerox Corporation. Toner transferring method and apparatus. 4,497,567, Cl. 355-3.0TR.
Gaia, Aldino J., to McGraw-Edison Company. Magnetic arc extinguished fusible elements. 4,498,068, Cl. 337-293.000.
Gaiman, Barry: *See—*
Libby, Charles J., Jr.; and Gaiman, Barry, 4,497,996, Cl. 219-124.340.
Gain, Lorand H., Jr., to AMSTED Industries Incorporated. Seal for post indicator valve assembly. 4,497,340, Cl. 137-556.000.
Gaines, Albert L., to Combustion Engineering, Inc. Compression hub with eddy current prevent means. 4,497,767, Cl. 376-142.000.

Galbraith, Lyle D., to Rocket Research Company. Inflatable buoy. 4,497,632, Cl. 441-30.000.

Galloway, Cecil, to Brownline Pipe Inc. Non-drain valve for sprinkler systems. 4,497,440, Cl. 239-201.000.

Galloway, Michael D.; Gingerich, David J.; and Shaffer, David T., to AMP Incorporated. Electrical hook switch. 4,497,983, Cl. 200-5.00R.

Galwey, Ronald K.; and Kanazawa, Kay K., to International Business Machines Corporation. Instrument for use with an electrochemical cell. 4,498,039, Cl. 323-234.000.

Gamble, Ronald C.; Tin, George W.; and Williams, Lawrence E., to Vestar Research Incorporated; and City of Hope National Medical Center. Method for labeling phagocytic cells. 4,497,791, Cl. 424-1.100.

Game Time, Inc.: *See—*
West, Donald E., 4,497,484, Cl. 272-113.000.

Gamroth, Michael: *See—*
Barin, Ihsan; Gamroth, Michael; Hesse, Rolf; and Wirosoedirdio, Soegianto, 4,497,780, Cl. 423-88.000.

GAO Gesellschaft fur Automation und Organisation mbH: *See—*
Hoppe, Joachim; and Gauch, Wolfgang, 4,497,872, Cl. 428-483.000.

Garbarino, Paul L.; Makarewicz, Stanley R.; and Shepard, Joseph F., to International Business Machines Corporation. Semiconductor structure with improved isolation between two layers of polycrystalline silicon. 4,498,095, Cl. 357-23.000.

Garcia, Tony P. Apparatus for filling a device with a fluid. 4,497,351, Cl. 141-329.000.

Garlick, Fred W., III. Aquatic animal containing devices. 4,498,190, Cl. 383-28.000.

Garman, James R.: *See—*
Ferris, Richard A.; Hess, Roger M.; and Garman, James R., 4,497,261, Cl. 109-2.000.

Garrett Corporation, The: *See—*
Corrigan, Charles E.; and Dodge, Paul R., 4,497,171, Cl. 60-39.750.
Elliott, Harry A.; and White, John T., 4,497,170, Cl. 60-39.030.

Garrett, Thomas R.: *See—*
Hood, Clarence E., Jr.; Garrett, Thomas R.; and DuBose, Charles R., 4,497,265, Cl. 111-86.000.

Gauch, Wolfgang: *See—*
Hoppe, Joachim; and Gauch, Wolfgang, 4,497,872, Cl. 428-483.000.

Gaudet, James L.; and Chukran, Rudolph E., to International Business Machines Corporation. Document automatic pagination. 4,498,150, Cl. 364-900.000.

Gaudio, Raymond, to Napco Security Systems, Inc. Fault indicator apparatus for a multi-zone intrusion system. 4,498,075, Cl. 340-525.000.

Gaulin Corporation: *See—*
Dexter, Edwin, 4,497,388, Cl. 181-233.000.

Gavrin, Edward S.: *See—*
Ahlstrom, John K.; Bachman, Brett L.; Belgard, Richard A.; Bernstein, David H.; Bratt, Richard G.; Clancy, Gerald F.; Gavrin, Edward S.; Gruner, Ronald H.; Jones, Thomas M.; Katz, Lawrence H.; Mundie, Craig J.; Richmond, Michael S.; Schleimer, Stephen I.; Wallach, Steven J.; Wallach, Walter A., Jr.; and Wells, Douglas M., 4,498,132, Cl. 364-200.000.
Bratt, Richard G.; Gavrin, Edward S.; Schleimer, Stephen I.; Pilat, John F.; Wallach, Walter A., Jr.; Richmond, Michael S.; Belgard, Richard A.; Farber, David A.; Ahlstrom, John K.; Wallach, Steven J.; Katz, Lawrence H.; Wells, Douglas M.; Mundie, Craig J.; Clancy, Gerald F.; Bernstein, David H.; Jones, Thomas M.; and Bachman, Brett L., 4,498,131, Cl. 364-200.000.

Geiger, Gary E. Method of inhibiting corrosion and deposition in aqueous systems. 4,497,713, Cl. 210-699.000.

Gelbard, Robert B.; Grimm, Bernard J.; and Irish , William D., to General Electric Company. Compressor auxiliary condenser arrangement adapted to be mounted in a refrigerator machinery compartment. 4,497,183, Cl. 62-295.000.

Gelchinski, Mordechai H.; Romankiw, Lubomyr T.; Vigliotti, Donald R.; and Von Gutfeld, Robert J., to International Business Machines Corporation. Laser-enhanced jet-plating and jet-etching: high-speed maskless patterning method. 4,497,692, Cl. 204-15.000.

Genba, Yasushi: *See—*
Kodera, Toshihiko; Eguchi, Kiyoshi; Ishikawa, Takayoshi; Genba, Yasushi; Tamaru, Shigemi; and Satou, Susumu, 4,497,992, Cl. 200-153.0SC.

General Electric Company: *See—*
Abolins, Visvaldis; Betts, Joseph E.; and Holub, Fred F., 4,497,925, Cl. 524-269.000.
Bhavsar, Dilip K., 4,498,172, Cl. 371-25.000.
Carreno, Diether E., 4,497,613, Cl. 416-228.000.
Gelbard, Robert B.; Grimm, Bernard J.; and Irish , William D., 4,497,183, Cl. 62-295.000.
Hale, Thomas E., 4,497,874, Cl. 428-551.000.
Holoyda, Peter W.; Hollenbeck, Dennis W.; and Hill, William D., 4,498,196, Cl. 455-607.000.
Knorowski, Victor J.; and Sheflin, Daniel J., 4,497,612, Cl. 416-198.00A.
Ohno, John M., 4,497,639, Cl. 51-307.000.
Pine, R. Davis, 4,497,587, Cl. 384-117.000.
Rabatin, Jacob G., 4,498,008, Cl. 250-486.100.
Rogers, Terrence E., 4,498,191, Cl. 455-164.000.
True, Thomas T.; Good, William E.; and Bates, William C., 4,498,101, Cl. 358-62.000.
Vandegraaf, Johannes J., 4,498,194, Cl. 455-166.000.
Yeboah, Yaw D.; and Venditti, Michael P., 4,497,942, Cl. 528-12.000.

General Motors Corporation: *See—*
Allen, Karl D.; and Brace, Alan L., 4,497,494, Cl. 277-27.000.
Ament, Frank, 4,497,298, Cl. 123-450.000.
Anderson, Stanley E.; and Hegler, Gary G., 4,497,618, Cl. 418-212.000.
Bezusko, Michael J.; Liska, Daniel P.; and McGee, Joseph A., 4,497,532, Cl. 339-112.00R.
Bradley, John R.; Burkstrand, James M.; and Tibbetts, Gary G., 4,497,788, Cl. 423-447.300.
Christiansen, Paul J., 4,497,495, Cl. 277-50.000.
Irwin, Clarence C., 4,497,503, Cl. 280-335.000.
Kopich, Leonard F., 4,497,399, Cl. 192-111.00A.
Lederman, Frederick E., 4,497,523, Cl. 384-613.000.
Paar, Michael S.; and McCarthy, Christopher I., 4,497,307, Cl. 123-90.330.
Rubin, Frank D.; and Schumacher, Roger A., 4,497,176, Cl. 60-584.000.
Salloum, Robert J.; and Atkins, Richard P., 4,497,945, Cl. 528-94.000.
Wright, Dolph D., 4,497,341, Cl. 137-563.000.

General Tire & Rubber Company, The: *See—*
Vitus, Francis J.; Hargis, Ivan G.; Livigni, Russell A.; and Aggarwal, Sundar L., 4,497,748, Cl. 260-665.00R.

Genova, Anthony T.; Squitieri, Vincent; and Lionetta, William G., Jr., to Chomerics, Inc. Shielded cable system and method. 4,497,533, Cl. 339-143.00R.

Geo-Centers, Inc.: *See—*
Sandler, Sheldon S., 4,498,086, Cl. 343-807.000.

Geo Vann, Inc.: *See—*
Brieger, Emmet F., 4,497,366, Cl. 166-150.000.

Geophysical Systems Corporation: *See—*
Martin, Lincoln A.; and Fenley, William F., Jr., 4,498,157, Cl. 367-50.000.

Georgens, Harold H.; and Brokaw, A. Ray, to Data Electronics, Inc. Tape cartridge receptacle. 4,498,112, Cl. 360-96.500.

Georgia Tech Research Institute: *See—*
Purdy, Kenneth R.; Gorton, Charles W.; and Knight, James A., Jr., 4,497,637, Cl. 48-111.000.

Geotech Development Corporation: *See—*
Cowling, Albert R., 4,497,712, Cl. 210-691.000.

Gerhard Collardin GmbH: *See—*
Mady, Raschad; Hanelt, Winand; Morlock, Roland; Geruhn, Dieter; Leyhe, Lutz; Meyer zu Bexten, Jobst H.; and Ricke, Franz, 4,497,668, Cl. 148-6.15Z.

Gertsek, Marina: *See—*
Tarsia, Joseph; Ross, Alexander S.; and Gertsek, Marina, 4,497,574, Cl. 355-76.000.

Geruhn, Dieter: *See—*
Mady, Raschad; Hanelt, Winand; Morlock, Roland; Geruhn, Dieter; Leyhe, Lutz; Meyer zu Bexten, Jobst H.; and Ricke, Franz, 4,497,668, Cl. 148-6.15Z.

GFM Gesellschaft fur Fertigungstechnik und Maschinenbau Gesellschaft m.b.H., Firma: *See—*
Kralowetz, Bruno, 4,497,195, Cl. 72-402.000.

Ghelli, Giovanni; and Barbon, Alessandro, to Luigi Stoppani S.p.A. Tanning material containing basic chromic sulfate and mercaptoacetic acid. 4,497,634, Cl. 8-94.260.

Ghosh, Atish; and Pasierb, John, to Bally Manufacturing Corporation. Prioritized overlay of foreground objects line buffer system for a video display system. 4,498,079, Cl. 340-725.000.

Giants, Thomas W., to Hughes Aircraft Company. Ethynyl-phenylene-substituted-1,3,5-triazine derivatives and process for their production. 4,497,951, Cl. 544-206.000.

Giardino, David A.; Groshans, Joseph R.; and McHenry, Kenneth A., to Chicago Pneumatic Tool Company. Pneumatic hydraulic handheld power unit. 4,497,197, Cl. 72-453.170.

Gibson, Duane M.: *See—*
Scott, Lewis A.; Gibson, Duane M.; and Woodfill, Arthur J., 4,497,232, Cl. 83-831.000.

Gibson, Keith: *See—*
Eilertsen, Jens H.; Fog, Arne D.; and Gibson, Keith, 4,497,897, Cl. 435-188.000.

Gillette Company, The: *See—*
Gruner, George P.; and Diederich, Walter J., 4,497,339, Cl. 137-495.000.

Gillilan, James. Power transducer system. 4,497,173, Cl. 60-495.000.

Gillis, Don A. Advancing mechanism and system utilizing same for raising and lowering a work platform. 4,497,591, Cl. 405-198.000.

Gindler, E. Melvin, to Sherwood Medical Company. Specimen embedding composition. 4,497,792, Cl. 424-3.000.

Gingerich, David J.: *See—*
Galloway, Michael D.; Gingerich, David J.; and Shaffer, David T., 4,497,983, Cl. 200-5.00R.

Giolma, William H.; and Morgan, John D., to Texas Instruments Incorporated. Current to frequency converter. 4,498,020, Cl. 307-261.000.

Giroldini, William; and Neri, Carlo, to Anic S.p.A. Synthesizing thiocarbamic acid esters. 4,497,739, Cl. 260-239.0BF.

Glaser, Hermann: *See—*
Vogt, Wilhelm; Glaser, Hermann; and Jagers, Erhard, 4,497,747, Cl. 260-546.000.

Glaverbel: *See—*
Robyn, Pierre; and Deschepper, Pierre, 4,497,473, Cl. 266-44.000.

Glaxo Group Limited: *See—*
Clitherow, John W., 4,497,961, Cl. 549-495.000.
Looker, Brian E., 4,497,956, Cl. 548-194.000.

Phillipps, Gordon H.; Humber, David C.; Ewan, George B.; Coomber, Barry A.; and Pateman, Anthony J., 4,497,805, Cl. 514-172.000.

Glazunov, Arkady A.: *See—*
Ivanchenko, Nikolai N.; Sokolov, Sergei S.; Lazarev, Anatoly A.; Kataev, Evgeny M.; Glazunov, Arkady A.; and Gorbunov, Evgeny S., 4,497,309, Cl. 123-276.000.

Glickman, David, to International Business Machines Corporation. Comparing input words to a word dictionary for correct spelling. 4,498,148, Cl. 364-900.000.

Gloystein, Jurgen, to Conver Ing. - Technik GmbH & Co., KG. Stowing strut for making fast containers or the like. 4,497,271, Cl. 114-75.000.

Gmeiner, Gunter; Moller, Hermann; Andres, Rudolf; and Faust, Eberhard, to Daimler-Benz Aktiengesellschaft. Motor vehicle seat. 4,497,517, Cl. 297-231.000.

Gnadig, Gerhard; Przybylla, Fritz; and Schneider, Friedrich, to Werner & Pfleiderer. Process for the manufacture of a steel body with a borehole protected against abrasion. 4,497,358, Cl. 164-80.000.

GNB Batteries Inc.: *See—*
Sabatino, Anthony; Orlando, Daniel; and Olszewski, Douglas J., 4,497,604, Cl. 414-131.000.

Go, Tony S.: *See—*
Miller, Richard F.; Go, Tony S.; and Wilson, George R., III, 4,497,702, Cl. 208-47.000.

Goldhammer, Albert, to Feinwerktechnik Schleicher & Co., Firma. Baling press with vertical operating direction. 4,497,247, Cl. 100-214.000.

Gonzalez-Doerner, Alberto C.: *See—*
de Montigny, Armand; Illger, Hans-Walter; Gonzalez-Doerner, Alberto C.; and Moretto, Hans-Heinrich, 4,497,962, Cl. 556-446.000.

Good, William E.: *See—*
True, Thomas T.; Good, William E.; and Bates, William C., 4,498,101, Cl. 358-62.000.

Goransson, Sture: *See—*
Adolfsson, Morgan; Brogardh, Torgny; Goransson, Sture; and Ovren, Christer, 4,498,004, Cl. 250-227.000.

Gorbunov, Evgeny S.: *See—*
Ivanchenko, Nikolai N.; Sokolov, Sergei S.; Lazarev, Anatoly A.; Kataev, Evgeny M.; Glazunov, Arkady A.; and Gorbunov, Evgeny S., 4,497,309, Cl. 123-276.000.

Gore, Thomas C., to Uarco Incorporated. Continuous business form for automated mailing. 4,497,509, Cl. 282-11.50A.

Gorman, Patrick R.; and Stottlemyer, William O., to ITT Corporation. Handsfree circuit for telephone instrument. 4,497,980, Cl. 179-81.00B.

Gorski, Richard M., to Zenith Electronics Corporation. Ultra-short LoBi electron gun for very short cathode ray tubes. 4,498,028, Cl. 315-15.000.

Gorton, Charles W.: *See—*
Purdy, Kenneth R.; Gorton, Charles W.; and Knight, James A., Jr., 4,497,637, Cl. 48-111.000.

Gorzinski, Manfred; Wilk, Hans-Christoph; Fischer, Herbert; and Wegemund, Bernd, to Henkel Kommanditgesellschaft auf Aktien. Emulsifier-free and solvent-free alkyd resin water lacquers. 4,497,933, Cl. 524-604.000.

Gotoh, Akio: *See—*
Ooi, Tetsuo; Watanabe, Hiroshi; Gotoh, Akio; Tsutsumi, Shuitsu; Oba, Ryohei; Ito, Koichi; and Huse, Syouzi, 4,498,195, Cl. 455-205.000.

Gottfried, Mario H. Flywheel device for a moving vehicle. 4,498,015, Cl. 290-15.000.

Goudie, Robert J.: *See—*
Harrison, Anthony W.; and Goudie, Robert J., 4,497,505, Cl. 280-698.000.

Gould, Max R.; Bone, David P.; and Hsieh, Fu H., to Quaker Oats Company, The. Cereal foods made from oats and method of making. 4,497,840, Cl. 426-560.000.

Govaerts, Karel J.; and Dehouwer, Louis J., to U.S. Philips Corporation. High-pressure sodium vapor discharge lamp with bimetallic element. 4,498,030, Cl. 315-60.000.

Grabbe, Dimitry G.: *See—*
Bakermans, Johannes C. W.; and Grabbe, Dimitry G., 4,497,196, Cl. 72-405.000.

Grable, Donovan B. Metal particle recovery at sub-surface locations. 4,497,519, Cl. 299-8.000.

Graco, Inc.: *See—*
Mommsen, Gordon V.; and Marfatia, Anil, 4,497,447, Cl. 239-691.000.

Grafon AG: *See—*
Schrader, Rolf, 4,497,101, Cl. 29-76.00R.

Graham, Howard A., to National Steel Corporation. Method and apparatus useful in cooling hot strip. 4,497,180, Cl. 62-63.000.

Granger Associates: *See—*
Werner, William L.; and DuHamel, Raymond H., 4,498,084, Cl. 343-792.500.

Granning Suspensions, Inc.: *See—*
Chervenak, Paul R., 4,497,507, Cl. 280-704.000.

Graphic Controls Corporation: *See—*
Hubbard, James R.; Pelensky, Joseph; and Kin, Niles, 4,497,468, Cl. 251-117.000.

Graves, Richard E.: *See—*
Biechler, Charles S.; Carroll, Allen M.; Graves, Richard E.; and Lyons, Steven A., 4,498,010, Cl. 250-492.200.

Graviner Limited: *See—*
Farquhar, Robert L., 4,497,373, Cl. 169-45.000.

Gravity Guidance, Inc.: *See—*
Miller, Jack V., 4,497,314, Cl. 128-75.000.

Grebowiec, Thaddeus J., to Brockway-Imco Inc. Blow pin assembly. 4,497,622, Cl. 425-525.000.

Griffith, Russell W., to Copeland Corporation. Scroll-type machine. 4,497,615, Cl. 417-310.000.

Grimm, Bernard J.: *See—*
Gelbard, Robert B.; Grimm, Bernard J.; and Irish , William D., 4,497,183, Cl. 62-295.000.

Grinberg, Jan: *See—*
Hansen, Siegfried; Grinberg, Jan; and Etchells, Robert D., 4,498,134, Cl. 364-200.000.

Grinde, James E., to Yamaha Hatsudoki Kabushiki Kaisha. Differential planetary gear system for producing complementary levels of forward/reverse drive. 4,497,220, Cl. 74-792.000.

Gronbech, Robert W.; and Lister, Michael, to Davy McKee (Sheffield) Limited. Hydro-mechanical actuator. 4,497,215, Cl. 74-89.150.

Groshans, Joseph R.: *See—*
Giardino, David A.; Groshans, Joseph R.; and McHenry, Kenneth A., 4,497,197, Cl. 72-453.170.

Gross, Dennis A.: *See—*
Bankier, Jack D.; and Gross, Dennis A., 4,497,694, Cl. 204-16.000.

Grosskreuz Abfulltechnik GmbH: *See—*
Grosskreuz, Gerhard; and Lassig, Arndt, 4,497,155, Cl. 53-331.500.

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Groth, Rolf; and Muller, Dieter, to Flachglas Aktiengesellschaft. Method of coating a transparent substrate. 4,497,700, Cl. 204-192.00P.

Grube, Dietrich: *See—*
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Gruner, George P.; and Diederich, Walter J., to Gillette Company, The. Two-stage pressure regulator. 4,497,339, Cl. 137-495.000.

Gruner, Ronald H.: *See—*
Ahlstrom, John K.; Bachman, Brett L.; Belgard, Richard A.; Bernstein, David H.; Bratt, Richard G.; Clancy, Gerald F.; Gavrin, Edward S.; Gruner, Ronald H.; Jones, Thomas M.; Katz, Lawrence H.; Mundie, Craig J.; Richmond, Michael S.; Schleimer, Stephen I.; Wallach, Steven J.; Wallach, Walter A., Jr.; and Wells, Douglas M., 4,498,132, Cl. 364-200.000.

GTE Automatic Electric Incorporated: *See—*
Edwards, Ivan L.; McLaughlin, Robert C.; and Macrander, Max S., 4,498,059, Cl. 331-1.00A.

GTE Laboratories Incorporated: *See—*
Cogan, Adrian I., 4,497,107, Cl. 29-571.000.
Sarin, Vinod K.; Penty, Robert A.; and Buljan, Sergej-Tomislav, 4,497,228, Cl. 82-1.00C.
Winful, Herbert G.; and Cooperman, Gene D., 4,497,535, Cl. 350-96.120.

GTE Products Corporation: *See—*
Bouchard, Andre C.; English, George J.; Hall, Harold H., Jr.; and Sentementes, Thomas J., 4,497,756, Cl. 264-1.900.
Karlotski, Robert J.; Lekebush, Ronald C.; and Kulik, Joseph S., Jr., 4,498,027, Cl. 313-634.000.
Mizuhara, Howard, 4,497,772, Cl. 420-457.000.
Ojanen, Randall W., 4,497,520, Cl. 299-86.000.

Gueguen, Daniel; and Rothera, Jacques, to Autoliv AB. Winder for a safety belt having a rapid locking and unlocking action and a reduced operating noise. 4,497,458, Cl. 242-107.40B.

Guertin, Robert W., to Dover Corporation. Vapor recovery system having automatic shut-off mechanism. 4,497,350, Cl. 141-206.000.

Guggemos, Hans; and Weber, Rolf-Dieter, to Saurer-Allma GmbH. Pneumatic drive for a swingable spool holder. 4,497,451, Cl. 242-37.00R.

Guguen, Claude: *See—*
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Guillory, Jack P.: *See—*
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Gulf Research & Development Company: *See—*
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Gulf & Western Manufacturing Company: *See—*
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Gurtler, Hebert & Co., Inc.: *See—*
Simpson, James K., 4,497,372, Cl. 166-381.000.

Guse, Rolf; and Tauber, Norbert, to Trutzschler GmbH & Co. KG. Regulating method and system for producing a uniform sliver in a carding machine. 4,497,086, Cl. 19-105.000.

Gutleber, Frank S., to United States of America, Army. Multiple interference null tracking array antenna. 4,498,083, Cl. 343-380.000.

H-C Industries, Inc.: *See—*
Wilde, Sheldon L.; McCandless, Thomas J.; and Saunders, Robert M., 4,497,765, Cl. 264-268.000.

H. Finger, Firma: *See—*
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Ratajski, Michel, 4,497,584, Cl. 368-294.000.

Haberkorn, Jerome R. Two-part fastener. 4,497,093, Cl. 24-586.000.

Hackney, Stanley, to United Kingdom Atomic Energy Authority. Filter assembly. 4,497,642, Cl. 55-422.000.

Haderle, Donald J.: *See—*
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Hafner, Hans W., to Pfister GmbH. Gyroscopic force measuring cell. 4,497,213, Cl. 73-862.380.

Haga, Yoshihiro: *See—*
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Hagen, Helmut; Markert, Juergen; and Wuerzer, Bruno, to BASF Aktiengesellschaft. Dichloroquinoline derivatives for use as herbicides. 4,497,651, Cl. 71-94.000.

Hagenmaier, Carl F., Jr.: *See—*
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Hagiwara, Daijiro: *See—*
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Hagiwara, Masaru: *See—*
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Hajicek, David J. Regenerative heat and humidity exchanging apparatus. 4,497,361, Cl. 165-7.000.

Hakura, Akira: *See—*
Yoshizumi, Hajime; Toyoshima, Kumao; Hakura, Akira; and Nakanishi, Toshihiro, 4,497,799, Cl. 514-9.000.

Halcon SD Group, Inc., The: *See—*
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Hale, Thomas E., to General Electric Company. Coated carbide cutting tool insert. 4,497,874, Cl. 428-551.000.

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Halluin, Albert P.; and Barnett, Allan E., to Exxon Research & Engineering Co. Coprecipitated Si-Al-metal-particle catalyst. 4,497,907, Cl. 502-235.000.

Hamada, Shigeharu: *See—*
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Hamaguchi, Naoru: *See—*
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Hamai, Kyugo; Nakagawa, Yasuhiko; Nakai, Meroji; and Inoue, Ryusaburo, to Nissan Motor Company, Limited. Ignition system for an internal combustion engine. 4,497,306, Cl. 123-620.000.

Hamane, Tokuhito; Tasai, Masaaki; and Kubota, Tadashi, to Matsushita Electric Industrial Co., Ltd. Coil inserting apparatus. 4,497,111, Cl. 29-734.000.

Hamano, Isao; Morishita, Akira; Akae, Yoshifumi; Tanaka, Toshinori; and Yabunaka, Kiyoshi, to Mitsubishi Denki Kabushiki Kaisha. Full economizer for vehicles. 4,497,291, Cl. 123-179.0BG.

Hamatani, Tomio, to Boeing Company, The. Outward opening electrically powered plug-type cargo door. 4,497,462, Cl. 244-129.500.

Hamisch, Paul H., Jr., to Monarch Marking Systems, Inc. Hand-held electrically selectable labeler. 4,497,682, Cl. 156-384.000.

Hammerschmidt, Johann: *See—*
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Hand, Jerry L.: *See—*
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Handa, Shizuo: *See—*
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Haneda, Isamu, to Sharp Kabushiki Kaisha. Electronic apparatus with a display and printer. 4,498,144, Cl. 364-900.000.

Hanelt, Winand: *See—*
Mady, Raschad; Hanelt, Winand; Morlock, Roland; Geruhn, Dieter; Leyhe, Lutz; Meyer zu Bexten, Jobst H.; and Ricke, Franz, 4,497,668, Cl. 148-6.15Z.

Hanji, Katsumi; and Kawai, Kiyoshi, to Sumitomo Chemical Company, Limited. Solid catalyst component for olefin polymerization. 4,497,906, Cl. 502-110.000.

Hansen, Kenneth N., to Allis-Chalmers Corp. Clutch pedal operating through a fore and aft shaft in a fire wall of a vehicle. 4,497,217, Cl. 74-512.000.

Hansen, Siegfried; Grinberg, Jan; and Etchells, Robert D., to Hughes Aircraft Company. Segregator functional plane for use in a modular array processor. 4,498,134, Cl. 364-200.000.

Hansmann, Johann; and Fawcett, Frederick, to Franz Plasser Bahnbaumaschinen Industriegesellschaft m.b.H. Mobile track position correction machine. 4,497,256, Cl. 104-11.000.

Hara, Noriaki: *See—*
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Harada, Setsuo; Tsubotani, Shigetoshi; and Asai, Mitsuko, to Takeda Chemical Industries, Ltd. Isomerization of β-lactam compounds. 4,497,742, Cl. 260-245.20T.

Harada, Setsuo; and Okada, Junya, to Takeda Chemical Industries, Ltd. Inclusion compound of lankacidin-group antibiotic and use thereof. 4,497,803, Cl. 514-450.000.

Hargis, Ivan G.: *See—*
Vitus, Francis J.; Hargis, Ivan G.; Livigni, Russell A.; and Aggarwal, Sundar L., 4,497,748, Cl. 260-665.00R.

Harman International Industries Incorporated: *See—*
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Harmon, William A., Jr.: *See—*
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Harrington, Robert J.: *See—*
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Harris, James E.: *See—*
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Harris, Robert S., to Stant Inc. Fuel system tester and primer. 4,497,290, Cl. 123-179.00G.

Harris, Robert S., to Stant Inc. Fuel-water separator. 4,497,714, Cl. 210-788.000.

Harris, Stephen J.: *See—*
Aldridge, Peter J.; and Harris, Stephen J., 4,498,082, Cl. 340-825.160.

Harrison, Anthony W.; and Goudie, Robert J., to Lucas Industries Public Limited Company. Vehicle suspension systems. 4,497,505, Cl. 280-698.000.

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Hart, Lawrence D., to Smith International, Inc. Reamer disassembly. 4,497,384, Cl. 175-315.000.

Harvey, William O. Line holder. 4,497,457, Cl. 242-96.000.

Hashimoto, Masaru: *See—*
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Hashimoto, Masashi; and Aratani, Matsuhiko, to Fujisawa Pharmaceutical Co., Ltd. Analogous compounds of cephalosporins, processes for the preparation thereof and pharmaceutical composition comprising the same. 4,497,738, Cl. 260-239.00A.

Hashimoto, Masashi; Hemmi, Keiji; and Hagiwara, Daijiro, to Fujisawa Pharmaceutical Co., Ltd. New peptides, process for preparation thereof and use thereof. 4,497,801, Cl. 514-15.000.

Hashimoto, Motoichi. Method of processing unmilled rice with chaffs attached thereto. 4,497,839, Cl. 426-482.000.

Hashimoto, Shigeyoshi: *See—*
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Hashiya, Yukio: *See—*
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Hatano, Takashi; and Maruyama, Akira, to Konishiroku Photo Industry Co., Ltd. Photomask material. 4,497,878, Cl. 428-698.000.

Hatayama, Keiji: *See—*
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Hatfield, William R.; Heck, Ronald M.; and Hsiung, Thomas H., to Engelhard Corporation. Method for recovering platinum in a nitric acid plant. 4,497,657, Cl. 75-83.000.

Hathaway, Charles T. Method of forming plastic envelopes. 4,497,679, Cl. 156-251.000.

Hawkins, Brian. Compound lever bow sight. 4,497,116, Cl. 33-265.000.

Hawkins, James B.: *See—*
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Haws, Spencer K. Asparagus cutter. 4,497,113, Cl. 30-124.000.

Hay, Robert D.: *See—*
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Hayashi, Akira: *See—*
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Hayashi, Kiyoshi, to Nippon Kogaku K.K. Zoom lens. 4,497,547, Cl. 350-427.000.

Hayashi, Shoichiro: *See—*
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Hayashi, Tomohiko: *See—*
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Hayashi, Yoshimasa; and Ogawa, Naoki, to Nissan Motor Company, Limited. Bearing beam structure. 4,497,292, Cl. 123-195.00H.

Haytayan, Harry M., to Pneutek, Inc. Pneumatic tool. 4,497,377, Cl. 173-15.000.

Hazelrigg, Mark J., Jr.: *See—*
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Heat Extractor Inc.: *See—*
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Heath, Donald L.; and Chou, Der-Jeou, to ECD-ANR Energy Conversion Company. Thermoelectric device exhibiting decreased stress. 4,497,973, Cl. 136-212.000.

Heathcote, Geoffrey L.; and Hollowell, Alan C., to Rank Organisation Limited, The. Probes for measuring apparatus. 4,498,043, Cl. 324-61.00P.

Heck, Ronald M.: *See—*
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Hecke, Paul; Burger, Arnulf; and Werther, Heinz-Ulrich, to BASF Aktiengesellschaft. Apparatus for treating printing plates. 4,497,081, Cl. 15-102.000.

Hegler, Gary G.: *See—*
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Helbert, John N., to Motorola, Inc. Process for improving adhesion of resist to gold. 4,497,890, Cl. 430-296.000.

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Kitaura, Yoshihiko; Nakaguchi, Osamu; Hemmi, Keiji; Yonishi, Satoshi; and Takeno, Hidekazu, 4,497,729, Cl. 260-112.50R.

Henke, Edward W. Reconstituted leather and method of manufacturing same. 4,497,871, Cl. 428-473.000.

Henkel Kommanditgesellschaft auf Aktien: *See—*
Gorzinski, Manfred; Wilk, Hans-Christoph; Fischer, Herbert; and Wegemund, Bernd, 4,497,933, Cl. 524-604.000.

Henry, Raymond W., to Texas Instruments Incorporated. On board non-volatile memory programming. 4,498,151, Cl. 364-900.000.

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Herlt, Anthony J.: *See—*
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Hernandez, Jose A., to Wide-Lite International Corporation. Lighting fixture with relamping socket apparatus. 4,498,126, Cl. 362-220.000.

Heronemus, William E. Plate-pin panel heat exchanger and panel components therefor. 4,497,363, Cl. 165-95.000.

Herrmann, Heinz; and Schlosser, Hans-Joachim, to Hoechst Aktiengesellschaft. Electrophotographic liquid developer for the reversal development of negatively-charged images. 4,497,886, Cl. 430-115.000.

Herrmann, John E.: *See—*
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Herrmann, John J. Photographic enlargements. 4,497,571, Cl. 355-40.000.

Hess, Hildegard: *See—*
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Hexamer, Donald L.; Spence, Randy D.; and Hesselberg, Johnny, to Custom Automation Designs, Inc. Integrated circuit mounting apparatus. 4,498,047, Cl. 324-158.00F.

Hice, Jaxon O.; and Webb, Gerald J., to Fryday Corporation. Method for producing a restructured food product. 4,497,844, Cl. 426-643.000.

Hicks, Donald D. Safety bait dispenser. 4,497,131, Cl. 43-131.000.

Hight, Ralph D.: *See—*
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Hilkenmeier, Jurgen: *See—*
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Hirai, Kenji: *See—*
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Hitachi Chemical Company, Ltd.: *See—*
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Sato, Hidetaka; Uchimura, Shunichiro; Uchigasaki, Isao; and Makino, Daisuke, 4,497,922, Cl. 524-104.000.

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Hiyama, Yasuhiro: *See—*
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Hobbs, Simon H.: *See—*
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Hobson, Lloyd L. Fork lift truck attachment. 4,497,606, Cl. 414-607.000.

Hodgson, Philip K. G.: *See—*
Bretherick, Leslie; and Hodgson, Philip K. G., 4,497,717, Cl. 252-8.55D.

Hoechst Aktiengesellschaft: *See—*
Herrmann, Heinz; and Schlosser, Hans-Joachim, 4,497,886, Cl. 430-115.000.
Horoldt, Ernst; Kraft, Kurt; and Ritz, Jurgen, 4,497,915, Cl. 523-156.000.
Vogt, Wilhelm; Glaser, Hermann; and Jagers, Erhard, 4,497,747, Cl. 260-546.000.

Hofer, Alan, to Stanton Magnetics, Inc. Electronic stethoscope for monitoring the operation of a prosthetic valve implanted in a patient's heart. 4,498,188, Cl. 381-67.000.

Hoffman, Jacob M., Jr., to Merck & Co., Inc. Thiatriazine dioxides as gastric anti-secretory agents. 4,497,810, Cl. 514-222.000.

Hoffman, Morris. Camera focusing means. 4,497,554, Cl. 354-160.000.

Hoffmann, Kurt, to Siemens Aktiengesellschaft. Monolithically integrated semiconductor memory. 4,498,154, Cl. 365-149.000.

Hofmann, Heinrich, to U.S. Philips Corporation. Magnetic-tape cassette having a capstan cleaning device. 4,498,115, Cl. 360-132.000.

Hokuyo Automatic Co., Ltd.: *See—*
Aihara, Hiroshi; Matumura, Akira; Takemura, Hiroshi; Kobashi, Rikiya; Satomi, Keisuke; and Ishibashi, Hiroe, 4,498,033, Cl. 318-261.000.

Hollenbeck, Dennis W.: *See—*
Holoyda, Peter W.; Hollenbeck, Dennis W.; and Hill, William D., 4,498,196, Cl. 455-607.000.

Hollis, Samuel D., to Union Camp Corporation. Antioxidants and lithium ion. 4,497,931, Cl. 524-570.000.

Hollman, Bert D.: *See—*
Simpson, Harold G.; and Hollman, Bert D., 4,497,151, Cl. 52-520.000.

Hollowell, Alan C.: *See—*
Heathcote, Geoffrey L.; and Hollowell, Alan C., 4,498,043, Cl. 324-61.00P.

Holman, Paul D. Apparatus and method employing selectively stackable game pieces. 4,497,491, Cl. 273-271.000.

Holoyda, Peter W.; Hollenbeck, Dennis W.; and Hill, William D., to General Electric Company. Testable optically isolated control circuit. 4,498,196, Cl. 455-607.000.

Holt, David M.: *See—*
Nicholson, Nicholas; Dowdy, Edward J.; Holt, David M.; and Stump, Charles J., Jr., 4,497,769, Cl. 376-257.000.

Holub, Fred F.: *See—*
Abolins, Visvaldis; Betts, Joseph E.; and Holub, Fred F., 4,497,925, Cl. 524-269.000.

Holzle, Gerd; Miotto, Mirella; Reinert, Gerhard; and Polony, Rudolf, to Ciba-Geigy Corporation. Water-soluble zinc and aluminium phthalocyanines. 4,497,741, Cl. 260-245.770.

Honda Giken Kogyo Kabushiki Kaisha: *See—*
Inoue, Kazuo; and Yamagata, Tetsuo, 4,497,301, Cl. 123-486.000.
Kondo, Makoto, 4,497,285, Cl. 123-41.650.
Masuda, Shoji, 4,497,286, Cl. 123-52.00M.
Miyakoshi, Shinichi; and Isono, Tokio, 4,497,506, Cl. 280-703.000.
Nakano, Yoshikatsu; Matsuura, Masaaki; and Akiyama, Minoru, 4,497,288, Cl. 123-52.00M.
Takagi, Masatoshi; and Annaka, Wataru, 4,497,293, Cl. 123-196.00A.

Honda, Shigemichi; Hitachi, Akio; Suzuki, Kiyosuke; and Dochi, Kiyotaka, to Sony Corporation. Electrostatic printing apparatus. 4,498,090, Cl. 346-159.000.

Honeywell Inc.: *See—*
Bonne, Ulrich, 4,497,438, Cl. 237-8.00R.

Mitchell, Gordon L.; and Tressler, John H., III, 4,497,544, Cl. 350-353.000.
Reynolds, George O., 4,498,009, Cl. 250-452.100.

Hongo, Akira; Ueda, Hideki; Nakata, Issei; Yoshida, Eiichi; Aoki, Nobuyoshi; and Suzuki, Toshimitsu, to Teisan Kabushiki Kaisha; and Daiwa Can Company, Limited. Method of preventing atmosphere from entering heat-insulating container. 4,497,178, Cl. 62-55.000.

Hood, Clarence E., Jr.; Garrett, Thomas R.; and DuBose, Charles R., to Clemson University. Seeding implement. 4,497,265, Cl. 111-86.000.

Hooijmans, Jacobus L. M.: *See—*
Schoute, Frederik C.; Doorduin, Adrianus W.; and Hooijmans, Jacobus L. M., 4,497,978, Cl. 179-9.000.

Hooper, Steven J.: *See—*
Vogel, Jerald M.; Hooper, Steven J.; and Hand, Jerry L., 4,497,078, Cl. 5-118.000.

Hoppe, Joachim; and Gauch, Wolfgang, to GAO Gesellachaft fur Automation und Organisation mbH. Sealed identification card with blocking layers. 4,497,872, Cl. 428-483.000.

Hori, Haruo: *See—*
Hosooka, Shuuichi; Imai, Tetsuji; and Hori, Haruo, 4,497,103, Cl. 29-418.000.

Horie, Fujio: *See—*
Yoshimura, Motokazu; Takiguchi, Michitaka; Horie, Fujio; and Hirata, Koichi, 4,498,078, Cl. 340-679.000.

Horii, Kenju: *See—*
Kuroda, Takao; Horii, Kenju; and Matsumoto, Shigenori, 4,498,013, Cl. 250-578.000.

Horikawa, Kazuo; and Arakawa, Satoshi, to Fuji Photo Film Co., Ltd. Radiation image read-out method and apparatus. 4,498,006, Cl. 250-327.200.

Horn, Petr, to Novasina AG. Method and circuitry for measuring the impedance of a sensor. 4,498,044, Cl. 324-65.00R.

Horoldt, Ernst; Kraft, Kurt; and Ritz, Jurgen, to Hoechst Aktiengesellschaft. Molding compositions containing triketoimidazolidine precondensates, their use, and a process for preparing a triketoimidazolidine precondensate composite suitable for this purpose. 4,497,915, Cl. 523-156.000.

Hortel, Thomas C.: *See—*
Beimesch, Wayne E.; and Hortel, Thomas C., 4,497,757, Cl. 264-13.000.

Horwitt, Laurence G., to Sun Chemical Corporation. Cigar lighter socket shell driver tool. 4,497,226, Cl. 81-474.000.

Hoshiko, Tomonori: *See—*
Ozaki, Shoichiro; Hoshiko, Tomonori; and Ogasawara, Tomio, 4,497,815, Cl. 517-274.000.

Hoshino Gakki Company, Ltd.: *See—*
Hoshino, Yoshihiro, 4,497,092, Cl. 24-514.000.

Hoshino, Mitsuo; Fukushima, Osamu; and Kakuta, Toshio, to Sony Corporation; and Hosiden Electronics Co., Ltd. Integrated circuit socket having an improved cover. 4,497,529, Cl. 339-75.00M.

Hoshino, Yoshihiro, to Hoshino Gakki Company, Ltd. Device for fixing rods in selected relative position. 4,497,092, Cl. 24-514.000.

Hosiden Electronics Co., Ltd.: *See—*
Aoki, Shigeo; Tamamura, Junichi; Ukai, Yasuhiro; and Morita, Hideo, 4,497,543, Cl. 350-337.000.
Hoshino, Mitsuo; Fukushima, Osamu; and Kakuta, Toshio, 4,497,529, Cl. 339-75.00M.

Hosooka, Shuuichi; Imai, Tetsuji; and Hori, Haruo, to Yoshida Kogyo K.K. Method for manufacturing a heat insulation sash bar. 4,497,103, Cl. 29-418.000.

House, William N., to Harman International Industries Incorporated. Multi-driver loudspeaker. 4,497,981, Cl. 179-115.5PS.

Houthoff, Jacobus; and Sips, Johannes J., to U.S. Philips Corporation. Junction field effect transistor having a substantially quadratic characteristic. 4,498,094, Cl. 357-22.000.

Howard, Lawrence V.: *See—*
Armstrong, Alan S.; Herrmann, John E.; and Howard, Lawrence V., 4,497,899, Cl. 436-510.000.

Howard, Lowell C.; and Peterson, Charles K. Data recording system for cameras. 4,497,552, Cl. 354-106.000.

Howell, S. Garry: *See—*
Howell, Samuel G.; and Birchall, William R., 4,497,782, Cl. 423-184.000.

Howell, Samuel G.; and Birchall, William R., to Howell, S. Garry; Watson, Lloyd; Birchall, William R.; and Allen, Larry. Method for destroying toxic organic chemical products. 4,497,782, Cl. 423-184.000.

Howlett, Thomas J.: *See—*
Furze, Victor J.; and Howlett, Thomas J., 4,497,482, Cl. 271-94.000.

Hoyt Manufacturing Corporation: *See—*
Manzone, Richard R., 4,497,690, Cl. 202-181.000.

Hriscisce, Frank: *See—*
Cherukuri, S. Rao; Bilka, Kenneth P.; and Hriscisce, Frank, 4,497,832, Cl. 426-5.000.

Hsia, Chung H.: *See—*
Wright, Bernard S.; Owen, Hartley; and Hsia, Chung H., 4,497,968, Cl. 585-304.000.

Hsieh, Fu H.: *See—*
Gould, Max R.; Bone, David P.; and Hsieh, Fu H., 4,497,840, Cl. 426-560.000.

Hsiung, Thomas H.: *See—*
Hatfield, William R.; Heck, Ronald M.; and Hsiung, Thomas H., 4,497,657, Cl. 75-83.000.

Huang, I-der: *See—*
Yang, Tai-Cheng; Rao, Krishna K.; and Huang, I-der, 4,497,958, Cl. 549-239.000.

Hubbard, James R.; Pelensky, Joseph; and Kin, Niles, to Graphic Controls Corporation. Catheter patency flush flow controller. 4,497,468, Cl. 251-117.000.

Huber, Max, to Sulzer Brothers Limited. X-Shaped packing layers and method of making. 4,497,752, Cl. 261-95.000.

Huber, Peter; Stengl, Jens P.; and Tihanyi, Jeno , to Siemens Aktiengesellschaft. Method of fabricating light-controlled thyristor utilizing selective etching and ion-implantation. 4,497,109, Cl. 29-578.000.

Huffy Corporation: *See—*
Forbes, Robert C.; and VanderKam, John, 4,497,502, Cl. 280-281.0LP.

Hug, Franz; Johler, Franz; and Franke, Reimar, to Klockner-Humboldt-Deutz AG. Combine harvester with angled axial thresher. 4,497,327, Cl. 130-27.00T.

Hughes Aircraft Company: *See—*
Giants, Thomas W., 4,497,951, Cl. 544-206.000.
Hansen, Siegfried; Grinberg, Jan; and Etchells, Robert D., 4,498,134, Cl. 364-200.000.

Hughes, Howard C.; and Bertolet, Roy D. Process for polymer coating electrical conductors. 4,497,849, Cl. 427-120.000.

Hughes Tool Company: *See—*
Baugh, John L., 4,497,368, Cl. 166-208.000.

Hughette, Michel: *See—*
Boursier, Bernard; Bussiere, Guy; Devos, Francis; and Hughette, Michel, 4,497,846, Cl. 426-660.000.

Hull, Frank A., to Carlson, Chesley F. Automated self calibrating exposure computer. 4,498,140, Cl. 364-571.000.

Hulse, Mark M.: *See—*
Anderson, Maynard E.; Marshall, Robert T.; and Hulse, Mark M., 4,497,898, Cl. 436-23.000.

Humber, David C.: *See—*
Phillipps, Gordon H.; Humber, David C.; Ewan, George B.; Coomber, Barry A.; and Pateman, Anthony J., 4,497,805, Cl. 514-172.000.

Hunter, Robert O.; and Fried, David L. High energy laser. 4,498,051, Cl. 330-4.300.

Hurdle, Edmund S.: *See—*
Neiditch, Oscar W.; Hurdle, Edmund S.; and Fox, Daniel J., 4,497,718, Cl. 252-8.750.

Hurta, Gary L.; Milberger, Lionel J.; and Williams, Alford M., to Combustion Engineering, Inc. Hydraulic control of subsea well equipment. 4,497,369, Cl. 166-368.000.

Huse, Syouzi: *See—*
Ooi, Tetsuo; Watanabe, Hiroshi; Gotoh, Akio; Tsutsumi, Shuitsu; Oba, Ryohei; Ito, Koichi; and Huse, Syouzi, 4,498,195, Cl. 455-205.000.

Huss, Albin, Jr.: *See—*
Chu, Pochen; Huss, Albin, Jr.; and Vartuli, James C., 4,497,786, Cl. 423-329.000.

Hutchinson, Daniel M. Wall display device. 4,497,125, Cl. 40-10.00R.

Hutzenlaub, Armin: *See—*
Kampf, Eberhard; and Hutzenlaub, Armin, 4,497,455, Cl. 242-56.900.

Hwang, Edward F.: *See—*
Okamoto, Yoshiyuki; and Hwang, Edward F., 4,497,727, Cl. 252-500.000.

Hwang, Jong-Yeong H.; Thayer, Stevan J.; and Zimmer, Bonnie A., to AT&T Bell Laboratories. Data set diagnostic system. 4,498,186, Cl. 375-7.000.

Ichida, Kozaburo: *See—*
Ikegami, Hiroshi; Ichida, Kozaburo; and Kobayashi, Katsuyoshi, 4,497,674, Cl. 148-156.000.

Ichikawa, Izuo: *See—*
Kurihara, Kozo; Ichikawa, Izuo; Nakane, Hisanori; and Ikegami, Yoshihiko, 4,497,847, Cl. 427-3.000.

Ichimura, Takeo: *See—*
Ogino, Makoto; Futami, Toshihiko; Kariya, Michio; Ichimura, Takeo; and Fujiu, Takamitsu, 4,497,629, Cl. 433-201.000.

Ichinomiya, Tsutomu: *See—*
Matsuura, Masahiro; Ichinomiya, Tsutomu; and Abe, Hideaki, 4,497,323, Cl. 128-685.000.

Idemitsu Kosan Company Limited: *See—*
Katayama, Takao, 4,497,721, Cl. 252-56.00R.

Igarashi, Keiichi: *See—*
Yoshimoto, Takeo; Igarashi, Keiichi; Yamazaki, Hideo; Takasawa, Yoshio; and Yanagita, Hirohisa, 4,497,828, Cl. 514-603.000.

Iglesias, David E.: *See—*
Allyn, Christopher L.; Flahive, Peter G.; Iglesias, David E.; Schlosser, Wolfgang O. W.; and Wemple, Stuart H., 4,498,093, Cl. 357-22.000.

Ikeda Bussan Co., Ltd.: *See—*
Nishimura, Shinichi; Akiyama, Yoshinori; and Kanazawa, Yuzo, 4,497,518, Cl. 297-341.000.

Ikegami, Hiroshi; Ichida, Kozaburo; and Kobayashi, Katsuyoshi, to Nippon Steel Corporation. Method and apparatus for continuously annealing steel sheet. 4,497,674, Cl. 148-156.000.

Ikegami, Yoshihiko: *See—*
Kurihara, Kozo; Ichikawa, Izuo; Nakane, Hisanori; and Ikegami, Yoshihiko, 4,497,847, Cl. 427-3.000.

Ikutake, Hiroshi, to Nippon Piston Ring Co., Ltd. Process for manufacturing a piston ring. 4,497,102, Cl. 29-156.600.

Illger, Hans-Walter: *See—*
de Montigny, Armand; Illger, Hans-Walter; Gonzalez-Doerner, Alberto C.; and Moretto, Hans-Heinrich, 4,497,962, Cl. 556-446.000.

Imai, Tetsuji: *See—*
Hosooka, Shuuichi; Imai, Tetsuji; and Hori, Haruo, 4,497,103, Cl. 29-418.000.

Imbiel, Herbert; and Herbig, Henning, to Messerschmitt-Boelkow-Blohm Gesellschaft mit beschraenkter Haftung. Apparatus for unfolding an antenna netting reflector. 4,498,087, Cl. 343-915.000.

Imperial Chemical Industries PLC: *See—*
Loftus, Frank, 4,497,949, Cl. 544-27.000.
Shepherd, David, 4,497,711, Cl. 210-656.000.

Inagawa, Jun: *See—*
Nagumo, Masahide; Inagawa, Jun; and Kojima, Tadashi, 4,498,175, Cl. 371-37.000.

Inco Alloys International, Inc.: *See—*
Wang, Kathy K.; and Robinson, Mark L., 4,497,669, Cl. 148-11.5QP.

Ing. C. Olivetti & C., S.p.A.: *See—*
Figini, Mario, 4,497,589, Cl. 400-706.000.
Scardovi, Alessandro, 4,498,089, Cl. 346-140.00R.

Ingold, Daniel L.; and Stewart, Robert L., to Appropriate Technology Corporation. Venting system for insulating window shade. 4,497,436, Cl. 236-49.000.

Inoue, Kazuo; and Yamagata, Tetsuo, to Honda Giken Kogyo Kabushiki Kaisha. Electronic fuel injection control system for internal combustion engines, including means for detecting engine operating condition parameters. 4,497,301, Cl. 123-486.000.

Inoue, Ryusaburo: *See—*
Hamai, Kyugo; Nakagawa, Yasuhiko; Nakai, Meroji; and Inoue, Ryusaburo, 4,497,306, Cl. 123-620.000.

Inspector, Elizabeth. Boot tree. 4,497,080, Cl. 12-128.00R.

Insta-Print, Inc.: *See—*
Cooperberg, Bruce; and Peck, Gene E., 4,497,558, Cl. 354-303.000.

Institut Francais du Petrole: *See—*
Quang, Dang V.; Sugier, Andre ; Commereuc, Dominique; and Chauvin, Yves, 4,497,910, Cl. 518-700.000.

Intercraft Designs Limited: *See—*
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International Business Machines Corporation: *See—*
Advani, Hira; and Cason, William C., 4,498,142, Cl. 364-900.000.
Agnew, Palmer W.; Kellerman, Anne S.; and Randall, Grayson W., 4,498,147, Cl. 364-900.000.
Baker, Jerry W.; Crus, Richard A.; and Haderle, Donald J., 4,498,145, Cl. 364-900.000.
Faris, Sadeg M.; Moskowitz, Paul A.; Davidson, Arthur; and Sai-Halasz, George A., 4,498,046, Cl. 324-158.00F.
Galwey, Ronald K.; and Kanazawa, Kay K., 4,498,039, Cl. 323-234.000.
Garbarino, Paul L.; Makarewicz, Stanley R.; and Shepard, Joseph F., 4,498,095, Cl. 357-23.000.
Gaudet, James L.; and Chukran, Rudolph E., 4,498,150, Cl. 364-900.000.
Gelchinski, Mordechai H.; Romankiw, Lubomyr T.; Vigliotti, Donald R.; and Von Gutfeld, Robert J., 4,497,692, Cl. 204-15.000.
Glickman, David, 4,498,148, Cl. 364-900.000.
Kaplan, Leon H.; and Kaplan, Richard D., 4,497,891, Cl. 430-296.000.
Sincerbox, Glenn T., 4,497,534, Cl. 350-3.720.
Sproul, William W., III, 4,498,136, Cl. 364-200.000.

International Standard Electric Corporation: *See—*
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International Telephone and Telegraph Corporation: *See—*
Bowen, James H., 4,498,167, Cl. 370-44.000.

Interox Chemicals Ltd.: *See—*
Smith, Eileen; Timperley, Doreen A.; and Titchener, Dorothy M., 4,497,725, Cl. 252-102.000.

Irish , William D.: *See—*
Gelbard, Robert B.; Grimm, Bernard J.; and Irish , William D., 4,497,183, Cl. 62-295.000.

Irwin, Clarence C., to General Motors Corporation. Hydraulic control system for vehicle. 4,497,503, Cl. 280-335.000.

Irwin Magnetic Systems, Inc.: *See—*
Velazquez, Juan F., 4,498,129, Cl. 364-174.000.

Ishibashi, Hiroe: *See—*
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Ishida, Kazuhiro: *See—*
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Ishida, Tokuji, to Minolta Camera Kabushiki Kaisha. Exposure control device for flash photography. 4,497,562, Cl. 354-416.000.

Ishihara, Shoichi: *See—*
Kitao, Teijiro; Setsune, Jun-ichiro; Ishihara, Shoichi; and Yamamoto, Ryoichi, 4,497,724, Cl. 252-70.000.

Ishikawa, Takayoshi: *See—*
Kodera, Toshihiko; Eguchi, Kiyoshi; Ishikawa, Takayoshi; Genba, Yasushi; Tamaru, Shigemi; and Satou, Susumu, 4,497,992, Cl. 200-153.0SC.

Isliker, Gaston R.: *See—*
Meyer, Helmut P.; and Isliker, Gaston R., 4,497,633, Cl. 445-7.000.

Isono, Tokio: *See—*
Miyakoshi, Shinichi; and Isono, Tokio, 4,497,506, Cl. 280-703.000.

Isuzu Motors Limited: *See—*
Fujiwara, Takahisa; Narihisa, Masaaki; and Tamai, Katsuyuki, 4,498,066, Cl. 335-281.000.

Ito, Hiroshi: *See—*
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Yoshizawa, Kenji; Kodama, Hitoshi; Minowa, Yoshibumi; Komura, Hirotsugu; and Ito, Hiroshi, 4,498,029, Cl. 315-39.000.

Ito, Koichi: *See—*
Ooi, Tetsuo; Watanabe, Hiroshi; Gotoh, Akio; Tsutsumi, Shuitsu; Oba, Ryohei; Ito, Koichi; and Huse, Syouzi, 4,498,195, Cl. 455-205.000.

Itoh, Akira; and Takemura, Akira, to Mitsubishi Paper Mills, Ltd. Colored silver halide photographic photosensitive materials. 4,497,894, Cl. 430-522.000.

Itoh, Takuji; and Akitsuki, Ikuo, to Toa Nenryo Kogyo Kabushiki Kaisha. Hydrogenation process. 4,497,909, Cl. 502-262.000.

ITT Corporation: *See—*
Gorman, Patrick R.; and Stottlemyer, William O., 4,497,980, Cl. 179-81.00B.

ITT Industries, Inc.: *See—*
Michalski, Dieter, 4,497,982, Cl. 200-5.00R.

Ivanchenko, Nikolai N.; Sokolov, Sergei S.; Lazarev, Anatoly A.; Kataev, Evgeny M.; Glazunov, Arkady A.; and Gorbunov, Evgeny S., to Tsentralny Iauchno-Issledovatelsky Dizelny Institut. Internal combustion engine. 4,497,309, Cl. 123-276.000.

Iwamoto, Noritada: *See—*
Nakai, Mamoru; Ohshima, Tokio; Kimura, Tomio; Omata, Tetsuo; and Iwamoto, Noritada, 4,497,957, Cl. 548-496.000.

Iwans, Robert C., to Coca-Cola Company, The. Ice bank control system for beverage dispenser. 4,497,179, Cl. 62-59.000.

Iwasawa, Nobuyuki; and Kazato, Keiji, to Toppan Printing Co. Ltd. Multi-layered hollow container. 4,497,856, Cl. 428-35.000.

Iwashita, Koichi: *See—*
Moriga, Hiroyuki; Uchida, Masao; Iwashita, Koichi; and Tanaka, Shuji, 4,497,720, Cl. 252-52.00A.

Izumi, Kouichi; and Hiyama, Yasuhiro, to Diesel Kiki Co., Ltd. Electronically controlled governor for diesel engines. 4,497,294, Cl. 123-357.000.

Izumita, Morishi: *See—*
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Izzo, Anthony J.: *See—*
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J. M. Huber Corporation: *See—*
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J. M. Voith GmbH: *See—*
Elsner, Ernst, 4,497,219, Cl. 74-790.000.

J & P Coats, Limited: *See—*
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Jagers, Erhard: *See—*
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Jakusch, Helmut: *See—*
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James River—Norwalk, Inc.: *See—*
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Janberg, Klaus: *See—*
Dyck, Hans P.; Janberg, Klaus; Richter, Wolfgang; and Spilker, Harry, 4,498,011, Cl. 250-507.100.

Jarby, Sven. Smoothing, cutting and polishing tool. 4,497,141, Cl. 51-168.000.

Jarry, Christian: *See—*
Creuzet, Marie-Helene; Feniou, Claude; Jarry, Christian; Prat, Gisele; and Pontagnier, Henri, 4,497,812, Cl. 514-211.000.

Jerobee Industries, Inc.: *See—*
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Jes, Otto J., to Willamette Industries, Inc. Stackable container with locking lid. 4,497,408, Cl. 206-509.000.

Jessen, Jens-Christian: *See—*
Lucke, Hans-Hermann; and Jessen, Jens-Christian, 4,497,879, Cl. 429-62.000.

Jezbera, Val K., to Dataproducts Corporation. Method of making a hammer bank assembly. 4,497,110, Cl. 29-602.00R.

Jha, Mahesh C.: *See—*
Kramer, Marcy J.; Warneke, William C.; Meyer, Gustavo A.; and Jha, Mahesh C., 4,497,779, Cl. 423-72.000.

Joa, Curt G.; and Radzins, Edmund, to Curt G. Joa, Inc. Offset orbit fluff generator. 4,497,448, Cl. 241-186.400.

Johannson, Richard J., to Towmotor Corporation. Fork position retainer. 4,497,607, Cl. 414-664.000.

Johler, Franz: *See—*
Hug, Franz; Johler, Franz; and Franke, Reimar, 4,497,327, Cl. 130-27.00T.

Johnson, Axel R.; and Woebcke, Herman N., to Stone & Webster Engineering Corp. Fuel gas generation for solids heating. 4,497,638, Cl. 48-197.00R.

Johnson, Delp W. Method of constructing and assembling building elements for foldably constructed stadiums. 4,497,154, Cl. 52-745.000.

Johnson, George N.: *See—*
Fearing, D. Michael; and Johnson, George N., 4,497,321, Cl. 128-330.000.

Johnson, Harold K.: *See—*
Becker, Arnold F.; and Johnson, Harold K., 4,498,192, Cl. 383-126.000.

Johnson, J. Darrel. Vegetation blocking fence edging assembly. 4,497,472, Cl. 256-32.000.
Johnson, Lewis H.; Carlson, Lee A.; and Lunt, David M., to Dennison Manufacturing Company. Ink stamp pad and reservoir. 4,497,275, Cl. 118-268.000.
Johnson, Robert R. Ash receptacle with dust eliminator. 4,497,308, Cl. 126-242.000.
Johnson, Russell W.: *See—*
O'Hara, Mark J.; and Johnson, Russell W., 4,497,704, Cl. 208-112.000.
Johnson Service Company: *See—*
Trobaugh, Arnold G., 4,497,435, Cl. 236-44.00A.
Jones, Thomas M.: *See—*
Ahlstrom, John K.; Bachman, Brett L.; Belgard, Richard A.; Bernstein, David H.; Bratt, Richard G.; Clancy, Gerald F.; Gavrin, Edward S.; Gruner, Ronald H.; Jones, Thomas M.; Katz, Lawrence H.; Mundie, Craig J.; Richmond, Michael S.; Schleimer, Stephen I.; Wallach, Steven J.; Wallach, Walter A., Jr.; and Wells, Douglas M., 4,498,132, Cl. 364-200.000.
Bratt, Richard G.; Gavrin, Edward S.; Schleimer, Stephen I.; Pilat, John F.; Wallach, Walter A., Jr.; Richmond, Michael S.; Belgard, Richard A.; Farber, David A.; Ahlstrom, John K.; Wallach, Steven J.; Katz, Lawrence H.; Wells, Douglas M.; Mundie, Craig J.; Clancy, Gerald F.; Bernstein, David H.; Jones, Thomas M.; and Bachman, Brett L., 4,498,131, Cl. 364-200.000.
Joynes, Brian: *See—*
Temperley, Harry D.; and Joynes, Brian, 4,497,175, Cl. 60-581.000.
JS Technology, Inc.: *See—*
Stasiek, Jan S., 4,497,227, Cl. 81-63.100.
Jujo Paper Co., Ltd.: *See—*
Yamato, Noboru; Satake, Toshimi; Minami, Toshiaki; and Fujimura, Fumio, 4,498,091, Cl. 346-216.000.
Julich, Werner: *See—*
Hintsch, Otto; and Julich, Werner, 4,497,346, Cl. 139-66.00R.
Jundt, Wolfgang: *See—*
Kummer, Martin; Krieg, Uwe; Jundt, Wolfgang; Rieker, Werner; Schadlich, Fritz; and Schaal, Gunter, 4,497,354, Cl. 145-4.000.
Jungverdorben, Hermann J.: *See—*
Reinehr, Ulrich; Herbertz, Toni; Jungverdorben, Hermann J.; and Dross, Joachim, 4,497,868, Cl. 428-400.000.
Jurgens, Reiner, to Norton Christensen, Inc. Apparatus for making and breaking screw couplings. 4,497,224, Cl. 81-57.340.
Kabushiki Kaisha Daini Seikosha: *See—*
Momoshima, Yukichi; Nagasaka, Nobuyuki; and Mine, Mamoru, 4,497,235, Cl. 84-1.190.
Saito, Yasuhiro; and Tatemichi, Takaomi, 4,497,977, Cl. 178-19.000.
Kabushiki Kaisha Ishida Koki Seisakusho: *See—*
Sashiki, Takashi, 4,497,385, Cl. 177-59.000.
Kabushiki Kaisha Komatsu Seisakusho: *See—*
Maruyama, Ryoichi; Nishijima, Takayoshi; Aida, Hideaki; Konishi, Hideyuke; and Hatayama, Keiji, 4,497,223, Cl. 74-866.000.
Kabushiki Kaisha Medos Kenkyusho: *See—*
Ouchi, Teruo; Chikashige, Kiyoshi; and Ueda, Hirohisa, 4,497,550, Cl. 350-584.000.
Kabushiki Kaisha Suwa Seikosha: *See—*
Tatsushi, Asakawa; and Shinji, Morozumi, 4,498,040, Cl. 323-299.000.
Kabushiki Kaisha Toyoda Jidoshokki Seisakusho: *See—*
Anahara, Meiji; and Suzuki, Yoshihisa, 4,497,089, Cl. 19-288.000.
Kabushiki Kaisha Toyota Chuo Kenkyusho: *See—*
Kamigaito, Osami; Doi, Haruo; and Fukushima, Yoshiaki, 4,497,869, Cl. 428-402.000.
Kabushikigaisha Nippon Kogu Seisakusho: *See—*
Kishimoto, Kiyoshi, 4,497,600, Cl. 407-53.000.
Kackos, Edward M.: *See—*
Kuelzow, Christopher J.; Kackos, Edward M.; and Murray, Francis J., 4,497,773, Cl. 422-26.000.
Kaiser, Peter: *See—*
Elsner, Emil; Reiber, Dietfried; Messmer, Josef; and Kaiser, Peter, 4,498,185, Cl. 373-93.000.
Kaiser Steel (Delaware), Inc.: *See—*
Oswald, Donald E., 4,497,837, Cl. 426-398.000.
Kaji, Kiyokane: *See—*
Takahashi, Juhei; Miura, Kenzo; Asano, Shogo; Sugiyama, Kunio; Kaji, Kiyokane; and Ohta, Jun, 4,497,198, Cl. 73-35.000.
Kakuta, Toshio: *See—*
Hoshino, Mitsuo; Fukushima, Osamu; and Kakuta, Toshio, 4,497,529, Cl. 339-75.00M.
Kalama Chemical, Inc.: *See—*
Marinak, Michael J.; and Simonson, John L., 4,497,955, Cl. 546-345.000.
Kali-Chemie Pharma GmbH: *See—*
Zeugner, Horst; Romer, Dietmar; Liepmann, Hans; and Milkowski, Wolfgang, 4,497,740, Cl. 260-244.400.
Kameyama, Koji: *See—*
Deguchi, Naoyasu; Kameyama, Koji; and Nakamura, Taku, 4,497,893, Cl. 430-359.000.
Kamigaito, Osami; Doi, Haruo; and Fukushima, Yoshiaki, to Kabushiki Kaisha Toyota Chuo Kenkyusho. Formed product of vermiculite and method for producing the same. 4,497,869, Cl. 428-402.000.
Kamp, Heinz, to W. Schlafhorst & Co. Method and apparatus for open-end spinning. 4,497,168, Cl. 57-401.000.
Kampf, Eberhard; and Hutzenlaub, Armin, to Erwin Kampf GmbH & Co Maschinenfabrik. Winding machine. 4,497,455, Cl. 242-56.900.
Kanayama, Yoshio, to Sharp Kabushiki Kaisha. Ink jet air bubble detection. 4,498,088, Cl. 346-140.00R.
Kanazawa, Kay K.: *See—*
Galwey, Ronald K.; and Kanazawa, Kay K., 4,498,039, Cl. 323-234.000.
Kanazawa, Yuzo: *See—*
Nishimura, Shinichi; Akiyama, Yoshinori; and Kanazawa, Yuzo, 4,497,518, Cl. 297-341.000.
Kaneda, Michihiro: *See—*
Sekine, Kunio; Kaneda, Michihiro; Shinokura, Kiichiro; Suenaga, Norihiro; and Suenaga, Nobuyuki, 4,497,319, Cl. 128-303.100.
Kaneko, Mamoru: *See—*
Noguchi, Toyota; Okamoto, Michio; Nishimura, Tadafumi; Sugimoto, Yukio; Kaneko, Mamoru; and Nakayama, Kenjiro, 4,498,170, Cl. 370-110.100.
Kanto Denka Kogyo Co., Ltd.: *See—*
Takano, Katsuhiro; Koma, Yoshishige; Hagiwara, Masaru; and Suzuki, Shintaro, 4,497,654, Cl. 75-0.5AA.
Kanzelberger, James C.; and Deau, William J., to Contemporary Inc. Thermal engraving presses. 4,497,248, Cl. 104-27.000.
Kao Corporation: *See—*
Yamasaki, Harumasa; Kobayashi, Takatoshi; and Sumida, Yuzo, 4,497,930, Cl. 524-556.000.
Kaplan, Leon H.; and Kaplan, Richard D., to International Business Machines Corporation. Dry-developed, negative working electron resist system. 4,497,891, Cl. 430-296.000.
Kaplan, Richard D.: *See—*
Kaplan, Leon H.; and Kaplan, Richard D., 4,497,891, Cl. 430-296.000.
Kariya, Michio: *See—*
Ogino, Makoto; Futami, Toshihiko; Kariya, Michio; Ichimura, Takeo; and Fujiu, Takamitsu, 4,497,629, Cl. 433-201.000.
Karlotski, Robert J.; Lekebush, Ronald C.; and Kulik, Joseph S., Jr., to GTE Products Corporation. Arc discharge lamp with improved starting capabilities, improved efficacy and maintenance, and line-of-sight arched arc tube for use therewith. 4,498,027, Cl. 313-634.000.
Karos, Lisa M. Pierced ear cleaning and sterilizing apparatus. 4,497,402, Cl. 206-210.000.
Kashino, Shinzo: *See—*
Eguchi, Jyutaro; Kashino, Shinzo; Odahara, Tetsuichi; and Sukenari, Gunzo, 4,497,162, Cl. 56-14.600.
Kataev, Evgeny M.: *See—*
Ivanchenko, Nikolai N.; Sokolov, Sergei S.; Lazarev, Anatoly A.; Kataev, Evgeny M.; Glazunov, Arkady A.; and Gorbunov, Evgeny S., 4,497,309, Cl. 123-276.000.
Katakura, Masayuki; and Tenma, Takumi, to Sony Corporation. Current amplifier. 4,498,053, Cl. 330-261.000.
Katayama, Takao, to Idemitsu Kosan Company Limited. Refrigerator oil composition. 4,497,721, Cl. 252-56.00R.
Katou Hatsujo Kaisha Ltd.: *See—*
Ohkata, Ichizo, 4,497,241, Cl. 98-40.250.
Katz, Bernard B.: *See—*
Levatter, Jeffrey I., 4,498,183, Cl. 372-86.000.
Katz, Lawrence H.: *See—*
Ahlstrom, John K.; Bachman, Brett L.; Belgard, Richard A.; Bernstein, David H.; Bratt, Richard G.; Clancy, Gerald F.; Gavrin, Edward S.; Gruner, Ronald H.; Jones, Thomas M.; Katz, Lawrence H.; Mundie, Craig J.; Richmond, Michael S.; Schleimer, Stephen I.; Wallach, Steven J.; Wallach, Walter A., Jr.; and Wells, Douglas M., 4,498,132, Cl. 364-200.000.
Bratt, Richard G.; Gavrin, Edward S.; Schleimer, Stephen I.; Pilat, John F.; Wallach, Walter A., Jr.; Richmond, Michael S.; Belgard, Richard A.; Farber, David A.; Ahlstrom, John K.; Wallach, Steven J.; Katz, Lawrence H.; Wells, Douglas M.; Mundie, Craig J.; Clancy, Gerald F.; Bernstein, David H.; Jones, Thomas M.; and Bachman, Brett L., 4,498,131, Cl. 364-200.000.
Kaufman, Lance R. Electrical sub-assembly having a lead frame to be compressed between a circuit board and heat sink. 4,498,120, Cl. 361-386.000.
Kaveh, Farrokh, to Owens-Corning Fiberglas Corporation. Blower for the attenuation of fibers. 4,497,644, Cl. 65-14.000.
Kawabata, Hidetsugu: *See—*
Kudo, Yoshihiko; Kawabata, Hidetsugu; Birukawa, Masahiro; Hara, Noriaki; and Muto, Akira, 4,497,870, Cl. 428-457.000.
Kawabata, Yuichi: *See—*
Koyama, Kazumi; Fukushima, Toshitaka; and Kawabata, Yuichi, 4,498,022, Cl. 307-473.000.
Kawaharada, Junji: *See—*
Nagamoto, Mitsuki; Hashiya, Yukio; and Kawaharada, Junji, 4,498,065, Cl. 335-79.000.
Kawai, Kiyoshi: *See—*
Hanji, Katsumi; and Kawai, Kiyoshi, 4,497,906, Cl. 502-110.000.
Kawamoto, Tamio, to Nissan Motor Company, Limited. Gear operating mechanism of an automotive manual transmission. 4,497,216, Cl. 74-475.000.
Kawamura, Yoshimi: *See—*
Ebata, Mitsuo; Miyake, Yukio; and Kawamura, Yoshimi, 4,497,797, Cl. 424-118.000.
Kawasaki, Hironobu: *See—*
Umezono, Akimi; Kawasaki, Hironobu; Sato, Takashi; and Hayashi, Tomohiko, 4,497,850, Cl. 427-127.000.
Kaye, Wilbur I., to Beckman Instruments, Inc. Apparatus for minimizing beam collimation sensitivity in optical instruments including liquid crystal cells. 4,497,542, Cl. 350-335.000.
Kazato, Keiji: *See—*
Iwasawa, Nobuyuki; and Kazato, Keiji, 4,497,856, Cl. 428-35.000.
Kedem, Tuval, to Equipment Company of America. Pallet truck with hydraulic lift. 4,497,501, Cl. 280-43.120.

Keller, Herbert. to Kraftwerk Union Aktiengesellschaft. Device for vibration damping in a guide vane ring. 4,497,611, Cl. 415-191.000.
Kellerman, Anne S.: *See—*
Agnew, Palmer W.; Kellerman, Anne S.; and Randall, Grayson W., 4,498,147, Cl. 364-900.000.
Kemisk Vaerk Koge A/S: *See—*
Olsen, Steffen C.; and Vinther, Arne, 4,497,735, Cl. 534-603.000.
Kemp, John: *See—*
Sall, Surinderpal S.; and Kemp, John, 4,497,493, Cl. 277-2.000.
Ken, Victor: *See—*
Schapira, Joseph; Ken, Victor; and Dauptain, Jean-Loup, 4,497,666, Cl. 148-6.15R.
Kennecott Corporation: *See—*
Nunlist, Erwin J., 4,497,418, Cl. 220-234.000.
Kenro Corporation: *See—*
Tarsia, Joseph; Ross, Alexander S.; and Gertsek, Marina, 4,497,574, Cl. 355-76.000.
Kestner, Diane E.: *See—*
Upson, Donald A.; and Kestner, Diane E., 4,497,917, Cl. 523-201.000.
Kettl, Henry G. Beehive aerator. 4,497,079, Cl. 6-1.000.
Khallil, George. Self-adjusting weather strip. 4,497,136, Cl. 49-481.000.
Khasin, Marra: *See—*
Pickett, Charles G.; Charney, John G.; and Khasin, Marra, 4,497,706, Cl. 210-130.000.
Kibby, Charles L.; and Kobylinski, Thaddeus P., to Gulf Research & Development Company. Activated cobalt-substituted layered alumino-silicate for synthesis gas conversion. 4,497,903, Cl. 502-85.000.
Kidon, William E. Corrosion resistant metal composite with zinc and chromium coating. 4,497,876, Cl. 428-624.000.
Killinger, Karl H., to Singer Company, The. Top work feeding arrangement for a chain stitch sewing machine. 4,497,268, Cl. 112-169.000.
Kim, Choong S.; Lee, Nam J.; and Kim, Joong H., to Korea Advanced Institute of Science and Technology. Process for the production of (±)-4-oxo-1,2,3,6,7,11b-hexahydro-4H-pyrazino[2,1-a]isoquinoline derivatives. 4,497,952, Cl. 544-344.000.
Kim, Joong H.: *See—*
Kim, Choong S.; Lee, Nam J.; and Kim, Joong H., 4,497,952, Cl. 544-344.000.
Kimble, James B.: *See—*
Eastman, Alan D.; Guillory, Jack P.; Cook, Charles F.; and Kimble, James B., 4,497,971, Cl. 585-658.000.
Kimura, Kenji, to Olympus Optical Co., Ltd. Optical disc reproducing apparatus. 4,498,110, Cl. 358-342.000.
Kimura, Tadakatsu: *See—*
Makabe, Takayoshi; Kuraishi, Yoshiaki; Nakayama, Kenji; and Kimura, Tadakatsu, 4,498,063, Cl. 333-173.000.
Kimura, Takeo: *See—*
Minemura, Norihiro; Kimura, Takeo; and Mitsui, Yoshiaki, 4,497,095, Cl. 26-2.00R.
Kimura, Tomio: *See—*
Nakai, Mamoru; Ohshima, Tokio; Kimura, Tomio; Omata, Tetsuo; and Iwamoto, Noritada, 4,497,957, Cl. 548-496.000.
Kimura, Yoshimasa: *See—*
Komiya, Yutaka; Kimura, Yoshimasa; and Murakami, Koichi, 4,497,568, Cl. 355-14.00R.
Kin, Niles: *See—*
Hubbard, James R.; Pelensky, Joseph; and Kin, Niles, 4,497,468, Cl. 251-117.000.
Kindler, Wolfgang: *See—*
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Kinetronics Corporation: *See—*
Stelcher, William N.; and Murdock, Michael J., 4,497,420, Cl. 221-13.000.
King, Dennis M.: *See—*
Earleson, Walter E.; King, Dennis M.; and Moncelle, Michael E., 4,498,016, Cl. 290-40.00R.
King Instrument Corporation: *See—*
Woodley, George M., 4,497,454, Cl. 242-56.00R.
King, James P.; and Tubbs, Paul, to Pennwalt Corporation. Metal salts of 1,2,4-thiadiazole and lubricants containing these metal salts. 4,497,719, Cl. 252-42.700.
King Seeley Thermos Company: *See—*
Utter, Robert P.; and Tandeski, David A., 4,497,184, Cl. 62-354.000.
Kirihara, Seishin: *See—*
Siga, Masao; Kirihara, Seishin; Yoshioka, Takatoshi; Hisano, Katsukuni; Tan, Toshimi; Akutsu, Yoji; and Kobayashi, Kei, 4,497,670, Cl. 148-12.00R.
Kishimoto, Kiyoshi, to Kabushikigaisha Nippon Kogu Seisakusho. End mill. 4,497,600, Cl. 407-53.000.
Kisiel, Stanley C., to Dresser Industries, Inc. Frangible valve stem assembly for rotary valve. 4,497,344, Cl. 137-797.000.
Kistner, John F., to Minnesota Mining and Manufacturing Company. Water-repellent, abrasion resistant coatings. 4,497,861, Cl. 428-201.000.
Kitamura, Hajime: *See—*
Tsuchida, Michinori; Abe, Tokuji; and Kitamura, Hajime, 4,497,722, Cl. 252-62.540.
Kitao, Teijiro; Setsune, Jun-ichiro; Ishihara, Shoichi; and Yamamoto, Ryoichi, to Matsushita Electric Industrial Co., Ltd. Solar energy storage materials. 4,497,724, Cl. 252-70.000.
Kitaura, Yoshihiko; Nakaguchi, Osamu; Hemmi, Keiji; Yonishi, Satoshi; and Takeno, Hidekazu, to Fujisawa Pharmaceutical Co., Ltd. Peptide, process for preparation thereof and use thereof. 4,497,729, Cl. 260-112.50R.
Kiwior, Denis; and Riner, Victor, to Societe Alsacienne de Construction de Materiel Textile. Mechanism for actuating the weft-inserting needles of a weaving loom. 4,497,347, Cl. 139-449.000.
Klees, Garry W. Pouring cap. 4,497,422, Cl. 222-482.000.
Klein, Robert W.; and Foxx, Mary E., to Dermik Laboratories, Inc. Erythromycin/benzoyl peroxide composition for the treatment of acne. 4,497,794, Cl. 424-81.000.
Kleinewefers GmbH: *See—*
Pav, Josef; and Jaegers, Heinz, 4,497,246, Cl. 100-35.000.
Klockner-Humboldt-Deutz AG: *See—*
Barin, Ihsan; Gamroth, Michael; Hesse, Rolf; and Wirosoedirdio, Soegianto, 4,497,780, Cl. 423-88.000.
Hug, Franz; Johler, Franz; and Franke, Reimar, 4,497,327, Cl. 130-27.00T.
Klockner-Humboldt-Deutz Aktiengesellschaft: *See—*
Schleiermacher, Herbert; and Bauer, Lothar, 4,497,287, Cl. 123-52.0MC.
Kluge, Arthur F.; Strosberg, Arthur M.; Whiting, Roger L.; and Christie, George A., to Syntex (U.S.A.) Inc. 2-(1,4-Benzodioxan-2-ylalkyl-)imidazoles useful as antihypertensives and platelet aggregation inhibitors. 4,497,818, Cl. 514-397.000.
Knight, James A., Jr.: *See—*
Purdy, Kenneth R.; Gorton, Charles W.; and Knight, James A., Jr., 4,497,637, Cl. 48-111.000.
Knorowski, Victor J.; and Sheflin, Daniel J., to General Electric Company. Steam turbine wheel antirotation means. 4,497,612, Cl. 416-198.00A.
Knutsen, Michael P.: *See—*
Balder, Richard T.; and Knutsen, Michael P., 4,497,278, Cl. 119-26.000.
Kobashi, Rikiya: *See—*
Aihara, Hiroshi; Matumura, Akira; Takemura, Hiroshi; Kobashi, Rikiya; Satomi, Keisuke; and Ishibashi, Hiroe, 4,498,033, Cl. 318-261.000.
Kobayashi, Hiroshi; and Machida, Haruhiko, to Machida Endoscope Company Limited. Method for manufacturing quadric surface. 4,497,144, Cl. 51-284.00R.
Kobayashi, Hiroshi, to Nissan Motor Company, Limited. Liquid gauge. 4,497,204, Cl. 73-304.00C.
Kobayashi, Katsuyoshi: *See—*
Ikegami, Hiroshi; Ichida, Kozaburo; and Kobayashi, Katsuyoshi, 4,497,674, Cl. 148-156.000.
Kobayashi, Kei: *See—*
Siga, Masao; Kirihara, Seishin; Yoshioka, Takatoshi; Hisano, Katsukuni; Tan, Toshimi; Akutsu, Yoji; and Kobayashi, Kei, 4,497,670, Cl. 148-12.00R.
Kobayashi, Takatoshi: *See—*
Yamasaki, Harumasa; Kobayashi, Takatoshi; and Sumida, Yuzo, 4,497,930, Cl. 524-556.000.
Kobayashi, Yuko, to Olympus Optical Co., Ltd. Wide-field eyepiece. 4,497,546, Cl. 350-410.000.
Kobylinski, Thaddeus P.: *See—*
Kibby, Charles L.; and Kobylinski, Thaddeus P., 4,497,903, Cl. 502-85.000.
Kocher, Erich J.; and Kopp, John K., to Vilter Manufacturing Corporation. Means to measure, indicate and regulate thickness of ice layer in refrigeration system. 4,497,181, Cl. 62-139.000.
Kodama, Hitoshi: *See—*
Yoshizawa, Kenji; Kodama, Hitoshi; Minowa, Yoshibumi; Komura, Hirotsugu; and Ito, Hiroshi, 4,498,029, Cl. 315-39.000.
Kodera, Toshihiko; Eguchi, Kiyoshi; Ishikawa, Takayoshi; Genba, Yasushi; Tamaru, Shigemi; and Satou, Susumu, to Mitsubishi Denki Kabushiki Kaisha. Air circuit breaker. 4,497,992, Cl. 200-153.0SC.
Koe, Joe K.: *See—*
Mendelsohn, Arnold; Koe, Joe K.; and Schienda, Gregory, 4,497,391, Cl. 187-29.00R.
Koehler, Richard F., Jr.: *See—*
Bolte, Steven B.; Brewington, Grace T.; Davidson, Theodore; Koehler, Richard F., Jr.; and Martin, Robert G., 4,497,570, Cl. 355-16.000.
Koester, Eberhard: *See—*
Ohlinger, Manfred; Vaeth, Guenter; Rudolf, Peter; Sarnecki, Wilhelm; Jakusch, Helmut; Koester, Eberhard; and Melzer, Milena, 4,497,723, Cl. 252-62.560.
Kogasaka, Fukuhei. Cleaning cloth for gun and cannon bores. 4,497,082, Cl. 15-104.165.
Kohlhage, Hermann: *See—*
Volke, Hans-Werner; Hilkenmeier, Jurgen; Kohlhage, Hermann; and Tewes, Udo, 4,497,588, Cl. 400-645.100.
Koide, Tsuyoshi; Maruyama, Toshio; and Tsujiuchi, Toshio, to Toyoda Koki Kabushiki Kaisha. Cam grinding machine. 4,497,140, Cl. 51-101.00R.
Koiki, Eishi, to Ozen Corporation. Simplified record player capable of automatically housing reproducing stylus upon removal of record disc from the record player. 4,498,160, Cl. 369-63.000.
Koitabashi, Takeo: *See—*
Matsuzaka, Syoji; Koitabashi, Takeo; Haga, Yoshihiro; Suzuki, Akio; and Shiozawa, Hiroaki, 4,497,895, Cl. 430-569.000.
Kojima, Masakatu, to Tokyo Shibaura Denki Kabushiki Kaisha. Apparatus for producing monocrystalline silicon. 4,497,777, Cl. 422-249.000.
Kojima, Tadashi: *See—*
Nagumo, Masahide; Inagawa, Jun; and Kojima, Tadashi, 4,498,175, Cl. 371-37.000.

Koma, Yoshishige: *See—*
Takano, Katsuhiro; Koma, Yoshishige; Hagiwara, Masaru; and Suzuki, Shintaro, 4,497,654, Cl. 75-0.5AA.

Komatsu, Nobiru: *See—*
Ohtsuki, Yuzo; Komatsu, Nobiru; Watanabe, Akira; and Saeki, Gouji, 4,497,901, Cl. 501-90.000.

Komitet po Goelogica: *See—*
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Komiya, Yutaka; Kimura, Yoshimasa; and Murakami, Koichi, to Canon Kabushiki Kaisha. Image formation apparatus. 4,497,568, Cl. 355-14.00R.

Komoro, Hidemasa: *See—*
Yamauchi, Masaaki; Yabe, Minoru; Shirai, Shoji; Komoro, Hidemasa; and Matsuda, Kenichi, 4,498,026, Cl. 313-414.000.

Komoto, Haruo: *See—*
Shinkai, Daisuke; Komoto, Haruo; and Hamada, Shigeharu, 4,497,695, Cl. 204-28.000.

Komura, Hirotsugu: *See—*
Yoshizawa, Kenji; Kodama, Hitoshi; Minowa, Yoshibumi; Komura, Hirotsugu; and Ito, Hiroshi, 4,498,029, Cl. 315-39.000.

Komura, Ichiroh: *See—*
Uchida, Kuniharu; Nagai, Satoshi; Komura, Ichiroh; and Hirasawa, Taiji, 4,497,210, Cl. 73-602.000.

Kondo, Makoto, to Honda Giken Kogyo Kabushiki Kaisha. Cooling structure for internal combustion engine. 4,497,285, Cl. 123-41.650.

Kondo, Tomoyoshi: *See—*
Narabayashi, Hirotaro; Kondo, Tomoyoshi; Hayashi, Akira; and Suzuki, Tomokazu, 4,497,826, Cl. 514-567.000.

Konishi, Hideyuke: *See—*
Maruyama, Ryoichi; Nishijima, Takayoshi; Aida, Hideaki; Konishi, Hideyuke; and Hatayama, Keiji, 4,497,223, Cl. 74-866.000.

Konishiroku Photo Industry Co., Ltd.: *See—*
Hatano, Takashi; and Maruyama, Akira, 4,497,878, Cl. 428-698.000.
Matsushima, Kohji; Nakagawa, Yasutsugu; and Yagi, Michio, 4,497,563, Cl. 354-429.000.
Matsuzaka, Syoji; Koitabashi, Takeo; Haga, Yoshihiro; Suzuki, Akio; and Shiozawa, Hiroaki, 4,497,895, Cl. 430-569.000.
Sakurai, Kunio; Ito, Hiroshi; and Nozaki, Takashi, 4,497,539, Cl. 350-164.000.

Kontz, Robert F.; and Moore, Gary L., to Owens-Illinois, Inc. Apparatus and method for applying heat shrinkable conical plastic labels on containers. 4,497,681, Cl. 156-363.000.

Kopich, Leonard F., to General Motors Corporation. Adjusting mechanism for a manually operated clutch. 4,497,399, Cl. 192-111.00A.

Kopp, John K.: *See—*
Kocher, Erich J.; and Kopp, John K., 4,497,181, Cl. 62-139.000.

Koppens Machinefabriek B.V.: *See—*
Koppens, Wilhelmus F. A., 4,497,244, Cl. 99-494.000.

Koppens, Wilhelmus F. A., to Koppens Machinefabriek B.V. Device for covering foodstuff with granular and/or powdery material. 4,497,244, Cl. 99-494.000.

Kordomenos, Panagiotis I., to Ford Motor Company. Thermosetting coating composition - V. 4,497,938, Cl. 525-514.000.

Korea Advanced Institute of Science and Technology: *See—*
Kim, Choong S.; Lee, Nam J.; and Kim, Joong H., 4,497,952, Cl. 544-344.000.

Korf & Fuchs Systemtechnik GmbH: *See—*
Fuchs, Gerhard; and Wabersich, Ernst, 4,497,475, Cl. 266-270.000.

Korsyn, Dever J. Method for repairing articles. 4,497,755, Cl. 264-1.700.

Koser, Manfred. Variable gear transmission system. 4,497,221, Cl. 74-793.000.

Kosner, Jerry J.: *See—*
Fuss, Peter S.; and Kosner, Jerry J., 4,498,123, Cl. 361-427.000.

Kowa Shoji Kabushiki Kaisha: *See—*
Mori, Kashichi, 4,497,245, Cl. 99-542.000.

Kowata, Nobuo; and Sasano, Naoshige. Optical fiber junction device and method of making the same. 4,497,643, Cl. 65-4.210.

Koyama, Kazumi; Fukushima, Toshitaka; and Kawabata, Yuichi, to Fujitsu Limited. Tristate output buffer with high-impedance state responsive to increase in power supply voltage. 4,498,022, Cl. 307-473.000.

Kraemer, Edgar: *See—*
Mailliet, Pierre; and Kraemer, Edgar, 4,497,379, Cl. 173-39.000.

Kraft, Helmut; and Ledjeff, Konstantin, to United States of America, Energy. Recombination device for storage batteries. 4,497,880, Cl. 429-86.000.

Kraft, Kurt: *See—*
Horoldt, Ernst; Kraft, Kurt; and Ritz, Jurgen, 4,497,915, Cl. 523-156.000.

Kraftwerk Union Aktiengesellschaft: *See—*
Keller, Herbert, 4,497,611, Cl. 415-191.000.

Krakowski, David: *See—*
Wendt, Alan C.; and Krakowski, David, 4,497,150, Cl. 52-242.000.

Kralowetz, Bruno, to GFM Gesellschaft fur Fertigungstechnik und Maschinenbau Gesellschaft m.b.H., Firma. Swaging machine. 4,497,195, Cl. 72-402.000.

Kramer, James H., to B. F. Goodrich Company, The. Floating structures. 4,497,593, Cl. 405-212.000.

Kramer, Marcy J.; Warneke, William C.; Meyer, Gustavo A.; and Jha, Mahesh C., to Amax Inc. Production of potassium hexafluotitanates using dilute hydrofluoric acid. 4,497,779, Cl. 423-72.000.

Kramer, Petrus A.: *See—*
van Helden, Robert; and Kramer, Petrus A., 4,497,966, Cl. 568-705.000.

Krapcho, John; and Wade, Peter C., to E. R. Squibb & Sons, Inc. Imido, amido and amino derivatives of mercaptoacyl prolines and pipecolic acids. 4,497,953, Cl. 546-99.000.

Krauss-Maffei Aktiengesellschaft: *See—*
Schmitz, Horst; and Krompass, Wolfgang, 4,497,579, Cl. 366-134.000.

Krautkramer-Branson, Inc.: *See—*
Rutloh, Max, 4,497,211, Cl. 73-606.000.

Krieg, Uwe: *See—*
Kummer, Martin; Krieg, Uwe; Jundt, Wolfgang; Rieker, Werner; Schadlich, Fritz; and Schaal, Gunter, 4,497,354, Cl. 145-4.000.

Krieger, Friedrich, to Salzgitter AG. Storage structure for nuclear waste. 4,497,770, Cl. 376-272.000.

Krijl, Gerrit; and Van de Leest, Renaat E., to U.S. Philips Corporation. Metal article layered with a nickel-phosphorus alloy and a protective coating. 4,497,877, Cl. 428-628.000.

Krishnan, Sivaram: *See—*
Sanderson, John R.; and Krishnan, Sivaram, 4,497,947, Cl. 528-174.000.

Krompass, Wolfgang: *See—*
Schmitz, Horst; and Krompass, Wolfgang, 4,497,579, Cl. 366-134.000.

Krones A.G. Hermann Kronseder Maschinenfabrik: *See—*
Cibis, Johannes, 4,498,003, Cl. 250-223.00B.

Kruckenberg, Winfried; and Schundehutte, Karl H., to Bayer Aktiengesellschaft. Azo dyestuffs. 4,497,736, Cl. 534-855.000.

Krupp Polysius AG: *See—*
Schulte, Hans-Gerd, 4,497,761, Cl. 264-66.000.

Kubo, Seiji: *See—*
Nagatomo, Hideaki; Yasuda, Mitsuo; and Kubo, Seiji, 4,497,240, Cl. 98-2.010.

Kubota, Ltd.: *See—*
Eguchi, Jyutaro; Kashino, Shinzo; Odahara, Tetsuichi; and Sukenari, Gunzo, 4,497,162, Cl. 56-14.600.

Kubota, Tadashi: *See—*
Hamane, Tokuhito; Tasai, Masaaki; and Kubota, Tadashi, 4,497,111, Cl. 29-734.000.

Kudamatsu, Akio; Kume, Toyohiko; and Tsuboi, Shinichi, to Nihon Tokushu Noyaku Seizo K.K. Insecticidal, acaricidal, and nematicidal O-ethyl S-alkyl S-(1,2,4-oxadiazol-5-yl-methyl) phosphorodithiolate derivatives, compositions, and methods of use. 4,497,804, Cl. 514-92.000.

Kudert, Frederick G.; Latreille, Maurice G.; Tennant, William A.; and Tung, Thomas T., to American Can Company. Apparatus for simultaneously driving valve means through co-injection nozzles of a multi-cavity injection molding machine. 4,497,621, Cl. 425-145.000.

Kudo, Yoshihiko; Kawabata, Hidetsugu; Birukawa, Masahiro; Hara, Noriaki; and Muto, Akira, to Matsushita Electric Industrial Co., Ltd. Magneto-optical recording medium. 4,497,870, Cl. 428-457.000.

Kuelzow, Christopher J.; Kackos, Edward M.; and Murray, Francis J., to Vernitron Corporation. Process and apparatus for shortening the drying stage of a steam sterilization cycle. 4,497,773, Cl. 422-26.000.

Kuhnis, Hans: *See—*
Zimmermann, Markus; and Kuhnis, Hans, 4,497,808, Cl. 514-222.000.

Kulik, Joseph S., Jr.: *See—*
Karlotski, Robert J.; Lekebush, Ronald C.; and Kulik, Joseph S., Jr., 4,498,027, Cl. 313-634.000.

Kumada, Akira: *See—*
Murata, Michihiro; and Kumada, Akira, 4,497,701, Cl. 204-430.000.

Kume, Toyohiko: *See—*
Kudamatsu, Akio; Kume, Toyohiko; and Tsuboi, Shinichi, 4,497,804, Cl. 514-92.000.

Kummer, Martin; Krieg, Uwe; Jundt, Wolfgang; Rieker, Werner; Schadlich, Fritz; and Schaal, Gunter, to Robert Bosch GmbH. Low noise planing machine, particularly hand planer. 4,497,354, Cl. 145-4.000.

Kumokawa, Takashi; Tamada, Minoru; Shimamoto, Ichiji; and Uda, Kiyoko, to Murata Manufacturing Co., Ltd. Small-size inductor. 4,498,067, Cl. 336-65.000.

Kuniya, Keiichi: *See—*
Arakawa, Hideo; Kuniya, Keiichi; Chiba, Akio; and Shimizu, Seiki, 4,497,875, Cl. 428-620.000.

Kunz, Walter: *See—*
Meyer, Alfred; Kunz, Walter; Maier, Ludwig; and Rempfler, Hermann, 4,497,647, Cl. 71-76.000.

Kunz, Walter E.: *See—*
Caldwell, John T.; Kunz, Walter E.; Cates, Michael R.; and Franks, Larry A., 4,497,768, Cl. 376-153.000.

Kupchik, Eugene J.; and Pisano, Michael A., to St. John's University. Triorganotin compounds, antifungal and antibacterial compositions containing same, and method of using same. 4,497,806, Cl. 514-189.000.

Kuraishi, Yoshiaki: *See—*
Makabe, Takayoshi; Kuraishi, Yoshiaki; Nakayama, Kenji; and Kimura, Tadakatsu, 4,498,063, Cl. 333-173.000.

Kureha Kagaku Kogyo Kabushiki Kaisha: *See—*
Wagu, Masakatsu; Hayashi, Shoichiro; Murayama, Naohiro; and Sakagami, Teruo, 4,497,710, Cl. 210-635.000.

Kurihara, Kozo; Ichikawa, Izuo; Nakane, Hisanori; and Ikegami, Yoshihiko, to Sankyo Company, Limited. Process for coating solid pharmaceutical preparations and coated preparations thus obtained. 4,497,847, Cl. 427-3.000.

Kuroda, Takao; Horii, Kenju; and Matsumoto, Shigenori, to Matsushita Electric Industrial Co., Ltd. Solid state image sensor exhibiting reduced image smearing effects. 4,498,013, Cl. 250-578.000.

Kurosawa, Kei, to Tokyo Shibaura Denki Kabushiki Kaisha. Method for manufacturing semiconductor device by controlling thickness of insulating film at peripheral portion of element formation region. 4,497,108, Cl. 29-576.00W.

Kurosawa, Tadashi, to Tensho Electric Industrial Co., Ltd. Foot bath. 4,497,313, Cl. 128-24.100.

Kurtz, Earl F. Gunpowder substituted composition and method. 4,497,676, Cl. 149-2.000.

Kurylko, George, to MKT Geotechnical Systems. Interchangeable ram diesel pile. 4,497,376, Cl. 173-1.000.

Kustu, Sydney G.: *See—*
Ames, Giovanna F.; and Kustu, Sydney G., 4,497,730, Cl. 260-112.00R.

Kutz, Heinrich; Grube, Dietrich; Eggert, Georg; and Stein, Rolf, to SMS Schloemann-Siemag Aktiengesellschaft. Gripping head of an hydraulic sheet stretcher. 4,497,193, Cl. 72-302.000.

Kuwahara, Hisao, to Tokyo Shibaura Denki Kabushiki Kaisha. Constant current source circuit. 4,498,041, Cl. 323-316.000.

Kwitkowski, Peter A.; and Pacholok, David R., to Motorola, Inc. Signal amplifier and integral signal shunt attenuator. 4,498,056, Cl. 330-296.000.

Kwun, Hegeon; and Teller, Cecil M., II, to Southwest Research Institute. Nondestructive testing of stress in a ferromagnetic structural material utilizing magnetically induced velocity change measurements. 4,497,209, Cl. 73-601.000.

Kyushu Refractories Co., Ltd.: *See—*
Ohtsuki, Yuzo; Komatsu, Nobiru; Watanabe, Akira; and Saeki, Gouji, 4,497,901, Cl. 501-90.000.

Labelle, Edward J. Implement holder. 4,497,412, Cl. 211-60.00T.

Labelle, Henri M. R., to Martinray Industries Ltd. Sectional folding closure. 4,497,357, Cl. 160-199.000.

Laboratorie Roger Bellon: *See—*
Matsumoto, Jun-ichi; Nishimura, Yoshiro; and Nakamura, Shinichi, 4,497,816, Cl. 514-300.000.

Laemmermann, Fritz; Rindfleisch, Werner; Fabian, Wolfgang; and Polster, Rudolf, to BASF Aktiengesellschaft. Procedure and apparatus for charging and emptying the drying trays in a drying box. 4,497,120, Cl. 34-15.000.

Laitram Corporation, The: *See—*
Lapeyre, James M., 4,497,551, Cl. 354-67.000.

Lambert, Teresa C. Appetite suppressant. 4,497,798, Cl. 424-153.000.

Lancaster, Patrick R., III, to Lantech, Inc. Friction drive stretch wrapping apparatus. 4,497,159, Cl. 53-556.000.

Landsness, Clifford A.; and Buehrle, Thomas M., to B. F. Goodrich Company, The. Mat testing apparatus. 4,498,042, Cl. 324-54.000.

Lane, Thomas A.; Rosen, Murray; and Quinn, Maxie E. Marine antifouling coating composition. 4,497,852, Cl. 427-287.000.

Langer, Uwe; and Brettbacher, Franz, to Voest-Alpine Aktiengesellschaft. Plant and process for hot-rolling strip or plate stock. 4,497,191, Cl. 72-202.000.

Lantech, Inc.: *See—*
Lancaster, Patrick R., III, 4,497,159, Cl. 53-556.000.

Lapeyre, James M., to Laitram Corporation, The. Method and system of aerial surveying. 4,497,551, Cl. 354-67.000.

Larson, Brian R., to Sperry Corporation. M Out of N code checker circuit. 4,498,177, Cl. 371-52.000.

Larson, Dalmon M.; and Reyes, Jorge, to Mead Johnson & Company. Stable liquid diet composition. 4,497,800, Cl. 514-2.000.

Larson, Kenneth E. Duct finishing machine. 4,497,189, Cl. 72-51.000.

LaSpisa, Ronald J.; and Likins, Merle R., Jr., to Phillips Petroleum Company. Boiler control. 4,497,283, Cl. 122-451.100.

Lassig, Arndt: *See—*
Grosskreuz, Gerhard; and Lassig, Arndt, 4,497,155, Cl. 53-331.500.

Latreille, Maurice G.: *See—*
Kudert, Frederick G.; Latreille, Maurice G.; Tennant, William A.; and Tung, Thomas T., 4,497,621, Cl. 425-145.000.

Laughman, Lanny M.: *See—*
Wayne, Robert J.; Laughman, Lanny M.; Mongeon, Robert J.; and Chenausky, Peter P., 4,498,179, Cl. 372-27.000.

Laurent, Paul: *See—*
Dupont, Andre ; and Laurent, Paul, 4,497,858, Cl. 428-44.000.

Lauver, Richard W., to United States of America, National Aeronautics and Space Administration. Chemical approach for controlling nadimide cure temperature and rate with maleimide. 4,497,939, Cl. 526-262.000.

Lauver, Richard W., to United States of America, National Aeronautics and Space Administration. Chemical approach for controlling nadimide cure temperature and rate. 4,497,940, Cl. 526-262.000.

Lauver, Richard W., to United States of America, National Aeronautics and Space Administration. Chemical approach for controlling nadimide cure temperature and rate with maleimide. 4,497,948, Cl. 528-342.000.

Lawless, Jacques. Detector of the flowing of a fluid in a pipe and energy saving device for a hot water system using this detector. 4,497,434, Cl. 236-23.000.

Lawson, John E., to Armco Inc. Self-levelling underwater structure. 4,497,592, Cl. 405-202.000.

Lay, Khin M.; and Palguta, Stephen E., to HITCO. Fill yarn removal apparatus. 4,497,098, Cl. 28-171.000.

Lazarev, Anatoly A.: *See—*
Ivanchenko, Nikolai N.; Sokolov, Sergei S.; Lazarev, Anatoly A.; Kataev, Evgeny M.; Glazunov, Arkady A.; and Gorbunov, Evgeny S., 4,497,309, Cl. 123-276.000.

Leandri, Jacqueline: *See—*
Rey, Pierre; Leandri, Jacqueline; and Abbou, Clement, 4,497,074, Cl. 3-1.000.

Lebensfeld, Steven A. Record players. 4,498,164, Cl. 369-177.000.

Lechat, Jacques B.: *See—*
Aliani, Giorgio; Lechat, Jacques B.; and Smits, Jozef A. F., 4,497,941, Cl. 526-331.000.

Lederman, Frederick E., to General Motors Corporation. Modular suspension strut bearing. 4,497,523, Cl. 384-613.000.

Ledjeff, Konstantin: *See—*
Kraft, Helmut; and Ledjeff, Konstantin, 4,497,880, Cl. 429-86.000.

Lee, Denny L. Y.; and Hay, Robert D., to Du Pont de Nemours, E. I., and Company. NMR Imaging apparatus. 4,498,048, Cl. 324-307.000.

Lee, Gordon J.: *See—*
Cheadle, Brian E.; and Lee, Gordon J., 4,497,364, Cl. 165-134.00R.

Lee, Nam J.: *See—*
Kim, Choong S.; Lee, Nam J.; and Kim, Joong H., 4,497,952, Cl. 544-344.000.

Lee, Robert: *See—*
Fowles, Tom A.; Lee, Robert; Richmond, Frank M.; and Tobiasz, Henry, 4,497,104, Cl. 29-419.00R.

Lee, Shy-Fuh, to Zoecon Corporation. Substituted phenoxyalkanetriones. 4,497,965, Cl. 568-325.000.

Lees, Jeremy J. Flow conversion device and method. 4,497,345, Cl. 138-39.000.

LeGresley, Barry P., to AEL Microtel Limited. Parallel cyclic redundancy checking circuit. 4,498,174, Cl. 371-37.000.

Lehman, Lawrence A., to Ultra Harvesters, Inc. Ground cotton retriever with dual cleaning means. 4,497,088, Cl. 19-202.000.

Lehman, R. Danford, Jr.; and Williams, Michael F. Game with shields for deflecting hurled projectile. 4,497,492, Cl. 273-411.000.

Lekebush, Ronald C.: *See—*
Karlotski, Robert J.; Lekebush, Ronald C.; and Kulik, Joseph S., Jr., 4,498,027, Cl. 313-634.000.

Leroy, Maurice: *See—*
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Les Cables de Lyon: *See—*
Bourget, Jean-Claude, 4,497,474, Cl. 266-81.000.

Leslie Hartridge Limited: *See—*
Allen, Ralph; Moore, David A.; and Quinton, Edward F., 4,497,201, Cl. 73-119.00A.

L'Etat Francais: *See—*
Caussignac, Jean-Marie; and Leroy, Maurice, 4,497,576, Cl. 356-335.000.

Levatter, Jeffrey I., to Katz, Bernard B. High repetition rate, uniform volume transverse electric discharger laser with pulse triggered multi-arc channel switching. 4,498,183, Cl. 372-86.000.

Lever Brothers Company: *See—*
Neiditch, Oscar W.; Hurdle, Edmund S.; and Fox, Daniel J., 4,497,718, Cl. 252-8.750.
Tai, Ho T., 4,497,716, Cl. 252-8.800.

Levin, Herbert L.: *See—*
Lipman, Abby G.; and Levin, Herbert L., 4,497,582, Cl. 368-15.000.

Levings, Nelson, Jr.; Evans, Donald J., deceased; and by Evans, Stephen G., administrator. Knock-down furniture assembly. 4,497,524, Cl. 312-265.000.

Lewis, Robert M.; and Slaugh, Lynn H., to Shell Oil Company. Copper-alkali metal-ruthenium/silica catalyst for converting syngas to linear alpha-olefins. 4,497,908, Cl. 502-245.000.

Lewis, Robert T.: *See—*
Sullivan, James W.; and Lewis, Robert T., 4,497,276, Cl. 118-694.000.

Leyhe, Lutz: *See—*
Mady, Raschad; Hanelt, Winand; Morlock, Roland; Geruhn, Dieter; Leyhe, Lutz; Meyer zu Bexten, Jobst H.; and Ricke, Franz, 4,497,668, Cl. 148-6.15Z.

Libby, Charles J., Jr.; and Gaiman, Barry, to Automatix Incorporated. Arc welding system with vision. 4,497,996, Cl. 219-124.340.

Licentia Patent-Verwaltungs-GmbH: *See—*
Morz, Gunther; and Milcz, Wilhelm, 4,498,061, Cl. 333-21.00A.

Lichtblau, George J. Resonant tag and deactivator for use in an electronic security system. 4,498,076, Cl. 340-572.000.

Liepmann, Hans: *See—*
Zeugner, Horst; Romer, Dietmar; Liepmann, Hans; and Milkowski, Wolfgang, 4,497,740, Cl. 260-244.400.

Likins, Merle R., Jr.: *See—*
LaSpisa, Ronald J.; and Likins, Merle R., Jr., 4,497,283, Cl. 122-451.100.

Lilla, James A. Cantilevered suspension sling. 4,497,316, Cl. 128-94.000.

Lilly, A. Clifton, Jr.: *See—*
Banyasz, Joseph L.; Owens, Cassandra D.; Mooz, Elizabeth D.; Lilly, A. Clifton, Jr.; Martin, Peter; Merritt, Henry B.; and Semp, Bernard A., 4,497,330, Cl. 131-291.000.

Lin, Kou C.; and Burkhardt, Charles E., to Electric Power Research Institute, Inc. Method of and arrangement for assembling electrical coils around transformer cores. 4,497,449, Cl. 242-4.00R.

Lindeman, Hans: *See—*
Lindeman, Wolfgang; and Lindeman, Hans, 4,497,188, Cl. 72-40.000.

Lindeman, Wolfgang; and Lindeman, Hans. Process and apparatus for peeling wire. 4,497,188, Cl. 72-40.000.

Lindemann, Eckhard; and Wolfgang, Neumann, to Dr.-Ing. Rudolf Hell GmbH. Screen for reproducing continuous-tone pictures. 4,498,108, Cl. 358-283.000.

Lindholm, Leif, to Santrade Limited. Cemented carbide. 4,497,660, Cl. 75-240.000.

Lindsey, Hiram E., Jr., to MWL Tool and Supply Company. Setting tool and retrievable landing assembly. 4,497,371, Cl. 166-377.000.

Ling, Chung-Mei: *See—*
Abram, Dinah; Armstrong, Alan S.; Herrmann, John E.; and Ling, Chung-Mei, 4,497,900, Cl. 436-511.000.

Lionetta, William G., Jr.: *See—*
Genova, Anthony T.; Squitieri, Vincent; and Lionetta, William G., Jr., 4,497,533, Cl. 339-143.00R.

Lipman, Abby G.; and Levin, Herbert L. Planetarium alarm clock. 4,497,582, Cl. 368-15.000.

Lippolt, Paul K. Adjustable violin peg and dowel shaving device. 4,497,352, Cl. 142-48.000.

Lirman, Irving R. Semi-conductor transducer and method of making the same. 4,498,070, Cl. 338-42.000.

Liska, Daniel P.: *See—*
Bezusko, Michael J.; Liska, Daniel P.; and McGee, Joseph A., 4,497,532, Cl. 339-112.00R.

Lister, Michael: *See—*
Gronbech, Robert W.; and Lister, Michael, 4,497,215, Cl. 74-89.150.

Litton Systems, Inc.: *See—*
Ross, William E., 4,497,545, Cl. 350-376.000.

Livigni, Russell A.: *See—*
Vitus, Francis J.; Hargis, Ivan G.; Livigni, Russell A.; and Aggarwal, Sundar L., 4,497,748, Cl. 260-665.00R.

Lockheed Corporation: *See—*
Cronin, Michael J., 4,498,119, Cl. 361-386.000.

Lockheed Missiles & Space Company, Inc.: *See—*
Wenzel, James G.; and Trimble, Lloyd C., 4,497,342, Cl. 137-565.000.

Loctite (Ireland) Limited: *See—*
Cooke, Bernard; and Wrobel, Peter, 4,497,916, Cl. 523-176.000.

Lodge & Shipley Company, The: *See—*
Coate, William C., 4,497,410, Cl. 211-1.500.

Lofmark, Bengt G., to Telefonaktiebolaget LM Ericsson. Balancing impedance included in a fork. 4,498,018, Cl. 307-17.000.

Loftus, Frank, to Imperial Chemical Industries PLC. Process for the manufacture of cephalosporin derivatives. 4,497,949, Cl. 544-27.000.

Logsdon, Gary L.: *See—*
Bolton, Brent C.; Logsdon, Gary L.; Hagenmaier, Carl F., Jr.; and Wilson, Jesse R., 4,498,133, Cl. 364-200.000.

Loh, William, to Chevron Research Company. 5-O-Acyl-5-C-alkyl-3-O-arylmethyl or substituted arylmethyl-1,2-O-alkylidene-αD-glucopentofuranose and β-L-ido-pentofuranose herbicides. 4,497,649, Cl. 71-88.000.

Loma Linda University Medical Center: *See—*
Farley, Donald V., 4,497,349, Cl. 141-19.000.

Longberg, Leif; and Pedersen, Hakon S., to A/S Bergens Mekaniske Verksteder. Assembly on a chain sheave/chain-rope system. 4,497,471, Cl. 254-372.000.

Lonza Ltd.: *See—*
Baumann, Hansjorg W., 4,497,859, Cl. 428-71.000.

Looker, Brian E., to Glaxo Group Limited. Manufacture of antibiotics. 4,497,956, Cl. 548-194.000.

Lopez, Jose A., to Camilo Muebles, Inc. Panel connector system. 4,497,148, Cl. 52-126.300.

Louen, Hans-Richard: *See—*
Reizig, Hans-Jurgen; Meuters, Friedrich; and Louen, Hans-Richard, 4,497,192, Cl. 72-203.000.

Louwenaar, David W. Solar warming hut. 4,497,145, Cl. 52-1.000.

Lover, Myron J.; Singer, Arnold J.; Lynch, Donald M.; and Rhodes, William E., III, to Block Drug Company, Inc. Polyoxyethylene derivatives as antipruritic ectoparasiticide. 4,497,831, Cl. 514-717.000.

Lowery, Michael B. Ball-like wheel with sockets for axle. 4,497,521, Cl. 301-106.000.

Lowrance, William T. Protective device for a golf club. 4,497,404, Cl. 206-315.200.

Lucas Industries Public Limited Company: *See—*
Harrison, Anthony W.; and Goudie, Robert J., 4,497,505, Cl. 280-698.000.

Luck, Terry C.; and Marsden, Paul R., to Intercraft Designs Limited. Screening apparatus. 4,497,356, Cl. 160-135.000.

Lucke, Hans-Hermann; and Jessen, Jens-Christian, to Brown, Boveri & Cie Aktiengesellschaft. Electrochemical storage cell. 4,497,879, Cl. 429-62.000.

Luigi Stoppani S.p.A.: *See—*
Ghelli, Giovanni; and Barbon, Alessandro, 4,497,634, Cl. 8-94.260.

Lummus Industries, Inc.: *See—*
Van Doorn, Donald W.; Hawkins, James B.; Webb, Tommy W.; and Harmon, William A., Jr., 4,497,085, Cl. 19-80.00R.

Lundberg, Robert D.; Peiffer, Dennis G.; Duvdevani, Ilan; and Phillips, Robert R., to Exxon Research & Engineering Co. Shear thickening of organic diluents via interpolymer complexes. 4,497,923, Cl. 524-107.000.

Lundstrom, Bo: *See—*
Stensson, Bo G.; Severinsson, Lars M.; and Lundstrom, Bo, 4,497,392, Cl. 188-59.000.

Lundstrom, Lennart. Power control device for a double-acting multicylinder hot gas engine. 4,497,174, Cl. 60-521.000.

Lunt, David M.: *See—*
Johnson, Lewis H.; Carlson, Lee A.; and Lunt, David M., 4,497,275, Cl. 118-268.000.

Lynch, Donald M.: *See—*
Lover, Myron J.; Singer, Arnold J.; Lynch, Donald M.; and Rhodes, William E., III, 4,497,831, Cl. 514-717.000.

Lyons, Steven A.: *See—*
Biechler, Charles S.; Carroll, Allen M.; Graves, Richard E.; and Lyons, Steven A., 4,498,010, Cl. 250-492.200.

Machida Endoscope Company Limited: *See—*
Kobayashi, Hiroshi; and Machida, Haruhiko, 4,497,144, Cl. 51-284.00R.

Machida, Haruhiko: *See—*
Kobayashi, Hiroshi; and Machida, Haruhiko, 4,497,144, Cl. 51-284.00R.

Macho Products, Inc.: *See—*
Cho, Soo S., 4,497,070, Cl. 2-22.000.

MacKay, Andrew D.: *See—*
Carrington, Donald P.; and MacKay, Andrew D., 4,497,229, Cl. 83-76.000.

Macklin, John J.; Silfvast, William T.; and Wood, Obert R., II, to AT&T Bell Laboratories. Continuous wave sper laser. 4,498,182, Cl. 372-62.000.

Macosko, Robert L. Baseball pitching target. 4,497,485, Cl. 273-26.00A.

Macrander, Max S.: *See—*
Edwards, Ivan L.; McLaughlin, Robert C.; and Macrander, Max S., 4,498,059, Cl. 331-1.00A.

Mady, Raschad; Hanelt, Winand; Morlock, Roland; Geruhn, Dieter; Leyhe, Lutz; Meyer zu Bexten, Jobst H.; and Ricke, Franz, to Gerhard Collardin GmbH. Phosphating process for zinc-plated metals. 4,497,668, Cl. 148-6.15Z.

Maeda, Osamu: *See—*
Nakagawa, Koichi; Maeda, Osamu; and Yamakawa, Shinzo, 4,497,759, Cl. 264-26.000.

Maier, Ludwig: *See—*
Meyer, Alfred; Kunz, Walter; Maier, Ludwig; and Rempfler, Hermann, 4,497,647, Cl. 71-76.000.

Mailliet, Pierre; and Kraemer, Edgar, to Paul Wurth S.A. Modular pivotal fluidic joint systems and components thereof. 4,497,379, Cl. 173-39.000.

Makabe, Takayoshi; Kuraishi, Yoshiaki; Nakayama, Kenji; and Kimura, Tadakatsu, to Nippon Electric Co., Ltd.; and Nippon Telegraph & Telephone Public Corporation. Switched capacitor filter having a reduced capacitance. 4,498,063, Cl. 333-173.000.

Makarewicz, Stanley R.: *See—*
Garbarino, Paul L.; Makarewicz, Stanley R.; and Shepard, Joseph F., 4,498,095, Cl. 357-23.000.

Makino, Daisuke: *See—*
Sato, Hidetaka; Uchimura, Shunichiro; Uchigasaki, Isao; and Makino, Daisuke, 4,497,922, Cl. 524-104.000.

Malhotra, Sudarshan K., to Dow Chemical Company, The. Diphenoxymethylpyridine herbicides. 4,497,652, Cl. 71-94.000.

Malinovsky, Evgeny J., to Moskovskoe Nauchno-Proizvodstvennoe Objedinenie Po Stroitelnomu I Dorozhnomu Mashinostroeniju. Apparatus for designing three dimensional structures. 4,498,139, Cl. 364-518.000.

Mallinckrodt, Inc.: *See—*
Fawzi, Mahdi B., 4,497,744, Cl. 260-429.700.

Mallion, Andrew J.: *See—*
Windsor, Harry M.; and Mallion, Andrew J., 4,497,397, Cl. 192-0.076.

Malueg, Richard M. Stabilization system for soft-mounted platform. 4,498,038, Cl. 318-648.000.

Mamei, Masayuki: *See—*
Yoshino, Tadashi; and Mamei, Masayuki, 4,497,459, Cl. 242-186.000.

Mandell, John F.: *See—*
Agrawal, Purushottam D.; and Mandell, John F., 4,497,855, Cl. 428-35.000.

Mannesmann, Gerda: *See—*
Skuballa, Werner; Raduechel, Bernd; Vorbrueggen, Helmut; Casals-Stenzel, Jorge; Schillinger, Ekkehard; Mannesmann, Gerda; and Nieuweboer, Bob, 4,497,830, Cl. 514-277.000.

Mannesmann Rexroth GmbH: *See—*
Mucheyer, Norbert; and Schmidt, Hubertus, 4,497,375, Cl. 172-10.000.

Manzone, Richard R., to Hoyt Manufacturing Corporation. Distillation. 4,497,690, Cl. 202-181.000.

Mardanov, Valentin P.: *See—*
Bely, Diamar I.; Mardanov, Valentin P.; Meschanov, Gennady I.; Peshkov, Izyaslav B.; Povelichenko, Anatoly P.; and Timoshin, Jury M., 4,497,867, Cl. 428-385.000.

Maresca, Louis M.: *See—*
Robeson, Lloyd M.; Harris, James E.; and Maresca, Louis M., 4,497,924, Cl. 524-151.000.

Marfatia, Anil: *See—*
Mommsen, Gordon V.; and Marfatia, Anil, 4,497,447, Cl. 239-691.000.

Mariani, Beniamino: *See—*
Dotti, Enrico; and Mariani, Beniamino, 4,497,164, Cl. 57-6.000.

Marinak, Michael J.; and Simonson, John L., to Kalama Chemical, Inc. Preparation of 2-chloro-5-trichloromethyl pyridine from lower chlorinated beta-picolines. 4,497,955, Cl. 546-345.000.

Marine Construction & Design Co.: *See—*
Anderson, Joseph W., 4,497,707, Cl. 210-136.000.

Marino, Michael J.: *See—*
Paull, Seymour; and Marino, Michael J., 4,497,585, Cl. 374-158.000.

Maris, Wiltjie; and Moran, Robert, to Blanrima Pty. Ltd. Disc film developer. 4,497,559, Cl. 354-316.000.

Markert, Juergen: *See—*
Hagen, Helmut; Markert, Juergen; and Wuerzer, Bruno, 4,497,651, Cl. 71-94.000.

Markus, Gerardus A., to BS&B Engineering Company Inc. Heater. 4,497,281, Cl. 122-248.000.

Marquardt, Robert F.; Pederson, Harold T., Jr.; and Francis, Leo H., to Dairy Technology Ltd. Modified whey product and process including ultrafiltration and demineralization. 4,497,836, Cl. 426-239.000.

Marsden, Paul R.: *See—*
Luck, Terry C.; and Marsden, Paul R., 4,497,356, Cl. 160-135.000.

Marsh, Walter H. W.: *See—*
Szostak, Jan; Schaeflern, Henry; and Marsh, Walter H. W., 4,497,267, Cl. 112-158.00A.

Marshall, Cary S.; and Troyer, Scott D., to Dow Chemical Company, The. Electrolytic preparation of 3,6-dichloropicolinic acid. 4,497,697, Cl. 204-73.00R.

Marshall, Robert T.: *See—*
Anderson, Maynard E.; Marshall, Robert T.; and Hulse, Mark M., 4,497,898, Cl. 436-23.000.

Marshall and Williams Company: *See—*
Richter, Hans H., 4,497,096, Cl. 26-74.000.

Martin, Henry, to Ciba-Geigy Corporation. Compositions, which promote plant growth and protect plants based on oxide ethers and oxime esters. 4,497,745, Cl. 260-465.00D.

Martin, Lincoln A.; and Fenley, William F., Jr., to Geophysical Systems Corporation. Method of determining weathering corrections in seismic operations. 4,498,157, Cl. 367-50.000.

Martin, Peter: *See—*
Banyasz, Joseph L.; Owens, Cassandra D.; Mooz, Elizabeth D.; Lilly, A. Clifton, Jr.; Martin, Peter; Merritt, Henry B.; and Semp, Bernard A., 4,497,330, Cl. 131-291.000.

Martin, Robert G.: *See—*
Bolte, Steven B.; Brewington, Grace T.; Davidson, Theodore; Koehler, Richard F., Jr.; and Martin, Robert G., 4,497,570, Cl. 355-16.000.

Martin, Wayne A.; and Modic, Justin G., to United States Steel Corporation. Method and apparatus for performing multiple closed and semi-closed operations on an open die press. 4,497,194, Cl. 72-356.000.

Martinez, Maria N., to AT&T Bell Laboratories. Management of defects in storage media. 4,498,146, Cl. 364-900.000.

Martinray Industries Ltd.: *See—*
Labelle, Henri M. R., 4,497,357, Cl. 160-199.000.

Maruyama, Akira: *See—*
Hatano, Takashi; and Maruyama, Akira, 4,497,878, Cl. 428-698.000.

Maruyama, Kimiomi; and Nakajima, Yasuo, to Nissan Motor Company, Limited. Fuel supply system for an internal combustion engine. 4,497,300, Cl. 123-463.000.

Maruyama, Ryoichi; Nishijima, Takayoshi; Aida, Hideaki; Konishi, Hideyuke; and Hatayama, Keiji, to Kabushiki Kaisha Komatsu Seisakusho. Engine speed control system for a hydro-mechanical transmission. 4,497,223, Cl. 74-866.000.

Maruyama, Toshio: *See—*
Koide, Tsuyoshi; Maruyama, Toshio; and Tsujiuchi, Toshio, 4,497,140, Cl. 51-101.00R.

Mas, Michel C.: *See—*
Brisset, Guy C. S.; and Mas, Michel C., 4,497,743, Cl. 260-429.00R.

Maschinenbau Oppenweiler GmbH: *See—*
Nothdurft, Edgar, 4,497,480, Cl. 270-58.000.

Maschinenfabrik Schweiter AG: *See—*
Vollm, Ernst B., 4,497,165, Cl. 57-22.000.

Mase, Toshiyasu: *See—*
Murase, Kiyoshi; Mase, Toshiyasu; and Tomioka, Kenichi, 4,497,817, Cl. 548-150.000.

Mase, Yasushi: *See—*
Nakajima, Masataka; and Mase, Yasushi, 4,497,296, Cl. 123-440.000.

Mason, Harry N. Earring with pendant and circumjacent spiral portion. 4,497,186, Cl. 63-13.000.

Massaglia, Piercarlo; Pagana, Enrico; and Savini, Dario, to Sip - Societa Italiana Per L'Esercizio Telefonico p.A. Waveguide structure for separating microwaves with mutually orthogonal planes of polarization. 4,498,062, Cl. 333-135.000.

Masuda, Shoji, to Honda Giken Kogyo Kabushiki Kaisha. Intake system for internal combustion engines. 4,497,286, Cl. 123-52.00M.

Masuda, Yoshihiko, to Toyota Jidosha Kogyo Kabushiki Kaisha. Control valve of exhaust gas recirculation apparatus. 4,497,335, Cl. 137-244.000.

Matec, Inc.: *See—*
Oja, Tonis; Petersen, Gary L.; and Cannon, David W., 4,497,208, Cl. 73-584.000.

Matson, Wayne R., to ESA, Inc. Liquid chromatography. 4,497,199, Cl. 73-61.10C.

Matsuda, Kenichi: *See—*
Yamauchi, Masaaki; Yabe, Minoru; Shirai, Shoji; Komoro, Hidemasa; and Matsuda, Kenichi, 4,498,026, Cl. 313-414.000.

Matsuda, Tsutomu: *See—*
Watanabe, Nobuyoshi; and Matsuda, Tsutomu, 4,497,887, Cl. 430-138.000.

Matsumoto, Jun-ichi; Nishimura, Yoshiro; and Nakamura, Shinichi, to Dainippon Pharmaceutical Co., Ltd.; and Laboratorie Roger Bellon. 7-(4-Pyridyl)-1,8-naphthyridine derivatives and their antibacterial compositions. 4,497,816, Cl. 514-300.000.

Matsumoto, Shigenori: *See—*
Kuroda, Takao; Horii, Kenju; and Matsumoto, Shigenori, 4,498,013, Cl. 250-578.000.

Matsuo Electric Company, Ltd.: *See—*
Uemura, Toshihiko, 4,497,105, Cl. 29-570.000.

Matsushima, Kohji; Nakagawa, Yasutsugu; and Yagi, Michio, to Konishiroku Photo Industry Co., Ltd. Programmed automatic exposure control. 4,497,563, Cl. 354-429.000.

Matsushita Electric Industrial Co., Ltd.: *See—*
Hamane, Tokuhito; Tasai, Masaaki; and Kubota, Tadashi, 4,497,111, Cl. 29-734.000.
Kitao, Teijiro; Setsune, Jun-ichiro; Ishihara, Shoichi; and Yamamoto, Ryoichi, 4,497,724, Cl. 252-70.000.
Kudo, Yoshihiko; Kawabata, Hidetsugu; Birukawa, Masahiro; Hara, Noriaki; and Muto, Akira, 4,497,870, Cl. 428-457.000.
Kuroda, Takao; Horii, Kenju; and Matsumoto, Shigenori, 4,498,013, Cl. 250-578.000.
Noguchi, Toyota; Okamoto, Michio; Nishimura, Tadafumi; Sugimoto, Yukio; Kaneko, Mamoru; and Nakayama, Kenjiro, 4,498,170, Cl. 370-110.100.
Takahashi, Juhei; Miura, Kenzo; Asano, Shogo; Sugiyama, Kunio; Kaji, Kiyokane; and Ohta, Jun, 4,497,198, Cl. 73-35.000.
Uya, Masaru, 4,498,021, Cl. 307-443.000.
Yoshimura, Susumu; and Murakami, Mutsuaki, 4,497,728, Cl. 252-514.000.
Yoshino, Tadashi; and Mamei, Masayuki, 4,497,459, Cl. 242-186.000.

Matsushita Electric Works, Ltd.: *See—*
Matsuura, Masahiro; Ichinomiya, Tsutomu; and Abe, Hideaki, 4,497,323, Cl. 128-685.000.
Nagamoto, Mitsuki; Hashiya, Yukio; and Kawaharada, Junji, 4,498,065, Cl. 335-79.000.

Matsuura, Masaaki: *See—*
Nakano, Yoshikatsu; Matsuura, Masaaki; and Akiyama, Minoru, 4,497,288, Cl. 123-52.00M.

Matsuura, Masahiro; Ichinomiya, Tsutomu; and Abe, Hideaki, to Matsushita Electric Works, Ltd. Exhaust valve having a constant bleed rate. 4,497,323, Cl. 128-685.000.

Matsuzaka, Syoji; Koitabashi, Takeo; Haga, Yoshihiro; Suzuki, Akio; and Shiozawa, Hiroaki, to Konishiroku Photo Industry Co., Ltd. Method for preparing silver halide photographic emulsion. 4,497,895, Cl. 430-569.000.

Mattei, Riccardo, to G. D Societa' per Azioni. Device for sharpening rotating blades. 4,497,143, Cl. 51-248.000.

Mattz, Donald P.: *See—*
Varga, Stephen I.; and Mattz, Donald P., 4,497,919, Cl. 524-10.000.

Matumura, Akira: *See—*
Aihara, Hiroshi; Matumura, Akira; Takemura, Hiroshi; Kobashi, Rikiya; Satomi, Keisuke; and Ishibashi, Hiroe, 4,498,033, Cl. 318-261.000.

Mayer, William; and Runions, Alton E., to Stewart-Warner Corporation. Dual halogen lamp assembly. 4,498,124, Cl. 362-211.000.

Mazda Motor Corporation: *See—*
Nagaoka, Mitsuru; and Yasuno, Mitsuo, 4,497,222, Cl. 74-866.000.

McCandless, Thomas J.: *See—*
Wilde, Sheldon L.; McCandless, Thomas J.; and Saunders, Robert M., 4,497,765, Cl. 264-268.000.

McCarthy, Christopher I.: *See—*
Paar, Michael S.; and McCarthy, Christopher I., 4,497,307, Cl. 123-90.330.

McCarthy, Karen; and Prochaska, Charles R., to Boeing Company, The. Locking device. 4,497,602, Cl. 410-69.000.

McCaskill, Emmett S., to Polaroid Corporation. Benzotriazine compounds. 4,497,950, Cl. 544-183.000.

McColl, Frederick A.: *See—*
Sewell, John S.; McColl, Frederick A.; and Petkoff, Peter M., 4,497,332, Cl. 137-15.000.

McDermott Incorporated: *See—*
Fern, Derek T., 4,497,594, Cl. 405-217.000.

McElrath, Kenneth O.: *See—*
Weinberg, Harold N.; Rebick, Charles; and McElrath, Kenneth O., 4,497,705, Cl. 208-127.000.

McFiggans, Robert B.: *See—*
Soderberg, John H.; Eckert, Alton B.; and McFiggans, Robert B., 4,498,187, Cl. 375-117.000.

McGee, Joseph A.: *See—*
Bezusko, Michael J.; Liska, Daniel P.; and McGee, Joseph A., 4,497,532, Cl. 339-112.00R.

McGhee, James: *See—*
Dickinson, Ben W. O., III; Dickinson, Robert W.; Odgers, Irving L.; and McGhee, James, 4,497,381, Cl. 175-61.000.

McGraw-Edison Company: *See—*
Gaia, Aldino J., 4,498,068, Cl. 337-293.000.

McHenry, Kenneth A.: *See—*
Giardino, David A.; Groshans, Joseph R.; and McHenry, Kenneth A., 4,497,197, Cl. 72-453.170.

McHugh, Edward L. Protective book cover. 4,497,508, Cl. 281-34.000.

McIntosh, John S.: *See—*
Meyer, Bruce E.; and McIntosh, John S., 4,497,134, Cl. 49-91.000.

McLaughlin, Robert C.: *See—*
Edwards, Ivan L.; McLaughlin, Robert C.; and Macrander, Max S., 4,498,059, Cl. 331-1.00A.

McMillan, Lavar C.: *See—*
Wudel, John A.; and McMillan, Lavar C., 4,497,841, Cl. 426-565.000.

McMullen, John W.; Wheeler, Michael G.; Cullingford, Hatice S.; and Sherman, Robert H., to United States of America, Energy. Apparatus for storing hydrogen isotopes. 4,497,775, Cl. 422-159.000.

Mead Johnson & Company: *See—*
Larson, Dalmon M.; and Reyes, Jorge, 4,497,800, Cl. 514-2.000.

Med-Tech Micrographics, Inc.: *See—*
Beachem, Ronald G., 4,497,572, Cl. 355-45.000.

Medical Laboratory Automation, Inc.: *See—*
Scordato, Richard E., 4,497,774, Cl. 422-73.000.

Meguro, Hiroshi; Okubo, Yuji; and Watanabe, Sakuji, to Nippon Kogaku K.K. Exposure mode setting device in an exposure control apparatus of a camera. 4,497,564, Cl. 354-442.000.

Mehesch, Hans: *See—*
Meyer, Frank; Cornely, Wolfgang; and Mehesch, Hans, 4,497,595, Cl. 405-261.000.

Meier, Eugen, to Mettler Instrumente AG. Weighing apparatus including improved force-transmitting lever means. 4,497,386, Cl. 177-229.000.

Meister, Winfried, to Meister, Winfried. Method and apparatus for the production of jointing bands with embedded reinforcing profiles which run at right angles to the longitudinal axis of the band. 4,497,762, Cl. 264-172.000.

Meldrum, Ian G.: *See—*
Fisher, Robert G.; Meldrum, Ian G.; Plomer, Alan J.; and Robinson, Richard A., 4,497,663, Cl. 134-4.000.

Melnor Industries, Inc.: *See—*
Chow, Ho, 4,497,441, Cl. 239-230.000.

Melys, Aleksandras A., to Sweda International, Inc. Keyboard spacer. 4,497,987, Cl. 200-42.00R.

Melzer, Milena: *See—*
Ohlinger, Manfred; Vaeth, Guenter; Rudolf, Peter; Sarnecki, Wilhelm; Jakusch, Helmut; Koester, Eberhard; and Melzer, Milena, 4,497,723, Cl. 252-62.560.

Mendelsohn, Arnold; Koe, Joe K.; and Schienda, Gregory, to Otis Elevator Company. Modular operational elevator control system. 4,497,391, Cl. 187-29.00R.

Mennicke, Winfried, to Bayer Aktiengesellschaft. Asymmetrical 1:2 chromium complexes derived from azo and azomethine dyes. 4,497,734, Cl. 534-695.000.

Menown, Hugh; Newton, Barry P.; and Neale, Christopher V., to English Electric Valve Company Limited. Laser arrangements. 4,498,181, Cl. 372-38.000.

Merck & Co., Inc.: *See—*
Hoffman, Jacob M., Jr., 4,497,810, Cl. 514-222.000.

Mercurio, Frank, to Coleco Industries, Inc. Spring action ride-on toy. 4,497,500, Cl. 280-1.130.

Merger, Franz; and Towae, Friedrich, to BASF Aktiengesellschaft. Process for the preparation of an aliphatic, cycloaliphatic, and/or aliphatic-cycloaliphatic di- and/or polyurethane. 4,497,963, Cl. 560-115.000.

Merlin Gerin: *See—*
Fiorina, Jean-Noel, 4,498,127, Cl. 363-5.000.

Merlini, Lucio; Rossi, Alessandro; and Buonamici, Metilde, to Farmitalia Carlo Erba S.p.A. Substituted iminoderivatives of dihydrobenzopyran and dihydrobenzothiopyran. 4,497,820, Cl. 514-432.000.

Mermelstein, Seymour, to Dresser Industries, Inc. Laminar flowmeter. 4,497,202, Cl. 73-202.000.

Merritt, Henry B.: *See—*
Banyasz, Joseph L.; Owens, Cassandra D.; Mooz, Elizabeth D.; Lilly, A. Clifton, Jr.; Martin, Peter; Merritt, Henry B.; and Semp, Bernard A., 4,497,330, Cl. 131-291.000.

Meschanov, Gennady I.: *See—*
Bely, Diamar I.; Mardanov, Valentin P.; Meschanov, Gennady I.; Peshkov, Izyaslav B.; Povelichenko, Anatoly P.; and Timoshin, Jury M., 4,497,867, Cl. 428-385.000.

Messerschmitt-Boelkow-Blohm Gesellschaft mit beschraenkter Haftung: *See—*
Imbiel, Herbert; and Herbig, Henning, 4,498,087, Cl. 343-915.000.

Messmer, Josef: *See—*
Elsner, Emil; Reiber, Dietfried; Messmer, Josef; and Kaiser, Peter, 4,498,185, Cl. 373-93.000.

Mettler Instrumente AG: *See—*
Meier, Eugen, 4,497,386, Cl. 177-229.000.

Meuters, Friedrich: *See—*
Reizig, Hans-Jurgen; Meuters, Friedrich; and Louen, Hans-Richard, 4,497,192, Cl. 72-203.000.

Meyco Products, Inc.: *See—*
Weissner, David W., 4,497,152, Cl. 52-709.000.

Meyer, Alfred; Kunz, Walter; Maier, Ludwig; and Rempfler, Hermann, to Ciba-Geigy Corporation. Triazolylalkenes as fungicides and plant growth regulants. 4,497,647, Cl. 71-76.000.

Meyer, Bruce E.; and McIntosh, John S. Exterior louver and louver apparatus. 4,497,134, Cl. 49-91.000.

Meyer, Frank; Cornely, Wolfgang; and Mehesch, Hans, to Bergwerksverband GmbH. Method of bonding roofbolt rods to boltholes. 4,497,595, Cl. 405-261.000.

Meyer, Gustavo A.: *See—*
Kramer, Marcy J.; Warneke, William C.; Meyer, Gustavo A.; and Jha, Mahesh C., 4,497,779, Cl. 423-72.000.

Meyer, Helmut P.; and Isliker, Gaston R., to Bendix Corporation, The. Method of forming a tubular electrical insulator assembly. 4,497,633, Cl. 445-7.000.

Meyer, Horst: *See—*
Wehinger, Egbert; Meyer, Horst; and Benz, Ulrich, 4,497,821, Cl. 514-302.000.

Meyer, Norbert: *See—*
Rentzea, Costin; Meyer, Norbert; Sauter, Hubert; Ammermann, Eberhard; and Pommer, Ernst-Heinrich, 4,497,819, Cl. 514-397.000.

Meyer zu Bexten, Jobst H.: *See—*
Mady, Raschad; Hanelt, Winand; Morlock, Roland; Geruhn, Dieter; Leyhe, Lutz; Meyer zu Bexten, Jobst H.; and Ricke, Franz, 4,497,668, Cl. 148-6.15Z.

Michalski, Dieter, to ITT Industries, Inc. Input unit. 4,497,982, Cl. 200-5.00R.

Microdot Inc.: *See—*
Repella, James A., 4,497,496, Cl. 277-134.000.

Mid America Machine Corp.: *See—*
Becker, Arnold F.; and Johnson, Harold K., 4,498,192, Cl. 383-126.000.

Mighty-Mac, Inc.: *See—*
Bell, Richard S., 4,497,071, Cl. 2-94.000.

Mikic, Frank; Fuhreck, John E.; and Pacetti, Larry D., to Snap-on Tools Corporation. Wrench holder. 4,497,405, Cl. 206-378.000.

Mikkor, Mati, to Ford Motor Company. Method of preparing an article which is resistant to corrosive attack by molten polysulfide salts. 4,497,882, Cl. 429-163.000.

Milberger, Lionel J.: *See—*
Hurta, Gary L.; Milberger, Lionel J.; and Williams, Alford M., 4,497,369, Cl. 166-368.000.

Milcz, Wilhelm: *See—*
Morz, Gunther; and Milcz, Wilhelm, 4,498,061, Cl. 333-21.00A.

Milia, Frank, to Carlisle Laboratories, Inc. Dispenser package assembly. 4,497,432, Cl. 229-17.00B.

Milkowski, Wolfgang: *See—*
Zeugner, Horst; Romer, Dietmar; Liepmann, Hans; and Milkowski, Wolfgang, 4,497,740, Cl. 260-244.400.

Millar, Colin A.: *See—*
Payne, David B.; and Millar, Colin A., 4,497,536, Cl. 350-96.210.

Millar, William G. Candle snuffer and method. 4,497,374, Cl. 169-46.000.

Miller, Herbert L., to Miller Paint Equipment, Inc. Paint shaker. 4,497,581, Cl. 366-208.000.

Miller, Jack V., to Gravity Guidance, Inc. Ankle supporting device for inverted posture. 4,497,314, Cl. 128-75.000.

Miller, Norman K. Electric mat switch. 4,497,989, Cl. 200-86.00R.

Miller Paint Equipment, Inc.: *See—*
Miller, Herbert L., 4,497,581, Cl. 366-208.000.

Miller, Richard F.; Go, Tony S.; and Wilson, George R., III, to Atlantic Richfield Company. Corrosion inhibition. 4,497,702, Cl. 208-47.000.

Milliken Research Corporation: *See—*
Cogan, Jerry A., Jr., 4,497,863, Cl. 428-253.000.

Millington, Michael J., to Parsons Controls Limited. Chain components. 4,497,169, Cl. 59-84.000.

Milner, Ed M.; and Mykrantz, John R. Artificial cross-country ski surface with pair of bent over ski tracks. 4,497,854, Cl. 428-17.000.

Minami, Satoyuki; Tanaka, Kazuhiro; and Nishioka, Takeshi, to Toray Industries, Inc. Polyethylene terephthalate film, process for the production thereof and magnetic recording medium therefrom. 4,497,865, Cl. 428-336.000.

Minami, Toshiaki: *See—*
Yamato, Noboru; Satake, Toshimi; Minami, Toshiaki; and Fujimura, Fumio, 4,498,091, Cl. 346-216.000.

Mine, Mamoru: *See—*
Momoshima, Yukichi; Nagasaka, Nobuyuki; and Mine, Mamoru, 4,497,235, Cl. 84-1.190.

Minemura, Norihiro; Kimura, Takeo; and Mitsui, Yoshiaki, to Teijin Limited. Apparatus for preparing a suede-like raised woven or knitted fabric. 4,497,095, Cl. 26-2.00R.

Minnesota Mining and Manufacturing Company: *See—*
Brady, Harold E., Jr., 4,497,860, Cl. 428-156.000.
Kistner, John F., 4,497,861, Cl. 428-201.000.
Sorlien, Mark D., 4,497,760, Cl. 264-36.000.

Minolta Camera Kabushiki Kaisha: *See—*
Ishida, Tokuji, 4,497,562, Cl. 354-416.000.

Minowa, Yoshibumi: *See—*
Yoshizawa, Kenji; Kodama, Hitoshi; Minowa, Yoshibumi; Komura, Hirotsugu; and Ito, Hiroshi, 4,498,029, Cl. 315-39.000.

Miotto, Mirella: *See—*
Holzle, Gerd; Miotto, Mirella; Reinert, Gerhard; and Polony, Rudolf, 4,497,741, Cl. 260-245.770.

Mitchell, Gordon L.; and Tressler, John H., III, to Honeywell Inc. Optical imaging device and method. 4,497,544, Cl. 350-353.000.

Mitsubishi Denki Kabushiki Kaisha: *See—*
Daimon, Masahiro, 4,498,159, Cl. 369-44.000.
Fujita, Jiro; and Yamane, Iwao, 4,497,266, Cl. 112-121.110.
Fukushima, Nobuo; and Tomimatsu, Noriyuki, 4,498,081, Cl. 340-793.000.
Hamano, Isao; Morishita, Akira; Akae, Yoshifumi; Tanaka, Toshinori; and Yabunaka, Kiyoshi, 4,497,291, Cl. 123-179.0BG.
Kodera, Toshihiko; Eguchi, Kiyoshi; Ishikawa, Takayoshi; Genba, Yasushi; Tamaru, Shigemi; and Satou, Susumu, 4,497,992, Cl. 200-153.0SC.
Nagatomo, Hideaki; Yasuda, Mitsuo; and Kubo, Seiji, 4,497,240, Cl. 98-2.010.
Shinkai, Daisuke; Komoto, Haruo; and Hamada, Shigeharu, 4,497,695, Cl. 204-28.000.
Wada, Shunichi, 4,497,203, Cl. 73-204.000.
Yoshizawa, Kenji; Kodama, Hitoshi; Minowa, Yoshibumi; Komura, Hirotsugu; and Ito, Hiroshi, 4,498,029, Cl. 315-39.000.

Mitsubishi Mining & Cement Co., Ltd.: *See—*
Niwa, Shigeo; Sawai, Kazuhiko; Takahashi, Shinobu; Ono, Mikiya; Fukuda, Yoshiaki; Takeuchi, Hiroyasu; and Tagai, Hideo, 4,497,075, Cl. 3-1.900.

Mitsubishi Paper Mills, Ltd.: *See—*
Itoh, Akira; and Takemura, Akira, 4,497,894, Cl. 430-522.000.

Mitsui Toatsu Chemicals, Incorporated: *See—*
Yoshimoto, Takeo; Igarashi, Keiichi; Yamazaki, Hideo; Takasawa, Yoshio; and Yanagita, Hirohisa, 4,497,828, Cl. 514-603.000.

Mitsui, Yoshiaki: *See—*
Minemura, Norihiro; Kimura, Takeo; and Mitsui, Yoshiaki, 4,497,095, Cl. 26-2.00R.

Mittelmann, Gerhard, to Swiss Aluminium Ltd. Container, in particular for transporting freight by air. 4,497,525, Cl. 312-321.000.

Mitter, Mathias. Arrangement for preventing screen deformation. 4,497,249, Cl. 101-120.000.

Mitter, Mathias. Apparatus for uniform application of liquid treating media to workpiece webs. 4,497,273, Cl. 118-50.000.

Miura, Kenzo: *See—*
Takahashi, Juhei; Miura, Kenzo; Asano, Shogo; Sugiyama, Kunio; Kaji, Kiyokane; and Ohta, Jun, 4,497,198, Cl. 73-35.000.

Miyake, Yukio: *See—*
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Miyakoshi, Shinichi; and Isono, Tokio, to Honda Giken Kogyo Kabushiki Kaisha. Anti-lifting mechanism for motor vehicles. 4,497,506, Cl. 280-703.000.

Mizuhara, Howard, to GTE Products Corporation. Reactive metal-palladium-copper-nickel brazing alloys. 4,497,772, Cl. 420-457.000.

MKT Geotechnical Systems: *See—*
Kurylko, George, 4,497,376, Cl. 173-1.000.

Mobay Chemical Corporation: *See—*
Sanderson, John R.; and Krishnan, Sivaram, 4,497,947, Cl. 528-174.000.

Mobil Oil Corporation: *See—*
Chu, Pochen; Huss, Albin, Jr.; and Vartuli, James C., 4,497,786, Cl. 423-329.000.
Murray, James G., 4,497,883, Cl. 429-194.000.
Wright, Bernard S.; Owen, Hartley; and Hsia, Chung H., 4,497,968, Cl. 585-304.000.

Mobius, Ulrich. Carrier arrangement. 4,497,425, Cl. 224-324.000.

Modic, Justin G.: *See—*
Martin, Wayne A.; and Modic, Justin G., 4,497,194, Cl. 72-356.000.

Modica, Frank S.: *See—*
Bertolacini, Ralph J.; Hirschberg, Eugene H.; and Modica, Frank S., 4,497,902, Cl. 502-65.000.

Mohan Rao, G. R., to Texas Instruments Incorporated. Semiconductor integrated circuit memory device with both serial and random access arrays. 4,498,155, Cl. 365-189.000.

Molins PLC: *See—*
Furze, Victor J.; and Howlett, Thomas J., 4,497,482, Cl. 271-94.000.

Moller, Hermann: *See—*
Gmeiner, Gunter; Moller, Hermann; Andres, Rudolf; and Faust, Eberhard, 4,497,517, Cl. 297-231.000.

Momma, Yoshinobu; Funatsu, Tsuneo; and Sasaki, Atusi, to Fujitsu Limited. Semiconductor device and a method of manufacturing the same. 4,497,106, Cl. 29-571.000.

Mommsen, Gordon V.; and Marfatia, Anil, to Graco, Inc. Energy damping device for spray gun. 4,497,447, Cl. 239-691.000.

Momoshima, Yukichi; Nagasaka, Nobuyuki; and Mine, Mamoru, to Kabushiki Kaisha Daini Seikosha. Electronic musical instrument. 4,497,235, Cl. 84-1.190.

Monarch Marking Systems, Inc.: *See—*
Hamisch, Paul H., Jr., 4,497,682, Cl. 156-384.000.

Moncelle, Michael E.: *See—*
Earleson, Walter E.; King, Dennis M.; and Moncelle, Michael E., 4,498,016, Cl. 290-40.00R.

Mongeon, Robert J.: *See—*
Wayne, Robert J.; Laughman, Lanny M.; Mongeon, Robert J.; and Chenausky, Peter P., 4,498,179, Cl. 372-27.000.

Monnet, Bernard, to Pont-A-Mousson S.A. Method for injection moulding coated parts from plastics material. 4,497,763, Cl. 264-255.000.

Monsanto Company: *See—*
Agrawal, Purushottam D.; and Mandell, John F., 4,497,855, Cl. 428-35.000.

Monti, Carmel S.: *See—*
Yurdin, Carl; and Monti, Carmel S., 4,497,549, Cl. 350-581.000.

Moore, David A.: *See—*
Allen, Ralph; Moore, David A.; and Quinton, Edward F., 4,497,201, Cl. 73-119.00A.

Moore, Gary L.: *See—*
Kontz, Robert F.; and Moore, Gary L., 4,497,681, Cl. 156-363.000.

Moore, Prentice G., to Square D Company. Electronic watt/var transducer. 4,498,138, Cl. 364-483.000.

Moore, William T.; and Albright, John W. Therapeutic method to reduce pain and inflammation. 4,497,823, Cl. 514-512.000.

Mooz, Elizabeth D.: *See—*
Banyasz, Joseph L.; Owens, Cassandra D.; Mooz, Elizabeth D.; Lilly, A. Clifton, Jr.; Martin, Peter; Merritt, Henry B.; and Semp, Bernard A., 4,497,330, Cl. 131-291.000.

Moran, Robert: *See—*
Maris, Wiltjie; and Moran, Robert, 4,497,559, Cl. 354-316.000.

Moretti, Antonio; and Banon, Louis, to Regie Nationale des Usines Renault. Synchronous electrodynamic machine with permanent magnets and cooled by a liquid. 4,498,024, Cl. 310-54.000.

Moretto, Hans-Heinrich: *See—*
de Montigny, Armand; Illger, Hans-Walter; Gonzalez-Doerner, Alberto C.; and Moretto, Hans-Heinrich, 4,497,962, Cl. 556-446.000.

Morgan Construction Company: *See—*
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Morgan, John D.: *See—*
Giolma, William H.; and Morgan, John D., 4,498,020, Cl. 307-261.000.

Morgan, Thomas W.: *See—*
Gage, Charles A.; Blair, Timothy T.; and Morgan, Thomas W., 4,497,567, Cl. 355-3.0TR.

Mori, Kashichi, to Kowa Shoji Kabushiki Kaisha. Pineapple cutter. 4,497,245, Cl. 99-542.000.

Mori, Nobuhiko, to Nippon Electric Co., Ltd. Comparator suitable for a character recognition system. 4,498,189, Cl. 382-30.000.

Moriga, Hiroyuki; Uchida, Masao; Iwashita, Koichi; and Tanaka, Shuji, to Teijin Limited. Method for treating metallic or ceramic surfaces at high temperatures. 4,497,720, Cl. 252-52.00A.

Morihashi, Toshifumi: *See—*
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Morikawa, Teruo: *See—*
Tokuhara, Mitsuhiro; Torigai, Akiyoshi; and Morikawa, Teruo, 4,497,573, Cl. 355-58.000.

Morishita, Akira: *See—*
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Morita, Hideo: *See—*
Aoki, Shigeo; Tamamura, Junichi; Ukai, Yasuhiro; and Morita, Hideo, 4,497,543, Cl. 350-337.000.

Morita, Yoshinori; and Ohmura, Yutaka, to Nissan Motor Company, Limited. Sealing assembly for automotive front-pillar and side-door arrangement. 4,497,516, Cl. 296-206.000.

Moriya, Masaichi; and Seko, Osamu, to Nissan Motor Company, Limited; and Ohi Seisakusho Co., Ltd. Inside-handle arrangement for an automotive vehicle door assembly. 4,497,514, Cl. 292-336.300.

Moriyama, Masaru, to Victor Company of Japan, Limited. A/D Converter having a self-bias circuit. 4,498,072, Cl. 340-347.0AD.

Morlock, Roland: *See—*
Mady, Raschad; Hanelt, Winand; Morlock, Roland; Geruhn, Dieter; Leyhe, Lutz; Meyer zu Bexten, Jobst H.; and Ricke, Franz, 4,497,668, Cl. 148-6.15Z.

Morran, James R.: *See—*
Flemm, Roy E.; and Morran, James R., 4,497,994, Cl. 219-109.000.

Morris, Roy E. Child proof seat belt. 4,497,094, Cl. 24-633.000.

Morton Glass Works: *See—*
Abel, Donald, 4,497,477, Cl. 269-303.000.

Morz, Gunther; and Milcz, Wilhelm, to Licentia Patent-Verwaltungs-GmbH. Microwave receiving device. 4,498,061, Cl. 333-21.00A.

Mosbrucker, Gregory A.; and Abelein, Dewayne M., to Precision Plumbing Products, Inc. Floor trap primer valve. 4,497,337, Cl. 137-247.250.

Moskovskoe Nauchno-Proizvodstvennoe Objedinenie Po Stroitelnomu I Dorozhnomu Mashinostroeniju: *See—*
Malinovsky, Evgeny J., 4,498,139, Cl. 364-518.000.

Moskowitz, Paul A.: *See—*
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Motorola, Inc.: *See—*
Addie, David L.; and Ellsworth, Kenneth A., 4,498,096, Cl. 357-67.000.
Dworsky, Lawrence N., 4,498,045, Cl. 324-71.500.
Helbert, John N., 4,497,890, Cl. 430-296.000.
Kwitkowski, Peter A.; and Pacholok, David R., 4,498,056, Cl. 330-296.000.
Stout, Roger P., 4,498,023, Cl. 310-14.000.

Motter Printing Press Co.: *See—*
Dressler, Frederick K., 4,497,250, Cl. 101-350.000.

Mourlevat, Jean: *See—*
Cabrit, Philippe; Mourlevat, Jean; and de Saint-Palais, Jacques, 4,497,510, Cl. 285-18.000.

Moyer, Robert C., to Barber-Colman Company. Ventilation control system. 4,497,242, Cl. 98-115.300.

Mucheyer, Norbert; and Schmidt, Hubertus, to Mannesmann Rexroth GmbH. Force measuring apparatus mounted on tractor including Hall sensor detecting deformation of flex rod to control tractor power hoist. 4,497,375, Cl. 172-10.000.

Mueller, Kurt; and Wirz, Armin, to Rieter Machine Works. Heatable godet and a method of heating a godet. 4,497,626, Cl. 432-9.000.

Mukoyama, Yoshiyuki: *See—*
Nishizawa, Hiroshi; and Mukoyama, Yoshiyuki, 4,497,944, Cl. 528-49.000.

Muller, Dieter: *See—*
Groth, Rolf; and Muller, Dieter, 4,497,700, Cl. 204-192.00P.

Muller, Eberhard. Method and device for erecting building structures such as bridges, using pre-fabricated concrete beams. 4,497,153, Cl. 52-745.000.

Muller, Heinz: *See—*
Artzt, Peter; Muller, Heinz; Egbers, Gerhard; and Neher, Heinz, 4,497,166, Cl. 57-263.000.

Mullet, David L.; Rilling, Raymond J.; and Voth, Elmer D., to Excel Industries, Inc. Mower with lateral extension wings. 4,497,160, Cl. 56-6.000.

Mullritter, Ludwig: *See—*
Reschenhofer, Rudolf; Mullritter, Ludwig; Schnall, Gunther; and Fruth, Franz, 4,497,478, Cl. 270-53.000.

Multi Bar Systems Ltd.: *See—*
Negus, Terence I., 4,497,601, Cl. 408-156.000.

Multinorm, B.V.: *See—*
Vissers, Hermanus H.; and Van Staveren, Hendrikus C., 4,497,161, Cl. 56-13.600.

Mundie, Craig J.: *See—*
Ahlstrom, John K.; Bachman, Brett L.; Belgard, Richard A.; Bernstein, David H.; Bratt, Richard G.; Clancy, Gerald F.; Gavrin,

Edward S.; Gruner, Ronald H.; Jones, Thomas M.; Katz, Lawrence H.; Mundie, Craig J.; Richmond, Michael S.; Schleimer, Stephen I.; Wallach, Steven J.; Wallach, Walter A., Jr.; and Wells, Douglas M., 4,498,132, Cl. 364-200.000.

Bratt, Richard G.; Gavrin, Edward S.; Schleimer, Stephen I.; Pilat, John F.; Wallach, Walter A., Jr.; Richmond, Michael S.; Belgard, Richard A.; Farber, David A.; Ahlstrom, John K.; Wallach, Steven J.; Katz, Lawrence H.; Wells, Douglas M.; Mundie, Craig J.; Clancy, Gerald F.; Bernstein, David H.; Jones, Thomas M.; and Bachman, Brett L., 4,498,131, Cl. 364-200.000.

Mundloch, James D.: *See*—
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Munter, Ernst A.; and Aczel, Andreas L., to Northern Telecom Limited. Tone source for telephone systems. 4,498,171, Cl. 370-110.200.

Murai, Yasushi: *See*—
Shibahara, Seiji; Okonogi, Tsuneo; Murai, Yasushi; Futkatsu, Shunzo; Niida, Taro; and Wakazawa, Tadashi, 4,497,811, Cl. 424-248.510.

Murakami, Koichi: *See*—
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Murakami, Masaki: *See*—
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Murakami, Mutsuaki: *See*—
Yoshimura, Susumu; and Murakami, Mutsuaki, 4,497,728, Cl. 252-514.000.

Murase, Kiyoshi; Mase, Toshiyasu; and Tomioka, Kenichi, to Yamanouchi Pharmaceutical Co., Ltd. 2-Phenylimidazo [2,1-b]benzothiazole derivatives. 4,497,817, Cl. 548-150.000.

Murata Kikai Kabushiki Kaisha: *See*—
Nakahara, Teiji; and Morihashi, Toshifumi, 4,497,167, Cl. 57-328.000.

Murata Manufacturing Co., Ltd.: *See*—
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Murata, Michihiro; and Kumada, Akira, 4,497,701, Cl. 204-430.000.

Murata, Michihiro; and Kumada, Akira, to Murata Manufacturing Co., Ltd. Humidity sensitive device. 4,497,701, Cl. 204-430.000.

Murayama, Fumiaki; and Handa, Shizuo, to Nippondenso Co., Ltd. Fuel injection timing device for internal combustion engines. 4,497,303, Cl. 123-501.000.

Murayama, Naohiro: *See*—
Wagu, Masakatsu; Hayashi, Shoichiro; Murayama, Naohiro; and Sakagami, Teruo, 4,497,710, Cl. 210-635.000.

Murdock, Michael J.: *See*—
Stelcher, William N.; and Murdock, Michael J., 4,497,420, Cl. 221-13.000.

Murray Corporation: *See*—
Proctor, Robert H., 4,497,090, Cl. 24-20.00R.

Murray, Francis J.: *See*—
Kuelzow, Christopher J.; Kackos, Edward M.; and Murray, Francis J., 4,497,773, Cl. 422-26.000.

Murray, James G., to Mobil Oil Corporation. Battery having cathode of sheet loaded with graphite and carbon sheet anode. 4,497,883, Cl. 429-194.000.

Murtfeldt, Robert L.: *See*—
Sullivan, Michael D.; Murtfeldt, Robert L.; and Yelsey, Arthur R., 4,497,324, Cl. 128-736.000.

Murtland, William H., to Sperry Corporation. Avionics chassis insertion/extraction mechanism. 4,497,528, Cl. 339-45.00M.

Muto, Akira: *See*—
Kudo, Yoshihiko; Kawabata, Hidetsugu; Birukawa, Masahiro; Hara, Noriaki; and Muto, Akira, 4,497,870, Cl. 428-457.000.

MWL Tool and Supply Company: *See*—
Lindsey, Hiram E., Jr., 4,497,371, Cl. 166-377.000.

Myers, Ronald W., to AMP Incorporated. Circuit board housing having self-contained modular jack. 4,497,526, Cl. 339-17.0LC.

Mykrantz, John R.: *See*—
Milner, Ed M.; and Mykrantz, John R., 4,497,854, Cl. 428-17.000.

Nagai, Satoshi: *See*—
Uchida, Kuniharu; Nagai, Satoshi; Komura, Ichiroh; and Hirasawa, Taiji, 4,497,210, Cl. 73-602.000.

Nagamoto, Mitsuki; Hashiya, Yukio; and Kawaharada, Junji, to Matsushita Electric Works, Ltd. Electromagnetic relay. 4,498,065, Cl. 335-79.000.

Nagaoka, Mitsuru; and Yasuno, Mitsuo, to Mazda Motor Corporation. Clutch control in a multiple clutch type gear transmission for automobile. 4,497,222, Cl. 74-866.000.

Nagaoka, Shinji; and Sato, Koji, to Seiko Koki Kabushiki Kaisha. Control circuit for active type range finder. 4,497,560, Cl. 354-403.000.

Nagasaka, Nobuyuki: *See*—
Momoshima, Yukichi; Nagasaka, Nobuyuki; and Mine, Mamoru, 4,497,235, Cl. 84-1.190.

Nagasaki, Tatsuo, to Olympus Optical Co. Limited. Ultrasonic detection apparatus. 4,497,322, Cl. 128-660.000.

Nagasuye, Joseph H.: *See*—
Assarsson, Per G.; and Nagasuye, Joseph H., 4,497,896, Cl. 435-161.000.

Nagatomo, Hideaki; Yasuda, Mitsuo; and Kubo, Seiji, to Mitsubishi Denki Kabushiki Kaisha. Temperature control device for a vehicle cabin. 4,497,240, Cl. 98-2.010.

Nagumo, Masahide; Inagawa, Jun; and Kojima, Tadashi, to Tokyo Shibaura Denki Kabushiki Kaisha. Error correcting system. 4,498,175, Cl. 371-37.000.

Nakagawa, Koichi; Maeda, Osamu; and Yamakawa, Shinzo, to Nippon Telegraph & Telephone Public Corporation. Drawing of polyoxymethylene using dielectric heating. 4,497,759, Cl. 264-26.000.

Nakagawa, Yasuhiko: *See*—
Hamai, Kyugo; Nakagawa, Yasuhiko; Nakai, Meroji; and Inoue, Ryusaburo, 4,497,306, Cl. 123-620.000.

Nakagawa, Yasutsugu: *See*—
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Nakaguchi, Osamu: *See*—
Kitaura, Yoshihiko; Nakaguchi, Osamu; Hemmi, Keiji; Yonishi, Satoshi; and Takeno, Hidekazu, 4,497,729, Cl. 260-112.50R.

Nakahara, Teiji; and Morihashi, Toshifumi, to Murata Kikai Kabushiki Kaisha. Method for producing spun yarns. 4,497,167, Cl. 57-328.000.

Nakahara, Toshiaki: *See*—
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Nakai, Mamoru; Ohshima, Tokio; Kimura, Tomio; Omata, Tetsuo; and Iwamoto, Noritada, to Ube Industries, Ltd. Process for preparing optically active tryptophans. 4,497,957, Cl. 548-496.000.

Nakai, Meroji: *See*—
Hamai, Kyugo; Nakagawa, Yasuhiko; Nakai, Meroji; and Inoue, Ryusaburo, 4,497,306, Cl. 123-620.000.

Nakajima, Masataka; and Mase, Yasushi, to Nissan Motor Company, Limited. Electronic control system for carburetor and control method therefor. 4,497,296, Cl. 123-440.000.

Nakajima, Yasuo: *See*—
Maruyama, Kimiomi; and Nakajima, Yasuo, 4,497,300, Cl. 123-463.000.

Nakamura, Shinichi: *See*—
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Nakamura, Taku: *See*—
Deguchi, Naoyasu; Kameyama, Koji; and Nakamura, Taku, 4,497,893, Cl. 430-359.000.

Nakane, Hisanori: *See*—
Kurihara, Kozo; Ichikawa, Izuo; Nakane, Hisanori; and Ikegami, Yoshihiko, 4,497,847, Cl. 427-3.000.

Nakanishi, Nobuyasu: *See*—
Nogami, Takahiro; Akahori, Shigetaka; Oohori, Harumi; and Nakanishi, Nobuyasu, 4,497,395, Cl. 192-4.00A.

Nakanishi, Toshihiro: *See*—
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Nakano, Yoshikatsu; Matsuura, Masaaki; and Akiyama, Minoru, to Honda Giken Kogyo Kabushiki Kaisha. Intake device for an engine. 4,497,288, Cl. 123-52.00M.

Nakata, Issei: *See*—
Hongo, Akira; Ueda, Hideki; Nakata, Issei; Yoshida, Eiichi; Aoki, Nobuyoshi; and Suzuki, Toshimitsu, 4,497,178, Cl. 62-55.000.

Nakayama, Kenji: *See*—
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Nakayama, Kenjiro: *See*—
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Nalco Chemical Company: *See*—
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Naoi, Mikio: *See*—
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Napco Security Systems, Inc.: *See*—
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Narabayashi, Hirotaro; Kondo, Tomoyoshi; Hayashi, Akira; and Suzuki, Tomokazu, to Sumitomo Chemical Company, Limited; Narabayashi, Hirotaro; Kondo, Tomoyoshi; Hayashi, Akira; and Suzuki, Tomokazu. Antiparkinsonian agent. 4,497,826, Cl. 514-567.000.

Narihisa, Masaaki: *See*—
Fujiwara, Takahisa; Narihisa, Masaaki; and Tamai, Katsuyuki, 4,498,066, Cl. 335-281.000.

National Semiconductor Corporation: *See*—
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National Steel Corporation: *See*—
Graham, Howard A., 4,497,180, Cl. 62-63.000.

NB Jackets Co.: *See*—
O'Connor, Mark, 4,497,128, Cl. 40-405.000.

NCR Corporation: *See*—
Anderson, Jeff L., 4,497,892, Cl. 430-347.000.

Neale, Christopher V.: *See*—
Menown, Hugh; Newton, Barry P.; and Neale, Christopher V., 4,498,181, Cl. 372-38.000.

NEC Corporation: *See*—
Yoshida, Yasuharu, 4,498,050, Cl. 329-110.000.

Negus, Terence I., to Multi Bar Systems Ltd. Cutting tool. 4,497,601, Cl. 408-156.000.

Neher, Heinz: *See*—
Artzt, Peter; Muller, Heinz; Egbers, Gerhard; and Neher, Heinz, 4,497,166, Cl. 57-263.000.

Neiditch, Oscar W.; Hurdle, Edmund S.; and Fox, Daniel J., to Lever Brothers Company. Homogeneous aqueous fabric softening composition with stilbene sulfonic acid fluorescent whitener. 4,497,718, Cl. 252-8.750.

Nellen, William J., to TMCI, Inc. Tobacco product with high filling power and process of making same. 4,497,331, Cl. 131-353.000.

Nelson, Carl T., to National Semiconductor Corporation. Celsius electronic thermometer circuit. 4,497,586, Cl. 374-163.000.

Nelson, Jeffrey N.; and Peters, Thomas A., to Fuller Company. Rotary coal feeder and dryer. 4,497,122, Cl. 34-68.000.

Nelson, Jon N., to Energy Conservation Associates Incorporated. Weather strip. 4,497,137, Cl. 49-496.000.

Nelson, Norvell J., to Psi Star, Inc. Aqueous process for etching cooper and other metals. 4,497,687, Cl. 156-659.100.

Nelson, Peter H., to Syntex (U.S.A.) Inc. Arachidonic acid analogues as anti-inflammatory and anti-allergic agents. 4,497,827, Cl. 514-381.000.

Nenkov, Nikolay D., to Komitet po Goelogica. Retractable core drill bit. 4,497,382, Cl. 175-260.000.

Neri, Carlo: *See*—
Giroldini, Villiam; and Neri, Carlo, 4,497,739, Cl. 260-239.0BF.

Neundorfer, Inc.: *See*—
Neundorfer, Mark H., 4,497,282, Cl. 122-379.000.

Neundorfer, Mark H., to Neundorfer, Inc. Apparatus for deslagging steam generator tubes. 4,497,282, Cl. 122-379.000.

Neuzil, Richard W.; and Hobbs, Simon H., to UOP Inc. Process for the separation of ethylbenzene. 4,497,972, Cl. 585-828.000.

Newman, John W.: *See*—
Sawran, William R.; Turrill, Frank H.; Newman, John W.; Hall, Norman W.; and Ward, Clifford, 4,497,789, Cl. 423-447.400.

Newton, Barry P.: *See*—
Menown, Hugh; Newton, Barry P.; and Neale, Christopher V., 4,498,181, Cl. 372-38.000.

Newton, Colin: *See*—
Chisholm, Donald M.; Newton, Colin; and Winchester, Stanley W., 4,497,662, Cl. 106-92.000.

Ng, Yee S., to Eastman Kodak Company. Correction of image defects in photoconductive film. 4,497,566, Cl. 355-3.0CH.

Nicholson, Charles B., to Albany International Corp. Two piece screen filter. 4,497,709, Cl. 210-489.000.

Nicholson, James E.; and Ryan, James P., to Rudolph Beaver, Inc. Surgical blade unit. 4,497,320, Cl. 128-305.000.

Nicholson, Nicholas; Dowdy, Edward J.; Holt, David M.; and Stump, Charles J., Jr., to United States of America, Energy. Portable instrument for inspecting irradiated nuclear fuel assemblies. 4,497,769, Cl. 376-257.000.

Nicoletti, Adolph E.: *See*—
Plevyak, Jerome B.; and Nicoletti, Adolph E., 4,497,488, Cl. 273-149.00R.

Nielsen, Edward M., Jr.; and Caffrey, Walter T. Heated windshield wiper. 4,497,083, Cl. 15-250.060.

Nieuweboer, Bob: *See*—
Skuballa, Werner; Raduechel, Bernd; Vorbrueggen, Helmut; Casals-Stenzel, Jorge; Schillinger, Ekkehard; Mannesmann, Gerda; and Nieuweboer, Bob, 4,497,830, Cl. 514-277.000.

Nihon Tokushu Noyaku Seizo K.K.: *See*—
Kudamatsu, Akio; Kume, Toyohiko; and Tsuboi, Shinichi, 4,497,804, Cl. 514-92.000.

Niida, Taro: *See*—
Shibahara, Seiji; Okonogi, Tsuneo; Murai, Yasushi; Futkatsu, Shunzo; Niida, Taro; and Wakazawa, Tadashi, 4,497,811, Cl. 424-248.510.

Nilsen, Carl J., to SWS Incorporated. Apparatus for continuously advancing and welding metal can bodies and the like. 4,497,995, Cl. 219-121.0LC.

Nippon Electric Co., Ltd.: *See*—
Makabe, Takayoshi; Kuraishi, Yoshiaki; Nakayama, Kenji; and Kimura, Tadakatsu, 4,498,063, Cl. 333-173.000.
Mori, Nobuhiko, 4,498,189, Cl. 382-30.000.

Nippon Gakki Seizo Kabushiki Kaisha: *See*—
Noro, Masao, 4,498,057, Cl. 330-297.000.

Nippon Infrared Industries Co., Ltd.: *See*—
Sekine, Kunio; Kaneda, Michihiro; Shinokura, Kiichiro; Suenaga, Norihiro; and Suenaga, Nobuyuki, 4,497,319, Cl. 128-303.100.

Nippon Kogaku K.K.: *See*—
Hayashi, Kiyoshi, 4,497,547, Cl. 350-427.000.
Meguro, Hiroshi; Okubo, Yuji; and Watanabe, Sakuji, 4,497,564, Cl. 354-442.000.
Ogino, Makoto; Futami, Toshihiko; Kariya, Michio; Ichimura, Takeo; and Fujiu, Takamitsu, 4,497,629, Cl. 433-201.000.

Nippon Piston Ring Co., Ltd.: *See*—
Ikutake, Hiroshi, 4,497,102, Cl. 29-156.600.

Nippon Steel Corporation: *See*—
Ikegami, Hiroshi; Ichida, Kozaburo; and Kobayashi, Katsuyoshi, 4,497,674, Cl. 148-156.000.
Ohtsuki, Yuzo; Komatsu, Nobiru; Watanabe, Akira; and Saeki, Gouji, 4,497,901, Cl. 501-90.000.
Shinkai, Daisuke; Komoto, Haruo; and Hamada, Shigeharu, 4,497,695, Cl. 204-28.000.
Umezono, Akimi; Kawasaki, Hironobu; Sato, Takashi; and Hayashi, Tomohiko, 4,497,850, Cl. 427-127.000.

Nippon Telegraph & Telephone Public Corporation: *See*—
Makabe, Takayoshi; Kuraishi, Yoshiaki; Nakayama, Kenji; and Kimura, Tadakatsu, 4,498,063, Cl. 333-173.000.
Nakagawa, Koichi; Maeda, Osamu; and Yamakawa, Shinzo, 4,497,759, Cl. 264-26.000.
Ooi, Tetsuo; Watanabe, Hiroshi; Gotoh, Akio; Tsutsumi, Shuitsu; Oba, Ryohei; Ito, Koichi; and Huse, Syouzi, 4,498,195, Cl. 455-205.000.

Nippondenso Co., Ltd.: *See*—
Murayama, Fumiaki; and Handa, Shizuo, 4,497,303, Cl. 123-501.000.
Ogura, Ken; Yamada, Nobuhiko; and Ohmi, Hiroshi, 4,497,693, Cl. 204-15.000.
Suzuki, Haruo; and Hashimoto, Shigeyoshi, 4,497,359, Cl. 164-120.000.

Nishijima, Takayoshi: *See*—
Maruyama, Ryoichi; Nishijima, Takayoshi; Aida, Hideaki; Konishi, Hideyuke; and Hatayama, Keiji, 4,497,223, Cl. 74-866.000.

Nishimura, Sanji: *See*—
Watanabe, Morio; and Nishimura, Sanji, 4,497,655, Cl. 75-34.000.

Nishimura, Shinichi; Akiyama, Yoshinori; and Kanazawa, Yuzo, to Nissan Motor Company, Limited; and Ikeda Bussan Co., Ltd. Adjustable seat structure for a motor vehicle. 4,497,518, Cl. 297-341.000.

Nishimura, Tadafumi: *See*—
Noguchi, Toyota; Okamoto, Michio; Nishimura, Tadafumi; Sugimoto, Yukio; Kaneko, Mamoru; and Nakayama, Kenjiro, 4,498,170, Cl. 370-110.100.

Nishimura, Yoshiro: *See*—
Matsumoto, Jun-ichi; Nishimura, Yoshiro; and Nakamura, Shinichi, 4,497,816, Cl. 514-300.000.

Nishioka, Akira; Aotani, Yoshimasa; and Yamasue, Kotaro, to Fuji Photo Film Co., Ltd. Light-sensitive o-quinonediazide printing plate with oxonol dye. 4,497,888, Cl. 430-165.000.

Nishioka, Takeshi: *See*—
Minami, Satoyuki; Tanaka, Kazuhiro; and Nishioka, Takeshi, 4,497,865, Cl. 428-336.000.

Nishizawa, Hiroshi; and Mukoyama, Yoshiyuki, to Hitachi Chemical Company, Ltd. Process for producing polyamide-imide resin. 4,497,944, Cl. 528-49.000.

Nishizawa, Shigeki: *See*—
Sato, Kazuhiro; Izumita, Morishi; Takahashi, Kenji; Akiyama, Toshiyuki; and Nishizawa, Shigeki, 4,498,106, Cl. 358-213.000.

Nissan Motor Company, Limited: *See*—
Hamai, Kyugo; Nakagawa, Yasuhiko; Nakai, Meroji; and Inoue, Ryusaburo, 4,497,306, Cl. 123-620.000.
Hayashi, Yoshimasa; and Ogawa, Naoki, 4,497,292, Cl. 123-195.00H.
Kawamoto, Tamio, 4,497,216, Cl. 74-475.000.
Kobayashi, Hiroshi, 4,497,204, Cl. 73-304.00C.
Maruyama, Kimiomi; and Nakajima, Yasuo, 4,497,300, Cl. 123-463.000.
Morita, Yoshinori; and Ohmura, Yutaka, 4,497,516, Cl. 296-206.000.
Moriya, Masaichi; and Seko, Osamu, 4,497,514, Cl. 292-336.300.
Nakajima, Masataka; and Mase, Yasushi, 4,497,296, Cl. 123-440.000.
Nishimura, Shinichi; Akiyama, Yoshinori; and Kanazawa, Yuzo, 4,497,518, Cl. 297-341.000.
Ozawa, Masuo, 4,497,305, Cl. 123-556.000.

Nittan Company, Limited: *See*—
Sasaki, Isao, 4,498,074, Cl. 340-514.000.

Niwa, Shigeo; Sawai, Kazuhiko; Takahashi, Shinobu; Ono, Mikiya; Fukuda, Yoshiaki; Takeuchi, Hiroyasu; and Tagai, Hideo, to Mitsubishi Mining & Cement Co., Ltd. Filler for filling in defects or hollow portions of bones. 4,497,075, Cl. 3-1.900.

Nixdorf Computer AG: *See*—
Volke, Hans-Werner; Hilkenmeier, Jurgen; Kohlhage, Hermann; and Tewes, Udo, 4,497,588, Cl. 400-645.100.

Noe, Christian. Chiral, optically active compounds useful as protective groups for hydroxy, thiol and amino compounds. 4,497,960, Cl. 549-386.000.

Nogami, Takahiro; Akahori, Shigetaka; Oohori, Harumi; and Nakanishi, Nobuyasu, to Toyota Jidosha Kabushiki Kaisha. Anti creep vehicle braking system allowing further additional braking action application. 4,497,395, Cl. 192-4.00A.

Noguchi, Toyota; Okamoto, Michio; Nishimura, Tadafumi; Sugimoto, Yukio; Kaneko, Mamoru; and Nakayama, Kenjiro, to Matsushita Electric Industrial Co., Ltd. Time divided digital signal transmission system. 4,498,170, Cl. 370-110.100.

Nordine, Clifford. Wood fired boiler. 4,497,262, Cl. 110-234.000.

Nordipa AG: *See*—
de Vroom, Hubertus M., 4,497,851, Cl. 427-147.000.

Noro, Masao, to Nippon Gakki Seizo Kabushiki Kaisha. Power amplifier with power supply switching. 4,498,057, Cl. 330-297.000.

North American Philips Corporation: *See*—
Stupp, Edward H.; and Fellows, Mark W., 4,498,031, Cl. 315-307.000.

Northern Telecom Limited: *See*—
DeBortoli, George, 4,497,411, Cl. 211-26.000.
Munter, Ernst A.; and Aczel, Andreas L., 4,498,171, Cl. 370-110.200.

Norton Christensen, Inc.: *See*—
Jurgens, Reiner, 4,497,224, Cl. 81-57.340.

Norton Company: *See*—
Ostertag, Alfred, 4,497,383, Cl. 175-289.000.

Nothdurft, Edgar, to Maschinenbau Oppenweiler GmbH. Ejector mechanism for incomplete fascicles in a conveyor line. 4,497,480, Cl. 270-58.000.

Novasina AG: *See*—
Horn, Petr, 4,498,044, Cl. 324-65.00R.

Novo Industri A/S: *See*—
Eilertsen, Jens H.; Fog, Arne D.; and Gibson, Keith, 4,497,897, Cl. 435-188.000.

Novus Inc.: *See*—
Wiele, Robert W., 4,497,476, Cl. 269-1.000.

Nozaki, Kenzie, to Shell Oil Company. Olefin polymerization catalyst compositions and polymerization process. 4,497,905, Cl. 502-107.000.
Nozaki, Takashi: *See—*
Sakurai, Kunio; Ito, Hiroshi; and Nozaki, Takashi, 4,497,539, Cl. 350-164.000.
NRG Systems, Inc.: *See—*
Funke, Craig D., 4,497,310, Cl. 126-292.000.
Nucor Corporation: *See—*
Simpson, Harold G.; and Hollman, Bert D., 4,497,151, Cl. 52-520.000.
Nunlist, Erwin J., to Kennecott Corporation. Repair plug assembly for vessel having a corrosion resistant lining. 4,497,418, Cl. 220-234.000.
Nussbaum, Joel H., to Standard Products Company, The. Method of making a laminate construction. 4,497,678, Cl. 156-244.110.
O/Y KYRO A/B Tamglass: *See—*
Peltonen, Esko J., 4,497,645, Cl. 65-107.000.
Oba, Ryohei: *See—*
Ooi, Tetsuo; Watanabe, Hiroshi; Gotoh, Akio; Tsutsumi, Shuitsu; Oba, Ryohei; Ito, Koichi; and Huse, Syouzi, 4,498,195, Cl. 455-205.000.
Oce-Nederland B.V.: *See—*
Rutten, Hendrik G. J., 4,497,565, Cl. 355-3.00R.
O'Connor, James M.: *See—*
Raes, Maurice C.; O'Connor, James M.; and Rosin, Michael L., 4,497,913, Cl. 521-137.000.
O'Connor, Mark, to NB Jackets Co. Single-channel microfiche master. 4,497,128, Cl. 40-405.000.
Odahara, Tetsuichi: *See—*
Eguchi, Jyutaro; Kashino, Shinzo; Odahara, Tetsuichi; and Sukenari, Gunzo, 4,497,162, Cl. 56-14.600.
O'Dell, James L. Cigarette snuffer. 4,497,329, Cl. 131-235.00R.
Odgers, Irving L.: *See—*
Dickinson, Ben W. O., III; Dickinson, Robert W.; Odgers, Irving L.; and McGhee, James, 4,497,381, Cl. 175-61.000.
Oehy, Peter, to Rieter Machine Works. Apparatus for cutting a fiber sliver. 4,497,087, Cl. 19-159.00A.
Ogasawara, Tomio: *See—*
Ozaki, Shoichiro; Hoshiko, Tomonori; and Ogasawara, Tomio, 4,497,815, Cl. 517-274.000.
Ogawa, Naoki: *See—*
Hayashi, Yoshimasa; and Ogawa, Naoki, 4,497,292, Cl. 123-195.00H.
Ogino, Makoto; Futami, Toshihiko; Kariya, Michio; Ichimura, Takeo; and Fujiu, Takamitsu, to Nippon Kogaku K.K. Dental implant and method of making same. 4,497,629, Cl. 433-201.000.
Ogman, Abraham, to Paul Revere Corporation, The. Apparatus to slice a large round bale. 4,497,163, Cl. 56-341.000.
Ogura, Ken; Yamada, Nobuhiko; and Ohmi, Hiroshi, to Nippondenso Co., Ltd. Method for plating an article and the apparatus therefor. 4,497,693, Cl. 204-15.000.
O'Hara, Mark J.; and Johnson, Russell W., to UOP Inc. Hydrocarbon conversion process. 4,497,704, Cl. 208-112.000.
Ohashi, Ken: *See—*
Tawara, Yoshio; and Ohashi, Ken, 4,497,672, Cl. 148-102.000.
Ohhashi, Masahide, to Tokyo Shibaura Denki Kabushiki Kaisha. Data error correction circuit. 4,498,178, Cl. 371-37.000.
Ohi Seisakusho Co., Ltd.: *See—*
Moriya, Masaichi; and Seko, Osamu, 4,497,514, Cl. 292-336.300.
Ohio & Pennsylvania Fuels Co, Ltd.: *See—*
Valenti, Nicholas, 4,497,661, Cl. 75-256.000.
Ohkata, Ichizo, to Katou Hatsujo Kaisha Ltd. Device for automatically adjusting angle of louver. 4,497,241, Cl. 98-40.250.
Ohlinger, Manfred; Vaeth, Guenter; Rudolf, Peter; Sarnecki, Wilhelm; Jakusch, Helmut; Koester, Eberhard; and Melzer, Milena, to BASF Aktiengesellschaft. Preparation of acicular, ferrimagnetic iron oxides. 4,497,723, Cl. 252-62.560.
Ohmi, Hiroshi: *See—*
Ogura, Ken; Yamada, Nobuhiko; and Ohmi, Hiroshi, 4,497,693, Cl. 204-15.000.
Ohmura, Yutaka: *See—*
Morita, Yoshinori; and Ohmura, Yutaka, 4,497,516, Cl. 296-206.000.
Ohno, John M., to General Electric Company. Silicon carbide cutting insert with pre-pressed core center piece and sintered diamond envelope. 4,497,639, Cl. 51-307.000.
Ohsaki, Ichiro: *See—*
Ushiyama, Hisayuki; Ohsaki, Ichiro; Takenouchi, Masanori; and Nakahara, Toshiaki, 4,497,885, Cl. 430-106.600.
Ohshima, Tokio: *See—*
Nakai, Mamoru; Ohshima, Tokio; Kimura, Tomio; Omata, Tetsuo; and Iwamoto, Noritada, 4,497,957, Cl. 548-496.000.
Ohta, Jun: *See—*
Takahashi, Juhei; Miura, Kenzo; Asano, Shogo; Sugiyama, Kunio; Kaji, Kiyokane; and Ohta, Jun, 4,497,198, Cl. 73-35.000.
Ohtsuki, Yuzo; Komatsu, Nobiru; Watanabe, Akira; and Saeki, Gouji, to Nippon Steel Corporation; and Kyushu Refractories Co., Ltd. Forsterite-carbon refractory. 4,497,901, Cl. 501-90.000.
Ohzawa, Yoshiyuki: *See—*
Sanada, Sakae; and Ohzawa, Yoshiyuki, 4,497,677, Cl. 156-89.000.
Oime, Inc.: *See—*
Frink, Shelby T., 4,497,614, Cl. 417-238.000.
Oja, Tonis; Petersen, Gary L.; and Cannon, David W., to Matec, Inc. Measurement of electro-kinetic properties of a solution. 4,497,208, Cl. 73-584.000.
Ojanen, Randall W., to GTE Products Corporation. Rotatable cutting bit. 4,497,520, Cl. 299-86.000.
Ojima, Iwao; and Hirai, Kenji, to Sagami Chemical Research Center. Process for production of N-acyl-α-amino acids. 4,497,964, Cl. 562-406.000.
Okada, Junya: *See—*
Harada, Setsuo; and Okada, Junya, 4,497,803, Cl. 514-450.000.
Okamoto, Michio: *See—*
Noguchi, Toyota; Okamoto, Michio; Nishimura, Tadafumi; Sugimoto, Yukio; Kaneko, Mamoru; and Nakayama, Kenjiro, 4,498,170, Cl. 370-110.100.
Okamoto, Yoshiyuki; and Hwang, Edward F., to W. R. Grace & Co. Poly(dipropargylamine)and derivatives thereof per se and p-doped and processes for preparing same. 4,497,727, Cl. 252-500.000.
Okamura, Makoto. Rear viewer for automobile. 4,497,541, Cl. 350-626.000.
Oklahoma Agricultural and Mechanical Colleges Acting for and on Behalf of Oklahoma State University, Board of Regents for the: *See—*
Whitcomb, Carl E., 4,497,132, Cl. 47-66.000.
Okonogi, Tsuneo: *See—*
Shibahara, Seiji; Okonogi, Tsuneo; Murai, Yasushi; Futkatsu, Shunzo; Niida, Taro; and Wakazawa, Tadashi, 4,497,811, Cl. 424-248.510.
Okubo, Yuji: *See—*
Meguro, Hiroshi; Okubo, Yuji; and Watanabe, Sakuji, 4,497,564, Cl. 354-442.000.
Olin Corporation: *See—*
Breedis, John F.; and Fister, Julius C., 4,498,121, Cl. 361-401.000.
Raes, Maurice C.; O'Connor, James M.; and Rosin, Michael L., 4,497,913, Cl. 521-137.000.
Olive Company, Inc., The: *See—*
Olive, Jerrel W., 4,497,124, Cl. 40-2.00R.
Olive, Jerrel W., to Olive Company, Inc., The. Stethoscope identification badge. 4,497,124, Cl. 40-2.00R.
Oliver, Roland A. G., to Alabama Power Company. Kit for teaching characteristics and use of electrical devices. 4,497,630, Cl. 434-224.000.
Olsen, Steffen C.; and Vinther, Arne, to Kemisk Vaerk Koge A/S. Arylide azopigments formed by coupling a diazoryl compound with an omega-ammoniumacetoactic acid derivative. 4,497,735, Cl. 534-603.000.
Olsson, Jan G.; and Samuelsson, Lars Erik. Method and apparatus for molding plastic wheels. 4,497,766, Cl. 264-328.800.
Olszewski, Douglas J.: *See—*
Sabatino, Anthony; Orlando, Daniel; and Olszewski, Douglas J., 4,497,604, Cl. 414-131.000.
Olympus Optical Co., Ltd.: *See—*
Kimura, Kenji, 4,498,110, Cl. 358-342.000.
Kobayashi, Yuko, 4,497,546, Cl. 350-410.000.
Nagasaki, Tatsuo, 4,497,322, Cl. 128-660.000.
Osanai, Akira, 4,497,426, Cl. 226-187.000.
Omark Industries: *See—*
Scott, Lewis A.; Gibson, Duane M.; and Woodfill, Arthur J., 4,497,232, Cl. 83-831.000.
Omata, Tetsuo: *See—*
Nakai, Mamoru; Ohshima, Tokio; Kimura, Tomio; Omata, Tetsuo; and Iwamoto, Noritada, 4,497,957, Cl. 548-496.000.
O'Meara, Thomas R., to United States of America, Air Force. Jinc-trap resonator. 4,498,184, Cl. 372-92.000.
O'Neill, James K.: *See—*
Brule, James E.; O'Neill, James K.; and Palmer, David N., 4,497,726, Cl. 252-182.100.
Ono, Mikiya: *See—*
Niwa, Shigeo; Sawai, Kazuhiko; Takahashi, Shinobu; Ono, Mikiya; Fukuda, Yoshiaki; Takeuchi, Hiroyasu; and Tagai, Hideo, 4,497,075, Cl. 3-1.900.
Oohori, Harumi: *See—*
Nogami, Takahiro; Akahori, Shigetaka; Oohori, Harumi; and Nakanishi, Nobuyasu, 4,497,395, Cl. 192-4.00A.
Ooi, Tetsuo; Watanabe, Hiroshi; Gotoh, Akio; Tsutsumi, Shuitsu; Oba, Ryohei; Ito, Koichi; and Huse, Syouzi, to Nippon Telegraph & Telephone Public Corporation; and Tokyo Shibaura Denki Kabushiki Kaisha. Radio interference detection device for use in a multi-channel access angle-modulation radio system. 4,498,195, Cl. 455-205.000.
Oono, Hiroshi; and Teshima, Tsutomu, to Fuji Photo Film Co., Ltd. Cassette having radiation image storage medium. 4,498,005, Cl. 250-327.200.
Orlando, Daniel: *See—*
Sabatino, Anthony; Orlando, Daniel; and Olszewski, Douglas J., 4,497,604, Cl. 414-131.000.
Orlowski, Ronald C.; and Seyler, Jay K., to Armour Pharmaceutical Company. Glycine 8-des-tyrosine 22 calcitonin. 4,497,731, Cl. 260-112.50T.
Orlowski, Ronald C.: *See—*
Seyler, Jay K.; Stahl, Glenn L.; and Orlowski, Ronald C., 4,497,732, Cl. 260-112.50T.
Osanai, Akira, to Olympus Optical Co., Ltd. Mechanism of controlling parallelism between the pinch roller and capstan shaft. 4,497,426, Cl. 226-187.000.
Ostermayer, Franz; and Zimmermann, Markus, to Ciba-Geigy Corporation. Derivatives of 3-aminopropane-1,2-diol. 4,497,813, Cl. 514-166.000.
Ostertag, Alfred, to Norton Company. Undercutting device for anchor holes. 4,497,383, Cl. 175-289.000.
Oswald, Donald E., to Kaiser Steel (Delaware), Inc. Method for electrostatic, epoxy coating of steel drum interiors and product thereof. 4,497,837, Cl. 426-398.000.

Otis Elevator Company: *See—*
Mendelsohn, Arnold; Koe, Joe K.; and Schienda, Gregory, 4,497,391, Cl. 187-29.00R.
Ottagawa, Takaaki: *See—*
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Otto Bock Orthopaedische Industrie KG: *See—*
Fettweis, Ewald; and Kindler, Wolfgang, 4,497,315, Cl. 128-78.000.
Otto, Stanislaus J.; and Doty, Verle L., to United States of America, Navy. Load-unload device—limit overload sensing device. 4,497,400, Cl. 198-468.000.
Ouchi, Teruo; Chikashige, Kiyoshi; and Ueda, Hirohisa, to Kabushiki Kaisha Medos Kenkyusho. Device for preventing the observing objective lens window of an endoscope from collecting moisture. 4,497,550, Cl. 350-584.000.
Ovren, Christer: *See—*
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Owen, Hartley: *See—*
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Owens, Cassandra D.: *See—*
Banyasz, Joseph L.; Owens, Cassandra D.; Mooz, Elizabeth D.; Lilly, A. Clifton, Jr.; Martin, Peter; Merritt, Henry B.; and Semp, Bernard A., 4,497,330, Cl. 131-291.000.
Owens-Corning Fiberglas Corporation: *See—*
Kaveh, Farrokh, 4,497,644, Cl. 65-14.000.
Spencer, Robert E.; and Clarke, Donald L., 4,497,771, Cl. 420-440.000.
Owens-Illinois, Inc.: *See—*
Kontz, Robert F.; and Moore, Gary L., 4,497,681, Cl. 156-363.000.
Ozaki, Shoichiro; Hoshiko, Tomonori; and Ogasawara, Tomio, to Ozaki, Shoichiro. 1-(N-Substituted carbamoyl)-5-fluorouracil derivatives and the carcinostatic agents containing same as active ingredients. 4,497,815, Cl. 517-274.000.
Ozawa, Masuo, to Nissan Motor Company, Limited. Cold-start boosting device of automotive engine. 4,497,305, Cl. 123-556.000.
Ozen Corporation: *See—*
Koiki, Eishi, 4,498,160, Cl. 369-63.000.
Paar, Michael S.; and McCarthy, Christopher I., to General Motors Corporation. Integral rocker arm hydraulic lifter and bearing assembly. 4,497,307, Cl. 123-90.330.
Pacetti, Larry D.: *See—*
Mikic, Frank; Fuhreck, John E.; and Pacetti, Larry D., 4,497,405, Cl. 206-378.000.
Pacholok, David R.: *See—*
Kwitkowski, Peter A.; and Pacholok, David R., 4,498,056, Cl. 330-296.000.
Padoan, Giorgio M., to Societa' Italiana Lenti S.I.L.-S.r.l. Casting plastic lenses from thermohardening monomer with compensation for polymer expansion and shrinkage. 4,497,754, Cl. 264-1.400.
Pagana, Enrico: *See—*
Massaglia, Piercarlo; Pagana, Enrico; and Savini, Dario, 4,498,062, Cl. 333-135.000.
Page, Norman A.: *See—*
Breckinridge, James B.; Page, Norman A.; Shack, Roland V.; and Shannon, Robert R., 4,497,540, Cl. 350-168.000.
Paige, William P.: *See—*
Thomas, Lowell S.; and Paige, William P., 4,497,920, Cl. 524-57.000.
Palguta, Stephen E.: *See—*
Lay, Khin M.; and Palguta, Stephen E., 4,497,098, Cl. 28-171.000.
Pallos, Ferenc M., to Stauffer Chemical Company. Amidocarbonylsulfonic acid salts: herbicide antidotes. 4,497,653, Cl. 71-100.000.
Palmer, David N.: *See—*
Brule, James E.; O'Neill, James K.; and Palmer, David N., 4,497,726, Cl. 252-182.100.
Papalexis, Gregory C.; and Elliott, Richard I. Hotdog roll slicer. 4,497,233, Cl. 83-873.000.
Parkins, William E. Generating power from wind. 4,498,017, Cl. 290-44.000.
Parsons Controls Limited: *See—*
Millington, Michael J., 4,497,169, Cl. 59-84.000.
Pasierb, John: *See—*
Ghosh, Atish; and Pasierb, John, 4,498,079, Cl. 340-725.000.
Pastor, Stephen D.: *See—*
Spivack, John D.; and Pastor, Stephen D., 4,497,959, Cl. 549-253.000.
Patchen, Paul J.: *See—*
Berti, Jerome L.; and Patchen, Paul J., 4,497,497, Cl. 277-163.000.
Patel, Kiritkumar R., to Eaton Corporation. Fluid operated clutch or brake. 4,497,398, Cl. 192-88.00B.
Patel, Naren I., to Siecor Corporation. Filled transmission cable. 4,497,538, Cl. 350-96.230.
Pateman, Anthony J.: *See—*
Phillipps, Gordon H.; Humber, David C.; Ewan, George B.; Coomber, Barry A.; and Pateman, Anthony J., 4,497,805, Cl. 514-172.000.
Patoflex Corporation: *See—*
Ehrlich, Johann, 4,497,123, Cl. 36-32.00R.
Paul Revere Corporation, The: *See—*
Ogman, Abraham, 4,497,163, Cl. 56-341.000.
Paul Wurth S.A.: *See—*
Mailliet, Pierre; and Kraemer, Edgar, 4,497,379, Cl. 173-39.000.
Paull, Seymour; and Marino, Michael J., to Roi Corporation. Electronic thermometer. 4,497,585, Cl. 374-158.000.
Pav, Josef; and Jaegers, Heinz, to Kleinewefers GmbH. Method of and arrangement for processing lengths of material. 4,497,246, Cl. 100-35.000.
Payne, David B.; and Millar, Colin A., to Post Office. Coupling of dielectric optical waveguides. 4,497,536, Cl. 350-96.210.
Pearce, Kenneth W.: *See—*
Spoors, Gerald; and Pearce, Kenneth W., 4,497,781, Cl. 423-164.000.
Peche, Gerhard; and Bialkowski, Gunter, to Siemens Aktiengesellschaft. Vacuum switch tube. 4,497,990, Cl. 200-144.00B.
Peck, Gene E.: *See—*
Cooperberg, Bruce; and Peck, Gene E., 4,497,558, Cl. 354-303.000.
Pedersen, Hakon S.: *See—*
Longberg, Leif; and Pedersen, Hakon S., 4,497,471, Cl. 254-372.000.
Pederson, Harold T., Jr.: *See—*
Marquardt, Robert F.; Pederson, Harold T., Jr.; and Francis, Leo H., 4,497,836, Cl. 426-239.000.
Peerless Machine & Tool Corporation: *See—*
Dempsey, Edmond N., 4,497,620, Cl. 425-145.000.
Peiffer, Dennis G.: *See—*
Lundberg, Robert D.; Peiffer, Dennis G.; Duvdevani, Ilan; and Phillips, Robert R., 4,497,923, Cl. 524-107.000.
Pelensky, Joseph: *See—*
Hubbard, James R.; Pelensky, Joseph; and Kin, Niles, 4,497,468, Cl. 251-117.000.
Pelletier, Bernice: *See—*
Pelletier, Wilmer O., 4,497,489, Cl. 273-158.000.
Pelletier, Wilmer O., to Pelletier, Bernice. Bow and ladder amusement device. 4,497,489, Cl. 273-158.000.
Peltonen, Esko J., to O/Y KYRO A/B Tamglass. Method of and furnace assembly for bending glass sheets. 4,497,645, Cl. 65-107.000.
Pennington, John W.: *See—*
Thorsted, Kenneth G.; and Pennington, John W., 4,497,460, Cl. 244-3.300.
Pennsylvania Engineering Corporation: *See—*
Robert, Edgardo J., 4,497,656, Cl. 75-60.000.
Pennwalt Corporation: *See—*
King, James P.; and Tubbs, Paul, 4,497,719, Cl. 252-42.700.
Simkin, Joseph, 4,497,793, Cl. 424-32.000.
Strauss, Theodore R., 4,497,749, Cl. 261-64.00B.
Penty, Robert A.: *See—*
Sarin, Vinod K.; Penty, Robert A.; and Buljan, Sergej-Tomislav, 4,497,228, Cl. 82-1.00C.
Percel, Phillip J.; Perkins, Douglas W.; and Petricca, Anthony V., to SCM Corporation. Acidulated meat emulsion. 4,497,845, Cl. 426-646.000.
PerfectData Corporation: *See—*
Davis, C. Paul, 4,498,114, Cl. 360-128.000.
Perkin-Elmer Corporation, The: *See—*
Biechler, Charles S.; Carroll, Allen M.; Graves, Richard E.; and Lyons, Steven A., 4,498,010, Cl. 250-492.200.
Perkins, Douglas W.: *See—*
Percel, Phillip J.; Perkins, Douglas W.; and Petricca, Anthony V., 4,497,845, Cl. 426-646.000.
Perobelli, Aldo: *See—*
Pessina, Giorgio; and Perobelli, Aldo, 4,497,479, Cl. 270-54.000.
Perrier, Jean, to Stein Industrie. Spring support device for pipework. 4,497,466, Cl. 248-588.000.
Perry, Leroy A.: *See—*
Courter, Harry I.; and Perry, Leroy A., 4,497,985, Cl. 200-38.00R.
Peshkov, Izyaslav B.: *See—*
Bely, Diamar I.; Mardanov, Valentin P.; Meschanov, Gennady I.; Peshkov, Izyaslav B.; Povelichenko, Anatoly P.; and Timoshin, Jury M., 4,497,867, Cl. 428-385.000.
Pessina, Giorgio; and Perobelli, Aldo. Device for symmetrically opening signatures made up of several sheets and arranging them onto a transport saddle. 4,497,479, Cl. 270-54.000.
Peters, Thomas A.: *See—*
Nelson, Jeffrey N.; and Peters, Thomas A., 4,497,122, Cl. 34-68.000.
Petersen, Christian C., to Polaroid Corporation. Electromagnetic shutter mechanism. 4,497,557, Cl. 354-234.100.
Petersen, Gary L.: *See—*
Oja, Tonis; Petersen, Gary L.; and Cannon, David W., 4,497,208, Cl. 73-584.000.
Petersen, Jorgen H.; Clausen, Peter J. M.; and Rasmussen, Hilmar O., to Danfoss A/S. Highly heatable fuel preparing element, particularly for vapor burners fed with liquid fuel. 4,497,625, Cl. 431-208.000.
Peterson, Charles K.: *See—*
Howard, Lowell C.; and Peterson, Charles K., 4,497,552, Cl. 354-106.000.
Peterson, William A.; and Sines, John C., to AT&T Bell Laboratories. Current limit circuit in single-ended forward converter utilizing core reset to initiate power switch conduction. 4,498,128, Cl. 363-21.000.
Petkoff, Peter M.: *See—*
Sewell, John S.; McColl, Frederick A.; and Petkoff, Peter M., 4,497,332, Cl. 137-15.000.
Petricca, Anthony V.: *See—*
Percel, Phillip J.; Perkins, Douglas W.; and Petricca, Anthony V., 4,497,845, Cl. 426-646.000.
Petterson, De Witt R.; Skelton, John; and Brookstein, David S., to Albany International Corp. Sucker rod. 4,497,866, Cl. 428-365.000.
Pfister GmbH: *See—*
Hafner, Hans W., 4,497,213, Cl. 73-862.380.
Phelan, James J., to AT&T Bell Laboratories. Method for processing essential lines in a communication system. 4,497,979, Cl. 179-18.00D.

Philip Morris Incorporated: *See—*
Banyasz, Joseph L.; Owens, Cassandra D.; Mooz, Elizabeth D.; Lilly, A. Clifton, Jr.; Martin, Peter; Merritt, Henry B.; and Semp, Bernard A., 4,497,330, Cl. 131-291.000.

Philipp, Harald, to Tektronix, Inc. Optical fiber test instrument calibrator. 4,497,575, Cl. 356-73.100.

Phillipps, Gordon H.; Humber, David C.; Ewan, George B.; Coomber, Barry A.; and Pateman, Anthony J., to Glaxo Group Limited. 11α-amino-androstanes. 4,497,805, Cl. 514-172.000.

Phillips, Bobby M., to Eastman Kodak Company. Hot shoe apparatus for preheating drafting, and stabilizing in sequence a running yarn strand. 4,497,627, Cl. 432-59.000.

Phillips, Kenneth G.: *See—*
Tai, Wun T.; and Phillips, Kenneth G., 4,497,927, Cl. 524-475.000.

Phillips Petroleum Company: *See—*
Eastman, Alan D.; Guillory, Jack P.; Cook, Charles F.; and Kimble, James B., 4,497,971, Cl. 585-658.000.
LaSpisa, Ronald J.; and Likins, Merle R., Jr., 4,497,283, Cl. 122-451.100.

Phillips, Robert R.: *See—*
Lundberg, Robert D.; Peiffer, Dennis G.; Duvdevani, Ilan; and Phillips, Robert R., 4,497,923, Cl. 524-107.000.

Photographic Peripherals, Inc.: *See—*
Yurdin, Carl; and Monti, Carmel S., 4,497,549, Cl. 350-581.000.

Pickett, Charles G.; Charney, John G.; and Khasin, Marra, to Purolator Inc. Oil filter relief valve. 4,497,706, Cl. 210-130.000.

Pickett, Kenneth J.; and Derr, Carl B., to Earthway Products, Inc. Combination seeder and fertilizer dispenser for home vegetable gardens. 4,497,264, Cl. 111-73.000.

Pilat, John F.: *See—*
Bratt, Richard G.; Gavrin, Edward S.; Schleimer, Stephen I.; Pilat, John F.; Wallach, Walter A., Jr.; Richmond, Michael S.; Belgard, Richard A.; Farber, David A.; Ahlstrom, John K.; Wallach, Steven J.; Katz, Lawrence H.; Wells, Douglas M.; Mundie, Craig J.; Clancy, Gerald F.; Bernstein, David H.; Jones, Thomas M.; and Bachman, Brett L., 4,498,131, Cl. 364-200.000.

Pine, R. Davis, to General Electric Company. Three-pad journal bearing. 4,497,587, Cl. 384-117.000.

Pinson, George T., to Boeing Company, The. High torque digital stepping motor and control. 4,498,032, Cl. 318-37.000.

Pisano, Michael A.: *See—*
Kupchik, Eugene J.; and Pisano, Michael A., 4,497,806, Cl. 514-189.000.

Pitney Bowes Inc.: *See—*
Soderberg, John H.; Eckert, Alton B.; and McFiggans, Robert B., 4,498,187, Cl. 375-117.000.

Pizzarello, Frank A., to Rockwell International Corporation. Electrochromic nonvolatile memory device. 4,498,156, Cl. 365-215.000.

Plasma-Therm, Inc.: *See—*
Richards, Edmond A., 4,497,680, Cl. 156-345.000.

Plessey Overseas Limited: *See—*
Richardson, Christopher K., 4,498,193, Cl. 455-1.000.

Plevyak, Jerome B.; and Nicoletti, Adolph E. Computerized card shuffling machine. 4,497,488, Cl. 273-149.00R.

Plomer, Alan J.: *See—*
Fisher, Robert G.; Meldrum, Ian G.; Plomer, Alan J.; and Robinson, Richard A., 4,497,663, Cl. 134-4.000.

Plough, Charles T., Jr.; and Hight, Ralph D., to Dale Electronics, Inc. High resistance film resistor. 4,498,071, Cl. 338-308.000.

Pluss, Raymond, to Sulzer Brothers Limited. Zig-zag profile packing and method of making. 4,497,751, Cl. 261-94.000.

Pneumo Corporation: *See—*
Salemka, Robert M., 4,498,036, Cl. 318-561.000.

Pneutek, Inc.: *See—*
Haytayan, Harry M., 4,497,377, Cl. 173-15.000.

Polaroid Corporation: *See—*
Choinski, Edward J., 4,497,121, Cl. 34-23.000.
McCaskill, Emmett S., 4,497,950, Cl. 544-183.000.
Petersen, Christian C., 4,497,557, Cl. 354-234.100.

Pollock, Jack H.: *See—*
DeWald, Carl O.; and Pollock, Jack H., 4,497,467, Cl. 251-78.000.

Polony, Rudolf: *See—*
Holzle, Gerd; Miotto, Mirella; Reinert, Gerhard; and Polony, Rudolf, 4,497,741, Cl. 260-245.770.

Polster, Rudolf: *See—*
Laemmermann, Fritz; Rindfleisch, Werner; Fabian, Wolfgang; and Polster, Rudolf, 4,497,120, Cl. 34-15.000.

Pommer, Ernst-Heinrich: *See—*
Rentzea, Costin; Meyer, Norbert; Sauter, Hubert; Ammermann, Eberhard; and Pommer, Ernst-Heinrich, 4,497,819, Cl. 514-397.000.

Pont-A-Mousson S.A.: *See—*
Monnet, Bernard, 4,497,763, Cl. 264-255.000.

Pontagnier, Henri: *See—*
Creuzet, Marie-Helene; Feniou, Claude; Jarry, Christian; Prat, Gisele; and Pontagnier, Henri, 4,497,812, Cl. 514-211.000.

Pooley, Frederick D., to University College Cardiff Consultants Limited. Microbial leaching of sulphide-containing ores. 4,497,778, Cl. 423-27.000.

Popow, Anatoliy. Continuous molding apparatus. 4,497,619, Cl. 425-75.000.

Portnoy, Robert C., to Du Pont de Nemours, E. I., and Company. Thiadiazinone plant disease control agents. 4,497,807, Cl. 514-222.000.

Post Office: *See—*
Payne, David B.; and Millar, Colin A., 4,497,536, Cl. 350-96.210.

Postbeschild, John W., to Smiths Industries Public Limited Company. Warm-air hand drying apparatus using an induced heated air flow. 4,497,999, Cl. 219-365.000.

Povelichenko, Anatoly P.: *See—*
Bely, Diamar I.; Mardanov, Valentin P.; Meschanov, Gennady I.; Peshkov, Izyaslav B.; Povelichenko, Anatoly P.; and Timoshin, Jury M., 4,497,867, Cl. 428-385.000.

Prat, Gisele: *See—*
Creuzet, Marie-Helene; Feniou, Claude; Jarry, Christian; Prat, Gisele; and Pontagnier, Henri, 4,497,812, Cl. 514-211.000.

Precision Plumbing Products, Inc.: *See—*
Mosbrucker, Gregory A.; and Abelein, Dewayne M., 4,497,337, Cl. 137-247.250.

Price, Edgar E., to Xerox Corporation. Optical system utilizing a variable focal length reflector lens. 4,497,617, Cl. 350-425.000.

Pritchard, Dalton H., to RCA Corporation. Apparatus for frame-to-frame comb filtering composite TV signal. 4,498,099, Cl. 358-31.000.

Prochaska, Charles R.: *See—*
McCarthy, Karen; and Prochaska, Charles R., 4,497,602, Cl. 410-69.000.

Procter & Gamble Company, The: *See—*
Beimesch, Wayne E.; and Hortel, Thomas C., 4,497,757, Cl. 264-13.000.

Proctor, Robert H., to Murray Corporation. Wire grip clamp with radially-directed screw take-up. 4,497,090, Cl. 24-20.00R.

Provost, Alfred M., to Izzo, Anthony J.; and Sutter, Orlin. Portable basin apparatus. 4,497,077, Cl. 4-628.000.

Przybylla, Fritz: *See—*
Gnadig, Gerhard; Przybylla, Fritz; and Schneider, Friedrich, 4,497,358, Cl. 164-80.000.

Psi Star, Inc.: *See—*
Nelson, Norvell J., 4,497,687, Cl. 156-659.100.

Purdy, Kenneth R.; Gorton, Charles W.; and Knight, James A., Jr., to Georgia Tech Research Institute. Thermochemical conversion of biomass to syngas via an entrained pyrolysis/gasification process. 4,497,637, Cl. 48-111.000.

Purolator Inc.: *See—*
Pickett, Charles G.; Charney, John G.; and Khasin, Marra, 4,497,706, Cl. 210-130.000.

Quaker Oats Company, The: *See—*
Gould, Max R.; Bone, David P.; and Hsieh, Fu H., 4,497,840, Cl. 426-560.000.

Quang, Dang V.; Sugier, Andre ; Commereuc, Dominique; and Chauvin, Yves, to Institut Francais du Petrole. Process for methane synthesis by catalytic reduction of carbon monoxide in aqueous phase. 4,497,910, Cl. 518-700.000.

Quinica Organica de Mexico, S.A.: *See—*
Rubio, Valentin de A., 4,497,646, Cl. 71-3.000.

Quinn, Maxie E.: *See—*
Lane, Thomas A.; Rosen, Murray; and Quinn, Maxie E., 4,497,852, Cl. 427-287.000.

Quinton, Edward F.: *See—*
Allen, Ralph; Moore, David A.; and Quinton, Edward F., 4,497,201, Cl. 73-119.00A.

Quist, Bernardus B.: *See—*
Bukkems, Franciscus H. J.; and Quist, Bernardus B., 4,497,605, Cl. 414-218.000.

Rabatin, Jacob G., to General Electric Company. X-ray image converter devices utilizing rare earth oxyhalide phosphors. 4,498,008, Cl. 250-486.100.

Raduechel, Bernd: *See—*
Skuballa, Werner; Raduechel, Bernd; Vorbrueggen, Helmut; Casals-Stenzel, Jorge; Schillinger, Ekkehard; Mannesmann, Gerda; and Nieuweboer, Bob, 4,497,830, Cl. 514-277.000.

Radzins, Edmund: *See—*
Joa, Curt G.; and Radzins, Edmund, 4,497,448, Cl. 241-186.400.

Raes, Maurice C.; O'Connor, James M.; and Rosin, Michael L., to Olin Corporation. Process for preparing a stable dispersion of a polymer in a polyol and its use in the production of high resilience polyurethane foam. 4,497,913, Cl. 521-137.000.

Rainal, Attilio J., to AT&T Bell Laboratories. High-speed, high pin-out LSI chip package. 4,498,122, Cl. 361-414.000.

Ramelot, Daniel L., to Centre de Recherches Metallurgiques-Centrum Voor Research in de Metallurgie. Apparatus for taking gaseous samples. 4,497,214, Cl. 73-863.120.

Randall, Grayson W.: *See—*
Agnew, Palmer W.; Kellerman, Anne S.; and Randall, Grayson W., 4,498,147, Cl. 364-900.000.

Rank Organisation Limited, The: *See—*
Heathcote, Geoffrey L.; and Hollowell, Alan C., 4,498,043, Cl. 324-61.00P.

Rao, Krishna K.: *See—*
Yang, Tai-Cheng; Rao, Krishna K.; and Huang, I-der, 4,497,958, Cl. 549-239.000.

Rasmussen, Hilmar O.: *See—*
Petersen, Jorgen H.; Clausen, Peter J. M.; and Rasmussen, Hilmar O., 4,497,625, Cl. 431-208.000.

Ratajski, Michel, to H. Finger, Firma. Wrist watch case with vulcanized gasket. 4,497,584, Cl. 368-294.000.

Ratell, Raymond E., Jr. Hydraulically-operated pump jack with chain drive. 4,497,616, Cl. 417-390.000.

Rausch, Paul G., to Celtite, Inc. Cartridge containing multiple areas of a multi-component mix and method of making the same. 4,497,403, Cl. 206-219.000.

Raychem Corporation: *See—*
Cameron, John K., 4,497,527, Cl. 339-30.000.

Toy, Lester T., 4,497,926, Cl. 524-271.000.

Razavi, Saeid M., to Electro-Craft Corporation. Velocity servo controller. 4,498,037, Cl. 318-561.000.

RCA Corporation: *See—*
Aschwanden, Felix, 4,498,103, Cl. 358-148.000.
Baran, Anthony S., 4,497,848, Cl. 427-106.000.
Bunting, Richard M.; and Acampora, Alfonse, 4,498,100, Cl. 358-31.000.
Crawshaw, Delbert D., 4,498,105, Cl. 358-213.000.
Pritchard, Dalton H., 4,498,099, Cl. 358-31.000.
Schwarzmann, Alfred, 4,498,007, Cl. 250-390.000.
Schwarzmann, Alfred, 4,498,085, Cl. 343-795.000.

Rebick, Charles: *See—*
Weinberg, Harold N.; Rebick, Charles; and McElrath, Kenneth O., 4,497,705, Cl. 208-127.000.

Recasens, Joseph: *See—*
Blanchet, Pierre; and Recasens, Joseph, 4,497,628, Cl. 432-179.000.

Reese, Dirk; and Rigler, Josef K., to Chemische Werke Huls AG. Fine particulate, expandable styrene polymers suitable for the production of rapidly mold-ejected cellular bodies. 4,497,912, Cl. 521-59.000.

Regie Nationale des Usines Renault: *See—*
Moretti, Antonio; and Banon, Louis, 4,498,024, Cl. 310-54.000.

Reiber, Dietfried: *See—*
Elsner, Emil; Reiber, Dietfried; Messmer, Josef; and Kaiser, Peter, 4,498,185, Cl. 373-93.000.

Reinehr, Ulrich; Herbertz, Toni; Jungverdorben, Hermann J.; and Dross, Joachim, to Bayer Aktiengesellschaft. Very fine denier synthetic fibers. 4,497,868, Cl. 428-400.000.

Reinert, Gerhard: *See—*
Holzle, Gerd; Miotto, Mirella; Reinert, Gerhard; and Polony, Rudolf, 4,497,741, Cl. 260-245.770.

Reiplinger, Erich, to Transformatoren Union Aktiengesellschaft. Transformer with smooth-walled tank. 4,497,387, Cl. 181-202.000.

Reitzel, Henry M., to Stant Inc. One-piece cap. 4,497,419, Cl. 220-302.000.

Reizig, Hans-Jurgen; Meuters, Friedrich; and Louen, Hans-Richard, to Thyssen Aktiengesellschaft vorm. August Thyssen-Hutte. Process for cropping the head of self-luminous rolled material, especially metal strips and system for cropping the head. 4,497,192, Cl. 72-203.000.

Rempfler, Hermann: *See—*
Meyer, Alfred; Kunz, Walter; Maier, Ludwig; and Rempfler, Hermann, 4,497,647, Cl. 71-76.000.

Rems-Werk Christian Foll und Sohne GmbH & Co.: *See—*
Wagner, Rudolf, 4,497,100, Cl. 29-27.00A.

Rentzea, Costin; Meyer, Norbert; Sauter, Hubert; Ammermann, Eberhard; and Pommer, Ernst-Heinrich, to BASF Aktiengesellschaft. Dibenzofuranyloxyalkylimidazolium salts, their preparation and their use as microbicides. 4,497,819, Cl. 514-397.000.

Repella, James A., to Microdot Inc. Hydrodynamic slitted seal and method of manufacture thereof. 4,497,496, Cl. 277-134.000.

Reschenhofer, Rudolf; Mullritter, Ludwig; Schnall, Gunther; and Fruth, Franz, to Agfa-Gevaert AG. Apparatus for squaring, stapling, and stacking copy sets. 4,497,478, Cl. 270-53.000.

RESEM, S.p.A.: *See—*
Trovati, Aldo, 4,497,932, Cl. 524-591.000.

Retrum, Rowland. Apparatus for hydrolyzing keratinaceous material. 4,497,733, Cl. 260-123.700.

Reudink, Douglas O., to AT&T Bell Laboratories. Technique for digital split-channel transmission using interpolative coders and decoders. 4,498,173, Cl. 371-30.000.

Rey, Pierre; Leandri, Jacqueline; and Abbou, Clement, to Agence National de Valorisation de la Recherche (ANVAR). Organ prostheses. 4,497,074, Cl. 3-1.000.

Rey, S. Frank, to Exxon Research & Engineering Co. Epoxy resin compositions of enhanced creep resistance. 4,497,764, Cl. 264-261.000.

Reyes, Daniel. Electric generating system. 4,498,014, Cl. 290-4.000.

Reyes, Jorge: *See—*
Larson, Dalmon M.; and Reyes, Jorge, 4,497,800, Cl. 514-2.000.

Reynolds, George O., to Honeywell Inc. Optical lithographic system having a dynamic coherent optical system. 4,498,009, Cl. 250-452.100.

Rheinmetall GmbH: *See—*
Sabranski, Udo, 4,497,253, Cl. 102-476.000.

Rhodes, William E., III: *See—*
Lover, Myron J.; Singer, Arnold J.; Lynch, Donald M.; and Rhodes, William E., III, 4,497,831, Cl. 514-717.000.

Richard, Christian; and Catros, Jean Y., to Thomson-CSF. Method and apparatus for a transmission system for transmitting an image at a reduced output. 4,498,102, Cl. 358-133.000.

Richards, Alwyn H.: *See—*
Whitlam, Joseph E.; Richards, Alwyn H.; and Akers, Brian, 4,497,389, Cl. 182-150.000.

Richards, Edmond A., to Plasma-Therm, Inc. Apparatus for conveying a semiconductor wafer. 4,497,680, Cl. 156-345.000.

Richardson, Christopher K., to Plessey Overseas Limited. Jammer transmitter. 4,498,193, Cl. 455-1.000.

Richardson, David A.; and Coney, Michael H., to Rolls-Royce Limited. Shroud assembly for a gas turbine engine. 4,497,610, Cl. 415-116.000.

Richardson, Patrick L., to Carrier Corporation. Annunciator. 4,498,077, Cl. 340-648.000.

Richmond, Frank M.: *See—*
Fowles, Tom A.; Lee, Robert; Richmond, Frank M.; and Tobiasz, Henry, 4,497,104, Cl. 29-419.00R.

Richmond, Michael S.: *See—*
Ahlstrom, John K.; Bachman, Brett L.; Belgard, Richard A.; Bernstein, David H.; Bratt, Richard G.; Clancy, Gerald F.; Gavrin, Edward S.; Gruner, Ronald H.; Jones, Thomas M.; Katz, Lawrence H.; Mundie, Craig J.; Richmond, Michael S.; Schleimer, Stephen I.; Wallach, Steven J.; Wallach, Walter A., Jr.; and Wells, Douglas M., 4,498,132, Cl. 364-200.000.
Bratt, Richard G.; Gavrin, Edward S.; Schleimer, Stephen I.; Pilat, John F.; Wallach, Walter A., Jr.; Richmond, Michael S.; Belgard, Richard A.; Farber, David A.; Ahlstrom, John K.; Wallach, Steven J.; Katz, Lawrence H.; Wells, Douglas M.; Mundie, Craig J.; Clancy, Gerald F.; Bernstein, David H.; Jones, Thomas M.; and Bachman, Brett L., 4,498,131, Cl. 364-200.000.

Richter, Hans H., to Marshall and Williams Company. Tenter frame drive and method. 4,497,096, Cl. 26-74.000.

Richter, Wolfgang: *See—*
Dyck, Hans P.; Janberg, Klaus; Richter, Wolfgang; and Spilker, Harry, 4,498,011, Cl. 250-507.100.

Ricke, Franz: *See—*
Mady, Raschad; Hanelt, Winand; Morlock, Roland; Geruhn, Dieter; Leyhe, Lutz; Meyer zu Bexten, Jobst H.; and Ricke, Franz. 4,497,668, Cl. 148-6.15Z.

Ricoh Compay, Ltd.: *See—*
Watanabe, Nobuyoshi; and Matsuda, Tsutomu, 4,497,887, Cl. 430-138.000.

Rieker, Werner: *See—*
Kummer, Martin; Krieg, Uwe; Jundt, Wolfgang; Rieker, Werner; Schadlich, Fritz; and Schaal, Gunter, 4,497,354, Cl. 145-4.000.

Rieter Machine Works: *See—*
Mueller, Kurt; and Wirz, Armin, 4,497,626, Cl. 432-9.000.
Oehy, Peter, 4,497,087, Cl. 19-159.00A.

Rigler, Josef K.; Trukenbrod, Karl; and Bollenrath, Franz-Michael, to Chemische Werke Huls AG. Production of fine particulate, expandable styrene polymers with improved properties. 4,497,911, Cl. 521-56.000.

Rigler, Josef K.: *See—*
Reese, Dirk; and Rigler, Josef K., 4,497,912, Cl. 521-59.000.

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Banitt, Elden H., 4,497,954, Cl. 546-221.000.

Rilling, Raymond J.: *See—*
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Riner, Victor: *See—*
Kiwior, Denis; and Riner, Victor, 4,497,347, Cl. 139-449.000.

Ritz, Jurgen: *See—*
Horoldt, Ernst; Kraft, Kurt; and Ritz, Jurgen, 4,497,915, Cl. 523-156.000.

Robert Bosch GmbH: *See—*
Bruhmann, Werner, 4,497,295, Cl. 123-374.000.
Fehrenbach, Siegfried; Herbst; Kurt; and Utz, Eberhard, 4,497,437, Cl. 236-68.00B.
Kummer, Martin; Krieg, Uwe; Jundt, Wolfgang; Rieker, Werner; Schadlich, Fritz; and Schaal, Gunter, 4,497,354, Cl. 145-4.000.
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Wang, Kathy K.; and Robinson, Mark L., 4,497,669, Cl. 148-11.50P.

Robinson, McDonald: *See—*
Celler, George K.; and Robinson, McDonald, 4,497,683, Cl. 156-603.000.

Robinson, Richard A.: *See—*
Fisher, Robert G.; Meldrum, Ian G.; Plomer, Alan J.; and Robinson, Richard A., 4,497,663, Cl. 134-4.000.

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Wischusen, Henry, III, 4,497,433, Cl. 229-30.000.

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Galbraith, Lyle D., 4,497,632, Cl. 441-30.000.

Rockwell International Corporation: *See—*
Pizzarello, Frank A., 4,498,156, Cl. 365-215.000.
Soclof, Sidney I., 4,497,685, Cl. 156-647.000.

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Carter, William M.; and Rodgers, John M., 4,497,470, Cl. 254-134.3FT.

Rodieck, Chester C. Sequencing valve and irrigation system. 4,497,333, Cl. 137-122.000.

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Rogers, Terrence E., to General Electric Company. Digital automatic frequency control with tracking. 4,498,191, Cl. 455-164.000.

Rogers, Thurmond J., Jr. Board game affording competitive challenge among players. 4,497,490, Cl. 273-249.000.

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Paull, Seymour; and Marino, Michael J., 4,497,585, Cl. 374-158.000.

Rolls-Royce Limited: *See—*
Adkins, Richard C.; and Yost, James O., 4,497,445, Cl. 239-590.000.
Richardson, David A.; and Coney, Michael H., 4,497,610, Cl. 415-116.000.
Smith, Stanley, 4,497,172, Cl. 60-226.100.

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Gelchinski, Mordechai H.; Romankiw, Lubomyr T.; Vigliotti, Donald R.; and Von Gutfeld, Robert J., 4,497,692, Cl. 204-15.000.

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Rose, Floyd D. Apparatus for restraining and fine tuning the strings of a musical instrument, particularly guitars. 4,497,236, Cl. 84-298.000.

Rosen, Murray: *See—*
Lane, Thomas A.; Rosen, Murray; and Quinn, Maxie E., 4,497,852, Cl. 427-287.000.

Rosin, Michael L.: *See—*
Raes, Maurice C.; O'Connor, James M.; and Rosin, Michael L., 4,497,913, Cl. 521-137.000.

Ross, Alexander S.: *See—*
Tarsia, Joseph; Ross, Alexander S.; and Gertsek, Marina, 4,497,574, Cl. 355-76.000.

Ross, William E., to Litton Systems, Inc. Method and device for increasing the density of a plurality of switchable magnetic elements. 4,497,545, Cl. 350-376.000.

Rossi, Alessandro: *See—*
Merlini, Lucio; Rossi, Alessandro; and Buonamici, Metilde, 4,497,820, Cl. 514-432.000.

Rothera, Jacques: *See—*
Gueguen, Daniel; and Rothera, Jacques, 4,497,458, Cl. 242-107.40B.

Rozmus, John M., to Scientific Atlanta, Inc. Multiaccess broadcast communication system. 4,498,169, Cl. 370-85.000.

Rubin, Frank D.; and Schumacher, Roger A., to General Motors Corporation. Brake system pressure bleed device. 4,497,176, Cl. 60-584.000.

Rubio, Valentin de A., to Quinica Organica de Mexico, S.A. Cultivation of rice with simultaneous control of weeds and fungus disease. 4,497,646, Cl. 71-3.000.

Rucker, Klaus G., to Du Pont de Nemours, E. I., and Company. Liquid-disabled blasting cap. 4,497,251, Cl. 102-202.600.

Rudek, Fred, to Exo Sensors, Inc. Radiation compensator for gas sensors. 4,498,049, Cl. 324-443.000.

Rudolf, Peter: *See—*
Ohlinger, Manfred; Vaeth, Guenter; Rudolf, Peter; Sarnecki, Wilhelm; Jakusch, Helmut; Koester, Eberhard; and Melzer, Milena, 4,497,723, Cl. 252-62.560.

Rudolph Beaver, Inc.: *See—*
Nicholson, James E.; and Ryan, James P., 4,497,320, Cl. 128-305.000.

Ruhmann, Douglas C.; Vorwerk, Frederick E.; and Mundloch, James D., to ACF Industries, Incorporated. Transverse bulkhead connection to filament wound vehicle body sides. 4,497,258, Cl. 105-248.000.

Runions, Alton E.: *See—*
Mayer, William; and Runions, Alton E., 4,498,124, Cl. 362-211.000.

Rupnik, David W.: *See—*
Ashman, John J.; and Rupnik, David W., 4,497,984, Cl. 200-11.0DA.

Rutloh, Max, to Krautkramer-Branson, Inc. Circuit for generating sawtooth shaped pulses for ultrasonic instruments. 4,497,211, Cl. 73-606.000.

Rutten, Hendrik G. J., to Oce-Nederland B.V. Exposure device for locally discharging a photoconductive imaging element. 4,497,565, Cl. 355-3.00R.

Ryan, James P.: *See—*
Nicholson, James E.; and Ryan, James P., 4,497,320, Cl. 128-305.000.

Ryoke, Katsumi; Yamaguchi, Nobutaka; Yoneyama, Takashi; and Tadokoro, Eiichi, to Fuji Photo Film Co., Ltd. Magnetic recording medium. 4,497,864, Cl. 428-323.000.

S. C. Johnson & Son, Inc.: *See—*
Crapser, James R., 4,497,456, Cl. 242-55.550.

SAB Nife AB: *See—*
Stensson, Bo G.; Severinsson, Lars M.; and Lundstrom, Bo, 4,497,392, Cl. 188-59.000.

Sabatino, Anthony; Orlando, Daniel; and Olszewski, Douglas J., to GNB Batteries Inc. Apparatus and method for supplying electrode plates in the assembly of battery cell elements. 4,497,604, Cl. 414-131.000.

Sabranski, Udo, to Rheinmetall GmbH. Armor-piercing projectile. 4,497,253, Cl. 102-476.000.

Saeki, Gouji: *See—*
Ohtsuki, Yuzo; Komatsu, Nobiru; Watanabe, Akira; and Saeki, Gouji, 4,497,901, Cl. 501-90.000.

Sagami Chemical Research Center: *See—*
Ojima, Iwao; and Hirai, Kenji, 4,497,964, Cl. 562-406.000.

Sai-Halasz, George A.: *See—*
Faris, Sadeg M.; Moskowitz, Paul A.; Davidson, Arthur; and Sai-Halasz, George A., 4,498,046, Cl. 324-158.00F.

St. Clair, Anne K.; and St. Clair, Terry L., to United States of America, National Aeronautics and Space Administration. Elastomer toughened polyimide adhesives. 4,497,935, Cl. 525-181.000.

St. Clair, Terry L.: *See—*
St. Clair, Anne K.; and St. Clair, Terry L., 4,497,935, Cl. 525-181.000.

St. John's University: *See—*
Kupchik, Eugene J.; and Pisano, Michael A., 4,497,806, Cl. 514-189.000.

St. Lawrence Technologies Limited: *See—*
Assarsson, Per G.; and Nagasuye, Joseph H., 4,497,896, Cl. 435-161.000.

Saito, Yasuhiro; and Tatemichi, Takaomi, to Kabushiki Kaisha Daini Seikosha. Automatic coordinate determining device having electrostatic shielding. 4,497,977, Cl. 178-19.000.

Sakagami, Teruo: *See—*
Wagu, Masakatsu; Hayashi, Shoichiro; Murayama, Naohiro; and Sakagami, Teruo, 4,497,710, Cl. 210-635.000.

Sakamoto, Takashi, to Dainippon Screen Seizo Kabushiki Kaisha. Picture outline tracing and recording machine. 4,498,109, Cl. 358-296.000.

Sakurai, Kunio; Ito, Hiroshi; and Nozaki, Takashi, to Konishiroku Photo Industry Co., Ltd. Antireflection optical coating. 4,497,539, Cl. 350-164.000.

Salemka, Robert M., to Pneumo Corporation. Adaptive control system. 4,498,036, Cl. 318-561.000.

Sall, Surinderpal S.; and Kemp, John, to Crane Packing Limited. Mechanical face seals with wear monitor means. 4,497,493, Cl. 277-2.000.

Salloum, Robert J.; and Atkins, Richard P., to General Motors Corporation. Tough epoxy polymers formable by reaction injection molding. 4,497,945, Cl. 528-94.000.

Salser, Winston A.; Cline, Martin J.; and Stang, Howard D., to University of California, The Regents of the. Gene transfer in intact mammals. 4,497,796, Cl. 424-95.000.

Salvatore, Amedeo: *See—*
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Salvisberg, Kurt: *See—*
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Salzgitter AG: *See—*
Krieger, Friedrich, 4,497,770, Cl. 376-272.000.

Samuelsson, Lars Erik: *See—*
Olsson, Jan G.; and Samuelsson, Lars Erik, 4,497,766, Cl. 264-328.800.

Sanada, Sakae; and Ohzawa, Yoshiyuki, to Hitachi, Ltd. Method for manufacturing ceramic substrate. 4,497,677, Cl. 156-89.000.

Sanderson, John R.; and Krishnan, Sivaram, to Mobay Chemical Corporation. Polycarbonate compositions having improved heat deflection temperature. 4,497,947, Cl. 528-174.000.

Sandis, Stylianos: *See—*
Blaya, Alain; Crouzet, Pierre; Sandis, Stylianos; and Bailly, Jean C., 4,497,904, Cl. 502-104.000.

Sandler, Sheldon S., to Geo-Centers, Inc. Broad band liquid loaded dipole antenna. 4,498,086, Cl. 343-807.000.

Sankyo Company, Limited: *See—*
Kurihara, Kozo; Ichikawa, Izuo; Nakane, Hisanori; and Ikegami, Yoshihiko, 4,497,847, Cl. 427-3.000.

Sanstrom, Beverly J.: *See—*
Sanstrom, Grant H.; and Sanstrom, Beverly J., 4,497,280, Cl. 119-51.110.

Sanstrom, Grant H.; and Sanstrom, Beverly J. Timer actuated pet feeder. 4,497,280, Cl. 119-51.110.

Santen, Sven O., to SKF Steel Engineering Aktiebolag. Method and device for continuous supply of lumps of material to a shaft. 4,497,609, Cl. 414-786.000.

Santrade Limited: *See—*
Lindholm, Leif, 4,497,660, Cl. 75-240.000.

Sargeson, Alan M.; Herlt, Anthony J.; and Harrowfield, John M., to Australian National University, The. Metal cage complexes and production thereof. 4,497,737, Cl. 260-239.0BC.

Sarin, Vinod K.; Penty, Robert A.; and Buljan, Sergej-Tomislav, to GTE Laboratories Incorporated. Method of machining cast iron. 4,497,228, Cl. 82-1.00C.

Sarnecki, Wilhelm: *See—*
Ohlinger, Manfred; Vaeth, Guenter; Rudolf, Peter; Sarnecki, Wilhelm; Jakusch, Helmut; Koester, Eberhard; and Melzer, Milena, 4,497,723, Cl. 252-62.560.

Sasaki, Atusi: *See—*
Momma, Yoshinobu; Funatsu, Tsuneo; and Sasaki, Atusi, 4,497,106, Cl. 29-571.000.

Sasaki, Isao, to Nittan Company, Limited. Selectively testable fire detector. 4,498,074, Cl. 340-514.000.

Sasaki, Takafumi, to Tokyo Shibaura Denki Kabushiki Kaisha. Locking device for door of cooking apparatus. 4,497,513, Cl. 292-217.000.

Sasano, Naoshige: *See—*
Kowata, Nobuo; and Sasano, Naoshige, 4,497,643, Cl. 65-4.210.

Sasayama, Takao; and Amano, Matsuo, to Hitachi, Ltd. Fuel control apparatus for internal combustion engine. 4,497,302, Cl. 123-489.000.

Sashiki, Takashi, to Kabushiki Kaisha Ishida Koki Seisakusho. Combinatorial weighing apparatus. 4,497,385, Cl. 177-59.000.

Satake, Toshimi: *See—*
Yamato, Noboru; Satake, Toshimi; Minami, Toshiaki; and Fujimura, Fumio, 4,498,091, Cl. 346-216.000.

Sato, Hidetaka; Uchimura, Shunichiro; Uchigasaki, Isao; and Makino, Daisuke, to Hitachi Chemical Company, Ltd. Compositions of materials for forming protective film in semiconductor device. 4,497,922, Cl. 524-104.000.

Sato, Kazuhiro; Izumita, Morishi; Takahashi, Kenji; Akiyama, Toshiyuki; and Nishizawa, Shigeki, to Hitachi, Ltd. Pulse generator for solid-state television camera. 4,498,106, Cl. 358-213.000.

Sato, Koji: *See—*
Nagaoka, Shinji; and Sato, Koji, 4,497,560, Cl. 354-403.000.

Sato, Takashi: *See—*
Umezono, Akimi; Kawasaki, Hironobu; Sato, Takashi; and Hayashi, Tomohiko, 4,497,850, Cl. 427-127.000.

Sato, Takeshi; Tsuji, Syogo; Shigeta, Kengo; and Uenishi, Akira, to Hitachi, Ltd. Steam wetness measuring apparatus. 4,497,577, Cl. 356-336.000.

Satomi, Keisuke: *See—*
Aihara, Hiroshi; Matumura, Akira; Takemura, Hiroshi; Kobashi, Rikiya; Satomi, Keisuke; and Ishibashi, Hiroe, 4,498,033, Cl. 318-261.000.

Satou, Susumu: *See—*
Kodera, Toshihiko; Eguchi, Kiyoshi; Ishikawa, Takayoshi; Genba, Yasushi; Tamaru, Shigemi; and Satou, Susumu, 4,497,992, Cl. 200-153.0SC.

Sauer, Rudolf, to Robert Bosch GmbH. Injection valve. 4,497,443, Cl. 239-533.300.

Saunders, Robert M.: *See—*
Wilde, Sheldon L.; McCandless, Thomas J.; and Saunders, Robert M., 4,497,765, Cl. 264-268.000.

Saurenman, Donald G. Control of static neutralization employing positive and negative ion distributor. 4,498,116, Cl. 361-213.000.

Saurer-Allma GmbH: *See—*
Guggemos, Hans; and Weber, Rolf-Dieter, 4,497,451, Cl. 242-37.00R.

Sauter, Hubert: *See—*
Rentzea, Costin; Meyer, Norbert; Sauter, Hubert; Ammermann, Eberhard; and Pommer, Ernst-Heinrich, 4,497,819, Cl. 514-397.000.

Savini, Dario: *See—*
Massaglia, Piercarlo; Pagana, Enrico; and Savini, Dario, 4,498,062, Cl. 333-135.000.

Sawai, Kazuhiko: *See—*
Niwa, Shigeo; Sawai, Kazuhiko; Takahashi, Shinobu; Ono, Mikiya; Fukuda, Yoshiaki; Takeuchi, Hiroyasu; and Tagai, Hideo, 4,497,075, Cl. 3-1.900.

Sawran, William R.; Turrill, Frank H.; Newman, John W.; Hall, Norman W.; and Ward, Clifford, to Ashland Oil, Inc. Process for the manufacture of carbon fibers. 4,497,789, Cl. 423-447.400.

Scardovi, Alessandro, to Ing. C. Olivetti & C., S.p.A. Control system for ink jet printing element. 4,498,089, Cl. 346-140.00R.

Schaaf, Bruce M. Spin-check device for arrows. 4,497,207, Cl. 73-432.00R.

Schaal, Gunter: *See—*
Kummer, Martin; Krieg, Uwe; Jundt, Wolfgang; Rieker, Werner; Schadlich, Fritz; and Schaal, Gunter, 4,497,354, Cl. 145-4.000.

Schadlich, Fritz: *See—*
Kummer, Martin; Krieg, Uwe; Jundt, Wolfgang; Rieker, Werner; Schadlich, Fritz; and Schaal, Gunter, 4,497,354, Cl. 145-4.000.

Schaefer, Ernest R. Oil scavenging material. 4,497,688, Cl. 162-181.100.

Schaeflern, Henry: *See—*
Szostak, Jan; Schaeflern, Henry; and Marsh, Walter H. W., 4,497,267, Cl. 112-158.00A.

Schapira, Joseph; Ken, Victor; and Dauptain, Jean-Loup, to Compagnie Francaise De Produits Industriels. Process for the treatment of phosphatized metal surfaces with a composition comprising trivalent titanium. 4,497,666, Cl. 148-6.15R.

Scharfenbergkupplung GmbH: *See—*
Forster, Hilmar; and Wonka, Heinz-Georg, 4,497,414, Cl. 213-76.000.

Schatteman, Etienne A., to Staar S. A. Automatic disc loading apparatus. 4,498,162, Cl. 369-77.100.

Schechter, Michael M., to Ford Motor Company. Plunger type fuel injection pump. 4,497,299, Cl. 123-451.000.

Schefer, Kurt; and Salvisberg, Kurt, to Sulzer Brothers Limited. Filament winding machine. 4,497,450, Cl. 242-18.00A.

Scheidegger, Albert, to ETS Scheidegger W. & Cie. Method of and apparatus for enveloping moving articles. 4,497,156, Cl. 53-399.000.

Schen, Michael A.: *See—*
Brown, James W.; Chen, Tsang J.; and Schen, Michael A., 4,497,929, Cl. 524-547.000.

Schering Aktiengesellschaft: *See—*
Skuballa, Werner; Raduechel, Bernd; Vorbrueggen, Helmut; Casals-Stenzel, Jorge; Schillinger, Ekkehard; Mannesmann, Gerda; and Nieuweboer, Bob, 4,497,830, Cl. 514-277.000.

Schering Corporation: *See—*
Witkowski, Joseph T., 4,497,814, Cl. 514-258.000.

Scheurenbrand, Hans, to Bodenseewerk Geratetchnik GmbH. Gravimeter. 4,497,206, Cl. 73-382.00R.

Schienda, Gregory: *See—*
Mendelsohn, Arnold; Koe, Joe K.; and Schienda, Gregory, 4,497,391, Cl. 187-29.00R.

Schilling, Curtis L., Jr.; Williams, Thomas C.; and Wesson, John P., to Union Carbide Corporation. Branched polycarbosilanes and their use in the production of silicon carbide. 4,497,787, Cl. 423-345.000.

Schilling, William, to Alco Foodservice Equipment Company. Mechanical post mix beverage dispensing system. 4,497,421, Cl. 222-144.500.

Schillinger, Ekkehard: *See—*
Skuballa, Werner; Raduechel, Bernd; Vorbrueggen, Helmut; Casals-Stenzel, Jorge; Schillinger, Ekkehard; Mannesmann, Gerda; and Nieuweboer, Bob, 4,497,830, Cl. 514-277.000.

Schindler, Edmund S.: *See—*
Vatsky, Joel; and Schindler, Edmund S., 4,497,263, Cl. 110-347.000.

Schleiermacher, Herbert; and Bauer, Lothar, to Klockner-Humboldt-Deutz Aktiengesellschaft. Intake system with oscillator tubes. 4,497,287, Cl. 123-52.0MC.

Schleimer, Stephen I.: *See—*
Ahlstrom, John K.; Bachman, Brett L.; Belgard, Richard A.; Bernstein, David H.; Bratt, Richard G.; Clancy, Gerald F.; Gavrin, Edward S.; Gruner, Ronald H.; Jones, Thomas M.; Katz, Lawrence H.; Mundie, Craig J.; Richmond, Michael S.; Schleimer, Stephen I.; Wallach, Steven J.; Wallach, Walter A., Jr.; and Wells, Douglas M., 4,498,132, Cl. 364-200.000.
Bratt, Richard G.; Gavrin, Edward S.; Schleimer, Stephen I.; Pilat, John F.; Wallach, Walter A., Jr.; Richmond, Michael S.; Belgard, Richard A.; Farber, David A.; Ahlstrom, John K.; Wallach, Steven J.; Katz, Lawrence H.; Wells, Douglas M.; Mundie, Craig J.; Clancy, Gerald F.; Bernstein, David H.; Jones, Thomas M.; and Bachman, Brett L., 4,498,131, Cl. 364-200.000.

Schlosser, Hans-Joachim: *See—*
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Schlosser, Wolfgang O. W.: *See—*
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Schmidt, Frank; and Tyrroff, Horst, to VEB Zentrum fur Forschung Und Technologie Mikroelektronik. Method for the production of a self-supporting mask. 4,497,884, Cl. 430-5.000.

Schmidt, Hubertus: *See—*
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Schmidt, Siegfried, to Buropatent AG. Isolating device for an opening traversed by conveyor cars. 4,497,254, Cl. 104-1.00R.

Schmitz, Horst; and Krompass, Wolfgang, to Krauss-Maffei Aktiengesellschaft. Mixing head for reactive materials. 4,497,579, Cl. 366-134.000.

Schmoock, Roy F., to Fischer & Porter Company. Flangeless electromagnetic flowmeter. 4,497,212, Cl. 73-861.120.

Schnall, Gunther: *See—*
Reschenhofer, Rudolf; Mullritter, Ludwig; Schnall, Gunther; and Fruth, Franz, 4,497,478, Cl. 270-53.000.

Schneider, Bruce H.: *See—*
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Schneider, Charles; Schneider, Bruce H.; and Schneider, Jerry S. Method of making aesthetic quilting. 4,497,269, Cl. 112-262.300.

Schneider, Friedrich: *See—*
Gnadig, Gerhard; Przybylla, Fritz; and Schneider, Friedrich, 4,497,358, Cl. 164-80.000.

Schneider, Heinrich; and Hammerschmidt, Johann, to Chemie Linz Aktiengesellschaft. Preparation of improved thermoplastic spun fleeces. 4,497,097, Cl. 28-112.000.

Schneider, Jerry S.: *See—*
Schneider, Charles; Schneider, Bruce H.; and Schneider, Jerry S., 4,497,269, Cl. 112-262.300.

Schott, Lawrence A.; and Schott, Roger A. Lubricating apparatus and system. 4,497,149, Cl. 52-174.000.

Schott, Roger A.: *See—*
Schott, Lawrence A.; and Schott, Roger A.. 4,497,149, Cl. 52-174.000.

Schoute, Frederik C.; Doorduin, Adrianus W.; and Hooijmans, Jacobus L. M., to U.S. Philips Corporation. Method and apparatus for preventing overloading of the central controller of a telecommunication system. 4,497,978, Cl. 179-9.000.

Schowengerdt, Frank D.: *See—*
Brown, James T., Jr.; and Schowengerdt, Frank D., 4,497,641, Cl. 55-94.000.

Schrader, Rolf, to Grafon AG. Method and apparatus for the manufacture of a three-dimensional, shaped graphite electrode utilizing a three-dimensional, shaped file. 4,497,101, Cl. 29-76.00R.

Schramm, Buford J. Barrel type engine with plural two-cycle cylinders and pressurized induction. 4,497,284, Cl. 123-41.470.

Schreiber, Jurgen, to Buderus Aktiengesellschaft. Apparatus for simultaneously grinding inner and outer workpiece surfaces. 4,497,138, Cl. 51-3.000.

Schubert & Salzer Maschinenfabrik Aktiengesellschaft: *See—*
Artzt, Peter; Muller, Heinz; Egbers, Gerhard; and Neher, Heinz, 4,497,166, Cl. 57-263.000.

Schuler, Murry W.: *See—*
Alm, Arthur L.; and Schuler, Murry W., 4,497,328, Cl. 130-27.00K.

Schulke, Karl A., to Heraeus-Quarzschmelze. Bell of opaque fused silica. 4,497,277, Cl. 118-733.000.

Schulte, Hans-Gerd, to Krupp Polysius AG. Process for the production of sintered magnesite from magnesium hydroxide. 4,497,761. Cl. 264-66.000.

Schulte, Thomas L. Method of chemically debriding ulcerated necrotic tissue. 4,497,824, Cl. 514-166.000.

Schulz, Axel, to Robert Bosch GmbH. Method and apparatus for concealing errors in a digital television signal. 4,498,104, Cl. 358-160.000.

Schumacher, Roger A.: *See—*
Rubin, Frank D.; and Schumacher, Roger A., 4,497,176, Cl. 60-584.000.

Schumaker, Eugene J., to Adjustable Fixture Company. Lamp with one arm fork support. 4,498,125, Cl. 362-216.000.

Schundehutte, Karl H.: *See—*
Kruckenberg, Winfried; and Schundehutte, Karl H., 4,497,736, Cl. 534-855.000.
Schwarzmann, Alfred, to RCA Corporation. Method and apparatus for neutron radiation monitoring. 4,498,007, Cl. 250-390.000.
Schwarzmann, Alfred, to RCA Corporation. Folded dipole radiating element. 4,498,085, Cl. 343-795.000.
Scientific Atlanta, Inc.: *See—*
Rozmus, John M., 4,498,169, Cl. 370-85.000.
SCM Corporation: *See—*
Percel, Phillip J.; Perkins, Douglas W.; and Petricca, Anthony V., 4,497,845, Cl. 426-646.000.
Scordato, Richard E., to Medical Laboratory Automation, Inc. Coagulation instrument for performing clotting tests. 4,497,774, Cl. 422-73.000.
Scott, Alexander, to J & P Coats, Limited. Method for production of synthetic yarn and yarn-like structures. 4,497,099, Cl. 28-220.000.
Scott, Lewis A.; Gibson, Duane M.; and Woodfill, Arthur J., to Omark Industries. Cutting tool with cutting tooth insert. 4,497,232, Cl. 83-831.000.
Sebesta, Edward H., to Amdahl Corporation. Lift-off process for depositing metal on a substrate. 4,497,684, Cl. 156-643.000.
Sedam, Jason K., to Coca-Cola Company, The. Apparatus and method for loading syrup and CO_2 containers into a portable post-mix beverage dispenser unit. 4,497,348, Cl. 141-2.000.
Segawa, Keiji; Naoi, Mikio; and Murakami, Masaki, to Victor Company of Japan, Limited. Diamond pickup stylus with good grindability. 4,498,163, Cl. 369-126.000.
Seiko Instruments & Electronics Ltd.: *See—*
Takahashi, Kunihiro, 4,498,025, Cl. 310-312.000.
Seiko Koki Kabushiki Kaisha: *See—*
Nagaoka, Shinji; and Sato, Koji, 4,497,560, Cl. 354-403.000.
Sekine, Kunio; Kaneda, Michihiro; Shinokura, Kiichiro; Suenaga, Norihiro; and Suenaga, Nobuyuki, to Nippon Infrared Industries Co., Ltd. Laser irradiating apparatus. 4,497,319, Cl. 128-303.100.
Sekmakas, Kazys; and Shah, Raj, to DeSoto, Inc. Epoxy phosphate-carboxyl copolymers and aqueous coatings containing the same. 4,497,946, Cl. 528-99.000.
Seko, Osamu: *See—*
Moriya, Masaichi; and Seko, Osamu, 4,497,514, Cl. 292-336.300.
Selsing, Jorgen, to G & W Electric Company. Resistor and capacitor graded termination. 4,497,975, Cl. 174-19.000.
Semiconductor Energy Laboratory Co., Ltd.: *See—*
Yamazaki, Shunpei, 4,498,092, Cl. 357-2.000.
Semp, Bernard A.: *See—*
Banyasz, Joseph L.; Owens, Cassandra D.; Mooz, Elizabeth D.; Lilly, A. Clifton, Jr.; Martin, Peter; Merritt, Henry B.; and Semp, Bernard A., 4,497,330, Cl. 131-291.000.
Sendzimir, Tadeusz. Twin coil strip accumulator. 4,497,452, Cl. 242-55.000.
Sentementes, Thomas J.: *See—*
Bouchard, Andre C.; English, George J.; Hall, Harold H., Jr.; and Sentementes, Thomas J., 4,497,756, Cl. 264-1.900.
Sessoms, L. A. Bush ax sharpening holder and method of retaining. 4,497,142, Cl. 51-218.00R.
Seton Company: *See—*
Cioca, Gheorge; Feeley, George F.; Brabson, Joseph B.; and Barth, Peter, 4,497,862, Cl. 428-220.000.
Setsune, Jun-ichiro: *See—*
Kitao, Teijiro; Setsune, Jun-ichiro; Ishihara, Shoichi; and Yamamoto, Ryoichi, 4,497,724, Cl. 252-70.000.
Severinsson, Anders S., to Telefonaktiebolaget LM Ericsson. Method of maintaining a predetermined beam direction in a laser pulse transmitter and an apparatus for carrying out the method. 4,498,180, Cl. 372-29.000.
Severinsson, Lars M.: *See—*
Stensson, Bo G.; Severinsson, Lars M.; and Lundstrom, Bo, 4,497,392, Cl. 188-59.000.
Sewell, John S.; McColl, Frederick A.; and Petkoff, Peter M., to Union Gas Limited. Apparatus for servicing gas lines. 4,497,332, Cl. 137-15.000.
Seyler, Jay K.; Stahl, Glenn L.; and Orlowski, Ronald C., to Armour Pharmaceutical Company. 1A-Endo-glycine-calcitonin. 4,497,732, Cl. 260-112.50T.
Seyler, Jay K.: *See—*
Orlowski, Ronald C.; and Seyler, Jay K., 4,497,731, Cl. 260-112.50T.
Shack, Roland V.: *See—*
Breckinridge, James B.; Page, Norman A.; Shack, Roland V.; and Shannon, Robert R., 4,497,540, Cl. 350-168.000.
Shaffer, David T.: *See—*
Galloway, Michael D.; Gingerich, David J.; and Shaffer, David T., 4,497,983, Cl. 200-5.00R.
Shah, Raj: *See—*
Sekmakas, Kazys; and Shah, Raj, 4,497,946, Cl. 528-99.000.
Shannon, Robert R.: *See—*
Breckinridge, James B.; Page, Norman A.; Shack, Roland V.; and Shannon, Robert R., 4,497,540, Cl. 350-168.000.
Shannon, Suel G., to AMP Incorporated. Electrical connector having a coupling indicator. 4,497,530, Cl. 339-89.00M.
Sharp Kabushiki Kaisha: *See—*
Haneda, Isamu, 4,498,144, Cl. 364-900.000.
Kanayama, Yoshio, 4,498,088, Cl. 346-140.00R.
Yoshida, Kunio, 4,498,149, Cl. 364-900.000.
Shaw, David N., to Dunham-Bush, Inc. Oil atomizing compressor working fluid cooling system for gas/vapor/helical screw rotary compressors. 4,497,185, Cl. 62-468.000.
Shedigian, Vandos: *See—*
Voyles, Gerald A.; and Shedigian, Vandos, 4,498,117, Cl. 361-315.000.
Sheflin, Daniel J.: *See—*
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Shell Oil Company: *See—*
Anderson, Martin, 4,497,822, Cl. 514-592.000.
Bukkems, Franciscus H. J.; and Quist, Bernardus B., 4,497,605, Cl. 414-218.000.
Diaz, Zaida, 4,497,784, Cl. 423-236.000.
Lewis, Robert M.; and Slaugh, Lynn H., 4,497,908, Cl. 502-245.000.
Nozaki, Kenzie, 4,497,905, Cl. 502-107.000.
van Helden, Robert; and Kramer, Petrus A., 4,497,966, Cl. 568-705.000.
Shemyakina, Elena V.; Dyatlova, Nina M.; Formenov, Alexandr I.; Belikin, Alexandr V.; Fridman, Alexandr Y.; Sinko, Nina I.; Erusalimchik, Iosif G.; Efimova, Galina I.; and Zavalsky, Julian P. Gold-plating electrolyte and process for preparing same. 4,497,696, Cl. 204-46.00G.
Shepard, Joseph F.: *See—*
Garbarino, Paul L.; Makarewicz, Stanley R.; and Shepard, Joseph F., 4,498,095, Cl. 357-23.000.
Shepherd, David, to Imperial Chemical Industries, PLC. Chromatography columns. 4,497,711, Cl. 210-656.000.
Sheppard, Roy J. P.; Thornhill, Howard S.; and Francis, Mark S., to Toronto General Burying Grounds, The Trustees of The. Monument foundation digger. 4,497,608, Cl. 414-726.000.
Sherman, Robert H.: *See—*
McMullen, John W.; Wheeler, Michael G.; Cullingford, Hatice S.; and Sherman, Robert H., 4,497,775, Cl. 422-159.000.
Sherrow, Lionel, to Budd Company, The. Emergency release handle. 4,497,512, Cl. 292-92.000.
Sherwood Medical Company: *See—*
Gindler, E. Melvin, 4,497,792, Cl. 424-3.000.
Shibahara, Seiji; Okonogi, Tsuneo; Murai, Yasushi; Futkatsu, Shunzo; Niida, Taro; and Wakazawa, Tadashi. 1-Oxadethiacephalosporin compound and antibacterial agent containing the same. 4,497,811, Cl. 424-248.510.
Shields, D. Leet. Shear with cutting height adjustment. 4,497,230, Cl. 83-600.000.
Shigeta, Kengo: *See—*
Sato, Takeshi; Tsuji, Syogo; Shigeta, Kengo; and Uenishi, Akira, 4,497,577, Cl. 356-336.000.
Shimamoto, Ichiji: *See—*
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Shimizu, Seiki: *See—*
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Shin-Etsu Chemical Co., Ltd.: *See—*
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Tawara, Yoshio; and Ohashi, Ken, 4,497,672, Cl. 148-102.000.
Tsuchida, Michinori; Abe, Tokuji; and Kitamura, Hajime, 4,497,722, Cl. 252-62.540.
Shinji, Morozumi: *See—*
Tatsushi, Asakawa; and Shinji, Morozumi, 4,498,040, Cl. 323-299.000.
Shinkai, Daisuke; Komoto, Haruo; and Hamada, Shigeharu, to Mitsubishi Denki Kabushiki Kaisha; and Nippon Steel Corporation. Plating current automatic switching method and apparatus. 4,497,695, Cl. 204-28.000.
Shinko Electric Co., Ltd.: *See—*
Fujiwara, Takahisa; Narihisa, Masaaki; and Tamai, Katsuyuki, 4,498,066, Cl. 335-281.000.
Shinokura, Kiichiro: *See—*
Sekine, Kunio; Kaneda, Michihiro; Shinokura, Kiichiro; Suenaga, Norihiro; and Suenaga, Nobuyuki, 4,497,319, Cl. 128-303.100.
Shionogi & Co., Ltd.: *See—*
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Shiozawa, Hiroaki: *See—*
Matsuzaka, Syoji; Koitabashi, Takeo; Haga, Yoshihiro; Suzuki, Akio; and Shiozawa, Hiroaki, 4,497,895, Cl. 430-569.000.
Shirai, Shoji: *See—*
Yamauchi, Masaaki; Yabe, Minoru; Shirai, Shoji; Komoro, Hidemasa; and Matsuda, Kenichi, 4,498,026, Cl. 313-414.000.
Shirakawa, Masami, to Sony Corporation. Motor speed control circuit. 4,498,034, Cl. 318-314.000.
Siecor Corporation: *See—*
Patel, Naren I., 4,497,538, Cl. 350-96.230.
Siemens Aktiengesellschaft: *See—*
Aulich, Hubert; Eisenrith, Karl-Heinz; and Urbach, Hans-Peter, 4,497,675, Cl. 148-191.000.
Hoffmann, Kurt, 4,498,154, Cl. 365-149.000.
Huber, Peter; Stengl, Jens P.; and Tihanyi, Jeno , 4,497,109, Cl. 29-578.000.
Peche, Gerhard; and Bialkowski, Gunter, 4,497,990, Cl. 200-144.00B.
Torggler, Norbert; and Franz, Dietmar, 4,497,976, Cl. 178-3.000.
Wagner, Wolfgang, 4,498,176, Cl. 371-47.000.

Siga, Masao; Kirihara, Seishin; Yoshioka, Takatoshi; Hisano, Katsukuni; Tan, Toshimi; Akutsu, Yoji; and Kobayashi, Kei, to Hitachi, Ltd. Rotor shaft and manufacturing method thereof. 4,497,670, Cl. 148-12.00R.
Silfvast, William T.: *See—*
Macklin, John J.; Silfvast, William T.; and Wood, Obert R., II, 4,498,182, Cl. 372-62.000.
Sima Products Corporation: *See—*
Breslau, Steven M., 4,497,127, Cl. 40-367.000.
Simkin, Joseph, to Pennwalt Corporation. Microencapsulated naturally occuring pyrethrins. 4,497,793, Cl. 424-32.000.
Simonds, Edward. Fuel impact device. 4,497,750, Cl. 261-64.00C.
Simonson, John L.: *See—*
Marinak, Michael J.; and Simonson, John L., 4,497,955, Cl. 546-345.000.
Simpson, Frank F.: *See—*
Flack, John H., deceased; and Simpson, Frank F., 4,497,380, Cl. 173-117.000.
Simpson, Harold G.; and Hollman, Bert D., to Nucor Corporation. Standing seam metal roof assembly. 4,497,151, Cl. 52-520.000.
Simpson, James K., to Gurtler, Hebert & Co., Inc. Anti-twist control system for deviated conductor driving systems. 4,497,372, Cl. 166-381.000.
Simpson, Robert E., to United States of America, Interior. Machine for mixing and injecting water and grout into a roof bolt hole. 4,497,578, Cl. 366-42.000.
Sincerbox, Glenn T., to International Business Machines Corporation. Holographic optical head. 4,497,534, Cl. 350-3.720.
Sines, John C.: *See—*
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Singer, Arnold J.: *See—*
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Singer Company, The: *See—*
Killinger, Karl H., 4,497,268, Cl. 112-169.000.
Szostak, Jan; Schaeflern, Henry; and Marsh, Walter H. W., 4,497,267, Cl. 112-158.00A.
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Sip - Societa Italiana Per L'Esercizio Telefonico p.A.: *See—*
Massaglia, Piercarlo; Pagana, Enrico; and Savini, Dario, 4,498,062, Cl. 333-135.000.
Sips, Johannes J.: *See—*
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Skelton, John: *See—*
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SKF Steel Engineering Aktiebolag: *See—*
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Skuballa, Werner; Raduechel, Bernd; Vorbrueggen, Helmut; Casals-Stenzel, Jorge; Schillinger, Ekkehard; Mannesmann, Gerda; and Nieuweboer, Bob, to Schering Aktiengesellschaft. Carbacyclins, their preparation and pharmacological use. 4,497,830, Cl. 514-277.000.
Slaugh, Lynn H.: *See—*
Lewis, Robert M.; and Slaugh, Lynn H., 4,497,908, Cl. 502-245.000.
Sloviter, Henry A., to University of Pennsylvania, The. Process for preparing perfluorochemical emulsion artificial blood. 4,497,829, Cl. 514-672.000.
Smart, David C., to Eastman Kodak Company. Shutter mechanism. 4,497,553, Cl. 354-135.000.
Smith, Eileen; Timperley, Doreen A.; and Titchener, Dorothy M., to Interox Chemicals Ltd. Aqueous bleach compositions. 4,497,725, Cl. 252-102.000.
Smith International, Inc.: *See—*
Hart, Lawrence D., 4,497,384, Cl. 175-315.000.
Smith, Samuel W. Elastic hosiery applicator. 4,497,424, Cl. 223-111.000.
Smith, Stanley, to Rolls-Royce Limited. Bearing chamber pressurization system for a machine. 4,497,172, Cl. 60-226.100.
Smith, Ulys. Woodwork cutting device such as a wood chisel with sharpening guides provided therewith. 4,497,355, Cl. 145-24.000.
Smiths Industries Public Limited Company: *See—*
Postbeschild, John W., 4,497,999, Cl. 219-365.000.
Smits, Jozef A. F.: *See—*
Aliani, Giorgio; Lechat, Jacques B.; and Smits, Jozef A. F., 4,497,941, Cl. 526-331.000.
Smolik, Robert A. Electrical receptacle box assembly. 4,497,416, Cl. 220-3.500.
Smoot, Lanny S., to AT&T Bell Laboratories. Transimpedance amplifier for optical receivers. 4,498,001, Cl. 250-214.00A.
SMS Schloemann-Siemag Aktiengesellschaft: *See—*
Kutz, Heinrich; Grube, Dietrich; Eggert, Georg; and Stein, Rolf, 4,497,193, Cl. 72-302.000.
Snap-on Tools Corporation: *See—*
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Societa' Italiana Lenti S.I.L.-S.r.l.: *See—*
Padoan, Giorgio M., 4,497,754, Cl. 264-1.400.
Societa'Cavi Pirelli S.p.A.: *See—*
Dotti, Enrico; and Mariani, Beniamino, 4,497,164, Cl. 57-6.000.
Societe Alsacienne de Construction de Materiel Textile: *See—*
Kiwior, Denis; and Riner, Victor, 4,497,347, Cl. 139-449.000.
Societe Anonyme Automobile Citroen: *See—*
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Societe Anonyme Automobiles Peugeot: *See—*
Bortolussi, Gerard, 4,497,289, Cl. 123-90.270.
Societe Cortial, S.A.: *See—*
Creuzet, Marie-Helene; Feniou, Claude; Jarry, Christian; Prat, Gisele; and Pontagnier, Henri, 4,497,812, Cl. 514-211.000.
Societe d'Assistance Technique pour Produits Nestle S.A.: *See—*
Errass, Werner; and Waldmeier, Eduard, 4,497,843, Cl. 426-602.000.
Societe Europeenne des Produits Refractaires: *See—*
Blanchet, Pierre; and Recasens, Joseph, 4,497,628, Cl. 432-179.000.
Societe Nationale Elf Aquitaine (Production): *See—*
Cabrit, Philippe; Mourlevat, Jean; and de Saint-Palais, Jacques, 4,497,510, Cl. 285-18.000.
Soclof, Sidney I., to Rockwell International Corporation. Small area high value resistor with greatly reduced parasitic capacitance. 4,497,685, Cl. 156-647.000.
Soderberg, John H.; Eckert, Alton B.; and McFiggans, Robert B., to Pitney Bowes Inc. Electronic postage meter having plural computing systems. 4,498,187, Cl. 375-117.000.
Sodeyama, Osamu: *See—*
Takago, Toshio; Sodeyama, Osamu; and Terashima, Masami, 4,497,943, Cl. 528-22.000.
Sokolov, Sergei S.: *See—*
Ivanchenko, Nikolai N.; Sokolov, Sergei S.; Lazarev, Anatoly A.; Kataev, Evgeny M.; Glazunov, Arkady A.; and Gorbunov, Evgeny S., 4,497,309, Cl. 123-276.000.
Solex Research Corporation of Japan: *See—*
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Sony Corporation: *See—*
Honda, Shigemichi; Hitachi, Akio; Suzuki, Kiyosuke; and Dochi, Kiyotaka, 4,498,090, Cl. 346-159.000.
Hoshino, Mitsuo; Fukushima, Osamu; and Kakuta, Toshio, 4,497,529, Cl. 339-75.00M.
Katakura, Masayuki; and Tenma, Takumi, 4,498,053, Cl. 330-261.000.
Shirakawa, Masami, 4,498,034, Cl. 318-314.000.
Sorlien, Mark D., to Minnesota Mining and Manufacturing Company. Cable sheath repair method. 4,497,760, Cl. 264-36.000.
Southern California Gas Co.: *See—*
Teague, W. Dorwin, Jr., 4,497,362, Cl. 165-54.000.
Southwest Research Institute: *See—*
Kwun, Hegeon; and Teller, Cecil M., II, 4,497,209, Cl. 73-601.000.
Spence, Randy D.: *See—*
Hexamer, Donald L.; Spence, Randy D.; and Hesselberg, Johnny, 4,498,047, Cl. 324-158.00F.
Spencer, Robert E.; and Clarke, Donald L., to Owens-Corning Fiberglas Corporation. Low tantalum content cobalt-base alloy. 4,497,771, Cl. 420-440.000.
Sperry Corporation: *See—*
Benrud, Vernal M., 4,498,058, Cl. 330-300.000.
Larson, Brian R., 4,498,177, Cl. 371-52.000.
Murtland, William H., 4,497,528, Cl. 339-45.00M.
Spilker, Harry: *See—*
Dyck, Hans P.; Janberg, Klaus; Richter, Wolfgang; and Spilker, Harry, 4,498,011, Cl. 250-507.100.
Spilker, Susanne: *See—*
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Spillers, Frank W.: *See—*
Dang, Hiep D.; Beaver, Richard N.; Spillers, Frank W.; and Hazelrigg, Mark J., Jr., 4,497,112, Cl. 29-825.000.
Spivack, John D.; and Pastor, Stephen D., to Ciba-Geigy Corporation. Substituted (4-hydroxyphenylthio) succinic anhydride or succinate stabilizers. 4,497,959, Cl. 549-253.000.
Spoors, Gerald; and Pearce, Kenneth W., to Steetley Refractories Limited. Manufacture of magnesium hydroxide. 4,497,781, Cl. 423-164.000.
Sprecher & Schuh AG: *See—*
Sturzenegger, Christian; and Blatter, Johann, 4,497,991, Cl. 200-148.00A.
Sproat, William B., Jr. Multipurpose material working tool. 4,497,353, Cl. 144-1.00R.
Sproul, William W., III, to International Business Machines Corporation. Interrupt processor. 4,498,136, Cl. 364-200.000.
Square D Company: *See—*
Moore, Prentice G., 4,498,138, Cl. 364-483.000.
Squires, Thomas G.: *See—*
Aida, Tetsuo; Squires, Thomas G.; and Venier, Clifford G., 4,497,636, Cl. 44-15.00R.
Squitieri, Vincent: *See—*
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Stace-Allen Chuck, Inc.: *See—*
Allen, Joseph S., 4,497,499, Cl. 279-119.000.
Stager, Daniel J. Welding rod package. 4,497,407, Cl. 206-443.000.
Stahl, Glenn L.: *See—*
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Standard Oil Company (Indiana): *See—*
Bertolacini, Ralph J.; Hirschberg, Eugene H.; and Modica, Frank S., 4,497,902, Cl. 502-65.000.
Standard Products Company, The: *See—*
Nussbaum, Joel H., 4,497,678, Cl. 156-244.110.

Stang, Howard D.: *See—*
Salser, Winston A.; Cline, Martin J.; and Stang, Howard D., 4,497,796, Cl. 424-95.000.
Stant Inc.: *See—*
Harris, Robert S., 4,497,290, Cl. 123-179.00G.
Harris, Robert S., 4,497,714, Cl. 210-788.000.
Reitzel, Henry M., 4,497,419, Cl. 220-302.000.
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Stasiek, Jan S., to JS Technology, Inc. Reversible ratchet mechanism. 4,497,227, Cl. 81-63.100.
Stauffer Chemical Company: *See—*
Anderson, Thomas M., 4,497,833, Cl. 426-41.000.
Pallos, Ferenc M., 4,497,653, Cl. 71-100.000.
Steetley Refractories Limited: *See—*
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Stein Industrie: *See—*
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Stein, Rolf: *See—*
Kutz, Heinrich; Grube, Dietrich; Eggert, Georg; and Stein, Rolf, 4,497,193, Cl. 72-302.000.
Stelcher, William N.; and Murdock, Michael J., to Kinetronics Corporation. Label dispenser. 4,497,420, Cl. 221-13.000.
Stell, Douglas E., to Digital Equipment Corporation. Apparatus for combining a video signal with graphics and text from a computer. 4,498,098, Cl. 358-22.000.
Stengl, Jens P.: *See—*
Huber, Peter; Stengl, Jens P.; and Tihanyi, Jeno , 4,497,109, Cl. 29-578.000.
Stensson, Bo G.; Severinsson, Lars M.; and Lundstrom, Bo, to SAB Nife AB. Rail vehicle disc brake caliper. 4,497,392, Cl. 188-59.000.
Stevenson, Alan R. Liner hanger. 4,497,367, Cl. 166-208.000.
Stewart, David G.: *See—*
Ball, William J.; and Stewart, David G., 4,497,969, Cl. 585-415.000.
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Stewart-Warner Corporation: *See—*
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Stone & Webster Engineering Corp.: *See—*
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Storage Technology Partners II: *See—*
Wilkinson, Richard A., Jr., 4,498,165, Cl. 369-270.000.
Yeakley, Lester M.; and Fitzgerald, Karen M., 4,497,465, Cl. 248-466.000.
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Gorman, Patrick R.; and Stottlemyer, William O., 4,497,980, Cl. 179-81.00B.
Stout, Garry A.: *See—*
Zink, David E.; and Stout, Garry A., 4,497,986, Cl. 200-38.00R.
Stout, Roger P., to Motorola, Inc. Voice coil linear motor with integral capacitor. 4,498,023, Cl. 310-14.000.
Strauss, Theodore R., to Pennwalt Corporation. Check valve for ammonia injector apparatus. 4,497,749, Cl. 261-64.00B.
Streetman, William E., to American Cyanamid Company. Method for the production of melamine/aldehyde filaments. 4,497,934, Cl. 525-58.000.
Streiff, Felix, to Sulzer Brothers Limited. Corrugated sheet packing and method of making. 4,497,753, Cl. 261-95.000.
Strnad, Frank F. Sound attachment for a reed instrument. 4,497,234, Cl. 84-1.040.
Strosberg, Arthur M.: *See—*
Kluge, Arthur F.; Strosberg, Arthur M.; Whiting, Roger L.; and Christie, George A., 4,497,818, Cl. 514-397.000.
Strzelecki, Stanislaus. Method of and apparatus for forming ideograms. 4,498,143, Cl. 364-900.000.
Stump, Charles J., Jr.: *See—*
Nicholson, Nicholas; Dowdy, Edward J.; Holt, David M.; and Stump, Charles J., Jr., 4,497,769, Cl. 376-257.000.
Stupp, Edward H.; and Fellows, Mark W., to North American Philips Corporation. Variable frequency current control device for discharge lamps. 4,498,031, Cl. 315-307.000.
Sturzenegger, Christian; and Blatter, Johann, to Sprecher & Schuh AG. Gas-blast switch. 4,497,991, Cl. 200-148.00A.
Suenaga, Nobuyuki: *See—*
Sekine, Kunio; Kaneda, Michihiro; Shinokura, Kiichiro; Suenaga, Norihiro; and Suenaga, Nobuyuki, 4,497,319, Cl. 128-303.100.
Suenaga, Norihiro: *See—*
Sekine, Kunio; Kaneda, Michihiro; Shinokura, Kiichiro; Suenaga, Norihiro; and Suenaga, Nobuyuki, 4,497,319, Cl. 128-303.100.
Sugier, Andre : *See—*
Quang, Dang V.; Sugier, Andre ; Commereuc, Dominique; and Chauvin, Yves, 4,497,910, Cl. 518-700.000.
Sugimoto, Yukio: *See—*
Noguchi, Toyota; Okamoto, Michio; Nishimura, Tadafumi; Sugimoto, Yukio; Kaneko, Mamoru; and Nakayama, Kenjiro, 4,498,170, Cl. 370-110.100.
Sugiyama, Kunio: *See—*
Takahashi, Juhei; Miura, Kenzo; Asano, Shogo; Sugiyama, Kunio; Kaji, Kiyokane; and Ohta, Jun, 4,497,198, Cl. 73-35.000.
Sukenari, Gunzo: *See—*
Eguchi, Jyutaro; Kashino, Shinzo; Odahara, Tetsuichi; and Sukenari, Gunzo, 4,497,162, Cl. 56-14.600.
Sullivan, Donald E. Dual flush system for controlling flush water in water closet. 4,497,076, Cl. 4-392.000.
Sullivan, James H.: *See—*
Wrobley, A. Ray; and Sullivan, James H., 4,497,117, Cl. 33-276.000.
Sullivan, James W.; and Lewis, Robert T., to Brown & Williamson Tobacco Corporation. Apparatus and method for applying plasticizers to fibrous filter material. 4,497,276, Cl. 118-694.000.
Sullivan, Michael D.; Murtfeldt, Robert L.; and Yelsey, Arthur R., to American Hospital Supply Corporation. Temperature monitoring catheter. 4,497,324, Cl. 128-736.000.
Sulzer Brothers Limited: *See—*
Hintsch, Otto; and Julich, Werner, 4,497,346, Cl. 139-66.00R.
Huber, Max, 4,497,752, Cl. 261-95.000.
Pluss, Raymond, 4,497,751, Cl. 261-94.000.
Schefer, Kurt; and Salvisberg, Kurt, 4,497,450, Cl. 242-18.00A.
Streiff, Felix, 4,497,753, Cl. 261-95.000.
Sumida, Yuzo: *See—*
Yamasaki, Harumasa; Kobayashi, Takatoshi; and Sumida, Yuzo, 4,497,930, Cl. 524-556.000.
Sumitomo Chemical Company, Limited: *See—*
Hanji, Katsumi; and Kawai, Kiyoshi, 4,497,906, Cl. 502-110.000.
Narabayashi, Hirotaro; Kondo, Tomoyoshi; Hayashi, Akira; and Suzuki, Tomokazu, 4,497,826, Cl. 514-567.000.
Sun Chemical Corporation: *See—*
Horwitt, Laurence G., 4,497,226, Cl. 81-474.000.
Suntory Ltd.: *See—*
Yoshizumi, Hajime; Toyoshima, Kumao; Hakura, Akira; and Nakanishi, Toshihiro, 4,497,799, Cl. 514-9.000.
Sutter, Orlin: *See—*
Provost, Alfred M., 4,497,077, Cl. 4-628.000.
Suzuki, Akio: *See—*
Matsuzaka, Syoji; Koitabashi, Takeo; Haga, Yoshihiro; Suzuki, Akio; and Shiozawa, Hiroaki, 4,497,895, Cl. 430-569.000.
Suzuki, Haruo; and Hashimoto, Shigeyoshi, to Nippondenso Co., Ltd. Die-casting method. 4,497,359, Cl. 164-120.000.
Suzuki, Kenji, to Canon Kabushiki Kaisha. Focus detection apparatus. 4,497,561, Cl. 354-406.000.
Suzuki, Kiyosuke: *See—*
Honda, Shigemichi; Hitachi, Akio; Suzuki, Kiyosuke; and Dochi, Kiyotaka, 4,498,090, Cl. 346-159.000.
Suzuki, Shintaro: *See—*
Takano, Katsuhiro; Koma, Yoshishige; Hagiwara, Masaru; and Suzuki, Shintaro, 4,497,654, Cl. 75-0.5AA.
Suzuki, Tomokazu: *See—*
Narabayashi, Hirotaro; Kondo, Tomoyoshi; Hayashi, Akira; and Suzuki, Tomokazu, 4,497,826, Cl. 514-567.000.
Suzuki, Toshimitsu: *See—*
Hongo, Akira; Ueda, Hideki; Nakata, Issei; Yoshida, Eiichi; Aoki, Nobuyoshi; and Suzuki, Toshimitsu, 4,497,178, Cl. 62-55.000.
Suzuki, Yoshihisa: *See—*
Anahara, Meiji; and Suzuki, Yoshihisa, 4,497,089, Cl. 19-288.000.
Sweda International, Inc.: *See—*
Melys, Aleksandras A., 4,497,987, Cl. 200-42.00R.
Swiss Aluminium Ltd.: *See—*
Bucher, Anton, 4,497,260, Cl. 108-56.100.
Mittelmann, Gerhard, 4,497,525, Cl. 312-321.000.
SWS Incorporated: *See—*
Nilsen, Carl J., 4,497,995, Cl. 219-121.0LC.
Syntex (U.S.A.) Inc.: *See—*
Kluge, Arthur F.; Strosberg, Arthur M.; Whiting, Roger L.; and Christie, George A., 4,497,818, Cl. 514-397.000.
Nelson, Peter H., 4,497,827, Cl. 514-381.000.
Szczepanski, Henry, to Ciba-Geigy Corporation. Oxime derivatives for protecting plant crops. 4,497,648, Cl. 71-88.000.
Szenger, Franz, to Carl-Zeiss-Stiftung. Guide means for rolling elements of a ball-race device. 4,497,522, Cl. 308-6.00C.
Szostak, Jan; Schaeflern, Henry; and Marsh, Walter H. W., to Singer Company, The. Low torque pattern selecting mechanism for a sewing machine. 4,497,267, Cl. 112-158.00A.
Szucs, Laszlo ; and Tasnadi, Csaba, to Energiagazdalkodasi Intezet. Heat engineering apparatus for carrying out thermodynamical processes comprising a pair of mutually opposite phase transitions of a work medium. 4,497,689, Cl. 202-174.000.
Tabet, Michael A. Rotatable split handled cooking utensil. 4,497,417, Cl. 220-94.00R.
Tadokoro, Eiichi: *See—*
Ryoke, Katsumi; Yamaguchi, Nobutaka; Yoneyama, Takashi; and Tadokoro, Eiichi, 4,497,864, Cl. 428-323.000.
Tagai, Hideo: *See—*
Niwa, Shigeo; Sawai, Kazuhiko; Takahashi, Shinobu; Ono, Mikiya; Fukuda, Yoshiaki; Takeuchi, Hiroyasu; and Tagai, Hideo, 4,497,075, Cl. 3-1.900.
Tai, Ho T., to Lever Brothers Company. Fabric softening composition. 4,497,716, Cl. 252-8.800.
Tai, Wun T.; and Phillips, Kenneth G., to Nalco Chemical Company. Tire tread adhesives. 4,497,927, Cl. 524-475.000.
Takagi, Masatoshi; and Annaka, Wataru, to Honda Giken Kogyo Kabushiki Kaisha. Internal combustion engine of motorcycle. 4,497,293, Cl. 123-196.00A.
Takago, Toshio; Sodeyama, Osamu; and Terashima, Masami, to Shin-Etsu Chemical Co., Ltd. Organocyclopolysiloxane and a room temperature curable composition containing same. 4,497,943, Cl. 528-22.000.
Takahashi, Juhei; Miura, Kenzo; Asano, Shogo; Sugiyama, Kunio; Kaji, Kiyokane; and Ohta, Jun, to Matsushita Electric Industrial Co., Ltd.; and Toyota Jidosha Kabushiki Kaisha. Knocking sensor. 4,497,198, Cl. 73-35.000.
Takahashi, Kenji: *See—*
Sato, Kazuhiro; Izumita, Morishi; Takahashi, Kenji; Akiyama, Toshiyuki; and Nishizawa, Shigeki, 4,498,106, Cl. 358-213.000.
Takahashi, Kunihiro, to Seiko Instruments & Electronics Ltd. Tuning fork. 4,498,025, Cl. 310-312.000.
Takahashi, Shinobu: *See—*
Niwa, Shigeo; Sawai, Kazuhiko; Takahashi, Shinobu; Ono, Mikiya; Fukuda, Yoshiaki; Takeuchi, Hiroyasu; and Tagai, Hideo, 4,497,075, Cl. 3-1.900.
Takanashi, Nobuyasu, to Terumo Corporation. Package for storage of medical container. 4,497,406, Cl. 206-438.000.
Takano, Katsuhiro; Koma, Yoshishige; Hagiwara, Masaru; and Suzuki, Shintaro, to Kanto Denka Kogyo Co., Ltd. Ferromagnetic metallic powders useful for magnetic recording and processes for producing said metallic powders. 4,497,654, Cl. 75-0.5AA.
Takasawa, Yoshio: *See—*
Yoshimoto, Takeo; Igarashi, Keiichi; Yamazaki, Hideo; Takasawa, Yoshio; and Yanagita, Hirohisa, 4,497,828, Cl. 514-603.000.
Takeda Chemical Industries, Ltd.: *See—*
Harada, Setsuo; Tsubotani, Shigetoshi; and Asai, Mitsuko, 4,497,742, Cl. 260-245.20T.
Harada, Setsuo; and Okada, Junya, 4,497,803, Cl. 514-450.000.
Yoshimura, Yoshinobu; Hamaguchi, Naoru; and Yashiki, Takatsuka, 4,497,809, Cl. 514-206.000.
Takemura, Akira: *See—*
Itoh, Akira; and Takemura, Akira, 4,497,894, Cl. 430-522.000.
Takemura, Hiroshi: *See—*
Aihara, Hiroshi; Matumura, Akira; Takemura, Hiroshi; Kobashi, Rikiya; Satomi, Keisuke; and Ishibashi, Hiroe, 4,498,033, Cl. 318-261.000.
Takeno, Hidekazu: *See—*
Kitaura, Yoshihiko; Nakaguchi, Osamu; Hemmi, Keiji; Yonishi, Satoshi; and Takeno, Hidekazu, 4,497,729, Cl. 260-112.50R.
Takenouchi, Masanori: *See—*
Ushiyama, Hisayuki; Ohsaki, Ichiro; Takenouchi, Masanori; and Nakahara, Toshiaki, 4,497,885, Cl. 430-106.600.
Takeuchi, Hiroyasu: *See—*
Niwa, Shigeo; Sawai, Kazuhiko; Takahashi, Shinobu; Ono, Mikiya; Fukuda, Yoshiaki; Takeuchi, Hiroyasu; and Tagai, Hideo, 4,497,075, Cl. 3-1.900.
Takiguchi, Michitaka: *See—*
Yoshimura, Motokazu; Takiguchi, Michitaka; Horie, Fujio; and Hirata, Koichi, 4,498,078, Cl. 340-679.000.
Talmadge, Thomas E.: *See—*
Clapper, David D.; and Talmadge, Thomas E., 4,497,147, Cl. 52-105.000.
Tamada, Minoru: *See—*
Kumokawa, Takashi; Tamada, Minoru; Shimamoto, Ichiji; and Uda, Kiyoko, 4,498,067, Cl. 336-65.000.
Tamai, Katsuyuki: *See—*
Fujiwara, Takahisa; Narihisa, Masaaki; and Tamai, Katsuyuki, 4,498,066, Cl. 335-281.000.
Tamamura, Junichi: *See—*
Aoki, Shigeo; Tamamura, Junichi; Ukai, Yasuhiro; and Morita, Hideo, 4,497,543, Cl. 350-337.000.
Tamaru, Shigemi: *See—*
Kodera, Toshihiko; Eguchi, Kiyoshi; Ishikawa, Takayoshi; Genba, Yasushi; Tamaru, Shigemi; and Satou, Susumu, 4,497,992, Cl. 200-153.0SC.
Tan, Toshimi: *See—*
Siga, Masao; Kirihara, Seishin; Yoshioka, Takatoshi; Hisano, Katsukuni; Tan, Toshimi; Akutsu, Yoji; and Kobayashi, Kei, 4,497,670, Cl. 148-12.00R.
Tanaka, Kazuhiro: *See—*
Minami, Satoyuki; Tanaka, Kazuhiro; and Nishioka, Takeshi, 4,497,865, Cl. 428-336.000.
Tanaka, Shuji: *See—*
Moriga, Hiroyuki; Uchida, Masao; Iwashita, Koichi; and Tanaka, Shuji, 4,497,720, Cl. 252-52.00A.
Tanaka, Toshinori: *See—*
Hamano, Isao; Morishita, Akira; Akae, Yoshifumi; Tanaka, Toshinori; and Yabunaka, Kiyoshi, 4,497,291, Cl. 123-179.0BG.
Tancrede, Jean M.; and Berejka, Anthony J., to Exxon Research & Engineering Co. Elastomer-ethylene copolymer hot melt systems. 4,497,936, Cl. 525-222.000.
Tandeski, David A.: *See—*
Utter, Robert P.; and Tandeski, David A., 4,497,184, Cl. 62-354.000.
Tarsia, Joseph; Ross, Alexander S.; and Gertsek, Marina, to Kenro Corporation. Slide supporting assembly for color-slide duplicator. 4,497,574, Cl. 355-76.000.
Tasai, Masaaki: *See—*
Hamane, Tokuhito; Tasai, Masaaki; and Kubota, Tadashi, 4,497,111, Cl. 29-734.000.
Tasnadi, Csaba: *See—*
Szucs, Laszlo ; and Tasnadi, Csaba, 4,497,689, Cl. 202-174.000.
Tatemichi, Takaomi: *See—*
Saito, Yasuhiro; and Tatemichi, Takaomi, 4,497,977, Cl. 178-19.000.
Tatsushi, Asakawa; and Shinji, Morozumi, to Kabushiki Kaisha Suwa Seikosha. Reference voltage circuit. 4,498,040, Cl. 323-299.000.
Tauber, Norbert: *See—*
Guse, Rolf; and Tauber, Norbert, 4,497,086, Cl. 19-105.000.
Tawara, Yoshio; and Ohashi, Ken, to Shin-Etsu Chemical Co., Ltd. Method for the preparation of a rare earth-cobalt based permanent magnet. 4,497,672, Cl. 148-102.000.
Taylor, Richard J., to EMI Limited. Proximity responsive apparatus. 4,497,252, Cl. 102-214.000.
Teague, W. Dorwin, Jr., to Southern California Gas Co. Regenerative room air exchanger. 4,497,362, Cl. 165-54.000.
Teijin Limited: *See—*
Minemura, Norihiro; Kimura, Takeo; and Mitsui, Yoshiaki, 4,497,095, Cl. 26-2.00R.
Moriga, Hiroyuki; Uchida, Masao; Iwashita, Koichi; and Tanaka, Shuji, 4,497,720, Cl. 252-52.00A.
Teisan Kabushiki Kaisha: *See—*
Hongo, Akira; Ueda, Hideki; Nakata, Issei; Yoshida, Eiichi; Aoki, Nobuyoshi; and Suzuki, Toshimitsu, 4,497,178, Cl. 62-55.000.
Tekirdaglis, Aris. Photoelectric instrument for observing a viewing corrider of interest. 4,498,002, Cl. 250-221.000.
Tektronix, Inc.: *See—*
Philipp, Harald, 4,497,575, Cl. 356-73.100.
Telefonaktiebolaget LM Ericsson: *See—*
Lofmark, Bengt G., 4,498,018, Cl. 307-17.000.
Severinsson, Anders S., 4,498,180, Cl. 372-29.000.
Tellabs, Inc.: *See—*
Fuss, Peter S.; and Kosner, Jerry J., 4,498,123, Cl. 361-427.000.
Teller, Cecil M., II: *See—*
Kwun, Hegeon; and Teller, Cecil M., II, 4,497,209, Cl. 73-601.000.
Temperley, Harry D.; and Joynes, Brian, to Automotive Products Limited. Hydraulic master cylinder. 4,497,175, Cl. 60-581.000.
Tenma, Takumi: *See—*
Katakura, Masayuki; and Tenma, Takumi, 4,498,053, Cl. 330-261.000.
Tennant, William A.: *See—*
Kudert, Frederick G.; Latreille, Maurice G.; Tennant, William A.; and Tung, Thomas T., 4,497,621, Cl. 425-145.000.
Tensho Electric Industrial Co., Ltd.: *See—*
Kurosawa, Tadashi, 4,497,313, Cl. 128-24.100.
Terashima, Masami: *See—*
Takago, Toshio; Sodeyama, Osamu; and Terashima, Masami, 4,497,943, Cl. 528-22.000.
Terumo Corporation: *See—*
Takanashi, Nobuyasu, 4,497,406, Cl. 206-438.000.
Teshima, Tsutomu: *See—*
Oono, Hiroshi; and Teshima, Tsutomu, 4,498,005, Cl. 250-327.200.
Tewes, Udo: *See—*
Volke, Hans-Werner; Hilkenmeier, Jurgen; Kohlhage, Hermann; and Tewes, Udo, 4,497,588, Cl. 400-645.100.
Texas A&M University: *See—*
Bockris, John O'M.; and Ottagawa, Takaaki, 4,497,698, Cl. 204-129.000.
Texas A&M University System, The: *See—*
Cummins, Joseph M., 4,497,795, Cl. 424-85.000.
Texas Instruments Incorporated: *See—*
Calenda, Ciro; De Filippis, Pietro; and Salvatore, Amedeo, 4,498,069, Cl. 337-354.000.
Caudel, Edward R., 4,498,135, Cl. 364-200.000.
Giolma, William H.; and Morgan, John D., 4,498,020, Cl. 307-261.000.
Henry, Raymond W., 4,498,151, Cl. 364-900.000.
Mohan Rao, G. R., 4,498,155, Cl. 365-189.000.
Th. Goldschmidt AG: *See—*
Bade, Volkbert, 4,497,825, Cl. 514-556.000.
Thayer, Stevan J.: *See—*
Hwang, Jong-Yeong H.; Thayer, Stevan J.; and Zimmer, Bonnie A., 4,498,186, Cl. 375-7.000.
Theurer, Josef, to Franz Plasser Bahnbaumaschinen Industriegesellschaft m.b.H. Mobile track alignment machine. 4,497,255, Cl. 104-8.000.
Thomas, Lowell S.; and Paige, William P., to Dow Chemical Company, The. System for bonding additives to resin particles and resulting composition. 4,497,920, Cl. 524-57.000.
Thomson-CSF: *See—*
Richard, Christian; and Catros, Jean Y., 4,498,102, Cl. 358-133.000.
Thornhill, Howard S.: *See—*
Sheppard, Roy J. P.; Thornhill, Howard S.; and Francis, Mark S., 4,497,608, Cl. 414-726.000.
Thorsted, Kenneth G.; and Pennington, John W., to United States of America, Navy. Erodale spin turbine for tube-launched missiles. 4,497,460, Cl. 244-3.300.
Thubeauville, Heinz, to Dr. C. Otto & Comp. G.m.b.H. Stack cooler for dry quenching of coke. 4,497,691, Cl. 202-228.000.
Thyssen Aktiengesellschaft vorm. August Thyssen-Hutte: *See—*
Reizig, Hans-Jurgen; Meuters, Friedrich; and Louen, Hans-Richard, 4,497,192, Cl. 72-203.000.
Tibbetts, Gary G.: *See—*
Bradley, John R.; Burkstrand, James M.; and Tibbetts, Gary G., 4,497,788, Cl. 423-447.300.
Tihanyi, Jeno : *See—*
Huber, Peter; Stengl, Jens P.; and Tihanyi, Jeno , 4,497,109, Cl. 29-578.000.
Tilley, George L.; and Doty, Allen W., to Union Oil Company of California. Production of rare earth compounds. 4,497,785, Cl. 423-263.000.
Timoshin, Jury M.: *See—*
Bely, Diamar I.; Mardanov, Valentin P.; Meschanov, Gennady I.; Peshkov, Izyaslav B.; Povelichenko, Anatoly P.; and Timoshin, Jury M., 4,497,867, Cl. 428-385.000.

Timperley, Doreen A.: *See—*
Smith, Eileen; Timperley, Doreen A.; and Titchener, Dorothy M., 4,497,725, Cl. 252-102.000.
Tin, George W.: *See—*
Gamble, Ronald C.; Tin, George W.; and Williams, Lawrence E., 4,497,791, Cl. 424-1.100.
Titchener, Dorothy M.: *See—*
Smith, Eileen; Timperley, Doreen A.; and Titchener, Dorothy M., 4,497,725, Cl. 252-102.000.
Titterton, John D. Convertible freight car. 4,497,259, Cl. 105-359.000.
TMCI, Inc.: *See—*
Nellen, William J., 4,497,331, Cl. 131-353.000.
Toa Nenryo Kogyo Kabushiki Kaisha: *See—*
Itoh, Takuji; and Akitsuki, Ikuo, 4,497,909, Cl. 502-262.000.
Tobiasz, Henry: *See—*
Fowles, Tom A.; Lee, Robert; Richmond, Frank M.; and Tobiasz, Henry, 4,497,104, Cl. 29-419.00R.
Tocci, Richard M. Rack. 4,497,413, Cl. 211-202.000.
Tokuhara, Mitsuhiro; Torigai, Akiyoshi; and Morikawa, Teruo, to Canon Kabushiki Kaisha. Variable magnification optical apparatus. 4,497,573, Cl. 355-58.000.
Tokyo Shibaura Denki Kabushiki Kaisha: *See—*
Aoyama, Shuki, 4,497,993, Cl. 219-10.55C.
Fukuda, Hirokazu; and Hashimoto, Masaru, 4,498,054, Cl. 330-261.000.
Kojima, Masakatu, 4,497,777, Cl. 422-249.000.
Kurosawa, Kei, 4,497,108, Cl. 29-576.00W.
Kuwahara, Hisao, 4,498,041, Cl. 323-316.000.
Nagumo, Masahide; Inagawa, Jun; and Kojima, Tadashi, 4,498,175, Cl. 371-37.000.
Ohhashi, Masahide, 4,498,178, Cl. 371-37.000.
Ooi, Tetsuo; Watanabe, Hiroshi; Gotoh, Akio; Tsutsumi, Shuitsu; Oba, Ryohei; Ito, Koichi; and Huse, Syouzi, 4,498,195, Cl. 455-205.000.
Sasaki, Takafumi, 4,497,513, Cl. 292-217.000.
Uchida, Kuniharu; Nagai, Satoshi; Komura, Ichiroh; and Hirasawa, Taiji, 4,497,210, Cl. 73-602.000.
Yoshimaru, Tomohisa; and Yamamoto, Kazuki, 4,498,107, Cl. 358-256.000.
Tomarin, Seymour A. Synthetic turf carpet game playing surface. 4,497,853, Cl. 428-17.000.
Tomimatsu, Noriyuki: *See—*
Fukushima, Nobuo; and Tomimatsu, Noriyuki, 4,498,081, Cl. 340-793.000.
Tomioka, Kenichi: *See—*
Murase, Kiyoshi; Mase, Toshiyasu; and Tomioka, Kenichi, 4,497,817, Cl. 548-150.000.
Toppan Printing Co. Ltd.: *See—*
Iwasawa, Nobuyuki; and Kazato, Keiji, 4,497,856, Cl. 428-35.000.
Toray Industries, Inc.: *See—*
Minami, Satoyuki; Tanaka, Kazuhiro; and Nishioka, Takeshi, 4,497,865, Cl. 428-336.000.
Torggler, Norbert; and Franz, Dietmar, to Siemens Aktiengesellschaft. Method for emitting additional information in conjunction with message signals to be transmitted over a data switching center. 4,497,976, Cl. 178-3.000.
Torigai, Akiyoshi: *See—*
Tokuhara, Mitsuhiro; Torigai, Akiyoshi; and Morikawa, Teruo, 4,497,573, Cl. 355-58.000.
Toronto General Burying Grounds, The Trustees of The: *See—*
Sheppard, Roy J. P.; Thornhill, Howard S.; and Francis, Mark S., 4,497,608, Cl. 414-726.000.
Tournier, Michel, to Esso Societe Anonyme Francaise. Method and device for evaluation and indication of wear condition of motor lubrication. 4,497,200, Cl. 73-64.000.
Towa Glove Co., Ltd.: *See—*
Watanabe, Hiroshi, 4,497,072, Cl. 2-161.00A.
Towae, Friedrich: *See—*
Merger, Franz; and Towae, Friedrich, 4,497,963, Cl. 560-115.000.
Towmotor Corporation: *See—*
Johannson, Richard J., 4,497,607, Cl. 414-664.000.
Toy, Lester T., to Raychem Corporation. Elastomer based adhesive compositions. 4,497,926, Cl. 524-271.000.
Toyoda Koki Kabushiki Kaisha: *See—*
Koide, Tsuyoshi; Maruyama, Toshio; and Tsujiuchi, Toshio, 4,497,140, Cl. 51-101.00R.
Toyoshima, Kumao: *See—*
Yoshizumi, Hajime; Toyoshima, Kumao; Hakura, Akira; and Nakanishi, Toshihiro, 4,497,799, Cl. 514-9.000.
Toyota Jidosha Kabushiki Kaisha: *See—*
Nogami, Takahiro; Akahori, Shigetaka; Oohori, Harumi; and Nakanishi, Nobuyasu, 4,497,395, Cl. 192-4.00A.
Takahashi, Juhei; Miura, Kenzo; Asano, Shogo; Sugiyama, Kunio; Kaji, Kiyokane; and Ohta, Jun, 4,497,198, Cl. 73-35.000.
Toyota Jidosha Kogyo Kabushiki Kaisha: *See—*
Masuda, Yoshihiko, 4,497,335, Cl. 137-244.000.
Transac-Alcatel: *See—*
Decavele, Dominique; and Fournier, Jean-Pierre, 4,498,000, Cl. 235-380.000.
Transformatoren Union Aktiengesellschaft: *See—*
Reiplinger, Erich, 4,497,387, Cl. 181-202.000.
Tressler, John H., III: *See—*
Mitchell, Gordon L.; and Tressler, John H., III, 4,497,544, Cl. 350-353.000.
Trimble, Lloyd C.: *See—*
Wenzel, James G.; and Trimble, Lloyd C., 4,497,342, Cl. 137-565.000.
Trobaugh, Arnold G., to Johnson Service Company. Control air exhaust for humidistat. 4,497,435, Cl. 236-44.00A.
Tropicana Products, Inc.: *See—*
Bonnell, James M., 4,497,838, Cl. 426-429.000.
Trovati, Aldo, to RESEM, S.p.A. Aqueous dispersions of polyurethanes from oligo urethanes having unsaturated terminal groups. 4,497,932, Cl. 524-591.000.
Troyer, Scott D.: *See—*
Marshall, Cary S.; and Troyer, Scott D., 4,497,697, Cl. 204-73.00R.
True, Thomas T.; Good, William E.; and Bates, William C., to General Electric Company. Light valve projection system with improved vertical resolution. 4,498,101, Cl. 358-62.000.
Trukenbrod, Karl: *See—*
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Schilling, Curtis L., Jr.; Williams, Thomas C.; and Wesson, John P., 4,497,787, Cl. 423-345.000.
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Agriculture: *See—*
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St. Clair, Anne K.; and St. Clair, Terry L., 4,497,935, Cl. 525-181.000.
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University College Cardiff Consultants Limited: *See—*
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University of California, The Regents of the: *See—*
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O'Hara, Mark J.; and Johnson, Russell W., 4,497,704, Cl. 208-112.000.
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Utter, Robert P.; and Tandeski, David A., to King Seeley Thermos Company. Auger-type ice making apparatus for producing high quality ice. 4,497,184, Cl. 62-354.000.
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Valenti, Nicholas, to Ohio & Pennsylvania Fuels Co, Ltd. Formed briquettes, process for forming the same and process for utilizing the same in the manufacture of metals. 4,497,661, Cl. 75-256.000.
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Van Doorn, Donald W.; Hawkins, James B.; Webb, Tommy W.; and Harmon, William A., Jr., to Lummus Industries, Inc. Apparatus for feeding modules of seed cotton into disperser apparatus. 4,497,085, Cl. 19-80.00R.
van Helden, Robert; and Kramer, Petrus A., to Shell Oil Company. Process for the preparation of nitrophenylalkanols. 4,497,966, Cl. 568-705.000.
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Vatsky, Joel; and Schindler, Edmund S., to Foster Wheeler Energy Corporation. Combustion system and method for a coal-fired furnace utilizing a wide turn-down burner. 4,497,263, Cl. 110-347.000.
Vaughn, John. High torque fastener and driving tool. 4,497,225, Cl. 81-451.000.
Veazey, Sidney E. Mastless sails. 4,497,272, Cl. 114-103.000.
VEB Zentrum fur Forschung Und Technologie Mikroelektronik: *See—*
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Vetter, Gregory J., to Truth Incorporated. Automatic operator and locking mechanism for a closure. 4,497,135, Cl. 49-280.000.

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Moriyama, Masaru, 4,498,072, Cl. 340-347.0AD.
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Vitus, Francis J.; Hargis, Ivan G.; Livigni, Russell A.; and Aggarwal, Sundar L., to General Tire & Rubber Company, The. Preparation of lithium initiator for the preparation of star polymers. 4,497,748, Cl. 260-665.00R.

Voest-Alpine Aktiengesellschaft: *See—*
Langer, Uwe; and Brettbacher, Franz, 4,497,191, Cl. 72-202.000.

Vogel, Jerald M.; Hooper, Steven J.; and Hand, Jerry L. Apparatus for preventing the transmission of vibrations. 4,497,078, Cl. 5-118.000.

Vogt, Wilhelm; Glaser, Hermann; and Jagers, Erhard, to Hoechst Aktiengesellschaft. Process for making acetic anhydride. 4,497,747, Cl. 260-546.000.

Volke, Hans-Werner; Hilkenmeier, Jurgen; Kohlhage, Hermann; and Tewes, Udo, to Nixdorf Computer AG. Printing or typing apparatus with a rotating platen as well as guide devices for the paper. 4,497,588, Cl. 400-645.100.

Vollm, Ernst B., to Maschinenfabrik Schweiter AG. Method and apparatus for preparing and splicing yarn ends. 4,497,165, Cl. 57-22.000.

Von Roll AG: *See—*
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Bely, Diamar I.; Mardanov, Valentin P.; Meschanov, Gennady I.; Peshkov, Izyaslav B.; Povelichenko, Anatoly P.; and Timoshin, Jury M., 4,497,867, Cl. 428-385.000.

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Wada, Shunichi, to Mitsubishi Denki Kabushiki Kaisha. Apparatus for measuring flow velocity. 4,497,203, Cl. 73-204.000.

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Wagner, Rudolf, to Rems-Werk Christian Foll und Sohne GmbH & Co. Apparatus for working pipes. 4,497,100, Cl. 29-27.00A.

Wagner, Wolfgang, to Siemens Aktiengesellschaft. Method and apparatus for the error-free synchronization of asynchronous pulses. 4,498,176, Cl. 371-47.000.

Wagu, Masakatsu; Hayashi, Shoichiro; Murayama, Naohiro; and Sakagami, Teruo, to Kureha Kagaku Kogyo Kabushiki Kaisha. Substrate for liquid chromatography and process for isolating and purifying fat-soluble substance by the liquid chromatography on the substrate. 4,497,710, Cl. 210-635.000.

Wakazawa, Tadashi: *See—*
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Ward, Carl E.; and Berthold, Robert V., to Union Carbide Corporation. Tetrahydrotriazines. 4,497,650, Cl. 71-93.000.

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Wason, Satish K., to J. M. Huber Corporation. Thixotropic unsaturated polyester compositions and methods. 4,497,918, Cl. 523-220.000.

Wasserman, Gary L. Processed ferrous metal and process of production. 4,497,671, Cl. 148-16.000.

Wasserstrom, Henry: *See—*
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Watanabe, Hiroshi, to Towa Glove Co., Ltd. Porous coated glove. 4,497,072, Cl. 2-161.00A.

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Van Doorn, Donald W.; Hawkins, James B.; Webb, Tommy W.; and Harmon, William A., Jr., 4,497,085, Cl. 19-80.00R.

Weber, Rolf-Dieter: *See—*
Guggemos, Hans; and Weber, Rolf-Dieter, 4,497,451, Cl. 242-37.00R.

Wedel, Victor J. Ultrasound needle, biopsy instrument or catheter guide. 4,497,325, Cl. 128-754.000.

Wegemund, Bernd: *See—*
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Weglin, Walter, to Jerobee Industries, Inc. Fine-line die and method of making same. 4,497,686, Cl. 156-651.000.

Wehinger, Egbert; Meyer, Horst; and Benz, Ulrich, to Bayer Aktiengesellschaft. Medicaments having antihypoxic and ischaemia-protective activity. 4,497,821, Cl. 514-302.000.

Weinberg, Harold N.; Rebick, Charles; and McElrath, Kenneth O., to Exxon Research & Engineering Co. Fluid coking with solvent separation of recycle oil. 4,497,705, Cl. 208-127.000.

Weissner, David W., to Meyco Products, Inc. Disappearing anchor. 4,497,152, Cl. 52-709.000.

Wells, Douglas M.: *See—*
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Bratt, Richard G.; Gavrin, Edward S.; Schleimer, Stephen I.; Pilat, John F.; Wallach, Walter A., Jr.; Richmond, Michael S.; Belgard, Richard A.; Farber, David A.; Ahlstrom, John K.; Wallach, Steven J.; Katz, Lawrence H.; Wells, Douglas M.; Mundie, Craig J.; Clancy, Gerald F.; Bernstein, David H.; Jones, Thomas M.; and Bachman, Brett L., 4,498,131, Cl. 364-200.000.

Wemple, Stuart H.: *See—*
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Wendel, Rainer, to Spilker, Susanne. Single-handedly flippable bag holder. 4,497,463, Cl. 248-95.000.

Wendt, Alan C.; and Krakowski, David, to United States Gypsum Company. Drive-in trim system for intersecting hollow wall partitions. 4,497,150, Cl. 52-242.000.

Wenzel, James G.; and Trimble, Lloyd C., to Lockheed Missiles & Space Company, Inc. Flexible retractable cold water pipe for an ocean thermal energy conversion system. 4,497,342, Cl. 137-565.000.

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Werther, Heinz-Ulrich: *See—*
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West, Burnell G., to Fairchild Camera and Instrument Corp. Temperature stabilized stop-restart oscillator. 4,497,998, Cl. 219-210.000.

West, Donald E., to Game Time, Inc. Playground climber. 4,497,484, Cl. 272-113.000.

Westinghouse Electric Corp.: *See—*
Buzard, Paul F.; and Harrington, Robert J., 4,498,198, Cl. 375-91.000.

Wetzel, Guenter, to Agfa-Gevaert AG. Arrangement for supplying originals for copying apparatus. 4,497,481, Cl. 271-3.100.

Wheeler, Michael G.: *See—*
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Whitcomb, Carl E., to Oklahoma Agricultural and Mechanical Colleges Acting for and on Behalf of Oklahoma State University, Board of Regents for the. Air-root-pruning container. 4,497,132, Cl. 47-66.000.

White, Eugene B., Jr., to White Machinery Corporation. Retractable wheeled vehicle. 4,497,257, Cl. 105-215.00C.

White, John T.: *See—*
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Wide-Lite International Corporation: *See—*
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Wiele, Robert W., to Novus Inc. Device for positioning a plug for repairing panes of glass. 4,497,476, Cl. 269-1.000.

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Wilkinson, Richard A., Jr., to Storage Technology Partners II. Apparatus for the centered mounting and unmounting on a device spindle. 4,498,165, Cl. 369-270.000.

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Williams, Leslie P., to Cause Consequence Analysis, Inc. Foam-applying nozzle having adjustable flow rates. 4,497,442, Cl. 239-437.000.

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Wilson, Frederick D. Self-adjusting ladder. 4,497,390, Cl. 182-202.000.

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Winful, Herbert G.; and Cooperman, Gene D., to GTE Laboratories Incorporated. Optical pulse generator. 4,497,535, Cl. 350-96.120.

Winston Adolph A., to Alberta Gas Chemicals, Incorporated. Artificially sweetened beverage mixes and process therefor. 4,497,835, Cl. 426-72.000.

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Wischusen, Henry, III, to Rock-Tenn Company. Combination food tray. 4,497,433, Cl. 229-30.000.

Witkowski, Joseph T., to Schering Corporation. 2-(Pyridinyl)-1,2,4-triazolo[1,5-a]pyrimidines and derivatives useful in increasing cardiac contractility. 4,497,814, Cl. 514-258.000.

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Woodley, George M., to King Instrument Corporation. Tape loading machine. 4,497,454, Cl. 242-56.00R.

Woodrow, Harold E., to Morgan Construction Company. Apparatus for bending a rolling mill laying pipe. 4,497,190, Cl. 72-133.000.

Woog, Manfred J. Compact precious metal furnace and recovery method. 4,497,658, Cl. 75-83.000.

Wright, Bernard S.; Owen, Hartley; and Hsia, Chung H., to Mobil Oil Corporation. Multistage process for converting olefins or oxygenates to heavier hydrocarbons. 4,497,968, Cl. 585-304.000.

Wright, Dolph D., to General Motors Corporation. Paint color change valve assembly for recirculating paint system. 4,497,341, Cl. 137-563.000.

Wrobel, Peter: *See—*
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Wrobley, A. Ray; and Sullivan, James H. Slope compensating angle gauge. 4,497,117, Cl. 33-276.000.

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Wudel, John A.; and McMillan, Lavar C., to Wudel Inc. Low calorie dessert mixes and products prepared therefrom. 4,497,841, Cl. 426-565.000.

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Yamasaki, Harumasa; Kobayashi, Takatoshi; and Sumida, Yuzo, to Kao Corporation. Process for producing highly water absorptive polymer. 4,497,930, Cl. 524-556.000.

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Yamato, Noboru; Satake, Toshimi; Minami, Toshiaki; and Fujimura, Fumio, to Jujo Paper Co., Ltd. Heat-sensitive recording sheet. 4,498,091, Cl. 346-216.000.

Yamauchi, Masaaki; Yabe, Minoru; Shirai, Shoji; Komoro, Hidemasa; and Matsuda, Kenichi, to Hitachi, Ltd. Electron gun for color picture tube. 4,498,026, Cl. 313-414.000.

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Yamazaki, Shunpei, to Semiconductor Energy Laboratory Co., Ltd. Semiconductor photoelectric conversion device. 4,498,092, Cl. 357-2.000.

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Yang, Tai-Cheng; Rao, Krishna K.; and Huang, I-der, to Exxon Research & Engineering Co. Process for oxidizing a carboxylic anhydride with heterogeneously prepared vanadium-phosphorus-oxygen containing catalyst composition. 4,497,958, Cl. 549-239.000.

Yano, Ryuji; Chiba, Shinsaku; Yoshida, Kazutoshi; Ishida, Kazuhiro; and Yoshimoto, Shoji, to Hitachi, Ltd. Output signal detectors of magnetic bubble memory devices. 4,498,153, Cl. 365-10.000.

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Yeakley, Lester M.; and Fitzgerald, Karen M., to Storage Technology Partners II. Pivotal mechanism upon which tracking mirrors and the like used in optical systems may be mounted. 4,497,465, Cl. 248-466.000.

Yeboah, Yaw D.; and Venditti, Michael P., to General Electric Company. Process for hydrolyzing chlorosilanes. 4,497,942, Cl. 528-12.000.

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Yoshida, Kunio, to Sharp Kabushiki Kaisha. Symbol input device for use in electronic translator. 4,498,149, Cl. 364-900.000.

Yoshida, Yasuharu, to NEC Corporation. Demodulation device for composite PSK-PSK modulated waves. 4,498,050, Cl. 329-110.000.

Yoshimaru, Tomohisa; and Yamamoto, Kazuki, to Tokyo Shibaura Denki Kabushiki Kaisha. Document information filing system. 4,498,107, Cl. 358-256.000.

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Yoshimoto, Takeo; Igarashi, Keiichi; Yamazaki, Hideo; Takasawa, Yoshio; and Yanagita, Hirohisa, to Mitsui Toatsu Chemicals, Incorporated. 3-Nitro-4-methylbenzene sulfon-2-chloro-4-nitroanilide and fungicidal composition for the control of plant diseases containing same. 4,497,828, Cl. 514-603.000.

Yoshimura, Motokazu; Takiguchi, Michitaka; Horie, Fujio; and Hirata, Koichi. Sewing machine with a voice warning device. 4,498,078, Cl. 340-679.000.

Yoshimura, Susumu; and Murakami, Mutsuaki, to Matsushita Electric Industrial Co., Ltd. Conductive pyrolytic product and composition using same. 4,497,728, Cl. 252-514.000.

Yoshimura, Yoshinobu; Hamaguchi, Naoru; and Yashiki, Takatsuka, to Takeda Chemical Industries, Ltd. Cephalosporin derivatives. 4,497,809, Cl. 514-206.000.

Yoshino, Tadashi; and Mamei, Masayuki, to Matsushita Electric Industrial Co., Ltd. Tape drive control apparatus. 4,497,459, Cl. 242-186.000.

Yoshioka, Takatoshi: *See—*
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Yoshizawa, Kenji; Kodama, Hitoshi; Minowa, Yoshibumi; Komura, Hirotsugu; and Ito, Hiroshi, to Mitsubishi Denki Kabushiki Kaisha. Microwave generated plasma light source apparatus. 4,498,029, Cl. 315-39.000.

Yoshizumi, Hajime; Toyoshima, Kumao; Hakura, Akira; and Nakanishi, Toshihiro, to Suntory Ltd. Polypeptide carcinostatic agent. 4,497,799, Cl. 514-9.000.

Yost, James O.: *See—*
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Young, Bill M.: *See—*
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Young, Dennis, to British Petroleum Company p.l.c., The. Aromatics production. 4,497,970, Cl. 585-417.000.

Young, James M. Device for magnetically reclaiming oil from water. 4,497,708, Cl. 210-222.000.

Youngworth, Thomas H., to Benson Engineering & Mfg., Inc. Dehumidifier. 4,497,182, Cl. 62-151.000.

Yu, Peter H.: *See—*
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Yurdin, Carl; and Monti, Carmel S., to Photographic Peripherals, Inc. Collapsible lens shade. 4,497,549, Cl. 350-581.000.

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Zahnraderfabrik Renk A.G.: *See—*
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Zaunberger, Franz X., to Zahnraderfabrik Renk A.G. Compact drive assembly. 4,497,218, Cl. 74-682.000.

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Zenith Electronics Corporation: *See—*
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Zeugner, Horst; Romer, Dietmar; Liepmann, Hans; and Milkowski, Wolfgang, to Kali-Chemie Pharma GmbH. 2-Azidomethyl-1,4-benzodiazepine compounds. 4,497,740, Cl. 260-244.400.

Zimmer, Bonnie A.: *See—*
Hwang, Jong-Yeong H.; Thayer, Stevan J.; and Zimmer, Bonnie A., 4,498,186, Cl. 375-7.000.

Zimmermann, Markus; and Kuhnis, Hans, to Ciba-Geigy Corporation. N-Oxide compounds useful in the treatment of cardiovascular ailments. 4,497,808, Cl. 514-222.000.

Zimmermann, Markus: *See—*
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Zink, David E.; and Stout, Garry A., to Emhart Industries, Inc. Line switch assembly for a timing mechanism. 4,497,986, Cl. 200-38.00R.

Zoecon Corporation: *See—*
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Zulauf, Gary B.; and Charboneau, Ben J., to Gulf & Western Manufacturing Company. Method and apparatus for automatically sensing the level of a liquid in a reservoir. 4,497,205, Cl. 73-313.000.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 5TH DAY OF FEBRUARY, 1985

NOTE—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

D'Agostino, Vincent F.; Lee, Joseph Y.; and Sentisi, Joseph C., to RAI Research Corporation. Separator membranes for electrochemical cells. Re. 31,824, Cl. 204-159.170.

Dow Chemical Company, The: *See—*
Erickson, Robert E.; and Krajewski, Richard M., Re. 31,822, Cl. 128-156.000.

Erickson, Robert E.; and Krajewski, Richard M., to Dow Chemical Company, The. Absorbent films and laminates. Re. 31,822, Cl. 128-156.000.

Fishter, Robert E.; Lada, Henry; and Manty, Brian A., to United Technologies Corporation. Chemical milling of high tungsten content superalloys. Re. 31,823, Cl. 156-664.000.

Garrett, Thomas C.: *See—*
Raymond, Douglas W.; and Garrett, Thomas C., Re. 31,828, Cl. 371-20.000.

Hohn, Richard; Jung, Werner; Winter, Gerhard; and Woerner, Siegfried, to Robert Bosch GmbH. Metalized recording carrier for recording instruments, and method of its manufacture. Re. 31,827, Cl. 346-135.100.

Jung, Werner: *See—*
Hohn, Richard; Jung, Werner; Winter, Gerhard; and Woerner, Siegfried, Re. 31,827, Cl. 346-135.100.

Krajewski, Richard M.: *See—*
Erickson, Robert E.; and Krajewski, Richard M., Re. 31,822, Cl. 128-156.000.

Lada, Henry: *See—*
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Lee, Joseph Y.: *See—*
D'Agostino, Vincent F.; Lee, Joseph Y.; and Sentisi, Joseph C., Re. 31,824, Cl. 204-159.170.

Machell, Greville, to Milliken Research Corporation. Hot melt adhesive bonded pile fabrics. Re. 31,826, Cl. 428-92.000.

Manty, Brian A.: *See—*
Fishter, Robert E.; Lada, Henry; and Manty, Brian A., Re. 31,823, Cl. 156-664.000.

Mason, Charles R.; Osteen, David K.; and Vaalburg, Lawrence, to Scott Paper Company. Method of making nonwoven fabric and product made thereby having both stick bonds and molten bonds. Re. 31,825, Cl. 428-198.000.

Milliken Research Corporation: *See—*
Machell, Greville, Re. 31,826, Cl. 428-92.000.

Nippon Oakki Seizo Kabushiki Kaisha: *See—*
Okamoto, Shimaji, Re. 31,821, Cl. 84-1.130.

Okamoto, Shimaji, to Nippon Oakki Seizo Kabushiki Kaisha. Variable function generator. Re. 31,821, Cl. 84-1.130.

Osteen, David K.: *See—*
Mason, Charles R.; Osteen, David K.; and Vaalburg, Lawrence, Re. 31,825, Cl. 428-198.000.

RAI Research Corporation: *See—*
D'Agostino, Vincent F.; Lee, Joseph Y.; and Sentisi, Joseph C., Re. 31,824, Cl. 204-159.170.

Raymond, Douglas W.; and Garrett, Thomas C., to Zehntel, Inc. In-circuit digital tester. Re. 31,828, Cl. 371-20.000.

Robert Bosch GmbH: *See—*
Hohn, Richard; Jung, Werner; Winter, Gerhard; and Woerner, Siegfried, Re. 31,827, Cl. 346-135.100.

Scott Paper Company: *See—*
Mason, Charles R.; Osteen, David K.; and Vaalburg, Lawrence, Re. 31,825, Cl. 428-198.000.

Sentisi, Joseph C.: *See—*
D'Agostino, Vincent F.; Lee, Joseph Y.; and Sentisi, Joseph C., Re. 31,824, Cl. 204-159.170.

United Technologies Corporation: *See—*
Fishter, Robert E.; Lada, Henry; and Manty, Brian A., Re. 31,823, Cl. 156-664.000.

Vaalburg, Lawrence: *See—*
Mason, Charles R.; Osteen, David K.; and Vaalburg, Lawrence, Re. 31,825, Cl. 428-198.000.

Winter, Gerhard: *See—*
Hohn, Richard; Jung, Werner; Winter, Gerhard; and Woerner, Siegfried, Re. 31,827, Cl. 346-135.100.

Woerner, Siegfried: *See—*
Hohn, Richard; Jung, Werner; Winter, Gerhard; and Woerner, Siegfried, Re. 31,827, Cl. 346-135.100.

Zehntel, Inc.: *See—*
Raymond, Douglas W.; and Garrett, Thomas C., Re. 31,828, Cl. 371-20.000.

LIST OF REEXAMINATION PATENTEES

TO WHOM

CERTIFICATES WERE ISSUED

Baker, Stanley Z.; and Baker, Benjamin H., to J. T. Eaton & Company, Inc. Trap for rats, mice and other vermin. B1 4,438,584, 2-5-85, Cl. 43-58.000.

Bemis Manufacturing Company: *See—*
Bemis, Richard A.; and Kelly, Gordon, B1 4,319,365, Cl. 4-236.000.

Bemis, Richard A.; and Kelly, Gordon, to Bemis Manufacturing Company. No tool toilet seat hardware. B1 4,319,365, 2-5-85, Cl. 4-236.000.

Cohen Abraham B.; and Heiart, Robert B., to E.I. DuPont de Nemours and Company: Method for making photoresists. B1 4,193,797, Cl. 430-258.000.

E.I. Dupont de Nemours and Company: *See*—Cohen, Abraham B.; and Heiart, Robert B., B1 4,193,797, Cl. 430-258.000.

J. T. Eaton & Company, Inc.: *See—*
Baker, Stanley Z.; and Baker, Benjamin H., B1 4,438,584, Cl. 43-58.000.

LIST OF DESIGN PATENTEES

Alter, Hobart L., to Coast Catamaran Corporation. Sailboat. 277,472, 2-5-85, Cl. D12-303.000.

American Commercial, Incorporated: *See—*
Laslo, Larry R., 277,444, Cl. D7-5.000.

American Safety Razor Company: *See—*
Iten, Clemens A., 277,434, Cl. D6-526.000.

American Tourister, Inc.: *See—*
Bomes, Harvey J.; Migliore, John J.; Pulichino, John; and Barber, Jack, 277,431, Cl. D3-48.000.

Appel, Mel; and Kress, George, to Appel, Mel. Child's chair. 277,432, 2-5-85, Cl. D6-364.000.

AT&T Technologies: *See—*
Genaro, Donald M.; McGarvey, John N.; Stern, Arthur L., Jr.; and Tilley, Alvin R., 277,479, Cl. D14-60.000.
Jackwicz, William V.; Jampathom, Sompoppol; McGarvey, John N.; and Tilley, Alvin R., 277,480, Cl. D14-61.000.

Barber, Jack: *See—*
Bomes, Harvey J.; Migliore, John J.; Pulichino, John; and Barber, Jack, 277,431, Cl. D3-48.000.

Barnik, Edward A., to Black & Decker Inc. Cordless jig saw. 277,451, 2-5-85, Cl. D8-64.000.

Baum, Ronald L.; Leibson, Abraham; and Siegel, A. Neal, to SmithKline Beckman Corporation. Bottle cap. 277,459, 2-5-85, Cl. D9-443.000.

Bearn Mecanique Aviation S.A.: *See—*
Ibis, Pierre, 277,506, Cl. D24-24.000.

Becton, Dickinson and Company: *See—*
Lewandowski, Raymond, 277,457, Cl. D9-415.000.

Beker, Gisela. Vest. 277,424, 2-5-85, Cl. D2-190.000.

Benedict, Charles E., to Telescoping Tie Racks, Inc. Extendable tie rack and cover therefor. 277,436, 2-5-85, Cl. D6-315.000.

Berger, Robert M., to Intercon Purchasing Industries (U.S.A.) Ltd. Portable chronometer. 277,461, 2-5-85, Cl. D10-31.000.

Bergstedt, Lowell C.; and Bergstedt, Marie C. Child's clothes rack and growth measuring and registering unit. 277,463, 2-5-85, Cl. D10-71.000.

Bergstedt, Lowell C.; and Bergstedt, Marie C. Child's clothes rack and growth measuring and registering unit. 277,464, 2-5-85, Cl. D10-71.000.

Bergstedt, Marie C.: *See—*
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Bergstedt, Lowell C.; and Bergstedt, Marie C., 277,464, Cl. D10-71.000.

Bescherer, Robert E. Suet feeder. 277,514, 2-5-85, Cl. D30-14.000.

Black & Decker Inc.: *See—*
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Bomes, Harvey J.; Migliore, John J.; Pulichino, John; and Barber, Jack, to American Tourister, Inc. Luggage. 277,431, 2-5-85, Cl. D3-48.000.

Bosch-Siemens Hausgerate GmbH: *See—*
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Vetter, Roland; and Feil, Rolf, 277,449, Cl. D7-346.000.

Butternut Electronics Co.: *See—*
Newcomb, Donald R., 277,483, Cl. D14-86.000.

Cartwright, Jerry G., to Wesco Manufacturing, Inc. Rotating tool storage cabinet with shelves. 277,440, 2-5-85, Cl. D6-476.000.

Cascarano, Anthony J.: *See—*
Matsuda, Hari; Cascarano, Anthony J.; and Schwimmer, Charles M., 277,482, Cl. D14-84.000.

Chan, David M. F.; and Chan, Michael L. F. Suspended holder for plants, candles or the like. 277,435, 2-5-85, Cl. D6-403.000.

Chan, Michael L. F.: *See—*
Chan, David M. F.; and Chan, Michael L. F., 277,435, Cl. D6-403.000.

Chien, Edward H., to Ooh La La!, Inc. Jewelry pin. 277,466, 2-5-85, Cl. D11-41.000.

Christensen, James M.: *See—*
Lawrence, Bruce R.; and Christensen, James M., 277,509, Cl. D24-33.000.

Clair, Michael W. Endotracheal intubation kit tray. 277,508, 2-5-85, Cl. D24-31.000.

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Clover Mfg. Co., Ltd.: *See—*
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Coast Catamaran Corporation: *See—*
Alter, Hobart L., 277,472, Cl. D12-303.000.

Colognori, Aldo. Combined backscrubber and back scratcher with removable sponge element. 277,512, 2-5-85, Cl. D28-63.000.

Compagnie Generale des Etablissements Michelin: *See—*
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Lockhart, Pamela J.; and Cooney, Daniel J., 277,492, Cl. D21-104.000.

CPG Products Corp.: *See—*
Lockhart, Pamela J.; and Cooney, Daniel J., 277,492, Cl. D21-104.000.

Crawford, Ronald H.: *See—*
Parsons, David E. J.; O'Reilly, Paul D.; and Crawford, Ronald H., 277,513, Cl. D29-8.000.

Crowell, James L. Frame for a combined table and seating unit. 277,442, 2-5-85, Cl. D6-499.000.

Daugherty, Valerie, to Questor Corp. Toy duck. 277,496, 2-5-85, Cl. D21-160.000.

Deovlet, Larry: *See—*
Hayden, Glenn M.; Miglins, Erik; and Deovlet, Larry, 277,516, Cl. D32-18.000.

Diamifray, Inc.: *See—*
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Dickinson, Richard J. Computer. 277,484, 2-5-85, Cl. D14-100.000.

Eggett, John G. Spectacle lens cleaning implement. 277,518, 2-5-85, Cl. D32-35.000.

Eisinger, Constantine. Cap. 277,426, 2-5-85, Cl. D2-246.000.

Enso-Gutzeit Oy: *See—*
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Ericson, Dan W. Base for matrix band retainer. 277,504, 2-5-85, Cl. D24-10.000.

Feil, Rolf: *See—*
Vetter, Roland; and Feil, Rolf, 277,448, Cl. D7-346.000.
Vetter, Roland; and Feil, Rolf, 277,449, Cl. D7-346.000.

Foggia, Donald A.; and Schneider, Rolf E., to Siemens Corporation. Telephone digital data interface console. 277,476, 2-5-85, Cl. D14-52.000.

Foggia, Donald A.; and Schneider, Rolf E., to Siemens Corporation. Telephone busy lamp field console. 277,477, 2-5-85, Cl. D14-52.000.

Foggia, Donald A.; and Schneider, Rolf E., to Siemens Corporation. Telephone attendant console. 277,478, 2-5-85, Cl. D14-58.000.

Fogler, Bjorn, to Classic Hus AB. Detached house. 277,510, 2-5-85, Cl. D25-17.000.

Fratelli Saporiti Industria Arredamenti di Saporiti Sergio e Giorgio: *See—*
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Fussner, Robert T.: *See—*
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Gallant, Dennis J.; and Fussner, Robert T., to Hill-Rom Company, Inc. Portable housing for a telephone handset. 277,481, 2-5-85, Cl. D14-65.000.

Gamm, Robert J., to Kangaroos U.S.A. Inc. Athletic shoe upper with pocket covering flap. 277,427, 2-5-85, Cl. D2-309.000.

Genaro, Donald M.; McGarvey, John N.; Stern, Arthur L., Jr.; and Tilley, Alvin R., to AT&T Technologies. Telephone stand. 277,479, 2-5-85, Cl. D14-60.000.

Gravity Guidance, Inc.: *See—*
Miller, Jack V., 277,498, Cl. D21-191.000.

Handley, Charles L. Storage drawer for hair care implements. 277,441, 2-5-85, Cl. D6-510.000.

Hayashi, Toru. Paper scissors. 277,450, 2-5-85, Cl. D8-57.000.

Hayden, Glenn M.; Miglins, Erik; and Deovlet, Larry. Hand-held vacuum cleaner. 277,516, 2-5-85, Cl. D32-18.000.

Higginson, John B., to Protector Safety Industries Limited. Safety helmet. 277,425, 2-5-85, Cl. D2-231.000.

Hill-Rom Company, Inc.: *See—*
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Hirose, Mutsuo: *See—*
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Holes-Webway Company, The: *See—*
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Holes, William W.: *See—*
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Hollinshead, Clive. Spring loaded chop sticks. 277,446, 2-5-85, Cl. D7-105.000.

Holson Company, The: *See—*
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Holson, Sheldon, to Holson Company, The. Greeting card or similar article. 277,489, 2-5-85, Cl. D19-1.000.

Honda Giken Kogyo Kabushiki Kaisha: *See—*
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Hull, James R. Combined bunk bed, desk and storage unit. 277,433, 2-5-85, Cl. D6-384.000.

Ibis, Pierre, to Bearn Mecanique Aviation S.A. Needle-less injection instrument. 277,506, 2-5-85, Cl. D24-24.000.

Intercon Purchasing Industries (U.S.A.) Ltd.: *See—*
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International Jensen Incorporated: *See—*
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Ishiwara, Koichiro: *See—*
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Iten, Clemens A., to American Safety Razor Company. Holder for disposable safety razor. 277,434, 2-5-85, Cl. D6-526.000.

Iwakura, Masato; and Hirose, Mutsuo, to Honda Giken Kogyo Kabushiki Kaisha. Internal combustion engine for motorcycle. 277,485, 2-5-85, Cl. D15-3.000.

Jackwicz, William V.; Jampathom, Sompoppol; McGarvey, John N.; and Tilley, Alvin R., to AT&T Technologies. Wall telephone stand or similar article. 277,480, 2-5-85, Cl. D14-61.000.

Jacobsen, Donald M.; Shalon, Tadmor; Thater, Walter A.; and Somogye, Steve, Jr., to Measuregraph Company, The. Combined fabric measuring and cost computing device. 277,462, 2-5-85, Cl. D10-70.000.

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Johnson, Martin W. Abdominal exerciser for attachment to chair or the like. 277,497, 2-5-85, Cl. D21-191.000.

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Kanoui, Joseph, to Interdica S.A. Perfume bottle. 277,456, 2-5-85, Cl. D9-377.000.

Kjellen, Maud K. H., to Svenska Tobaks AB. Belt. 277,428, 2-5-85, Cl. D2-380.000.

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Kress, George: *See—*
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Laslo, Larry R., to American Commercial, Incorporated. Torte plate. 277,444, 2-5-85, Cl. D7-5.000.

Lawrence, Bruce R.; and Christensen, James M., to Sutter Biomedical Inc. Great toe metatarsal phalangeal implant. 277,509, 2-5-85, Cl. D24-33.000.

Leath, Lonzie. Stereo stand. 277,439, 2-5-85, Cl. D6-474.000.

LeBoutillier, Jean. Sewing weight kit. 277,429, 2-5-85, Cl. D3-18.000.

Lehman, Dexter K.: *See—*
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Lehtio, Jukka: *See—*
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Leibson, Abraham: *See—*
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Lerch, Karl D., to Quaker Oats Company, The. Toy pickup truck. 277,494, 2-5-85, Cl. D21-136.000.

Levine, Leonard. Bagel slicing jig. 277,445, 2-5-85, Cl. D7-43.000.

Levy, Didya. Finger lancing device. 277,507, 2-5-85, Cl. D24-28.000.

Lewandowski, Raymond, to Becton, Dickinson and Company. Packaging container for a stopcock or the like. 277,457, 2-5-85, Cl. D9-415.000.

Lifeline Systems, Inc.: *See—*
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Lockhart, Pamela J.; and Cooney, Daniel J., to CPG Products Corp. Combined puzzle and tray. 277,492, 2-5-85, Cl. D21-104.000.

Loesch, Walter, to Kolorkraft Photography Pty. Ltd. Contact printer for proofing. 277,488, 2-5-85, Cl. D16-29.000.

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MacDonald, John B., to Lifeline Systems, Inc. Portable emergency alarm transmitter. 277,465, 2-5-85, Cl. D10-106.000.

Matsuda, Hari; Cascarano, Anthony J.; and Schwimmer, Charles M., to International Jensen Incorporated. Combined video monitor and loudspeaker system front panel assembly. 277,482, 2-5-85, Cl. D14-84.000.

Matti, Dominic. Van running board. 277,470, 2-5-85, Cl. D12-203.000.

McGaha, George V.: *See—*
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McGill, Leland S. Combined toilet seat and cover. 277,500, 2-5-85, Cl. D23-71.000.

McQuarrie, Ralph A., to Lucas Film, Ltd. Toy vehicle. 277,493, 2-5-85, Cl. D21-130.000.

Measuregraph Company, The: *See—*
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Meinhardt, Ben W. Grounding bushing. 277,454, 2-5-85, Cl. D8-397.000.

Messer, Ron L., to Compagnie Generale des Etablissements Michelin. Tire tread and buttress. 277,469, 2-5-85, Cl. D12-151.000.

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Murry, Edsel E., to Samsonite Corporation. Chair. 277,443, 2-5-85, Cl. D6-366.000.

Muters, Keith: *See—*
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Nagayasu, Hideaki, to Sumitomo Rubber Industries, Ltd. Vehicle tire. 277,468, 2-5-85, Cl. D12-147.000.

Nakamura, Kazuharu, to Toyotomi Kogyo Co., Ltd. Oil-fired space heater. 277,501, 2-5-85, Cl. D23-123.000.

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Nilsson, Sven, to SKF Nova AB. Worm gear. 277,487, 2-5-85, Cl. D15-149.000.

North American Philips Corporation: *See—*
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Parsons, David E. J.; O'Reilly, Paul D.; and Crawford, Ronald H. Medical face mask. 277,513, 2-5-85, Cl. D29-8.000.

Passarello, Franco, to Fratelli Saporiti Industria Arredamenti di Saporiti Sergio e Giorgio. Table. 277,438, 2-5-85, Cl. D6-483.000.

Patel, Madhu, to Sears, Roebuck and Co. Outdoor light. 277,511, 2-5-85, Cl. D26-68.000.

Pelton and Crane Company, The: *See—*
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Protector Safety Industries Limited: *See—*
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Pulichino, John: *See—*
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Richmond, Colin B., II, to Oneida Ltd. Spoon or similar article. 277,447, 2-5-85, Cl. D7-137.000.

Samsonite Corporation: *See—*
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Secor, Richard J. Cleaning rack for saddles or the like. 277,515, 2-5-85, Cl. D30-45.000.

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Siegel, A. Neal: *See—*
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Slager, Joseph J. Combined sprayer and caddy. 277,499, 2-5-85, Cl. D23-35.000.

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Tapdrup, Erik P., to Interlego A.G. Rattle. 277,491, 2-5-85, Cl. D21-65.000.

Telescoping Tie Racks, Inc.: *See—*
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Thater, Walter A.: *See—*
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NOTE.—First number, class; second number, subclass; third number, patent number

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807 4,498,086
915 4,498,087

CLASS 346

135.1 Re.31,827
140 R 4,498,088
4,498,089
159 4,498,090
216 4,498,091

CLASS 350

3.72 4,497,534
96.12 4,497,535
96.21 4,497,536
96.23 4,497,537
4,497,538
164 4,497,539
168 4,497,540
335 4,497,542
337 4,497,543
353 4,497,544
376 4,497,545
410 4,497,546
425 4,497,617
427 4,497,547
560 4,497,548
581 4,497,549
584 4,497,550
626 4,497,541

CLASS 354

67 4,497,551
106 4,497,552
135 4,497,553
160 4,497,554
173.1 4,497,555
212 4,497,556
234.1 4,497,557
303 4,497,558
316 4,497,559
403 4,497,560
406 4,497,561
416 4,497,562
429 4,497,563
442 4,497,564

CLASS 355

3 CH 4,497,566
3 R 4,497,565
3 TR 4,497,567
14 R 4,497,568
4,497,569
16 4,497,570
40 4,497,571
45 4,497,572
58 4,497,573
76 4,497,574

CLASS 356

73.1 4,497,575
335 4,497,576
336 4,497,577

CLASS 357

2 4,498,092
22 4,498,093
4,498,094
23 4,498,095
67 4,498,096

CLASS 358

12 4,498,097
22 4,498,098
31 4,498,099
4,498,100
62 4,498,101
133 4,498,102
148 4,498,103
160 4,498,104
213 4,498,105
4,498,106
256 4,498,107
283 4,498,108
296 4,498,109
342 4,498,110

CLASS 360

27 4,498,111
96.5 4,498,112
128 4,498,113
4,498,114
132 4,498,115

CLASS 361

213 4,498,116
315 4,498,117
384 4,498,118
386 4,498,119
4,498,120
401 4,498,121
414 4,498,122
427 4,498,123

CLASS 362

211 4,498,124
216 4,498,125
220 4,498,126

CLASS 363

5 4,498,127
21 4,498,128

CLASS 364

174 4,498,129
188 4,498,130
200 4,498,131
4,498,132
4,498,133
4,498,134
4,498,135
4,498,136
471 4,498,137
483 4,498,138
518 4,498,139
571 4,498,140
728 4,498,141
900 4,498,142
4,498,143
4,498,144
4,498,145
4,498,146
4,498,147
4,498,148
4,498,149
4,498,150
4,498,151

CLASS 365

1 4,498,152
10 4,498,153
149 4,498,154
189 4,498,155
215 4,498,156

CLASS 366

42 4,497,578
134 4,497,579
190 4,497,580
208 4,497,581

CLASS 367

50 4,498,157

CLASS 368

15 4,497,582
291 4,497,583
294 4,497,584

CLASS 369

32 4,498,158
44 4,498,159
63 4,498,160
75.2 4,498,161
77.1 4,498,162
126 4,498,163
177 4,498,164
270 4,498,165

CLASS 370

9 4,498,166
44 4,498,167
85 4,498,168
4,498,169
110.1 4,498,170
110.2 4,498,171

CLASS 371

20 Re.31,828
25 4,498,172
30 4,498,173
37 4,498,174
4,498,175
4,498,178
47 4,498,176
52 4,498,177

CLASS 372

27 4,498,179
29 4,498,180
38 4,498,181
62 4,498,182
86 4,498,183
92 4,498,184

CLASS 373

93 4,498,185

CLASS 374

158 4,497,585
163 4,497,586

CLASS 375

7 4,498,186
91 4,498,198
117 4,498,187

CLASS 376

142 4,497,767
153 4,497,768
257 4,497,769
272 4,497,770

CLASS 381

67 4,498,188

CLASS 382

30 4,498,189

CLASS 383

28 4,498,190
126 4,498,192

CLASS 384

117 4,497,587
613 4,497,523

CLASS 400

645.1 4,497,588
706 4,497,589

CLASS 405

152 4,497,590
198 4,497,591
202 4,497,592
212 4,497,593
217 4,497,594
261 4,497,595
263 4,497,596
288 4,497,597

CLASS 406

114 4,497,598
132 4,497,599

CLASS 407

53 4,497,600

CLASS 408

156 4,497,601

CLASS 410

69 4,497,602

CLASS 411

34 4,497,603

CLASS 414

131 4,497,604
218 4,497,605
607 4,497,606
664 4,497,607
726 4,497,608
786 4,497,609

CLASS 415

116 4,497,610
191 4,497,611

CLASS 416

198 A 4,497,612
228 4,497,613

CLASS 417

238 4,497,614
310 4,497,615
390 4,497,616

CLASS 418

212 4,497,618

CLASS 420

440 4,497,771
457 4,497,772

CLASS 422

26 4,497,773
73 4,497,774
159 4,497,775
4,497,776
249 4,497,777

CLASS 423

27 4,497,778
72 4,497,779
88 4,497,780
164 4,497,781
184 4,497,782
213.5 4,497,783
236 4,497,784
263 4,497,785
329 4,497,786
345 4,497,787
447.3 4,497,788
447.4 4,497,789

CLASS 424

1.1 4,497,790
4,497,791
3 4,497,792
32 4,497,793
81 4,497,794
85 4,497,795
95 4,497,796
118 4,497,797
153 4,497,798
248.51 4,497,811

CLASS 425

75 4,497,619
145 4,497,620
4,497,621
525 4,497,622
4,497,623
548 4,497,624

CLASS 426

5 4,497,832
41 4,497,833
42 4,497,834
72 4,497,835
239 4,497,836
398 4,497,837
429 4,497,838
482 4,497,839
560 4,497,840
565 4,497,841
592 4,497,842
602 4,497,843
643 4,497,844
646 4,497,845
660 4,497,846

CLASS 427

3 4,497,847
106 4,497,848
120 4,497,849
127 4,497,850
147 4,497,851
287 4,497,852

CLASS 428

17 4,497,853
4,497,854
35 4,497,855
4,497,856
4,497,857
44 4,497,858
71 4,497,859
92 Re.31,826
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201 4,497,861
220 4,497,862
253 4,497,863
323 4,497,864
336 4,497,865
365 4,497,866
385 4,497,867
400 4,497,868
402 4,497,869
457 4,497,870
473 4,497,871
483 4,497,872
547 4,497,873
551 4,497,874
620 4,497,875
624 4,497,876
628 4,497,877
698 4,497,878

CLASS 429

62 4,497,879
86 4,497,880
91 4,497,881
163 4,497,882
194 4,497,883

CLASS 430

5 4,497,884
106.6 4,497,885
115 4,497,886
138 4,497,887
165 4,497,888
258 B1 4,193,797
260 4,497,889
296 4,497,890
4,497,891
347 4,497,892
359 4,497,893
522 4,497,894
569 4,497,895

CLASS 431

208 4,497,625

CLASS 432

9 4,497,626
59 4,497,627
179 4,497,628

CLASS 433

201 4,497,629

CLASS 434

224 4,497,630

CLASS 435

161 4,497,896
188 4,497,897

CLASS 436

23 4,497,898
510 4,497,899
511 4,497,900

CLASS 440

8 4,497,631

CLASS 441

30 4,497,632

CLASS 445

7 4,497,633

CLASS 455

1 4,498,193
164 4,498,191
166 4,498,194
205 4,498,195
607 4,498,196
619 4,498,197

CLASS 501

90 4,497,901

CLASS 502

65 4,497,902
85 4,497,903
104 4,497,904
107 4,497,905
110 4,497,906
235 4,497,907
245 4,497,908
262 4,497,909

CLASS 514

2 4,497,800
8 4,497,802
9 4,497,799
15 4,497,801
92 4,497,804
166 4,497,813
4,497,824
172 4,497,805
189 4,497,806
206 4,497,809
211 4,497,812
222 4,497,807
4,497,808
4,497,810
258 4,497,814
277 4,497,830
300 4,497,816
302 4,497,821
381 4,497,827
397 4,497,818
4,497,819
432 4,497,820
450 4,497,803
512 4,497,823
556 4,497,825
567 4,497,826
592 4,497,822
603 4,497,828
672 4,497,829
717 4,497,831

CLASS 517

274 4,497,815

CLASS 518

700 4,497,910

CLASS 521

56 4,497,911
59 4,497,912
137 4,497,913

CLASS 523

105 4,497,914
156 4,497,915
176 4,497,916
201 4,497,917
220 4,497,918

CLASS 524

10 4,497,919
57 4,497,920
59 4,497,921
104 4,497,922
107 4,497,923
151 4,497,924
269 4,497,925
271 4,497,926
475 4,497,927
502 4,497,928
547 4,497,929
556 4,497,930
570 4,497,931
591 4,497,932
604 4,497,933

CLASS 525

58 4,497,934
181 4,497,935
222 4,497,936
333.1 4,497,937
514 4,497,938

CLASS 526

262 4,497,939
4,497,940
331 4,497,941

CLASS 528

12 4,497,942
22 4,497,943
49 4,497,944
94 4,497,945
99 4,497,946
174 4,497,947
342 4,497,948

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603 4,497,735
695 4,497,734
855 4,497,736

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27 4,497,949
183 4,497,950
206 4,497,951
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99 4,497,953
221 4,497,954
345 4,497,955

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150 4,497,817
194 4,497,956
496 4,497,957

CLASS 549

239 4,497,958
253 4,497,959
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495 4,497,961

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CLASS 560

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CLASS 562

406 4,497,964

CLASS 568

325 4,497,965
705 4,497,966
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CLASS 585

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415 4,497,969
417 4,497,970
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828 4,497,972

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D3— 18 277,429
28 277,430
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364 277,432
366 277,443
384 277,433
403 277,435
470 277,437
474 277,439
476 277,440
483 277,438
499 277,442
510 277,441
526 277,434
D7— 5 277,444
43 277,445
105 277,446
137 277,447
346 277,448
277,449
D8— 57 277,450
64 277,451
99 277,452
323 277,453
397 277,454
D9— 307 277,455
377 277,456
415 277,457
443 277,458
277,459
447 277,460
D10— 31 277,461
70 277,462
71 277,463
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106 277,465
D11— 41 277,466
155 277,467
D12— 147 277,468
151 277,469
203 277,470
211 277,471
D14— 303 277,472
3 277,473
6 277,474
277,475
52 277,476
277,477
58 277,478
60 277,479
61 277,480
65 277,481
84 277,482
86 277,483
100 277,484
D15— 3 277,485
126 277,486
149 277,487
D16— 29 277,488
D19— 1 277,489
33 277,490
D21— 65 277,491
104 277,492
130 277,493
136 277,494
137 277,495
160 277,496
191 277,497
277,498
D23— 35 277,499
71 277,500
123 277,501
153 277,502
D24— 5 277,503
10 277,504
17 277,505
24 277,506
28 277,507
31 277,508
33 277,509
D25— 17 277,510
D26— 68 277,511
D28— 63 277,512
D29— 8 277,513
D30— 14 277,514
45 277,515
D32— 18 277,516
22 277,517
35 277,518

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		4,497,630		4,497,679		4,497,145			4,497,227	4,497,419	4,497,339
		4,498,032		4,497,684		4,497,465			4,497,348	4,497,499	4,497,363
04	:	4,497,088		4,497,685		4,497,548			4,497,433	4,497,606	4,497,377
		4,497,117		4,497,687		4,497,641			4,497,599	4,497,620	4,497,413
		4,497,170		4,497,697		4,497,658			4,497,637	4,497,708	4,497,454
		4,497,171		4,497,730		4,497,676			4,497,931	4,497,714	4,497,533
		4,497,176		4,497,772		4,497,733			4,498,169	4,497,765	4,497,535
		4,497,284		4,497,785		4,497,779	16	:	4,497,519	4,497,800	4,497,557
		4,497,491		4,497,791		4,498,165	17	:	4,497,091	4,497,802	4,497,585
		4,497,528		4,497,792	09	: 4,497,179			4,497,093	4,497,981	4,497,603
		4,497,890		4,497,796		4,497,185			4,497,104	4,497,985	4,497,688
		4,497,988		4,497,818		4,497,250			4,497,127	4,497,986	4,497,690
		4,498,023		4,497,824		4,497,331			4,497,150	4,498,117	4,497,756
		4,498,096		4,497,827		4,497,391			4,497,177	19 : 4,497,078	4,497,857
06	:	Re.31,828		4,497,833		4,497,421			4,497,180	4,497,269	4,497,866
		4,497,098		4,497,836		4,497,452			4,497,248	4,497,325	4,497,950
		4,497,110		4,497,837		4,497,486			4,497,257	4,497,328	4,497,996
		4,497,154		4,497,881		4,497,500			4,497,310	4,497,636	4,498,009
		4,497,186		4,497,905		4,497,726			4,497,340	20 : 4,497,160	4,498,048
		4,497,225		4,497,926		4,497,767			4,497,343	4,497,515	4,498,086
		4,497,239		4,497,951		4,497,783			4,497,420	21 : 4,497,159	4,498,098
		4,497,278		4,497,965		4,497,855			4,497,444	4,497,183	4,498,131
		4,497,314		4,497,998		4,497,913			4,497,477	4,497,276	4,498,137
		4,497,316		4,498,002		4,498,035			4,497,497	4,497,403	26 : Re.31,822
		4,497,318		4,498,010		4,498,076			4,497,509	4,497,757	4,497,149
		4,497,324		4,498,012		4,498,095			4,497,524	4,497,789	4,497,205
		4,497,333		4,498,017		4,498,121			4,497,581	22 : 4,497,372	4,497,234
		4,497,342		4,498,038		4,498,179			4,497,621	4,497,551	4,497,237
		4,497,349		4,498,039	10	: 4,497,807			4,497,694	4,497,594	4,497,298
		4,497,367		4,498,049	12	: Re.31,823			4,497,704	4,497,659	4,497,299
		4,497,370		4,498,051		4,497,070			4,497,731	4,497,936	4,497,307
		4,497,381		4,498,055		4,497,114			4,497,732	23 : 4,497,388	4,497,336
		4,497,401		4,498,060		4,497,126			4,497,899	24 : 4,497,090	4,497,341
		4,497,402		4,498,070		4,497,148			4,497,900	4,497,118	4,497,396
		4,497,408		4,498,077		4,497,226			4,497,902	4,497,130	4,497,399
		4,497,427		4,498,084		4,497,312			4,497,919	4,497,261	4,497,457
		4,497,440		4,498,112		4,497,351			4,497,927	4,497,400	4,497,494
		4,497,467		4,498,114		4,497,393			4,497,946	4,497,508	4,497,496
		4,497,485		4,498,116		4,497,424			4,497,972	4,497,590	4,497,503
		4,497,502		4,498,119		4,497,448			4,497,975	4,497,918	4,497,507
		4,497,527		4,498,132		4,497,453			4,497,979	4,498,148	4,497,618
		4,497,534		4,498,134		4,497,464			4,498,016	25 : 4,497,071	4,497,639
		4,497,540		4,498,141		4,497,470			4,498,028	4,497,077	4,497,671
		4,497,542		4,498,145		4,497,498			4,498,045	4,497,107	4,497,678
		4,497,545		4,498,156		4,497,501			4,498,056	4,497,121	4,497,788
		4,497,558		4,498,157		4,497,571			4,498,059	4,497,163	4,497,874
		4,497,582		4,498,168		4,497,793			4,498,079	4,497,182	4,497,882
		4,497,586		4,498,183		4,497,838			4,498,123	4,497,190	4,497,920
		4,497,598		4,498,184		4,497,840			4,498,124	4,497,199	4,497,938
		4,497,649		4,498,186		4,497,852			4,498,146	4,497,202	4,497,945
		4,497,650		4,498,196		4,498,138			3,171,729	4,497,228	4,497,973
		4,497,652	08	: 4,497,134		4,498,190	18	:	4,497,264	4,497,275	4,498,036

27 :	4,498,129	4,497,680	4,497,432	4,497,279	4,497,526	4,498,047
	4,497,135	4,497,683	4,497,439	4,497,282	4,497,530	4,498,126
	4,497,184	4,497,705	4,497,487	4,497,350	4,497,667	4,498,133
	4,497,220	4,497,706	4,497,549	4,497,353	4,497,712	4,498,135
	4,497,262	4,497,715	4,497,553	4,497,398	4,497,713	4,498,142
	4,497,321	4,497,718	4,497,554	4,497,407	4,497,719	4,498,150
	4,497,361	4,497,727	4,497,556	4,497,410	4,497,755	4,498,151
	4,497,416	4,497,749	4,497,566	4,497,472	4,497,794	4,498,155
	4,497,438	4,497,773	4,497,567	4,497,495	4,497,798	49 : 4,497,304
	4,497,447	4,497,786	4,497,569	4,497,523	4,497,810	4,497,552
	4,497,476	4,497,814	4,497,570	4,497,532	4,497,823	4,497,841
	4,497,544	4,497,831	4,497,580	4,497,593	4,497,829	50 : 4,497,436
	4,497,572	4,497,832	4,497,587	4,497,597	4,497,848	51 : 4,497,272
—	4,497,604	4,497,883	4,497,612	4,497,615	4,497,849	4,497,311
	4,497,760	4,497,907	4,497,613	4,497,616	4,497,862	4,497,330
	4,497,834	4,497,914	4,497,617	4,497,624	4,497,889	4,497,352
	4,497,860	4,497,921	4,497,633	4,497,644	4,497,903	4,497,417
	4,497,861	4,497,923	4,497,638	4,497,661	4,497,928	4,497,460
	4,497,954	4,497,924	4,497,669	4,497,681	4,497,983	4,497,492
	4,498,037	4,497,953	4,497,692	4,497,682	4,497,984	4,497,520
	4,498,058	4,497,958	4,497,709	4,497,744	4,497,989	4,497,934
	4,498,140	4,497,967	4,497,774	4,497,748	4,497,994	4,497,935
	4,498,177	4,497,968	4,497,787	4,497,771	4,498,105	4,498,136
28 :	4,497,980	4,497,974	4,497,806	4,497,782	4,498,198	4,498,167
29 :	4,497,258	4,497,987	4,497,835	4,497,845	44 : 4,497,096	4,498,191
	4,497,619	4,497,995	4,497,842	4,497,876	45 : Re.31,826	4,498,194
	4,497,622	4,498,001	4,497,891	4,497,892	4,497,265	53 : 4,497,113
	4,497,623	4,498,007	4,497,917	4,497,939	4,497,863	4,497,139
	4,497,854	4,498,080	4,497,925	4,497,940	46 : 4,497,189	4,497,236
	4,497,871	4,498,083	4,497,929	4,497,948	47 : 4,497,365	4,497,238
	4,497,898	4,498,085	4,497,942	4,498,008	4,497,627	4,497,280
	4,498,068	4,498,093	4,497,959	4,498,042	48 : 4,497,079	4,497,308
30 :	4,497,131	4,498,099	4,498,014	4,438,584	4,497,094	4,497,412
31 :	4,497,083	4,498,100	4,498,031	40 : 4,497,132	4,497,112	4,497,422
	4,497,147	4,498,122	4,498,046	4,497,151	4,497,115	4,497,461
	4,497,469	4,498,128	4,498,075	4,497,229	4,497,119	4,497,462
33 :	4,498,071	4,498,173	4,498,101	4,497,283	4,497,173	4,497,504
	4,497,489	4,498,182	4,498,143	4,497,596	4,497,209	4,497,578
	4,497,758	4,497,366	4,498,147	4,497,750	4,497,338	4,497,591
34 :	4,498,027	35 : 4,497,768	4,498,164	4,497,971	4,497,368	— 4,497,602
	Re.31,825	4,497,769	4,498,166		4,497,369	4,497,632
	B1 4,193,797	4,497,775	4,498,172	41 : 4,497,232	4,497,371	4,497,686
	4,497,080	4,497,873	4,498,187	4,497,329	4,497,384	4,497,707
	4,497,125	4,498,187	4,498,188	4,497,337	4,497,442	4,497,955
	4,497,233	36 : Re.31,824	37 : 4,497,124	4,497,575	4,497,490	4,498,113
	4,497,251	4,497,069	4,497,129	4,497,607	4,497,614	55 : 4,497,181
	4,497,263	4,497,073	4,497,142	42 : 4,497,122	4,497,698	4,497,217
	4,497,267	4,497,116	4,497,146	4,497,194	4,497,702	4,497,334
	4,497,268	4,497,128	4,497,231	4,497,196	4,497,764	4,497,405
	4,497,376	4,497,152	4,497,355	4,497,207	4,497,784	4,497,431
	4,497,429	4,497,197	4,497,390	4,497,212	4,497,790	4,497,435
	4,497,430	4,497,208	4,497,404	4,497,230	4,497,795	4,497,456
	4,497,441	4,497,242	4,497,538	4,497,259	4,497,908	4,498,120
	4,497,468	4,497,270	4,497,844	4,497,344	4,497,947	4,498,125
	4,497,488	4,497,362		4,497,449	4,498,020	4,319,365
	4,497,574	4,497,374		4,497,512		
	4,497,657	4,497,418	39 : 4,497,076			

DESIGN PATENTS

06	:	277,433		277,509	24	: 277,426	34	: 277,432		277,473	277,445
		277,435		277,516		277,451		277,457		277,494	277,459
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		277,498		277,500		277,462		277,447		277,442	55 : 277,499
		277,508		277,517							

PLANT PATENTS

06	:	P 5,400	5,401	5,402	5,403	

DEFENSIVE PUBLICATIONS APPLICATIONS

[Notice of Dec. 16, 1969, 869 O.G. 6877]

48	:	T105,101				

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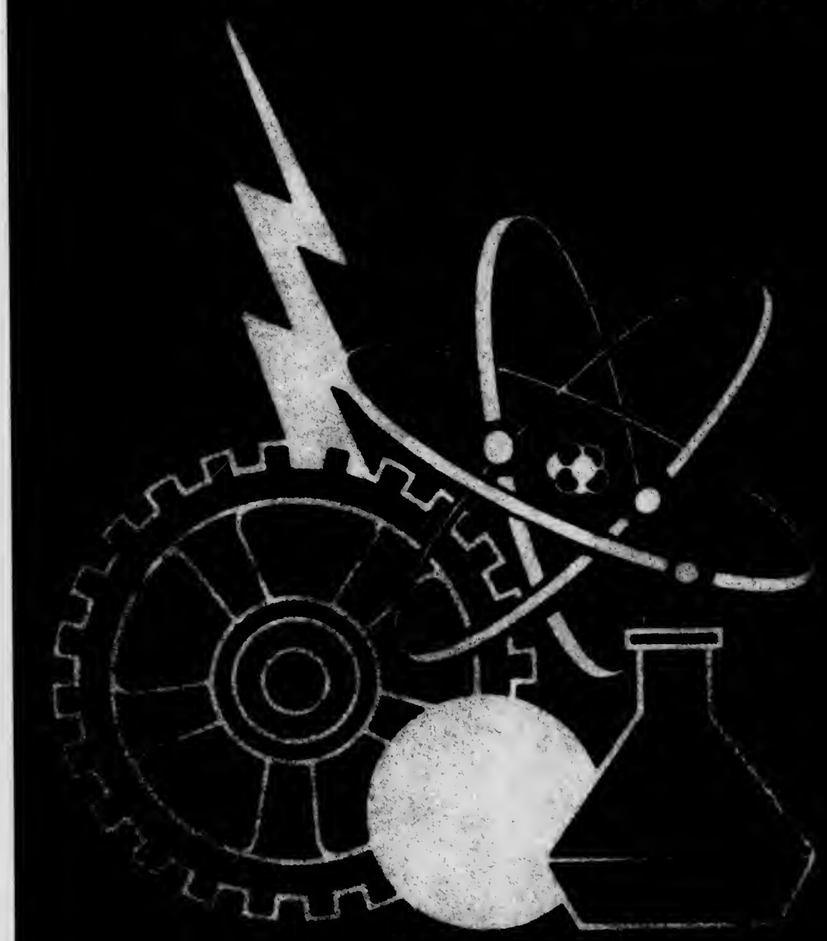
OFFICIAL GAZETTE

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UNITED STATES PATENT AND TRADEMARK OFFICE

PATENTS

February 12, 1985



PUBLISHED WEEKLY BY AUTHORITY OF CONGRESS

OFFICIAL GAZETTE of the
UNITED STATES PATENT AND TRADEMARK OFFICE
February 12, 1985 Volume 1051 Number 2

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PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty (PCT) Information

For information concerning the PCT member countries see the notice appearing in the *Official Gazette* at 1050 O.G. 330 on Jan. 15, 1985.

For use of the European Patent Office as a Searching Authority for PCT applications filed in the United States Receiving Office, see the notice appearing in the *Official Gazette* at 1022 O.G. 52 on Sept. 28, 1982.

Domestic PCT fees were increased on Oct. 1, 1982 by a rule change to 37 CFR 1.445 that was published in the *Official Gazette* at 1021 O.G. 11 on Aug. 10, 1982.

The Search fee for the European Patent Office was changed as of Jan. 3, 1985 and was announced in the *PCT Gazette* at No. 26/1984 page 3241 on Nov. 8, 1984.

International PCT fees were changed by the PCT Assembly effective Jan. 1, 1985 and were announced in the *Official Gazette* at 1050 O.G. 330 on Jan. 15, 1985.

The current schedule of PCT fees is as follows:

Transmittal fee	$ 125.00
Search fee	
U.S. Patent and Trademark Office as Searching Authority	
· No corresponding prior U.S. national application filed	500.00
· Corresponding prior U.S. national application filed	250.00
European Patent Office as Searching Authority	
· All cases	690.00
International fees	
Basic fee (first 30 pages)	265.00
Basic Supplemental fee (for each page over 30)	5.00
Designation fee (for each national or regional office)	64.00
Designation fee for 11th and subsequent designations	no charge

Dec. 24, 1984. GERALD J. MOSSINGHOFF, *Commissioner of Patents and Trademarks.*

Notice of Maintenance Fees Payable

Title 37, Code of Federal Regulations, Section 1.362(d), effective Nov. 1, 1984, provides that maintenance fees may be paid without surcharge for a six-month period beginning 3, 7, and 11 years after the date of issue of patents based on applications filed on or after Dec. 12, 1980. An additional six-month grace period is provided by 35 U.S.C. 41(b) and 37 CFR 1.362(e) for payment of the maintenance fee with the surcharge set forth in 37 CFR 1.20(k) or (l), effective Nov. 1, 1984. If the maintenance fee is not paid in a patent requiring such payment, the patent will expire on the 4th, 8th or 12th anniversary of the grant.

Attention is drawn to the patents which were issued on Feb. 9, 1982 for which maintenance fees due at 3 years and six months may now be paid. The patents have patent numbers within the following ranges:

Plant Patents	None
Utility Patents	4,314,379 through 4,315,333

Reissue Patents based on the above identified patents.

No maintenance fees are required for design patents.

Payments of maintenance fees in patents should be directed to "Commissioner of Patents and Trademarks, Box M. Fee, Washington, D.C. 20231."

The current amounts of the maintenance fees due at 3 years and six months are set forth in 37 CFR 1.20(e) and (h), which are reproduced below:

37 CFR §1.20 Post-issuance fees

"(e) For maintaining an original or reissue patent, except a design patent, based on an application filed on or after Dec. 12, 1980 and before Aug. 27, 1982, in force beyond 4 years; the fee is due by three years and six months after the original grant . . . $ 200.00"

"(h) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Aug. 27, 1982, in force beyond 4 years; the fee is due by three years and six months after the original grant:
By a small entity (§1.9(f)) . . . . . $ 200.00
By other than a small entity . . . . . $ 400.00"

The amounts of the surcharges, effective Nov. 1, 1984, are set forth in 37 CFR 1.20(k)-(m), which are reproduced below:

"(k) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Dec. 12, 1980 and before Aug. 27, 1982 . . . . . $ 100.00"

"(l) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Aug. 27, 1982:
By a small entity (§1.9(f)) . . . . . $ 50.00
By other than a small entity . . . . . $ 100.00"

"(m) Surcharge for accepting a maintenance fee after expiration of a patent for non-timely payment of a maintenance fee on a patent based on an application filed on or after Aug. 27, 1982, where the delay in payment is shown to the satisfaction of the Commissioner to have been unavoidable . . . . . $ 500.00"

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.19(a)).

4,359,119, Re. S.N. 672,106 Filed Nov. 15, 1984, Cl. 180/69.R, SPRING-ASSISTED ELONGATED MASS OVER-CENTER SYSTEM, Steven B. Kammerman, Owner of Record: *New York Development Consultants, Ltd., Bayside, N.Y.,* Attorney or Agent: James. F. Bryan, Ex. Gp.: 316

4,359,726, Re. S.N. 672,139, Filed Nov. 15, 1984, Cl. 340/666, COMPOSITE SHEETS CONSTITUTING ELECTROMECHANICAL TRANSDUCERS AND TRANSDUCERS EQUIPPED WITH SUCH SHEETS, Jacques Lewiner, et al., Owner of Record:

Inventors, Attorney or Agent: Roberts B. Larson, et al., Ex. Gp.: 268

4,437,723, Re. S.N. 665,828, Filed Oct. 29, 1984, Cl. 339/99R, THREE-ROW CONNECTOR FOR MASS TERMINATING FLAT CABLE, Ronald S. Narozny, Owner of Record: *Thomas & Betts Corp., Raritan, N.J.,* Attorney or Agent: Robert M. Rodrick, Ex. Gp.: 322

REQUESTS FOR REEXAMINATION FILED

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.19(a)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b)).

Re. 30,035, Reexam. No. 90/000,673, Requested: Nov. 30, 1984, Cl. 198/850, ARTICULATED LINK CONVEYOR, Eldon S. Miller, Owner of Record: *Eldon S. Miller, Tampa, Fla.,* Attorney or Agent: None, Ex. Gp.: 310, Requester: Cidelcem, Paris, France

3,217,256, Reexam. No. 90/000,675, Requested: Nov. 30, 1984, Cl. 455/109, INDEPENDENT SIDEBAND TRANSMISSION SYSTEM, Anthony Palatinus, Owner of Record: *Anthony Palatinus, Glen Cove, N.Y.,* Attorney or Agent: None, Ex. Gp.: 260, Requester: AT&T Technologies, Inc., Berkley Heights, N.J.

3,716,977, Reexam. No. 90/000,710, Requested: Jan. 11, 1985, Cl. 56/202, GRASS CATCHER ASSEMBLY, Harold P. Jackson, Owner of Record: *McDonough Power Equipment, Inc., McDonough, Ga.,* Attorney or Agent: Francis C. Browne, Ex. Gp.: 333, Requester: The Toro Co., Minneapolis, Minn.

3,764,305, Reexam. No. 90/000,706, Requested: Jan. 10, 1985, Cl. 75/130R, METHOD OF STORAGE AND HEAT-RETAINING FOR TREATED NODULAR CAST IRON, Georg Andersson, Owner of Record: *Allmanna Svenska Elektriska Aktiebolaget, Vasteras, Sweden,* Attorney or Agent: Jennings Bailey, Jr., Ex. Gp.: 111, Requester: Ernest F. Marmorek, New York, N.Y.

3,934,421, Reexam. No. 90/000,709, Requested: Jan. 9, 1985, Cl. 405/16, GROUND STABILIZATION MATTING, Berthold H. Daimler, et al., Owner of Record: *Akzona, Inc., Enka, N.C.,* Attorney or Agent: David M. Carter, Ex. Gp.: 350, Requester: Owner

4,268,915, Reexam. No. 90/000,708, Requested: Jan. 9, 1985, Cl. 455/158, UNIVERSAL AUTOMOTIVE ELECTRONIC RADIO WITH DISPLAY FOR TUNING OR TIME INFORMATION, Bernard S. Parmet, Owner of Record: *Motorola, Inc., Chicago, Ill.,* Attorney or Agent: James W. Gillman, Ex. Gp.: 263, Requester: Vynalam Ltd., New York, N.Y.

4,337,805, Reexam. No. 90/000,707, Requested: Jan. 8, 1985, Cl. 141/71, AGRICULTURAL BAG LOADING APPARATUS, William C. Johnson, et al., Owner of Record: *Ag-Bag Corp., Arlington, Nebr.,* Attorney or Agent: Michael A. O'Neil, Ex. Gp.: 240, Requester: Ryco, Inc., Blair, Nebr.

4,379,804, Reexam. No. 90/000,688, Requested: Dec. 17, 1984, Cl. 428/332, LIQUID SORBENT MATERIALS, John F. Eisele, et al., Owner of Record: *Minnesota Mining and Manufacturing Co., St. Paul, Minn.,* Attorney or Agent: Warren R. Bovee, Ex. Gp.: 154, Requester: Owner

4,381,934, Reexam. No. 90/000,701, Requested: Dec. 31, 1984, Cl. 65/135, GLASS BATCH LIQUEFACTION, Gerald E. Kunkle, et al., Owner of Record: *PPG Industries, Pittsburgh, Pa.,* Attorney or Agent: Dennis G. Millman, Ex. Gp.: 130, Requester: Owner

4,387,440, Reexam. No. 90/000,703, Requested: Jan. 3, 1985, Cl. 364/900, MODEM CONTROL DEVICE CODE MULTIPLEXING, Michael D. Eaton, Owner of Record: *Business Computer Corp., Sunnyvale, Calif.,* Attorney or Agent: Limbach, Limbach, et al., Ex. Gp.: 230, Requester: Owner

4,451,645, Reexam. No. 90/000,705, Requested: Jan. 4, 1985, Cl. 528/403, EPOXY COMPOUNDS, Peter Johncock, Owner of Record: *The Secretary of State for Defence in Her Britannic Majesty's Gov't of the United Kingdom of GBX & Northern Ireland, London, England,* Attorney or Agent: Cushman, Darby, et al., Ex. Gp.: 150, Requester: Owner

Availability of a Patent and Trademark Publication

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Jan. 16, 1985. THERESA A. BRELSFORD, *Assistant Commissioner for Administration.*

Department of Commerce
Patent and Trademark Office
37 CFR Part 1
Docket 50103-5003

Arbitration of Patent Interference Cases

Agency: Patent and Trademark Office, Commerce
Action: Advance Notice of proposed rulemaking
Summary: Section 105 of the Patent Law Amendments Act of 1984 provides for arbitration of patent interferences cases. The Patent and Trademark Office plans to issue regulations to implement the arbitration provisions of the Patent Law Amendments Act of 1984. Interested individuals are invited to make suggestions and to comment on the proposed rules being considered. A notice of proposed rulemaking could be published as early as Apr. 1, 1985.
Dates: Comments and suggestions should be received by Mar. 1, 1985.
Address: Address written comments to Box 8, Commissioner of Patents and Trademarks, Washington, D.C. 20231 marked to the attention of Fred E. McKelvey (703) 557-4025.
For Further Information Contact: Fred E. McKelvey, by telephone at (703) 557-4025, or by mail marked to his attention and addressed to Box 8, Commissioner of Patents and Trademarks, Washington, D.C. 20231.

Supplementary Information: Section 105 of the Patent Law Amendments Act of 1984, Public Law 98–622, enacted on Nov. 8, 1984, provides for arbitration of patent interference cases. Section 105, codified as 35 U.S.C. §135(d), provides:

> Arbitration of Interferences
>
> Parties to a patent interference, within such time as may be specified by the Commissioner by regulation, may determine such contest or any aspect thereof by arbitration. Such arbitration shall be governed by the provisions of title 9 to the extent such title is not inconsistent with this section. The parties shall give notice of any arbitration award to the Commissioner, and such award shall, as between the parties to the arbitration, be dispositive of the issues to which it relates. The arbitration award shall be unenforceable until such notice is given. Nothing in this subsection shall preclude the Commissioner from determining patentability of the invention involved in the interference.

The Patent and Trademark Office (PTO) conducts interference cases to determine who as between two or more applicants for patent or one or more applicants and one or more patentees is the first inventor of a patentable invention. Patent interference cases can be quite expensive. Arbitration may prove useful to minimize expenses in interference cases.

Arbitration will be governed by title 9 of the U.S. Code to the extent that title 9 is not inconsistent with §105 of Public Law 98–622. Within the confines of title 9 of the U.S. Code and §105 of Public Law 98–622, the parties can agree on the procedure to be used in arbitrating a patent interference case. An example of rules which parties might adopt are the Patent Arbitration Rules of the American Arbitration Association (June 1, 1983).

The PTO favors settlement of interference cases, but has not had extensive experience in connection with arbitration of interferences. It has been suggested that patent attorneys and agents likewise may have had little experience with arbitration of patent matters. Field, *Patent Arbitration: Past, Present, and Future,* 24 Idea 235 (1984). The following non-exhaustive list of articles may be helpful to familiarize readers with arbitration in patent matters generally: (1) Field, *supra;* (2) Goldstein, *Arbitrating Disputes Relating to Patent Validity and Infringement,* 72 Illinois Bar Journal 350 (Mar. 1984); (3) Carmichael, *Arbitration of Patent Disputes,* 38 The Arbitration Journal 3 (Mar. 1983); (4) Note, *Arbitration and Intellectual Property: A Survey of Arbitration in Patent, Trademark and Copyright cases,* 48 Albany Law Journal 797 (1984) (the entire Spring 1984 edition of the Albany Law Journal is directed to arbitration issues), (5) Devitt, *International Arbitration of Patent Disputes,* 65 J. Pat. Off. Soc'y 621 (1983); (6) *PTC Research Report; Alternatives to Court Litigation in Intellectual Property Disputes: Binding Arbitration and/or Mediation—Patent and Nonpatent Issues,* 22 Idea 271 (1982); (7) Davis, *Resolving Patent Disputes by Arbitration and Minitrial,* 65 J. Pat. Off. Soc'y 275 (1983); (8) Davis, *A New Approach to Resolving Costly Litigation,* 61 J. Pat. Off. Soc'y 482 (1979); and (9) Janicke, *Resolving Patent Disputes by Arbitration: An Alternative to Litigation,* 62 J. Pat. Off. Soc'y 339 (1980).

In order to provide some basis for comments and suggestions, a proposed §1.690 being considered is set out in this notice.

Paragraph (a) of proposed §1.690 being considered states, consistent with §105 of Public Law 98–622, that parties to an interference may determine the interference or any aspect thereof by arbitration. This paragraph would permit parties to arbitrate the issue of priority based on counts (and claims corresponding thereto) as determined by the PTO and set out in a notice declaring the interference. One issue which might arise in arbitration is the extent to which parties may arbitrate other "aspects" of an interference, e.g., the scope of a count and claims corresponding thereto. Section 105 of Public Law 98–622 vests the PTO with final authority, subject to judicial review, to determine patentability. Hence, interested individuals may wish to consider and comment on the effect of an award which arbitrates the scope of a count (or claims corresponding thereto) or the ultimate issue of priority based on that count where the PTO later determines that the counts or claims corresponding thereto were improper vehicles for deciding priority.

Paragraph (b) of proposed §1.690 being considered states that an arbitration shall take place within such time as an examiner-in-chief may set. The examiner-in-chief would set a time for making an award on a case-by-case basis depending upon the status of the case. For example, if all the testimony had been taken and the only issue for the arbitrator was deciding priority based on that testimony, a relatively short time could be set. On the other hand, if the parties wanted witnesses to appear before the arbitrator, a longer period of time might be needed. Extensions of time for making an award could be obtained under 37 CFR §1.645 (49 F.R.48464 (Dec. 12, 1984)). However, it should be expected that the examiner-in-chief will make a reasonable effort to dispose of the interference within 24 months from the date it is declared. 37 CFR §1.610 (49 F.R. 48457 (Dec. 12, 1984)).

Paragraph (c) of proposed §1.690 being considered would provide that an award shall be in writing and shall be definite with respect to the issue or issues arbitrated and to the disposition of each issue. The arbitration award would have to be signed by the arbitrator or arbitrators and would have to be filed in the PTO within twenty (20) days from the date of the award. As between the parties, the award would be dispositive of the issues arbitrated.

Paragraph (d) of proposed §1.690 being considered states that an arbitration award does not preclude the Office from determining patentability of any invention involved in an interference. Thus, the parties cannot establish *vis-a-vis* the public that subject matter is patentable.

List of Subjects in 37 CFR Part 1

Administrative practice and procedure, Authority delegations, Conflicts of interest, Courts, Inventions and patents, Lawyers.

The proposed rule under consideration would add §1.690 to Subpart E of 37 CFR Part 1 as follows:

§1.690 Arbitration of Interferences

(a) Parties to a patent interference may determine the interference or any aspect thereof by arbitration.

(b) An interference or any aspect thereof shall be arbitrated within such time as may be authorized on a case-by-case basis by an examiner-in-chief.

(c) An arbitration award shall be in writing and shall state in a clear and definite manner (1) the issue or issues which were arbitrated and (2) the disposition of each issue. The parties shall give notice to the Office of an arbitration award by filing within twenty days from the date of the award a copy of the award signed by the arbitrator or arbitrators. When an award is timely filed, the award shall, as to the parties to the arbitration, be dispositive of the issue to which it relates.

(d) An arbitration award shall not preclude the Office from determining patentability of any invention involved in the interference.

Jan. 8, 1985.

GERALD J. MOSSINGHOFF,
Commissioner of Patents and Trademarks.

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DEPARTMENT OF AGRICULTURE

SN 6–327,296 (4,480,040). SENSITIVE AND RAPID DIAGNOSIS OF VIROID DISEASES AND VIRUSES.

SN 6–448,675 (4,483,950). MODIFIED STARCHES AS EXTENDERS FOR ABSORBENT POLYMERS.

SN 6–518,779 (4,483,689). ABRASION-RESISTANT DURABLE-PRESS ACRYLIC FINISHES FOR COTTON TEXTILES BY USE OF NONOXIDATIVE POLYMERIZATION INITIATORS AND ACCELERATORS IN TWO-STAGE HEAT CURING.

SN 6–532,431 (4,484,539). OVIPOSITIONAL STIMULANT FOR TRICHOGRAMMA SPP.

SN 6–637,241. SOIL SAMPLING APPARATUS.

DEPARTMENT OF COMMERCE

SN 6–261,415 (4,481,517). ECHOMETRY DEVICE AND METHOD.

SN 6–671,539. PROCESS OF SYNTHESIZING MIXED BaO-TiO2 BASED POWDERS FOR CERAMIC APPLICATIONS.

DEPARTMENT OF HEALTH AND HUMAN SERVICES

SN 6–548,849. SAPONIN-BASED POLYETHER POLYOLS.

SN 6–554,795 (4,487,693). MULTI-LAYER COIL COUNTERCURRENT CHROMATOGRAPH WITH ADJUSTABLE REVOLUTIONAL RADIUS.

SN 6–582,759 (4,486,179). BIOCOMPATIBLE CEMENTITIOUS DENTAL COMPOSITIONS.

SN 6–657,630. IMMORTAL LINE OF HUMAN FETAL GLIAL CELLS.

SN 6–663,969. TRANSDUCER HYDROPHONE WITH FILLED RESERVOIR.

DEPARTMENT OF INTERIOR

SN 6–376,852 (4,387,655). METHOD FOR CONTROLLED BURNOUT OF ABANDONED COAL MINES AND WASTE BANKS.

DEPARTMENT OF THE AIR FORCE

SN 6–552,552 (4,476,062). PSEUDO-P-1,1,2,2,9,9,10,10-OCTOFLUORO[2,2]-P-CYCLOPHANE BIS-ACID CHLORIDE.

SN 6–627,691. DATA ACQUISITION CHANNEL APPARATUS.

SN 6–643,201. MINIATURE HIGH PERFORMANCE PULSED MODULATOR APPARATUS.

SN 6–651,961. MULTIPLE RATE SHOCK ISOLATOR DAMPING VALVE

SN 6–651,983. HEATER BLOCK ASSEMBLY FOR USE IN THERMAL OXIDATION TESTING OF JET FUEL.

SN 6–653,641. PROGRAMMABLE REALTIME INTERFACE BETWEEN A BLOCK FLOATING POINT PROCESSOR AND MEMORY.

SN 6–654,338. INTEGRATED DEFENSE COMMUNICATIONS SYSTEMS ANTIJAMMING ANTENNA SYSTEM.

SN 6–656,844. AN ADAPTIVE FAST FOURIER TRANSFORM WEIGHTING TECHNIQUE TO INCREASE SMALL TARGET SENSITIVITY.

SN 6–656,845. GAIN RESTORATION AFTER DOPPLER FILTERING.

SN 6–657,099. A TECHNIQUE FOR RAPID DETERMINATION OF PROBABILITY OF DETECTION IN PULSE DOPPLER RADARS.

SN 6–657,100. INERT ATMOSPHERE TRANSFER VESSEL.

SN 6–661,549. HIGH EFFICIENCY ELECTRON BEAM GUN FOIL SUPPORT.

SN 6–661,834. FLOW MEASUREMENT DEVICE.

DEPARTMENT OF THE ARMY

SN 6–669,912. DUAL MODE SCANNER/TRACKER.

ENVIRONMENTAL PROTECTION AGENCY

SN 6–514,192 (4,485,747). REDUCING POLLUTANT EMISSIONS BY FINES REMOVAL.

PATENT NOTICES

Certificates of Correction for the Week of Feb. 12, 1985

Plt. 5,273	4,427,835	4,451,727	4,464,791
Re. 31,351	4,429,963	4,451,872	4,464,889
Re. 31,635	4,431,293	4,452,456	4,465,052
4,163,562	4,433,714	4,452,556	4,465,398
4,188,541	4,434,067	4,452,685	4,466,016
4,235,801	4,434,614	4,452,936	4,466,284
4,289,354	4,434,658	4,454,068	4,466,413
4,300,249	4,438,596	4,454,494	4,466,461
4,320,390	4,439,445	4,455,316	4,466,487
4,327,302	4,439,977	4,455,337	4,466,964
4,338,478	4,440,079	4,455,400	4,467,022
4,344,860	4,440,135	4,455,553	4,467,304
4,350,411	4,441,113	4,455,761	4,467,307
4,354,402	4,441,557	4,456,080	4,467,433
4,356,110	4,442,918	4,456,438	4,467,519
4,359,340	4,444,668	4,456,702	4,467,593
4,364,756	4,445,142	4,456,771	4,467,971
4,366,330	4,445,856	4,456,780	4,468,335
4,367,519	4,446,012	4,457,602	4,468,345
4,371,622	4,446,118	4,457,867	4,468,385
4,371,663	4,447,363	4,459,149	4,468,482
4,376,835	4,447,450	4,459,277	4,468,545
4,383,123	4,447,628	4,460,034	4,468,612
4,389,967	4,447,831	4,460,665	4,468,870
4,395,462	4,448,552	4,460,698	4,468,902
4,407,063	4,448,658	4,460,731	4,469,043
4,407,832	4,448,700	4,460,797	4,469,091
4,411,454	4,448,784	4,460,867	4,469,177
4,411,884	4,448,867	4,461,807	4,469,252
4,411,994	4,450,282	4,462,143	4,469,530
4,412,539	4,450,319	4,462,513	4,469,698
4,413,006	4,450,579	4,463,463	4,469,890
4,414,333	4,450,770	4,463,844	4,471,961
4,414,589	4,451,033	4,463,941	4,472,021
4,418,972	4,451,165	4,464,290	
4,424,222	4,451,612	4,464,638	

Disclaimers

4,064,529.—*Harold George Seer, Jr.,* Woodbury, N.J. APPARATUS FOR AUTOMATIC COLOR BALANCING OF COLOR TELEVISION SIGNALS. Patent dated Dec. 20, 1977. Disclaimer filed Dec. 7, 1984, by the assignee, *RCA Corp.*

Hereby enters this disclaimer to claims 1, 2, 4 and 5 of said patent.

4,227,704.—*James G. Blaha,* Painesville, Ohio. SEAL. Patent dated Oct. 14, 1980. Disclaimer filed Dec. 17, 1984, by the assignee, *Towmotor Corp.*

Hereby enters this disclaimer to claims 1 through 20 of said patent.

4,295,173.—*Lubomyr T. Romankiw,* Briarcliff Manor and *David A. Thompson,* South Salem, N.Y. THIN FILM INDUCTIVE TRANSDUCER. Patent dated Oct. 13, 1981. Disclaimer filed Dec. 5, 1983, by the assignee, *International Business Machines Corp.*

The term of this patent subsequent to Feb. 26, 1997 has been disclaimed.

4,372,078.—*Gorden W. Spring,* Norwalk, Calif. TOY MOVABLE BY ALTERNATELY RELOCATING INDIVIDUAL MEMBERS OF A PAIR OF BODY PARTS. Patent dated Feb. 8, 1983. Disclaimer filed Dec. 28, 1983, by the assignee, *Tomy Corp.*

Hereby enters this disclaimer to claims 1–23 of said patent.

4,417,802.—*Richard L. Forbes II,* Walworth, N.Y. PARTICLE DISPENSER. Patent dated Nov. 29, 1983. Disclaimer filed Sept. 21, 1984, by the assignee, *Xerox Corp.*

Hereby enters this disclaimer to claims 1 through 8 of said patent.

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These patent collections are open to public use and each of the Patent Depository Libraries, in addition, offers the publications of the U.S. Patent Classification System (e.g. The Manual of Classification, Index to the U.S. Patent Classification, Classification Definitions, etc.) and provides technical staff assistance in their use to aid the public in gaining effective access to information contained in patents. With one exception, as noted in the table following, the collections are organized in patent number sequence.

Facilities for making paper copies from either microfilm in reader-printers or from the bound volumes in paper-to-paper copies are generally provided for a fee.

Owing to variations in the scope of patent collections among the Patent Depository Libraries and in their hours of service to the public, anyone contemplating use of the patents at a particular library is advised to contact that library, in advance, about its collection and hours, so as to avert possible inconvenience.

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Nevada	Reno: University of Nevada Library	(702) 784-6579
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New Jersey	Newark Public Library	(201) 733-7815
New Mexico	Albuquerque: University of New Mexico Library	(505) 277-5441
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	New York Public Library (The Research Libraries)	(212) 930-0850
North Carolina	Raleigh: D. H. Hill Library, N.C. State University	(919) 737-3280
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	Columbus: Ohio State University Libraries	(614) 422-6286
	Toledo/Lucas County Public Library	(419) 255-7055 Ext. 212
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*Collection organized by subject matter.

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RENE D. TEGTMEYER, Assistant Commissioner
JAMES E. DENNY, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF January 5, 1985

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL METALLURGICAL, INORGANIC, PETROLEUM AND ELECTRICAL CHEMISTRY, AND ENGINEERING, GROUP 110—D. E. TALBERT, Director	8-20-81
ORGANIC CHEMISTRY AND BIOTECHNOLOGY, GROUP 120—C. E. VAN HORN, Director	6-01-83
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 130—R. F. WHITE, Director	6-06-83
HIGH POLYMER CHEMISTRY, PLASTICS, COATING, PHOTOGRAPHY, STOCK MATERIALS AND COMPOSITIONS, GROUP 150—J. O. THOMAS, Director	4-21-83
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—B. R. GRAY, Director	3-28-83
SPECIAL LAWS ADMINISTRATION, GROUP 220—K. L. CAGE, Director	10-12-80
INFORMATION PROCESSING, STORAGE, AND RETRIEVAL, GROUP 230—E. LEVY, Director	3-17-82
RECEPTACLES, CLEANING, WINDING, AND MEASURING, GROUP 240—G. M. FORLENZA, Director	3-21-83
ELECTRONIC AND OPTICAL SYSTEMS AND DEVICES, GROUP 250—S. S. MATTHEWS, Director	10-01-80
COMMUNICATIONS, MEASURING, TESTING AND LAMP/DISCHARGE GROUP, GROUP 260—S. G. KUNIN, Director	5-07-82
DESIGN, GROUP 290—K. L. CAGE, Director	9-09-82
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—(Vacant)	3-04-83
MATERIAL SHAPING, ARTICLE MANUFACTURING AND TOOLS, GROUP 320—S. N. ZAHARNA, Director	12-13-82
MECHANICAL TECHNOLOGIES AND HUSBANDRY PERSONAL TREATMENT INFORMATION, GROUP 330—R. E. AEGERTER, Director	12-01-82
SOLAR, HEAT, POWER, AND FLUID ENGINEERING DEVICES, GROUP 340—D. J. STOCKING, Director	12-21-81
GENERAL CONSTRUCTIONS, PETROLEUM AND MINING ENGINEERING, GROUP 350—A. L. SMITH, Director	12-04-81

Expiration of patents: The patents within the range of numbers indicated below expire during January 1985, except those which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents ..... Numbers 3,360,800 to 3,366,969, inclusive
Plant Patents ..... Numbers 2,784 to 2,793 inclusive

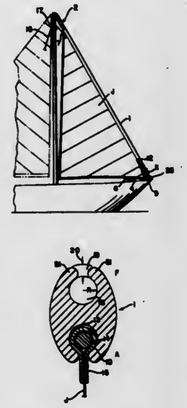
REISSUES

FEBRUARY 12, 1985

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 31,829
TWO GROOVE HEADSTAY

Leathem S. Stearn, 111 N. First Ave., Sturgeon Bay, Wis. 54235
Original No. 3,851,609, dated Dec. 3, 1974, Ser. No. 385,443, Aug. 3, 1973. Continuation-in-part of Ser. No. 282,414, Aug. 21, 1972, Pat. No. 3,851,608. Application for reissue Jul. 26, 1982, Ser. No. 401,534
Int. Cl.³ B63H *9/04*
U.S. Cl. 114—105 **23 Claims**



1. A jibstay assembly for a sailboat comprising a longitudinal member extending and supported between the bow portion of the boat and the upper portion of the boat mast, said member being *torsionally resistant,* generally rounded in cross-sectional shape and having two grooves inset therein, each of which is adapted to slidably receive and release and to hold a bead at the luff of a jib sail [.] *and facilitate the changing of jib sails.*

Re. 31,830
INFECTIOUS BRONCHITIS VACCINE FOR POULTRY

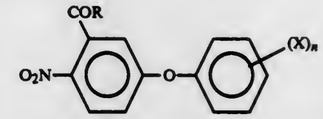
Peter Apontowell, EK Leersum, and Manfred M. Krasselt, EP de Bilt, both of Netherlands, assignors to Gist-Brocades N.V., Delft, Netherlands
Original No. 4,357,320, dated Nov. 2, 1982, Ser. No. 209,583, Nov. 24, 1980. Application for reissue Mar. 18, 1983, Ser. No. 476,505
Claims priority, application Netherlands, Nov. 13, 1979, 7908687; Sep. 9, 1980, 8005083
Int. Cl.³ A61K *39/215*
U.S. Cl. 424—89 **17 Claims**

11. A method of preventing infectious bronchitis in poultry comprising administering to poultry an amount of a combined vaccine of claim 1 sufficient to prevent infectious bronchitis.

Re. 31,831
SUBSTITUTED PHENOXYBENZOIC ACIDS AND ESTERS THEREOF

Robert J. Theissen, Westfield, N.J., assignor to Rhone-Poulenc Agrochimie, Lyons, France
Original No. 3,784,635, dated Jan. 8, 1974, Ser. No. 114,712, Feb. 11, 1971. Continuation-in-part of Ser. No. 819,412, Apr. 25, 1969, Pat. No. 3,652,645. Application for reissue Jun. 25, 1981, Ser. No. 277,470
Int. Cl.³ C07C *79/46*
U.S. Cl. 560—021 **5 Claims**

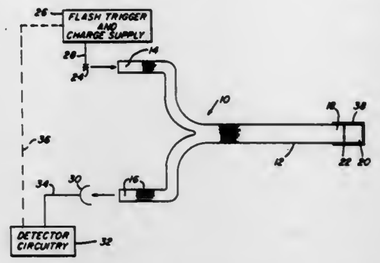
1. A compound having the formula:



wherein X is a [member] *combination of the members* selected from the group consisting of nitro and trifluoromethyl, *wherein both of said members must be present,* R is selected from the group consisting of hydroxy and alkoxy of 1 to 5 carbon atoms, n is an integer of [1] 2 to 5 [, and in which a compound R is alkoxy when X is nitro].

Re. 31,832
TEMPERATURE PROBE

Thaddeus V. Samulski, 649 Maybell Ave., Palo Alto, Calif. 94306
Original No. 4,245,507, dated Jan. 20, 1981, Ser. No. 73,841, Sep. 10, 1979. Application for reissue Jan. 6, 1983, Ser. No. 456,330
Int. Cl.³ G01K *11/20*
U.S. Cl. 374—131 **38 Claims**



31. A system for measuring temperature of an environment, comprising:

a quantity of luminescent material positionable in thermal communication with said environment, said luminescent material characterized by emitting, when excited with transient radiation, luminescent radiation that continues in time beyond the termination of the excitation radiation and with a rate of decay that is related to the temperature of the luminescent material,

means for exposing said luminescent material to such transient excitation radiation, thereby to cause said luminescent material to luminesce with a decaying intensity extending beyond the termination of said excitation radiation, and

means receiving the luminescent material luminescence for measuring the rate of decay of said luminescence pulse, thereby to measure the temperature of the luminescent material.

PLANT PATENTS

GRANTED FEBRUARY 12, 1985

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

5,404

RED RASPBERRY, N.Y. 883

John C. Sanford, Geneva, and Donald K. Ourecky, Rochester, both of N.Y., assignors to Cornell Research Foundation, Inc., Ithaca, N.Y.

Filed Sep. 16, 1982, Ser. No. 418,964
Int. Cl.[3] A01H *5/03*
U.S. Cl. Plt.—46 1 Claim

1. The new and distinct variety of red raspberry herein described and illustrated and identified by the characters enumerated above.

5,405

PURPLE RASPBERRY, N.Y. 632

John C. Sanford, Geneva; Donald K. Ourecky, Rochester, both of N.Y., and George L. Slate, deceased, late of Hilton, N.Y. (by Barbara S. Abbott, heir), assignors to Cornell Research Foundation, Inc., Ithaca, N.Y.

Filed Sep. 16, 1982, Ser. No. 418,965
Int. Cl.[3] A01H *5/03*
U.S. Cl. Plt.—46 1 Claim

1. The new and distinct variety of raspberry herein described and illustrated and identified by the characters enumerated above.

PATENTS

GRANTED FEB. 12, 1985

ERRATA

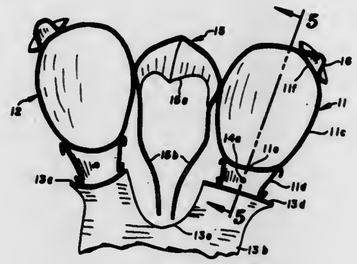
For CLASS	See PATENT NO.
534–697	4,499,015
514–428	4,499,019
514–002	4,499,079
514–012	4,499,080
514–017	4,499,081
514–002	4,499,082
514–036	4,499,083
514–046	4,499,084
514–058	4,499,085
514–211	4,499,087
514–202	4,499,088
514–222	4,499,089
514–210	4,499,090
514–254	4,499,091
514–254	4,499,092
514–258	4,499,093
514–301	4,499,094
514–299	4,499,095
514–214	4,499,096
514–314	4,499,097
514–364	4,499,098
514–299	4,499,099
514–321	4,499,100
514–374	4,499,101
514–365	4,499,102
514–365	4,499,103
514–396	4,499,104
514–631	4,499,105
514–603	4,499,106
514–575	4,499,107
514–653	4,499,108
044–051	4,499,267
514–570	4,499,299
514–605	4,499,303
366–316	4,499,445
364–200	4,499,604

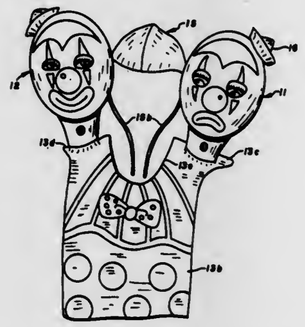
PATENTS

GRANTED FEBRUARY 12, 1985

GENERAL AND MECHANICAL

4,498,199
MULTIPLE HEADED COSTUME
Mark D. Margolis, Bloomington, Minn., assignor to Spearhead Industries, Inc., Minneapolis, Minn.
Filed May 4, 1983, Ser. No. 491,620
Int. Cl.³ A41D *11/00*
U.S. Cl. 2—69 **11 Claims**

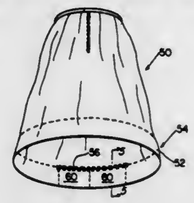




1. A costume unit to provide the effect of a multi-headed figure when worn on a person, such costume unit including:
   a. an inflatable member arranged and constructed to simulate a head;
   b. means for inflating said head member;
   c. a base portion arranged and constructed for placement and positioning on the shoulders of the person using the costume; and,
   d. said inflatable, simulated head being secured to said base portion whereby said head is positioned in side-by-side relation to the head of the user.

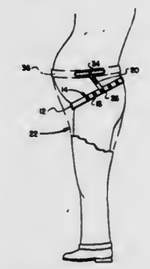
4,498,200
GARMENT HAVING CONCEALED POUCH
Jeanne Livingstone, 1025 Stuart St., Helena, Mont. 59601
Filed Jul. 30, 1982, Ser. No. 403,541
Int. Cl.³ A41D *27/20, 1/14*
U.S. Cl. 2—247 **2 Claims**

1. In combination with a garment having a hem at an open end thereof, at least one pocket defined by the hem adjacent the open end, said hem being folded on itself and stitched and held fast to the outer material of the garment by hemstitching, said hemstitching which is a sufficient distance above the selvage of the hem to accommodate said pocket, the pocket being sealable by a linear closure element that is integral with the inside hem material of the garment and being disposed at direct in-line continuation and interconnection of the hemstitching line, the hemstitching line being discontinued to accommodate the pocket, said linear closure element being



secured by stitching directly to each end of the hemstitching line and thus to the outer material of the garment.

4,498,201
TROUSER SUPPORT SYSTEM
R. S. Carter, 3416 Purdue, Dallas, Tex. 75225
Filed Sep. 2, 1982, Ser. No. 414,300
Int. Cl.³ A41F *9/00*
U.S. Cl. 2—312 **7 Claims**

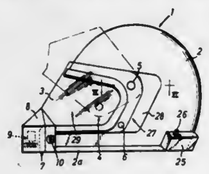


1. A support device for trousers comprising: a flexible supporting belt having adjustable length fastening means for fastening the belt around the hip region of the user; duplicate support arms pivotally mounted on opposite sides of said flexible supporting belt; pivotal interconnect mounting means interconnecting each of said duplicate support arms to said flexible supporting belt; duplicate trouser waistband stiffeners pivotally mounted on said duplicate support arms at the ends thereof remote from the pivotal mounting of said flexible supporting belt; and connection means connecting said trouser waistband stiffeners to opposite sides of a trouser waistband.

4,498,202
HELMET EQUIPPED WITH VENTILATOR
Tamenobu Yamamoto, Higashi-Osaka, Japan, assignor to Yamamoto Kogaku Co., Ltd., Higashi, Japan
Filed Feb. 24, 1983, Ser. No. 469,246
Int. Cl.³ A42B *3/02*
U.S. Cl. 2—424 **8 Claims**

1. A helmet having a shell, a face shield at an opening in the shell, a protector portion positionable at the chin of a wearer, and a ventilator located in the protector portion, for ventilating the space between the face shield and the face of the wearer of the helmet, the ventilator comprising a case attached to the shell of the helmet and having an inside opening open to the inside of the face shield and an outside opening communicating with the inside opening and open to the outside the helmet, and air passing means including an electric motor and a fan in the case for causing the air flowing through the space to form a

stream along the inner surface of the face shield, wherein the air passing means forms a blower for drawing atmospheric air into the case through the outside opening and supplying the air to the inner surface of the face shield from the inside opening,





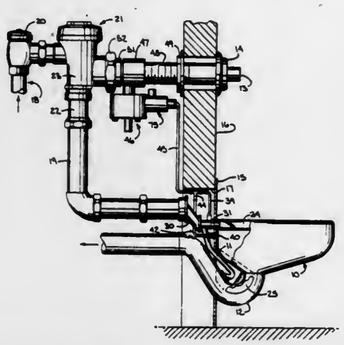
wherein a clearance is formed at each side end of the face shield between the face shield and the helmet shell to serve as a vent, whereby the air supplied by the blower forms a stream flowing along the inner surface of the face shield and is discharged from the vent.

4,498,203

FLOOD PREVENTER FOR FLUID FILLING SYSTEMS

Thomas G. Barnum, Fox Point, and Thomas E. Pelt, Greenfield, both of Wis., assignors to Bradley Corporation, Menomonee Falls, Wis.

Continuation-in-part of Ser. No. 498,149, May 25, 1983, abandoned. This application May 9, 1984, Ser. No. 608,392
Int. Cl.³ E03D *11/02, 11/18*
U.S. Cl. 4—427 **18 Claims**



1. A pneumatically responsive flood preventer mechanism for insertion between a valve in a supply line to a receptacle and a reciprocating actuator for the valve, to prevent repeated actuation of the valve which would cause overfilling and flooding of the receptacle, the mechanism comprising:

vacuum generating means in the supply line with a low pressure port for drawing a partial vacuum as fluid flows through said means into the receptacle;

a level sensor having an orifice communicating with the receptacle above a normal fluid level, the orifice allowing relief of any partial vacuum communicated to the level sensor when fluid in the receptacle is below the orifice, and the orifice becoming partially sealed when covered by fluid from the receptacle;

lockout means adapted to be positioned between the valve and the actuator to prevent operation of the valve when fluid in the receptacle rises to the level of the orifice, the lockout means being responsive to a partial vacuum to disable operation of the valve by the actuator; and

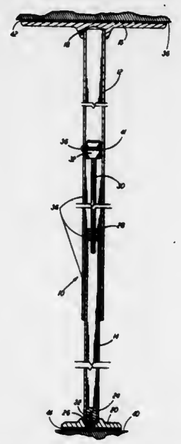
means for pneumatically interconnecting the lockout means, the low pressure port and the level sensor, so that a partial vacuum will be drawn to operate the lockout means only when fluid is flowing through the vacuum generating means and only when fluid has reached the level of the orifice.

4,498,204

ADJUSTABLE POSITION PHYSICAL SUPPORT SYSTEM

Stanley H. Warner, 1621 W. Onondaga St., Syracuse, N.Y. 13204

Filed Sep. 21, 1983, Ser. No. 534,157
Int. Cl.³ A47K *3/00*
U.S. Cl. 4—559 **10 Claims**



1. A support device for installation between the floor and ceiling of a room, said support device comprising, in combination:

(a) a pair of elongated, hollow rods, arranged for coaxial, telescoping, relative axial movement;

(b) a first plate affixed to the non-telescoping end of one of said rods and having a planar surface of a first area normal to the axis of said rods;

(c) a second plate affixed to the non-telescoping end of the other of said rods and having a planar surface of a second area parallel to said first plate planar surface;

(d) means defining an internally threaded opening in the telescoping end of one of said rods;

(e) an elongated, externally threaded member having a first end threadedly inserted into said internally threaded opening to extend coaxially into the telescoping end of the other of said rods; and

(f) connecting means for rigidly affixing said externally threaded member and said other rod in any of a plurality of relative axial positions, whereby the overall length of said pair of rods is selectively adjustable by a combination of the axial position at which said externally threaded member and said other rod is affixed and the rotational movement of said externally threaded member into and out of said internally threaded opening, to permit said first and second plates to be rapidly adjusted to a desired axial length and advanced into tight frictional, non-piercing,

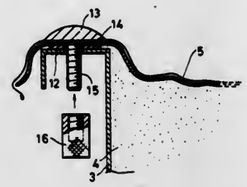
engagement with the floor and ceiling, respectively of the room in which said support device is installed.

4,498,205

MEDICAL BED WITH SHEET RETAINING MEANS

Kazuhiko Hino, Kanagawa, Japan, assignor to Fuji Electric Co., Ltd., Kanagawa, Japan

Filed Dec. 1, 1982, Ser. No. 445,781
Claims priority, application Japan, Dec. 1, 1981, 56-178803[U]
Int. Cl.³ A47C *27/08, 21/00*
U.S. Cl. 5—449 **2 Claims**



1. A medical bed of the type wherein a sheet covers a solid particle media in a bed body and compressed air is supplied into said bed body to fluidize said solid particle media whereby a patient lying on said sheet may be supported, said bed comprising;

a box-shaped bed body filled with a solid particle media, said bed body having a peripheral flange;

a packing member covering a surface of said peripheral flange;

a gas-permeable filter sheet placed over said bed body and packing member;

sheet-retaining hand rails for pressing said sheet against said packing member whereby said solid particle media are sealed in said bed body, said hand rails having a plurality of hook portions extending through said sheet, said packing member and said flange; and

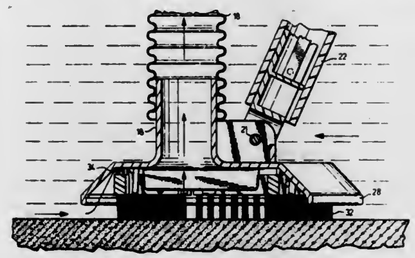
clamping means for pulling said hook portions to urge said hand rails uniformly against said sheet around the entire periphery of said flange, said clamping means comprising latch lock coupling means mounted on an exterior of said bed body and including loop-like coupling means for engaging said hook portions.

4,498,206

VACUUM HEAD FOR CLEANING UNDERWATER SURFACES

Heinz W. Braukmann, 98 Heathcote Ave., Willowdale, Ontario, Canada M2L 1Z4

Filed Apr. 21, 1983, Ser. No. 487,230
Claims priority, application Canada, Mar. 22, 1983, 424164
Int. Cl.³ E04H *3/20*
U.S. Cl. 15—1.7 **5 Claims**



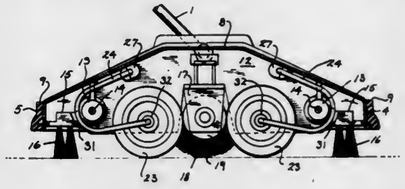
1. A vacuum head for cleaning swimming pool underwater surfaces comprising a transverse wall, an integral skirt depending downwardly from the perimeter of said transverse wall, an upwardly extending integral conduit to said transverse wall, said conduit being adapted for sealing connection to a flexible vacuum hose, a brush member securable to the underside of said transverse wall, spaced inward of said skirt and around said conduit in spaced relationship therefrom, bristles on said brush member extending into a plane below that of the lower edge of said skirt, said conduit providing for suction of the material disturbed by the action of said bristles on said underwater surface, a plurality of apertures defined by spacing said brush member from the underside of said transverse wall, said apertures providing for suction therethrough to said conduit of the suspended material contained in the water located between said skirt and said bristles, said vacuum head being made of a plastic material and weights attached to said transverse wall to sink said vacuum head to said underwater surfaces.

4,498,207

FLOOR SWEEPER WITH IMPROVED DRIVE WHEEL CONSTRUCTION

Henry J. Rosendall, Grand Rapids, Wis., assignor to Bissell Inc., Grand Rapids, Mich.

Filed Jul. 1, 1983, Ser. No. 510,209
Int. Cl.³ A47L *11/33*
U.S. Cl. 15—42 **12 Claims**



1. In a floor sweeper, the combination comprising:

(a) a housing;

(b) a rotatable brush fixedly mounted on an axle within said housing and with said brush being positioned for contact with the floor for sweeping debris therefrom;

(c) coupling wheels disposed on said axle at opposite end thereof;

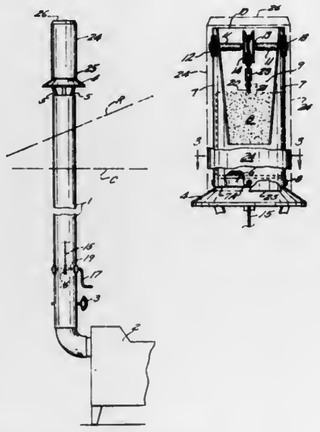
(d) horizontally and vertically movable drive wheels disposed within said housing for supporting said sweeper for reciprocating fore and aft translation over the floor, said drive wheels mounted in frictional contact with said coupling wheels for free movement between loaded and unloaded positions in response to said fore and aft translation; and

(e) spring means disposed within said housing which acts against said drive wheels to urge said drive wheels into their loaded positions so that they are in driving frictional contact with said coupling wheels to effect rotation of said brush when said sweeper is moved in one direction and acts to effect unloading of said drive wheels when said sweeper is moved in the other direction, said spring means includes a curved spring having horizontally disposed parallel legs at opposite ends thereof extending transversely to the curve in said spring, one of said legs being mounted for pivotal movement about a horizontal axis, and the other of said legs defining an axle for carrying a said drive wheel.

4,498,208
CHIMNEY CLEANING SYSTEM

Henry F. Henderson, 55786 Bivouac Rd., Bend, Oreg. 97702

Filed May 26, 1983, Ser. No. 498,632
Int. Cl.³ F23J 3/00
U.S. Cl. 15—163 3 Claims



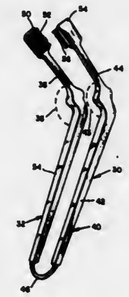
1. A chimney cleaning comprising,
a brush for contact with the chimney internal walls,
an elongate flexible member on which said brush is supported,
adjustment means on said flexible member to permit varying the tension of same,
a chimney cap structure for disposition above the chimney and including a base member, said base member having legs for supporting said cap structure on the chimney so that spaces are provided between the legs through which the combustion gases and particulate material can pass a brush housing in place on said base member and in which the brush may be stored, said brush housing having a cut out area located adjacent a stored brush and permitting access to said brush and said adjustment means,
a detachable closure disposed about said brush housing and defining a dead air space, and
pulley means in said brush housing on which the elongate flexible member is entrained, crank and pulley means for installation within the chimney to enable imparting rectilinear travel to said brush for downward entry into and travel along said chimney to clean same whereupon the brush may be retracted upwardly from the chimney by said flexible member for storage in the dead air space within said brush housing.

4,498,209
TWIN DENTAL BRUSH

Leslie Weiss, #354 607 Franklin Ave., Hollywood, Calif. 90028

Filed Mar. 25, 1983, Ser. No. 479,001
Int. Cl.³ A46B 9/04
U.S. Cl. 15—167 A 3 Claims

1. A dental brush for simultaneously brushing both faces of a tooth comprising:
a. a first handle member;
b. said first handle member comprising a first straight section and a second offset section which extends from one end of the first straight section and at a uniform angle to the first straight section;
c. said second offset section of the first handle member further comprising a slender elongated section adjacent said first section at one end and a tranversely wider, generally rectangular section at the other end of the slender elongated section;
d. a second handle member;
e. said second handle member containing a first straight section and a second offset section which extends from one end of the first straight section and at a uniform angle to the first straight section;
f. said second offset section of the second handle member further comprising a slender elongated section adjacent said first section at one end and a tranversely wider, generally rectangular section at the other end of the slender elongated section;
g. said first handle member and said second handle member pivotally attached at the lower portion of each first section such that the two handle members extend upwardly and away from each other in generally spaced parallel planes;
h. the angle of the offset section to the first straight section of each handle member being the same such that the first straight section of each handle member extend away from each other in generally spaced parallel planes and the offset section of each handle member extend away from each other in generally spaced parallel planes so that the respective elongated sections are oppositely disposed and the respective wider sections are oppositely disposed;
i. said first handle member containing a first set of parallel bristles emanating from the wider, generally rectangular section of its offset section;



j. said first set of parallel bristles extending away from the wider rectangular section of the offset section of said first handle member and towards the wider rectangular section of the offset section of said second handle member;
k. said second handle member containing a second set of parallel bristles emanating from the wider, generally rectangular section of its offset section;
l. said second set of parallel bristles extending away from the wider rectangular section of the offset section of said second handle member and towards the wider rectangular section of the offset section of said first handle member;
m. said first set of parallel bristles and said second set of parallel bristles facing each other in generally spaced parallel relationship such that they can be brought into direct alignment when the two handle members are pressed together;
n. said second offset section of each handle member being approximately half the length of each of said first straight sections, said slender elongated section of each handle member being approximately twice the length of each of said generally rectangular sections; and
o. wherein the angle between each straight section and its offset section on each handle is approximately 135 degrees.

4,498,210
BRUSH BRISTLE UNIT FOR BRUSH ROLLS

Arthur E. Drumm, 20042 State Rte. #4, Marysville, Ohio 43040

Filed Nov. 30, 1983, Ser. No. 556,275
Int. Cl.³ A46B 7/10
U.S. Cl. 15—183 3 Claims

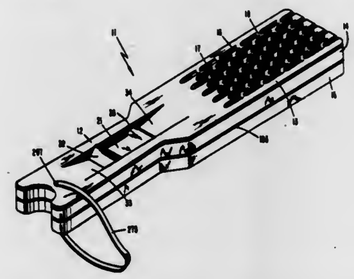


1. A bristle unit for slipping longitudinally into a longitudinally-extending channel socket on a sweeper drum, the channel socket having laterally-opposed guiding and retaining channel socket sections opening laterally-inwardly towards each other, comprising a mounting channel of metal having a base formed around a flat longitudinally-extending stiffening bar to form opposed laterally-outwardly extending parallel guiding and retaining double-flanged ears that are longitudinally continuous and adapted to slip longitudinally into said channel socket sections, and laterally-spaced parallel longitudinally extending spring flanges projecting radially-outwardly from said ears to receive a bristle strip therebetween, said bristle strip being formed of a U-shaped longitudinally-extending channel having laterally-spaced side flanges which project radially outwardly in the same direction as said spring flanges and which receive therebetween U-shaped bristles that have their inner U-ends retained therein by a retaining wire extending longitudinally therethrough and crimping at the sides of the flanges radially-outwardly of the wire, said spring flanges having two pairs of longitudinally-extending continuous ribs formed therein and consisting of inner and outer opposed ribs which project laterally-inwardly at radially-spaced inner and outer positions, the inner pair engaging the crimped sides of said flanges of the bristle-carrying channel and the outer pair extending over the outer edges of the flanges thereof, said flanges having laterally-outwardly flared curbed outer edges to prevent cutting of the bristles thereby when the bristles are bent into contact therewith during rotation of the drum.

4,498,211
RETRACTABLE BRUSH

Gary Bottolfson, Rapid City, S. Dak., assignor to Michael O'-Connor, Vermillion, S. Dak., a part interest

Filed Feb. 6, 1984, Ser. No. 577,615
Int. Cl.³ A46B 9/10
U.S. Cl. 15—203 16 Claims

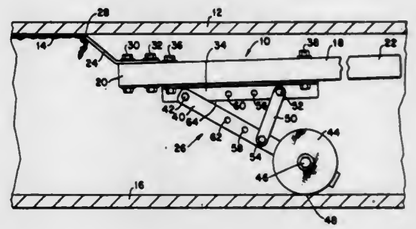


13. A folding brush comprising a case having parallel first and second walls respectively having first and second interior faces spaced from each other to form a cavity, the first wall including a matrix of cylindrical like slots extending between the first face and a third face on the exterior of the first wall, a frame slidable along a longitudinal axis in the cavity between a first retracted position and a second fully extended position, means for locking the frame in the first and second positions, a multiplicity of bristle tufts each having a longitudinal axis, means for mounting the bristle tufts on the frame so the longitudinal axes of the tufts rotate together from a first retracted angle displaced slightly from the frame longitudinal axis to a second fully extended angle approximately at right angles to the frame longitudinal axis in response to the frame sliding between the first and second longitudinal positions, the bristle tufts being positioned on the frame and the matrix of slots being arranged so that each of the bristle tufts is in a separate one of the slots, a slidable tongue having a first end fixedly connected to the frame located in the cavity, a second end of the tongue including feet means engaging one of the cavity faces, the locking means including: a detent bar on the tongue for engaging first and second longitudinal spaced notches in the second face of the handle cavity when the frame is respectively in the retracted and fully extended positions, the tongue being made of a flexible spring like material so the portion of the tongue between the ends thereof can be pressed into the cavity and the top of the detent bar is urged against the second face of the handle cavity while the detent bar is between the notches.

4,498,212
FLUE CLEANER

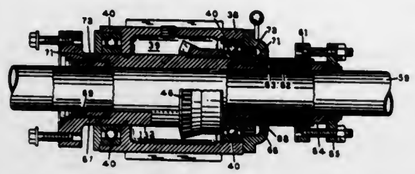
John D. Davis, P.O. Box 55, Black Mountain, N.C. 28711

Filed Sep. 1, 1983, Ser. No. 528,408
Int. Cl.³ F23J 3/02
U.S. Cl. 15—242 9 Claims



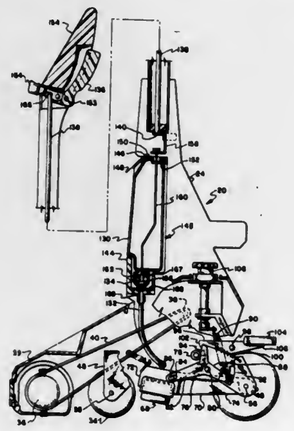
1. An improved flue cleaner comprising: an elongated rod having a free end and a handle end, a scraper connected to one side of said rod near said free end, a fulcrum assembly connected to the opposite side of said rod near said free end, said fulcrum assembly including a roller extending away from said rod, said roller being located between said handle end of said rod and said scraper but closer to said scraper, said scraper adapted to contact one side of the flue, said roller adapted to contact the other side of the flue whereby said roller acts as a fulcrum to pivot said scraper by back and forth action of the handle end of said rod; said roller being rotatably mounted to one end of a first bracket; the other end of said first bracket being pivotably connected to said rod; a second bracket connected to said first bracket; a third bracket mounted along the surface of said opposite side of said rod, said second bracket being connected to said third bracket to rigidly hold said roller away from said rod; the distance between said roller and said rod is variable for various sizes of flues; means for mounting said second bracket at various points along said first bracket and said third bracket.

4,498,213
SOOT BLOWER
Gerald F. Zalewski, Albion, Pa., assignor to White Consolidated Industries, Inc., Cleveland, Ohio
Division of Ser. No. 478,291, May 17, 1983, , which is a division of Ser. No. 234,982, Feb. 17, 1981, Pat. No. 4,387,481. This application Mar. 16, 1984, Ser. No. 590,290
Int. Cl.[3] F23J *3/02*
U.S. Cl. 15—316 R 3 Claims



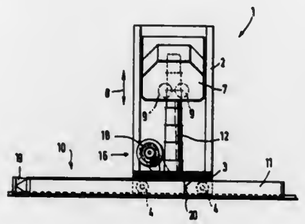
1. In a soot blower including a lance tube and lance tube support movable along a path of travel between working and non-working positions and a feed pipe in a co-axial, telescoping relation with said lance tube and lance tube support, a bushing arrangement which comprises
(a) at least one ring-shaped bushing element secured about the outer circumference of said feed pipe,
(b) said ring-shaped bushing element including an outer surface engaging the inner surface of said lance tube support,
(c) said outer surface of said ring-shaped bushing element being formed to a generally convex configuration whereby the lance tube support and feed pipe may pivot with respect to one another with the forces developed between the lance tube and feed pipe being distributed through the convex outer surface of said ring-shaped bushing element.

4,498,214
CARPET CLEANING APPARATUS WITH AUXILIARY CLEANING DEVICE ARRANGEMENT
Berton R. Oxel, Louisville, Ohio, assignor to The Hoover Company, North Canton, Ohio
Continuation of Ser. No. 470,226, Feb. 28, 1983, abandoned. This application Apr. 16, 1984, Ser. No. 600,423
Int. Cl.[3] A47L *7/00*
U.S. Cl. 15—320 24 Claims



19. A carpet cleaning apparatus having a nozzle including a nozzle chamber communicating with a carpet surface, vacuum generating means for drawing dirt laden air through the nozzle chamber, an agitator including brushes, a handle assembly pivotally connected to the nozzle and movable between an operating position where it is generally inclined relative to a carpeted surface and a storage position where it is generally vertical relative to a carpeted surface, and an auxiliary cleaning device elongated in a direction transverse to direction of travel of the carpet cleaning apparatus and engageable with a carpet surface to provide additional cleaning, said carpet cleaning apparatus further comprising:
compensating means providing support for said auxiliary cleaning device at a generally central location along the transverse extent thereof and providing for change in transverse elevation of said auxiliary cleaning device in response to an uneven carpet surface thereby establishing a more uniform contact interrelationship between said auxiliary cleaning device and a carpet surface.

4,498,215
APPARATUS FOR CONVEYING MATERIAL AS IT IS REMOVED FROM ROWS OF BALES CONSTITUTING SPINNING MATERIAL
Hubert Hergeth, and Helmut Hergeth, both of Dulmen, Fed. Rep. of Germany, assignors to Hergeth Hollingsworth GmbH, Dulmen, Fed. Rep. of Germany
Filed May 2, 1983, Ser. No. 490,849
Claims priority, application Fed. Rep. of Germany, May 7, 1982, 3217184
Int. Cl.[3] D01G *9/00*; B65G *53/26, 53/52*
U.S. Cl. 19—81 23 Claims

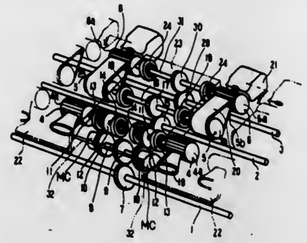


1. Apparatus comprising a generally elongated channel having an elongated longitudinally disposed slot, a frame, means for moving said frame along said channel, said frame including means for delivering material into and along said channel through said slot, a flexible belt, a first end of said flexible belt being secured to said channel, a second end of said flexible belt being secured to said frame, said flexible belt being adapted to be placed in overlying relationship to said slot upon movement of said frame along said channel whereby material delivered into said channel is covered by said belt, means carried by said frame for collecting and dispensing said belt during frame movement relative to said channel with belt dispensing taking place during material delivery, said belt collecting and dispensing means including a drum upon which said belt is adapted to be wound, and one of said first and second belt ends is secured to said drum.

4,498,216
DRAFTING APPARATUS IN A SPINNING FRAME
Yoshihisa Suzuki, Chiryu; Yoshiharu Yasui, Toyota, and Shigeru Takasu, Kariya, all of Japan, assignors to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Kariya, Japan
Filed May 27, 1983, Ser. No. 498,849
Claims priority, application Japan, May 31, 1982, 57-092515
Int. Cl.[3] D01H *5/86*
U.S. Cl. 19—244 5 Claims

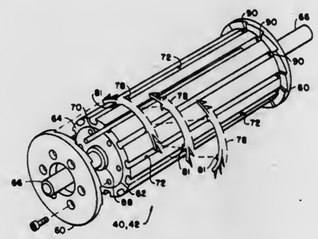
1. In drafting apparatus for a spinning frame or the like comprising a plurality of parallel, laterally spaced, rotatable, shaft means, bottom rollers mounted on each of said shaft

means, support means for engaging and supporting each shaft means, and drive means for rotating each shaft means, wherein the improvement comprises providing a pair of axially spaced, bottom rollers on each shaft means, one at one end of each respective shaft means and the other at the other end of each respective shaft means with the respective bottom roller of



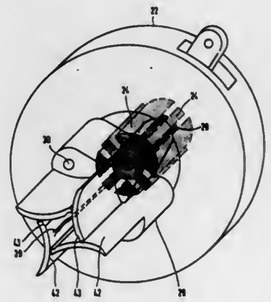
each pair aligned in the same plane with the corresponding respective roller of each other pair, disposing said drive means and said support means between the pair of rollers of each pair and engaging said support means with said shaft means between the rollers of each pair whereby said rollers are unobstructed by said support means and said drive means and have oppositely facing free ends.

4,498,217
PILE FABRIC CUTTING DEVICE
Walter Engels, Tryon, N.C., assignor to Milliken Research Corporation, Spartanburg, S.C.
Filed Jun. 21, 1982, Ser. No. 390,320
Int. Cl.[3] D06C *13/08*
U.S. Cl. 26—9 4 Claims



1. A cutting rotor comprising: a cylindrical body member having a plurality of axial grooves in the surface thereof, a plurality of helical cutting members equal to the number of grooves in said body member surface secured to said body member and having tabs integral therewith which project into said grooves and making a plurality of 360° wraps around said cylindrical body member, each of said helical cutting members having at least three cutting segments in 360° wrap of said helical member and end caps mounted on both ends of cutting rotor to maintain said helical cutting members on said body member, each of said end caps being serrated on the inside thereof to provide a number of abutment surfaces equal in number to the number of helical cutting members, each helical cutting member abutting one of the abutment surfaces on the inside of each end cap.

4,498,218
APPARATUS FOR TRANSMITTING A TAMPON BLANK TO A TAMPON PRESS
Axel Friese, Wuppertal, Fed. Rep. of Germany, assignor to Dr. Carl Hahn G.m.b.H., Dusseldorf, Fed. Rep. of Germany
PCT No. PCT/DE81/00232, § 371 Date Aug. 13, 1982, § 102(e) Date Aug. 13, 1982, PCT Pub. No. WO82/02336, PCT Pub. Date Jul. 22, 1982
PCT Filed Dec. 21, 1981, Ser. No. 413,369
Claims priority, application Fed. Rep. of Germany, Dec. 31, 1980, 3049581
Int. Cl.[3] A61F *13/20*
U.S. Cl. 28—119 7 Claims



1. In an apparatus for compressing a blank comprising absorbent material into a compressed tampon, said apparatus having:
a transmission device for containing a blank upstream of a tampon press;
said tampon press having press jaws forming a continuous opening and press jaw means for opening said jaws to receive said blank and for closing said jaws to compress said blank;
a push rod and means for reciprocating said push rod to transmit said blank from said transmission device into said press; and
an ejector mandrel and means for reciprocating said ejector mandrel for ejecting said compressed tampon from said press;
the improvement wherein:
said transmission device comprises a stationary basic body having an axis aligned with the central axis of the apparatus and a plurality of carrier jaws movably fixed to said basic body;
said carrier jaws being movable with respect to each other so as to form, in a first position, a first passage opening having closed walls defined by said jaws for enclosing said blank;
said jaws being movable with respect to each other so as to form, in a second position, a second passage opening having closed walls defined by said jaws for enclosing said compressed tampon;
said first and second passage openings being coaxial with the central axis of said apparatus;
said carrier jaws having a length in the direction of the central axis, at least equal to the length of the blank;
said push rod being axially positioned upstream of said transmission device and adapted to reciprocate into and out of said first passage opening for transmitting said blank into said press;
said ejector mandrel being axially positioned downstream of said press and having a diameter smaller than that of said compressed tampon and adapted to reciprocate into and out of said press;
carrier jaw moving means for moving said carrier jaws into said first and second positions;
said apparatus adapted for operation in sequence wherein said carrier jaws are moved into said first position by said

carrier jaw moving means and said press jaws are opened by said press jaw means;

said push rod is reciprocated into said first passage opening to transfer said tampon blank into said opened press jaws;

said press jaws are closed by said press jaw means to compress said blank, said carrier jaws are moved into said second position by said carrier jaw moving means, and said push rod is reciprocated to close the upstream end of said second passage opening; and

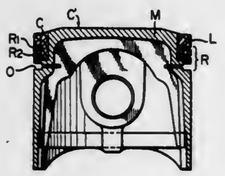
said ejector mandrel is reciprocated into said closed press jaws to eject said compressed tampon into said second passage opening.

4,498,219

METHOD OF CONSTRUCTING A FIBER-REINFORCED PISTON FOR INTERNAL COMBUSTION ENGINES

Keisuke Ban, Fujimi, and Akimasa Daimaru, Oomiya, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 15, 1982, Ser. No. 388,666
Claims priority, application Japan, Jun. 18, 1981, 56-94461
Int. Cl.³ B23P *15/10*
U.S. Cl. 29—156.5 R **3 Claims**



1. In a method of producing a fiber reinforced piston of an internal combustion engine comprising forming a molded body of inorganic fiber to constitute a top land and ring region for the piston and filling the molded body with a lightweight alloy matrix to integrally join the molded body and alloy matrix, the improvement comprising forming said inorganic fiber with less than 10% by weight of fiber granules having a particle diameter less than 100 mesh from a blanket by subjecting said blanket to a coarse granulated-fiber elimination treatment consisting of a vibration method and a wet type method.

4,498,220

METHOD FOR PRE-EXPANDING HEAT EXCHANGER TUBE

Donald S. Fiegen, LaCrescent, Minn., and Chester D. Ware, La Crosse, Wis., assignors to The Trane Company, La Crosse, Wis.

Filed Aug. 23, 1982, Ser. No. 410,724
Int. Cl.³ B21D *53/02*; B23P *25/00*
U.S. Cl. 29—157.3 C **10 Claims**



8. A method for expanding a heat exchanger tube to which a nucleate boiling heat transfer enhancement treatment is applied, into a bore of a tube sheet or tube support, to minimize risk of splitting the tube, or degrading the treatment, comprising the steps of:

a. pre-expanding a selected section of the tube to a diameter slightly less than the diameter of the bore in the tube sheet or tube support;

b. applying the nucleate boiling heat transfer enhancement treatment to the exterior of the tube, where it is not pre-expanded;

c. inserting the pre-expanded section of the tube within said bore; and

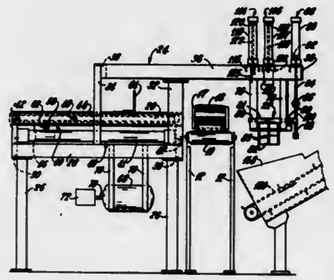
d. mechanically expanding the pre-expanded section of the tube within said bore to seat it.

4,498,221

APPARATUS FOR STRIPPING PACKAGED LINEAR MATERIAL FROM A FORMING TUBE

Jeffrey B. Braziel, Travelers Rest, S.C., assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Aug. 16, 1983, Ser. No. 523,801
Int. Cl.³ B23Q *3/00*
U.S. Cl. 29—283.5 **6 Claims**



1. Package stripping apparatus comprising, in combination, a package stripping station for stripping linear material from a plastic forming tube package, means supporting the forming tube package at the stripping station, means at the stripping station engageable with the package for collapsing the forming tube rendering the linear material in a loose hank on the collapsed forming tube, a stripper member, means for retracting the support means from the collapsed forming tube package at the stripping station, means for moving the collapsed forming tube away from the stripping station whereby the stripper member engages the loose hank of material on the collapsed forming tube for stripping the loose hank of material from the forming tube during movement of the forming tube away from the stripping station.

4,498,222

CLINCHING PROCESS OF BUCKLE BASE AND WIRE ROPE

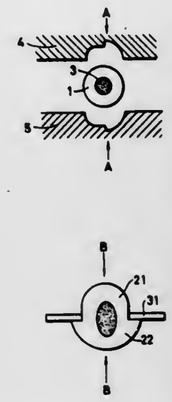
Katsuyasu Ono, Kanagawa, and Tomosaburo Sato, Saitama, both of Japan, assignors to NSK-Warner K.K., Japan

Filed Jun. 2, 1983, Ser. No. 500,443
Claims priority, application Japan, Jun. 20, 1982, 105697
Int. Cl.³ B21D *39/00*; B23P *11/00*
U.S. Cl. 29—509 **4 Claims**

1. A process for clinching a wire rope on a buckle base, which process comprises the following consecutive steps:

subjecting a starting anchor block metal sleeve and the wire rope in combination to a first clinching plastic deforming operation to form a preformed anchor block bearing steps extending up radially outwardly thereon; and

subjecting the preformed anchor block and the buckle base in combination to a second clinching plastic deforming operation to clinch the resultant anchor block on the buckle base, which second clinching operation is applied in a direction at an angle or angles substantially different from the first clinching operation to scatter the resulting stresses.

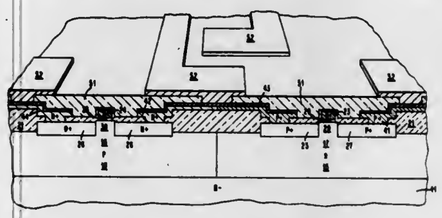


4,498,223

METHOD OF FABRICATION OF MONOLITHIC INTEGRATED CIRCUIT STRUCTURE

Ernest A. Goldman, Stow; Jeremiah P. McCarthy, Framingham, and Paul E. Poppert, Acton, all of Mass., assignors to GTE Laboratories Incorporated, Waltham, Mass.

Filed Apr. 23, 1982, Ser. No. 371,326
Int. Cl.³ H01L *21/265*
U.S. Cl. 29—571 **4 Claims**



1. The method of fabricating monolithic integrated circuit structure incorporating complementary field effect transistors comprising

providing a body of semiconductor material having a first section of one conductivity type and a second section of the opposite conductivity type at a surface of the body with a first sector within said first section and a second sector within said second section covered by an adherent gate layer of insulating material, the portions of the surface of the body contiguous with said first and second sectors being covered by an adherent field layer of insulating material thicker than the gate layer of insulating material;

placing a first gate member of semiconductor material of low resistivity over a portion of the gate layer of insulating material overlying a channel region with said channel region lying between two remaining regions of said first sector, and a second gate member of semiconductor material of low resistivity over a portion of the gate layer of insulating material overlying a channel region of said second sector with said channel region lying between two remaining regions of said second sector;

introducing conductivity type imparting material of the opposite conductivity type into the two remaining regions of said first sector and introducing conductivity type imparting material of the one conductivity type into the two remaining regions of said second sector;

converting the outer surfaces of the first and second gate members except at the interface with the underlying gate layer of insulating material to adherent insulating material and increasing the thickness of the gate layer of insulating material overlying the remaining regions of the first and second sectors to form a field layer;

removing a portion of the field layer of insulating material overlying each of the remaining regions of the first and second sectors to expose a surface area in each of said remaining regions;

forming adherent contact members of semiconductor material of the opposite conductivity type of low resistivity on and in ohmic contact with the exposed surface areas of the two remaining regions of the opposite conductivity type in said first sector extending over the field layer of insulating material, and forming adherent contact members of semiconductor material of the one conductivity type of low resistivity on and in ohmic contact with the exposed surface areas of the two remaining regions of the one conductivity type in said second sector extending over the field layer of insulating material, one of the contact members of semiconductor material of the one conductivity type being contiguous with one of the contact members of semiconductor material of the opposite conductivity type at a junction; and

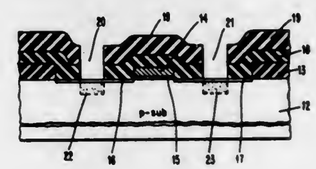
forming an adherent layer of highly conductive material on and in ohmic contact with the one contact member of semiconductor material of the one conductivity type and on and in ohmic contact with the one contact member of semiconductor material of the opposite conductivity type in the regions of the contact members in which the one contact member of semiconductor material of the one conductivity type and the one contact member of semiconductor material of the opposite conductivity type are contiguous thereby shorting out the rectifying junction between the one contact member of semiconductor material of the one conductivity type and the one contact member of semiconductor material of the opposite conductivity type.

4,498,224

METHOD OF MANUFACTURING A MOSFET USING ACCELERATED IONS TO FORM AN AMORPHOUS REGION

Kenji Maeguchi, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Oct. 24, 1982, Ser. No. 544,991
Claims priority, application Japan, Dec. 23, 1982, 57-232508
Int. Cl.³ H01L *21/425*
U.S. Cl. 29—571 **8 Claims**



1. A method for manufacturing semiconductors of the MOSFET type comprising the steps of:

forming a gate insulation layer and a gate electrode on a

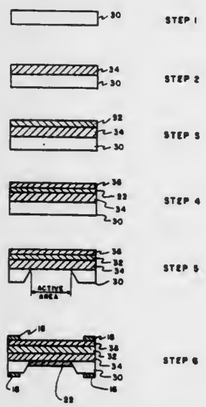
selected portion of a semiconductor body of single crystal material having a first conductivity type;
introducing impurities of a second conductivity type into a preselected region of the semiconductor body using the gate electrode as a mask;
introducing accelerated ions to overlap at least a portion of the region in which the impurities are introduced, wherein a fraction of the accelerated ions is introduced deeper than the impurities, said accelerated ion introducing step converting the crystal material of said semiconductive body portion into an amorphous state;
forming a diffused region by diffusion of the second conductivity type impurities from said preselected region;
and
forming an electrode to contact the diffused region.

4,498,225

METHOD OF FORMING VARIABLE SENSITIVITY TRANSMISSION MODE NEGATIVE ELECTRON AFFINITY PHOTOCATHODE

William A. Gutierrez, and Herbert L. Wilson, both of Woodbridge, Va., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Division of Ser. No. 260,959, May 6, 1981,. This application Oct. 20, 1983, Ser. No. 522,768
Int. Cl.³ H01L *31/18*
U.S. Cl. 29—572 **5 Claims**



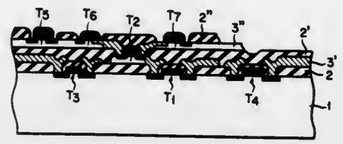
1. A method of forming a variable photosensitivity transmission mode negative electron affinity photocathode for varying the luminous sensitivity about the white and monochromatic light wavelengths by varying the backsurface recombination velocity in said photocathode, the steps of forming said photocathode comprising:
providing a large bandgap single crystal transparent window substrate having an epitaxially grown wide bandgap semiconductor window layer thereon containing sufficient chromium or oxygen therein so as to be semi-insulating;
epitaxially growing a photoemitter layer on said semiinsulating window layer;
layering electrical contact rings on the outer peripheries of said photoemitter layer and said transparent window substrate;
applying an antireflection coating on the back of said transparent window substrate to reduce the amount of reflected light from the photon receiving side of said photocathode;
activating said photoemitter layer to bring about a condition of negative electron affinity; and
biasing said photocathode into operation by applying a bias supply voltage to said electrical contact rings to modulate an electric field effect in said photocathode.

4,498,226

METHOD FOR MANUFACTURING THREE-DIMENSIONAL SEMICONDUCTOR DEVICE BY SEQUENTIAL BEAM EPITAXY

Tomoyasu Inoue, Tokyo, and Kenji Shibata, Kawasaki, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Aug. 27, 1982, Ser. No. 412,241
Claims priority, application Japan, Aug. 31, 1981, 56-135421; Aug. 31, 1981, 56-135422
Int. Cl.³ H01L *21/263, 21/225*
U.S. Cl. 29—576 B **8 Claims**



1. A method for manufacturing a three-dimensional semiconductor device comprising the steps of:
forming first and second semiconductor elements on the surface of a single-crystalline semiconductor substrate;
forming a first insulating film on said substrate;
forming a first opening in said first insulating film at a predetermined portion of said first semiconductor element;
forming a first polycrystalline or amorphous semiconductor layer on said first insulating film having said first opening;
irradiating said first semiconductor layer with an energy beam to grow a single crystal in a predetermined region in said first semiconductor layer using as a seed crystal that part of said semiconductor substrate which contacts said first semiconductor layer and to form a first single-crystalline semiconductor region;
forming at least a part of a third semiconductor element in said first single-crystalline semiconductor region;
forming an interconnection between said first and third semiconductor elements by using a part of said first single-crystalline semiconductor region from said semiconductor substrate to said third element;
forming a second insulating film having a second opening at a predetermined portion of said second semiconductor element so as to elongate on said first single-crystalline semiconductor region;
forming a second polycrystalline or amorphous semiconductor layer on said second insulating film having said second opening;
irradiating said second semiconductor layer with an energy beam to grow a single crystal at a predetermined region in said second semiconductor layer using as a seed crystal that part of said semiconductor substrate which contacts with the second semiconductor layer and to form a second single-crystalline semiconductor region; and
forming a remaining part of said third semiconductor element and forming an interconnection between said second and third semiconductor elements by using a part of said second single-crystalline semiconductor region from said semiconductor substrate to said third semiconductor element.

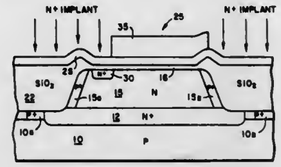
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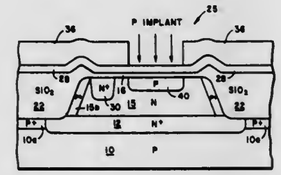
WAFER FABRICATION BY IMPLANTING THROUGH PROTECTIVE LAYER

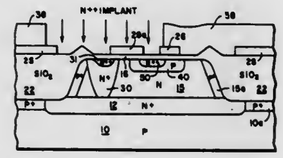
Paul J. Howell, Gray, and Gregory B. Currier, Yarmouth, both of Me., assignors to Fairchild Camera & Instrument Corporation, Mountain View, Calif.

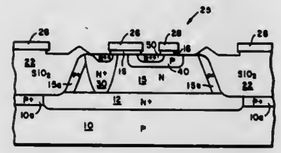
Filed Jul. 5, 1983, Ser. No. 510,761
Int. Cl.³ H01L *21/265, 21/318*
U.S. Cl. 29—576 B **20 Claims**

1. A method for fabricating a bipolar substantially isoplanar integrated circuit structure on a substrate of semiconductor material of a first conductivity type, said substrate being processed by depositing an epitaxial layer of semiconductor material over the substrate thereby forming an isolation junction extending laterally through the structure between the epitaxial layer and substrate, forming a thin epitaxial oxide buffer layer over the epitaxial layer, subdividing said structure into a plurality of epitaxial islands in which active and passive elements are fabricated, and isolating said epitaxial islands relative to each other by forming annular shaped isolation oxide regions of oxidized semiconductor material extending through the epitaxial layer to the isolation junction, wherein the improvement in the method of fabricating said structure comprises:
depositing a uniform nitride layer over the structure thereby passivating the structure and protecting the isolation oxide regions, epitaxial oxide buffer layer and epitaxial layer from contaminants;









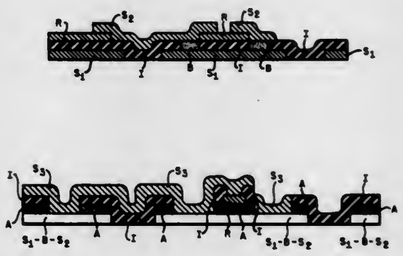
implanting collector sink regions in the epitaxial islands by selectively directing a beam of ions of second conductivity type through the nitride layer and epitaxial oxide buffer layer into the epitaxial layer at collector sink region surface locations;
retaining the nitride layer and epitaxial oxide buffer layer in place as a barrier to environmental contaminants;
implanting base regions in the epitaxial islands by selectively directing a beam of ions of first conductivity type through the nitride layer and epitaxial oxide buffer layer into the epitaxial layer at base region surface locations before implanting emitter regions;
retaining the nitride layer and epitaxial oxide buffer layer in place as a barrier to environmental contaminants;
forming a self-aligned transistor mask pattern over the nitride layer for defining the surface locations of collector sink, base and emitter regions in self-alignment relative to each other on the epitaxial islands through openings in the self-aligned transistor mask pattern;
etching the underlying nitride layer through the openings in the self-aligned transistor mask pattern and removing the nitride layer at the surface locations of the collector sink, base and emitter regions while retaining the epitaxial oxide buffer layer in place as a barrier to environmental contaminants;
removing the self-aligned transistor mask pattern, retaining the unetched remainder of the nitride layer in place, and retaining the epitaxial oxide buffer layer in place at the surface locations where the nitride layer was removed by etching;
implanting emitter regions in base regions previously implanted in the epitaxial islands by selectively directing a beam of ions of second conductivity type through the epitaxial oxide buffer layer into the epitaxial layer;
simultaneously annealing the implanted collector sink, base and emitter regions thereby providing a substantially isoplanar integrated circuit structure of active and passive elements in the epitaxial islands separated by said isolation oxide regions.

4,498,228

METHOD OF MANUFACTURING JOSEPHSON JUNCTION INTEGRATED CIRCUITS

Don W. Jillie, Jr., Arlington, and Lawrence N. Smith, Lexington, both of Mass., assignors to Sperry Corporation, New York, N.Y.

Division of Ser. No. 252,528, Apr. 9, 1981, Pat. No. 4,430,662. This application Nov. 14, 1983, Ser. No. 550,847
Int. Cl.³ H01L *21/479, 21/48*
U.S. Cl. 29—577 C **21 Claims**



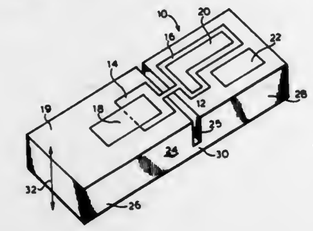
1. A method of fabricating a superconductive integrated circuit including at least one Josephson tunnel junction, said tunnel junction including first and second tunnel junction electrodes superposed with respect to each other with a Josephson tunneling barrier therebetween for conducting Josephson tunneling current between said first and second tunnel junction electrodes, said method comprising the steps of
forming a ground plane for said integrated circuit and forming said first tunnel junction electrode by depositing a first layer of superconductive material on a substrate, said first layer comprising said ground plane as well as including said first tunnel junction electrode,
forming a first layer of insulative material on said first layer of superconductive material,
forming at least one opening through said first layer of insulative material,
forming said Josephson tunneling barrier within said opening in said layer of insulative material, and
depositing a second layer of superconductive material on said layer of insulative material, said second layer including said second tunnel junction electrode.

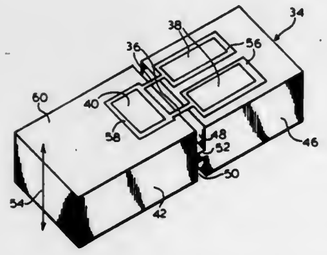
4,498,229

PIEZORESISTIVE TRANSDUCER

Leslie B. Wilner, Palo Alto, Calif., assignor to Becton, Dickinson and Company, Paramus, N.J.

Filed Oct. 4, 1982, Ser. No. 432,620
Int. Cl.³ H01L *41/08*; G01L *1/22*
U.S. Cl. 29—580 **8 Claims**





1. A process for producing a strain sensitive element, comprising the steps of

(a) selecting a silicon crystal wafer with the plane of said wafer oriented (110);

(b) depositing in a first depositing step an oxide layer on both sides of said wafer selected from said selecting step;

(c) establishing coordinated indices on both sides of said wafer obtained from said depositing step;

the improvement characterized by

(d) on at least one side of said wafer, in a first defining step, defining on said oxide layer unsupported gages indexed [111] and the conductors therefore which are integral with said wafer by opening apertures in said oxide deposit corresponding to said defined gages and conductors;

(e) said defining step for each strain sensitive element providing for at least one groove over which said integral gages will extend;

(f) said defining step defining the entire bodies of said integral gages as being the only material extending over said groove without any separate support;

(g) said groove dividing each said strain sensitive element into two parts with an integral hinge portion extending therebetween;

(h) said integral hinge portion being spaced from said unsupported integral gages;

(i) depositing in a second depositing step boron into said apertures from said first defining step;

(j) subjecting said wafer to sufficiently elevated temperatures for a sufficient period of time to anneal said wafer;

(k) opening an etching pattern on at least one side of said wafer to define said groove to be formed in said wafer over which said defined gages will extend and through which said integral hinge portion will extend;

(l) said etching step being to a depth within the range of between about 0.0022 inches and 0.005 inches to undercut said defined gages, and form said defined groove;

(m) said etching step being carried out to a point short of piercing said wafer for defining said hinge portion;

(n) stripping from said wafer all residual oxide;

(o) depositing in a third depositing step a thin oxide layer on said wafer to protect all positive-negative junctions thereon;

(p) depositing in a fourth depositing step a metallic layer on at least one side of said wafer;

(q) defining in a second defining step, said conductors for said gages in said metallic layer; and

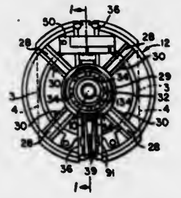
(r) cutting said wafer into strain sensitive elements containing said defined gages, conductors, groove or grooves, and hinge.

4,498,230

ASSEMBLING BRUSH BOX SUB-ASSEMBLIES IN ELECTRIC MOTORS

David Harris, Wolsingham, and Alan Hays, Spennymoor, both of England, assignors to Black & Decker Inc., Newark, Del.

Filed Jan. 10, 1983, Ser. No. 456,701
Claims priority, application United Kingdom, Jan. 8, 1982, 8200514
Int. Cl.³ H02K *15/00*
U.S. Cl. 29—597 **3 Claims**



1. A method of assembling a brush box sub-assembly in an electric motor having a commutator, said brush box sub-assembly comprising a brush box having at least two opposed side walls, a brush located within the brush box, resilient means stressed between the brush box and the brush for urging the brush outwardly in a longitudinal direction from within the brush box, and said two opposed side walls being stressed to grip and hold against movement said brush, said method comprising the steps of:

inserting the brush box into said motor;

separating said opposed side walls sufficiently as the brush box is so inserted to enable said brush to move in said brush box; and

allowing said resilient means to urge said brush outwardly of said brush box into contact with said commutator as said opposed side walls are so separated.

4,498,231

THIN FILM STRAIN TRANSDUCER

James L. Rand, San Antonio, Tex., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Division of Ser. No. 352,827, Feb. 26, 1982, Pat. No. 4,425,808. This application Aug. 26, 1983, Ser. No. 526,770
Int. Cl.³ H01C *17/00*
U.S. Cl. 29—610 SG **2 Claims**

1. A method of making a thin film strain transducer for use in accurately measuring strain on thin films comprising:

(a) providing a thin sheet or beryllium-copper alloy stock in the half-hard condition;

(b) drawing a pattern of a one-half segment four times the dimensions of the final product and consisting of an elongated strip provided with twelve equal diameter and uniformly spaced holes and a pair of tab portions;

(c) photographically reducing this pattern to produce a negative of the actual size desired;

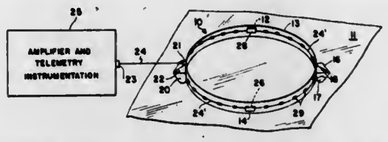
(d) transferring this negative image to the beryllium-copper alloy sheet;

(e) making the image and immersing the sheet in a chemical solution to chem-mill the excess material away from the masked pattern to recover an elongated strip of material and a pair of semicircular tab elements;

(f) repeating steps (b), (c), (d) and (e) to recover identical pattern portions;

(g) bending the identical elongated strips to form a pair of semicircular segments and with bent gusset extensions on each end thereof;

(h) spot welding the pair of semicircular strips to form a ring and spot welding a pair of the semicircular tab elements to



the gussets extending from each strip to form a double layered tab;

(i) placing the assembled ring and tab structure onto a mandrel having essentially the same thermal characteristics as the beryllium-copper alloy and heat treating this assembly for approximately two hours at approximately 315° C. to change the alloy from the half-hard to full strength;

(j) electrochemically removing the oxide coating formed during the heat treating process;

(k) bonding four identical precision strain gages to the ring with a pair of the strain gages positioned each at essentially the 90° stations between the diametrically disposed tabs and one member of each pair being on the outer surface of the ring; and

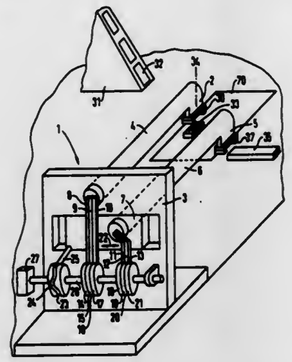
(l) electrically connecting each strain gage in Wheatstone bridge circuit arrangement to output instrumentation.

4,498,232

AUTOMATIC INSERTION AND REMOVAL DEVICE FOR COMPONENTS

Wilhelm Ertl, Ottobrunn, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed May 3, 1982, Ser. No. 374,286
Claims priority, application Fed. Rep. of Germany, May 18, 1981, 3119686
Int. Cl.³ H05K *3/30*
U.S. Cl. 29—741 **11 Claims**



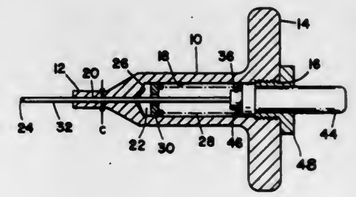
1. Automatic insertion and removal device for components, comprising a supply container for the components, a holding device for the components, an insertion head for taking the components from said supply container and inserting the components into said holding device, a removal head for removing the components from the holding device and for passing the components on, and a cam control connected to said heads for providing a motion cycle for said heads, said cam control including opening cams, opening levers being actuatable by said opening cams and opening push rods being actuatable by said opening levers, and each of said heads including pliers facing a component, said pliers being actuatable by said opening push rods for gripping the component.

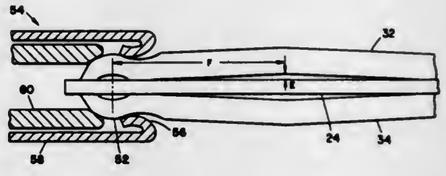
4,498,233

RETRIEVAL TOOL FOR SOCKET CONTACTS

Charles C. Simms, San Jose, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Aug. 27, 1982, Ser. No. 412,420
Int. Cl.³ B23P *19/00*
U.S. Cl. 29—747 **2 Claims**





1. An apparatus for seating a socket contact in an electrical connector from the front side of the connector, which comprises:

(a) a pair of elongated, parallel, opposing, flexible fingers for insertion into said socket contact, the outside surface of the ends of said fingers being shaped to internally grasp the socket contact when said fingers are forced apart, said fingers having an inward bend near the ends which allows the ends of the fingers to come together so that the fingers may be inserted into the socket contact;

(b) a housing having a central bore including an interior section leading to a narrow output section through which said fingers extend out of said housing for insertion into said socket contact;

(c) a wedge member disposed between said fingers, said wedge member being fixed relative to said housing and having a blade section which extends through said narrow output section out of said housing;

(d) means for extending said fingers beyond the end of said wedge member and for retracting said fingers so that said wedge member extends beyond the ends of said fingers, said means for extending and retracting comprising:

(1) plunger means slidable in the interior section of said central bore, said fingers being coupled to said plunger means so that said fingers are extended by depressing said plunger means,

(2) spring means disposed in the interior section of said central bore for opposing the depression of said plunger means to retract said fingers, whereby the extension of said fingers allows said fingers and said wedge to be

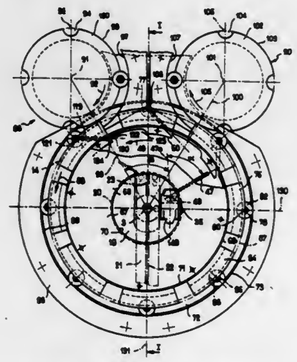
inserted into said socket contact whereupon the retraction of said fingers causes the wedge member to force apart said fingers to internally grasp said socket contact so that said fingers may be pulled to seat the contact.

4,498,234

AUTOMATIC APPARATUS FOR FITTING OBJECTS INTO RECEPTACLES

Bernard P. Greslin, Rixheim, and Daniel J. Rohmer, Herrlisheim, both of France, assignors to Manufacture de Machines du Haut-Rhin, Mulhouse, France

Filed Jan. 20, 1983, Ser. No. 459,681
Claims priority, application France, Jan. 20, 1982, 82 00801
Int. Cl.³ B23P *21/00*; B21D *51/54*; F42B *7/02*
U.S. Cl. 29—785 **11 Claims**



1. An apparatus for fitting receptacles at a predetermined spacing with respective substantially identical objects each having a bottom face, each rececteacle having for the respective object a hole opening downward at the respective bottom face, the apparatus comprising:

a fixed support;

a plate generally centered on an upright plate axis and having a substantially planar, smooth, and horizontal upper face with a generally circular outer edge;

means for rotating the plate relative to the fixed support in a predetermined direction about the plate axis;

means for depositing the objects on the upper face of the plate radially inward of the edge thereof such that these objects sit on this upper plate face by their bottom faces;

means forming a plurality of individual seats distributed at the spacing of the receptacles along the outer edge of the upper face of the plate and each having a floor coplanar with the upper plate face and a shape complementary with that of one of the objects;

a guide member having an inner edge above the upper face of the plate immediately adjacent same, and a plurality of respective passages which each open at one end at this inner edge and at the other end at the respective seat, each such passage being so dimensioned that the objects can pass one by one from the inner edge to the respective seat;

means for exerting on the objects a radially outwardly directed force urging them toward the outer edge of the face and toward the seats via the passages of the guide member, the means for exerting including:

means for rotating the plate about the plate axis at such a speed that the resultant centrifugal force moves the objects radially outward, and

means for rotating the seats and the guide member about the plate axis opposite to the predetermined direction relative to the plate;

means including respective receptacle holders fixed relative to the seats and to the guide member for temporarily holding a respective receptacle above each seat in a position in which this receptacle is positioned with its hole for the object as an upper extension of the seat, these holders and their receptacles therefore orbiting about the plate axis as the plate rotates thereabout;

means for feeding the receptacles to the holders and means for taking the receptacles from the holders at respective intake and output stations along the outer plate edge during rotation of the seats and guide member;

respective punches at the seats in vertical alignment therewith, each punch being vertically slidable relative to the respective seat and to the guide member and having a substantially planar upper end movable between an upper position in which it is coplanar with the upper face of the plate to define the floor of the respective seat and a lower position in which it lies above the upper face of the plate; and

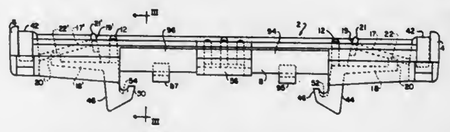
means for sliding the punches as the seats and guide member orbit so that each punch is in the lower position in the intake station and moves into the upper position between the intake station and the output station for thereby pushing an object up into each hole as the respective receptacles travel from the intake to the takeoff stations.

4,498,235

RAZOR BLADE ASSEMBLY

Chester F. Jacobson, Southboro, Mass., assignor to The Gillette Company, Boston, Mass.

Continuation-in-part of Ser. No. 419,202, Sep. 17, 1982,. This application Aug. 2, 1983, Ser. No. 519,565
Int. Cl.³ B26B *21/22*
U.S. Cl. 30—47 **1 Claim**



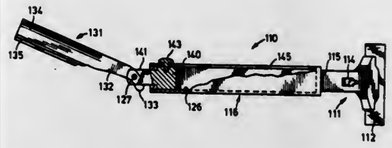
1. A razor blade assembly comprising a body member having first and second end portions interconnected by front and back wall portions, first and second frame portions interconnecting said front and back wall portions, said end portions having therein opposed slots, a first pair of spring fingers extending outwardly from said frame portions parallel to said front and back wall portions and in opposite directions, said fingers being aligned with a first pair of said slots, a second pair of spring fingers extending inwardly from said end portions, and in generally opposite directions toward one another, said second pair of spring fingers being aligned with a second pair of said slots, a third pair of spring fingers extending inwardly from said end portions, and in generally opposite directions toward one another, said third pair of spring fingers being aligned with a third pair of said slots, a guard portion mounted on said first pair of spring fingers and disposed in said first pair of slots, and first and second blade members having, respectively, first and second cutting edges parallel with each other and facing a same direction to act in tandem upon a surface being shaved, said blade members being disposed in said second and third pairs of slots, respectively and resting upon said second and third pairs of spring fingers, respectively, said first and second blade members and said guard portions each being independently movable relative to the body member in response to forces encountered during a shaving operation by flexure of said spring fingers, the blade assembly having pivot mounting means thereon for pivotal attachment to a razor handle assembly, whereby the blade assembly, as a whole, is pivotally movable on said handle assembly in response to forces encountered during the shaving operation, and cam means disposed on an underside of said body member and adapted to receive a cam follower mounted on said razor handle to maintain maximum contact between said surface being shaved and said independently movable first and second blade members and guard portion.

4,498,236

SHAVING INSTRUMENT COMPLEX

Marvin H. McIntyre, and Ernest L. McIntyre, both of 410 S. 2nd St., Caseyville, Ill. 62232

Filed Sep. 22, 1982, Ser. No. 421,301
Int. Cl.³ B26B *21/08*
U.S. Cl. 30—34.1 **4 Claims**



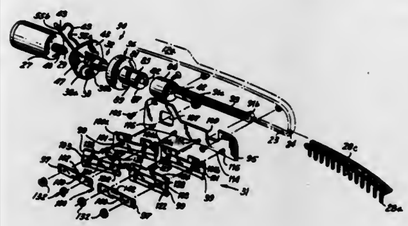
1. A compound shaving instrument comprising, in combination: an elongated main handle member having first and second opposite ends and a hollow internal chamber therebetween; safety razor means mounted on the first end of said handle member and including a shaving head that is permanently attached to the first end, and replaceable razor blade means having a cutting edge and being removably held by said shaving head in a position guarding the cutting edge against unrestricted cutting contact with a user; and straight razor means movably mounted on the second end of said handle member and including integrally formed shank and blade portions, said blade portion being carried on one end of said shank portion and having an exposed and unguarded cutting edge during use, said shank portion having a pivotal mounting connection adjacent to its other end for swinging movement to carry said integral blade portion to various angular positions relative to said handle member for shaving purposes; and said internal chamber of said handle member forming a housing to accommodate and store said blade portion of said straight razor means during non-use thereof, whereby said safety razor means and said straight razor means are selectively usable from opposite ends of the same handle member for obtaining an optimum total shave.

4,498,237

HAIR TRIMMER

William Mack, Commack, N.Y.; Herbert Morrison, Trumbull, and Frank Chiapetta, Woodbury, both of Conn., assignors to Clairol Incorporated, New York, N.Y.

Filed Jan. 18, 1983, Ser. No. 459,009
Int. Cl.³ B26B *19/02, 19/20*
U.S. Cl. 30—200 **11 Claims**



1. A cutting unit comprising:

a cutting assembly including multiple sets of tandem arcuate blades, said multiple sets being longitudinally aligned and arranged in order to conform the cutting surfaces of all sets along a single substantially arcuate path, each set comprising opposing first and second toothed arcuate blades, each said first toothed arcuate blade bearing against and longitudinally slidable along the corresponding second toothed arcuate blade in a longitudinally reciprocating cutting motion, said first blades of each set being coupled for simultaneous longitudinal reciprocating motion relative to the corresponding second blades of each set; and

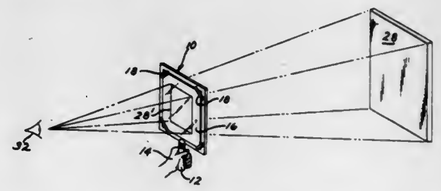
reciprocating means for producing said longitudinal reciprocating motion of all said first blades simultaneously.

4,498,238

TRANSPARENT PERSPECTIVE TRACING BOARD

James N. Vaughn, Georgetown, Ind., assignor to Richard L. Caslin, Louisville, Ky.

Filed Sep. 30, 1982, Ser. No. 429,949
Int. Cl.³ B44D *2/00*
U.S. Cl. 33—1 K **1 Claim**



1. A transparent perspective hand-held tracing board adapted for use with a sheet of transparent drawing material that is to be attached to the front surface thereof, said tracing board comprising:

a. a rigid panel of transparent material taken from the group consisting of plastic and glass:

b. a measured pattern imprinted on the transparent panel to assist in judging distance and relative angles:

c. a supporting handle secured adjacent one side edge and extending from the transparent panel, the handle providing mechanical advantage to assist in holding the panel steady for long periods of time, where the handle is for grasping by one hand in holding the panel in space at a predetermined angle and distance in front of a user, and an object at a distance may be sighted through the transparent panel and positioned within the measured pattern on the panel so that the said object can then be traced by the user's other hand with a drawing instrument that is capable of leaving a mark, wherein the said supporting handle is mounted on the lower edge of the transparent panel, and it includes a universal socket for providing angular adjustablity between the handle and the panel.

4,498,239

FEELER GAGE MOUNTING SYSTEM

Harry Epstein, Seaford, N.Y., assignor to Kastar, Inc., Bellport, N.Y.

Filed May 19, 1983, Ser. No. 491,368
Int. Cl.³ G01B *3/32*
U.S. Cl. 33—168 R **9 Claims**

1. A feeder gage mounting system comprising in combination:

a case having a pair of flexible opposed walls,

a pin including an elongated pin body having opposed first and second ends,

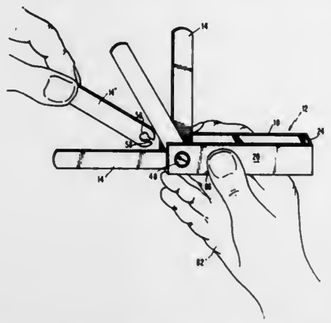
said first end being non-rotatably affixed to one of said walls,

means for connecting said second end of said pin body to the other of said walls and for flexing said other wall towards said one wall whereby said opposed walls are pressed against said plurality of blade members, and

a plurality of blade members, each of said blade members being a flat, elongated member having opposed blade end portions, each said blade member forming an approximately circular hole spaced proximate to one of said blade

end portions, said hole being adapted to accept said elongated pin body in rotatable association, each of said blade members forming a slot joining said one end portion and said circular hole adapted to pass said pin body into a rotatable connection with said blade members at said hole and from rotatable connection with said blade members at said hole,

said elongated pin body having a first pair of opposed sides spaced apart at a maximum first distance joining a second



pair of opposed sides spaced apart at a second distance, said second pair of sides being planar, said first distance being greater than said second distance, said first distance being slightly less than the diameter of said hole,

said slot having opposed planar surfaces spaced apart at a third distance slightly greater than said second distance and less than said first distance of said opposed sides of said pin body,

whereby said pin body can be slid into and from said circular hole.

4,498,240

SEAM-DETECTING DEVICE FOR INTERCONNECTED SECTIONS OF SHEET MATERIAL

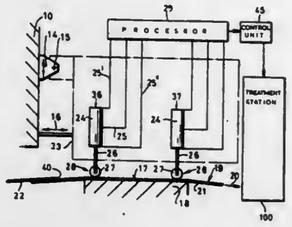
Alfonsius A. J. Van Dijk, St. Odilienberg, Netherlands, assignor to Johannes Menschner Maschinenfabrik GMBH & Co. KG, Viersen, Fed. Rep. of Germany

Filed May 12, 1983, Ser. No. 493,918

Claims priority, application Fed. Rep. of Germany, May 12, 1982, 3217815

Int. Cl.³ G01B 7/06

U.S. Cl. 33—147 L **12 Claims**



11. In an apparatus for the continuous advancement of a web of consecutive sections of sheet material, overlappingly interconnected by generally transverse seams of greater thickness, through a treatment station,

the combination therewith of a seam detector comprising:

a support with a flat surface underlying the path of said web;

a first, a second and a third thickness sensor fixedly disposed above said support and provided with mobile contactors engageable with an upper surface of a section of sheet material passing over said support, each of said sensors including a generator of variable voltage depending on the position of the respective contactor, said first and second sensors being spaced apart in the direction of advancement, said first and third sensors being spaced apart in a direction transverse to the direction of advancement; and

processing means connected to said sensors for signaling the presence of a seam in response to similar voltage changes generated by said first and third sensors within a predetermined interval of each other, indicative of increases in web thickness along a generally transverse line, unaccompanied by a compensatory voltage change generated by said second sensor.

4,498,241

HEIGHT GAUGE

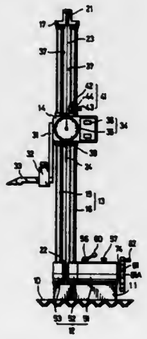
Tokuzo Nakaoki, Kawasaki, Japan, assignor to Mitutoyo Mfg. Co., Ltd., Tokyo, Japan

Filed Aug. 4, 1982, Ser. No. 405,005

Claims priority, application Japan, Aug. 10, 1981, 56-118472[U]; Sep. 14, 1981, 56-145046; Sep. 14, 1981, 56-145047

Int. Cl.³ G01B 5/00

U.S. Cl. 33—172 R **13 Claims**



1. A height gauge comprising:

a base;

a plurality of elongated supports extending away from said base, said supports having lower ends located close to said base and upper ends located remote from said base;

a tilting mechanism mounted on said base, the lower ends of said supports being connected to said tilting mechanism whereby said supports can be tilted with respect to said base;

a slider movably supported on said supports;

an indicating device for measuring the displacement of said slider along said supports;

a driving mechanism for moving said slider along said supports, said driving mechanism comprising a drive shaft extending transversely to said supports and being mounted for rotation with respect to said base, a control wheel provided at one end of said drive shaft, a lower pulley mounted for integral rotation with said drive shaft, an upper pulley mounted on said supports adjacent to the upper ends of said supports, and a flexible cord member would around said upper and lower pulleys for movement therewith, said cord member being attached to said slider so that movement of said cord member causes movement of said slider along said supports;

a fine adjustment mechanism for driving said driving mechanism at a low speed to move said slider along said supports at a low speed, said fine adjustment mechanism including a large diameter gear which is stationary with respect to said base and has a central hole therein, said drive shaft extending through said central hole and being rotatable therein, a shiftable pinion which can selectively be moved into meshing engagement with said gear, and a finger grip mounted on said control wheel and connected for integral rotation with said pinion, said finger grip being movable in a direction parallel to the lengthwise direction of said drive shaft to bring said pinion into and out of meshing engagement with said gear.

4,498,242

DEVICE FOR POSITION-CHECKING OF THE SHOCK-ABSORBER HEADS OF A FRONT VEHICLE SUSPENSION SYSTEM

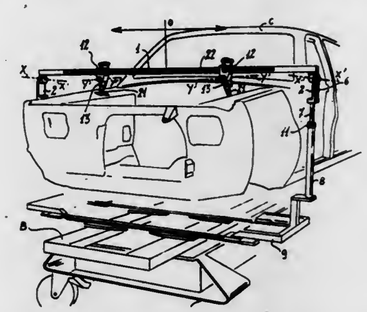
Germain Celette, Vienne, France, assignor to Celette S.A., Vienne, France

Filed Sep. 27, 1983, Ser. No. 536,396

Claims priority, application France, Sep. 30, 1982, 82 16439; Sep. 15, 1983, 83 14670

Int. Cl.³ G01B 5/25

U.S. Cl. 33—180 AT **13 Claims**



1. A device for checking the positions of shock-absorber heads of a front vehicle suspension system of the McPherson type, wherein said device comprises:

a horizontal cross-beam which is intended to be placed above the front end of the vehicle to be checked and the ends of which are mounted so as to be capable of pivotal displacement about a transverse horizontal axes defined by two lateral support brackets;

means cooperating with the lateral support brackets for supporting said cross-beam;

two sliders slidably mounted on said cross-beam and carrying a control arm which is capable of pivotal displacement about an axis disposed in the longitudinal direction and the lower end of which is intended to be placed opposite to the center of the head of either of the two corresponding shock-absorbers;

separate graduated scales which make it possible after this coincident position-setting operation to determine the angle of relative forward or backward displacement of the cross-beam with respect to its lateral support brackets as well as the angle of outward or inward inclination of the control arms of the sliders.

4,498,243

MOTOR VEHICLE CENTERING SYSTEM

Hiroo Kashiwagi, Aichi, Japan, assignor to Toyota Jidosha Kabushiki Kaisha, Aichi, Japan

Filed Jan. 19, 1983, Ser. No. 459,267

Claims priority, application Japan, Jan. 22, 1982, 57-7703[U]

Int. Cl.³ G01B 5/255

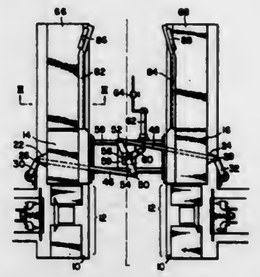
U.S. Cl. 33—203.12 **9 Claims**

1. A motor vehicle centering system for centering a motor vehicle having pairs of wheels, comprising:

a. a stationary frame;

b. a pair of first tread-boards extending along and on both sides of a center line between said first tread-boards, each of said first tread-boards having a width wider than the width of said wheels, said first tread-boards separated laterally by a distance corresponding to the approximate lateral distance between said wheels, and each of said first tread-boards being laterally movably mounted on said frame;

c. a pair of wheel guides symmetrically positioned on opposite sides of said center line for moving said wheels which contact said first tread-boards into positions symmetrical relative to the center line, each of said wheel guides being laterally movably mounted on said frame;



d. link means mounted on said frame for maintaining said pair of wheel guides symmetrical relative to said center line and allowing said wheel guides to move symmetrically laterally; and

e. driving means for driving said link means to move said wheel guides and push wheels in contact with said first tread-boards to positions symmetrical relative to said center line.

4,498,244

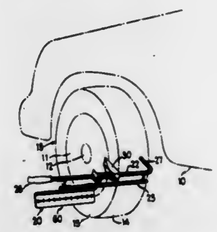
TARGET INCLUDING SLIDING SCALE

Roy B. Bendickson, and Alfred A. Wridt, both of Racine, Wis., assignors to Snap-on Tools Corporation, Kenosha, Wis.

Filed Oct. 14, 1983, Ser. No. 542,260

Int. Cl.³ G01B 7/315

U.S. Cl. 33—203.15 **25 Claims**

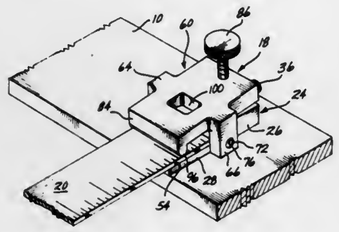


1. A target for use in equipment for aligning a vehicular wheel which carries a tire thereon having a tread surface and a pair of side walls, said target comprising an elongated body, first and second jaws depending from said body for respectively engaging the side walls of the tire, at least one of said jaws being movable toward and away from the other of said jaws, first means for latching said jaws at a selected spacing therebetween so as to be mounted on the tire, scale means slidably carried by said body, and second means for latching said scale at a selected position on said body.

4,498,245
ADAPTOR FOR CLAMPING OPTICAL SCALE ON TOOLING BUTTON

Robert B. Mayor, Sumner, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Jun. 30, 1983, Ser. No. 509,663
Int. Cl.³ G01C *21/00*
U.S. Cl. 33—286 14 Claims

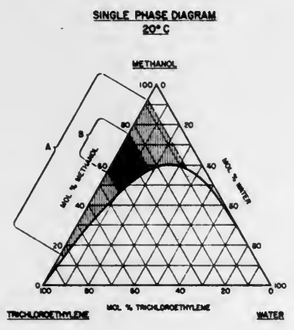


1. For use in positioning optically read scales on tooling button-type bench marks, an adaptor clamp comprising:
- a first plate having an opening adjacent one end to receive a tooling button;
- means attached to said first plate to secure said first plate on said button;
- a flat surface portion of said first plate spaced from said one end and being adjacent an inner peripheral portion of said opening spaced from said one end;
- a cutaway portion adjacent said flat surface and at said inner peripheral portion of said opening to align said flat surface with a button in said opening so that a scale on said flat surface may abut a peripheral surface portion of said button complementary to said opening when the scale and peripheral surface portion are within the cutaway portion;
- means pivotally engaging a second plate to said first plate; and
- means on said second plate to pivot one end thereof toward said flat surface of said first plate for clamping a scale thereon in abutment with said tooling button.

4,498,246
ALCOHOL/HEAVY LIQUID DRYING OF COAL

Terry S. Cantu, Ponca City, Okla., and Mark C. Williams, Berkeley, Calif., assignors to Conoco Inc., Ponca City, Okla.

Filed Sep. 22, 1983, Ser. No. 535,003
Int. Cl.³ F26B *3/00*
U.S. Cl. 34—9 10 Claims

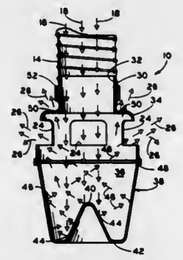


1. A method for removing water from coal containing water comprising contacting said coal with a solution of an alcohol containing from 1 to 3 carbon atoms and an organic liquid, said solution having a specific gravity in the range of from about 1.2 to about 1.4, at a temperature sufficiently high to retain said alcohol and organic material in a single continuous phase and for a time sufficient to remove water from the coal, then separating the coal from the alcohol/organic solution and water.

4,498,247
VENT ATTACHMENT FOR A HOT AIR CLOTHES DRYER

Peter J. Benevento, West Hempstead, N.Y., assignor to Lambro Industries, Inc., Amityville, N.Y.

Continuation of Ser. No. 402,206, Jul. 26, 1982, abandoned. This application Jul. 19, 1984, Ser. No. 632,550
Int. Cl.³ F26B *11/04*
U.S. Cl. 34—82 1 Claim



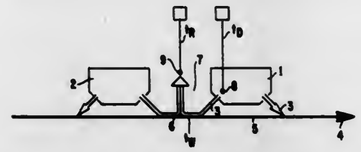
1. A hot air venting device of a type having an operative position in attached relation to an end of a hose of a hot air-operated clothes dryer to facilitate the venting to atmosphere of hot air exiting from said clothes dryer through said hose, said venting device comprising a body having a cylindrical portion bounding an inlet opening at said attachment of said venting device to said hose for allowing the entry thereinto of said exiting hot air, said body having a side wall extending rearwardly from said inlet opening a back wall so as to define a chamber for receiving said hot air, said side wall having exit openings therein adjacent the upper end of said chamber which are oriented substantially in the flow direction of said entering hot air, the back wall oriented in facing relation to said inlet opening and said back wall comprising an inwardly projecting conical shape formed by substantially straight walls in cross section located centrally in said back wall and spaced rearwardly from said exit openings, said hot air flow being characterized such that the hot air first exits the hot air-operated clothes dryer, then passes through the hose and into the inlet of the venting device, the hot air then bypasses the exit openings and impinges upon said conical shape at the back wall, whereby the impingement against said conical shape causes angular flow paths in said hot air, the hot air then flows through said angular flow paths wherein the hot air is discharged through said exit openings, the conical shape which causes the angular flow paths contributes to increasing the volume of hot air which is vented through said exit openings of said venting device.

4,498,248
METHOD AND DEVICE FOR CONTROLLING A CONTINUOUS HEAT TREATMENT OF A TEXTILE FABRIC WEB

Manfred Pabst, Cologne, Fed. Rep. of Germany, assignor to A. Monforts GmbH & CO., Moenchen- Gladbach, Fed. Rep. of Germany

Filed Sep. 8, 1982, Ser. No. 416,085
Claims priority, application Fed. Rep. of Germany, Sep. 8, 1981, 3135473; Dec. 8, 1981, 3148576
Int. Cl.³ F26B *21/00*
U.S. Cl. 34—89 18 Claims

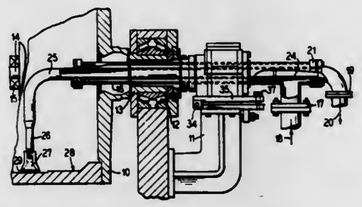
1. Apparatus for sensing the continuous convective heat treatment of a textile fabric web, comprising a plurality of nozzles disposed in zones sequentially at a web transport path, said nozzles having nozzle outflow channels adjacent the web for directing heated air toward the web and nozzle return flow channels adjacent the web for removing air, a first measuring sensor disposed directly in each of said nozzle outflow channels for remotely performing measurements for each temperature difference of the web at the transport path, and a second measuring sensor disposed directly in each of said nozzle return flow channels for measuring the amount of heat given off to the web, which is proportional to the temperature of the web, as a function of the difference between the temperature of the air impinging on the web and the temperature of the air reflected by the web.



4,498,249
DRYER STATIONARY SYPHON ADJUSTMENT MECHANISM

Ronald D. Cooke, and Neil A. Laage, both of Beloit, Wis., assignors to Beloit Corporation, Beloit, Wis.

Filed Sep. 30, 1982, Ser. No. 430,948
Int. Cl.³ F26B *13/08*
U.S. Cl. 34—125 6 Claims

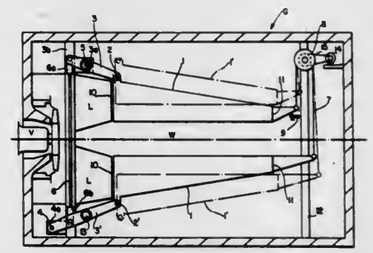


1. A mechanism for drying a traveling web comprising in combination:
- a hollow cylindrical dryer drum having an inner surface against which steam condensate collects and being rotatably supported on stationary frame means;
- means for introducing steam into the interior of said drum;
- a syphon tube extending into an end of the drum with an internal portion having a head adjacent the inner surface of the drum for collecting condensate and having an external portion for receiving the collected condensate;
- a rotary steam seal through which the tube extends accommodating rotation of the drum without leakage of steam past the tube; and
- a pivotally adjustable mount for the tube on said frame means externally of the drum and an adjustment member for adjusting the angular position of the tube on said mount and thereby adjusting the spacing between the head end and the inner surface of the drum.

4,498,250
APPARATUS FOR TREATING LENGTHS OF MATERIALS WITH A GASEOUS MEDIUM

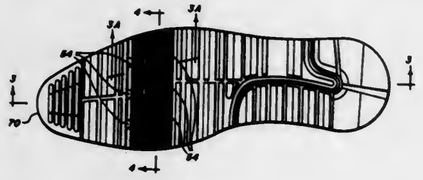
Fritz Gageur, Lindau-Bodolz, Fed. Rep. of Germany, and Horst Wohlgenannt, Bregenz, Austria, assignors to Lindauer Dornier Gesellschaft mbH, Lindau/Bodensee, Fed. Rep. of Germany

Filed Nov. 10, 1983, Ser. No. 550,642
Claims priority, application Fed. Rep. of Germany, Dec. 22, 1982, 3247459
Int. Cl.³ F26B *13/02*
U.S. Cl. 34—155 7 Claims



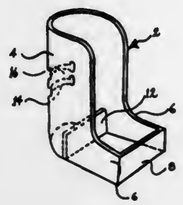
1. In an apparatus for treating a web of material in a treatment chamber by flowing a gaseous treatment medium onto the web through upper and lower nozzle boxes operatively arranged in said treatment chamber to form a gap through which said web may pass, each nozzle box having nozzle openings in a box wall facing said gap and a treatment medium supply inlet arranged for cooperation with a treatment medium supply conduit, the improvement comprising hinging pivot means (2, 2') connected respectively to one end (10) of each upper and lower nozzle box adjacent to said supply inlet, tilting lever means (3, 3') pivotally connected to said hinging pivot means (2, 2') of said nozzle boxes, journal means (4, 5) operatively securing said tilting lever means (3, 3') to said treatment chamber whereby said tilting lever means (3, 3') are tiltable in a plane extending substantially perpendicularly to a plane defined by said web of material, linkage drive means (6) operatively connected to said tilting lever means (3, 3') for interconnecting two nozzle boxes forming a pair for driving said tilting lever means (3, 3') in synchronism and in opposite directions, whereby said upper and lower nozzle boxes forming a pair are moved away from each other and toward each other in synchronism, so that said box walls with the nozzle openings therein extend substantially in parallel to each other in a pair of nozzle boxes, said hinging pivot means (2, 2') defining hinging axes extending in parallel to said web of material, coupling means (7) operatively connected to said upper and lower nozzle boxes forming a pair at an opposite end (11) remote from said hinging pivot means (2, 2'), and direction reversing means (8) arranged in said treatment chamber for cooperation with said coupling means (7) in such a position that said coupling means (7) may move said opposite ends (11) of said pair of nozzle boxes also in synchronism with each other and in opposite directions, whereby said upper and lower nozzle boxes forming a pair are tiltable relative to each other about said hinging axes when said tilting lever means (3, 3') are held in a stationary position, for folding apart said nozzle boxes forming a pair.

4,498,251
SHOE DESIGN
Yoon K. Shin, Pusan, Rep. of Korea, assignor to Mercury International Trading Corp., Mansfield, Mass.
Filed Feb. 7, 1983, Ser. No. 464,204
Int. Cl.³ A43B *13/14, 13/18, 13/00*
U.S. Cl. 36—30 R 19 Claims



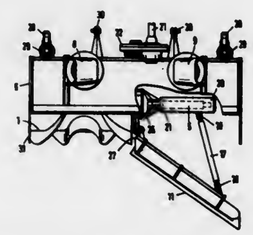
18. An article of footwear comprising:
a rubber outsole extending from the toe to the heel and having a section extending the full width of the sole structure and positioned to underlie the ball of the foot,
a plurality of parallel slots traversing the section across the full width of the outsole and extending upwardly from the bottom surface to just short of the top surface thereof to form hinges in the outsole to make the section very flexible so that it can bend easily,
and a plurality of additional transverse slots provided in the section of the outsole and extending from the upper surface of said section downwardly toward the lower surface, said additional slots lying between the parallel transverse slots that form the hinges.

4,498,252
FOOTWEAR PROTECTOR
Paul E. Connors, 2275 Grand Ave., San Diego, Calif. 92109
Filed Sep. 30, 1982, Ser. No. 431,155
Int. Cl.³ A43B *13/22*
U.S. Cl. 36—72 B 5 Claims



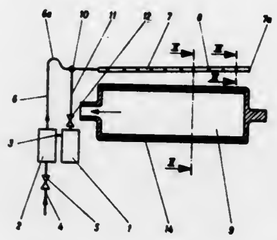
1. A device to protect a heel and a portion of a backside of footwear comprising:
(a) a shield portion which is a wall of generally U-shaped cross-section adapted to envelop the sides and backside of the heel and a suitable portion of the backside of the footwear,
(b) a heel stop portion disposed at a base of the shield adapted to prevent the shield from riding up the heel,
(c) a first heel binding strap portion affixed to the shield at its base and adapted to resiliently embrace a breast of the heel and thereby frictionally hold the device in place, and
(d) a second heel binding strap extending across a saddle of the shield and affixed to the shield at its base and adapted to resiliently embrace a breast of a heel which is too small to be embraced by the first heel binding strap.

4,498,253
SNOW REMOVAL
Alfred Schmidt, Friedrich Strasse 17, D-7822 St. Blasien, Fed. Rep. of Germany
Filed Jul. 8, 1983, Ser. No. 511,959
Claims priority, application Fed. Rep. of Germany, Jul. 14, 1982, 3226273
Int. Cl.³ E01H *5/09*
U.S. Cl. 37—249 11 Claims



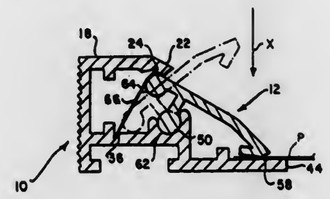
1. A snowblower with free support axles for a plurality of removable propeller drums mounted within a housing, said axles being situated horizontally and perpendicular to the driving direction of said drums and including a drive for the propeller drums, means for replacing one of said propeller drums with a snowplow blade including a bushing means mountable on one of said free support axles when said propeller drum has been removed, means mounting the end of said blade nearer to the remaining propeller drum rigidly to said housing, and adjustable means for mounting the end of said blade which is remote from said remaining propeller drum to said bushing means carried by said one of said free support axles from which the propeller drum has been removed, and for adjusting the angle of said blade relative to its support axle by said adjustable means.

4,498,254
SPRAYING APPARATUS FOR LAUNDRY MANGLES
Gotthard Schädlich, Aue, German Democratic Rep., assignor to VEB Kombinat Textima, Karl Marx Stadt, German Democratic Rep.
Filed May 7, 1982, Ser. No. 375,856
Claims priority, application German Democratic Rep., Sep. 1, 1981, 232916
Int. Cl.³ D06F *65/10*
U.S. Cl. 38—14 19 Claims



1. In a steam trough mangle comprising at least one mangle unit including a mangle cylinder having a wrapping and at lease one steam trough partly surrounding said cylinder forming a pressing surface, an apparatus for decreasing the friction between the pressing surface and laundry while being ironed and dried by means of said mangle, said apparatus comprising
(A) an atomizer for atomizing a liquid lubricating agent by means of a gaseous medium under pressure,
(B) at least one conduit connected with said atomizer for conducting atomized lubricating agent mist away from said atomizer (A), and
(C) at least one pipe connected with said conduit (B), said pipe being provided with openings and extending substantially over the entire width of said at least one mangle unit for spraying said lubricating agent through said openings onto said pressing surface and the wrapping thereby to decrease friction between the laundry and the pressing surface during drying and ironing of the laundry.

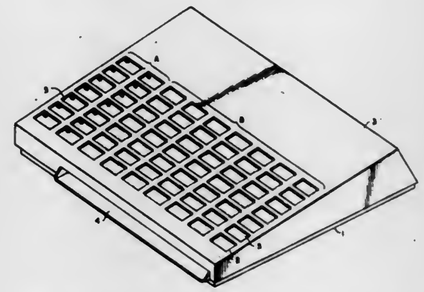
4,498,255
PICTURE FRAMES
Malcolm G. Heard, P.O. Box 6662, Roggebaai, 8012, Cape Town, Cape Province, South Africa
Filed May 25, 1983, Ser. No. 497,936
Claims priority, application South Africa, May 25, 1982, 82/3629
Int. Cl.³ A47G *1/06*
U.S. Cl. 40—156 14 Claims



1. In a picture frame, a structure comprising a base frame member having a wall which forms part of the outer boundary of the frame and first and second spaced flange structures protruding from said wall, said flange structures defining a mouth constituting the entrance to the interior of said frame member, and said first flange structure protruding beyond the second flange structure to provide a flange which forms a backing for an edge zone of a picture, a picture retaining member pivotally mounted on said first flange structure, said retaining member extending through said mouth thereby to provide a first portion which is within the interior of the frame member and a second portion which lies externally of said interior, said second portion including a picture engaging face for gripping a picture between itself and said flange, and said first portion including an end face which swings in an arc when said retaining member is displaced about its pivotal mounting, and a leaf spring in said interior and spanning between said flange structures, said end face bearing on the leaf spring which lies along a chord of the arc along which said end face moves whereby the leaf spring is increasingly deformed and then allowed to relax as said picture retaining member is displaced about its pivotal mounting from either of its end positions.

4,498,256
ITEM INPUT DEVICE FOR A DATA PROCESSING SYSTEM
Toshiaki Tanaka; Masao Fukai; Tatsuro Onuma, and Ryohei Kinoshita, all of Suzuka, Japan, assignors to Fujitsu Limited, Kawasaki, Japan
Filed Aug. 14, 1981, Ser. No. 292,913
Claims priority, application Japan, Sep. 4, 1980, 55/122789; Sep. 4, 1980, 55/122790
Int. Cl.³ G09F *11/02*
U.S. Cl. 40—475 16 Claims

1. An input device for a data processing system, the device being operable in a winding direction and a reverse direction and having a display location for displaying information, comprising:
(a) a rotatable shaft;
(b) a page sheet unit capable of removable attachment with the rotatable shaft, the page sheet unit having
(i) a flexible base sheet with one end having connected thereto a metal linkage pin, the opposite ends of the metal linkage pin projecting from opposite sides of the base sheet, and the rotatable shaft having grooves for receiving in linking arrangement the opposite ends of the metal linkage pin when the page sheet unit is removably attached to the rotatable shaft, and
(ii) a plurality of flexible page sheets, each bearing input information designations, each being bound in the page sheet unit separate from the rotatable shaft and each being wound around the circumference of the rotatable shaft such that the plurality of page sheets overlap one another with their radially outermost ends spaced apart therearound and the ends of the plurality of page sheets which are radially innermost during operation are connected to the flexible base sheet so as to be spaced apart around the circumference during operation;



(c) a page sheet unit exchange mouth opening to the exterior of the device;
(d) a guide path extending from the exchange mouth to the rotatable shaft; and
(e) an endless belt extending around part of the rotatable shaft for maintaining the winding direction of the plurality of page sheets of a page sheet unit removably attached to the rotatable shaft,
wherein the device is operated by inserting a page sheet unit through the exchange mouth and into the guide path so as to link the both ends of the linkage pin and the grooves of the rotatable shaft, by selecting a desired page sheet of the plurality of page sheets by rotation of the rotatable shaft in the winding direction, by deploying a selected page sheet to the display location by rotation of the rotatable shaft in the reverse direction, by releasing the removably attached page sheet unit by rotation of the rotatable shaft in the reverse direction, and by guiding the released page sheet unit out of the device through the exchange mouth via the guide path.

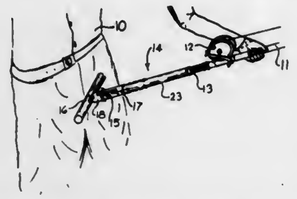
4,498,257
FISHING ROD BUTT
Harold L. Jekel, Rte. 5097, Corning, Calif. 906021
Filed May 23, 1983, Ser. No. 496,909
Int. Cl.³ A01K *87/02*
U.S. Cl. 43—23 3 Claims

1. A fishing rod butt, comprising:
a main butt structure constructed of substantially round stock and having a front end and a back end;
means for attaching a fishing rod to said front end of said main butt structure;
a body support, constructed of substantially round stock of substantially the same diameter as that of which said main butt structure is constructed, having a first end and a second end, said body support being pivotally attached to

said back end of said main butt structure by pivot means positioned midway between said first end and said second end so that said body support pivots to a position in line with said main butt structure and a position substantially perpendicular to said main butt structure;

positioning means for holding said body support in position with respect to said main butt structure, consisting substantially of:

a substantially cylindrical sleeve having an inner diameter substantially equal to the outer diameter of said main butt structure and of said body support such that said



substantially cylindrical sleeve slides laterally on said main butt structure over said body support into a position near said pivot means when said body support is positioned in line with said main butt structure, and into a position near said pivot means when said body support is pivoted to a position substantially perpendicular to said main butt structure, and

locking means for holding said substantially cylindrical sleeve in position when said substantially cylindrical sleeve is slid into a position near said pivot means, whereby the movement of said body support with respect to said main butt structure is limited.

4,498,258

SPINDLE TILTING CONTROL DEVICE FOR A PLANE AND SPHERICAL ROTARY GRINDING MACHINE, FINE GRINDING MACHINE, LAPPING MACHINE AND POLISHING MACHINE

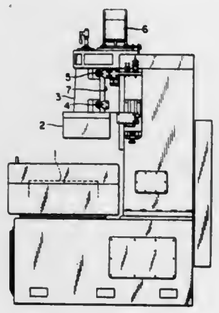
Yoshio Ishimura, 25-5 1-chome Shibayama, Funabashi-shi, Chiba-ken, Japan

PCT No. PCT/JP81/00053, § 371 Date Nov. 10, 1982, § 102(e) Date Nov. 10, 1982, PCT Pub. No. WO82/03039, PCT Pub. Date Sep. 16, 1982

PCT Filed Mar. 10, 1981, Ser. No. 442,221

Int. Cl.³ B24B *5/00*

U.S. Cl. 51—131.3 **1 Claim**



1. A rotary grinding machine, comprising:

(a) a machine bed with an upper horizontal part, a central vertical part, and a lower horizontal part, said central vertical part having a vertical wall;

(b) a rotary table (1) disposed for rotating in the horizontal plane disposed on said lower horizontal part, including magnetic or vacuum means to retain a workpiece;

(c) a vertical spindle and spindle head (3) alongside the central part of said frame disposed for holding a grindstone (2) so as to contact the workpiece which is to be placed on said rotary table, said spindle head usually rotating said grindstone in the horizontal plane, said spindle including a vertical plane section disposed parallel to said vertical wall;

(d) a joint (7) for holding said spindle plane section to said vertical wall, including a cylindrical shaft section penetrating said vertical wall and a hemispherical head section penetrating said plane section, said head section allowing rotation thereabout by said spindle in universal directions of about sixty degrees; and,

(e) a motor (6) connected to said upper horizontal part, operatively coupled to said spindle to rotate the spindle.

4,498,259

NUMERICAL CONTROLLER FOR A GRINDING MACHINE

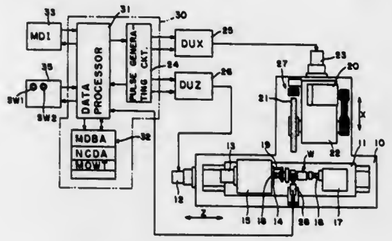
Katsumi Yamamoto, Takahama; Yuichiro Komatsu, and Ikuro Hamada, both of Kariya, all of Japan, assignors to Toyoda Koki Kabushiki Kaisha, Kariya, Japan

Filed Jun. 13, 1983, Ser. No. 503,589

Claims priority, application Japan, Jun. 23, 1982, 57-107772

Int. Cl.³ B24B *49/02*

U.S. Cl. 51—165.71 **8 Claims**



1. A numerical controller for a grinding machine having a bed, a workpiece support mounted on said bed for rotatably carrying a workpiece provided with a plurality of portions to be ground respectively at different axial positions thereon, a wheel support mounted on said bed for rotatably carrying a grinding wheel, first feed means for effecting relative movement between said workpiece support and said wheel support so as to present selectively said workpiece portions before said grinding wheel, and second feed means for effecting relative movement between said workpiece support and said wheel support so as to move said grinding wheel toward and away from said workpiece, said numerical controller comprising:

data input means for inputting plural grinding modes in which said workpiece portions are to be ground and plural sets of machining data respectively used for grinding said workpiece portions;

memory means for storing said plural grinding modes and said plural sets of machining data input by said data input means;

grinding order decision means responsive to said plural grinding modes and said plural sets of machining data stored in said memory means for deciding a grinding order in which said workpiece portions are ground, in accordance with a predetermined rule; and

numerical control means responsive to said grinding order decided by said grinding order decision means and said plural sets of machining data stored in said memory means for controlling said first and second feed means to grind said workpiece portions in said decided grinding order and based upon said plural sets of machining data.

4,498,260

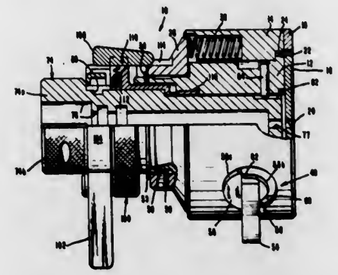
TOOL FOR OPTICALLY FINISHING MULTIPLE MOUNTED OPTICAL FIBERS

John S Doty, Yucaipa, Calif., assignor to Hughes Aircraft Company, El Segundo, Calif.

Filed May 10, 1982, Ser. No. 376,866

Int. Cl.³ B24B *41/06*

U.S. Cl. 51—217 R **5 Claims**



1. A tool for simultaneously grinding and polishing a plurality of optical fiber termini comprising:

an assembly mounting a plurality of fiber optic ferrules and their optical fibers in a specific and fixed order of their fiber optic termini;

a body having means including a carrier in threaded engagement with said body and supporting and positioning said assembly of ferrules and their fiber termini at a surface on said body, said body means having a first connection with said body for ensuring only linear movement of said assembly towards and away from said body surface and a second connection with said assembly for positioning said ferrules and said fiber termini with respect to said body surface, said assembly supporting means further including a split cradle insertable in said carrier and comprising a pair of halves having a cavity for receiving and holding said ferrules, and said second connection including an annular groove extending about said cradle and retaining means on said carrier engageable with said groove;

a housing surrounding said body and having a surface generally surrounding said body surface; and

means interconnecting said housing and said body for effecting relative movements of retraction and extension therebetween and including a mechanism defining limits to the relative movements, respectively to place said body and housing surfaces in a coplanar position prior to grinding of the ferrules and their fiber termini and to move said body surface into a position forward of said housing surface prior to said polishing of the ferrules and their fiber termini.

4,498,261

LOW PRESSURE VENTING PANEL

Bryce H. Wilson, Kansas City, and Franklin A. Hansen, Raytown, both of Mo., assignors to Continental Disc Corporation, Kansas City, Mo.

Filed Dec. 7, 1981, Ser. No. 328,189

Int. Cl.³ B65D *25/00*; F16K *17/40*

U.S. Cl. 52—1 **15 Claims**

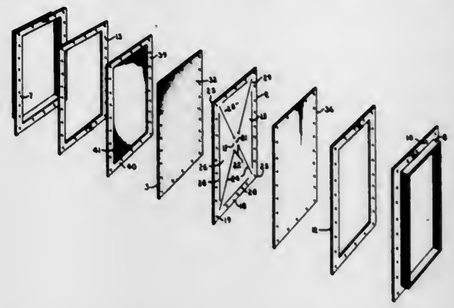
1. A low pressure venting panel comprising:

(a) a rupture body having a central portion and a peripheral margin;

(b) said rupture body having a plurality of slits in said central portion, said slits emanating from an area substantially proximate a center of said rupture body toward said peripheral margin so as to define a plurality of leaves such that said leaves are spreadable outward upon rupture of said rupture body toward said peripheral margin so as to define a plurality of leaves such that said leaves are spreadable outward upon rupture of said rupture body;

(c) a bonding agent on a first side of said rupture body; and

(d) a sealing membrane abutting said first side of said rupture body such that said rupture body and said sealing membrane are securely bonded to each other by said bonding agent at least on both sides of said slits and substantially adjacent thereto; and said sealing membrane being a semi-elastic material and being substantially resistant to expansion in the area of said slits.



4,498,262

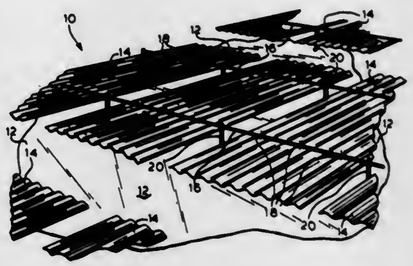
SOLAR SHIELD ASSEMBLY

Enrique Garcia, San Juan, P.R., assignor to Enrique Garcia Associates, San Juan, P.R.

Filed Apr. 6, 1981, Ser. No. 223,341

Int. Cl.³ E04H *14/00, 9/00*; E04D *13/16*

U.S. Cl. 52—173 R **7 Claims**



1. An assembly for shielding the concrete surface of a concrete building from solar radiation, which comprises;

a plurality of heat reflective, heat insulative, panels suspended in a position between the source of solar radiation and the surface of the concrete structure, the surface of said panel proximate to the concrete structure being non-planar; and

means attached to said panels for suspending them;

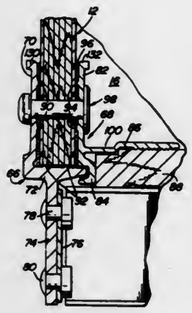
said panels being fixedly spaced from each other and the concrete surface so as to define first open spaces between and second open spaces beneath the panels, said open spaces being in open communication with the atmosphere whereby air may freely circulate in and out of the open spaces which are unchanging in dimension.

4,498,263
TELESCOPIC BEAM
Albert Böcker, Werne, Fed. Rep. of Germany, assignor to Albert Bocker GmbH & Co KG, Fed. Rep. of Germany
Filed Sep. 20, 1982, Ser. No. 420,408
Claims priority, application Fed. Rep. of Germany, Sep. 23, 1981, 3137846
Int. Cl.³ B66C *23/06*
U.S. Cl. 52—223 R **9 Claims**



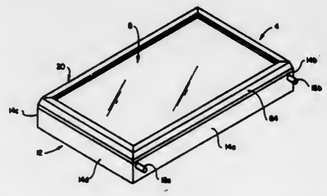
1. In a telescopic beam having a plurality of telescopically-interconnected members and means for locking the members of any adjacent pair together in a pre-determined extended position, the improvement which consists in utilizing elongate tensioning means bridging several of said telescopic members, the elongate tensioning means being guided by means of spacers attached to said telescopic members, the elongate tensioning means comprising at least one cable, wherein one end of said at least one cable is attached to a winding roller around which said at least one cable is windable, the winding roller being attached to a first telescopic member at one end of the beam, the other end of said at least one cable being attached to a stop member fixed to a second telescopic member adjacent to the other end of the beam.

4,498,264
ADHESIVELY BONDED TRAILER INCLUDING FIBER REINFORCED PANELS
Gerald P. McCafferty, Churchville; Stanley J. Navoczynski, Allentown, and Robert W. Kinkle, Wayne, all of Pa., assignors to The Budd Company, Troy, Mich.
Filed Dec. 20, 1982, Ser. No. 450,872
Int. Cl.³ E04B *2/60*
U.S. Cl. 52—281 **7 Claims**



1. In a trailer having a wall panel connected between a roof and floor,
means for supporting said wall panel comprising:
(a) top and bottom horizontal support structures extending along the roof and floor, respectively;
(b) each of said horizontal support structures including inner and outer rail elements disposed to receive said panel therebetween;
(c) means for securing said panel between said inner and outer rail elements;
(d) adhesive means for bonding said inner and outer rail elements to the inner and outer edge surfaces and edges of said panel to provide sealing around the edges of said panel; and
(e) spacer means between said inner and outer rail elements to provide uniform thickness of said adhesive means between said inner and outer rail elements and said panel.

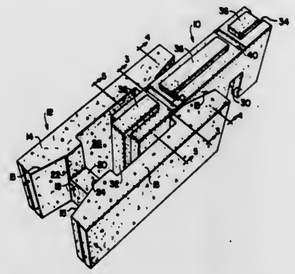
4,498,265
SOLAR COLLECTOR CONSTRUCTION AND SEALING ARRANGEMENT
James A. Leflar, and William C. Wardlow, both of Fort Collins, Colo., assignors to International Solarpanel, Inc., Fort Collins, Colo.
Filed Jun. 11, 1982, Ser. No. 387,358
Int. Cl.³ E06B *3/26*
U.S. Cl. 52—403 **7 Claims**



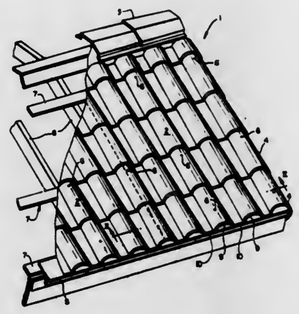
1. A sealing arrangement for sealing the edge of a glass panel or the like to the sides of a case where the sides of the case are formed with a generally cylindrical groove which faces upwardly and whose opening is narrower than the widest part of the groove, said sealing arrangement including an elongate resilient body comprising
an anchor section dimensioned to fit snuggly within the groove and having an annular cross-section with a slit at the top thereof and a generally cylindrical central opening which is wider than the slit,
a holding section formed integrally with the anchor section near the top thereof and having a side wall projecting upwardly from the top of the anchor section, and a pair of vertically spaced holding walls integrally formed with and projecting laterally from the side wall for receiving the edge of a glass panel or the like,
an upwardly projecting neck which is formed integrally with the anchor section near the top thereof and is separated from said side wall by said slit, and
wherein said sealing arrangement further includes an elongate lock strip which fits over said resilient body and includes
an elongate cap section which fits over the uppermost holding wall and the neck, and
a downwardly extending projection enlarged at the lower end thereof to fit within the slit and central opening of the anchor section.

4,498,266
CONCRETE BLOCK AND HOLLOW INSULATING INSERT THEREFOR
Arnold Perreton, Pleasant St. Webster, Rte. 5, Concord, N.H. 03301
Filed Jun. 22, 1982, Ser. No. 390,820
Int. Cl.³ E04B *2/00*
U.S. Cl. 52—405 **19 Claims**

1. A hollow insulating insert adapted to be used with a building block to form a composite wall structure, said insert comprisng:
(a) top, bottom, side and end walls,
(b) at least two longitudinally spaced notches formed in the bottom wall of the insert extending transversely through the insert and terminating at a point generally intermediate the height of the insert, each of said notches being defined by opposed side walls and a top wall,
(c) a recess formed in each side wall of said notch extending the full height thereof, the portions of the side walls of said notch on either side of said recesses being adapted to be compressed into said recesses during installation of said insert, and
(d) cavities formed in said insert extending upwardly from and communicating with said notch, said cavities terminating at their upper ends at a point relatively adjacent the top wall of the insert, the side walls of the insert which partially define said cavities being adapted to be compressed into said cavities during installation of said insert, said recesses and cavities being tightly sealed when said insert is located in position so as to form still air chambers.

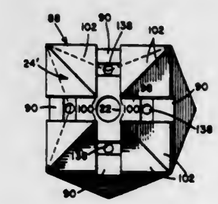


4,498,267
SIMULATED CLAY TILE ROOF CONSTRUCTION AND METHOD OF MAKING SAME
Ermon Beck, 55820 River Shore Estates, Elkhart, Ind. 46516
Filed Nov. 29, 1982, Ser. No. 445,060
Int. Cl.³ E04D *1/00, 1/08*
U.S. Cl. 52—555 **9 Claims**



1. A simulated clay tile roof construction comprising at least one unitary roof panel member formed to simulate a plurality of clay tiles;
said roof panel member being generally rectangular and having a series of raised partial cylindrical portions joined by flat portions;
the longitudinal edges of said roof panel member being located at raised partial cylindrical portions, for overlapping or underlapping raised partial cylindrical portions of longitudinal edges of adjacent roof panel members when in an in-use position forming a roof;
edge regions located at lateral edges of said roof panel member for overlapping or underlapping by engaging corresponding edge regions of adjacent roof panel member when in an in-use position forming a roof;
diagonally opposite cut-out corner sections on raised partial cylindrical portion edge regions for abuttingly engaging corresponding cut-out sections of diagonally adjacent roof panel members when in an in-use position forming a roof; and
diagonally opposite non cut-out corner sections being solid for overlapping or underlapping the abutting cut-out sections of adjacent roof panel members when in an in-use position forming a roof.

4,498,268
UNDERSEA PLATFORM CONSTRUCTION
Calvin R. Inman, 20 W. Mosholu Pkwy., S. Broax, N.Y. 10468
Filed Feb. 18, 1981, Ser. No. 235,502
Int. Cl.³ E04C *1/10*
U.S. Cl. 52—593 **1 Claim**



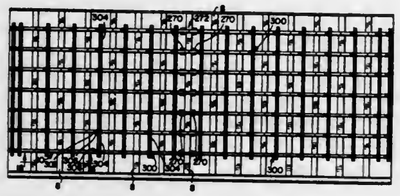
1. A foundation block comprising a rectahedral parallelepiped having quadrangular pyramidal faces, the opposite faces of which are concave and convex, respectively, said opposite faces being cruciform in shape with the legs of the crosses perpendicular to the intermediate sides of the rectahedral parallelepiped, said opposite faces sloping away from the inner vertices of the cross and said opposite faces being sized and shaped to interengage matingly, whereby a plurality of said foundation blocks can be interfitted into a three-dimensional array, said foundation block having a central vertical hole extending from the center of one face to the center of the opposite face, the faces through which said vertical hole extends being provided with notches on each of their four edges, said notches being sized and shaped to receive interlocking keys the exterior surfaces of which lie in a common plane flush with the outermost points of said block, whereby a common plane which may be used as a support for a planar surface facing the interlocking foundation blocks is formed.

4,498,269
KILN FLOOR SYSTEM
Norman H. Andreasen, 1520 W. Norwood Ave., Itasca, Ill. 60143
Division of Ser. No. 235,656, Feb. 18, 1981,. This application Dec. 1, 1982, Ser. No. 446,000
Int. Cl.³ E04C *2/42*
U.S. Cl. 52—669 **3 Claims**

1. A locating brace assembly for use with a plurality of rows of parallel stringer members supporting a kiln floor assembly comprising
a plurality of stringer members lying end to end in an upright configuration in a plurality of rows, each of said rows having a pair of closely spaced upright stringer members being horizontally spaced from each other,
a plurality of elongated locating braces adapted to extend across three or more rows of parallel stringer members at predetermined positions between the end to end extent of

said stringer members for the accurate alignment and installation thereof,

attachment means coupling each of said locating braces to each of the three or more rows of parallel stringer members, said attachment means being spaced along said braces by predetermined distances to establish the spacing of said rows of stringer members,



said attachment means includes a plurality of attachment assemblies for affixing said brace to both stringer members of each of said respective pairs of stringer members in said rows, each of said braces extending perpendicularly across the upper surfaces of said stringer members, and,

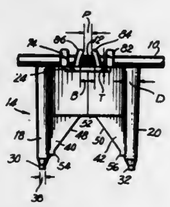
said attachment assemblies acting to further support said pairs of stringer members in said upright position during installation of said rows of stringer members.

4,498,270

SUPPORT FOR POSITIONING REINFORCING RODS OR MESH IN CONCRETE OR THE LIKE

Robert J. Ilukowicz, Port Jefferson, N.Y., assignor to Preco Industries Limited, Plainview, N.Y.

Filed Apr. 12, 1982, Ser. No. 367,393
Int. Cl.³ F04C 5/16
U.S. Cl. 52—685 **18 Claims**



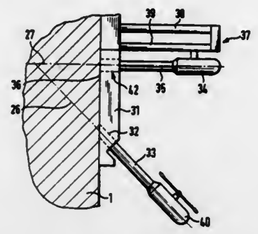
1. A support for a reinforcing rod, bar or mesh, said support comprising a plate of at least substantially planar construction, a cruciform structure beneath and supporting said plate, a plurality of legs on said cruciform structure and tips depending from and adapted to support said legs and thereby said plate, said tips being adapted to expose a relatively minimal part of said support with said support being embedded in a substance being solidified about and reinforced by said rod, bar or mesh, means on said plate to limit movement of the rod, bar or mesh transversely of said plate, said tips being of inverted truncated conical shape, said means including at least two spaced pairs of pins toed in towards each other and extending upwardly from said plate, said cruciform structure comprising intersecting portions integrated with said plate to extend radially thereof, said intersecting portions having upper surfaces disposed substantially in a common plane with one another and with the upper surface of the plate to form a substantially common upper surface for said support, said intersecting portions intersecting beneath said plate and having outer ends which are integral with said legs to couple said legs with said plate, said intersecting portions including fillet portions, tapered webs depending from said intersection portions and interconnected by said fillet portions, said webs tapering towards said tips, and triangular teeth projecting from said tapered webs at a tapered surface thereof whereby to independently engage and become embedded in said solidified substance to distribute forces thereto.

4,498,271

FIXING ANCHORING BARS OR THE LIKE IN STRUCTURES SUCH AS CONCRETE

Rudolf Köniğer, and Kai Köniğer, both of Spitalackerstr. 21, D-7808 Waldkirch, Fed. Rep. of Germany

Filed Mar. 11, 1982, Ser. No. 357,296
Claims priority, application Fed. Rep. of Germany, Mar. 28, 1981, 3112421
Int. Cl.³ E04B 1/38
U.S. Cl. 52—707 **23 Claims**



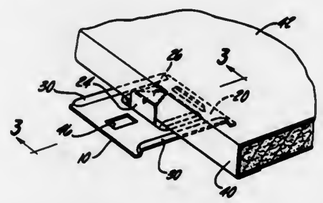
1. Apparatus for use in attaching an anchoring bar to a hardened concrete, cement, stone, or similar structure having an outer face, and anchoring bar and side holes intersecting at a predetermined angle, said apparatus comprising a sprag positioned within said side hole and comprising means for taking up a pulling force acting along an anchoring bar positioned within said anchoring bar hole, said sprag being supported against said outer face and having a generally cylindrical portion with an internally threaded opening extending through it, said opening being angled with respect to the longitudinal axis of said sprag at an angle which is substantially equal to said predetermined angle, said sprag opening being generally aligned with said anchoring bar hole and with said anchoring bar when said anchoring bar is inserted within said anchoring bar hole, said anchoring bar being threaded and being screwed within said threaded opening when inserted within said anchoring bar hole.

4,498,272

PANEL FASTENER

George C. Adams, Ann Arbor, Mich., assignor to Rollform, Incorporated, Ann Arbor, Mich.

Filed May 20, 1982, Ser. No. 380,211
Int. Cl.³ E04B 1/60, 2/72
U.S. Cl. 52—714 **7 Claims**



1. A wallboard fastener adapted for securing a panel to a framing member comprising:

a substantially planar base having two spaced ends and two spaced longitudinally extending edges,

a single impaling flange secured to a midpoint of said base, said impaling flange comprising a first leg extending perpendicularly outwardly from said base and a second leg extending from the free end of said leg in a plane parallel to but spaced from said base, said second leg forming at least one point which faces one end of said base and which is adapted for insertion into one edge of said panel,

a ridge formed along each of said longitudinally extending edges of said base, said ridges being formed by bending said edges outwardly from said base in the same direction as said impaling flange, and

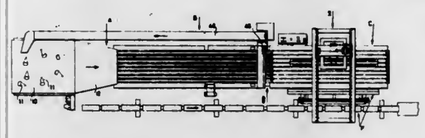
said base including a fastener opening positioned between said ridges and between said impaling flange and the other end of said base.

4,498,273

SYSTEM FOR PACKAGING ICE-CREAM CONES AND LIKE ARTICLES

Arturo Colamussi, Via Borso 8, Ferrara, Italy

Filed Dec. 15, 1981, Ser. No. 330,860
Claims priority, application Italy, Dec. 15, 1980, 9012 A/80
Int. Cl.³ B65B 25/00, 57/10
U.S. Cl. 53—54 **27 Claims**



1. A system for packaging ice-cream cones and similar articles, comprising:

a first processing station which includes a chute having individual races for splitting the main feed stream of the loosely incoming cones into a predetermined number of individual substreams and for previously orienting the cones with their axes parallel to the direction of each individual sub-stream;

a second processing station which includes a pair of conveying belts, the number of which equals the number of individual sub-streams as formed in the first processing station, to originate an orderly temporary cone-storage field having a forward motion, each of said pair of conveying belts having operatively associated therewith devices for marshalling the cones mutually spaced apart between the respective two belts, the cone axes being vertical and the cone tips upside down;

a third processing station which further comprises a plurality of tapes which are parallel and horizontal, corresponding to the number of pairs of conveying belts of the second processing station, each tape having a row of seats adapted to receive individual cones with their axes vertical and their tips pointing downwards, each of said tapes being independently motorized relative to the other tapes, and means for detecting the position of each individual cone in any of the seats of the tapes and for consequentially commanding the forward advance of the relative tape by one step corresponding to the distance between the axes of two consecutive seats;

means for transferring the cones from said second processing station to the third processing station and which further comprises a plurality of members which can be controlled to take either of two positions, one position being for feeding the cones to the seats of the tapes of the third processing station and the other position for rejecting the cones coming from the second processing station, said reject position of said members being operatively associated with a cone-recycling unit to a position upsteam of the first processing station, detection means operatively associated with each of said tapes of the third processing station for detecting the presence of the cones in a determined number of consecutive seats of the respective tape and for controlling the switching of the relative transfer member from said first to said second position if cones are present in said seats and for permitting switch-back of said member to its first position if said seats are empty;

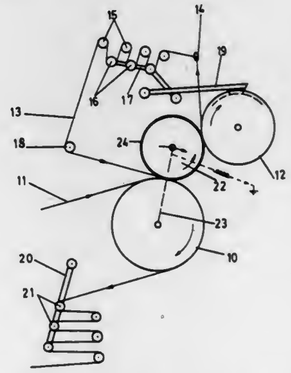
means located in said third processing station for grasping the cones positioned in said determined number of seats of at least one tape, said means for grasping being liftable perpendicularly to the direction of advance of the parallel tapes of the third processing station to selectively grasp the cones from the plurality of tapes to transfer the grasped cones to at least one position adjacent said tapes and to introduce the cones into empty cartons.

4,498,274

DEVICE FOR SUPPLYING AND FOR BRINGING TOGETHER A WEB OF PACKAGING MATERIAL AND A TEAR STRIP WEB

Hans Vorhauer, Schwelm, Fed. Rep. of Germany, assignor to Maschinenfabrik Alfred Schmermund GmbH & Co., Gevelsberg, Fed. Rep. of Germany

Filed Jun. 11, 1982, Ser. No. 387,446
Claims priority, application Fed. Rep. of Germany, Jun. 13, 1981, 3123544
Int. Cl.³ B65B 61/18
U.S. Cl. 53—412 **10 Claims**



1. A method of mating a moving film of packaging material and a tear strip which is to be applied thereto comprising:

passing the film over a feed roller;

withdrawing the tear strip from a supply reel;

applying a preselected degree of tension to the tear strip;

bringing the tear strip into contact with the surface of the film at the periphery of the feed roller; and

loading a drive wheel against the tear strip supply reel and the feed roller whereby the supply reel will be coupled to the feed roller by the drive wheel and rotate in synchronism with the feed roller.

4,498,275

ROTARY FILLING AND CAPPING APPARATUS

Richard D. Baron, Indian Rocks Beach, Fla., assignor to Lykes Pasco Packing Company, Dade City, Fla.

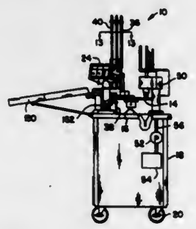
Continuation-in-part of Ser. No. 30,370, Apr. 16, 1979, Pat. No. 4,276,734. This application Jul. 6, 1981, Ser. No. 280,813
The portion of the term of this patent subsequent to Jul. 7, 1998, has been disclaimed.
Int. Cl.³ B65B 3/04, 7/28, 43/50, 57/08
U.S. Cl. 53—506 **8 Claims**

1. An apparatus for filling and capping a plurality of stackable containers with a fluid from a fluid reservoir, comprising in combination:

a rotary table having a plurality of container receiving means disposed about said rotary table;

a container magazine disposed at a first position relative to said rotary table;

container transfer means for transferring a single one of the plurality of containers from said container magazine to said container receiving means of said rotary table;
a filling head disposed at a second position relative to said rotary table;
pump means connecting the fluid reservoir to said filling head for filling a container disposed on said rotary table with the fluid from the fluid reservoir;
a lid magazine disposed at a third position relative to said rotary table;
lid transfer means for individually transferring lids from said lid magazine to the top of the filled container, said lid magazine being disposed adjacent a container aperture in said rotary table in said third position;



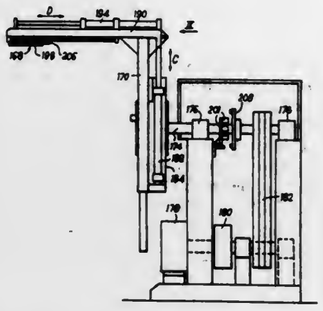
lid transfer means comprising a rotatable arm pivoted for rotating one hundred and eighty degrees about an axis substantially perpendicular to the axis of rotation of said rotary table;
means for linearly moving said rotatable arm relative to said lid magazine;
lid sensor means for sensing the presence of a lid during transfer by said lid transfer means;
a heat sealer disposed at a fourth position relative to said rotary table; and
discharge means disposed at a fifth position relative to said rotary table for discharging the capped container from said rotary table.

4,498,276

HANDLING AND PACKAGING APPARATUS

Geoffrey R. Reed, Tadworth, England, assignor to Encomech Product Development Limited, Surrey and Head Wrightson Machine Company Limited, Cleveland, both of, England

Filed Jun. 25, 1981, Ser. No. 277,110
Claims priority, application United Kingdom, Jun. 25, 1980, 8020824
Int. Cl.³ B65B *13/12*
U.S. Cl. 53—588 **14 Claims**



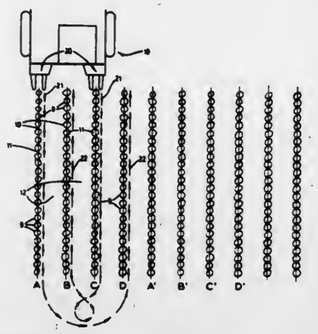
1. Apparatus for wrapping a sheet metal wrapping around a cylindrical coil of material having a hollow core, for covering essentially the entire outer peripheral surface of the coil, comprising:
a mounting extending through the hollow core of the coil for supporting it with its axis horizontal,
a wrapping arm for holding the sheet metal wrapping to be applied to said outer peripheral surface of the coil,
support means for said arm for supporting the arm rotatably about a horizontal axis substantially coincident with the coil axis,
drive means for rotating the arm about said axis,
a feed table for feeding sheets of the sheet metal wrapping in a direction essentially perpendicular to the axis of the coil,
drive means on said table for advancing the metal wrapping sheets towards the wrapping arm and the suspended coil,
a lateral edge guide on said table for wrapping sheets, said guide edge extending in the direction of feed of the feed table, and means for adjusting said guide axially of the coil and mounting for aligning the sheet axially with the coil,
the wrapping arm comprising a member projecting from radially outer end of said wrapping arm parallel to the rotary axis and holding means on said member for sheets fed from the feed table,
first adjustment means on said member for adjusting the position of the holding means axially relative to said rotary axis, and
second adjustment means on said wrapping arm for adjusting the position of the holding means radially relative to said rotary axis.

4,498,277

METHOD FOR HARVESTING NARROWLY SPACED ROWS OF PLANTS, METHOD FOR CONVERTING CONVENTIONAL APPARATUS FOR SUCH HARVESTING AND APPARATUS FOR SUCH HARVESTING

Rodney W. Bennett, Tranquillity; Jerry C. Bennett, Fresno; William C. Bennett, Tranquillity, and Charlie Bennett, Avenal, all of Calif., assignors to Bennett and Bennett, Tranquillity, Calif.

Filed Sep. 20, 1963, Ser. No. 533,921
Int. Cl.³ A01D *46/08*
U.S. Cl. 56—1 **9 Claims**



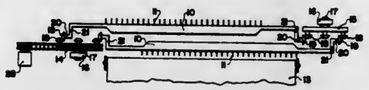
1. A method for harvesting cotton from plants aligned in a plurality of substantially parallel rows, the method comprising traversing at least three of said rows in substantially continuous movement along a course substantially parallel to said rows; and substantially simultaneously harvesting the cotton from the plants of at least two of said rows traversed which are spaced from each other by at least one of said rows traversed from which cotton is not harvested.

4,498,278

HARVESTER SWATH PICK-UP DRIVE

David Friesen, Box 6, R.R. #3, Winkler, Manitoba, Canada R0G 2X0

Filed Apr. 19, 1983, Ser. No. 486,500
Claims priority, application Australia, Apr. 21, 1982, 3685/82
Int. Cl.³ A01D *89/00*
U.S. Cl. 56—364 **14 Claims**



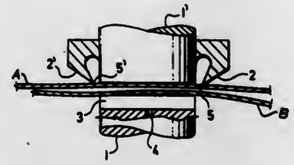
1. A pick-up attachment for a harvester comprising a plurality of members extending transversely across the pick-up arranged generally around and parallel to an axis transverse to a direction of movement of the pick-up, each member supporting a plurality of tines extending therefrom generally outwardly relative to the transverse axis and means for moving the members in a composite movement around the transverse axis and parallel to the transverse axis such that each tine describes a closed path around the transverse axis and inclined thereto, said moving means comprising a pair of parallel planar support members arranged at respective ends of the transverse members, means mounting the support members for rotation about parallel axes generally transverse thereto and lying in a substantially vertical plane, each support member having mounted thereon a plurality of pairs of meshing gears at angularly spaced positions around the support member axis for rotation therewith, offset crank means connecting one of each pair of gears to a respective end of a respective one of the transvers members and means mounting the other of each pair of gears such that rotation of the support member about the axis of the support member causes rotation of said offset crank means about an axis substantially at right angles to said support member axis, said offset crank means of each transverse member being arranged to offset the transverse member outwardly relative to the other transverse members, whereby said rotation of said support members moves the transverse members substantially in a planar movement parallel to the support member plane and not parallel to said composite movement and the rotation of said crank means adds to said planar movement to form said composite movements.

4,498,279

METHOD OF AND APPARATUS FOR SPLICING FIBER FORMATIONS

Miloslav Pavék, Liberec, Czechoslovakia, assignor to Elitex, koncern textilního strojírenství, Liberec, Czechoslovakia

Filed Jan. 9, 1984, Ser. No. 569,391
Claims priority, application Czechoslovakia, Jan. 7, 1983, 126-83
Int. Cl.³ D01H *15/00*
U.S. Cl. 57—22 **10 Claims**



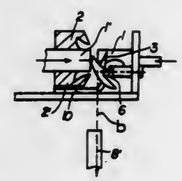
1. Method of splicing fibrous formations, such as yarns in the pressure channel of a splicing chamber, comprising arranging the ends of the fibrous formations to be spliced in side-by-side overlapping relationship in the pressure channel, introducing pressure air into the splicing channel so that it blows outwardly therethrough so as to subject the portions of the fibrous formations disposed within the pressure channel to the action of the air as it flows outwardly from the pressure channel, and vibrating the column of air passing through the pressure channel at a high frequency lying within the frequency range from the high frequency end of the audible to a supersonic frequency within the sonic wave spectrum.

4,498,280

METHOD OF AND APPARATUS FOR PREPARING AND SPLICING THE ENDS OF FIBROUS FORMATIONS

Miloslav Pavek, and Ladislav Hlubucek, both of Liberec, Czechoslovakia, assignors to ELITEX, koncern textilního strojírenství, Liberec, Czechoslovakia

Filed Jan. 9, 1984, Ser. No. 569,392
Claims priority, application Czechoslovakia, Jan. 7, 1983, 127-83
Int. Cl.³ D01H *15/00*
U.S. Cl. 57—22 **6 Claims**



1. Method of preparing and splicing the ends of fibrous formations in the pressure channel of a pneumatic splicing chamber provided with a displaceable lid, comprising placing ends of excess length of the fibrous formations in overlapping substantially parallel relationship adjacent to each other within the pressure channel, cutting off the excess length at each end of each of the fibrous formations when they are positioned within the pressure channel, after such trimming of the fibrous formations bending the remaining ends thereof without gripping by adjustable obstacles with blades over the edges of the mouth of the pressure channel, whereby to retain the fibrous formations in generally parallel relationship in the pressure channel of the splicing chamber, and subjecting the thus positioned fibrous formations to the whirling effect of a pressure air flow which is introduced centrally into the pressure channel and flows outwardly therefrom in opposite directions through the mouths of the channel, upon leaving the mouth of the pressure channel the pressure flow impinging upon adjustable obstacles provided with blades.

4,498,281

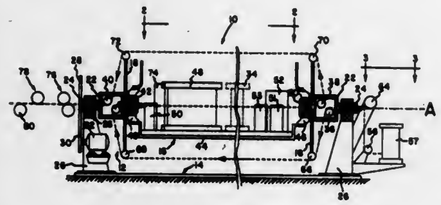
APPARATUS AND METHOD OF MAKING METALLIC CORD

Frederick G. Wraight, Strassen, Luxembourg, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Apr. 25, 1983, Ser. No. 488,560
Claims priority, application Luxembourg, May 7, 1982, 84134
Int. Cl.³ D07B *3/12, 3/02*
U.S. Cl. 57—58.34 **13 Claims**

1. Apparatus for producing metallic cords adapted to be used as reinforcing members in elastomeric structures in a machine having a rotating flyer with flyer pulleys to guide wire over the flyer and sunken pulleys to guide wire to and from the flyer axis of rotation (A) all of which rotates with the flyer, a shuttle mounted within the flyer freely rotatable relative thereto about the flyer axis (A) for supporting internal spools of wire from which wire or wires may pass from the interior of the shuttle passing over sunken pulleys to the exterior of the flyer on the flyer pulleys, means for guiding and drawing wires from external spools of wire through the machine and over the flyer on flyer pulleys together with the

wires from the internal spools comprising: idler rollers on the shuttle for guiding wires from the internal and external spools around the internal spools including idler rollers tangent to the axis of the flyer (A) for guiding wires into and out of the shuttle, a brake-capstan on said shuttle in the path of the wire between the internal spools and the sunken pulley directing wires from the shuttle over the flyer on flyer pulleys, another brake-capstan on said shuttle in the path of the wire between the external spools and the sunken pulley directing the wires



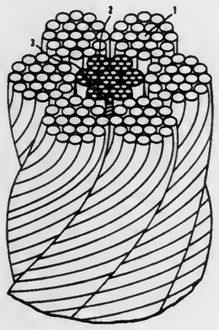
from the shuttle over the flyer on flyer pulleys, each brake capstan applying independent braking force to the wires received thereon to control the tension in both the wire or wires from the internal spools and wire or wires from the external spools which are joined together upon reaching the sunken pulley which directs all the wires over the flyer on flyer pulleys to exit the machine by the redirecting of the sunken pulley directing the now formed cord from the machine on the flyer axis A.

4,498,282

WIRE ROPE HAVING A DURABLE MARKER

Reinhard Graetz, Wiesbaden, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Dec. 16, 1982, Ser. No. 450,298
Claims priority, application Fed. Rep. of Germany, Dec. 18, 1981, 8136921[U]
Int. Cl.³ B32B *1/00, 15/00;* D07B *1/06;* D02G *3/00*
U.S. Cl. 57—218 **8 Claims**



1. A wire rope having a durable marker, comprising:
a rope core comprised of a first plurality of strands;
a second plurality of strands twisted together around said rope core; and
a durable marker comprising a synthetic resin tape which carries marking information and which has a width of from about 2 to 6 mm and a thickness of from about 10 to 100 μm, said tape being wound in a spirally overlapping manner around a support element and being worked into the strands of the wire rope in the direction of the longitudinal axis of said wire rope.

4,498,283

APPARATUS FOR LOCATING A TRAVELING-TYPE SERVICING DEVICE IN A MULTISTATION TEXTILE MACHINE

Ikuo Kodama, Toyoda; Shigeru Muramatsu, Okazaki; Kazunori Terasaki, and Takayuki Morita, both of Kariya, all of Japan, assignors to Seisakusho Kabushiki Kaisha Toyoda Jidoshokki, Kariya, Japan

Filed Feb. 10, 1983, Ser. No. 465,538
Claims priority, application Japan, Feb. 12, 1982, 57-021857
Int. Cl.³ D01H *9/14, 15/00*
U.S. Cl. 57—261 **11 Claims**



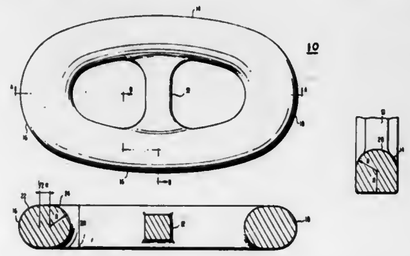
1. An apparatus for locating a servicing device which is supported movably along a parent textile machine, such as a spinning frame, including a plurality of stations and may stop at any designated station of said parent machine to perform a servicing operation, such as yarn piecing, package doffing or cleaning, at said designated station by use of a fluid medium, such as compressed air or vacuum, which may be supplied from any source of such fluid disposed along said plurality of stations separately from said servicing device, said apparatus comprising, on one hand, on said parent textile machine:
a stationary connector means arranged for each of said stations of said parent machine at intervals corresponding to the station-to-station distance and each communicating with said source of fluid;
a locator guide member disposed adjacently of each of said stationary connector means, and said apparatus comprising, on the other hand, on said servicing device;
an actuator means;
a locator member movable by said actuator means toward and away from the respective of said locator guide members and having an end portion engageable therewith;
a communicator member having a conduit formed therethrough and movable together with said locator member by said actuator means; and
a movable connector means fixed to said communicator member in communication with said conduit thereof and engageable with each of said stationary connector means.

4,498,284

CHAIN LINK

Gordon E. Gearhart, Atlanta, Ga., assignor to E.V. Camp Steel Works, Inc., Atlanta, Ga.

Filed May 25, 1982, Ser. No. 381,892
Int. Cl.³ F16G *13/06*
U.S. Cl. 59—84 **14 Claims**



1. A chain link having variable cross sectional areas which

are configured in order to provide improved functional and weight characteristics, comprising in combination:
an elongated elliptical body section, said body section having longitudinal side portions and end portions; wherein said end portions have an ovular shaped cross sectional configuration and said longitudinal side portions have a "D" shaped cross sectional configuration; and
the "D" shaped cross sectional portion is formed by a semicircle having a radius R and the straight portion is formed by a rectangle portion having sides whose length is 2R and whose width is R.

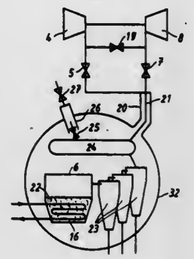
8. A chain link having variable cross sectional areas which are configured in order to provide improved functional and weight characteristics, comprising in combination:
an elongated elliptical body section, said body section having longitudinal side portions and end portions; wherein said end portions have an ovular shaped cross sectional configuration and said longitudinal side portions have a "D" shaped cross sectional configuration; and
said ovular end portion has two end sections which are semicircular each having a radius R and a rectangular central portion having a length 2R and a width of ½R.

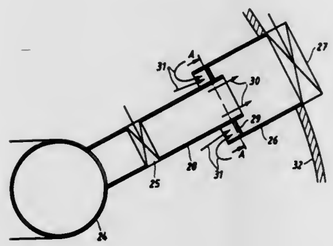
4,498,285

GAS TURBINE PLANT WITH A FLUIDIZED BED COMBUSTION CHAMBER

Sven-Erik Kreij, Linköping, Sweden, assignor to Stal-Laval Turbin AB, Finspong, Sweden

Filed Jun. 9, 1983, Ser. No. 502,837
Claims priority, application Sweden, Jun. 14, 1982, 8203664
Int. Cl.³ F02G *3/00;* F02C *3/20*
U.S. Cl. 60—39.1 **6 Claims**





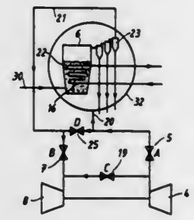
1. A gas turbine plant comprising
a compressor,
a turbine,
a combustion chamber for a fluidized bed between said compressor and said turbine and enclosed in a pressure container,
means for providing pressurized combustion air from said compressor to said pressure container,
inlet means for providing pressurized combustion air from said pressure container to said combustion chamber,
first and second shut-off valve means for shutting off, respectively, the compressor and the turbine from the combustion chamber, and a by-pass duct including a third valve means for direct connection of the compressor and the turbine upon a drop out of the turbine load,
a valve system for blow off of combustion gas from the combustion chamber upon a drop out of the turbine load, said valve system including means for mixing together hot combustion gas and colder compressed air from said pressure container during the blow off.

4,498,286

GAS TURBINE PLANT WITH A FLUIDIZED BED COMBUSTION CHAMBER

Roine Brännström, Finspong, and Sven-Erik Kreij, Linköping, both of Sweden, assignors to Stal-Laval Turbin AB, Finspong, Sweden

Filed Jun. 9, 1983, Ser. No. 502,838
Claims priority, application Sweden, Jun. 14, 1982, 8203665
Int. Cl.³ F02G *3/00;* F02C *9/00*
U.S. Cl. 60—39.1 **8 Claims**



1. A gas turbine plant comprising:
a compressor;
a turbine;
a pressure container for containing combustion air compressed by said compressor;
a combustion chamber enclosed in said container and surrounded by said compressed air;
a fluidizable bed within said combustion chamber;
inlet means for supplying pressurized combustion air from said container to said combustion chamber so as to fluidize said fluidizable bed;
means for supplying fuel to the fluidized bed;
conduit means for combustion gas connecting said combustion chamber with said gas turbine;
a first valve means for shutting off said compressor from said container;
a second valve means for shutting off said turbine from said combustion chamber;
a third valve means for direct connection of said compressor and said turbine when cutting out a turbine load; and
a fourth valve means for short-circuiting the fluidized bed by connecting the outlet side of said combustion chamber with said compressed air contained in said container and surrounding said combustion chamber.

4,498,287

COMBUSTORS AND METHODS OF OPERATING SAME

Robert M. Schirmer, and Ellsworth H. Fromm, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 220,210, Dec. 23, 1980, Pat. No. 4,385,490, which is a continuation-in-part of Ser. No. 933,344, Aug. 14, 1978, abandoned. This application Sep. 29, 1982, Ser. No. 427,250
Int. Cl.³ F02C *3/14*
U.S. Cl. 60—39.02 **13 Claims**

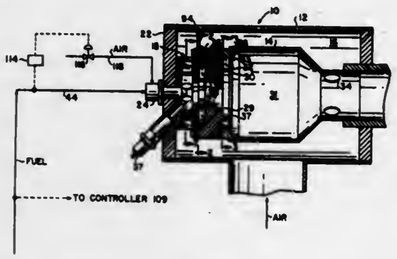
1. A method for the combustion of a fuel in a combustion zone having a first cylindrical upstream combustion region, and a second cylindrical combustion region located adjacent,

downstream from, concentric with, and in communication with said first combustion region; which method comprises, in combination:

introducing a stream of fuel together with a stream of assist air into the upstream end portion of said cylindrical, upstream combustion region,

introducing a first stream of air at a controlled but variable rate into said upstream end portion of said first combustion region,

tangentially introducing a second stream of air into said first combustion region in a circumferential direction and forming a combustible mixture of said fuel and said streams of air,



causing at least partial combustion of said combustible mixture and forming hot combustion products;

tangentially introducing a third stream of air into said second cylindrical combustion region in a circumferential direction, said second region having an abrupt enlargement of diameter so that the volume capacities of the first combustion region as compared to the second combustion region is in a ratio of the range of about 1:35 to about 1:45;

controlling said variable rate of introduction of said first stream of air in accordance with the rate of introduction of said fuel, and

controlling the pressure, or the volume, of said stream of assist air in accordance with the rate of introduction of said fuel.

4,498,288

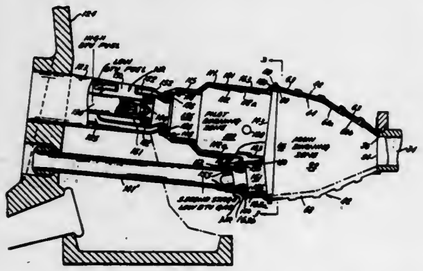
FUEL INJECTION STAGED SECTORAL COMBUSTOR FOR BURNING LOW-BTU FUEL GAS

Robert L. Vogt, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Continuation of Ser. No. 166,726, Jul. 7, 1980, abandoned, which is a division of Ser. No. 951,181, Oct. 13, 1978, Pat. No. 4,253,301. This application Feb. 9, 1983, Ser. No. 465,295

Int. Cl.³ F02C *3/14*

U.S. Cl. 60—39.06 **5 Claims**



1. A method of operating a fuel injection staged high temperature combustor, said combustor including a pilot burning zone and a main burning zone communicating therewith, said method comprising:

introducing at least one of a first low-BTU fuel and a high-BTU fuel and a first flow of swirling air into an upstream end of said pilot burning zone and mixing therein to form a first fuel-air mixture;

introducing during at least a portion of the combustor's operation, the other of said first low-BTU fuel and said high-BTU fuel into said upstream end of said pilot burning zone to form a part of said first fuel-air mixture;

igniting and burning said first fuel-air mixture in said pilot burning zone;

flowing the combustion products from said pilot burning zone into an upstream end of said main burning zone;

introducing at least a second low-BTU fuel and a second flow of swirling air into said main burning zone for mixing with said combustion products; and

adjusting a relationship between said first and second low-BTU fuel, said high-BTU fuel and said first and second flow of swirling air to increase a temperature in said main burning zone an increment above a temperature in said pilot zone effective to maintain a local equivalence ratio in said combustor within a preselected range.

4,498,289

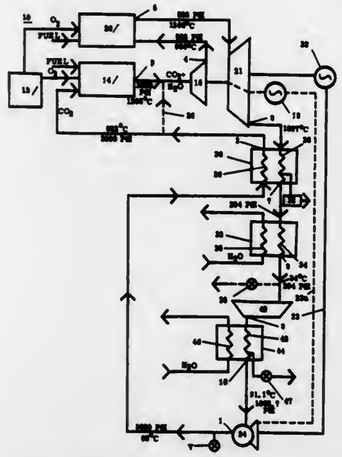
CARBON DIOXIDE POWER CYCLE

Ian Osgerby, c/o Dennis R. Lowe, Esq., 1842 Massachusetts Ave., Lexington, Mass. 02173

Filed Dec. 27, 1982, Ser. No. 453,724

Int. Cl.³ F02N *25/06*

U.S. Cl. 60—39.52 **19 Claims**



1. An improved direct fired power system generating and employing a combustion gas which includes carbon dioxide as a working fluid comprising:

means defining a combustion chamber for burning a mixture which includes oxygen, a carbonaceous fuel and recycled carbon dioxide working fluid at a supercritical first pressure, thereby providing a combustion gas which includes carbon dioxide and water at substantially said first pressure, and a supercritical temperature,

means defining a first turbine for receiving combustion gas from said combustion chamber and allowing said gas to expand therethrough to generate power and reduce the pressure of said combustion gas to a second pressure while maintaining a supercritical state,

means for receiving said combustion gas from said first turbine and heating said gas at said second pressure to a higher temperature

means defining a second turbine for receiving combustion gas from said means for heating and allowing said gas to expand therethrough to generate power and further reduce the pressure on said combustion gas to a third pressure while maintaining a supercritical state,

means defining a heat exchanger having first and second ducts in heat exchange relationship, said first duct receiving combustion gas from said second turbine and conducting said gas therethrough, said second duct conducting recycled carbon dioxide working fluid at substantially said first pressure and a temperature below that of said combustion gas in said first duct therethrough and having an output connected to said combustion chamber for providing at least a portion of said recycled carbon dioxide thereto, for enabling said combustion gas to transfer heat to said recycled carbon dioxide to condense at least a portion of the water in said combustion gas, but maintain the carbon dioxide thereof in a supercritical state,

means for separating the condensed water from the remainder of said combustion gas

first cooling means connected to the output of said first duct of said heat exchanger for receiving combustion gas therefrom and cooling said combustion gas to a supercritical first temperature,

first compression means for receiving said combustion gas from said first cooling means and compressing said combustion gas to a fourth pressure below said first pressure,

second cooling means for receiving said combustion gas from said first compression means and cooling said combustion gas to a second temperature at essentially the liquid/gas interface of said combuston gas and,

second compression means for receiving said combustion gas from said second cooling means and compressing said gas to substantially said first pressure to thereby provide said recycled carbon dioxide working fluid, said second compression means being connected to the input of said second duct of said heat exchanger for providing said recycled carbon dioxide thereto.

4,498,290

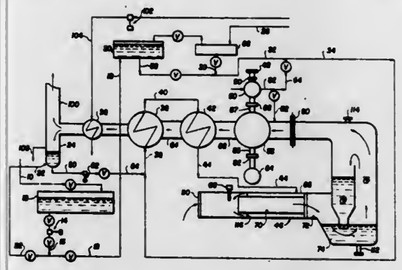
ROTARY ENGINE

Arnold M. Leas, 122 N. 34th St., Towne House Village, Richmond, Ind. 47374, and Lawrence E. Leas, 1482 Sinaloa Rd., Simi Valley, Calif. 93065

Division of Ser. No. 91,919, Nov. 6, 1979, abandoned. This application Jun. 30, 1981, Ser. No. 279,120

Int. Cl.³ F02C *3/14, 3/20*

U.S. Cl. 60—39.55 **5 Claims**



1. An apparatus for burning a mixture of methyl alcohol vapor and steam with near stoichiometric quantities of air, said apparatus comprising:

a primary combustion chamber wherein said methyl alcohol vapor is partially oxidized;

steam introduction means operably connected to said primary combustion chamber for supplying sufficient steam to said combustion chamber to maintain said combustion chamber at a temperature of between 1500° F. and 2000° F.;

a secondary combustion chamber into which the residual fuel not burned in the primary combustion chamber is passed and which contains a fluidized bed of an oxidized stainless steel powder which effects a further oxidation of the fuel;

a gas expander positioned relative to said secondary combustion chamber such that exhaust gases from said secondary combustion chamber may be pressured into said expander;

power take-off shafts operably connected to said gas expander and driven by said gas expander;

cooling means extending from said gas expander into which exhaust gases from said gas expander are passed and cooled sufficiently to condensate a portion of said steam;

condensate recovery means positioned relative to said cooling means to collect said condensed steam;

heating means connected to said condensate recovery means and into which a portion of said condensed steam is passed and converted to steam; and

recycle means connected to said heating means and to said primary combustion chamber for directing a portion of said steam recovered from said heating means into said primary combustion chamber.

4,498,291

TURBINE OVERSPEED LIMITER FOR TURBOMACHINES

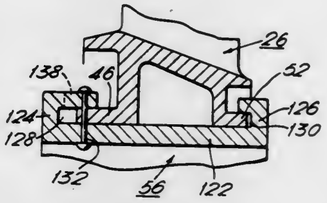
Graham J. Jeffery, Bristol, England, assignor to Rolls-Royce Limited, London, England

Filed Oct. 6, 1983, Ser. No. 539,381

Claims priority, application United Kingdom, Oct. 6, 1982, 8228584

Int. Cl.³ F02G *3/00;* F01B *25/16;* F01D *21/00*

U.S. Cl. 60—39.091 **9 Claims**



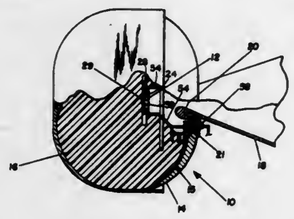
1. A mechanism for preventing a turbine rotor from exceeding a predetermined speed if a shaft, connecting the turbine rotor to a compressor rotor of the engine, breaks and releases its axial and torsional constraint on the turbine rotor, the mechanism comprising a segmented stator vane assembly downstream of a stage of the turbine rotor, each segment having first and second members projecting radially inwards, the first and second members being provided respectively at an upstream and downstream region of the inner end of each segment, a constraining means located adjacent the radially outer ends of the segments and operable to constrain the segments against displacement bodily on an axial direction, and static structure of the engine constructed and arranged relative to the turbine rotor so that it engages the first and second members and provides radially outwards and axially rearwards constraint on the first members and radially inwards and axially forwards constraint on the second member, and when the shaft breaks and the turbine rotor strikes the structure in an axial direction, the structure retains the first members of each segment and provides a means about which the segments rotate and simultaneously releases its axial and radial constraint on the second member of each segment thereby, in use, causing the gas loads on the segment to tilt an upstream outer region of the segments about the fulcrum into the path of the turbine rotor blades.

4,498,292

IGNITER FOR ROCKET MOTORS

C. Max White, Brigham City, Utah, assignor to Thiokol Corporation, Chicago, Ill.

Filed Feb. 2, 1983, Ser. No. 463,102
Int. Cl.³ F02K 9/08
U.S. Cl. 60—256 10 Claims



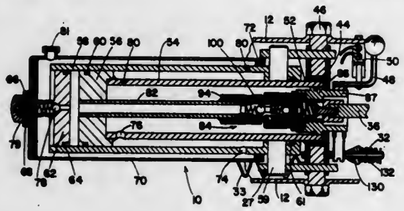
1. An igniter for a rocket motor comprising,
a hat-shaped housing having a disk attached to one end of a hollow cylinder having a flange at its other end for attachment of the igniter to the propellant of the rocket motor, said cylinder having a plurality of peripherally spaced holes therein, the inner surface of said cylinder being lined with an elastomer liner having holes therein in alignment with the holes in said cylinder,
a circular piece of fiber glass cloth bonded to the inside of said disk of said housing,
a flat, circular propellant disk partially bonded to said fiber glass cloth, said propellant disk having a plurality of holes therein to adjust mass flow rate of gases thereof, and having a plurality of radial grooves on a surface thereof to direct the burning propellant gases through the aligned peripheral holes in said cylinder and liner, and
means to ignite said propellant disk.

4,498,293

HYDRAULIC LOG SPLITTER

Jack T. Gregory, Penngrove, Calif., assignor to Gregory Tool Systems, Inc., Sonoma, Calif.

Filed Mar. 28, 1983, Ser. No. 479,795
Int. Cl.³ F16D 31/02
U.S. Cl. 60—478 12 Claims



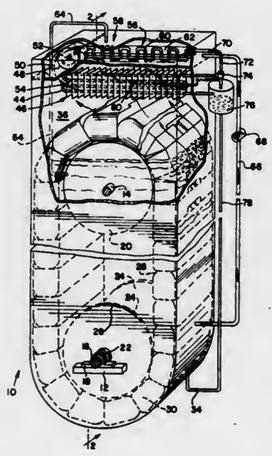
1. A hydraulic force-delivering tool comprising:
a hydraulic cylinder having a cylinder head at one end thereof;
a piston slidably received in said cylinder;
an inlet opening into said cylinder between said piston and said cylinder head; and
a hydraulic actuator pump;
said hydraulic actuator pump comprising:
a valve body having a cylindrical bore therein;
a forward end of said valve body connected to said inlet to seal therearound;
means forming a flow passageway through said forward end of said valve body;
a main power check valve in said flow passageway forming means enabling flow only outward of said valve body;
a hollow plunger movable axially in said bore;
drive means operative when actuated to reciprocate said plunger;
a cylindrical cup carried on the forward end of said plunger and slidable in said cylindrical bore;
a cylindrical tubular guide in said valve body extending rearward from said flow passageway forming means and slidably receiving said cup;
said bore being larger than said tubular guide to form an annular space around said tubular guide ahead of said cup;
a hydraulic reservoir around said valve body;
a first lateral inlet port in said valve body opening into said bore;
a second lateral inlet port in said hollow plunger;
first-stage load port means opening through the bottom of said cylindrical cup;
a first-stage one-way check valve engageable with said first stage port means and enabling inward flow only therethrough;
load duct means from within said hollow plunger to said first-stage load port means;
a valve seat in said load duct means;
a high volume check valve engageable with said valve seat to enable inward flow only;
second stage duct means from said load duct means to said annular spaces, and
pressure responsive means inactivating said high volume check valve to bypass same in response to an increase in pressure in said load duct means above a predetermined level.

4,498,294

BUOYANCY PRIME MOVER WITH PRESSURE CONTROL MEANS

Thomas D. Everett, 1144 E. Washington Blvd., Lombard, Ill. 60148

Continuation-in-part of Ser. No. 260,390, May 4, 1981, Pat. No. 4,363,212. This application Aug. 17, 1982, Ser. No. 408,767
Int. Cl.³ F03G 7/00
U.S. Cl. 60—496 9 Claims



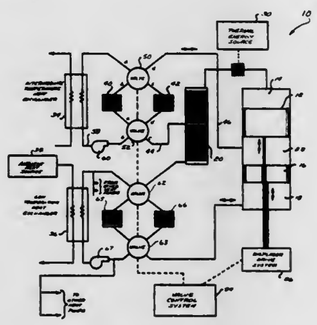
1. An apparatus for converting the potential energy of a gas buoyant within a liquid into rotating mechanical energy comprising:
(a) rotating means supported by an enclosed frame including at least two upper and lower sprockets freely rotatable about shafts mounted within said frame and being at least partially immersed within the liquid, each of said upper and lower sprockets supporting a continuous chain for movement about a horizontal axis of rotation;
(b) a plurality of adjacent buckets immersed in the liquid and coupled to said continuous chains such that the buckets are equidistant and each bucket is in close proximity with an adjacent bucket to nest within said adjacent bucket for streamlined vertical movement about the horizontal axis of rotation;
(c) means for compressing the gas that flows from the buckets upon rotation about the upper sprockets to produce a heated, pressurized gas;
(d) means in operative communication with said compressing means for condensing the heated, pressurized gas to produce a cooled, liquified gas; and
(e) means in communication with said condensing means for circulating the cooled, liquified gas to generate said gas within said enclosed frame
whereby upon filling each bucket with a volume of said gas to displace the liquid from each bucket, the buckets move through the liquid with minimal turbulence and revolve the rotating means about the horizontal axis of rotation to generate power and the gas can be pressurized, condensed and vaporized for recirculation through the apparatus.

4,498,295

THERMAL ENERGY TRANSFER SYSTEM AND METHOD

Stellan Knoos, 5933 Avenida Chamnez, La Jolla, Calif. 92037

Filed Aug. 9, 1982, Ser. No. 406,342
Int. Cl.³ F02G 1/04
U.S. Cl. 60—517 34 Claims



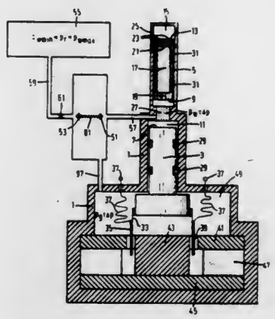
1. A thermodynamic system for interchanging thermal energy with external sources or sinks, comprising:
a thermodynamic machine including regenerator means, a working fluid, and means for cycling the working fluid bidirectionally through the regenerator means;
at least one heat exchanger for interchanging thermal energy with a heat source or sink, the heat exchanger including means for receiving working fluid therein; and
switchable thermal energy storage means coupling working fluid between the regenerator means of the thermodynamic machine and the heat exchanger, the switchable thermal energy storage means isolating the thermodynamic machine from the heat exchanger for at least predetermined intervals during operation of the thermodynamic machine.

4,498,296

THERMODYNAMIC OSCILLATOR WITH AVERAGE PRESSURE CONTROL

Kees Dijkstra, and Andreas J. Gareafeld, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Aug. 24, 1983, Ser. No. 525,907
Claims priority, application Netherlands, Jul. 1, 1983, 8302337
Int. Cl.³ F02G 1/06
U.S. Cl. 60—521 10 Claims



1. A thermodynamic oscillator having at least one displacer which is displaceable in a working space filled with the working medium at the resonant frequency of the oscillator and which divides the working space into an expansion space and a compression space of different substantially constant temperatures, which expansion and compression spaces communicate with the each other through a regenerator, the movement of the displacer due to pressure fluctuations in the working medium being coupled to a member which is also displaceable in the working space,
said working space being connected through at least one release valve having a mechanical pre-stress and at least one supply valve having a mechanical pre-stress to at least one reservoir which is filled with the the same working medium as that of the working space and whose pressure lies between a maximum and a minimum working pressure of the working medium,
characterized in that the release valve and the supply valve are arranged in the connection between one simple reservoir and the working space, and
said oscillator comprises means for varying bothe the opening pressure of the release valve and the opening pressure of the supply valve as a function of the ambient temperature, the opening pressure of the release valve being equal to the sum of the mechanical pre-stress of the release valve and the reservoir pressure, and the opening pressure of the supply valve being equal to the difference between the reservoir pressure and the mechanical pre-stress of the supply valve.

4,498,297

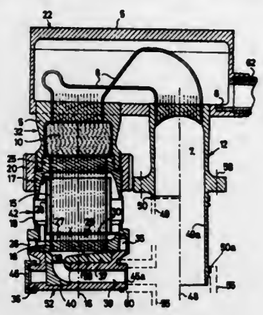
HEAT EXCHANGER MODULE FOR STIRLING ENGINES

Michel J. P. Darche, Ville d'Avray, and Stig Cariqvist, Paris, both of France, assignors to Societe ECA, Asnieres, France

Filed Apr. 20, 1982, Ser. No. 370,132
Int. Cl.³ F02G 1/04
U.S. Cl. 60—525 5 Claims

1. A modular heat exchanger for a Stirling engine having cylinders and cylinder heads, said unit comprising a tubular heater, a regenerator and a tubular cooler, the regenerator and cooler forming an assembly of generally cylindrical shape whose axis is parallel to the axis of the head of a first cylinder,

said tubular heater having a housing rigidly connecting said head of said first cylinder and the regenerator, a wall of said unit being flexible and capable of absorbing the effects of thermal expansion of the heater, said cooler having a plate at its base comprising an opening parallel and eccentric to the axis of



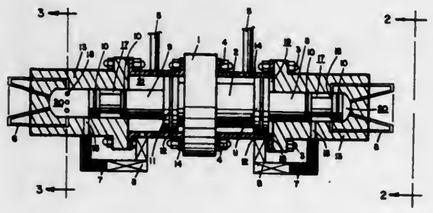
the cooler and connecting with said cooler, a duct extending transversely across said plate, said opening meeting said duct at a point nearer the periphery of the plate in one direction than in the opposite direction, a connecting member connecting said opening with said duct in one direction and means connecting said duct to the base of a second cylinder.

4,498,298

STIRLING CYCLE PISTON ENGINE

George R. Morgan, 1831 S. Berthed Pl., Tucson, Ariz. 85710

Filed Sep. 15, 1983, Ser. No. 532,652
Int. Cl.³ F02G *1/04*
U.S. Cl. 60—525 **1 Claim**



1. A hot gas Stirling cycle engine in which a plurality of gases are alternately expanded and compressed in closed thermodynamic systems comprising:

a first cylinder with a first piston with a working gas passage reciprocating in said cylinder;

a second cylinder located on cylindrical axis mounted to said first cylinder with a second piston reciprocating in said cylinder in a fixed relationship with said first piston;

a transmission of power means coupled to said second cylinder mounted perpendicular to cylinderical axis operatively coupled to said second piston;

a third cylinder located on cylindrical axis mounted to said transmission of power means, with a third piston reciprocating in said cylinder in a fixed phase relationship to said first and second pistons;

a fourth cylinder located on cylinderical axis mounted to said third cylinder with a fourth piston, with a working gas passage reciprocating in said cylinder in a fixed relationship to said third piston;

a first working space defined by said first cylinder and said first piston in which a heated gas expands to perform work in moving said first piston;

a second working space defined by said second cylinder and said second piston in which a cooled gas is compressed;

a third working space defined by said third cylinder and said third piston in which a cooled gas is compressed;

a fourth working space defined by said fourth cylinder and said fourth piston in which a heated gas expands to perform work in moving said fourth piston;

a first heating means external of said first cylinder providing a heat source for gas flowing into said first working space;

a second heating means external of said fourth cylinder providing a heat source for gas flowing into said fourth working space;

a first regenerator-cooler unit located near said cylinderical axis located in a gas passage connecting said first and second working spaces;

a second regenerator-cooler unit located near said cylinderical axis and located in a gas passage connecting said third and fourth said working spaces;

a first working gas inject/reject regulation means external of said second cylinder providing a source of working gas to second working space; a second working gas inject/reject regulation means external of said third cylinder providing a source of working gas to third working space;

whereby a first working gas flows from said first regenerator-cooler unit through said first piston working gas passage into said first heating means as said first piston is at T.D.C., allowing said first working gas to be heated by said first heating means and to flow into said first working space, moving said first piston from T.D.C., blocking said first working gas flow from said first regenerator-cooler unit, through said first piston working gas passage, allowing expansion of said first working gas to move said first piston to B.D.C., performing work and to flow through said first regenerator-cooler unit into said second working space where it is compressed, then flows through said first regenerator-cooler unit, through said first piston working gas passage as said first piston moves to T.D.C., allowing said first working gas to flow into said first heating means to cyclically perform a first Stirling cycle;

wherein a second working gas flows from said second regenerator-cooler unit through said fourth piston working gas passage into said second heating means as said fourth piston is at T.D.C., allowing said second working gas to be heated by said second heating means and to flow into said fourth working space moving said fourth piston from T.D.C., blocking said second working gas flow from said second regenerator-cooler unit through said fourth piston working gas passage, allowing expansion of said second working gas to move said fourth piston to B.D.C., performing work and to flow through said second regenerator-cooler unit into said third working space where it is compressed, then flows through said second regenerator-cooler unit, through said fourth piston working gas passage, as said fourth piston moves to T.D.C., allowing said second working gas to flow into said second heating means to cyclically perform a second Stirling cycle.

wherein said first and second cycles are 180° out of phase with one another.

4,498,299

VALVE ASSEMBLY

David L. Brademeyer, Centerville, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Aug. 26, 1983, Ser. No. 526,668
Int. Cl.³ B60T *11/08*
U.S. Cl. 60—562 **8 Claims**

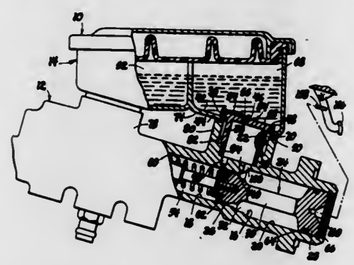
1. In a quick take-up brake master cylinder assembly having a brake fluid reservoir housing defining a reservoir chamber, a master cylinder housing with a bore therein providing a brake quick take-up pressure generating chamber and at least one brake actuating pressure chamber, fluid compensation ports in said master cylinder housing operatively communicating with said bore and said reservoir chamber, support means formed as a part of said master cylinder housing and providing a mount for said reservoir housing, said support means also having a recess providing fluid access between said quick take-up chamber and said reservoir chamber through at least one of said compensation ports;

a quick take-up fluid pressure and flow control valve assembly comprising:

a valve housing received in said support means recess and having a generally cylindrical wall portion defining a valve chamber therein, and a cap portion on the upper end of said wall portion, said valve chamber having its lower end openly communicating with said quick take-up chamber through said at least one of said compensation ports;

at least two passages formed through said valve housing and providing controlled brake fluid communication between said valve chamber and said reservoir chamber;

and first and second normally closed brake fluid pressure and flow control valves respectively associated with different ones of said at least two passages to control brake



fluid flow and pressure therethrough, one of said valves opening at a predetermined increase in brake fluid pressure in said valve chamber generated in said quick take-up chamber and at a pressure value sufficient for brake take-up, the other of said valves opening in response to a decrease in brake fluid pressure in said valve chamber below the brake fluid pressure in said reservoir chamber to permit substantially free brake fluid pressure and flow from said reservoir chamber to said valve chamber and thence to said quick take-up chamber through said at least one of said compensation ports;

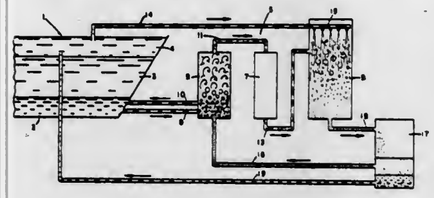
said valves each including a movable valve member mounted on and supported by said valve housing and a valve seat means formed by an integral part of said valve housing at the end of each of said associated passages, and yieldable valve biasing means, which may be a part of each of said valve member, continuously urging each of said valve members toward engagement with its valve seat means.

4,498,300

DUAL PURPOSE SOLAR POND FOR EVAPORATION AND HEAT STORAGE

Gad Assaf, Rehovot, and Benjamin Doron, Jerusalem, both of Israel, assignors to Solmat Systems, Ltd., Yavne, Israel

Filed Dec. 28, 1982, Ser. No. 453,938
Int. Cl.³ F03G *7/02*
U.S. Cl. 60—641.8 **3 Claims**



1. A method for using a solar pond power plant comprising a salt water solar pond that includes an upper convective layer on which solar radiation is incident, a non-convective halocline having a downwardly directed density gradient below the convective layer, and a heat storage layer below the halocline, and having a heat machine that includes a vaporizer and a condenser for generating power, said method comprising:

(a) exchanging brine between the heat storage layer and the vaporizer of the heat machine for generating power;

(b) exchanging brine between the convective layer and the condenser for adding heat to the convective layer thereby increasing the rate of evaporation therefrom and increasing the salinity thereof; and

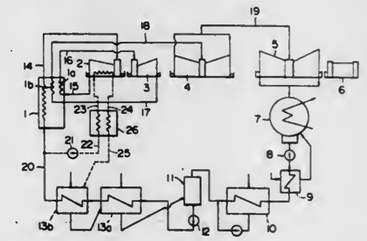
(c) periodically withdrawing brine from the convective layer to an evaporation pond where the brine is concentrated by evaporation, and replacing the withdrawn brine with make-up brine that is less dense than the withdrawn brine.

4,498,301

COOLING DEVICE OF STEAM TURBINE

Kuniyoshi Tsubouchi, Hitachi, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 16, 1983, Ser. No. 466,935
Claims priority, application Japan, Feb. 17, 1982, 57-22636
Int. Cl.³ F01K *17/04*
U.S. Cl. 60—657 **6 Claims**



1. A cooling device for a steam turbine, the cooling device comprising:

condenser means for condensing steam supplied from the steam turbine;

feedwater means for supplying feedwater from the condenser means to a boiler means;

a first cooling fluid means branching from the feedwater means for supplying a portion of the feedwater to to the steam turbine as a cooling fluid; and

a second cooling fluid means communicating with said first cooling fluid means and including a regenerating heat exchanger means for heating the cooling fluid, said second cooling fluid means being connected to the steam turbine so that the cooling fluid heated by said heat exchanger means is supplied to portions of the steam turbine requiring a cooling.

4,498,302

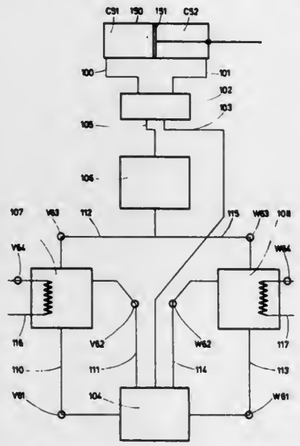
THERMOMECHANICAL-CONVERSION ENGINE, ESPECIALLY AN ENGINE WORKING WITH A LOW-BOILING-POINT FLUID

Salah Djelouah, Loiret, France, assignor to Sorelec, Loiret, France

Filed Nov. 17, 1982, Ser. No. 442,382
Claims priority, application France, Nov. 19, 1981, 81 21709; Jan. 14, 1982, 82 00535
Int. Cl.³ F01K *25/10*
U.S. Cl. 60—671 **5 Claims**

1. A thermomechanical-conversion engine system comprising a thermomechanical-conversion engine capable of being driven by a low boiling point fluid and a closed circuit for providing low boiling point fluid to and receiving low boiling point fluid from the thermomechanical-conversion engine, said

circuit comprising a condenser, an evaporator, a first reservoir, a second reservoir, a line connecting an outlet of the engine to an inlet of said condenser, a line connecting an outlet of said condenser to an inlet of said first reservoir, a line connecting an outlet of said condenser to an inlet of said second reservoir, a line connecting the outlet of said first reservoir to an inlet of said evaporator, a line connecting the outlet of said second reservoir to an inlet of said evaporator, a line connecting an outlet of said evaporator to an inlet of said first reservoir, a line connecting an outlet of said evaporator to an inlet of said second reservoir, a line connecting an outlet of said evaporator to an inlet of the engine, and means for alternating aligning the



circuit in one of two alignments, the first alignment enabling flow of low boiling point fluid from said condenser to said first reservoir, prohibiting flow of low boiling point fluid from said condenser to said second reservoir and permitting flow of low boiling point fluid between said evaporator and said second reservoir, the second alignment enabling flow of low boiling point fluid from said condenser to said second reservoir, prohibiting flow of low boiling point fluid from said condenser to said first reservoir and permitting flow of low boiling point fluid between said evaporator and said first reservoir, said first and second reservoirs having means to condense low boiling point fluid.

4,498,303

CARBON DIOXIDE LIQUIFICATION SYSTEM

Albert N. Helchberger, P.O. Box 16562, Jacksonville, Fla. 32245

Filed Jul. 6, 1983, Ser. No. 511,270
Int. Cl.³ F25J *3/02*
U.S. Cl. 62—21 **11 Claims**

1. A process for selectively condensing carbon dioxide from a source gas flow, comprising:

providing an initial quantity of liquid carbon dioxide in a vertical configuration including, in ascending order, a lower removing region, a gas distributing region, a condensing region, and a gas collecting region;

said liquid carbon dioxide being at selected temperature and pressure conditions above condensation conditions for all components of said source gas except carbon dioxide;

introducing said flow of source gas into said gas distributing region and distributing said flow in said liquid carbon dioxide within said distributing region;

removing heat from said liquid carbon dioxide within said condensing region, as distributed gas rises in said liquid carbon dioxide from said distributing region through said condensing region, at a heat removal rate sufficient to maintain said selected temperature condition and to selectively condense substantially all carbon dioxide from said distributed gas;

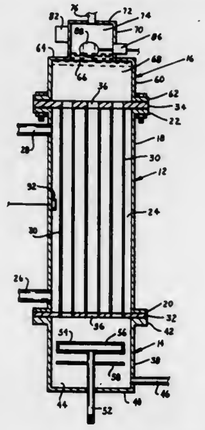
collecting noncondensed gas in said gas collecting region as noncondensed gas rises from said liquid carbon dioxide above said condensing region; and

removing substantially only carbon dioxide liquid from said lower removing region below said gas distributing region.

8. Apparatus for selectively condensing carbon dioxide from a source gas flow, comprising:

a chamber configured to contain a quantity of liquid carbon dioxide in vertically arranged regions including, in ascending order, a lower removing region, a gas distributing region, a condensing region, and a gas collecting region;

inlet means for introducing said flow of source gas into said gas distributing region and distributing said flow in said liquid carbon dioxide within said distributing region;



cooling means for removing heat from said liquid carbon dioxide within said condensing region, as distributed gas rises in said liquid carbon dioxide from said distributing region through said condensing region;

said condensing region being sized and shaped and arranged such that as distributed gas passes through said liquid carbon dioxide in direct heat exchange relationship sufficient heat exchange occurs to selectively condense substantially all carbon dioxide from said distributed gas;

collecting means for collecting noncondensed gas in said gas collecting region as noncondensed gas rises from said liquid carbon dioxide above said condensing region; and

outlet means for removing carbon dioxide liquid from said lower removing region below said gas distributing region.

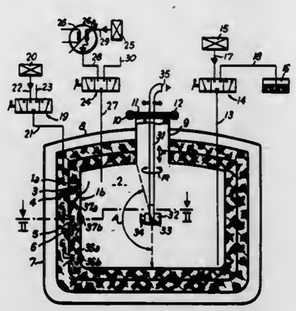
4,498,304

STORAGE TANK FOR CRYOGENIC LIQUEFIED GAS

Jean R. Guilhem, Sainte-Adresse, France, assignor to Gaz de France and Applied Thermodynamics & LNG Service, both of, France

Filed Jul. 26, 1983, Ser. No. 517,515
Claims priority, application France, Aug. 3, 1982, 82 13559
Int. Cl.³ F17C *13/02*
U.S. Cl. 62—49 **7 Claims**

1. In a tank construction adapted to contain cryogenic liquefied gas such as liquefied natural gas including a first interior wall providing a primary barrier and defining a tank chamber for containing liquefied gas under pressure, a second intermediate wall providing a secondary barrier and spaced outwardly of said first wall and providing a primary space between the first and second walls, a third exterior wall outwardly of the second wall and providing a secondary space between the second and third walls, thermal insulating material filling said primary space, thermally insulating material filling the secondary space, a line communicating the tank chamber with an inert gas supply adapted, after the liquefied gas has been unloaded from the tank chamber, to push any remaining liquefied gas out of the tank chamber, and a line communicating the secondary space with a supply of safety gas, the safety gas having, under the pressure prevailing in the primary space, a sublimation temperature lower than the temperature prevailing in service



within said secondary space and higher than the primary barrier temperature at said chamber prior to warming-up of the primary barrier, the provision of:

a temperature sensing means in said tank chamber for sensing temperatures at selected areas of said first wall after unloading of said liquefied gas;

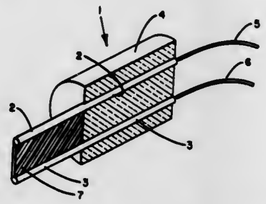
and means for introducing and supporting said temperature sensing means in said tank chamber.

4,498,305

PROBE FOR MEASURING ELECTRICAL CONDUCTANCE

Joseph A. Budula, Fulton, N.Y., assignor to Carrier Corporation, Syracuse, N.Y.

Division of Ser. No. 353,768, Mar. 1, 1982, Pat. No. 4,449,396. This application Oct. 31, 1983, Ser. No. 547,313
Int. Cl.³ F25B *43/02*; G01K *13/00*
U.S. Cl. 62—84 **1 Claim**



1. A method of monitoring water concentration in the refrigerant of a hermetic vapor compression refrigeration system having an oil lubricated compressor drive train, which comprises:

placing a probe for measuring electrical conductance in the lubrication oil for the compressor drive train;

measuring the conductance of the probe during a selected time period of operation of the refrigeration system to determine a reference level of conductance for the probe;

measuring the conductance of the probe during regular operation of the refrigeration system; and

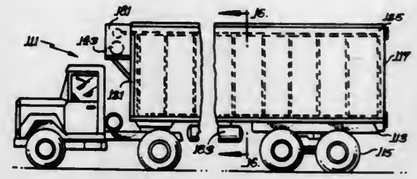
comparing the conductance measured during regular operation of the refrigeration system to the reference level of conductance to determine the change in water concentration in the oil corresponding to the change in water concentration in the refrigerant of the refrigeration system.

4,498,306

REFRIGERATED TRANSPORT

Lewis Tyree, Jr., 145 Briarwood Ave. North, Oak Brook, Ill. 60521

Filed Nov. 9, 1982, Ser. No. 440,403
Int. Cl.³ F25D *15/00*
U.S. Cl. 62—119 **20 Claims**



1. A refrigerated transport comprising

means defining an insulated enclosure including a plurality of walls and a floor for holding a quantity of product at a storage temperature below ambient temperature, and including opening means for inserting and removing said product,

means for holding a cryogen reservoir,

thermosyphon means in heat-transfer relationship with said walls and floor containing a vaporizable refrigerant which exhibits liquid-vapor two-phase form at about said storage temperature and at an equilibrium pressure not greater than 500 psia.,

intermediate heat sink means in heat-transfer relationship with upper portions of said thermosyphon means, and

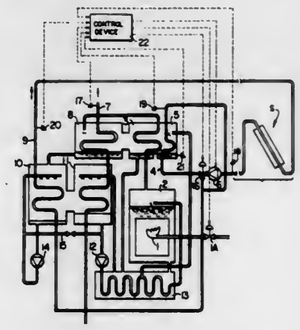
means for controlling the transfer of heat from said intermediate heat sink means to said cryogen to maintain said heat sink means at a desired temperature below said storage temperature but substantially above the temperature of said cryogen reservoir, whereby heat attempting to enter said enclosure is intercepted by said thermosyphon means, transferred to said intermediate heat sink and ultimately absorbed by said cryogen.

4,498,307

ABSORPTION COLD AND WARM WATER SYSTEM UTILIZING SOLAR HEAT

Yozo Hibino; Kohji Kamejima, both of Ibaraki, and Yasuaki Nara, Tsuchiura, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed May 11, 1983, Ser. No. 493,704
Claims priority, application Japan, May 12, 1982, 57/78288
Int. Cl.³ F25B *15/00*
U.S. Cl. 62—148 **10 Claims**



1. An absorption cold and warm water system comprising an evaporator means, solar heat generator means for heating water by solar heat so as to provide heat source water, a main

heating source means a supply means for feeding the heat source water to the cold and warm water system, switching means for switching the supply means in such a manner that the cold and warm water system selectively functions as a warm water system relying on heating by the main heating source means without receiving a supply of heat source water, said switching means being adapted to be displaced to a first position wherein the heat source water is fed to the evaporator means of the cold and warm water system whereby the heat of the heat source water is utilized through heating by the main heating source means, and a second position wherein the heat source water is fed to the evaporator means and the solar heat generator means and the heat possessed by the heat source water released at the evaporator means is utilized through the solar heat generator means and the main heating source; and

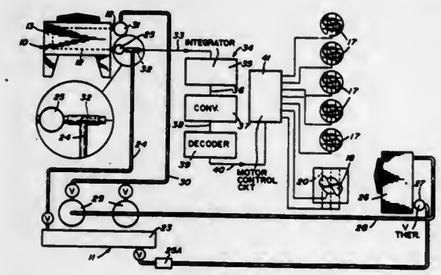
control means for controlling said switching means and said main heating source means in accordance with a temperature of the heat source water.

4,498,308

NON-FLOODING REMOTE AIR COOLED CONDENSERS

Parker V. Phillips, Brantford; Ness Lakdawala, St. Lambert, and Michel Lecompte, Mont St. Hilaire, all of Canada, assignors to Hussmann Store Equipment Limited, Brantford, Canada

Filed Sep. 30, 1982, Ser. No. 430,699
Int. Cl.³ F25B *39/04*
U.S. Cl. 62—184 **14 Claims**



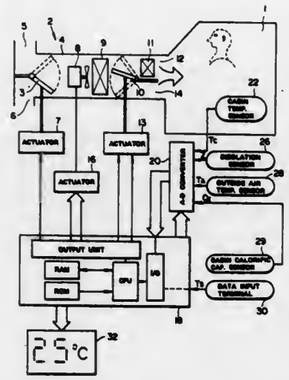
1. An outdoor air cooled condenser for use in a refrigeration system having at least one refrigeration circuit, said condenser including a condenser coil assembly having a condenser coil and a heat transfer surface for said refrigeration circuit, a housing having air inlet and outlet means for the passage of air through said housing about said heat transfer surface, said outlet means having a primary outlet and a plurality of secondary outlets, air displacement means associated with a respective one of said primary and secondary outlets, damper means associated with each said secondary outlet, controllable damping means associated with said primary outlet to control the size of the opening thereof, sensing means connected to said condenser coil to sense predetermined condition of a refrigerant in said condenser coil, control circuit means for monitoring said sensed refrigerant condition with respect to a predetermined ideal condition set point value for said refrigeration system and for controlling said controllable damping means of said primary outlet and said air displacement means of said secondary outlets to control the amount of air passing through said housing and said condenser coil heat transfer surface in response to changes in said refrigerant condition resulting from heat rejection load changes in said coil or entering air temperature changes in said housing, whereby to substantially maintain said refrigeration system operating at said ideal condition set point value.

4,498,309

BLOWER CONTROL ARRANGEMENT FOR AIR CONDITIONING UNIT OR THE LIKE

Shinsa Kobayashi, Hiratsuka, and Eiji Ohsawa, Ebina, both of Japan, assignors to Nissan Shatai Company, Limited, Hiratsuka, Japan

Filed Aug. 26, 1983, Ser. No. 526,634
Claims priority, application Japan, Aug. 31, 1982, 57-150144
Int. Cl.³ F25D *17/04*
U.S. Cl. 62—186 **34 Claims**



1. An air conditioning unit for a vehicle having a cabin, comprising:

a blower for inducing air to flow through a duct of said air conditioning unit;

a heat exchanger arrangement associated with said duct and arranged to vary the temperature of the air induced to flow through said duct;

a sensor arrangement for sensing at least one parameter affecting the environment of said cabin and outputting an indication of said parameter;

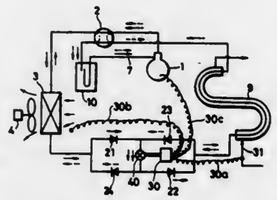
a control circuit for controlling the energization of said blower according to an energization schedule, a first extremum of which is selectively varied in response to the output of said sensor arrangement, and for varying the rate at which said schedule proceeds from said first extremum to a second extremum in accordance with the difference between the extrema.

4,498,310

HEAT PUMP SYSTEM

Masami Imanishi, Wakayama, and Naoki Tanaka, Hyogo, both of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 5, 1983, Ser. No. 455,640
Claims priority, application Japan, Jan. 9, 1982, 57-2072
Int. Cl.³ F25B *41/00*
U.S. Cl. 62—211 **8 Claims**



1. A heat pump system including a utilization side heat exchanger, a non-utilization side heat exchanger, a compressor for compressing and circulating a refrigerant fluid through said utilization side heat exchanger and said non-utilization side heat exchanger, a four-way valve for controlling a direction of refrigerant fluid flow through said utilization side heat exchanger and said non-utilization side heat exchanger, and an expansion valve provided between said utilization side heat exchanger and said non-utilization side heat exchanger for selectively controlling the circulation rate of said refrigerant fluid in accordance with an amount of valve opening of said expansion valve, wherein the improvement comprises:

sensing means for detecting only a predetermined temperature of media undergoing heat exchange at said utilization side heat exchanger and a predetermined temperature of media undergoing heat exchange with said refrigerant at said non-utilization side heat exchanger regardless of said direction of refrigerant fluid flow; and

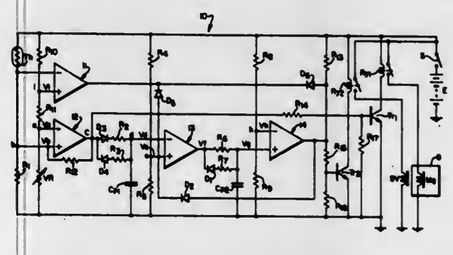
controller means for controlling said amount of opening of said expansion valve in accordance with the sensed predetermined temperatures.

4,498,311

CONTROL DEVICE FOR A VARIABLE DISPLACEMENT COMPRESSOR IN AN AIR CONDITIONING SYSTEM

Riichi Sakano, Saitama, and Tadayoshi Ubakata, Gunma, both of Japan, assignors to Sanden Corporation, Gunma, Japan

Filed Mar. 7, 1983, Ser. No. 472,497
Claims priority, application Japan, Mar. 5, 1982, 57-30423[U]
Int. Cl.³ F25B *1/00*
U.S. Cl. 62—227 **13 Claims**



11. A control device for a compressor in an air conditioning system, said compressor having a magnetic clutch to drive said compressor and a variable displacement device to change the cooling capacity of said compressor between a small and a large volume, said control device comprising:

a voltage source;

magnetic clutch control means connected to said voltage source for actuating said magnetic clutch to drive said compressor, said magnetic clutch control means including a thermistor for sensing the temperature of the air blown by the air conditioning system and a first comparator for comparing the sensed temperature to a first predetermined temperature, said first comparator generating a control signal for actuating said magnetic clutch when the sensed temperature is above the first predetermined temperature;

first cooling capacity control circuit means connected to said voltage source for actuating said variable displacement device to decrease the cooling capacity of said compressor, said first cooling capacity control means including a second comparator operatively connected to said first comparator for determining the rate of operation of said compressor and a third comparator operatively connected to said second comparator for comparing the determined rate of operation of said compressor to a predetermined rate, said third comparator generating a control signal to actuate said variable displacement device to decrease the cooling capacity of said compressor when the determined rate of operation of the compressor is below the predetermined rate; and

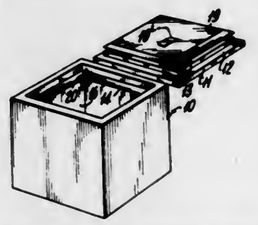
second cooling capacity control circuit means connected to said voltage source for actuating said variable displacement device to increase the cooling capacity of said compressor, said second cooling capacity control means including a fourth comparator for comparing the sensed temperature of the air blown by the air conditioning system to a second predetermined temperature, said fourth comparator generating a signal to actuate said variable displacement device to increase the cooling capacity of said compressor when the sensed temperature is above the second predetermined temperature.

4,498,312

METHOD AND APPARATUS FOR MAINTAINING PRODUCTS AT SELECTED TEMPERATURES

Edward P. Schlosser, 509 Lawton Ave., Ridgefield, N.J. 07657

Filed Nov. 23, 1983, Ser. No. 554,525
Int. Cl.³ F25D *3/08*
U.S. Cl. 62—457 **7 Claims**



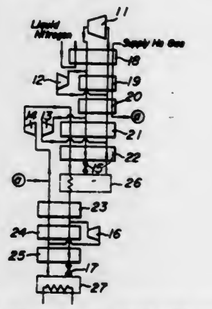
1. Apparatus for maintaining products at a desired temperature comprising a chest of essentially rectangular configuration formed of heat insulating material and a plurality of relatively flat, hollow, sealed containers lining the sides, bottom and top of the inside of said chest, at least certain of said containers being formed to interlock one with others to hold them in position within the chest, each of said containers including a recessed opening and cooperating removable plug and adapted to be filled with a liquid having a high boiling point and a low freezing point, said containers upon being filled with said liquid and subjected to a selected temperature until the liquid reaches said selected temperature and then inserted in said chest, products in said chest will be maintained at approximately the selected temperature for an extended period of time.

4,498,313

COMPACT HELIUM GAS-REFRIGERATING AND LIQUEFYING APPARATUS

Kenji Hosoyama, Ibaragi, and Hiromi Hirabayashi, Tsuchiura, both of Japan, assignors to National Laboratory for High Energy Physics, Ibaragi, Japan

Filed Dec. 27, 1983, Ser. No. 565,606
Claims priority, application Japan, Dec. 27, 1982, 57-233113
Int. Cl.³ F25D *9/00*
U.S. Cl. 62—514 R **7 Claims**



1. A helium gas-refrigerating and liquefying apparatus comprising:

a neon gas-refrigerating and liquefying circuit system for pre-cooling helium gas, comprising:

a turbo-type gas compressor for compressing neon gas and delivering the compressed neon gas to a first plurality of interconnected heat exchangers;

at least one turbo-type neon gas expansion machine maintaining a temperature differential across at least one of the heat exchangers of said first plurality;

a first Joule-Thomason valve interconnecting an outlet and an inlet of a last of the heat exchangers of said first plurality; and

means for passing helium gas through at least one of the said heat exchangers of said first plurality to pre-cool said helium gas;

a helium gas-refrigerating and liquefying circuit system for further cooling and liquefying said precooled helium gas comprising:

a turbo-type helium gas compressor for compressing said precooled helium gas and delivering the compressed helium gas to a second plurality of interconnected heat exchangers;

at least one helium gas expansion machine maintaining a temperature differential across at least one of the heat exchangers of said second plurality; and

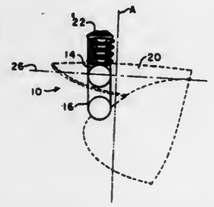
a second Joule-Thomson valve interconnecting an outlet and an inlet of a last of the heat exchangers of said second plurality.

4,498,314

FINGERNAIL JEWELRY DEVICE

Diane H. Okamura, 20824 Chester St., Castro Valley, Calif. 94546

Filed Jul. 27, 1983, Ser. No. 517,795
Int. Cl.³ A44C *25/00*
U.S. Cl. 63—2 **6 Claims**



1. A fingernail jewelry device comprising

a first elongated arcuate support leg having a curvature approximating the curvature of a fingernail as defined by the line of intersection of said fingernail with a plane perpendicular to the longitudinal axis of said fingernail,

a second elongated support leg connected at one end to one end of said first support leg, said second support leg adapted to frictionally engage said fingernail along the underside thereof,

said first and second support leg combination defining an elongated arcuate U-shaped member, open at one end and adapted to be emplaced on said fingernail from one side of said fingernail in a direction perpendicular to the longitudinal axis of said fingernail said open end of said U-shaped member proximate a side of said fingernail,

said first elongated arcuate support leg adapted to frictionally engage the top of said fingernail and having the longitudinal axis of said first support leg disposed perpendicular to the longitudinal axis of said fingernail, and

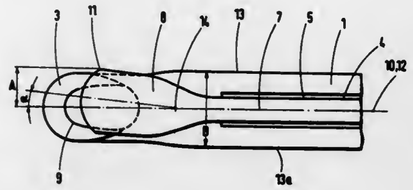
means for mounting at least one decorative object on said first leg.

4,498,315

LATCH NEEDLE FOR MACHINES FOR PRODUCING KNITTED GOODS

Werner Wohlgemuth, Albstadt, Fed. Rep. of Germany, assignor to Theodor Groz & Sohne & Ernst Beckert Nadelfabrik Commandit-Gesellschaft, Albstadt, Fed. Rep. of Germany

PCT No. PCT/DE82/00197, § 371 Date May 16, 1983, § 102(e) Date May 16, 1983, PCT Pub. No. WO83/01259, PCT Pub. Date Apr. 14, 1983
PCT Filed Oct. 6, 1982, Ser. No. 503,153
Claims priority, application Fed. Rep. of Germany, Oct. 10, 1981, 3140386
Int. Cl.³ D04B *35/04*
U.S. Cl. 66—121 **2 Claims**



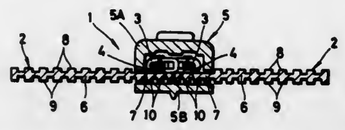
1. A latch needle for machines for producing knitted goods, having a needle shank, a needle head and a latch pivotably supported in a latch slot, characterized in that the latch spoon (8) is tilted with respect to the plane of symmetry (10) of the latch (5), pointing toward one side of the needle shank (1), and that the lateral distance (A) between the most extreme point (11) of the latch spoon (8) and the plane of symmetry (12) of the needle is equal to not more than half the shank thickness (B).

4,498,316

WARP-KNIT STRINGER TAPE FOR SLIDE FASTENERS

Yoshio Matsuda, Nyuzen, Japan, assignor to Yoshida Kogyo K. K., Tokyo, Japan

Filed Sep. 28, 1983, Ser. No. 535,078
Claims priority, application Japan, Sep. 29, 1982, 57-147738[U]
Int. Cl.³ D04B *7/04*
U.S. Cl. 66—196 **11 Claims**



1. A stringer tape for a slide fastener having a pair of rows of coupling elements and a slider threaded thereon, comprising:

(a) an elongate warp-knit fabric including a longitudinally stretchable elongate web portion, and a longitudinally non-stretchable marginal portion extending along one longitudinal edge of said web portion for supporting one coupling element row of the slide fastener and also for being in contact with the slider;

(b) said web portion having a double-faced knit structure having a plurality of longitudinal wales on opposite faces thereof, said marginal portion having a single-faced knit structure having a plurality of longitudinal wales on only one face thereof; and

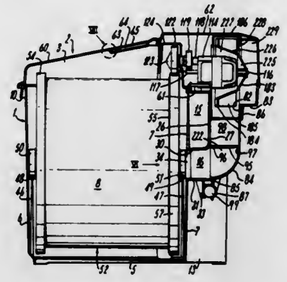
(c) said longitudinal wales at said web portion being composed of textured yarns, said longitudinal wales at said marginal portion being composed of multifilament yarns.

4,498,317

LAUNDRY HANDLING MACHINE, ROTATIONAL SPEED REDUCTION ARRANGEMENT AND RINSING DEVICE

Albert A. P. Thysen, Bilzen, and Gilbert L. J. Timmermans, Tongeren, both of Belgium, assignors to ITT Industries, Inc., New York, N.Y.

Filed Feb. 18, 1982, Ser. No. 349,805
Int. Cl.³ D06F *25/00, 33/02, 39/02*
U.S. Cl. 68—12 R **39 Claims**



1. A laundry treating machine for performing both a washing and a drying operation, including a housing having a cover, a vat, a drum mounted in the vat for turning about an axis and a motor for turning the drum, comprising:

means for inducing a flow of air through two separate paths, one passing over the motor and the other circumventing the motor before combining with the air emerging from the first path for joint flow therewith to the exterior of the housing during the washing operation and into the drum during the drying operation; and

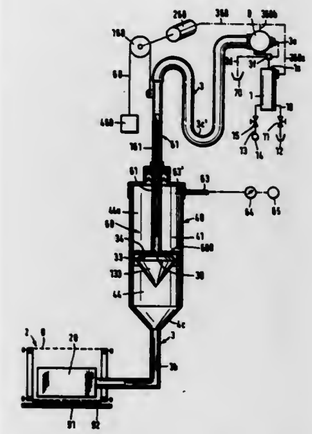
means for heating the air in the second path at least during the drying operation.

4,498,318

APPARATUS FOR SUPPLYING FOAM TO A CONSUMER

Mathias Mitter, Falkenstr. 57, D-4815 Schloss Holte, Fed. Rep. of Germany

Filed Dec. 15, 1982, Ser. No. 450,108
Claims priority, application Fed. Rep. of Germany, Dec. 23, 1981, 3150936; Oct. 9, 1982, 3237591
Int. Cl.³ D06B *1/08*
U.S. Cl. 68—200 **42 Claims**



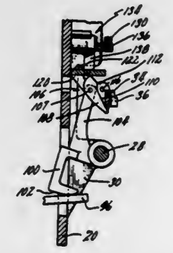
1. Apparatus for applying foam to a substrate, comprising at least one consumer having a hollow rotary screen through which at least the liquid fraction of foam passes into contact with the consumer and an applicator in the interior of said screen; means for feeding foam to said applicator including at least one foam generator having foam discharging outlet means and means for connecting said outlet means with the consumer, said connecting means including at least one conduit and at least one pressurized foam storing device in said conduit; and compensating means for varying the effective volume of said storing device as a function of variations of the quantity of foam and the resulting fluctuations of pressure in said storing device, said compensating means including a portion which is disposed in the interior of said storing device.

4,498,319

EXIT DEVICE

Walter O. Baldacci, and Theodore H. Miller, both of New Britain, Conn., assignors to Emhart Industries, Inc., Farmington, Conn.

Filed May 24, 1982, Ser. No. 381,604
Int. Cl.³ E05B *65/10*
U.S. Cl. 70—92 **12 Claims**



1. An exit device comprising a case, a latch bolt supported by and moveable relative to said case between projected and retracted positions, a manual operator, an action lever pivotably mounted in said case and adapted to be pivoted by said manual operator between an open and closed position, a locking member mounted in said case for movement between a locked and unlocked position, and means mounted on said action lever adjacent one end thereof engageable with said locking member when said locking member is in the unlocked position for causing retraction of said latch bolt when said action lever is pivoted into its open position, and free of engagement of said locking member and cammed about said latch bolt when said locking member is in the locked position, whereby said latch bolt remains projected when said action lever is pivoted into its open position.

4,498,320

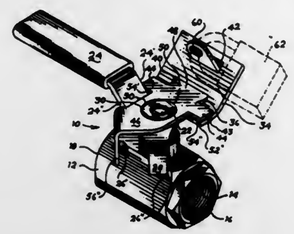
APPARATUS FOR LOCKING A CONTROL DEVICE

Jerry D. Mullis, Matthews, N.C., assignor to Conbraco Industries, Inc., Matthews, N.C.

Filed Sep. 2, 1981, Ser. No. 298,659
Int. Cl.³ F16K *35/00*
U.S. Cl. 70—177 **22 Claims**

1. Apparatus for locking a control device of the type having a body and an operating handle mounted thereon for selective shifting between a first and a second position, comprising movable engagement means adapted to be movably mounted on said control device for selective disposition both when said handle is in its said first position and when said handle is in its said second position in simultaneous engagement of said body and said handle to restrain said handle from movement and for selective disengagement in both said positions from at least one of said body and said handle to permit shifting to said handle, said movable engagement means having shoulder means for selective disposition between said first and second positions of

said handle and in abutment with said handle, leg means operatively arranged relative to said shoulder means for engaging said body when said shoulder is disposed between said first and second positions of said handle and is in abutment therewith, and means for permitting selective movement of at least one of said shoulder means and leg means relative to the other thereof and generally normal with respect to the shifting movement of



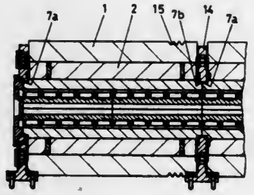
said handle for selective positioning of said shoulder means and said leg means for simultaneous abutment of said handle with said shoulder means and engagement of said body with said leg means to prevent movement of said handle and for selective disengaging of at least one of said shoulder means and said leg means from said handle and said body, respectively, to permit shifting of said handle.

4,498,321

METHOD OF AND APPARATUS FOR FORMING LONG METAL TUBING STOCK TO TAPERED SHAPE

Keiichiro Yoshida, 641, Mobara, Chiba, Japan (297)

Filed Jul. 8, 1983, Ser. No. 512,126
Claims priority, application Japan, Jul. 9, 1982, 57-120346
Int. Cl.³ B21J *7/16*
U.S. Cl. 72—76 **6 Claims**



1. An apparatus for forming a relatively long metal tubing stock to a tapered shape by means of the swaging process, comprising a plurality of swaging units which are arranged in a serial tandem configuration, each of said swaging units including:

an outer cylindrical-shape flywheel;

an inner cylindrical-shape assembly mounted inside said outer cylindrical-shape flywheel, said assembly including hammer rolls arranged at regular intervals around said assembly and spacer members each interposed between the two adjacent hammer rolls;

a cylindrical-shape spindle mounted inside said inner cylindrical-shape assembly, said spindle having two longitudinal bucker grooves extending in parallel with the central axis of said spindle and diametrically opposed relative to each other, each of said two bucker grooves having a series of regularly spaced apertures formed in the bottom in the longitudinal direction thereof and aligned with the apertures in the other bucker grooves, a series of striking rods each inserted into each of said apertures movably in the radial direction of said spindle, and a bucker mounted between said series of striking rods in each of said bucker grooves and said inner cylindrical-shape assembly so that said bucker is pressed down by said hammer rolls in said inner assembly;

working die means mounted inside said spindle, said working die means having two split parts extending longitudinally thereof; and

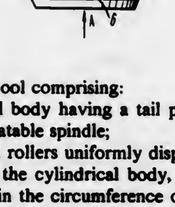
driving means having output connected to said outer cylindrical-shape flywheel, wherein each of said working die means in each of said swaging units is interconnected one after another to form a continuous working sequence, and each of said driving means is connected to each of said outer cylindrical-shape flywheel.

4,498,322

THREAD-ROLLING TOOL

Gennady A. Toropov, ulitsa Mironova, 17, kv. 45, and Stepan P. Shamenko, prospekt Geroev, 33, korpus 1, kv. 45, both of Dnepropetrovsk, U.S.S.R.

PCT No. PCT/SU80/00117, § 371 Date Feb. 23, 1982, § 102(e) Date Feb. 23, 1982, PCT Pub. No. WO82/00109, PCT Pub. Date Jan. 21, 1982
PCT Filed Jun. 30, 1980, Ser. No. 355,754
Int. Cl.³ B21H *03/08*
U.S. Cl. 72—118 **1 Claim**



1. A thread-rolling tool comprising:

a unitary cylindrical body having a tail portion for fixing said body in a rotatable spindle;

a plurality of thread rollers uniformly disposed around the circumference of the cylindrical body, the axes of said rollers lying within the circumference of the cylindrical body and being in an angular position relative to the axis of rotation of the body at an angle equal to the lead angle of the helical line of the thread being rolled;

a plurality of groove-forming rollers uniformly disposed around the circumference of the cylindrical body with their axes lying within the circumference of the cylindrical body, the groove forming rollers positioned on the opposite side of the thread rollers from the the tail relative to the axis of the body and including a plurality of alternate peripheral crests and roots having a pitch equal to that of the thread rollers and being disposed in an angular position relative to the axis of rotation of the body and at an angle relative to the thread rollers, the top portions of the groove-forming rollers being axially displaced relative to the top portions of a preceding thread roller, if viewed in the projection on a plane normal to the axis of rotation of the body, the amount of displacement being:

$$(P/2)-P\beta/360°),$$

where

P is a pitch of the thread being rolled,

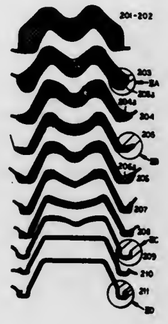
β is an angle between the axes of rotation of the groove-forming and preceding thread rollers if viewed in the projection on a plane normal to the axis of rotation of the body.

4,498,323

METHOD OF ROLLING SHEET PILING

Jacques Metzdorf, Esch/Alzette, Luxembourg, assignor to Arbed S.A., Luxembourg, Luxembourg

Filed Sep. 28, 1982, Ser. No. 426,064
Claims priority, application Luxembourg, May 25, 1982, 84169
Int. Cl.³ B21B *1/08*
U.S. Cl. 72—177 **5 Claims**



1. In a method of rolling inertial sheet piling in which a generally U-shaped sheet pile is formed with a pair of flanges joining a web and each of the flanges has a hook-shaped extremity, said method comprising three initial rolling passes for roughing a blank such that a bulge is formed at a free edge of each flange, and in three final rolling passes the hook shape is imparted to each extremity by folding, the improvement which comprises:

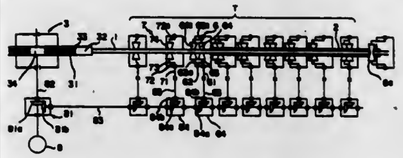
flat rolling each bulge between substantially parallel generally cylindrical ridge-free rolling surfaces in at least one pass following the formation thereof and without prior upsetting of said bulge whereby a grain structure parallel to the flat rolled bulge is formed prior to the folding passes.

4,498,324

RESTRAINED MANDREL MILL INLET TABLE

Shinji Akita, and Megumu Tanaka, both of Yokohama, Japan, assignors to Nippon Kokan Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 21, 1983, Ser. No. 477,326
Claims priority, application Japan, Mar. 25, 1982, 57-46342
Int. Cl.³ B21B *17/10*
U.S. Cl. 72—208 **7 Claims**



1. An inlet table for a restrained mandrel mill comprising:

a plurality of roll means arranged in the direction of a pass line to support a mandrel bar /or a shell to be rolled; and

a restrained bar coupled to said mandrel bar and mounted for reciprocal movement relative to said roll means;

means for reciprocating said restrained bar; gear means interconnecting said restrained bar and said roll means for mechanically transmitting the movement of said restrained bar to said roll means; and

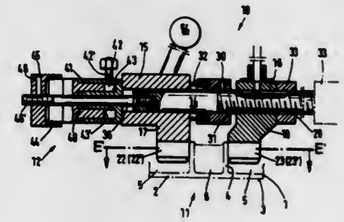
wherein each of said roll means includes at least one roll mounted on an arm supported so that the arm can be swung reversibly about a rotary shaft in response to a forward movement or a backward movement of said restrained bar, whereby at least one of said plurality of roll means supports said mandrel bar and/or the shell to be rolled on the pass line.

4,498,325

METHOD FOR SHAPING PANELS BY A BENDING OPERATION, IN PARTICULAR PANELS FOR AIRCRAFT FUSELAGE SKIN, AND APPARATUS FOR IMPLEMENTING SUCH METHOD

Helmut Reccius, Munich, and Werner Pönitzsch, Friedrichshafen, both of Fed. Rep. of Germany, assignors to Walter Eckold GmbH & Co. KG, Andreasberg and Dornier GmbH, Friedrichshafen, both of, Fed. Rep. of Germany

Filed Sep. 29, 1982, Ser. No. 426,472
Int. Cl.³ B21D *11/20*
U.S. Cl. 72—302 **10 Claims**



1. A method for shaping panels made of a plastically deformable material having both a skin portion and a plurality of intersecting stiffening and secondary ribs on one surface of said skin portion, comprising the steps of transmitting force along said stiffening ribs to plastically vary the length thereof, said force being transmitted to a stiffening rib by engaging the stiffening rib and applying force at the points of intersection between said stiffening and secondary ribs at a predetermined distance spaced outwardly from said skin portion whereby said skin portion is subjected to bending forces without substantial tensioning or crushing stresses being imparted thereto.

4,498,326

APPARATUS AND PROCESS FOR FORMING ARTICLES BY HEADING

David S. Brandt, Oneonta, and Samuel J. Costello, Nineveh, both of N.Y., assignors to Allied Corporation, Morristown, N.J.

Filed May 27, 1983, Ser. No. 499,103
Int. Cl.³ B21F *5/00*
U.S. Cl. 72—318 **20 Claims**

19. Apparatus for forming articles from elongated blanks by heading comprising:

an axially fixed holder plate;

at least one holder carried by said holder plate having an opening adapted to receive one end of an elongated blank, said holder also including means for clamping a received blank end disposed therein;

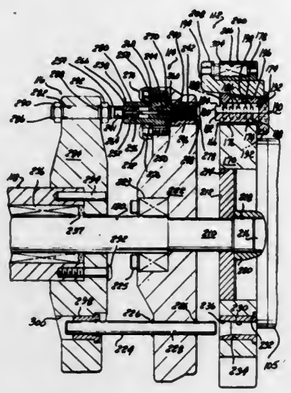
a first tooling plate carrying a die having an opening locatable opposite said holder carried by said holder plate;

means for mounting said first tooling plate to be axially movable toward and away from said holder plate;

means for causing controlled timed advance and retraction of said first tooling plate consisting of movement of said first tooling plate towards and away from said holder plate bringing said die opening from a position remote from said holder opening to a position overlying said holder opening to create a closed end die opening with said blank protruding thereinto;

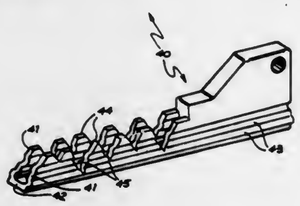
a second tooling plate juxtaposed to said first tooling plate on a side thereof remote from said holder plate carrying at

least one punch axially aligned and extending towards said at least one die opening in said first tooling plate;
means for mounting said second tooling plate for independent axial movement towards and away from said first tooling plate;
means for causing controlled timed advance and retraction of said second tooling plate comprising movement of said second tooling plate toward and away from said first tooling plate respectively to cause advance of said at least one punch into said at least one die opening to enable heading of a blank retained in said at least one holder in said at least one die opening;



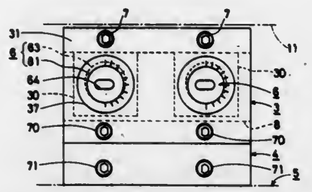
means for successively feeding blanks into said at least one holder; and
means for ejecting formed articles from said at least one holder after each forming cycle, whereby said apparatus enables head forming of blanks successively introduced into said at least one holder;
said at least one holder further including a recessed counterbore at the surface thereof facing said die and of a larger diameter than said die opening allowing radial expansion of a portion of said blank disposed therein to form a shoulder intermediate the length of said formed blank as said punch is advanced to head form said blank.

4,498,327
CYLINDER LOCKS AND KEYS THEREFOR
Brian F. Preddey, Miranda, and Laurence P. Mills, Crows Nest, both of Australia, assignors to Taboola Pty. Ltd., New South Wales, Australia
Filed Mar. 29, 1982, Ser. No. 362,795
Claims priority, application Australia, Mar. 30, 1981, PE8207; Jul. 8, 1981, PE9648
Int. Cl.³ B21D *53/42*
U.S. Cl. 72—341 **4 Claims**



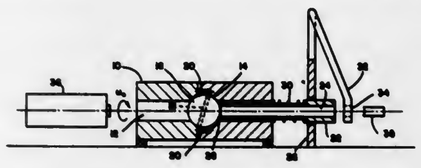
1. A method of forming a key, said method comprising the steps of:
(a) providing a key blank of generally v-shaped transverse cross section so as to define two longitudinally extending transversely converging key blades joinded by a longitudinal base;
(b) cutting a key profile in at least one of the blades so as to provide at least one groove extending inwardly from a longitudinal edge of the said one blade; and
(c) bending the blades towards each other so as to define in combination with the base a key of generally u-shaped transverse cross section.

4,498,328
PRESS DEVICE
Seiju Nagakura, Ama, Japan, assignor to Toyokoki Co., Ltd., Jushiyama, Japan
Filed Apr. 21, 1983, Ser. No. 487,370
Claims priority, application Japan, Apr. 30, 1982, 57-73577
Int. Cl.³ B21D *37/00*
U.S. Cl. 72—482 **7 Claims**



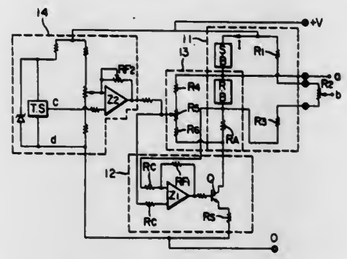
1. A press comprising a table for receiving a lower mold, a movable ram movable up-and-down relative to said table, said ram being provided with a holder for supporting said upper mold, said holder utilizing an adapter mounted in alignment on a lower edge of said ram, said adapter being provided with an eccentric shaft member which is operable to adjust the vertical position of said holder relative to said ram by rotating said eccentric shaft member, said adapter comprising a front plate and a rear plate, said front plate being spaced from said rear plate, a middle plate disposed between said front and rear plates, said eccentric shaft member having two end sections and a center section, said center section being eccentrically disposed relative to said two end sections, said two end sections being rotatably received in said front plate and said rear plate, said middle plate having an opening in which said center section is received such that rotation of said eccentric shaft member raises and lowers said middle plate relative to said front and rear plates.

4,498,329
APPARATUS FOR MEASUREMENT OF SLIDING FRICTION USING GYROSCOPIC MASS
James W. Bloomer, II, Bremerton, Wash., and Robert H. Nunn, Plymouth, England, assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed May 20, 1983, Ser. No. 496,699
Int. Cl.³ G01N *19/02*
U.S. Cl. 73—9 **10 Claims**



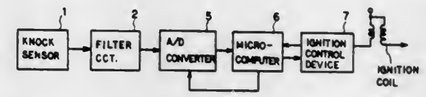
7. A method for determining the coefficient of sliding friction between two bodies comprising the steps of:
(a) configuring the first of said bodies as a cylinder, said cylinder having an internal bore along its longitudinal axis and capable of being rotated at selected speeds about said axis, said cylinder further fabricated in two pieces such that said cylinder has a central cavity approximate the middle of said axis;
(b) configuring the second of said bodies as a sphere having a major axis of inertia and two equal minor axis of inertia, the diameter of said sphere being slightly less than any dimension of said cavity;
(c) placing at least two tubular inserts in fixed positions in said cavity such that said inserts touch the surface of said sphere;
(d) aligning said major axis of said sphere at a predetermined angle away from said axis of said cylinder;
(e) holding said sphere at said predetermined angle while said cylinder and said sphere within said cavity are spun to a predetermined rate of rotation;
(f) releasing said sphere in said cavity such that said sphere will gyroscopically align said major axis of inertia with said axis of said cylinder; and
(g) determining the time required for said major axis of inertia of said sphere to traverse said predetermined angle and align with said cylindrical axis.

4,498,330
GAS DETECTING AND MONITORING DEVICE
Toshiro Hosoya, Tokyo, Japan, assignor to U.S. Industrial Products Co., Norwalk, Calif.
Filed May 10, 1982, Ser. No. 376,519
Claims priority, application Japan, May 15, 1981, 56-72918
Int. Cl.³ G01N *27/12*
U.S. Cl. 73—23 **8 Claims**



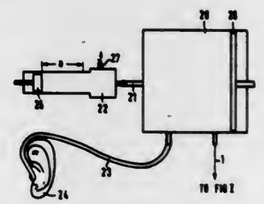
1. A gas detecting and monitoring device having a bridge circuit including a gas detecting element and a constant-current circuit for feeding a constant current to said gas detecting element, characterized in that said bridge circuit comprises a compensating bridge circuit including at least a part of said gas detecting element, said compensating bridge circuit producing a signal corresponding to the variation of the resistance value of said gas detecting element depending upon the variation of the ambient temperature and feeding said signal to said constant-current circuit to automatically control the current fed to said bridge circuit thereby maintaining the resistance value of said gas detecting element at a constant value, and a correcting circuit including a temperature sensor for sensing the variation of the ambient temperature disposed near said gas detecting element, said correcting circuit feeding the output of said temperature sensor corresponding to the variation of the ambient temperature to said compensating bridge circuit thereby compensating for the variation of the respective circuit components owing to the variation of the ambient temperature.

4,498,331
KNOCKING DETECTING APPARATUS FOR INTERNAL COMBUSTION ENGINES
Hirotoshi Nakamura; Teruyoshi Itoh; Hiroshi Haraguchi, all of Kariya; Kou Narita; Toshiharu Iwata, both of Aichi, and Takeshi Matsui, Toyohashi, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan
Filed Apr. 7, 1983, Ser. No. 483,016
Claims priority, application Japan, Apr. 8, 1982, 57-59424
Int. Cl.³ G01M *15/00*
U.S. Cl. 73—35 **6 Claims**



1. A knocking detecting apparatus for an internal combustion engine comprising:
a knocking sensor for detecting the existence of a knocking detecting signal having a frequency specific to knocking;
an A/D converter for converting the knocking detecting signal into digital values after a predetermined delay time from the instant when the knocking detecting signal passes through a predetermined level; and
a microcomputer which instructs the A/D converter about an instant of initiating the A/D conversion of the knocking detecting signal, and discriminates the occurrence of knocking from the digital values thus converted.

4,498,332
TEST DEVICE FOR MEASURING THE FIT OF HEARING AID RELATED DEVICES
Henning Bruckhoff, Lister Meile 23, 3000 Hannover 1, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich and Henning Bruckhoff, Hannover, both of, Fed. Rep. of Germany
Filed Oct. 18, 1983, Ser. No. 543,183
Claims priority, application Fed. Rep. of Germany, Oct. 20, 1982, 3239227
Int. Cl.³ G01M *3/00*; A61F *1/18*
U.S. Cl. 73—40 **8 Claims**



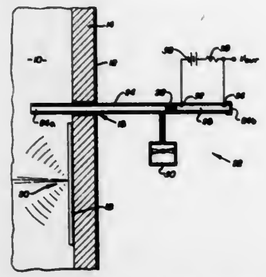
1. In a measuring device for checking the tightness of an ear impression mold which serves as a pattern for the manufacture of an otoplastic and of an otoplastic which is insertable in the auditory passage of an ear wherein by means of said device an air pressure prevailing on the outside can be produced, via an air permeable connection, in an inner space defined by the ear drum and the ear impression mold and otoplastic and through which changes in a generated deviating air pressure can be measured, the improvement comprising:
(a) a pump connected to said air permeable connection which serves for the generation of said deviating air pressure via a pressure chamber with a volume which is a multiple of the volume of said inner ear space; and
(b) a control circuit for presetting the timing of pumping and measuring functions provided therethrough.

4,498,333

CARBON GRANULE PROBE MICROPHONE FOR LEAK DETECTION

Shakkottai P. Parthasarathy, Duarte, Calif., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Jun. 1, 1983, Ser. No. 500,044
Int. Cl.³ G01M 3/24
U.S. Cl. 73—40.5 A 5 Claims



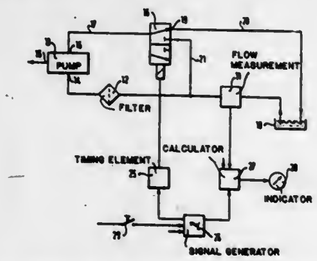
1. A fluid container system including means for detecting leaks therein, comprising:
a fluid container;
a ceramic tube having an open end adapted for insertion into the interior of the container, said tube having a closed end located on the outside of the container;
a plurality of carbon granules packed within the closed end of the tube;
a plug contained within the tube for maintaining the carbon granules in their packed condition, said plug allowing the passage of sound waves therethrough; and
detection means for detecting resistance changes of a fixed length path through the carbon granules resulting from pressure changes on the carbon granules caused by sound waves entering the tube.

4,498,334

APPARATUS FOR MEASURING FUEL CONSUMPTION IN AN INTERNAL COMBUSTION ENGINE

Klaus-Otto Riesenberg, Ludwigsburg, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

PCT No. PCT/DE82/00075, § 371 Date Sep. 30, 1982, § 102(e) Date Sep. 30, 1982, PCT Pub. No. WO83/00221, PCT Pub. Date Jan. 20, 1983
PCT Filed Mar. 31, 1982, Ser. No. 433,119
Claims priority, application Fed. Rep. of Germany, Jul. 9, 1981, 3127123
Int. Cl.³ G01F 9/00
U.S. Cl. 73—113 3 Claims



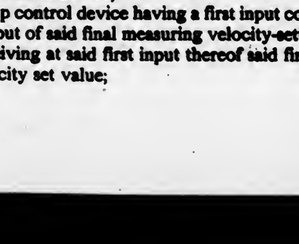
1. An apparatus for measuring fuel consumption in an internal combustion engine having fuel tank, a fuel pump which draws fuel from said fuel tank through an inflow line, a flow measuring device in said inflow line between said fuel tank and said fuel pump, a return flow line from said fuel pump to said fuel tank, control means for connecting said return flow line at least intermittently to the inflow line downstream of the flow measuring device and upstream of said fuel pump, means for controlling said control means in which said control means is activated only during a period of time in which said return flow line transmits fuel from said fuel pump to said inflow line downstream of said flow measuring device, and an evaluation circuit for producing a quantity signal only within a period of time in which said control means is operated to return fuel from said return line to said inflow line downstream of said flow measuring device.

4,498,335

CONTROL ARRANGEMENT FOR A GEAR TESTING MACHINE

Peter Thoma, Zurich, Switzerland, assignor to Maag Gear-Wheel & Machine Company Limited, Zurich, Switzerland

Filed Oct. 25, 1982, Ser. No. 436,519
Claims priority, application Switzerland, Nov. 9, 1981, 7162/81
Int. Cl.³ G01B 7/28; G01M 13/02
U.S. Cl. 73—162 5 Claims



1. A control arrangement for a gear testing machine, comprising:
a slide system;
a measuring feeler supported by said slide system;
a regulatable measuring drive provided for such slide system;
a velocity regulator for regulating said regulatable mesuring drive and having a set value input;
a final measuring velocity-setting device having an output and generating thereat a final measuring velocity set value for said velocity regulator;
a generating straight edge;
a lever system for moving said generating straight edge;
said slide system actuating said lever system;
a generating cylinder rolling essentially free of slippage upon such generating straight edge when said generating straight edge is moved under the action of said lever system actuated by said slide system;
said generating cylinder being capable of being coupled with a test gear;
an auxiliary drive provided for said generating cylinder;
said auxiliary drive being settable to a substantially constant rotational moment;
a rotational moment-setting device provided for said auxiliary drive and generating a set signal representative of said substantially constant rotational moment for said auxiliary drive;
a vibration pickup fixedly connected with the gear testing machine and delivering a vibration signal which defines an envelope having an amplitude;
said vibration pickup having an output;
a start-up control device;
said start-up control device having a first input connected to said output of said final measuring velocity-setting device and receiving at said first input thereof said final measuring velocity set value;

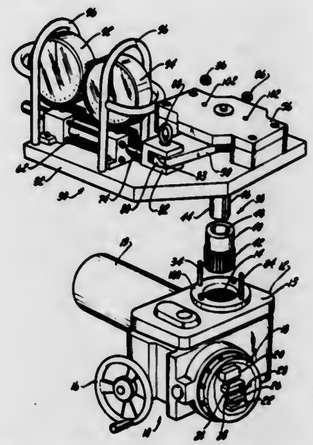
said start-up control device having a second input connected to said rotational moment-setting device for said auxiliary drive and receiving at said second input thereof said set signal representative of said substantially constant rotational moment for said auxiliary drive;
said start-up control device having a third input connected to said output of said vibration pickup and receiving at said third input thereof said vibration signal delivered by said vibration pickup; and
said start-up control device having an output connected to said set-value input of said velocity regulator for regulating said regulatable measuring drive for said slide system and generating at said output thereof, during a start-up phase of a gear testing operation, a set value of said measuring velocity which set value ascends as a function of time to said final measuring velocity set value according to a slope which equals the product of the reciprocal value of said set signal representative of said substantially constant rotational moment for said auxiliary drive and the reciprocal value of the amplitude of the envelope of said vibration signal.

4,498,336

TORQUE MEASURING DEVICE

Thomas B. Dalton, Muskegon, Mich., assignor to Dyna-Torque, Inc., Southfield, Mich.

Filed Jan. 14, 1983, Ser. No. 458,056
Int. Cl.³ G01M 19/00
U.S. Cl. 73—168 8 Claims



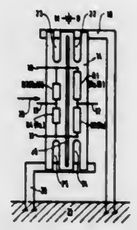
1. For use in conjunction with a valve actuator having a housing, an actuator member movable between an open and a closed position, means for moving said actuator member between said open and closed positions, a device for measuring the force applied by said moving means to said actuator member comprising:
a mounting plate;
means for detachably securing said mounting plate to said housing,
a coupler carried by said plate,
means for detachably securing said coupler to said actuator member so that said coupler and said actuator member move in unison with each other,
a force responsive means carried by said plate, said force responsive means having an input member wherein said force responsive means comprises a cylinder having a closed chamber, a piston slideably mounted within said cylinder and dividing said cylinder chamber into two subchambers,
means for indicating the magnitude of force imposed on said input member,
means for connecting said coupler to said input member.

4,498,337

TEMPERATURE SENSOR FOR DETERMINING MASS TRANSFER RATE AND/OR TEMPERATURE RATE OF A FLOWING MEDIUM

Heiko Gruner, Gerlingen, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Feb. 28, 1983, Ser. No. 470,270
Claims priority, application Fed. Rep. of Germany, Mar. 6, 1982, 3208096
Int. Cl.³ G01F 1/68; G01K 7/16
U.S. Cl. 73—204 18 Claims



1. Sensor apparatus for measuring temperature or for thermally measuring rate of flow, in a flowing medium, comprising:
means for supporting a metal foil in a flowing medium in a position in which said medium may flow along the surface of said foil in contact with at least one surface thereof;
a metal foil held in said support means for exposing the surfaces of said foil for heat exchange with said medium, said foil having a stiffness sufficient for providing mechanical stability during exposure to flow of said medium at least up to a predetermined rate of flow thereof;
an electrically insulating layer on said at least one surface of said foil;
a plurality of resistors respectively constituted as patches of thin electrically resistant layers on said insulating layer, said resistors including at least one pair of resistors having a single common connection and also including two resistors having resistances which vary with temperature, one of which is connected in a circuit for heating said last-mentioned resistor to a regulated extent;
connection means on said insulating layer for connecting the respective terminals of said resistors to connection conductors leading to an external measuring circuit;
said resistors and connection means substantially covering said at least one surface of said foil, and said foil and said supporting means being of a configuration providing for thermal decoupling from each other of said two resistors of resistance that varies with temperature, by virtue of a subdivision (26, 27) of said foil (14, 14a).

4,498,338

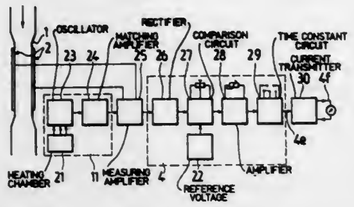
PROCEDURE AND MEANS FOR MEASURING THE COAL CONTENT IN QUICK ASH

Eero Peltonen, Espoo; Aarni Somerikko, Helsinki, and Timo Viitanen, Espoo, all of Finland, assignors to Kajaani Oy, Finland

Filed Jan. 26, 1983, Ser. No. 461,033
Claims priority, application Finland, Feb. 1, 1982, 820307
Int. Cl.³ G01N 27/22
U.S. Cl. 73—432 R 14 Claims

1. A method for measuring the coal content of quick ash, comprising the steps of feeding quick ash containing uncom-

busted coal particles into an electric field established by a pair of spaced electrodes of a capacitor, measuring the change in



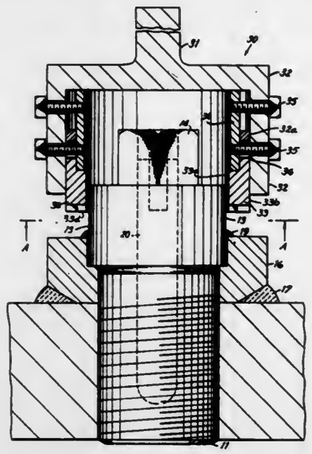
capacitance of the capacitor, and generating a measuring signal which indicates the coal content of said ash.

4,498,339

METHOD FOR INSPECTING INTERIOR OF A PRESSURE VESSEL HAVING REPLACEABLE PLUG ASSEMBLY

Joseph P. Diggins, Coraopolis, Pa., assignor to Foster Wheeler Energy Corporation, Livingston, N.J.

Division of Ser. No. 398,487, Jul. 15, 1982,. This application Nov. 3, 1983, Ser. No. 548,384
Int. Cl.³ G01M *19/00, 11/00*
U.S. Cl. 73—432 R **6 Claims**



1. A method for visually inspecting the interior of a pressure vessel through a hole containing a replaceable plug, comprising:

(a) removing a seal weld from around a cylindrical shoulder of a threaded plug and an adjacent threaded reinforcing collar in the pressure vessel by positioning a cup-shaped rotary machining tool having at least one cutting edge concentrically disposed over said plug, guiding said tool by the cylindrical shoulder surface of the plug and rotating the tool to cut away the weld;

(b) unscrewing and removing said threaded plug from said threaded reinforcing collar in the vessel wall;

(c) viewing the interior of said vessel and then replacing the threaded plug; and

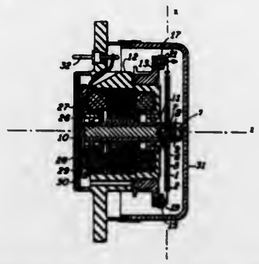
(d) remaking the seal weld between the threaded plug cylindrical shoulder and said adjacent reinforcing collar.

4,498,340

DAMPING MECHANISM FOR GYROSCOPES

Damon H. Duncan, Phoenix, Ariz., assignor to Sperry Corporation, New York, N.Y.

Filed Apr. 7, 1983, Ser. No. 483,078
Int. Cl.³ G01C *19/06, 19/42*
U.S. Cl. 73—504 **3 Claims**



1. In a gyroscopic angular rate sensor of the type having a closed housing containing a compressible fluid and a thin flexible disk rotor therein, a spin motor coupled with said disk for spinning the same about a spin axis normal to the plane of said disk whereby upon rotation of said housing about axes orthogonal to said spin axis said disk deflects out of its plane of rotation due to precessional forces acting thereon, pick-off means fixed to said housing for supplying output signals proportional to such rotor deflection, and squeeze film fluid damping means coupled with said disk for damping deflections of said disk resulting from vibrations thereof in the direction of said spin axis; wherein said damping means comprises auxiliary disk means supported on each side of and parallel to said disk rotor and spaced therefrom a small distance to provide said squeeze film damping, said spin motor including a rigid shaft extending along said spin axis, wherein said disk rotor is rigidly supported on said shaft and wherein said auxiliary disk means comprises first and second disks rigidly supported on said shaft on each side of said first rotor and spacer means between each of said auxiliary disks and said disk rotor,

wherein the improvement comprises providing each of said auxiliary disks with a thickness that is the same or substantially the same as that of said disk rotor whereby said auxiliary disks deflect with said disk rotor in response to said precessional forces.

4,498,341

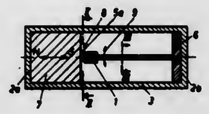
METHOD AND ARRANGEMENT FOR SENSING THE ACCELERATION OF OSCILLATING BODIES

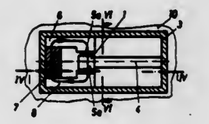
Elmar Breitbach, Göttingen, and Ernst-August Dehne, Adelebsen, both of Fed. Rep. of Germany, assignors to Deutsche Forschungs- u. Versuchsanstalt für Luft-u-Raumfahrt e.V., Porz-Wahn, Fed. Rep. of Germany

Continuation of Ser. No. 198,856, Oct. 20, 1980, abandoned, which is a continuation of Ser. No. 55,080, Jul. 5, 1979, abandoned. This application Sep. 28, 1982, Ser. No. 425,577
Claims priority, application Fed. Rep. of Germany, Jul. 5, 1978, 2829425
Int. Cl.³ G01P *15/08*
U.S. Cl. 73—517 R **5 Claims**

5. In a device for measuring accelerations on vibrating bodies, in which the relative motion between a resiliently suspended seismic mass, made of a ferromagnetic material, and the associated housing, which is connected to the vibrating body is converted into an electric measurement voltage, by means of at least two ohmic resistance means which are dependent on a magnetic field, and by means of a magnetic field in an air gap between the seismic mass and the housing, said magnetic field being generated by means of at least one pemanent magnet and being constant in its intensity and configuration, said resistance means being prestressed by the stationary magnetic field which permeates them and being arranged symmetrically with respect to the zero position of the seismic mass in

such a manner that, when relative motion occurs and the magnetic flux through one resistance means is reduced, the magnetic flux through the other resistance means is increased, the improvement wherein said resistance means is arranged perpendicularly to the lines of flux of the magnetic field in the air gap, with their longitudinal axes perpendicular to the direction of motion of the seismic mass and in that the size and the arrangement of the seismic mass is matched to the dimensions and the arrangement of said resistance means in such a manner





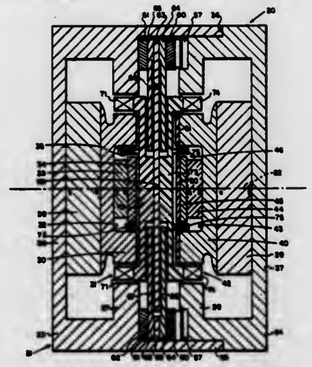
that, even when the relative motion occurs, the projection of the seismic mass onto the resistance means moves within the areas onto which these resistance means are attached, resulting in a reduction in the magnetic flux passing through one resistance means equal in magnitude to the increase in the magnetic flux passing through the other resistance means, wherein the magnetic field is focused onto said resistance means by means of soft iron parts so as to increase the prestressing by means of the stationary magnetic field and wherein said seismic mass consists of a soft iron part which is arranged so as to permit vibration, between the other soft iron parts and in the two resistance means are located, in each case, in two air gaps.

4,498,342

INTEGRATED SILICON ACCELEROMETER WITH STRESS-FREE REBALANCING

Vernon H. Aske, Minnetonka, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Apr. 18, 1983, Ser. No. 486,144
Int. Cl.³ G01P *15/13*
U.S. Cl. 73—517 B **2 Claims**



2. In an accelerometer, in combination:

a flexure member comprising an epitaxially grown sheet of single crystal silicon including a central disc separated from an outer ring except at a pair of hinge sites spaced around the circumference of the disc by less than 180 degrees so that the disc is unbalanced about a line passing through the hinge sites, at least one of the hinge sites being implanted on opposite surfaces with impurity boron to form strain sensitive pickoff means;

means mounting said flexure member for acceleration in a direction orthogonal to said disc;

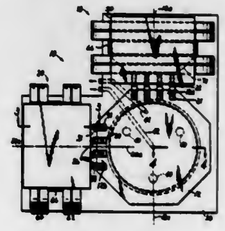
rebalance coil means secured to said inner plate, magnetic means carried by the mounting means for cooperation with said coil means, and large scale integrated circuitry on said disc including means energizable to give outputs in accordance with the responses of said strain sensitive means and means energizing said rebalance coil means in accordance with said outputs.

4,498,343

METHOD AND APPARATUS FOR TWO-AXIS SCREENING VIBRATION

David V. Kimball, 132 W. Chestnut, Monrovia, Calif. 91016

PCT No. PCT/US80/00350, § 371 Date May 4, 1982, § 102(e) Date May 4, 1982
PCT Filed Mar. 23, 1982, Ser. No. 375,891
Int. Cl.³ B06B *1/04, 3/00*
U.S. Cl. 73—663 **47 Claims**



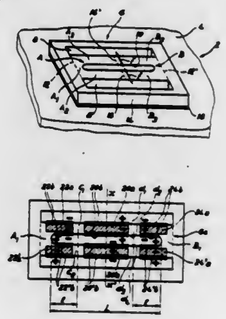
1. Vibration screening apparatus for the screening testing for manufacturing defects of a test piece carried on a rigid slip plate, said apparatus comprising angularly opposed first and second vibrating means each having bodily longitudinal displaceability in a first axis for driving the slip plate and lateral freedom in a second axis to permit longitudinal displacement of the other for driving the slip plate in two coplanar axes simultaneously, and separate means fixed to said slip plate in a manner constraining slip plate freedom of movement into said driving axes.

4,498,344

SENSITIVE ELEMENT FOR USE IN A STRAIN SENSOR AND A SENSOR COMPRISING SUCH AN ELEMENT

Rudolf Dinger, St. Aubin, Switzerland, assignor to Asulab S.A., Bienne, Switzerland

Filed Jun. 30, 1983, Ser. No. 509,673
Claims priority, application France, Jul. 1, 1982, 82 11717
Int. Cl.³ G01L *1/10*
U.S. Cl. 73—778 **10 Claims**



1. A sensitive element for a strain sensor, comprising:

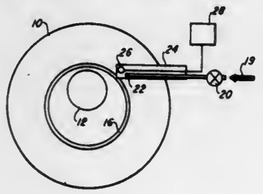
a support having a coefficient of thermal expansion α;
an elongated piezoelectric resonator provided with electrodes; and
means for securing the resonator to the support for transmitting to the resonator and lengthwise thereof strains applied to the support, the resonator having a cut such that its coefficient of thermal expansion longitudinally thereof is substantially equal to α.

4,498,345

METHOD FOR MEASURING SAW BLADE FLEXURE

Lawrence D. Dyer, Richardson, and Anderson D. McGregor, Sherman, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Oct. 4, 1982, Ser. No. 432,619
Int. Cl.³ G01M 5/00; G01N 3/20
U.S. Cl. 73—849 **1 Claim**



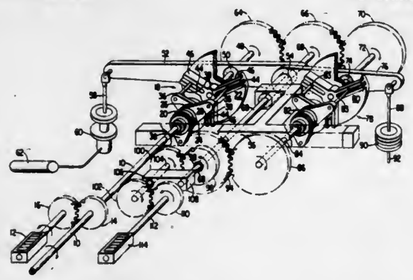
1. A method for measuring the flexure of an internal diameter saw blade suitable for slicing wafers from a semiconductor crystal, comprising the steps of:
positioning sensor means adjacent the cutting edge of the saw blade for generating an output signal proportional to the the displacement of the blade in a direction normal to the plane of the blade;
directing a stream of air at the saw blade adjacent the sensor, while the saw blade is rotating, to displace the blade from its steady state position;
measuring the deflection of the saw blade by measuring the change in the sensor output, wherein the flexure of the saw blade can be determined; and
periodically repeating said directing and measuring steps to determine whether the blade flexure falls within a predetermined limit.

4,498,346

METERED GAS VOLUME CORRECTING ARRANGEMENT

George W. Schneider, Jr, Huntingdon Valley, Pa., assignor to The Singer Company, Stamford, Conn.

Filed May 6, 1983, Ser. No. 492,293
Int. Cl.³ G01F 15/02
U.S. Cl. 73—861.01 **12 Claims**



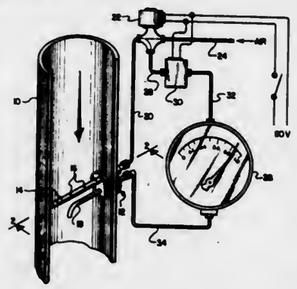
1. Mechanism for correcting volumetric flow indications of a gas meter to a base temperature and pressure, said mechanism including an input shaft rotatable at a speed which is a measure of the actual volumetric gas flow, a first variable ratio transmission which is rotatable by the input shaft, means for altering the ratio of the first transmission in response to temperature changes in the gas, gearing operable by the first transmission for rotating a shaft connected thereto at a speed indicative of volumetric flow at the base temperature, a second variable ratio transmission which is operably connected to said gearing for rotation thereby, means for altering the ratio of the second transmission and speed of a shaft rotatable thereby in response to pressure changes in the gas, a gear on the shaft rotatable by the second transmission, and a multiplying planetary gear train operably connected to the gear on the shaft rotatable by the second transmission and to the shaft drivable by the gearing operable by the first transmission for rotating an output shaft at a speed indicative of volumetric flow at the base temperature and pressure.

4,498,347

FLUID FLOW MEASURING

LeRoy F. Grantham, Calabasas, and Norman W. Heath, Canoga Park, both of Calif., assignors to Rockwell International Corporation, El Segundo, Calif.

Filed Mar. 31, 1983, Ser. No. 481,012
Int. Cl.³ G01F 1/46
U.S. Cl. 73—861.66 **5 Claims**



1. A device for ensuring the accuracy and reliability of gas flow measurements when said gas contains substantial quantities of entrained particulates, said measurement being taken from a pitot tube with a pressure-sensing means, said pitot tube being disposed in a duct through which said gas flows and having a velocity prressure-sensing tube with at least one orifice facing the upstream direction of flow for measuring velocity pressure, comprising rotation means for interposing a barrier between said orifice and the upstream direction of flow when velocity pressure measurements are not being taken, said rotation means comprising a remotely actuated, external cover rotatable between a first position in which it covers said orifice and a second position in which said orifice is exposed and further including a three-way valve means interconnecting said velocity pressure-sensing tube, pressure-measuring means and a source of pressurized air, said valve means being operable between one position in which said velocity pressure-sensing tube and said source of pressurized air are in fluid communication and fluid communication to said pressure-measuring means is blocked, and a second position in which said velocity pressure-sensing tube and pressure-measuring means are in fluid communication, and fluid communication to the source of pressurized air is blocked.

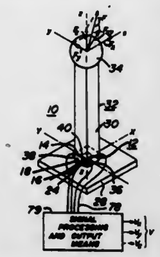
4,498,348

PHOTOELASTIC SENSING DEVICE

Laurence N. Wesson, Collegeville, Pa., assignor to TRW Inc., Redondo Beach, Calif.

Filed Jun. 13, 1983, Ser. No. 503,429
Int. Cl.³ G01L 5/16
U.S. Cl. 73—862.05 **51 Claims**

1. A photoelastic sensing device comprising a photoelastic member of transparent material, first means for providing light fluxes to the member for transmission therethrough as polarized light fluxes along respective first and second paths, second means for respectively receiving and detecting the light fluxes transmitted along the first and second paths, the light fluxes respectively transmitted along the first and second paths of the member each being responsive to stresses in the member along its path, and third means for applying stresses to the member in response to the application thereto of force, which force is variable and has a magnitude and a direction represented by its respective components along first and second vector coordinates defining a two dimensional space, the second means providing an output signal which is representative of the force and responsive to each of the components of the force applied to the third means.

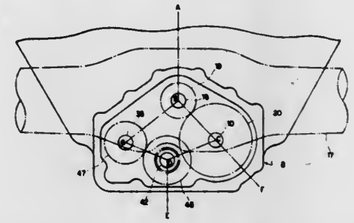


4,498,349

FRONT POWER TAKE-OFF FOR TRACTORS

Tadao Nishihara, Matsuyama, Japan, assignor to Iseki & Co., Ltd., Matsuyama, Japan

Filed Sep. 13, 1982, Ser. No. 417,332
Int. Cl.³ F16H 37/00; B60K 17/28, 25/00
U.S. Cl. 74—5.2 **4 Claims**



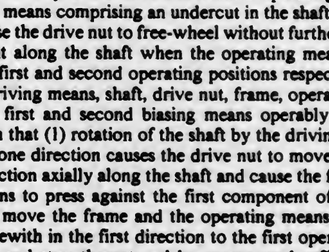
1. For use in a tractor type vehicle, an improved front power take off device comprising a transversely extending front axle housing (17), a front gear case (13), and an associated drive gear case (8), said front gear case being rotatably supported to said front axle housing (17), said front gear case (13) having a pivoted end (14) supported by said drive gear case (8), a differential mechanism (12) disposed in said front gear case (13) and having an associated drive pinion shaft (18) projecting from said pivoted end (14) into said drive gear case (8), a front wheel drive power input shaft (10) laterally disposed to one side of said drive pinion shaft (18), a front working power input shaft (38) laterally disposed to the other side of said drive pinion shaft (18), and a front working power output shaft (42) disposed between said front wheel drive power input shaft (10) and said front wheel working power input shaft, means (19, 20) for drivingly connecting said front wheel drive power input shaft (10) to said drive pinion shaft (18), and means (47, 48) for drivingly connecting said front working power input shaft (38) to said front working power output shaft (42), a transmission means, said transmission means including a front wheel power take-off shaft (6) co-axially disposed relative to said front wheel drive power input shaft, and a front working power take-off drive shaft (35) co-axially disposed relative to said front working power input shaft (38), a first transmission shaft means (11) co-axially interconnecting said front wheel drive power take-off shaft (6) to said front wheel drive power input shaft (10), and a second transmission shaft means (39) co-axially interconnecting said front working power take-off shaft (35) to said front working power input shaft (38) whereby said front wheel drive power input shaft (10) and said front wheel working power input shaft (38) are disposed below and parallel to either side of said drive pinion shaft (18), and said front wheel power output shaft (42) is disposed between shafts (10) and (38) so as to space said wheel power output shaft (42) as close as possible to said drive pinion shaft (18) so as to provide for maximum clearance between said drive gear case (8) and the ground.

4,498,350

SHIFTING MECHANISM

Alan R. Ross, Lyndhurst, Ohio, assignor to Eaton Corporation, Cleveland, Ohio

Filed Sep. 20, 1982, Ser. No. 420,194
Int. Cl.³ F16H 27/02, 29/02
U.S. Cl. 74—89.15 **14 Claims**



1. A shifting mechanism for positioning a means for performing at least one operation in a preloaded condition at each of at least first and second spaced-apart operating positions comprising:
a threaded shaft having a central longitudinal rotational axis between opposite ends thereof,
driving means operable to cause the shaft to rotate in either one direction or in an opposite direction about the central longitudinal rotational axis thereof,
a drive nut threadingly mounted on the shaft in such a manner as to move axially in one direction along the shaft when the shaft is rotated in the one direction and able to move axially along the shaft in an opposite direction when the shaft is rotated in the opposite direction,
a frame moveably disposed with respect to the shaft and the drive nut and able to move in a first direction to the first operating position in response to movement of the drive nut in the one direction and able to move in a second direction to the second operating position in response to movement of the drive nut in the opposite direction,
first resilient biasing means disposed intermediate the drive nut and a first component of the frame,
second resilient biasing means disposed intermediate the drive nut and a second component of the frame spaced apart from the first component of the frame,
operating means associated with the frame enabling the performance of the operation upon movement of the frame respectively to the first and second operating positions,
and means enabling the frame and operating means to stop respectively at the first and second operating positions, said means comprising an undercut in the shaft adapted to cause the drive nut to free-wheel without further advancement along the shaft when the operating means reaches the first and second operating positions respectively,
said driving means, shaft, drive nut, frame, operating means and first and second biasing means operably associated such that (1) rotation of the shaft by the driving means in the one direction causes the drive nut to move in the one direction axially along the shaft and cause the first biasing means to press against the first component of the frame and move the frame and the operating means associated therewith in the first direction to the first operating position and stop thereat and be compressed sufficiently by any resistance encountered to place the operating means in a preloaded condition sufficient to apply a biasing force

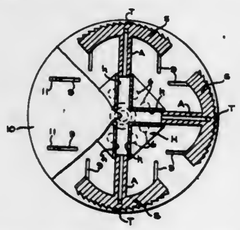
against the frame sufficient to enable the operating means to perform the operation by overcoming the resistance or upon removal of the resistance upon the occurrence of an event enabling the operation to occur and (2) rotation of the shaft by the driving means in the opposite direction causes the drive nut to move in the opposite direction axially along the shaft and cause the second biasing means to press against the second component of the frame and move the frame and the operating means associated therewith in the second direction to the second operating position and stop thereat and be compressed sufficiently by any resistance encountered to place the operating means in a preloaded condition sufficient to apply a biasing force against the frame sufficient to enable the operating means to perform the operation by overcoming the resistance or upon removal of the resistance upon the occurrence of an event enabling the operation to occur.

4,498,351

CONTINUOUSLY VARIABLE RATIO TRANSMISSION

Rooin Ahoor, Louisville, Ky., assignor to Harry B. O'Donnell, III, Louisville, Ky.

Continuation-in-part of Ser. No. 245,993, Mar. 20, 1981, abandoned. This application Dec. 20, 1983, Ser. No. 563,573
Int. Cl.³ F16H *55/12*
U.S. Cl. 74—439 **4 Claims**



1. For interconnecting a rotary output shaft of drive means to a rotary input shaft of means to be driven by said drive means, novel transmission means, comprising:

(a) gear means mounted on base means for rotary movement relative thereto, with said gear means comprising first, second, third and fourth gears and each of said gears including a hollow, fluid-receiving, radially inner hub portion that is rotatably mounted to said base means and a radially outer portion that is divided into plural segments each having a radially outer end provided with teeth and a radially inner end comprising an arm mounted within said hollow hub portion for slidable movement relative thereto both towards and away from radial center of said hub portion,

(b) said hub portion of said first gear being connectable to said output shaft, said hub portion of said fourth gear being connectable to said input shaft, and said hub portions of said second and third gears being interconnected to one another;

(c) first endless chain means engageable with said radially outer portions of said first and second gears to interconnect the same and second endless chain means engageable with said radially outer portions of said third and fourth gears to interconnect the same;

and

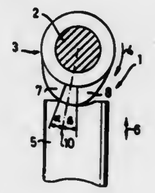
(d) means for selectively supplying and removing pressurized fluid to and from said hollow hub portions of said gears for selectively slidably moving said segments of said gears radially outwardly and inwardly with respect to their said hub portions to thus selectively vary the radius of each of said gears by thus moving said plural segments of each of said gears through several selectively variable radial positions as related to each of said gear hub portions.

4,498,352

CAM APPARATUS WITH A ROTATABLE, VARIABLE-PROFILE CAM MEANS

Lars G. B. Hedelin, Skärsnäsvägen 5, S-18263 Djursholm, Sweden

PCT No. PCT/SE81/00259, § 371 Date May 25, 1982, § 102(e) Date May 25, 1982, PCT Pub. No. WO82/01217, PCT Pub. Date Apr. 15, 1982
PCT Filed Sep. 14, 1981, Ser. No. 385,393
Claims priority, application Sweden, Sep. 29, 1980, 8006793
Int. Cl.³ F16H *53/00*
U.S. Cl. 74—568 R **19 Claims**



1. A cam apparatus comprising:

a drive shaft;

a cam means on the drive shaft and having a cam flank for coacting with a movable follower for controlling the motion of the follower; the cam means comprising first and second cam members, each cam member having a sleeve-shaped portion with a hole for fitting around and receiving the drive shaft and being displaceable in a respective peripheral direction in relation to the drive shaft for varying the shape of the cam flank, the respective peripheral directions being opposite each other; the cam members being immovable axially in relation to each other during displacement thereof in the respective peripheral directions; and

a guide means for engaging the drive shaft and the sleeve-shaped portion of each cam member for displacing each cam member in the respective peripheral direction for varying the cam flank shape when the drive shaft is displaced axially in relation to the cam members.

4,498,353

AIR BREATHER STRUCTURE FOR OIL SEALS IN AN AUTOMATIC TRANSMISSION

Nobumitsu Kitade, Tokyo, Japan, assignor to Fuji Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 27, 1982, Ser. No. 424,651
Claims priority, application Japan, Sep. 30, 1981, 56-155564
Int. Cl.³ F16H *57/02, 57/04;* B65D *53/00;* F16J *15/00*
U.S. Cl. 74—606 R **7 Claims**

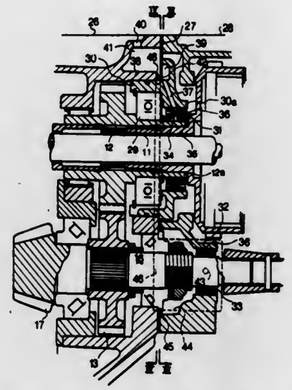
1. An improved air breather structure for oil seals in an automatic transmission for a vehicle wherein each oil seal comprises a pair of sealing members with a space therebetween, said automatic transmission comprises a final reduction device provided in a differential case and an automatic transmission device provided in an automatic transmission case, both the cases coupled at corresponding ends of the respective cases interposing a gasket therebetween, two rotating shafts extending across the gasket for transmitting an output of the automatic transmission to front and rear wheels of the vehicle for four-wheel driving, said oil seals being provided around the rotating shafts, respectively, the improvement comprising

each of said cases forming a plurality of cavities at said ends of the cases, respectively, reducing the weight of the cases,

a first passage provided in one of said cases communicating the space of the first oil seal with a recess formed adjacent the end of said first passage;

an opening formed in said gasket communicating with said recess;

a first means provided in a first of said cavities in an upper portion of the other of said cases for communicating said opening with the atmosphere;



a second passage provided in one of the cases for communicating the space of the second oil seal with a second of said cavities; and

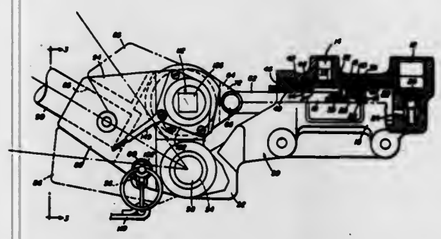
a second means including another of said cavities for communicating said second passage with said first means.

4,498,354

AUTOMATIC LOCK FOR TWO MODE PISTON PUMP

Wellington J. Walker, Kensington, Conn., and George M. Whitehouse, deceased, late of Wallingford, Conn. (by Barbara J. Whitehouse, executor), assignors to LFE Corporation, Waltham, Mass.

Filed Nov. 9, 1982, Ser. No. 440,268
Int. Cl.³ F04B *35/00*
U.S. Cl. 74—625 **5 Claims**



1. A lock assembly for a two mode piston pump comprising

a pump housing including a cylinder,

a piston mounted for reciprocal movement within said cylinder, and

a piston rod fixed to said piston and extending out of said pump housing for reciprocal movement to operate said piston,

wherein said assembly comprises:

a connecting link pivotally connected to said piston rod,

lever means pivotally mounted on said pump housing,

cam means, having a cylindrical outer surface, rotatably mounted in said connecting link for effecting reciprocal movement of said connecting link,

cam shaft means fixed, off-center, to said cam means and rotatably mounted within said lever means,

said cam shaft means having an axial passage with a square cross-section for engagement by a power tool square drive shaft,

a cam locking means for locking said cam shaft means to said lever means for operation of said pump by pivotal movement of said lever means with respect to said pump housing,

said cam locking means comprising a shaft portion adapted to be insertable in said cam shaft means axial passage, and a head portion fixed to said shaft portion,

said cam locking means shaft portion having a first position in said axial passage in which said cam shaft means is locked to said lever means and a second position in said axial passage in which said cam shaft means is unlocked, and

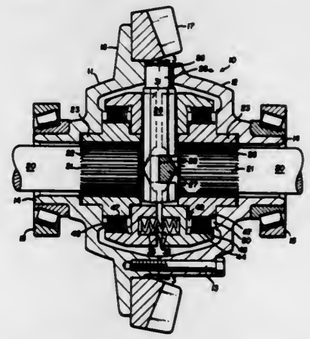
a lever locking means for locking said lever means to said pump housing.

4,498,355

SELF LOCKING DIFFERENTIAL

Carl E. Schou, 1438 Lone Pine Rd., Bloomfield Hills, Mich. 48013

Filed Apr. 22, 1982, Ser. No. 371,034
Int. Cl.³ F16H *35/04, 1/44*
U.S. Cl. 74—650 **3 Claims**



1. A differential assembly, self-releasing locking means for connecting and disconnecting the end portions of each of a pair of axially aligned, conventional axle-like shaft to a conventional power rotated housing which contains said end portions, comprising:

a pair of diametrically arranged, hexagonal cross-section, drive rods housed between the adjacent shaft end portions and having their outer ends fixedly connected to the housing for rotating therewith, each of said drive rods including outer ends having round cross-sections which are fitted into corresponding openings in the housing, and said drive rods including opposed notches at their centers for permitting an interlocked connection between said drive rods such that said drive rods lie in the same plane when they are connected at said notches;

a pair of closely spaced apart, opposing coupling rings in axial alignment with and surrounding bushing-like hubs mounted upon the shaft end portions;

pairs of aligned, adjacent V-shaped notches formed in the facing ends of the coupling rings with the drive rods radially extending through the V-shaped notches, and with the V-shaped notch forming walls being parallel to and slightly spaced from their adjacent hexagonal rod faces;

each of said hexagonal drive rods being positioned between said coupling rings and having opposed lead faces which are perpendicular to the plane of rotation of said drive rods;

a clutch means releasably interconnecting each of the coupling rings to the bushing-like hub which said ring surrounds, said clutch means being engaged by axially outwardly directed pressure caused by movement of the coupling ring away from the opposite coupling ring, and

said clutch means being disengaged upon release of the ring pressure due to movement of the ring inwardly towards the opposite coupling ring, and each of said clutch means including a series of interleaved ring-like clutch plates surrounding a shaft end hub, and being surrounded by a coupling ring, and with alternate plates being spline connected to the coupling ring and to the hub, with the interleaved clutch plates being relatively axially movable together into engaging surface to surface contact for locking and being movable apart from each other for unlocking in response to corresponding movement of their coupling ring;

whereby during normal powered rotation of the housing, the drive rods rotate with the housing and engage the V-shaped notch forming walls that are in their path of rotation for rotating the coupling rings and simultaneously, for wedging the V-shaped notch forming walls apart, causing the coupling rings to move axially apart and to apply axially outwardly directed pressure upon the clutch means to thereby lock the hubs and shaft end portions to the housing for rotation therewith; but when either of the shafts rotate faster than the rotation of the housing, the coupling ring of that shaft angularly moves forwardly relative to the drive rods so as to disengage the rods from the notch forming walls for that coupling ring resulting in that coupling ring moving inwardly towards the opposite coupling ring and releasing its pressure upon, and consequently unlocking, its clutch means so that its shaft may free wheel relative to the housing;

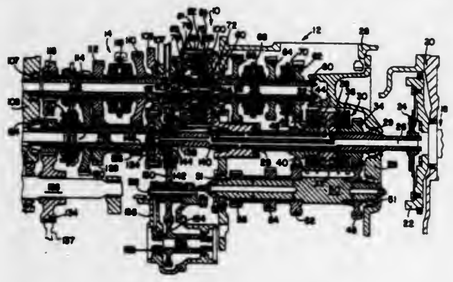
and stop means connecting the coupling rings for limited relative angular movement of one coupling ring relative to the other so that during the times that the rods are disengaged from the notch forming walls in the path of their direction of rotation, the rods are roughly centered within the walls forming such notches, and said stop means being formed of a number of pins, each having one end secured to one of the coupling rings, and its opposite end extending towards and loosely fitting into a socket formed in the other coupling ring, with the degree of looseness corresponding to the permissible angular movement of one ring relative to the other for centering the drive rods within the notches of one ring, and coil springs means arranged between and normally spring pressing the two coupling rings apart in the axial direction for normally tending to move the rings axially away from the rods and into position for applying pressure to their respective clutch means for engaging the clutch means.

4,498,356

MOTOR VEHICLE TRANSMISSION

George R. Vater, Clarendon Hills, and Harold W. Melles, Downers Grove, both of Ill., assignors to International Harvester Company, Chicago, Ill.

Filed May 18, 1982, Ser. No. 379,549
Int. Cl.³ F16H *3/02, 3/08, 3/38*
U.S. Cl. 74—745 11 Claims



1. A motor vehicle transmission comprising:

a speed transmission section connected with the vehicle engine and comprising:

an engine driven input shaft means extending through said speed section;

drive clutch packs mounted on said input shaft means and hydraulically actuated in the alternative manner;

a plurality of gears mounted on a speed output shaft and selectively engageable by gear synchronizers secured to said output shaft;

said gears being driven by drive gears mounted on an intermediate counter shaft and, in its turn, driven by either of said clutch packs;

a range transmission section being in a tandem arrangement with said speed transmission section and coupleable therewith through a hydraulically actuated master clutch transmitting power from said speed transmission section to said range section;

said range section comprising a plurality of synchronized forward gears and a non-synchronizer reverse gear providing at least three speed ranges;

said input shaft means passing through said range section and by-passing said master clutch;

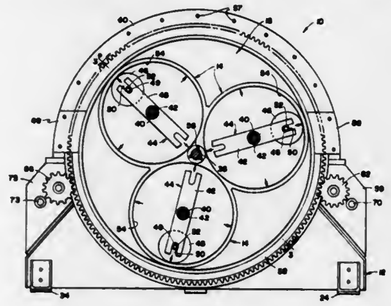
whereby during all synchronized shifting said master clutch and said clutch packs are disengaged, and re-engagement of said master clutch follows that of said clutch packs.

4,498,357

MASS ACCELERATOR AND POWER CONVERTER UNIT

George Makarov, 30205 Summit Dr., Apartment 201, Farmington Hills, Mich. 48018

Filed Sep. 22, 1982, Ser. No. 421,612
Int. Cl.³ F16H *3/74, 33/02, 1/28*
U.S. Cl. 74—752 F 20 Claims



1. A mass accelerator and power converter unit comprising:

a support structure;

a plurality of cylindrical housings having curved inner surfaces;

a like plurality of masses, each of which is rotatably mounted in its respective cylindrical housing about its respective auxiliary rotational axis to engage the inner curved surface of its respective housing;

a wheel rotatably mounted on said support structure for rotating about a main rotational axis spaced apart from each of said plurality of auxiliary axes, said wheel interconnecting said cylindrical housings to permit said housings to rotate about said main axis in unison upon rotation of said masses;

drive means coupled to each of said masses for supplying rotational power to each of said masses; and

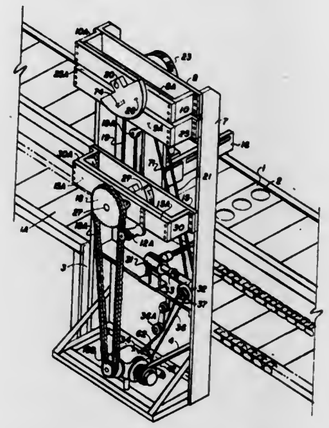
driven means coupled to said wheel for withdrawing rotational power from said wheel, said wheel rotating upon engagement of said rotating masses with their respective housings.

4,498,358

OSCILLATING HEAD FILLER DEVICE

Glen F. Raque, and Edward A. Robinson, both of Louisville, Ky., assignors to Raque Food Systems Inc., Louisville, Ky.

Filed Sep. 22, 1981, Ser. No. 304,619
Int. Cl.³ F16H *35/08;* B65B *43/42*
U.S. Cl. 74—829 7 Claims



1. A device for adjusting the spacing between a mounting arm and a conveyor traveling linearly parallel to a first axis at a selected speed where the mounting arm moves in an orbital path in a plane parallel to the first axis and about a second axis transverse to the first axis in spaced relation from the conveyor so the linear component of speed of the mounting arm parallel to the direction of travel of the conveyor is directed opposite to the direction of travel during a first portion of the orbit and in the same direction of travel as the conveyor during a second portion of the orbit including:

a. crank drive means having a drive shaft to rotate eccentric crank means and an eccentrically located post connected to the mounting arm to drive the mounting arm in an orbital path in a plane parallel to the first axis;

b. a planetary differential gear device having a first input shaft and an adjustment input shaft and a differential output shaft which rotates through an arc instantaneously responsive to the rotation of the first input shaft and to be selectively advanced by rotation of the adjustment input shaft in a first direction and retarded by rotation of the adjustment input shaft in a second direction;

c. first adjustment drive means including a shaft rotatable about a fixed axis at a selected speed of rotation and having a first circular external drive surface;

d. power transmission means to interconnect the differential output shaft for rotation of the first adjustment drive means;

e. second adjustment drive means carried by the mounting arm means for orbital travel therewith having a second circular external drive surface to engage and be in continuous contact with said first external drive surface and where the second adjustment drive means has a rotatable output shaft;

f. first drive means to drive the conveyor;

g. second drive means to rotate the drive shaft of the crank drive means and the first input shaft of the planetary differential gear device so that without rotation of the adjustment input shaft the arc of rotation of the first circular external drive surface is equal to the arc of rotation of the second circular external drive surface so there is no relative movement of the second adjustment drive means about the first adjustment drive means and so that upon rotation of the adjustment input shaft of the planetary differential gear device the first circular external drive surface rotates relative to the second circular external drive surface to rotate the rotatable output shaft through an arc proportional to the extent of rotation of the adjustment input shaft and in a direction determined by the direction of rotation of the adjustment input shaft;

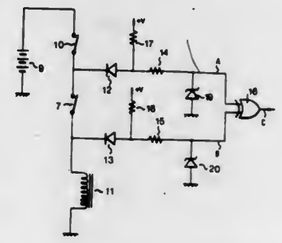
h. space adjusting means connected to said mounting arm and having a space adjusting input shaft driven by the rotatable output shaft to adjust the position of a portion of the mounting arm relative to the conveyor dependant upon extent and direction of rotation of the rotatable output shaft of the second adjustment drive means.

4,498,359

SYSTEM FOR DETECTING RANGES IN AN AUTOMATIC TRANSMISSION FOR VEHICLES

Kazuo Hara, Musashino, Japan, assignor to Fuji Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 24, 1981, Ser. No. 324,711
Claims priority, application Japan, Nov. 27, 1980, 55-167112
Int. Cl.³ B60K *41/00;* G01D *11/00;* F02N *17/00;* H01H *9/06*
U.S. Cl. 74—850 3 Claims



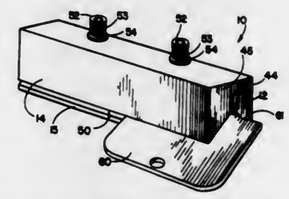
3. A system for detecting a neutral range state of an automatic transmission for an engine powered vehicle having a select lever for changing ranges of said automatic transmission, comprising a battery, a starter switch, an inhibitor switch, and a starter which are connected in series, said inhibitor switch being turned on when said select lever of said automatic transmission is in a neutral position; and a circuit means responsive to voltages at both ends of said inhibitor switch for producing an output when said inhibitor switch is closed, said circuit means comprising a pair of diodes connected to said both ends of said inhibitor switch at a cathode of each of said diodes, respectively, a voltage supply for applying a voltage to an anode of each said diode, and means comprising a logic gate connected to said anode of each said diode so as to detect the neutral range state.

4,498,360

SHARPENER FOR A SPREADING TOOL

J. David Milum, Rte. 5, Cumming, Ga. 30130

Filed Sep. 14, 1983, Ser. No. 532,194
Int. Cl.³ B21K *5/12*
U.S. Cl. 76—88 8 Claims



1. An apparatus for sharpening an edge of a sheet-like member, comprising:

a guide surface abutting a barrier;

means for mounting a blade extending through said barrier, said blade including a cutting edge intersecting said guide surface; and

guide means mounted in predetermined spaced-apart relation to said guide surface for urging the sheet-like member against said guide surface;

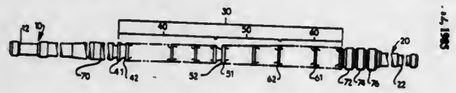
said sheet-like member being insertable between said guide surface and said guide means to contact said barrier and said cutting edge of said blade associated therewith.

4,498,361

BROACH MANUFACTURING METHOD

Wallace C. Grace, LaSalle, Canada, assignor to Ex-Cell-O Corporation, Troy, Mich.

Filed Apr. 25, 1983, Ser. No. 488,233
Int. Cl.³ B21K *5/02*
U.S. Cl. 76—101 R **6 Claims**



1. A method for making from tool stock a broaching tool with a puller portion adjacent one end, a retriever portion adjacent the other end and a cutting portion having a plurality of individual cutting teeth between the puller portion and retriever portion comprising

(a) turning the tool stock to machine the outer dimension of the puller portion, retriever portion and cutting portion to a preselected over-size dimension larger than the finished outer dimension of the tool and turning individual cutting teeth to have a gullet radius to finished dimension and a hook angle to an oversize dimension intersecting the gullet radius,

(b) then heat treating the tool stock turned in step (a),

(c) then turning the heat treated tool stock to machine the oversize outer dimension of the puller portion, retriever portion and at least a portion of the cutting portion of the tool stock to finished dimension and turning individual cutting teeth to face the hook angle to finished dimension and blend said hook angle with the gullet radius.

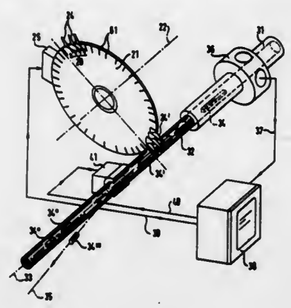
4,498,362

APPARATUS FOR CUTTING THROUGH ROD OR STRAND-LIKE PRODUCTS

Hermann O. Steinke; Roland Steinke, and Karl-Ulrich Vornfett, all of Hamburg, Fed. Rep. of Germany, assignors to Justus Technik GmbH Industrie-Anlagen, Hamburg, Fed. Rep. of Germany

Filed Aug. 23, 1983, Ser. No. 525,820
Claims priority, application Fed. Rep. of Germany, Aug. 24, 1982, 3231825
Int. Cl.³ B26D *1/29, 3/16, 5/02, 7/06*
U.S. Cl. 83—304 **16 Claims**

1. Apparatus for cutting through rod or strand-like products, comprising means for moving said products individually in a predetermined direction and at a predetermined speed thereby defining a path of motion for said products, said apparatus having a plurality of cutting blades, each provided with a cutting edge, said blades being pivotally fixed to a rotary holder arranged adjacent the path of motion and whose rotation axis is inclined relative to the longitudinal extension of the path of motion so that said cutting edges pass through the products at right angles to the longitudinal extension of the path of motion during the cutting process, wherein said cutting blades are movable between a working position, in which the cutting edges pass through the products, and an inoperative



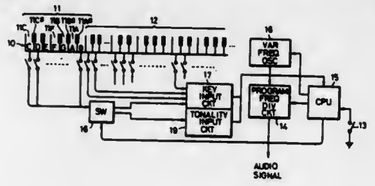
position, in which such a blade is outside the path of motion and means for driving and controlling said apparatus.

4,498,363

JUST INTONATION ELECTRONIC KEYBOARD INSTRUMENT

Kengo Shimada, Sagamihara; Yutaka Chiba, Fuchu, and Toshio Sanuki, Sagamihara, all of Japan, assignors to Victor Company of Japan, Ltd., Japan

Filed Feb. 14, 1983, Ser. No. 466,364
Claims priority, application Japan, Feb. 13, 1982, 57-21851; Feb. 13, 1982, 57-21853
Int. Cl.³ G09B *15/02;* G10H *1/18*
U.S. Cl. 84—1.01 **14 Claims**



1. A just intonation electronic keyboard instrument comprising:

a plurality of tonality selection switches for selecting each key from among twenty-four different just intonation keys, number of said tonality selection switches being less than twenty-four;

control means for discriminating selection of a major scale or a minor scale, discriminating one or a plurality of keys among each of twelve keys from C through B, and determining one or a plurality of keys from among said twenty-four just intonation keys, according to manipulation of said plurality of tonality selection switches;

variable frequency oscillator means responsive to the determined one or plurality of keys among said twenty-four just intonation keys, for generating an output oscillation frequency so that the output oscillation frequency is equal to a frequency which is an integral multiple of a frequency of a key-note of the key determined by said control means; and

frequency dividing means comprising a plurality of frequency dividers respectively provided in correspondence with each of instrument keys of a keyboard for play,

each of said plurality of frequency dividers being supplied with the output of said variable frequency oscillator means,

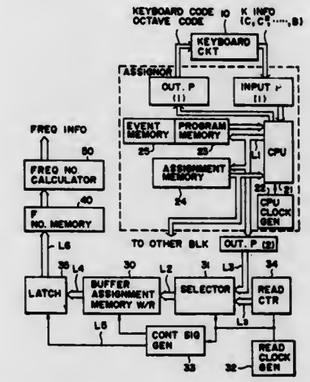
each of frequency dividing ratios of said frequency dividers being varied so that ratios among the frequency dividing ratios are in accordance with a temperament of just intonation key determined by said control means.

4,498,364

ELECTRONIC MUSICAL INSTRUMENT

Sadaaki Ezawa, Iwata, Japan, assignor to Kabushiki Kaisha Kawai Gakki Seisakusho, Japan

Filed Aug. 25, 1982, Ser. No. 411,337
Claims priority, application Japan, Aug. 28, 1981, 56-134906
Int. Cl.³ G10H *3/06*
U.S. Cl. 84—1.17 **1 Claim**



1. An electronic musical instrument including a plurality of keyboards in which a pair of frequency numbers consisting of a note frequency number corresponding to a pitch of a predetermined note and an auxiliary frequency number of a value slightly different from the value of the note frequency number are provided for each predetermined note and the frequency numbers are selected in accordance with predetermined key information, the electronic musical instrument comprising:

means for selecting the note frequency number for keys which are depressed on a plurality of keyboards when keys corresponding only to different notes are depressed on the plurality of keyboards;

means for detecting the keys simultaneously depressed on at least two keyboards are of the same note;

means for selecting the note frequency number for the one of the depressed keys;

means for selecting the auxiliary frequency number for the other depressed key in response to said means for detecting having detected simultaneously depressed keys of the same note on at least two keyboards; and

means for reading out a musical waveform memory in accordance with the selected frequency numbers to generate musical waveform signals of slightly different pitches when the auxiliary frequency member is selected.

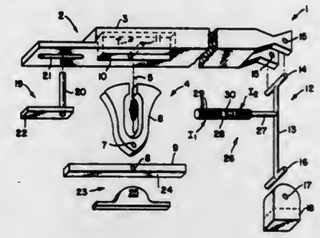
4,498,365

APPARATUS FOR PROVIDING EXTENDED VERSATILITY IN A KEYBOARD-CONTROLLED MUSICAL INSTRUMENT IN PITCH VARIATION, TONE ALTERATION CHARACTERISTICS AND THE LIKE

Jeff Tripp, 35 Squam Rd., Rockport, Mass. 01966; John Allen, 10 Farragut St., Somerville, Mass. 02144, and F. Merrick Murphy, 40 Rugg Rd., Allston, Mass. 02134

Filed Oct. 14, 1983, Ser. No. 541,915
Int. Cl.³ G10H *1/02, 1/34*
U.S. Cl. 84—1.24 **13 Claims**

1. A keyboard-operated tone-producing apparatus having, in combination, keyboard means the keys of which are mounted for downward depression to effect tone production in the apparatus and for longitudinal sliding to alter or bend the tone; electronic digital signal processor means; tone-generating means; pressure sensing means responsive to key depression to produce signals corresponding thereto for application to the signal processor means to produce corresponding digital signals applied to generate tones from the tone-generating means; means for causing the pressure sensing means to provide the same signal reference, upon key depression, irrespective of the



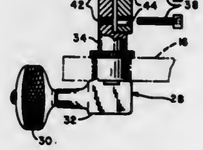
point of pressure along the path of longitudinal sliding of the key; and means controlled in response to the last-named means and cooperative with the signal processor means as it controls the tone-generating means to produce one or all of variable range bending of the tone, center compensation for differing player techniques of key depression, and second striking of the key while depressed for second tone generation.

4,498,366

CLAMPING TUNING MACHINE

Stephen P. Carr, 67 Singing Wood Dr., Holbrook, N.Y. 11741

Filed Mar. 29, 1984, Ser. No. 594,845
Int. Cl.³ G10D *3/14*
U.S. Cl. 84—304 **6 Claims**



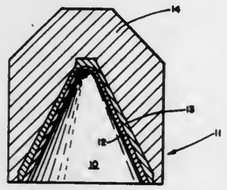
1. A tuning machine for a stringed musical instrument comprising post means for terminating a string, a tuning key, and means for transmitting rotational force of said tuning key to cause rotation of said post means with sufficient mechanical advantage to effectively render said transmitting means irreversible, said rotation of said post means caused by rotation of said key permitting selective adjustment of the tension in said string, the improvement comprising wherein said post means comprises a main body and a removable clamping segment, said main body and segment having matching mating surfaces to clamp said string over an extended length of said string thereby minimizing damage to said string, and means for actuating said segment on said main body to permit clamping of the end of said string with sufficient force so as to permit termination and tension adjustment of said string by said tuning key with less than 360 degree wraparound of said string on said post means, said actuating means including threaded means for adjustably clamping said segment to said main body, a pair of spaced holes in said segment, a pair of spaced threaded holes in said main body aligned with said spaced holes, and threaded bolts to pass through said spaced holes and threaded into said threaded holes to permit tightening of said segment to said main body for clamping the string passing therethrough.

4,498,367

ENERGY TRANSFER THROUGH A MULTI-LAYER LINER FOR SHAPED CHARGES

Saul Skolnick, and Albert Goodman, both of Albuquerque, N. Mex., assignors to Southwest Energy Group, Ltd., Albuquerque, N. Mex.

Filed Sep. 30, 1982, Ser. No. 429,247
Int. Cl.³ C06B *21/00*; F42B *33/10*
U.S. Cl. 86—1 R **6 Claims**



1. Method for determining liner materials to enhance the formation of high energy jets in multilayer shaped charges, comprising the steps of:

employing a high density material for an inner layer of a shaped charge said high density materials including tungston, uranium, tantalium, gold, lead and alloys thereof; and

employing a lower density material for an outer layer and suitably adjusting the properties of said lower density material selected from copper, aluminum, antimony, magnesium and alloys thereof, to buffer said inner layer from shattering as a result of the detonation of a high explosive charge adjacent to said outer layer.

4,498,368

FRANGIBLE FLY THROUGH DIAPHRAGM FOR MISSILE LAUNCH CANISTER

William J. Doane, San Diego, Calif., assignor to The United States of America as representedby the Secretary of the Navy, Washington, D.C.

Filed Oct. 6, 1983, Ser. No. 539,503
Int. Cl.³ F41F *3/04*
U.S. Cl. 89—1.817 **22 Claims**

1. A frangible fly through diaphragm assembly for missile launcher tube closures, comprising:

a. a first fabric layer forming a first ply;

b. a second fabric layer forming a second ply;

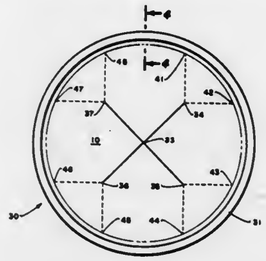
c. said first and second plies each being operable to tear easily along paths in two directions and to resist tearing in all other directions;

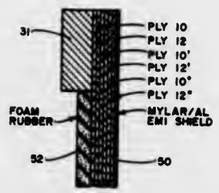
d. said first ply having score lines in a first geometric pattern;

e. said second ply having score lines in a second geometric pattern;

f. said first ply and said second ply being impregnated with an adhesive and bonded together to form a diaphragm unit with the score lines of said first ply being aligned with the direction of the tear paths of said second ply, and score lines of said second ply being aligned with the directions of the tear paths of said first ply;

g. said diaphragm unit being operable to resist a large uniformly distributed pressure load and fail under a lower concentrated central loading by a missile nose cone; the tearing of said diaphragm unit being controlled by the arrangement of said first and second plies wherein the score pattern of one ply aligned with the tear direction of the adjacent ply forms a geometric tear pattern for said





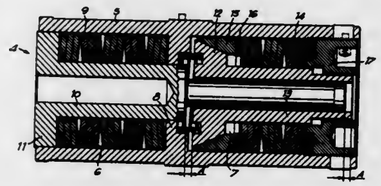
diaphragm unit which allows for minimum drag force on a missile as it is launched.

4,498,369

HIND ABSORBER FOR AUTOMATIC FIRE-ARMS ACTUATED BY BARREL RECOIL

Georges J. L. Kaiser, Chaudfontaine, Belgium, assignor to Fabrique Nationale Herstal, Belgium

Filed Feb. 24, 1983, Ser. No. 469,406
Claims priority, application Belgium, Mar. 19, 1982, 2/59636
Int. Cl.³ F41D *11/12*
U.S. Cl. 89—198 **4 Claims**



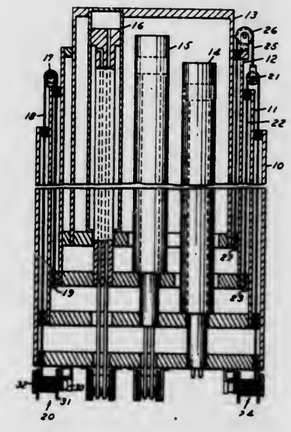
1. A rear block for an automatic fire arm comprising: a casing having a longitudinal axis and an interior wall; said interior wall having an inwardly extending portion in a mediate area; a pad slidably positioned within the casing for movement along the axis in response to a recoil force; a front damping stage on one side of the inwardly extending portion comprising front resilient means positioned between an area of the pad and said inwardly extending portion so that said front resilient means is loaded when the pad moves relative to the casing along said axis in one direction and is unloaded when the pad moves relative to the casing in the opposite direction; a rear damping stage on the other side of the inwardly extending portion comprising a thrust cone axially slidable within the casing so that a portion of the thrust cone is engageable with a portion of the pad after the pad is moved an initial distance along said axis, a radially expansible and axially slidable ring engageable with the thrust cone and the interior wall of the casing, rear resilient means engageable with the ring so that said rear resilient means is loaded when the ring moves relative to the casing along said axis in one direction and is unloaded when the ring moves relative to the casing in the opposite direction; adjustment means for adjusting the axial position of the rear damping stage relative to the pad so that said initial distance is variable and whereby the force applied to the pad which is required to begin loading the rear damping stage is variable.

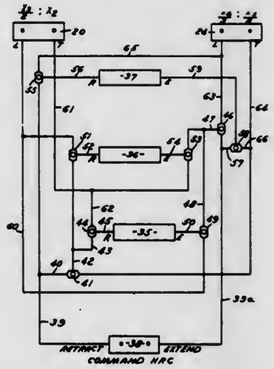
4,498,370

POWER TRANSMISSION

Robert H. Breeden, Metamora, and Henry D. Taylor, Pontiac, both of Mich., assignors to Vickers, Incorporated, Troy, Mich.

Filed Feb. 22, 1982, Ser. No. 351,180
Int. Cl.³ F15B *11/22*
U.S. Cl. 91—171 **6 Claims**





1. A hydraulic system for synchronizing the movement of telescoping sections of a crane boom comprising a fixed section and first and second movable sections that can be extended and retracted,

a first hydraulic actuator between said fixed section and said first movable section for extending and retracting said fixed section relative to said first movable section,

a second hydraulic actuator between said first movable section and said second movable section for extending and retracting said second movable section relative to said first movable section,

first and second pilot operated directional valves for controlling the flow rate of fluid to said first and second actuators, respectively,

each said directional valve having openings to which pilot pressure is selectively applied to extend or retract its respective actuator,

a command hydraulic remote control valve for applying pilot pressure to said first and second directional control valves simultaneously,

cable means between said fixed section and said first and second movable sections positioned such that non-uniformity in movement between said sections causes a change in displacement of said cable means,

a position signal sensing means associated with said cable means for producing a pilot pressure signal in response to variations in the tension on the cable means as a result of non-uniformity in movement of the respective sections,

and means hydraulically connected to said command valve and said sensing means and responsive to the pilot pressure signal from the command valve and any signal from the sensing means for modifying the pilot pressure signal to the directional valves so that the flow of hydraulic fluid to the hydraulic actuators is modified to reduce the flow rate of fluid to the one actuator which is moving faster than the other in order to maintain synchronism between the movement of the first and second sections.

6. A hydraulic system for synchronizing the movement of telescoping sections of a crane boom comprising a fixed section and first and second movable sections that can be extended and retracted,

a first hydraulic actuator between said fixed section and said first movable section for extending and retracting said first movable section,

a second hydraulic actuator between said first movable section and said second movable section for extending and retracting said second movable section relative to said first movable section,

first and second pilot operated directional valves for controlling the operation of said first and second actuators, respectively,

each said directional valve having openings to which pilot pressure is selectively applied to extend or retract its respective actuator,

a command hydraulic remote control valve for applying pilot pressure to said first and second directional control valves simultaneously,

cable means between said fixed section and said first and second movable sections positioned such that non-uniformity in movement between said sections causes a change in displacement of said cable means,

a position signal means associated with said cable means for producing a pilot pressure signal in response to variations in the tension on the cable means as a result of non-uniformity in movement of the respective sections,

and means responsive to the pilot pressure signal from the command valve and any signal from the sensing means for modifying the pilot pressure signal to the directional valves so that the flow of hydraulic fluid to the hydraulic actuators is modified to further extend or retract the sections in order to maintain synchronism between the movement of the first and second sections,

a third movable section that can be extended or retracted,

a third hydraulic actuator between said second movable section and said third movable section for extending and retracting said third movable section relative to said second movable section,

a third pilot operated directional valve for controlling the operation of said third actuator,

said command hydraulic remote control valve applying pilot pressure to said third directional control valve simultaneously with said first and second directional valves,

second cable means between said fixed section, second and third sections such that non-uniformity and movement between said fixed section, second and third sections causes a change in displacement of said second cable means,

said means responsive to the pilot pressure signal from the command valve and any signal from the second sensing

means as well as the first sensing means to modify the flow to the first, second and third actuators to maintain synchronism between the first, second and third actuators,

said second cable means comprising a second cable having one end fixed to said third section,

a pulley on said second movable section,

a free pulley,

a third cable having one end fixed to said second movable section and trained over said free pulley,

said second cable being trained over said pulley and having its other end connected to the aforementioned free pulley,

a second drum mounted on said fixed section for rotation in two directions,

said third cable having its other end wound around said second drum,

a hydraulic motor applying a continuous torque to said second drum,

a cam attached to said drum,

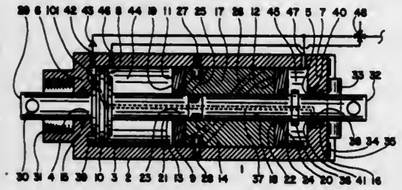
said second position signal means comprising a second remote control valve connected to said command control valve and said first, second and third directional valves and having a cam follower bearing on the cam such that the pilot signals are produced by said second remote control valve when the second drum rotates in either direction.

4,498,371

DIRECT ACTING ROTARY ACTUATOR CYLINDER

Yon S. Lew, and Hyok S. Lew, both of 7890 Oak St., Arvada, Colo. 80005

Filed Jun. 28, 1982, Ser. No. 392,629
Int. Cl.³ F01B *3/08*
U.S. Cl. 92—2 **10 Claims**



5. A direct acting rotary actuator cylinder with an initial linear movement comprising in combination:

(a) a cylinder including a first circular cylindrical cavity with a first end wall having a centrally disposed circular hole and a second end wall with a centrally disposed circular hole;

(b) a rod with a circular cross section coaxially disposed in said first circular cylindrical cavity with one extremity rotatably and slidably engaging and extending through the circular hole centrally disposed through said first end wall in an air-tight manner and the other extremity engaging and extending through the circular hole centrally disposed through said second end wall, said rod having a noncircular cross section over a mid-portion of its length wherein the minimum diametrical dimension of said noncircular cross section is greater than the diameter of said circular cross section;

(c) a first slidable partitioning body slidably disposed adjacent to said first end wall in said first circular cylindrical cavity and dividing said first circular cylindrical cavity into a first compartment adjacent to said first end wall and a second compartment in an air-tight manner, said first slidable partitioning body pierced by and rigidly affixed to said rod in an air-tight manner;

(d) a second slidable partitioning body slidably disposed adjacent to said second end wall in said first circular cylindrical cavity and dividing said first circular cylindrical cavity into said second compartment intermediate said first and second slidable partitioning bodies, and a third compartment adjacent to said second end wall in an air-tight manner, said second slidable partitioning body including;

(1) a first cylindrical member having a centrally located noncircular hole slidably and nonrotatably engaged by the noncircular portion of said rod at least in part and having a plurality of helical grooves of common pitches disposed on the outer cylindrical surface of said first cylindrical member, said plurality of helical grooves slidably engaged by a plurality of guide means affixed to the cylindrical wall of said first circular cylindrical cavity;

(2) at least one second cylindrical member having a centrally located circular hole slidably and rotatably engaged by the circular portion of said rod in an air-tight manner, said at least one second cylindrical member slidably engaging said first circular cylindrical cavity in an air-tight manner wherein said at least one second cylindrical member is kinematically linked to said first cylindrical member;

(e) a fluid passage disposed through said rod with one end open to said first compartment and the other end emerging through the cylindrical surface of said rod and into a seal ring affixed to said cylinder with a slit open to said third compartment wherein said other end of said fluid passage lines up with said slit included in said seal ring only when sad rod is fully rotated to one extreme angular position;

(f) a first port with a check valve disposed adjacent to said first end wall and open to said first compartment, said check valve allowing the flow into said first compartment and preventing the flow out of said first compartment;

(g) a second port disposed adjacent to said first end wall and open to said second compartment;

(h) a third port disposed adjacent to said second end wall and open to said third compartment;

whereby, the pressurization of said second compartment and the venting of said third compartment moves said rod first to said one extreme angular position and then to one extreme linear position, and the venting of said second compartment and the pressurization of said first and third compartments moves said rod to the other extreme linear position opposite to said one extreme linear position and to the other extreme angular position opposite to said one extreme angular position.

4,498,372

PUMP WITH RING RETAINED FLOATING WRIST PINS AND CONNECTING RODS

Ramon Pareja, Edina, Minn., assignor to Lear Siegler, Inc., Santa Monica, Calif.

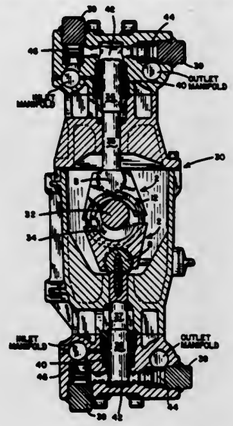
Filed Dec. 23, 1983, Ser. No. 564,727
Int. Cl.³ F16J *1/14*; F04B *1/04, 39/14*
U.S. Cl. 92—187 **8 Claims**

1. An improved fluid handling pump of the type having a crankshaft with at least one eccentric lobe and relative to which a push rod is mounted for reciprocal movement in a cylinder, the improvement comprising:

a connecting rod having a major arcuate lateral surface formed in one end thereof for mounting about said crankshaft eccentric and a second smaller arcuate lateral surface extending inwardly from the other end thereof and circumscribing an arc of greater than 180° and including a pair of arcuate grooves formed in opposed front and back surfaces of said connecting rod, said arcuate grooves being concentric with said major arcuate surface;

a cylindrical wrist pin having first and second outer opposed cylindrical end regions of slightly greater diameter than a centrally disposed cylindrical region therebetween, said cylindrical wrist pin having a flat area defining a zone of narrow lateral dimension; and

first and second retainer rings mountable in said arcuate grooves of said connecting rod, such that upon inserting the zone of said wrist pin of narrowest lateral dimension in the bore containing said second surface and rotating said wrist pin, said first and second outer cylindrical end portions hold said retainer rings in said arcuate grooves, while



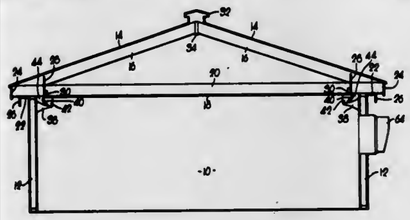
said central cylindrical region holds said wrist pin adjacent to said smaller arcuate lateral surface of said connecting rod.

4,498,373

AIR INLET SYSTEM

Willard W. Dittmer, Rte. 1, Box 250A, and Mark W. Dittmer, 111 E. 14th St., both of Higginsville, Mo. 64037

Filed Apr. 18, 1983, Ser. No. 485,746
Int. Cl.³ F24F *7/007*
U.S. Cl. 98—33.1 **7 Claims**



1. In a ventilating system for controlling the humidity and temperature of air within a building having at least one air mover operable as an exhauster of air from the building to the atmosphere, the improvement of which comprises structure for automatically permitting air to flow from the atmosphere into the building when the air pressure therein drops below atmospheric upon actuation of said air mover, said structure including:

means including an elongated, inclined upwardly facing surface, presenting an airway above said surface having an upper air inlet communicating with the atmosphere and a lower air outlet discharging into the building;

an elongated, inclined air valve above said surface having a lowermost, longitudinal terminus normally resting on said surface under the influence of gravity in closed relationship to said airway; and

means at the uppermost extremity of the valve supporting the same for swinging movement about an essentially horizontal axis away from said surface to a position opening the airway in response to operation of said air mover,

said surface and the bottom face of the valve proximal to said surface having streamlined contours across which the air flows along the airway for reducing resistance to said flow, decreasing turbulence of the air within the airway and funneling the air along a well-defined continuous path from said inlet through said outlet,

at least a portion of the contour of said surface being transversely concave and at least a portion of the contour of said face of the valve being transversely convex,

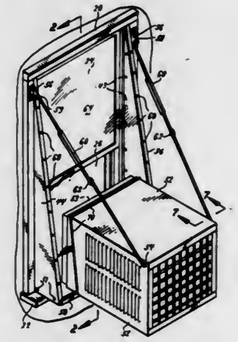
said concave and convex portions extending downwardly and inwardly from the air inlet toward the air outlet.

4,498,374

SPACE-DEFINING MOUNTING FOR ROOM COOLERS

David C. Gibson, 321 S. Elm Ave., Webster Groves, Mo. 63119

Filed Feb. 7, 1983, Ser. No. 464,335
Int. Cl.³ E06B *7/10*
U.S. Cl. 98—94.2 **9 Claims**



1. A space-defining mounting, for a window-type air-conditioning unit that is disposed adjacent a sash-equipped window of a building and that has a vented protective housing and that has all portions thereof other than the electric cord disposed wholly outwardly of the lower sash of said window, which comprises a platfrom that is securable in a position, adjacent the lower portion of said window, wherein all portions of said platform are disposed wholly outwardly of said lower sash of said window and wherein said platform has a portion thereof extending outwardly from said building to underlie and help support said air-conditioning unit, horizontally-spaced vertically-directed, substantially air-impervious side members that are disposable adjacent the opposite sides of said window and that have all portions thereof disposed outwardly of said lower sash of said window, said side members having lower portions that will be disposed wholly inwardly of the vents in said housing for said air-conditioning unit and that will be coextensive in part with portions of said housing for said air-conditioning unit, and a substantially air-impervious member which is disposable immediately adjacent portions of said housing for said air-conditioning unit that are disposed inwardly of said vents in said housing for said air-conditioning unit and which is extendable outwardly and upwardly from said housing for said air-conditioning unit toward said side members, said platform and said side members and said substantially air-impervious member being adapted to coact with said lower sash for said window and with said housing for said air-conditioning unit, whenever said lower sash is in its closed position, to help define an insulating air space that is external of, but that is close to, said lower sash, said platform and said side members and said substantially air-impervious member being adapted to coact with said housing for said air-conditioning unit to provide a barrier to the elements when said lower sash is raised to permit operation of said air-conditioning unit.

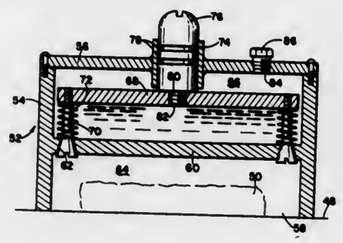
4,498,375
AUTOMATIC COFFEE POT
Dante Bedini, 680 Knapps Hwy., Fairfield, Conn. 06430
Filed Mar. 1, 1984, Ser. No. 585,259
Int. Cl.³ A47J *31/30*
U.S. Cl. 99—303 **20 Claims**



1. A coffee pot comprising:
an upper chamber releasably connected to a lower chamber, said lower chamber having
a filter basket disposed therein adapted to receive a quantity of ground coffee beans, said filter basket having
a hollow stem portion in communication with said lower chamber and adapted to receive steam generated by heating of water in said lower chamber which is directed through said filter basket and ground coffee beans,
a filter plate between said upper and lower chambers in communication with the interior of said filter basket housing said ground coffee beans,
a solid plate forming a liquid holding bottom for said upper chamber provided in said upper chamber in spaced relation above said filter plate,
an elongated tubular member seated on said solid plate and having one end provided with an opening in communication with the space between said filter plate and said solid plate, the other end of said elongated tubular member being closed, and
an orifice formed in the side wall of said elongated tubular member providing communication along with said opening in said one end between the interior of said upper chamber and the space between said solid plate and said filter plate,
a lid pivotally mounted on said upper chamber for substantially closing said upper chamber, and
means on said filter basket stem portion disposed in said lower chamber providing communication between the interior of said filter basket and said lower chamber for increasing the flow of steam generated upon heating of water in said lower chamber through said stem and filter basket.

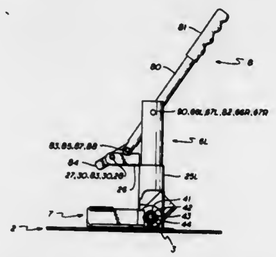
4,498,376
PIZZA COOKING UTENSIL
Thomas F. Carey, P.O. Box 992, Miami, Okla. 74354
Filed Sep. 2, 1983, Ser. No. 528,940
Int. Cl.³ A47J *37/10*
U.S. Cl. 99—345 **3 Claims**

1. A pizza cooking utensil comprising a housing having one closed end and one open end adapted to be disposed on a hot cooking surface for providing a chamber to encase a pizza; a fluid reservoir chamber provided in the housing; valve means interposed between the fluid reservoir chamber and pizza encasing chamber to provide selected communication therebetween; actuator means operably connected with the valve means for opening thereof to establish communication between the fluid reservoir chamber and pizza encasing chamber whereby moisture may be selectively added to the pizza encasing chamber; the closed end of the housing being closed by removable cover means; a partition provided in the housing and interposed between the closed and open ends thereof to provide said fluid reservoir chamber; the valve means comprising normally closed valve means disposed in the partition, at least one tapered port provided in the partition, and spring urged tapered valve means reciprocally disposed within the



tapered port for cooperation therewith to provide alternate open and closed communication between the fluid reservoir chamber and the pizza encasing chamber; and wherein the tapered valve means is carried by reciprocal plate means disposed within the fluid reservoir chamber and selectively movable against the force of the spring urged tapered valve means for providing the open communication between the fluid reservoir chamber and the pizza encasing chamber.

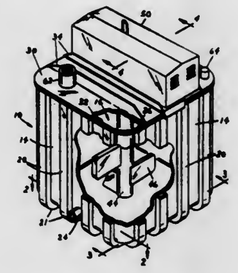
4,498,377
GOURMET HOT TAMALE MACHINE
Earnest L. Smith, 6738 Ave. N, Houston, Tex. 77011
Filed Jul. 17, 1984, Ser. No. 631,737
Int. Cl.³ A21C *3/04, 9/00, 9/06*
U.S. Cl. 99—450.7 **9 Claims**



1. A barrel member of a hot tamale machine comprising a main element in the general form of a right cylinder elongated along its longitudinal axis and having openings at one end defining a discharge orifice, and also comprising a pair of side-by-side stub tubes secured to and extending from the cylinder outwardly from its longitudinal axis, each of such stub tubes defining a generally cylindrical passageway open at its outer end,
said cylinder being hollow over a portion contiguous with its discharge end to define an outer wall and having a cylindrical passageway coaxial with the longitudinal axis of the cylinder and extending from the discharge orifice to one of the stub tubes where it intersects and joins with the passageway of such stub tube so that the two form a single (first) L-shaped passageway which is isolated from all other passageways, said barrel also comprising a generally cylindrical small tube disposed within the passageway of the main cylinder and also coaxial with the longitudinal axis thereof, such small tube being of smaller cross-section than its accommodating passageway and defining therein

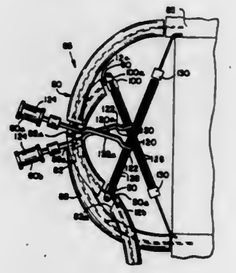
an annulus lying between the outer surface of the small tube and the wall of such passageway, such small tube extending longitudinally from the discharge orifice to the other of the stub tubes and joined thereto so that its hollow interior joins the passageway of the stub tube so that the two passages form a single (second) L-shaped passageway which is isolated from all other passageways, each of the two L-shaped passageways providing a continuous flow path for semi-liquid materials from the outer end of the stub tube to the discharge orifice of the barrel.

4,498,378
VACUUM CONTAINER FOR MEAT PRODUCTS
Lyle W. Norrie, Etobicoke; Robert W. Snider, King City, and Knud Simonsen, Nobleton, all of Canada, assignors to Knud Simonsen Industries Limited, Rexdale, Canada
Filed Sep. 6, 1983, Ser. No. 529,522
Int. Cl.³ A23B *4/02*; B01F *7/16*
U.S. Cl. 99—472 **5 Claims**



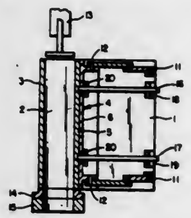
1. Container apparatus for the processing of meat products, both under atmospheric pressure and under a high vacuum, and comprising:
a container having a generally flattened bottom wall and generally planar side walls defining a generally square cross section having inner and outer surfaces, and having an open top;
a plurality of reinforcing channel sections located at spaced-apart intervals along each of said side walls, on the exterior thereof and on the exterior of the bottom wall, said reinforcing channels being of generally uniform three-sided shape having continuous side portions welded on the exterior of said walls of said container, and a continuous planar web portion extending between said side portions spaced from said container walls thereby forming, with said container walls, continuous generally tubular enclosures of rectangular cross-section, whereby to resist implosion due to vacuum within said container;
a top edge around the upper edges of said four side walls adapted to receive a closure member;
a closure member for said open top of said container adapted to hermetically seal the same;
stirring mechanism supported on said closure member, and stirring motor means supported above said closure member, and having drive means extending from said motor, through said closure member into driving connection with said stirring means;
reinforcing means extending across the upper surface of said closure member for resisting implosion forces, and,
hose connection means on said closure member for connection to suitable vacuum pump means.

4,498,379
METHOD FOR FORMING WIRE CONNECTION
Millard P. Saylor, 1125 W. Greenbriar, Arlington Heights, Ill.
Division of Ser. No. 459,945, Jan. 21, 1983, Pat. No. 4,450,763, which is a continuation-in-part of Ser. No. 273,252, Jun. 12, 1981, abandoned. This application Dec. 23, 1983, Ser. No. 564,842
Int. Cl.³ B65B *13/28*
U.S. Cl. 100—2 **3 Claims**



1. A method of automatically applying and connecting a continuous loop of bale wire to a bale of material without manual labor comprising the steps of:
feeding wire around from a continuous coil through a guide situated adjacent the periphery of a bale of material;
overlapping an end portion of said fed wire with another portion thereof after being looped around the bale;
cutting the wire at said another portion to create a second wire end portion;
looping both end portions of said wire back to form interengaging loops coupling said wire end portions together; and
twisting two portions of said wire together adjacent each of said loops to form and support said interengaging loops.

4,498,380
APPARATUS FOR CUTTING FOODSTUFFS
Helmut Maus, Pleckhausen, Fed. Rep. of Germany, assignor to Holac Maschinenbau GmbH, Heidenheim/Brenz, Fed. Rep. of Germany
Filed Apr. 4, 1983, Ser. No. 481,646
Claims priority, application Fed. Rep. of Germany, Apr. 8, 1982, 3213175
Int. Cl.³ B30B *15/08*
U.S. Cl. 100—98 R **7 Claims**



1. An apparatus for cutting foodstuffs and the like comprising an open-end, open-top tubular foodstuff cutting compartment formed by a bottom wall and two lateral side walls one of which is a press wall movable with respect to the other, fixed side wall and which, in its unretracted or closed position, forms therewith a compartment of rectangular cross-sectional configuration; an open-bottm foodstuff holding compartment of similar cross-sectional configuration positioned above said cutting compartment and communicating therewith whereby foodstuff can be fed thereto; foodstuff cutting means posi-

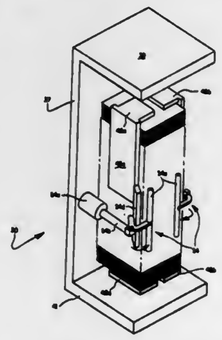
tioned at one end of said cutting compartment and a piston at the other end for moving foodstuff therethrough and against said cutting means; a cover plate located on the same side of the cutting compartment as said press wall for closing communication between said holding and said cutting compartments; a movable compacting wall located in front of, and adapted to be contacted by, said press wall; and a foodstuff compacting piston operatively associated with said press wall and said cover plate for simultaneously retracting both from their closed positions along an axis perpendicular to the axis of movement of said cutting compartment whereby foodstuff is fed from said holding compartment into a resultant laterally expanded cutting compartment, and for simultaneously returning said press wall and said cover plate to their closed positions whereby communication between said holding and cutting compartments is closed by said cover plate and foodstuff fed into said cutting compartment is subjected to a lateral prepressing in the direction of said fixed wall by said compacting wall.

4,498,381

SIGNATURE TRANSFER VEHICLE WITH STACK CLAMPING MECHANISM

Frank H. Convey, Jr., Peru, N.Y., assignor to Harris Graphics Corporation, Melbourne, Fla.

Filed Jul. 28, 1983, Ser. No. 518,014
Int. Cl.³ B30B *15/06*
U.S. Cl. 100—100 **6 Claims**



1. Apparatus for engaging a stack of signatures on a stacker and for removing the stack of signatures from the stacker, said apparatus comprising a transfer vehicle which can move toward a stack of signatures on the stacker, a clamping mechanism connected with the transfer vehicle to clamp the stack, said transfer vehicle being movable away from the stacker to move from the stacker a set of signatures clamped by said clamping mechanism, said clamping mechanism comprising a pair of clamp assemblies that are movable toward each other to clamp the stack therebetween, at least one of said clamp assemblies including a pair of clamp members, and means for moving said clamp members in said one clamp assembly linearly and independently of each other to apply pressure to at least two points at one end of the stack to insure adequate compression of the stack even at different initial height of the stack at said two points.

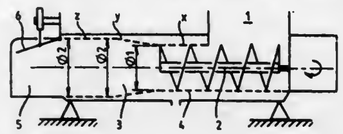
4,498,382

SCREW PRESS FOR GRAPE CROP

Jean Pera, Florensac, and Didier Pera, Montblanc, both of France, assignors to Societe S.O.M.A.V.I., Florensac, France

Filed Jun. 20, 1983, Ser. No. 505,634
Claims priority, application France, Mar. 28, 1983, 83 05068
Int. Cl.³ B30B *9/14*
U.S. Cl. 100—117 **2 Claims**

1. A screw press comprising a hopper for reception of grape crop, a compression chamber, a helical screw which conveys and compresses grapes in said compression chamber, an outlet end, grids and a filter tube formed from said grids, said filter tube including a first cylindric section extending up to the downstream end of the screw and a second divergent or conical section starting from a diameter equal to the diameter of the first section and terminated by a higher diameter at the outlet end and a third cylindric section between said divergent or



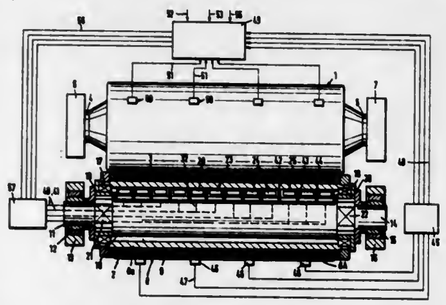
conical section and said outlet end, said third cylindric section having a length such that the marc cake is reconstituted at said outlet end of the press whatever be the composition of the grape crop, said filter tube diverging from a determined section of its length in the downstream direction such that said divergence enables the grapes to be freed and prevents formation of an impermeable crust in the filtering tube thereby resulting in total pressing and increased flow rate.

4,498,383

CALENDER

Josef Pav, Krefeld; Wimmar Schmitz, Kempen, and Reinhard Wenzel, Krefeld, all of Fed. Rep. of Germany, assignors to Kleinewefers GmbH, Krefeld, Fed. Rep. of Germany

Filed Aug. 9, 1982, Ser. No. 406,494
Claims priority, application Fed. Rep. of Germany, Aug. 12, 1981, 3131799
Int. Cl.³ B30B *3/04*
U.S. Cl. 100—162 B **31 Claims**



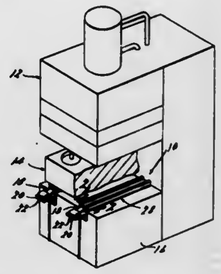
1. In a machine for treating running webs or the like, particularly in a calender for treating sheets of paper and the like, a system comprising a first roll; a second roll including a hollow at least partly elastic rotary shell defining with the first roll an elongated nip, a carrier spacedly surrounded by said shell, and supporting means interposed between said shell and said carrier and including a plurality of adjustable force applying devices distributed in said shell in the longitudinal direction of said nip and arranged to apply forces against the respective portions of said shell to thereby influence the temperature of such portions, each of said rolls having an external surface and at least that portion of one of said rolls which is adjacent to the respective external surface consisting of a viscoelastic material; means for ascertaining the temperatures of at least some of said portions and for generating signals denoting the ascertained temperatures; means for comparing said signals with reference values denoting the desired temperatures of said portions; means for adjusting said force applying devices when the ascertained temperatures of the respective portions of said shell deviate form the corresponding reference values, said comparing means comprising means for evaluating said signals and for transitting to said adjusting means second signals when the signals furnished by said ascertaining means deviate from said reference values; and means for transmitting to said evaluating means additional signals denoting at least one variable parameter of the running web which influences the temperature of said shell, said evaluating means being operative to modify said second signals as a function of the characteristics of such additional signals.

4,498,384

DIE TRANSFER SYSTEM

William P. Murphy, 1067 Kennesaw Ave., Birmingham, Mich. 48008

Filed Jul. 7, 1983, Ser. No. 511,548
Int. Cl.³ B30B *15/02*
U.S. Cl. 100—224 **1 Claim**



1. A die transfer system for a press having a bolster with a surface for the support of a die, said system comprising means on said bolster defining a pair of elongated, parallel upwardly opening cavities, each of said cavities having a horizontally extending vertically movable rail therein with oppositely longitudinally extending ends at the lowermost portions thereof, a plurality of rollers supported by said rail and movable vertically therewith, an air bag extending longitudinally of said cavities under said rail and engageable with the bottom thereof, inflation of said air bag effecting elevation of said rail and rollers into engagement with the bottom of said die and elevation of said die relative to said bolster, and limiting means engageable with said rail to limit upward movement thereof comprising a pair of inverted U-shaped stops each defined by a horizontal uninterrupted bight portion and spaced downwardly extending leg portions, the bight portions of said stops overlying said opposite end portions of said rail but being disposed entirely below the die support surface of said press bolster.

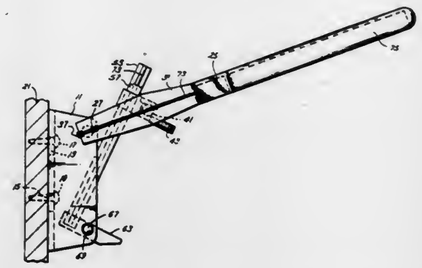
4,498,385

CAN CRUSHER

Norman G. Manley, 15809 Booth Cir., Volente, Tex. 78641

Filed Aug. 23, 1982, Ser. No. 410,362
Int. Cl.³ B30B *7/00*
U.S. Cl. 100—233 **12 Claims**

1. A crusher comprising
a base,
a handle, first single axis pivot means pivotally connecting the handle to the base constraining the handle to motion of rotation relative to the base about said single axis of said first single axis pivot means while preventing relative translation of the handle and base,
an upper crusher plate, second single axis pivot means pivotally connecting said upper crusher plate to the handle providing a single axis of rotation that is stationary relative to both the handle and upper crusher plate and constraining said upper crusher plate to motion of rotation relative to said handle about said single axis of said second single axis pivot means while preventing relative translation of said upper crusher plate and said handle,
a lower crusher plate, third single pivot axis means pivotally connecting said lower crusher plate to the base constraining said lower crusher plate to motion of rotation about said single pivot axis of said third single pivot axis means relative to the base, while preventing relative translation of said lower crusher plate and base, and
positioning means maintaining said plates parallel to each other while the lower plate rotates relative to the base.

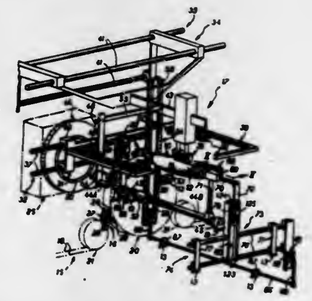


4,498,386

SILK SCREEN PRINTING MACHINE

Eric Rouly, Saint-Maur, and Jean-Pierre Douville, Gagny, both of France, assignors to Societe d'Exploitation des Machines Dubuit, Paris, France

Filed Jun. 7, 1983, Ser. No. 501,878
Int. Cl.³ B41F *17/22*
U.S. Cl. 101—40 **10 Claims**



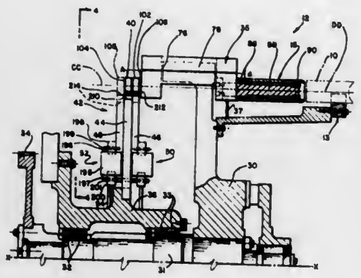
1. A silkscreen printing machine of the kind comprising at least one printing station, a conveyor carrying at least one workholder adapted to support an object to be printed and, at said printing station, a screen being carried by a screen support carriage which is mounted to be movable to-and-fro on a guide, a squeegee being carried by a squeegee support carriage which is mounted to be movable to-and-fro on a guide parallel to said screen support carriage guide, and a bearing block for bearing on the object to be printed and controlling its angular orientation relative to an axis transverse to the screen support carriage and squeegee support carriage guides, said bearing block being keyed to a first lever so as to rotate therewith, said first lever by virtue of engagement means being adjustable along its length and meshing with a control carriage mounted movably on a guide in synchronism with the squeegee support carriage.

4,498,387

CAM ASSEMBLY FOR SKIP-PRINT MANDREL WHEEL ASSEMBLY

James S. Stirbis, Littleton, Colo., assignor to Adolph Coors Company, Golden, Colo.

Filed Oct. 21, 1983, Ser. No. 544,015
Int. Cl.³ B41F 17/22
U.S. Cl. 101—40 19 Claims



1. A mandrel assembly for use in a continuous printing machine for cylindrical containers comprising:

a. mandrel wheel means for supporting cylindrical container receiving apparatus thereon, said mandrel wheel means having a central axis of rotation positioned in parallel alignment with a central axis of rotation of an associated blanket wheel device carrying a printing medium on a circumferential portion thereof for printing on said cylindrical containers carried by said mandrel wheel means;

b. at least one mandrel holder means for supporting a mandrel spindle means thereon, pivotally mounted on a circumferential portion of said mandrel wheel means for pivotal movement about a mandrel holder pivot axis positioned substantially parallel to said mandrel wheel central axis of rotation;

c. elongate mandrel spindle means for supporting a cylindrical container on a peripheral surface thereof, rotatably mounted on said mandrel holder means for rotation about a central axis of rotation positioned in substantially parallel, non-coaxial relationship with said mandrel holder pivot axis whereby said mandrel spindle means is radially displaceable relative said central axis of rotation of said mandrel wheel means by pivotal movement of said mandrel holder means about said mandrel holder pivot axis;

d. cam follower means for following a cam track means, rotatably mounted on said mandrel holder means for rotation about a central axis of rotation positioned in substantially parallel, non-coaxial relationship with said mandrel holder pivot axis whereby said mandrel holder means is pivotally displaced about said mandrel holder means pivot axis by radial displacement of said cam follower means relative said central axis of rotation of said mandrel wheel means;

e. cam track means operably associated with said cam follower means for guiding said cam follower means and for causing preselected relative radial displacement thereof with respect to said central axis of rotation of said mandrel wheel means for causing preselected radial displacement of said mandrel spindle means relative said blanket wheel device whereby when said mandrel wheel means is in a rotated position associated with cylindrical container printing, and when said mandrel spindle is in a normal operating state wherein said mandrel spindle has a cylindrical container properly seated thereon, said mandrel spindle is positioned to urge said cylinder container into printing contact with said blanket wheel device; and whereby when said mandrel wheel means is in said rotated position associated with cylindrical container printing and when said mandrel spindle is in a skip-print operating wherein said mandrel spindle does not have a cylindrical container properly seated thereon, said mandrel spindle is positioned in radially spaced apart, non-engaging relationship with said blanket wheel device; and

f. control means for sensing the position of a can on an associated mandrel wheel and actuating said cam track means in response to the can position;

wherein said cam track means comprises a cam track printing portion thereon associated with movement of said mandrel spindle means into a proximate relationship with the blanket wheel device and wherein said cam track printing portion comprises:

printing path means for engaging said cam follower means in said normal operating state and for guiding said cam follower means to cause a printing engagement between the blanket wheel device and a container carried by said mandrel spindle, and

skip-printing path means for engaging said cam wheel means in said skip-print operating state and for guiding said cam follower means to cause said mandrel spindle to be deflected away from printing engagement with the blanket wheel device;

wherein said printing path means and said skip-printing path means comprise operating surfaces which are radially displaceable with respect to one another;

wherein said cam track means comprises a substantially continuous, closed loop, cam follower engaging fixed track and a relatively short length cam follower engaging moveable track positioned in axially offset relationship with said fixed track, said moveable track being positioned within said cam track printing portion;

wherein said printing path means comprises one of said fixed track and said moveable track and wherein said skip-printing path means comprises the other of said fixed track and said moveable track;

moveable track movement means for radially moving said second track relative said first track between a skip-print operating position and a normal operating position;

wherein said moveable track movement means comprises:

first roller means having an axis fixedly attached to said moveable track means;

second roller means having an axis positioned in parallel relationship with said first roller means axis, said second roller means axis being fixed relative fixed track;

wedge means positionable between said first and second roller means in contacting engagement therewith; and

wedge movement means for moving said wedge means between said first and second roller means for causing displacement of said first roller means relative said second roller means.

4,498,388

PRINT HAMMER MECHANISM HAVING INTERMEDIATE PIVOT FULCRUM

Norman E. Farb, Villa Park, Calif., assignor to Printronix, Inc., Irvine, Calif.

Continuation of Ser. No. 406,035, Aug. 6, 1982, abandoned. This application May 3, 1984, Ser. No. 606,650
Int. Cl.³ B41J 3/10
U.S. Cl. 101—93.04 9 Claims

1. A print hammer mechanism comprising:

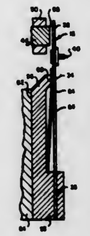
a resilient hammer element having opposite fixed and free ends, the free end of the hammer element having structure mounted thereon consisting of a dot imprinting tip of relatively small size and mass;

a magnetic structure mounting the hammer element at the fixed end of the hammer element;

a pole piece mounted on the magnetic structure and terminating in a pole tip disposed in facing relation to the free end of the hammer element;

a hammer element impact arrangement disposed in facing relation to the hammer element at an intermediate portion of the hammer element between the fixed end and the free end of the hammer element, the impact arrangement having a surface facing the intermediate portion of the hammer element and covered with an elastomeric material;

the hammer element being spaced apart from both the pole tip and the impact arrangement when in a neutral, unflexed position and being of generally planar configura-



tion and being positioned to impact the impact arrangement approximately at the node of the second order of vibration of the hammer element in the plane of the hammer element; and

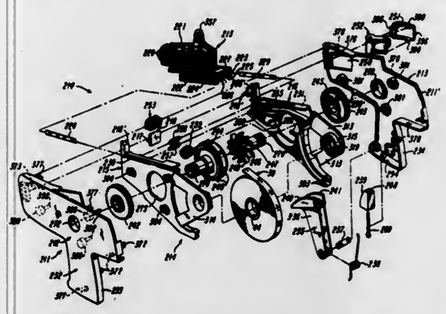
means coupled to the magnetic structure for providing a magnetic field which normally attracts the hammer element toward the pole tip and the impact arrangement, the pole tip and the impact arrangement being disposed so that the hammer element impacts and resides against the impact arrangement and forms an air gap with the pole tip when the hammer element is caused to flex into a retract position by the magnetic field.

4,498,389

LABELER WITH INKING MECHANISM

Paul H. Hamisch, Jr., Franklin, Ohio, assignor to Monarch Marking Systems, Inc., Dayton, Ohio

Continuation of Ser. No. 193,553, Oct. 3, 1980, abandoned, which is a division of Ser. No. 653,403, Jan. 29, 1976, Pat. No. 4,249,973, Division of Ser. No. 540,051, Jan. 10, 1975, Pat. No. 3,952,652, which is a division of Ser. No. 312,454, Dec. 6, 1972, Pat. No. 3,968,745, which is a continuation-in-part of Ser. No. 208,035, Dec. 8, 1971, abandoned. This application Feb. 17, 1983, Ser. No. 467,579
Int. Cl.³ B41K 1/42, 1/46
U.S. Cl. 101—288 14 Claims



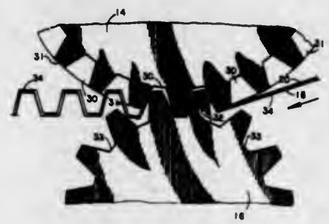
1. A hand-held label printing and applying machine for printing on labels carried on a web of supporting material, comprising: a housing having a first housing section and a second housing section, the first housing section having a handle, a print head mounted by the first housing section, means disposed in space within the housing for inking the print head, means for movably mounting the second housing section relative to the first housing section to afford access to the inking means, means for delaminating a printed label from the web, an applicator disposed adjacent the deliminating means, means including an actuator disposed at the handle of advancing the web to effect label delamination at the delaminating means, and means spaced from the second housing section mounting means for mounting the applicator on the second housing section.

4,498,390

METHOD AND APPARATUS FOR EMBOSSING FOIL

James A. Bowling, Midlothian, and Wallace M. David, Richmond, both of Va., assignors to Philip Morris Incorporated, New York, N.Y.

Continuation of Ser. No. 148,316, May 9, 1980, abandoned. This application Sep. 3, 1981, Ser. No. 299,262
Int. Cl.³ B41F 31/02
U.S. Cl. 101—365 9 Claims



1. A method of embossing a sheet of metallic foil in at least one pair of complementary embossing dies having male and female die portions comprising:

a. providing a sheet of compressible deformable material;

b. layering said compressible deformable sheet with a sheet of said metallic foil;

c. placing said sheets between said male and female die portions with the metallic foil surface facing the male die portion

d. bringing said die portions together under pressure with male and female portions in register to compress said metallic foil against a surface of a die portion with yieldable force.

4,498,391

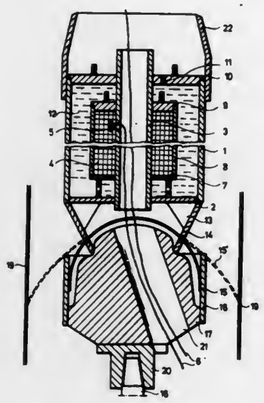
EXPLOSIVE MINE BREAKING APPARATUS WITH ARC-SUPPRESSING HEAT-DISSIPATING FLUID AROUND THE CHARGE BODIES

György Gergö, Pécs; József Németh, Budapest; Béla Sebestyén, and Béla Solymossy, both of Pécs, all of Hungary, assignors to Mecseki Szénbányák, Komját Aladár, Hungary

Filed Jun. 2, 1983, Ser. No. 500,294
Claims priority, application Hungary, Jun. 4, 1982, 1810/82
Int. Cl.³ F42D 3/00
U.S. Cl. 102—312 3 Claims

1. A breaking apparatus for steep dip strong-coal deposits in an explosive atmosphere, comprising a succession of explosive units spaced apart within a bore hole, each of said explosive units including a core tube, an explosive charge body surrounding said core tube, an igniter anchored in said charge body and having a conductor extending into said charge body through the respective core tube, and means for maintaining an arc-suppressing heat-dissipating fluid all around said charge body and said core tube, the conductors of the igniters more

remote from an inlet of said bore hole traversing the core tubes of each of the units more proximal to said inlet, each of said



units being provided with means for anchoring same at a selected location along said bore hole.

4,498,393

PROCESS FOR THE DISTRIBUTION OF SUBMUNITION

Klaus Fischer, Troisdorf; Heinz Kroschel, Troisdorf-Sieglar; Joachim Nicodemus, Cologne, and Willi Petters, Leverkusen, all of Fed. Rep. of Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf, Fed. Rep. of Germany

Filed Mar. 22, 1982, Ser. No. 360,788

Claims priority, application Fed. Rep. of Germany, Mar. 26, 1981, 3111907

Int. Cl.³ F42B *13/50, 25/16*

U.S. Cl. 102—393 **9 Claims**



1. A process for the distribution of submunition wherein a plurality of individual submunitions completely accommodated within at least one dispensing unit of a carrier projectile are released at a predetermined point in time, characterized in that the at least one dispensing unit is ejected in a defined fashion at a predetermined instant from the carrier projectile by being guided during the ejection movement in the carrier projectile, and is maintained in a stable flight position at a spacing from the carrier projectile; and that the carrier projectile and the at least one dispensing unit are differently decelerated so that the trajectories of the carrier projectile and the at least one dispensing unit diverge, and finally the plurality of individual submunitions which are completely accommodated within the at least one dispensing unit are ejected from the at least one dispensing unit.

4,498,392

INFRARED DECOY LAUNCHING DEVICE TO BE DEPLOYED RAPIDLY WITH A DOUBLE SAFETY DEVICE

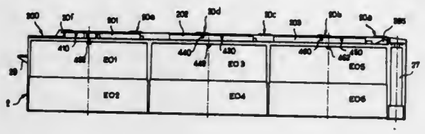
Alain A. Billard, Muret; Hubert C. Calmettes, Toulouse, and Roland C. Encoyand, Muret, all of France, assignors to Etienne LaCroix - Tous Artifices, Muret, France

Filed Jun. 1, 1982, Ser. No. 384,098

Claims priority, application France, Jun. 3, 1981, 81 10976

Int. Cl.³ F42B *4/22, 4/24;* F41F *5/02*

U.S. Cl. 102—342 **9 Claims**



1. An infrared decoy launching device, comprising a launcher case as well as at least one infrared decoy member able to be housed in this case and provided with a pyrotechnic chain for the ejection of the decoy in a given direction from the case and ignition characterized by the fact that the decoy member has a major dimension which extends transversely to the direction of ejection in the launcher case and that the pyrotechnic chain is provided in order to bring about an ejection of the decoy member transversely with respect to its major dimension at a low speed, the pyrotechnic chain including ejection means having a barrel defined in the decoy member in axial alignment with the ejection direction and an ejection cartridge containing an ejection charge slidably received in this barrel to eject the decoy member in alignment with the ejection direction at a low speed with a high but short acceleration.

4,498,394

ARRANGEMENT FOR A TERMINALLY GUIDED PROJECTILE PROVIDED WITH A TARGET SEEKING ARRANGEMENT AND PATH CORRECTION ARRANGEMENT

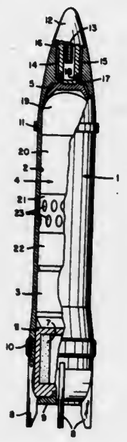
Christer Regebro, Eskilstuna, Sweden, assignor to Forenade Fabriksverken, Eskilstuna, Sweden

Filed Nov. 4, 1982, Ser. No. 439,026

Claims priority, application Sweden, Nov. 12, 1981, 8106719

Int. Cl.³ F42B *13/24, 13/50*

U.S. Cl. 102—489 **9 Claims**



1. Arrangement for launching a terminally guided fin-stabilized mortar projectile provided with a target seeking arrangement and a path correction arrangement, and comprising: an

artillery shell capable of being fired from the rifled barrel of an artillery gun and which is provided with a central, extended cavity; said terminally guided fin-stabilized mortar projectile positioned within said cavity coaxially with the artillery shell; a separation charge provided in the artillery shell which at a desired point in its ballistic path will eject the mortar projectile so that with the aid of the said target seeking arrangement and the path correction arrangement the projectile can subsequently be terminally guided towards a selected target.

4,498,395

POWDER COMPRISING COATED TUNGSTEN GRAINS

Wulf Kock; Rainer Schmidberger, both of Markdorf, and Wolfgang Wagner, Weingarten, all of Fed. Rep. of Germany, assignors to Dornier System GmbH, Friedrichshafen, Fed. Rep. of Germany

Filed Jul. 6, 1983, Ser. No. 511,510

Claims priority, application Fed. Rep. of Germany, Jul. 16, 1983, 3226648

Int. Cl.³ F42B *11/00;* C22C *1/02*

U.S. Cl. 102—517 **27 Claims**



1. A heterogeneous powder comprising particles of tungsten grains with a diameter of less than 1 μm with a binder sponge-like coating of at least one metal selected from the group consisting of nickel, copper, silver, iron, cobalt, molybdenum and rhenium with a particle diameter of 10 to 50 μm.

18. A method of forming sintered elements comprising compressing the heterogeneous powders of claim 1 to form a compact of the desired shape with a high green density and sintering the compact at 600° to 1300° C. in a reducing atmosphere and degassing the sintered body whose structure is pore free and consists of polygonal tungsten grains with a mean diameter less than 5 μm which substantially occupy all the space therein with a thin layer of binder between them.

4,498,396

2.75 INCH PLASTIC WARHEAD

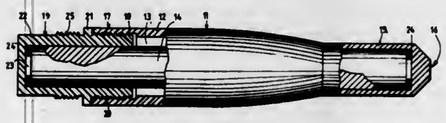
Gilles Bérubé, Loretteville, Canada, assignor to Her Majesty the Queen in right of Canada, as represented by the Minister of National Defence, Ottawa, Canada

Continuation of Ser. No. 87,237, Oct. 22, 1979, abandoned. This application Mar. 11, 1982, Ser. No. 357,288

Claims priority, application Canada, Mar. 1, 1979, 322792

Int. Cl.³ F42B *13/22*

U.S. Cl. 102—529 **6 Claims**



1. A practice warhead for simulating the flight characteristics of an actual warhead, the practice warhead providing a coefficient of drag, weight and maximum cross-sectional area of the practice warhead such that the ballistic coefficient of the practice warhead matches closely that of the actual warhead, the practice warhead comprising a shell of substantially the same external configuration and maximum cross-sectional area as the actual warhead, the shell defining a hollow core, and readily insertable ballast means in the form of a cylindrical metal rod disposed in the core to provide a sufficient weight to match the ballistic coefficient of the actual warhead while maintaining flight stability, the practice warhead being characterised in that the shell is of a suitable plastic material, the cylindrical metal rod being of generally uniform diameter throughout its length, the hollow core of the shell having a forward end portion of substantially the same internal diameter as the outside diameter of the metal rod and within which said metal rod is positioned, the remainder of said hollow core being of greater diameter than said metal rod, said shell including an aft opening of greater diameter than said metal rod for receiving the metal rod within the core, a joint means detachably secured in said aft opening, said joint means being a generally cylindrical member open at one end and having a central hollow bore of the same diameter as said metal rod and within which the aft end of said metal rod is positioned whereby each end portion of the cylindrical metal rod is principally supported adjacent each of its ends and positioned to define an annular space between the metal rod and the core.

4,498,397

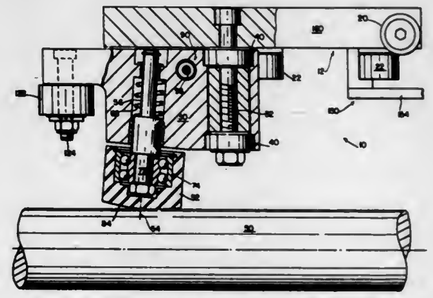
CONVEYOR TRANSFER MECHANISM

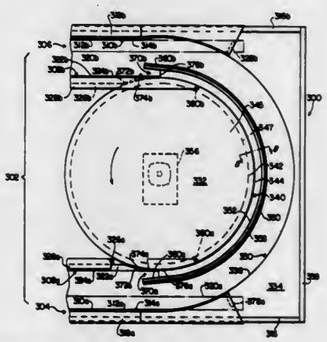
Gilbert Fuchs; Norman Crowley, and Randall Wink, all of Evansville, Ind., assignors to Evans Tool & Engineering Inc., Evansville, Ind.

Filed Aug. 17, 1982, Ser. No. 408,816

Int. Cl.³ B61J *1/02;* B61B *13/12*

U.S. Cl. 104—35 **30 Claims**





1. A transfer mechanism for a conveyor system comprising: a first trackway having a longitudinal axis and a transfer end, said first trackway including an inside track and an outside track which are disposed parallel to one another in a horizontal plane, each said track having a top surface and a lateral surface;

a second trackway having a longitudinal axis and a transfer end located adjacent to the transfer end of said first trackway, said second trackway including an inside track and an outside track which are disposed parallel to one another in a horizontal plane, each said track having a top surface and a lateral surface;

a pallet which is mounted for longitudinal movement on said tracks of said first and said second trackways, said pallet including at least three top rollers mounted for rotation about horizontal axes in engagement with the top surfaces of said inside or outside tracks such that said pallet is vertically supported on said trackway and three lateral rollers mounted for rotation about vertical axes in engagement with the lateral surfaces of said inside or outside tracks such that said pallet is laterally positioned on said trackway, said pallet further including a drive roller having an axial face which is movably mounted to said pallet;

an outside arcuate connecting track means for connecting said outside track of said first and second trackways including an arcuate connecting track having a top surface and a lateral surface which connects the transfer end of said outside track of said first trackway with the adjacent transfer end of said outside track of said second trackway, said arcuate track having a center axis of curvature;

a first drive means for driving said pallet along said first trackway towards said transfer end of said first trackway and a second drive means for driving said pallet along said second trackway away from said transfer end of said second trackway, said first drive means including a first rotating cylindrical drive shaft disposed underneath and parallel to said first trackway and said second drive means including a second rotating cylindrical drive shaft disposed underneath and parallel to said second trackway such that said axial face of said drive roller rotatably contacts an adjacent said cylindrical drive shaft; and

a transfer means for moving said pallet from the transfer end of said first trackway to the adjacent transfer end of said second trackway including

(a) a turntable having an axis of rotation and an inside track portion disposed about the axis of rotation of said turntable, said inside track portion including a top surface and a lateral surface, the axis of rotation of said turntable being coaxial with the center axis of said arcuate track and said inside track portion being located on said turntable such that said inside track portion is positionable by rotation of said turntable adjacent the transfer end of said inside track of said first trackway and of said second trackway;

(b) a rotating means for rotating said turntable about the axis of rotation to cyclically present said inside track portion of said turntable to the transfer end of said inside track of said first trackway and subsequently to the transfer end of said inside track of said second trackway; and

(c) a transition means provided between the top surface of said turntable inside track portion and the adjacent transfer ends of said inside track for providing a gap therebetween at an acute angle to the longitudinal axis of said top surfaces whereby a smooth transition is provided as said respective top rollers move therebetween.

4,498,398

DISPLAY TURNTABLE

Robert G. Vallee, Grosse Pointe Woods, Mich., assignor to George P. Johnson Co., Warren, Mich.

Filed Jul. 7, 1980, Ser. No. 166,320
Int. Cl.³ B60S *13/02*
U.S. Cl. 104—44 **2 Claims**

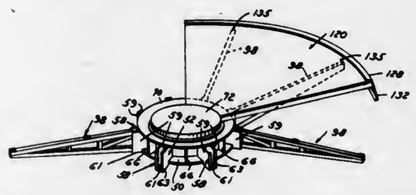
1. A rotating table for display of large heavy products such as vehicles and formed of manually manageable components which are readily assembled and disassembled which comprises:

(a) a central portable stationary horizontal base member,

(b) a rotatable center load bearing unit rotatably mounted on said base member,

(c) radial stanchions circumferentially spaced around and permanently supported on said load bearing unit each having a vertical socket well with an open top,

(d) a plurality of independent outrigger trusses each having a vertical drop-in base bar at the proximal end to insert vertically and fit removably in a socket well, and structural members extending radially outward of said base bar a predetermined distance from said base member, and



(e) a plurality of portable shaped platform elements supported on and secured to said outrigger trusses to form a circular load bearing rotating table supported on said base member,

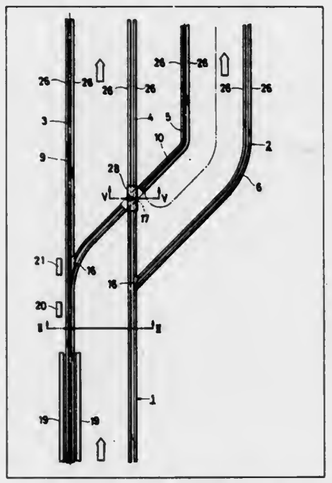
(f) said shaped platform elements being sector shaped and being formed of a plywood plate, a framework of metal tubes underlying the radial edges of said plate, and a rigid plastic coating of material over side plate and around said tubes to unify the construction.

4,498,399

FREE LINE SWITCH ARRANGEMENT FOR POWER-AND-FREE TROLLEY CONVEYOR

Takao Wakabayashi, Toyonaka, Japan, assignor to Nakanishi Metal Works Co., Ltd., Osaka, Japan

Filed Nov. 24, 1981, Ser. No. 324,598
Claims priority, application Japan, Nov. 28, 1980, 55-172008[U]
Int. Cl.³ E01B *25/26*
U.S. Cl. 104—96 **7 Claims**



1. A free line switch arrangement for a power-and-free trolley conveyor comprising a first free line composed of a first left rail and a first right rail arranged in parallel in a substantially horizontal plane, a second free line composed of a second left rail and a second right rail arranged in parallel in said substantially horizontal plane, each of said rails comprising a pair of channel members closely arranged with their openings opposed to each other, said second free line being joined to said first free line, a first switch rail pivotally moveable in said

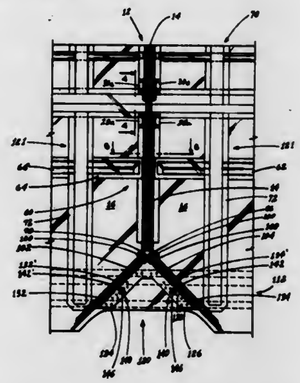
substantially horizontal plane and provided at the junction of said first left rail and said second left rail, a second switch rail pivotally moveable in said substantially horizontal plane and provided at the junction of said first right rail and said second right rail, and a crossing switch rail pivotally moveable in said substantially horizontal plane and provided in a cut out portion in the rails at the position where one of said first rails crosses one of said second rails; one channel member of each of the first free line rails being partly cut out at each of said junctions of the first free line rails and the second free line rails, one channel member of each of the second free line rails being continuous with one of the cut out ends of said one channel member of the first free line rails, the other channel member of each of the second free line rails extending to a location close to the other cut out end, each of said first and second switch rails being pivotably suspended at its one end from a rail suspending frame at a location close to the ends of the two inner channel members included in the four channel members of the two rails at the junction, the free other end of each of the switch rails being selectively connectable to said one cut out end of said one channel member of the first free line rail or to the other channel member of the same first free line rail.

4,498,400

HOPPER SLOPE SHEET SUPPORT AND CONNECTING MEANS

Frederick E. Vorwerk, St. Peters, and James D. Mundloch, Florissant, both of Mo., assignors to ACF Industries, Incorporated, New York, N.Y.

Filed Sep. 30, 1982, Ser. No. 429,744
Int. Cl.³ B61D *5/02, 7/02, 49/00*
U.S. Cl. 105—248 **9 Claims**



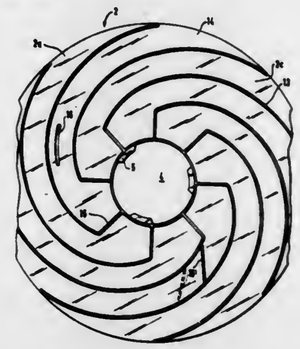
1. A hopper slope sheet to side sill connection comprising: metal plates located on each side of a filament wound railway hopper car body; said plates connecting transversely extending hopper slope sheets to car body sides and longitudinally extending side sills; said plates being generally "U" shaped and including legs which extend downwardly from a joint between the transverse bulkheads and the slope sheets downwardly along each of the slope sheets; said plates being connected to the car body sides, and to the side sill with mechanical fasteners; said plate including flange portions extending inwardly from the car body sides containing openings to receive transversely extending slope sheet reinforcements.

4,498,401

ARTICLE DISPLAY STAND

Wolf-Dietrich Hannecke, Rischenau Weg 6, 3410 Northeim, Fed. Rep. of Germany

Continuation of Ser. No. 821,410, Aug. 3, 1977,. This application Oct. 28, 1981, Ser. No. 315,987
Claims priority, application Fed. Rep. of Germany, Mar. 3, 1977, 7706489[U]; Mar. 3, 1977, 7706490[U]; Mar. 4, 1977, 7706706[U]
The portion of the term of this patent subsequent to Sep. 21, 1996, has been disclaimed.
Int. Cl.³ A47B *57/00*
U.S. Cl. 108—60 **7 Claims**



1. An article display stand, comprising an elongated upright support having a plurality of recesses which are spaced from and located adjacent to each other in the direction of elongation of said support; and an article supporting element mountable in said support in any of a plurality of positions spaced longitudinally of said support and having a periphery and projection which is detachably engageable with respective ones of said recesses so that, when said projection of said support element engages in one of said recesses of said support, said article supporting element is fixed in a respective one of said positions, said article supporting element having a circular base plate with a periphery and a central opening for extension of said support and also having a plurality of substantially upright walls located on an upper surface of said base plate and forming a plurality of compartments each of which has an outer opening at the periphery of said base plate, the walls bounding each of said compartments having inner ends and also having portions extending over a greater part of a length of the wall, from said inner ends of the walls to said outer opening of the respective compartment and being continuously smoothly curved from said inner ends of said walls to said outer opening of the respective compartment so as to provide a continuous slight bending of articles supported in said compartments and to thereby improve stiffness and reliable standing of the articles in a vertical position.

4,498,402

METHOD OF REDUCING HIGH TEMPERATURE SLAGGING IN FURNACES AND CONDITIONER FOR USE THEREIN

Alfred E. Kober, 81 Claire Dr., Bridgewater, N.J. 08807, and Christopher J. Macey, 720 Pearl St., Elizabeth, N.J. 07202

Filed Jun. 13, 1983, Ser. No. 503,727
Int. Cl.³ F23J *11/00*
U.S. Cl. 110—345 **15 Claims**

1. A method of ameliorating high-temperature slagging conditions which result from impaction on the boiler interior surfaces of molten or semi-molten ash particles in flue gas resulting from the combustion of coal, which method comprises

(a) at or upstream of the high-temperature region in said

boiler system where slagging tends to occur, adding to said flue gas a conditioner selected from the group consisting of strontium carbonate, a mixture of zircon with copper oxychloride, a mixture of alumina with aluminum fluoride, zircon or zirconyl chloride, and a mixture of hydrated aluminum silicate, unexpanded perlite ore, unexpanded vermiculite ore or strontium carbonate with copper oxychloride, zircon, or zirconyl chloride; and

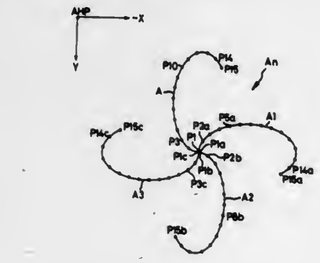
(b) thereafter causing said mixed flue gas and conditioner to flow through said region.

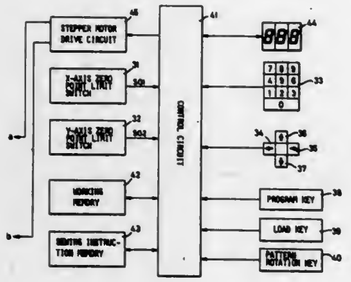
4,498,403

PROGRAMMING DEVICE FOR AN AUTOMATIC SEWING MACHINE

Toshiaki Yanagi, and Yoshinori Bessho, both of Nagoya, Japan, assignors to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Filed Aug. 13, 1982, Ser. No. 407,799
Claims priority, application Japan, Aug. 31, 1981, 56-136746
Int. Cl.³ D05B *21/00*
U.S. Cl. 112—121.12 **6 Claims**





1. A programming device for an automatic sewing machine wherein a succession of stitches defining a stitch pattern are formed through relative movements between a needle and a work holder according to a batch of sewing instructions, said programming device comprising;

memory means for storing said batch of sewing instructions prepared for forming said stitch pattern;

manual setting means for setting a desired number of angular divisions of a plane about a preset coordinate point into equal angles, said preset coordinate point being defined by a first sewing instruction stored in said memory means;

first control means for preparing, based on said batch of sewing instructions and said desired number of angular divisions, another batch of sewing instructions for forming said stitch pattern at a plural number of positions corresponding to said desired number of angular divisions, said plural number of positions being circumferentially spaced about said preset coordinate point in every degrees of said equal angles; and

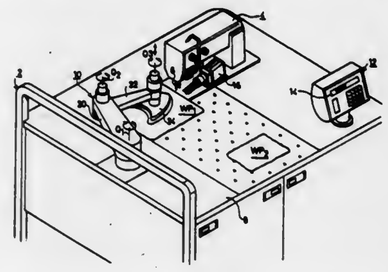
second control means for storing said another batch of sewing instructions in said memory means.

4,498,404

AUTOMATIC SEWING APPARATUS

Yaacov Sadeh, Beersheva, Israel, assignor to Beta Engineering & Development Ltd., Beer Sheva, Israel

Filed Sep. 15, 1982, Ser. No. 418,389
Claims priority, application Israel, Jul. 23, 1982, 66381
Int. Cl.³ D05B *21/00*
U.S. Cl. 112—121.12 **5 Claims**



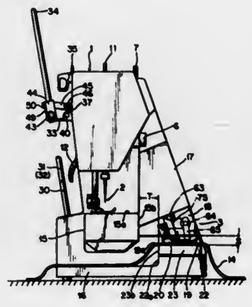
1. Sewing apparatus including a main frame, a sewing head mounted thereon, a horizontal table carried by said main frame for receiving a workpiece to be sewn, and a manipulator for manipulating the workpiece on the table with respect to the sewing head; characterized in that said manipulator includes a first arm rotatably mounted to said main frame about a first vertical axis, a second arm rotatably mounted to said first arm about a second vertical axis, a manipulatable head rotatably mounted to said second arm about a third vertical axis, said manipulator head being a suction head and including means for selectively applying a negative fluid pressure to its interior in order to pick up and release the workpiece, and rotary drive means for rotating said first and second arms and said manipulator head about their respective first, second and third vertical axes, said horizontal table being formed with a plurality of apertures therethrough and including means for selectively applying either positive or negative fluid pressure through said apertures to the upper face of the table in order to selectively produce either suction for holding the workpiece thereto, or an air cushion for facilitating moving the workpiece thereover by said manipulator.

4,498,405

DUAL-FUNCTION SEWING MACHINE

Susumu Hanyu, and Yoshikazu Ebata, both of Tokyo, Japan, assignors to Janome Sewing Machine Co., Ltd., Tokyo, Japan

Filed Feb. 7, 1983, Ser. No. 464,741
Claims priority, application Japan, Feb. 12, 1982, 57-19541
Int. Cl.³ D05B *1/14*
U.S. Cl. 112—168 **7 Claims**



1. A double functioning sewing machine, comprising:

a base having an upper side and a rear end portion and being partly formed with a hollow frame having a top and a rear side;

a machine frame having a top, a one side, a bracket, an arm, and a front side formed with a recess, said machine frame being formed so as to rise from said rear end portion of said base to said top from which said arm laterally extends and overhangs said base and terminates into said bracket;

a lock stitch mechanism provided in said machine frame and including an operatively connected lock stitching needle bar with a needle, said lock stitching needle bar with said needle being supported by said bracket of said arm of said machine frame;

a free arm having a bottom face and a front side and disposed rearwardly on said one side of said machine frame and extending between said arm and said base;

an overlock stitch mechanism provided in said machine frame and including an overlock stitching needle bar with a needle, a presser bar with a presser foot, all being disposed in said recess of said front side of said machine frame adjacent said one side where said free arm is provided;

a loop taker driver provided in said free arm;

a loop taker provided in said free arm and driven by said loop taker driver to cooperate with said lock stitching needle bar with said needle supported by said bracket so as to produce lock stitches;

a fabric feed device disposed in said hollow frame of said base;

a looper mechanism disposed in said hollow frame of said base, said looper mechanism and said fabric feed device cooperating with said overlock stitching needle to produce overlock stitches; and

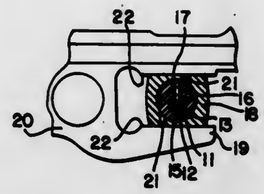
an overlock stitch working surface disposed at said top of said hollow frame and being at a level slightly lower than said bottom face of said free arm and slightly extending from said one side of said machine frame and being parallel with said free arm so that a path is defined by said rear side of said hollow frame, said front side of said free arm, said upper side of said base, and said bottom face of said free arm for guiding a fabric towards said rear end portion of said base as the fabric is transported by said fabric feed device during overlock stitching operation.

4,498,406

SEWING MACHINE LUBRICATION SYSTEM

Wolf R. Von Hagen, Hemmingen, Fed. Rep. of Germany, assignor to Union Special G.m.b.H., Stuttgart, Fed. Rep. of Germany

Filed Mar. 28, 1983, Ser. No. 479,529
Claims priority, application Fed. Rep. of Germany, Mar. 31, 1982, 3211893
Int. Cl.³ D05B *71/00*
U.S. Cl. 112—256 **9 Claims**



1. A sewing machine lubrication system comprising:

a revoluble crankshaft provided with lubricant conducting means, said crankshaft includes at least one eccentric rotary actuating element having a peripheral bearing surface and an axis about which the eccentric element rotates;

lubricant conducting bore means radially extending from the lubricant conducting means of said crankshaft and reaching to a location on the bearing surface of said eccentric rotary actuating element spaced substantially the farthest distance from the axis of rotation of said eccentric actuating element; and

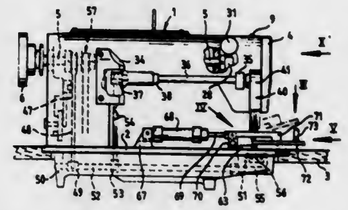
lubricant reservoir means provided on the bearing surface of said eccentric rotary actuating element over an area intersected by said radial lubricant conducting bore means.

4,498,407

SEWING MACHINE WORK PIECE TURNING DEVICE

Günter Landwehr, Bielefeld, and Horst Meyer, Bad Salzuflen, both of Fed. Rep. of Germany, assignors to Koch Adler AG, Fed. Rep. of Germany

Filed May 4, 1983, Ser. No. 491,266
Claims priority, application Fed. Rep. of Germany, May 6, 1982, 3216995; Sep. 23, 1982, 8226771[U]
Int. Cl.³ D05B *35/10, 39/00*
U.S. Cl. 112—308 **15 Claims**



1. A sewing machine having a sewing station with at least a needle and a presser foot, means including a four motion feeding dog for feeding a workpiece past said sewing station, a supporting plate positioned near said needle and having a guide edge for orienting said workpiece relative to said needle, turning means comprising an air chamber positioned above said work piece for turning said workpiece about an axis coinciding with the needle, a plurality of air nozzles leading from said air chamber for directing air jets from said nozzles in a spaced manner which is tangentially directed with respect to said needle and in an accutely angled manner toward said support plate, and means for pivotally moving said air chamber toward and away from said workpiece.

4,498,408

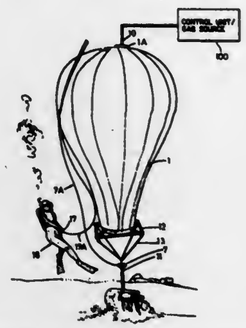
LIFTING BODY FOR DIVING

Sven I. Otteblad, Partille, and Ralph G. Dovertie, Gothenburg, both of Sweden, assignors to Aquastat AB, Gothenburg, Sweden

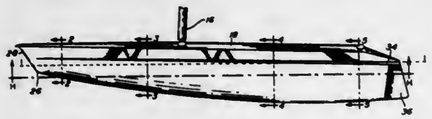
Filed Jul. 16, 1982, Ser. No. 398,884
Claims priority, application Sweden, Jul. 17, 1981, 8104428
Int. Cl.³ B63C *7/10*
U.S. Cl. 114—52 **30 Claims**

1. Lifting body for transporting, raising or lowering objects under water, provided with means for supplying and removing a lifting gas, and being of the type in which the lifting gas has essentially the same pressure as the surrounding mass of water, and which includes a first measuring means comprising one of a pressure meter and an echo-sounder for providing a depth position signal, characterized in that the depth position signal is arranged to be compared with a preset desired depth signal to regulate the means for supplying and removing the lifting gas, and the lifting body is provided with a second measuring means for providing an acceleration signal, which is coupled to the lifting gas supply means, and a lifting implement for attachment to an object to be raised, said second measuring means comprising a dynamometer arranged in a lifting means to measure the force in the lifting means, wherein the acceleration signal is coupled to a high-pass filter, the output signal of

which is arranged to be compared with a signal derived from the depth position signal and the desired depth signal, to generate a control signal for the means for supplying and removing the lifting gas.



4,498,409
MULTI-HULL SAILBOAT
Maurice Edel, Chemin du Moulin d'Amont, 69150 Decines, France
Filed Oct. 15, 1982, Ser. No. 434,556
Claims priority, application France, Oct. 15, 1981, 81 19634
Int. Cl.³ B63B *1/12*
U.S. Cl. 114—61 **6 Claims**



1. A hull for a multi-hull sailcraft, the hull being streamlined and including a bow section, a mid-hull section, and a stern section, the bow section and the fore of the mid-hull section having shallow draft and having a wide cross-section in order to provide maximum buoyancy, the stern section and the aft of the mid-hull section having a gradually deepening draft and a gradually narrowing V-shaped cross-section relative to the fore section of the mid-hull such that the aft of the mid-hull and the stern function as a leeboard, and the center of buoyancy tends to move forward as the hull is immersed deeper in water.

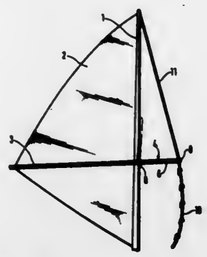
4,498,410
ELECTIVELY DETACHABLY COUPLED BALL JOINT AND PIVOT CUP COMBINATION FOR A WIND-PROPELLED SURFBOARD
James D. Budge, 1031 16th St., Santa Monica, Calif. 90403
Filed Jul. 28, 1982, Ser. No. 402,649
Int. Cl.³ B63B *15/00*
U.S. Cl. 114—91 **4 Claims**

1. An electively detachably coupled ball joint and pivot cup combination for electively detachably coupling a mast to a surfboard, said electively detachably coupled ball joint and pivot cup combination comprising:
a. a pivot cup which is pivotally and rotationally coupled to the surfboard;
b. an annular plate which is disposed on and mechanically coupled to the peripheral edge of the opening of said pivot cup;
c. a spherical member which has been cut into a plurality of sections which are loosely coupled to each other so that said plurality of sections of said spherical member may be either inserted into or removed from said pivot cup through said annular plate, with each of said plurality of sections of said spherical member being loosely coupled to the mast;
d. a sleeve into which the mast is inserted and which is slidably coupled to the mast; and
e. resiliently biasing means for resiliently biasing said sleeve against said plurality of sections of said spherical member so that said plurality of sections of said spherical member



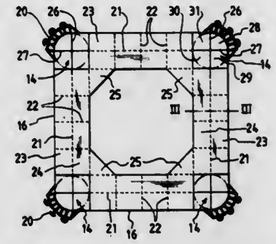
are resiliently biased against said annular plate and are secured in said pivot cup whereby the application of a force overcoming the resiliently biasing force of said resiliently biasing means moves said sleeve away from said plurality of sections of said spherical member thereby enabling said plurality of sections of said spherical member to move closer together in order to release said spherical member from said pivot cup.

4,498,411
SAILBOARD RIG AND BOOM
Frank P. Marker, Garmisch-Partenkirchen, Fed. Rep. of Germany, assignor to Hannes Marker, Garmisch-Partenkirchen, Fed. Rep. of Germany
Filed Apr. 28, 1982, Ser. No. 372,565
Claims priority, application Fed. Rep. of Germany, Apr. 30, 1981, 3117312
Int. Cl.³ B63H *9/10*
U.S. Cl. 114—97 **6 Claims**



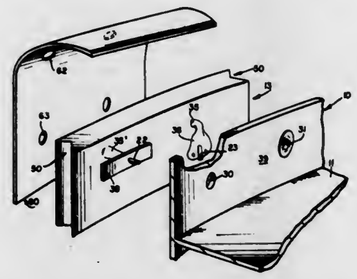
1. A sailboard rig comprising:
a mast;
a boom positioned substantially perpendicular to the mast;
a rigid extension member pivotably connected to the boom, said rigid extension being pivotable to an operative position wherein said rigid extension member extends in the plane of and a substantial distance from the boom;
stopping means for stopping the pivotable movement of the rigid extension member when in the operative position in the plane of the boom; and
spring means for pivotably biasing the rigid extension member away from the plane of the boom to an inoperative position,
whereby said rigid extension member can be moved from the inoperative position to the operative position in the plane of the boom to aid in turning a sail from a position parallel to the surface of the water to a position perpendicular to the surface of the water to facilitate removal of the sail from the water.

4,498,412
OFFSHORE PLATFORM
Hadar Lidén, Västra Frölunda, Sweden, assignor to Götaverken Arendal AB, Sweden
Filed Jun. 2, 1983, Ser. No. 500,308
Claims priority, application Sweden, Jun. 8, 1982, 8203536
Int. Cl.³ B63B *35/44*
U.S. Cl. 114—264 **3 Claims**



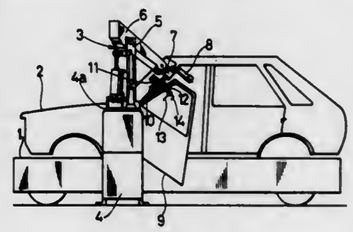
1. An offshore platform of the kind comprising an operating deck carried by four cylindrical columns supported by submerged pontoons, which said pontoons include four box structures having a substantially four-sided cross-section and formed into a symmetrical, square ring where each of said pontoon box structures is subdivided into two compartments by a longitudinal center line bulkhead, and a portion of the outward shell of each column is extended downwardly to form a rounded corner in the square ring, the columns lack external interconnection, and each of said columns is subdivided by cruciform, vertical bulkheads forming extensions of said longitudinal centerline bulkheads in the adjacent pontoon box structures.

4,498,413
CONSTRUCTION OF RIGID HULL INFLATABLE BOAT
William H. Cochran, 72 Water St., P.O. Box 32, Stonington, Conn. 06378
Filed Mar. 16, 1983, Ser. No. 475,768
Int. Cl.³ B63B *7/00*
U.S. Cl. 114—345 **14 Claims**



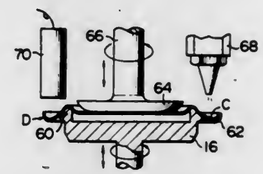
8. In combination with a rigid hull portion of a boat:
a plurality of inflatable bladders, positioned to generally define a ring around and generally at, or above, the water level of the hull, and including valve means associated with each bladder; and
a shroud of flexible material surrounding at least some of said bladders, said shroud having first and second end portions thereof, both end portions operatively connected to the rigid hull portion at approximately the same point, so that said shroud completely circumferentially surrounds at least some of said bladders when they are inflated and extends outwardly from said rigid hull portion.

4,498,414
VEHICLE BODY PAINTING ROBOT
Hiroshi Kiba, Hiroshima; Yoshimasa Itoh, Yokohama, and Kiyuji Kiryu, Kawasaki, all of Japan, assignors to Mazda Motor Corporation, Hiroshima and Tokico Ltd., Kawasaki, both of, Japan
Filed Nov. 29, 1982, Ser. No. 445,153
Claims priority, application Japan, Nov. 30, 1981, 56-193397
Int. Cl.³ B05B *13/02*
U.S. Cl. 118—663 **11 Claims**



1. A robot for coating a paint on a vehicle body which is transferred along a conveyor line, said robot comprising:
(a) an arm supported on a pedestal rotatably in both horizontal and vertical planes;
(b) a rotary actuator supported at the fore end of said arm;
(c) a paint applicator supported on the output shaft of said rotary actuator for spraying a paint toward said vehicle body; and
(d) a door handler supported on the output shaft of said rotary actuator and engagable with the door of said vehicle body to open or close said door.

4,498,415
DETECTION OF IMPROPER COATING OF SEALING COMPOSITION ON CAN END DISKS
Toshiharu Tsuchiya, Susono, and Mamoru Iwata, Oyama, both of Japan, assignors to Shiaryo Seikan Kabushiki Kaisha, Tokyo, Japan
Filed Oct. 25, 1983, Ser. No. 545,357
Claims priority, application Japan, Nov. 19, 1982, 57-202028
Int. Cl.³ B05C *3/02*; B05B *13/06*
U.S. Cl. 118—712 **3 Claims**



1. In apparatus for applying a coat of a sealing composition on annular, curled rims of can end disks, including a rotary rest for holding thereon one can end disk at a time for joint rotation therewith, and a nozzle supported in a first preassigned angular

position over the curled rim of the can end disk on the rest for dispensing each predetermined quantity of the sealing composition, each can end disk having its curled rim coated with the sealing composition from the nozzle while being rotated a prescribed number of revolutions on the rest, a system for detecting the improper coating of the sealing composition on the curled rims of the can end disks, the detecting system comprising:

(a) a photodetector disposed in a second preassigned angular position over the curled rim of the can end disk on the rest for detecting uncoated regions on the curled rim of the can end disk on the rest while the can end disk is in rotation with the rest and is being coated with the sealing composition from the nozzle, the photodetector putting out a first signal indicative of uncoated regions on the curled rim of the can end disk, the uncoated regions detected by the photodetector including both faulty and nonfaulty uncoated regions, a nonfaulty uncoated region being one which is not yet coated with the sealing composition, a said first signal indicative of a nonfaulty uncoated region being generated during the passage relative to the photodetector of a peripheral region of the curled rim which is ahead, with respect to a direction of rotation of the rotary rest, of a spot of the curled rim to which the sealing composition is first applied from the nozzle;

(b) a signal generator for putting out a second signal during a prescribed length of time toward the end of the prescribed period of rotation of the can end disk on the rest after the generation of the first signal indicative of the nonfaulty uncoated region has ended; and

(c) circuit means for processing the first and second signals for invalidating that portion of the first signal which represents the nonfaulty uncoated region in order to obtain a rejection signal which represents only a faulty uncoated region, if any, on the curled rim of the can end disk on the rest, said circuit means comprising an AND gate having input terminals receiving said first and second signals from said photodetector and said signal generator, respectively, said AND gate generating the rejection signal only when it receives concurrently the second signal and the first signal indicative of a faulty uncoated region.

4,498,416

INSTALLATION FOR TREATMENT OF MATERIALS FOR THE PRODUCTION OF SEMI-CONDUCTORS

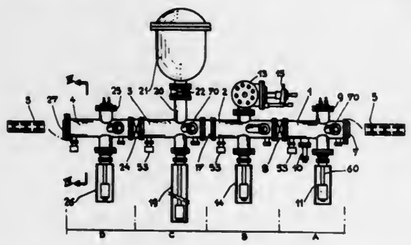
Pierre Bouchaib, L'Etang la Ville, France, assignor to Instrument S.A., Paris, France

Continuation of Ser. No. 339,590, Jan. 15, 1982, abandoned. This application Nov. 2, 1983, Ser. No. 547,463

Claims priority, application France, Jan. 27, 1981, 81 01486

Int. Cl.³ C23C *13/08*

U.S. Cl. 118—719 **1 Claim**



1. An installation comprising a series of modules for the sequential treatment, in vacuum chambers, of materials for the production of semi-conductors from slices of crystalline metarials, said slices being carried in complete batches by carriers (5) moved seriatim through said installation, and further comprising at least one airtight door (7) for introduction of said carriers into a first of said modules and at least one airtight door (27) for removal of said carriers from a last of said module, each of said modules comprising

(a) a straight, cylindrical tubular portion (1, 2, 3, 4) comprising rail means (47) parallel with the axis of the latter;

(b) a treatment chamber laterally offset from said tubular portion;

(c) means (61, 63) operated from the exterior of said module for manipulating the individual slices in said carrier and a said treatment means in a given module, and between different locations of said carrier, said means comprising a transfer bar (60) terminating in a circular plate (61) carrying a plurality of curved plates (63) with recess means (64) for selectively engaging a portion of a support (31) for a said slice to enable removal of said slice from said carrier;

(d) endless chain means (50, 51, 52) operated from the exterior of said modules for moving a said carrier along said rail means (47), said chain means carrying regularly spaced lugs having lateral projections which contact abutments (55) on said carrier surrounding said chain means, successive modules being disposed with their tubular portions and rail means aligned; and

(e) each of said carriers (5) having wheels (36), the position of said wheels and the cross section of said rail means (47) being so determined as to maintain a said carrier (5) on one portion of said rail when a portion of said carrier (5) is passing over an interruption of said rail means (47)

(f) valve means (8, 24) being interposed between successive modules operating under different pressures.

4,498,417

SUPPLY APPARATUS FOR THE ENRICHMENT OF AQUARIUM WATER WITH CO_2-GAS

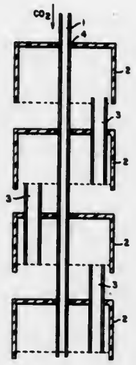
Arno Richter, Belm, Fed. Rep. of Germany, assignor to Warner-Lambert Company, Morris Plains, N.J.

Filed Jun. 28, 1983, Ser. No. 508,684

Claims priority, application Fed. Rep. of Germany, Jun. 29, 1982, 3224149

Int. Cl.³ A01K *63/04*

U.S. Cl. 119—5 **6 Claims**



1. Apparatus for enriching aquarium water with carbon dioxide gas, comprising:

an inlet conduit for carbon dioxide gas, said conduit being adapted to extend downwardly into the water of an aquarium;

a plurality of containers having open bases and closed sides and tops, said containers being arranged one above the other and positioned relative to said inlet conduit so that carbon dioxide gas issuing from said inlet conduit collects within and substantially fills a lower one of said containers to establish a first gas/water interface, said gas then overflowing said lower one of said containers to be collected within a higher container to establish a second gas/water interface; and

an overflow conduit fitted through the wall of said lower one of said containers, the lower end of said overflow conduit extending to said first gas/water interface and the upper end of said overflow conduit extending to said second gas/water interface.

4,498,418

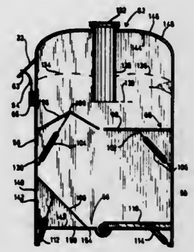
CATTLE CAR

Claude Chumley, P.O. Box 213, Harrogate, Tenn. 37752

Filed Nov. 8, 1982, Ser. No. 439,790

Int. Cl.³ B60P *3/04*; B61D *3/04*

U.S. Cl. 119—10 **12 Claims**



1. A vehicle for the long distance and humane transporting of livestock in which the vehicle is alternately suitable for the transporting of bulk particulate or granular matter, as well as other cargo comprising:

a substantially rectangular shaped support platform including wheel means to allow movement of said support platform over a selected route and having a long dimension and a short dimension thereby defining a selected perimeter;

an enclosing structure for housing livestock having a pair of side walls, a pair of end walls and a top wherein said side walls and end walls define a base with substantially the same shape as said selected perimeter, and which base joins to said support platform in a manner suitable for maintaining a closed environment, said enclosing structure defining at least one entryway to the interior of said enclosing structure, and a multiplicity of apertures for selectively providing light and ventilation to the interior of said enclosing structure, said enclosing structure further including means for closing said entryway and said multiplicity of apertures in a manner suitable for maintaining said closed environment;

a lower support floor located above said support platform, said lower support floor having a lower first half and a lower second half, each of said lower first and second halves including an interior edge supported by said support platform between said pair of side walls such that upon rotation of said first and second halves of said lower support floor about said interior edges, both first and second halves of said lower support floor slope toward the center of said enclosure;

lower support floor power actuators for rotating said lower first half and lower second half about said interior edges;

auger means supported below and parallel to said lower support floor and further located between said interior edge of said lower first half and interior edge of said lower second half, said auger means for transporting particulate or granular material to a selected location in said vehicle;

an environmental system for maintaining the temperature and other environmental parameters within said enclosed environment at preselected levels;

a multiplicity of open containers secured to said side walls which allow free access by said livestock to feed and water contained in said open containers;

first and second storage containers for storing food and water respectively;

means for providing feed to selected ones of said multiplicity of open containers from said first storage container;

means for providing water to other selected ones of said multiplicity of open containers from said second storage container; and

master control means for controlling said environmental system, said means for providing feed, and said means for providing water.

4,498,419

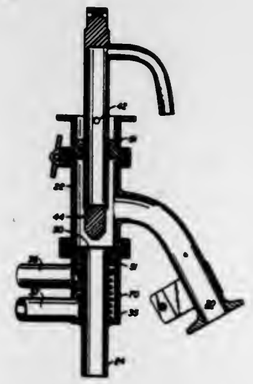
BACKWASH VALVE AND SYSTEM FOR TEAT CUP ASSEMBLY

Andrew J. Flocchini, 7050 Lakeville Hwy., Petaluma, Calif. 94952

Filed Oct. 18, 1982, Ser. No. 434,979

Int. Cl.³ A01J *7/00*

U.S. Cl. 119—14.18 **5 Claims**



1. A backwash valve for use between a teat cup assembly and a milk manifold comprising:

a main valve body defining a central valve chamber and including a main inlet, a main outlet and a valve seat along a fluid path between said main inlet and said main outlet, said main inlet fluidly connected to the teat cup assembly and the main outlet fluidly connected to the milk manifold; and

a valve head member movably mounted to the main valve body for movement between a first, milking position and a second, backwash position, said valve head member including:

a valve surface sized for mating engagement with said valve seat when said valve head member is in said second position thereby sealing said main outlet from said main inlet;

a head inlet; and

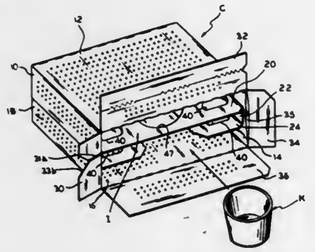
a head outlet fluidly connected to said head inlet, said head outlet disposed along said valve head member so to fluidly communicate with said central valve chamber when said valve head member is in said second, backwash position and to fluidly isolate said head outlet from said central valve chamber when said valve head member is in said first, milking position;

whereby said backwash valve allows the teat cup assembly to be backwashed between animals without disassembly of the teat cup assembly from the milk manifold.

4,498,420
CARTON FOR INSECTS

D. L. Botterman; N. A. Wolff, and H. T. Ver Planck, all of Arlington, Tex., assignors to Container Corporation of America, Chicago, Ill.

Filed Jan. 23, 1984, Ser. No. 572,870
Int. Cl.³ A01K *1/00*; B65D *5/48*
U.S. Cl. 119—15 2 Claims

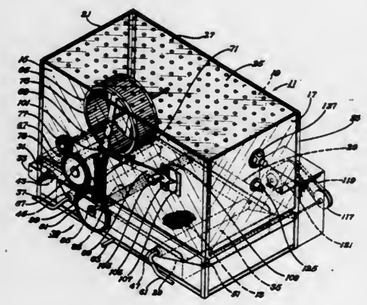


1. A carton for hatching, holding, feeding, and releasing insects, said carton being formed from a unitary blank of foldable paperboard and comprising:
(a) pairs of apertured, opposed top and bottom, side, and end wall panels foldably joined to each other to form a vented box-like external structure;
(b) certain of said end wall panels being readily openable to facilitate quick release of insects from said carton;
(c) an internal insect holding and feeding structure disposed intermediate said top and bottom wall panels;
(d) said internal structure including:
(i) a pair of parallel upper and lower panels spaced vertically from each other and from said top and bottom wall panels and extending between and connected to said side wall panels;
(ii) said upper and lower panels presenting apertures accommodating the passage of insects therethrough;
(iii) said upper and lower panels also presenting aligned holes for retaining in place an insect food holding container.

4,498,421
SELF-CLEANING CAGE

Robert O. Lovitt, Katy, Tex., assignor to Michael Douglas Fredrick, Houston, Tex.

Filed Jul. 19, 1982, Ser. No. 399,832
Int. Cl.³ A01K *1/03*, *1/01*
U.S. Cl. 119—17 7 Claims

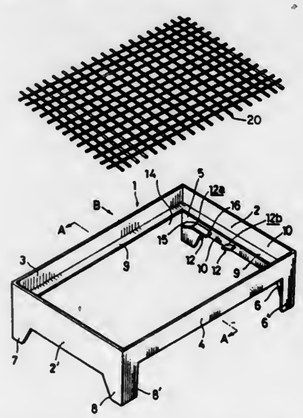


1. In a cage for small animals or the like having a perforated bottom to allow waste to be dropped by gravity exteriorly of the cage, a continuous periphery of walls extending upwardly from the bottom, at least one of the walls affording a view of the interior of the cage, at least one of the walls adapted at the top thereof to engage a member to form a lid; the improvement comprising:
a. a continuous closed-loop belt with a portion traversing underneath the perforated bottom to catch the wastes dropped therethrough; said belt traversing over a plurality of rollers beneath said portion and constraining said belt to pass contiguously to a scraper and interiorly of a cleaning pan for cleaning;
b. said scraper and waste collector disposed adjacent said belt upstream of said pan so as to scrape the wastes from the top surface of said belt before it traverses said cleaning pan;
c. said cleaning pan disposed downstream of said scraper and adapted to receive liquids condensed on and falling from said belt, said cleaning pan having a drain for draining off said liquids;
d. steam cleaning passageways traversing laterally across said belt interiorly of said cleaning pan for cleaning said belt such that liquids will collect in said cleaning pan; and
e. motive means for moving said belt such that its top surface passes beneath the perforate bottom, contiguously to said scraper and through said cleaning pan adjacent said steam cleaning passageways; said motive means including an animal-powered wheel suspended accessible to said animal and journalled for rotation responsive to locomotion of said animal and transducing means for translating said rotation of said wheel into movement of said belt;
said wheel having a ratchet to constrain rotation to a single direction and said transducing means including first and second co-engaging gears and a third gear and connected belt engaging means and moving said belt responsive to rotation of said third gear; said third gear being movable to engage said second gear for movement of said belt and to disengage from said second gear to prevent movement of said belt responsive to locomotion of said animal in said wheel.

4,498,422
BOTTOM BOX FOR PET CAGE

Teho Sou, 7-18 Higashiimazato 2-chome, Higashinari-ku, Osaka, Japan

Filed Oct. 31, 1983, Ser. No. 547,445
Int. Cl.³ A01K *31/06*
U.S. Cl. 119—17 2 Claims



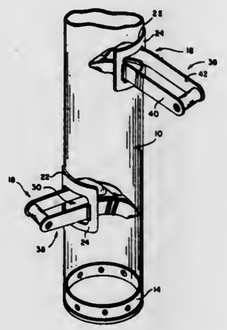
1. A bottom structure for underlying a pet cage comprising an integral plastic molding including a rectangular body having side walls, a front wall, and a back wall and being vertically open, a shelf on said side walls and at least said back wall and spaced down from the top of said walls, said shelf being perpendicular to the respective walls and leaving an open center section, said shelf being adapted to support a sheet of wire or

the like, said walls being of limited vertical extent, leg means adjacent the intersections of said walls for supporting said walls above a supporting surface, said side walls depending below both said front and rear walls, each of said side walls having a plurality of inward protuberances thereon spaced below said shelf, and a rectangular refuse receptacle open only at its top, said refuse receptacle having lateral flange means at its upper extremity received on said protuberances and below said shelf and a sheet of wire net or the like supported on said shelf, one protuberance on each side wall being relatively adjacent the front wall and having a ramp portion running up from relatively towardly the front wall to relatively towards the rear wall and joining a further portion substantially parallel to said shelf, and a second protuberance on each sidewall farther from the front wall than said one protuberance having only a ramp portion, the upper extremities of both of said protuberances being spaced from said shelf substantially the thickness of said flange means to support said flange means substantially against said shelf.

4,498,423
BIRD FEEDER

Leon Gainsboro, Wayland, Mass., and Peter A. Latham, Rye, N.H., assignors to OPUS, Inc., Framingham, Mass.

Filed Jan. 4, 1983, Ser. No. 455,601
Int. Cl.³ A01K *39/01*
U.S. Cl. 119—51 R 13 Claims



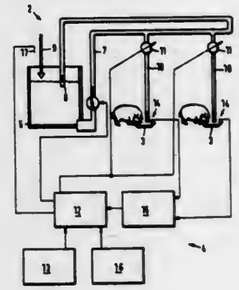
1. A bird feeder having an adjustable perch comprising:
a housing to contain bird feed, the housing having an opening through which a bird may feed;
a perch;
means for supporting the perch, said means being adjustable to vary the horizontal spacing of the perch with respect to the feeding opening;
said perch support being constructed and arranged so that the perch is located in a lower position when the perch support is in a more outwardly extended position.

4,498,424
ANIMAL FEEDING METHOD AND APPARATUS

Peter Leuschner, Emsbüren, Fed. Rep. of Germany, assignor to Hölscher & Leuschner GmbH & Co., Emsbüren, Fed. Rep. of Germany

Filed May 6, 1983, Ser. No. 492,082
Claims priority, application Fed. Rep. of Germany, May 15, 1982, 3218438
Int. Cl.³ A01K *5/02*
U.S. Cl. 119—51 R 16 Claims

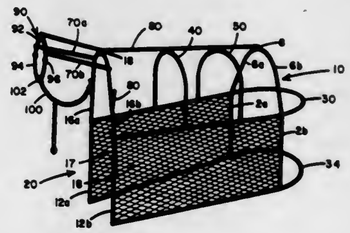
1. Animal feeding apparatus comprising a feeding trough from which animals eat, supply means for supplying animal feed to said trough, measuring means on said trough for measuring the rate at which the animals eat the animal feed from said trough such that said measured eating rate is indicative of the behavior value of the animals, and control means operable in response to said measured rate to control the amount of feed subsequently supplied to said trough based on said prior measured rate such that the animal's own behavior thereby determines the amount of feed supplied to said trough.



4,498,425
ANIMAL RESTRAINER

Robert D. Aanestad, Rte. 1, Box 189, Isle, Minn. 56342

Filed Jan. 9, 1984, Ser. No. 569,200
Int. Cl.³ A01K *15/04*
U.S. Cl. 119—96 6 Claims



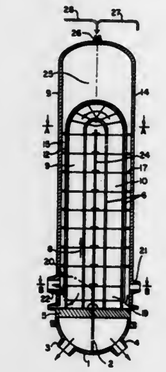
1. A portable apparatus for catching and restraining a small animal comprising:
(a) a first set of at least two U-shaped rods of similar shape and parallel to each other with open ends extending downward;
(b) a second set of at least two U-shaped rods of similar shape and parallel to each other, perpendicular to said first set of U-shaped rods with open ends extending in a first direction, said second set being fastened to said first set; whereas said ends of second set being fastened to one of said outermost rods of said first set;
(c) a support rod attached to the closed ends of said first set of U-shaped rods and extending beyond said first set in said first direction; and
(d) head restraining means for capturing the head of said animal, attached to said support rod at said extension in said first direction beyond said open ends of said second set.

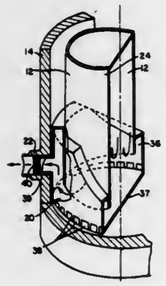
4,498,426

SUPERHEATED STEAM GENERATOR COMPRISING BANK OF U-TUBES

Jean-Luc Leroy, Gif-sur-Yvette, and Pol Dejeux, Nogent-sur-Marne, both of France, assignors to Framatome & Cie, Courbevoie, France

Filed Jan. 26, 1983, Ser. No. 461,065
Claims priority, application France, Feb. 4, 1982, 82 01784
Int. Cl.³ F22B *1/06*
U.S. Cl. 122—32 **3 Claims**





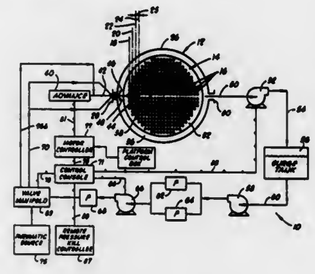
1. A superheated steam generator comprising
(a) a bank of U-tubes (6);
(b) a two-part channel head (1) for supplying said tubes with hot primary fluid and for discharging cooled primary fluid after it has passed through said tube bank and come into thermal contact with feed water to be vaporized;
(c) a secondary casing (14) enclosing said feed water;
(d) a tube plate (5) in which said tubes (6) of said tube bank are fixed and which is fastened to (i) said channel head (1) at its inlet face with which the ends of the tubes are flush, and to (ii) said secondary casing (14) at its outlet face through which said bank of tubes passes; and
(e) a casing (12) enclosing said bank of tubes and disposed inside said secondary casing (14) so as to form in conjunction with the latter an annular space (15) into which a primary water inlet connection (21) leads on the outlet or cold branch (10) side of said bank of tubes, said tube bank casing (12) having at least one opening (19) above said tube plate (5) for the passage of said feed water into the interior of said tube bank casing (12) in order to bring said feed water into contact with said cold branch (10);
(f) a separating partition (24) disposed between said cold branch (10) and a hot branch (9) of said tube bank through which the primary fluid passes out, thus enabling said feed water and then steam to be guided along said tube bank;
(g) a superheated steam recuperator (20) disposed in the proximity of the end of said hot branch (9) which passes through said tube plate (5), for the purpose of evacuating the superheated steam through a pipe connection (22) leading into said annular space (15);
(h) a free space (25) being provided inside said secondary casing (14) above said tube bank casing (12) which is completely closed at its upper part, in order to form a reserve of at least 20 tons of feed water for a thermal power of the steam generator of 1000 MW, this power being defined on the basis of the inlet temperature, the outlet temperature and the flow of primary fluid, said free space being in communication with said annular space (15) and with at least one means (26) of supplying water at a temperature lower than the temperature of the primary fluid to keep said free space continuously full of feed water during normal operation of the steam generator.

4,498,427

SLUDGE LANCE WITH MULTIPLE NOZZLE JET HEAD

Bradley L. Todd, Duncan, Okla., assignor to Halliburton Company, Duncan, Okla.

Filed Mar. 21, 1983, Ser. No. 477,181
Int. Cl.³ F22B *37/48*; F28G *7/00*
U.S. Cl. 122—379 **5 Claims**



1. A fluid lancing apparatus for cleaning sludge from between tubes of a tube bundle of a heat exchanger, said tubes being arranged in a plurality of parallel rows, said apparatus comprising:
an elongated lance including a jet head on an end of said lance, said jet head including transversely directed nozzle means;
said lance having first indicia means thereon for identifying a point on said lance spaced by a first predetermined longitudinal distance from said nozzle means;
an alignment rod, having a first end means for abutting a tube of a predetermined row of said plurality of parallel rows of tubes of said tube bundle, and having a second indicia means thereon for identifying a point on said alignment rod spaced by a second predetermined longitudinal distance from first end means; and
said lance and alignment rod being so arranged and constructed that when said first end means of said alignment rod is abutted against said tube of said predetermined row, and when said first indicia means of said lance is aligned with said second indicia means of said alignment rod, said nozzle means of said jet head is aligned with a predetermined space between adjacent tube rows of said tube bundle.

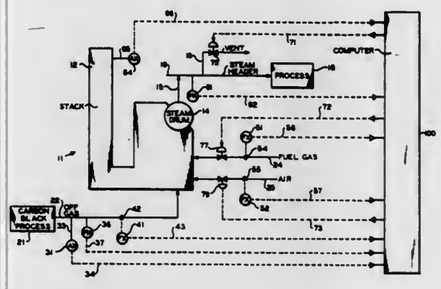
4. A method of initially positioning a lance to clean sludge from between tubes of a tube bundle of a heat exchanger, said tubes being arranged in a plurality of parallel rows, said method comprising the steps of:
providing a first indicia means on said lance and thereby identifying a point on said lance spaced by a first predetermined longitudinal distance from a transversely directed nozzle means of a jet head of said lance;
providing a second indicia means on an alignment rod and thereby identifying a point on said alignment rod spaced by a second predetermined longitudinal distance from a first end of said alignment rod;
inserting said alignment rod through an access opening of said heat exchanger and abutting said first end of said alignment rod against a tube of a predetermined row of said plurality of rows of tubes of said tube bundle;
inserting said lance through said access opening substantially parallel to said alignment rod and moving said lance forward until said first indicia means of said lance is aligned with said second indicia means of said alignment rod; and
thereby aligning said nozzle means with a predetermined space between adjacent tube rows of said tube bundle.

4,498,428

COMBUSTION CONTROL FOR A BOILER

Ronald J. LaSpisa; Merle R. Likins, Jr., and William R. King, all of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Apr. 10, 1984, Ser. No. 598,610
Int. Cl.³ F22B *5/00*
U.S. Cl. 122—448 R **12 Claims**



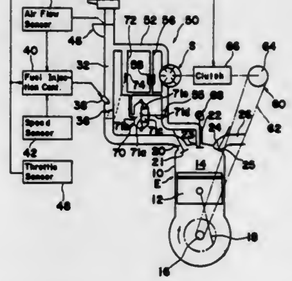
1. Apparatus comprising:
a boiler having a burner and a stack associated therewith;
a steam header conduit;
means for providing steam from said boiler to said steam header conduit;
means for venting steam from said steam header conduit;
means for providing a low BTU content offgas to said burner;
means for providing a fuel gas to said burner, wherein the BTU content of said fuel gas is much greater than the BTU content of said offgas;
means for providing air to said burner, wherein the combustion of said offgas and said fuel gas with said air at said burner supplies heat to said boiler;
means for establishing a first signal representative of the actual ratio of the heat supplied by said offgas to said boiler to the total heat supplied by said offgas and said fuel gas to said boiler;
means for establishing a second signal representative of the desired ratio of the heat supplied by said offgas to said boiler to the total heat supplied by said offgas and said fuel gas to said boiler;
means for comparing said first signal and said second signal and for establishing a third signal which is responsive to the difference between said first signal and said second signal, wherein said third signal is scaled so as to be representative of the amount of steam which should be vented from said steam header conduit in order to maintain the actual ratio represented by said first signal substantially equal to the desired ratio represented by said second signal;
Means for controlling the venting of steam from said steam header conduit in response to said third signal;
means for establishing a fourth signal representative of the actual pressure in said steam header conduit;
means for establishing a fifth signal representative of the desired pressure in said steam header conduit;
means for comparing said fourth signal and said fifth signal and for establishing a sixth signal which is responsive to the difference between said fourth signal and said fifth signal, wherein said sixth signal is scaled so as to be representative of the total amount of heat which must be provided to said boiler by said fuel gas and said offgas in order to maintain the actual steam header pressure represented by said fourth signal substantially equal to the desired steam header pressure represented by said fifth signal;
means for establishing a seventh signal representative of the actual total heat being supplied to said boiler by said offgas and said fuel gas;
means for comparing said sixth signal and said seventh signal and for establishing an eighth signal which is responsive to the difference between said sixth signal and said seventh signal, wherein said eighth signal is scaled so as to provide a control signal for manipulating the flow rate of said fuel gas; and
means for manipulating the flow rate of said fuel gas in response to said eighth signal.

4,498,429

FUEL INTAKE SYSTEM FOR SUPERCHARGED ENGINE

Haruhiko Satow; Haruo Okimoto; Shigeru Sakurai, and Hiroyuki Oda, all of Hiroshima, Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan

Filed Sep. 3, 1982, Ser. No. 414,858
Claims priority, application Japan, Sep. 7, 1981, 56-141344; Sep. 21, 1981, 56-150420
Int. Cl.³ F02B *29/00, 33/00*; F02M *69/00*
U.S. Cl. 123—26 **12 Claims**



1. A fuel intake system for an internal combustion engine having a combustion chamber, said fuel intake system comprising, in combination:
primary intake means for supplying a combustible airfuel mixture to the combustion chamber;
auxiliary intake means including a supercharger for supplying at least supercharged air to the combustion chamber, said auxiliary intake means being operable during a high load engine operating condition to supply the supercharged air to the combustion chamber at least during a period in which the chamber undergoes a compression stroke;
drive means adapted to be driven by the engine for driving the supercharger to cause the supercharger to produce the supercharged air;
clutch means operable both to couple the supercharger to the drive means during the high load engine operating condition to drive the supercharger and to decouple the supercharger from the drive means during a low load engine operating condition to bring the supercharger to a halt; and

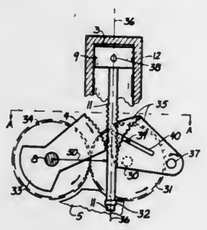
control means provided in the auxiliary intake means for adjusting the pressure of the supercharged air, said control means including a bypass passage communicated at a first end to a portion of the auxiliary intake means between the supercharger and a flow control valve arranged in the auxiliary intake means downstream of the supercharger, a second end of the bypass passage being communicated with another portion of the auxiliary intake means upstream of the supercharger, a bypass valve disposed in the bypass passage for controlling the effective cross-sectional area of the bypass passage, and a bypass valve actuator for opening and closing the bypass valve during the low load engine operating condition and during the high load engine operating condition, respectively independent of backflow upstream of said flow control valve.

4,498,430

LINEAR RECIPROCATING PISTON ENGINE

Robert L. Giuliani, P.O. Box 30862, Honolulu, Hi. 96820; Karen A. Giuliani, and Mark A. Giuliani, both of 45-310 Akimala Pl., Kaneohe, Hi. 96744

Filed Nov. 14, 1983, Ser. No. 551,179
Int. Cl.³ F02B *75/32*
U.S. Cl. 123—58 R **18 Claims**



3. An apparatus for converting motion between linear and rotary, the combination comprising:

a housing;

at least one crankless power shaft rotatably supported by the housing;

at least one member having linear reciprocating motion;

at least one rod movable along a linear path, the rod communicating with the member at the one end for effecting linear reciprocating motion therebetween;

at least one crankless first element non-rotatably secured to the power shaft, the first element adapted for direct communication with the rod for effecting continuous rotary motion in the power shaft;

the direct communication occurring during a part of the linear reciprocating motion in one direction;

at least one second element non-rotatably secured to the power shaft;

at least one fourth element rotatably supported by the housing;

the fourth element adapted to communicate directly with the rod during movement in a direction opposite the one direction of the linear recirocating motion; and

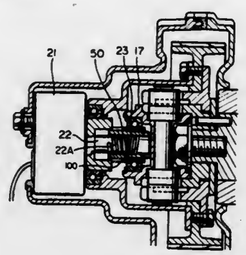
at least one third element communicating with the second and fourth elements for transmitting motion therebetween wherein the said communications convert motion between linear of the member and continuous rotary of the power shaft.

4,498,431

VARIABLE VALVE-TIMING APPARATUS IN AN INTERNAL-COMBUSTION ENGINE

Norihiko Nakamura, Mishima, and Toyokazu Baika, Susono, both of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Nov. 23, 1982, Ser. No. 443,919
Claims priority, application Japan, Feb. 8, 1982, 57-17595
Int. Cl.³ F01L *1/34*
U.S. Cl. 123—90.15 **9 Claims**



6. A system for connecting, in an internal-combustion engine, a crankshaft to a camshaft, said apparatus comprising

a driven member having a first axis of rotation common to that of the camshaft;

a power-transmitting member for connecting the crankshaft to the driven member;

a first sleeve member fixedly connected to the camshaft;

a second sleeve member fixedly connected to the driven member, said first and second sleeves being coaxial with the first axis;

one of said first and second sleeve members being rotatably inserted into the other; said first sleeve member and second sleeve member having two sets of elongated first and second slits, one set of said slits being circumferentially spaced from the other set, the first slit of each set being located in the first sleeve member, the second slit of each set being located in the second sleeve member adjacent to the corresponding first slit in the first member, the adjacent slits in each set being skewed with respect to said first axis;

abutment means arranged in said adjacent slits of each set for causing a relative angular displacement between the first and the second sleeve members in response to movement of the abutment means along the first axis, said abutment means comprising two corresponding sets of first and second rollers which are arranged in said first and second slits, respectively, of each of set of slits so that the rollers contact corresponding slits, and means for allowing free and independent rotation of each of the rollers about a second axis transverse to the first axis, the two first slits being arranged so that they contact the corresponding first rollers on only one side of said second axis, and the two second slits being arranged so that they contact the corresponding second rollers on only the other side of said second axis, thereby eliminating backlash between the inner and outer sleeves;

a slider on which said abutment means are mounted, said slider being movable along said first axis while rotatable about the first axis;

drive means for moving the slider along the first axis, said drive means comprising a rotary motor and means arranged between the rotary motor and the slider for changing rotation of the rotary motor into linear movement of the support means; and

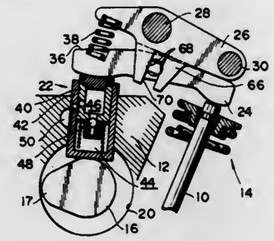
means responsive to the operating conditions of the engine for operating the drive motor, whereby the relative angular position of the camshaft with respect to the crankshaft is controlled so as to obtain a variable valve timing.

4,498,432

VARIABLE VALVE TIMING ARRANGEMENT FOR AN INTERNAL COMBUSTION ENGINE OR THE LIKE

Seinosuke Hara; Shunichi Aoyama, and Kazuyuki Miisho, all of Yokosuka, Japan, assignors to Nissan Motor Company, Limited, Japan

Filed Jun. 15, 1982, Ser. No. 388,705
Claims priority, application Japan, Jun. 16, 1981, 56-87396[U]; Jun. 30, 1981, 56-98125[U]
Int. Cl.³ F01L *1/34*; F02D *13/02*
U.S. Cl. 123—90.16 **19 Claims**



12. In a valve train for inducing reciprocating motion in a valve having

a cam mounted on a cam shaft which is driven to continuously rotate, means for controllably varying valve operation of said valve, comprising:

a telescopic hydraulic tappet in following engagement with said cam;

a rocker arm pivotally mounted at one end on said tappet and engaging said valve at the other end thereof;

a reaction member against which said rocker arm is abutable to establish a fulcrum after a specified movement of said rocker arm by said hydraulic tappet, said reaction member connected to a bias means for biasing apart the reaction member and the rocker arm; and

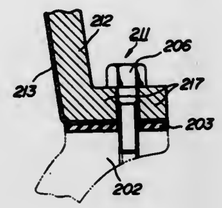
control means for selectively supplying hydraulic fluid under pressure to said telescopic hydraulic tappet whereby operating characteristics of said valve are varied varying timing of the establishment of said fulcrum.

4,498,433

MEMBER SUCH AS AN ENGINE COVER ADJACENT TO AN AUTOMOTIVE ENGINE

Naoki Ogawa, Yokohama, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

Continuation of Ser. No. 150,901, May 16, 1980, abandoned. This application Jun. 20, 1983, Ser. No. 505,724
Claims priority, application Japan, May 18, 1979, 54-61766; May 31, 1979, 54-67765; May 31, 1979, 54-67766; May 31, 1979, 54-67767
Int. Cl.³ F02M *9/10*
U.S. Cl. 123—90.38 **11 Claims**



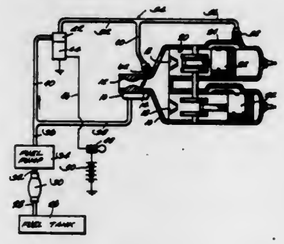
1. A noise-reducing member attached to an engine, said member being shaped in the form of a layer and having a flange portion for attachment to said engine, said member being formed from a homogeneous body comprising fibers selected from the group consisting of organic and inorganic fibers, said fibers having been mixed with a resin binder and a crosslinking agent for the binder, and heated to effect cross linking of the crosslinking agent to form said shaped layer; said flange portion only further being impregnated with a synthetic resin, without impregnating the remainder of said member, to form a resulting resin-impregnated hardened flange portion; said member, when attached to the engine through said flange portion, being effective to damp vibrations transmitted from the engine.

4,498,434

FUEL PRIMING SYSTEM WITH INTEGRAL AUXILLIARY ENRICHMENT FEATURE

Gene F. Baltz, Lake Villa, Ill.; Amos M. Clark, Kenosha, Wis.; David J. Hartke, Waukegan, Ill., and Donovan K. Jourdan, Kenosha, Wis., assignors to Outboard Marine Corporation, Waukegan, Ill.

Filed Jun. 29, 1983, Ser. No. 508,943
Int. Cl.³ F02N *17/00*
U.S. Cl. 123—187.5 R **6 Claims**



1. A crankcase scavenged, two-cycle engine comprising a manifold adapted to be connected to a carburetor for receiving therefrom a fuel/air mixture, a crankcase connected to said manifold for receiving therefrom the fuel/air mixture, a check valve between said manifold and said crankcase for preventing fluid flow from said crankcase to said manifold and permitting fluid flow from said manifold to said crankcase, a combustion chamber extending from said crankcase, a transfer passage communicable between said crankcase and said combustion chamber for transferring the fuel/air mixture from said crankcase to said combustion chamber, a normally closed valve adapted to be connected to a source of fuel and including an outlet, a first conduit communicating between said outlet and said transfer passsage, a second conduit communicating between said outlet and said induction manifold, and means connected to said valve for selective opening thereof.

4,498,435

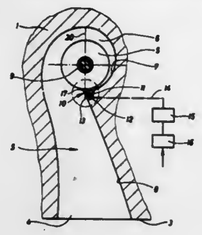
FUEL-INJECTION INTERNAL-COMBUSTION ENGINE

Günter Krömer, Heilbronn, Fed. Rep. of Germany, assignor to Audi Nsu Auto Auto Union Aktiengesellschaft, Fed. Rep. of Germany

Filed Oct. 15, 1982, Ser. No. 434,598
Claims priority, application Fed. Rep. of Germany, Oct. 22, 1981, 3141880
Int. Cl.³ F02M *35/10*
U.S. Cl. 123—306 **4 Claims**

1. A fuel-injection internal-combustion engine with direct injection, having an air suction passage formed as a twist forming passage means with walls and comprising a curved passage section having a valve chamber with a circumferential wall joined thereto, the valve chamber enclosing an inlet valve and said circumferential wall being substantially rotationally symmetrical to the longitudinal axis of said inlet valve, the passage section opening mainly tangentially into the valve chamber and forming an edge between one of said passage walls and the circumferential wall of the valve chamber, and having means

for influencing the twist in the air suction passage comprising an elastically deformable hollow body which is located in an undercut cavity provided in the edge and extending substantially parallel to the longitudinal axis of the inlet valve, the



hollow body being deformable by pressure means connected to its internal space such that at least part of the hollow body can be made to project in to the air suction passage in dependence upon operating parameters of the engine.

4,498,436

AUXILIARY AIR SUPPLYING APPARATUS FOR AN INTERNAL COMBUSTION ENGINE

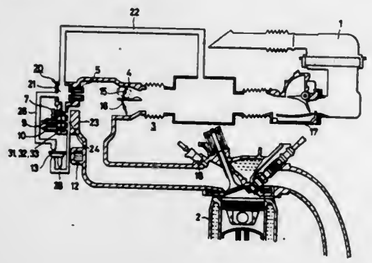
Tomofusa Horiuchi, Yokohama, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

Filed Apr. 29, 1983, Ser. No. 490,227

Claims priority, application Japan, May 7, 1982, 57-66165[U]

Int. Cl.³ F02M *23/04*

U.S. Cl. 123—339 **11 Claims**



1. An auxiliary air supplying apparatus for an internal combustion engine having throttle valves disposed in an intake passageway, comprising,

a bypass passageway having a first side connected to said intake passage upstream of said throttle valves,

an air box connected to a second side of said bypass passageway,

a plurality of auxiliary air passageways being branched in parallel between said air box and said intake passageway downstream of said throttle valves, and

means for controlling the flow rate of air which flows respectively through said auxiliary passageways in accordance with operating conditions of the engine.

4,498,437

CENTRIFUGAL GOVERNOR FOR INTERNAL COMBUSTION ENGINE

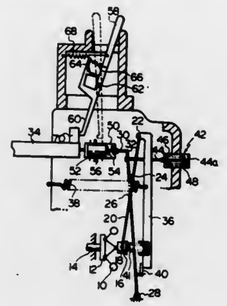
Masayoshi Ohkoshi, Matsuyama, and Yoshiro Suzuno, Kawagoe, both of Japan, assignors to Diesel Kiki Company, Ltd., Tokyo, Japan

Filed Dec. 6, 1982, Ser. No. 447,382

Claims priority, application Japan, Dec. 19, 1981, 56-190177[U]

Int. Cl.³ F02D *1/04*

U.S. Cl. 123—373 **10 Claims**



1. In a centrifugal governor for an internal combustion engine having flyweights responsive to an engine speed, a shifter rod driven by the flyweights to move against a governor spring which acts on the shifter rod through a tension lever, a guide lever pivotally connected with the shifter rod, and a floating lever pivotally connected with the guide lever to transmit a displacement of the guide lever to a control rod of the fuel injection pump, the improvement comprising:

first means for yieldably forcing the control rod to a maximum fuel injection volume position in a fuel increasing direction when the engine is to be started up; and

second means for moving the control rod in a fuel decreasing direction opposite to the fuel increasing direction while causing the first means to yield, in response to a predetermined engine speed during engine starting;

whereby the fuel injection volume from the pump is increased to the maximum during engine starting and, thereafter, controlled in accordance with a varying engine speed;

the first means comprising an articulated lever assembly engagable with the control rod at one end thereof and the second means comprising a relatively slidable assembly disposed between the floating lever and the control rod;

the articulated lever assembly comprising a first lever and a second lever pivotally mounted at one end thereof on a common shaft, said first lever being operated into an angular movement at the other end, said second lever being engagable with the control rod at the other end.

4,498,438

IGNITION TIMING CONTROL UNIT FOR A CAR ENGINE AND METHOD THEREOF

Kunihiko Sato, Okazaki, Japan, assignor to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Mar. 9, 1984, Ser. No. 587,976

Claims priority, application Japan, Jun. 24, 1983, 58-114471

Int. Cl.³ F02P *5/04*; F02D *37/02*

U.S. Cl. 123—418 **6 Claims**

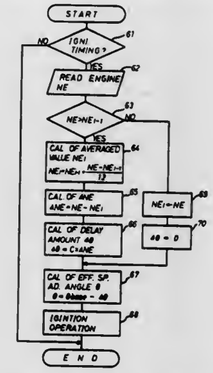
1. An ignition timing control unit for a car engine which comprises an operational control circuit for controlling the output timing of ignition current to be applied to a spark plug in accordance with a crank angle signal produced for every equal crank angle in synchronization with the rotation of a crank shaft; said operational control circuit further comprising;

(a) engine speed detecting means for detecting the engine speed in accordance with the crank angle signal,

(b) memory means for storing averaged values of the engine speed,

(c) basic spark advance angle calculating means for calculating a basic spark advance value from running conditions of the engine,

(d) averaging means for newly carrying out an averaging process in accordance with the engine speed and an averaged value of the engine speed and afterward storing the



result of the averaging process into said memory means as one averaged value of the engine speed and for updating said average value of the engine speed which has been stored in said memory means, and

(e) calculating means for calculating an amount to be corrected of the spark advance angle in accordance with the difference between the averaged out value and the engine speed and for controlling the output timing of the ignition current in accordance with the amount thus corrected of the basic spark advance angle value by said amount to be corrected.

4,498,439

CARBURETOR FITTED WITH ELECTROMAGNETIC DEVICES FOR INTERCEPTING THE FLOW OF FUEL DURING ACCELERATOR RELEASE

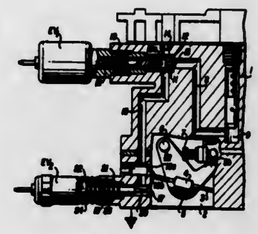
Mauro Franchini, Bologna; Angelo Sarasso, Turin, and Angelo Puccetti, Lagaro, all of Italy, assignors to Weber S.P.A., Turin, Italy

Filed Mar. 21, 1983, Ser. No. 477,440

Claims priority, application Italy, Apr. 13, 1982, 3397 A/82

Int. Cl.³ F02M *3/08*

U.S. Cl. 123—438 **5 Claims**



1. Carburetor for internal combustion engines, fitted with electromagnetic devices for intercepting the flow of fuel during accelerator release, comprising at least: a main barrel; a throttle positioned in said main barrel and which turns with a shaft; a main lever splined on said shaft and connected to to the accelerator to position said throttle; a speed adjusting screw to define the position of said throttle when accelerator is released; an electrical contact between said speed adjusting screw and said main lever to inform an electronic control unit of the position of said throttle and in particular of the definite position of said speed adjusting screw; an idle system which starts from a cavity full of fuel and which opens into said main barrel by means of progression and idle mixture holes and which comprises a first hole for metering the emulsion air; said carburetor being fitted with a first solenoid valve which is controlled by said power unit to close said first hole; said carburetor being characterised by the fact of having an obturator rod for assisting with an opening positioned in said idle system; said obturator being part of a second solenoid valve for moving it from a first position in which said obturator totally or partially closes said opening to a second position in which said obturator totally opens said opening to increase vacuum signal on said first hole and vice-versa; said control unit serving to send control signals to said second solenoid valve to maintain said obturator in said second position for a definite period of time subsequent to accelerator release.

4,498,440

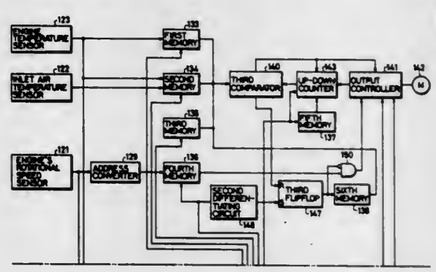
MIXTURE CONTROL APPARATUS FOR CARBURETOR

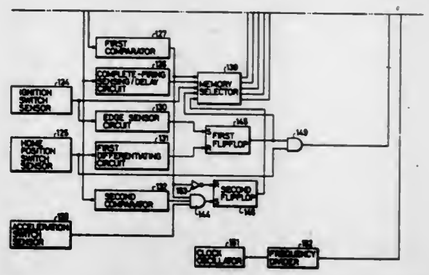
Toshio Nomura; Yasuhiro Imai; Tomio Aoi; Tetsuo Nakajima, and Hiroshi Irino, all of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 2, 1984, Ser. No. 595,867

Int. Cl.³ F02M *7/24*

U.S. Cl. 123—438 **1 Claim**





1. A mixture control apparatus for a carburetor comprising a choke valve disposed on the upstream side and a throttle valve on the downstream side respectively in an air inlet relative to a venturi section admitting an opening end of a main fuel nozzle, first rotary cam means interlocked with said choke valve and adapted to operate said choke valve from the totally opened position to the totally closed position thereof, second rotary cam means interlocked with said throttle valve and adapted to operate said throttle valve to a prescribed degree of opening for fast idling, and an electric motor for driving said first and second rotary cam means and determining the rotational positions thereof according to the operating condition of an internal combustion engine, which mixed control apparatus

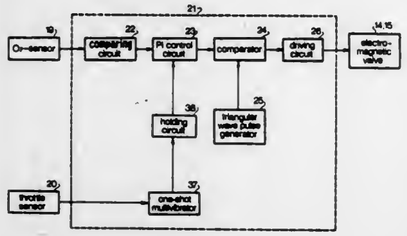
is characterized in that said electric motor is adapted to be rotated in a normal direction and in a reverse direction from a home position thereof as the boundary, that said first and second cam means have the shapes thereof selected so that when said electric motor is rotated in the normal direction from said home position, said choke valve will be retained at a substantially fully opened position and said throttle valve will have the degree of opening thereof increased and, when said electric motor is rotated in the reverse direction from said home position, said choke valve will have the degree of opening thereof decreased and said throttle valve will have the degree of opening thereof increased, that the transition of said electric motor from the reverse rotation side past the home position to the normal rotation side is effected based on a logical conjunction of at least the three conditions that the engine temperature should exceed a boundary temperature between the cold and hot states, the engine's rotational speed should exceed the prescribed value, and the throttle lever should be mechanically separated from said second rotary cam means, and that the characteristic of hysteresis is conferred upon the switch between the cold and hot states by causing said boundary temperature between the cold and hot states to be switched in accordance with whether the engine is in the cold state or in the hot state, and that said electric motor is provided, with means capable of preventing said electric motor from moving from the side of normal rotation thereof past said home position to the side of reverse rotation thereof after said engine has been changed to its hot state and unless a stop of said engine is detected.

4,498,441

AIR-FUEL RATIO CONTROL SYSTEM

Masaaki Ohgami, and Mitsuo Nakamura, both of Tokyo, Japan, assignors to Fuji Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 5, 1981, Ser. No. 308,708
Claims priority, application Japan, Oct. 13, 1980, 55-142817
Int. Cl.³ F02M 7/24
U.S. Cl. 123—440 **10 Claims**



1. In an air-fuel ratio control system for an internal combustion engine having an induction passage, a throttle valve in the induction passage, a carburetor, an electromagnetic valve means for correcting the air-fuel ratio of the air-fuel mixture supplied to said carburetor, an O_2-sensor for detecting oxygen concentration of exhaust gases from the engine, and a feedback control circuit comprising a proportion and integration circuit responsive to the output of said O_2-sensor for producing a control output signal for driving said electromagnetic valve means for correcting the air-fuel ratio; the improvement comprising

detecting means for detecting the operation of said engine for producing an output signal when the throttle valve of the engine is widely opened;

means comprising a one-shot multivibrator responsive to said output signal of said detecting means for producing another output signal for a fixed predetermined period always the same;

voltage applying means for continuously applying a fixed predetermined voltage always the same to said feedback control circuit when said voltage applying means is connected to said feedback control circuit;

first switch means responsive to said another output signal of said one-shot multivibrator for connecting said voltage applying means with said feedback control circuit; and

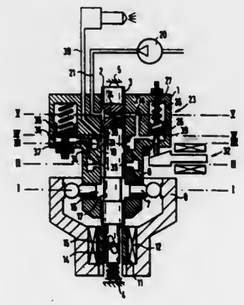
second switch means responsive to said another output signal of said one-shot multivibrator for rendering said integration circuit operative as an amplifier for said predetermined voltage from said voltage applying means.

4,498,442

FUEL INJECTION PUMP

Raymond Tissot, Genas, France, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Apr. 6, 1983, Ser. No. 482,650
Claims priority, application Fed. Rep. of Germany, Jun. 29, 1982, 3224152
Int. Cl.³ F02M 41/02
U.S. Cl. 123—447 **8 Claims**



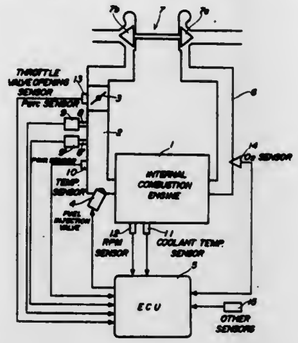
1. A fuel injection pump having at least one work chamber enclosed by a pump piston in a cylinder in a housing, which work chamber can be made to communicate with an associated fuel injection location via at least one supply line during a compression stroke of the pump piston and with a fuel supply conduit during the filling stroke of the pump piston; a relief conduit leading to a reservoir chamber having a movable wall loaded by a restoring force, the communication of the relief conduit with the work chamber being opened after an adjustable compression stroke of the pump piston, by means of a control edge guided in synchronism with the drive of the pump piston, wherein the location of a control point of the control edge relative to a reference point of the pump piston drive means is variable and wherein the reservoir chamber is connected to the work chamber during the filling stroke of the pump piston, characterized in that the said fuel supply conduit communicates with an adjustable fuel quantity metering device, and said control edge is one limiting edge of a control groove disposed on a jacket face of a distributor rotatable in synchronism with the pump piston and guided in a cylinder wherein the width of said control groove determines the piston stroke during which said relief conduit and said reservoir chamber are connected to said work chamber, the distributor having a distributor groove communicating with the pump work chamber, by means of which distributor groove one after another of a multiplicity of supply lines leading away from the cylinder can be made to communicate, upon the rotation of the distributor, with the pump work chamber during a compression stroke of the pump piston, and that the location of the control point of the control edge relative to a reference point of the pump piston drive means is variable in accordance with operating parameter.

4,498,443

FUEL SUPPLY CONTROL METHOD HAVING FAIL-SAFE FUNCTION FOR ABNORMALITIES IN INTAKE PASSAGE PRESSURE DETECTING MEANS OF AN INTERNAL COMBUSTION ENGINE HAVING A TURBOCHARGER

Shunpei Hasegawa, Niiza, and Akihiro Yamato, Shiki, both of Japan, assignors to Honda Motor Co., Ltd., Tokyo, Japan

Filed May 20, 1983, Ser. No. 496,590
Claims priority, application Japan, May 24, 1982, 57-87753
Int. Cl.³ F02M 51/00
U.S. Cl. 123—478 **4 Claims**



1. A method for electronically controlling the quantity of fuel being supplied to an internal combustion engine having a turbocharger, an intake passage and a throttle valve arranged in said intake passage, and means for detecting pressure in said intake passage at a location downstream of said throttle valve, in response to values of engine control parameters including at least a value of intake passage absolute pressure of the engine detected by said pressure detecting means, the method comprising the steps of:

(1) detecting whether or not there is an abnormality in the functioning of said pressure detecting means;

(2) determining whether or not the engine is operating in a predetermined supercharged operating condition;

(3) determining the quantity of fuel by the use of a predetermined pressure value in lieu of the valve of said intake passage absolute pressure detected by said pressure detecting means when an abnormality is detected in the functioning of said pressure detecting means, only while the engine is determined to be operating in an operating condition other than said predetermined supercharged operating condition, and supplying the determined quantity of fuel to the engine; and

(4) interrupting the fuel supply to the engine when an abnormality is detected in the functioning of said pressure detecting means, while the engine is determined to be operating in said predetermined supercharged operating condition.

4,498,444

METHOD OF CONTROLLING ENGINE

Kenji Tabuchi, Katsuta; Masami Shida, Mito, and Toshio Ishii, Katsuta, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jan. 27, 1984, Ser. No. 574,580
Claims priority, application Japan, Jan. 28, 1983, 58-11445
Int. Cl.³ F02M 51/00
U.S. Cl. 123—478 **4 Claims**

1. A method of controlling engine comprising steps of:

generating a reference cylinder signal each time the shaft of a 4-stroke cycle engine is rotated twice;

generating a positional signal each time the shaft of said engine is rotated once;

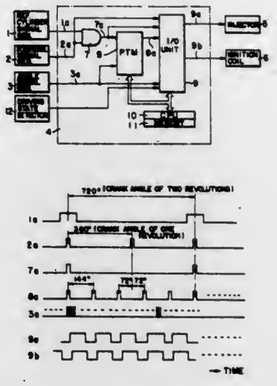
generating a reference signal on the basis of said reference cylinder signal and said positional signal;

generating a fuel injection signal on the basis of said positional signal or said reference signal; and

generating an ignition on the basis of said reference signal,

wherein said method further includes steps of:

monitoring the generation of said reference cylinder signal and said positional signal;



generating said reference signal ½ its period after the first signal when the first signal after the start of the engine is only said positional signal; and

generating said reference signal immediately after said positional signal when said reference signal and said positional signal are detected first.

4,498,445

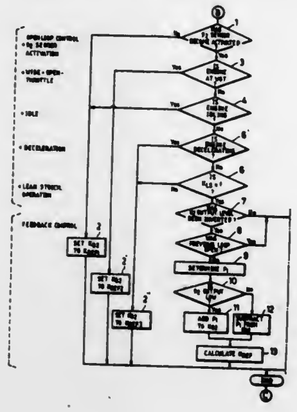
AIR/FUEL RATIO FEEDBACK CONTROL SYSTEM ADAPTED TO OBTAIN STABLE ENGINE OPERATION UNDER PARTICULAR ENGINE OPERATING CONDITIONS

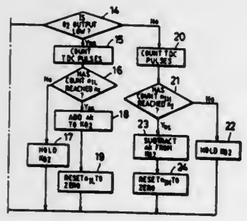
Shumpei Hasegawa, Niiza; Noriyuki Kishi, Tokyo, and Takashi Koumura, Saitama, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed May 6, 1983, Ser. No. 492,399
Claims priority, application Japan, May 6, 1982, 57-75615
Int. Cl.³ F02M 51/00
U.S. Cl. 123—489 **2 Claims**

1. An air/fuel ratio feedback control system for an internal combustion engine having an exhaust system, comprising: a sensor arranged in said exhaust system of said engine, for detecting the concentration of exhaust gases emitted from said engine, and electrical circuit means for controlling the air/fuel ratio of an air/fuel mixture being supplied to said engine to a predetermined value, by the use of a first coefficient having a value variable in response to the output of said sensor, said electrical circuit means including means for detecting operating conditions of said engine inclusive of a plurality of divided subregions of a feedback control region in which is effected the control of the air/fuel ratio of said air/fuel mixture responsive to an output generated by said sensor, and a plurality of particular operating regions other than said feedback control region, means for calculating a mean value of values of said first coefficient occurring when said engine is operating in each of said divided subregions of said feedback control region, and means for selecting one of such calculated mean values of said first coefficient corresponding to each of said particular operating regions, when it is detected by said operating condition detecting means that said engine is operating in said each particular

operating region, and means for controlling the air/fuel ratio of said air/fuel mixture by the use of said one selected mean





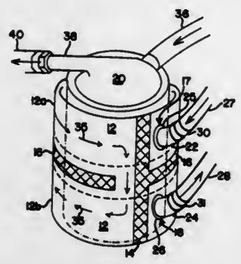
value, in place of said first coefficient, while said engine is operating in said each particular operating region.

4,498,446

DIESEL FUEL HEATER

Daniel G. Judson, P.O. Box 417, Lisbon, Me. 04250

Filed Jun. 29, 1983, Ser. No. 508,821
Int. Cl.³ F02M *31/00*
U.S. Cl. 123—557 **8 Claims**



1. A diesel fuel heater for preheating diesel fuel at a diesel fuel filter in diesel powered vehicles having a diesel engine cooled by a liquid coolant circulating system comprising:

flexible elongate fluid jacket means having sufficient length for wrapping around the diesel fuel filter of the diesel engine, said flexible elongate fluid jacket means defining a channel having inlet means and outlet means for operatively coupling into the liquid coolant circulating system of the diesel engine, thereby preheating diesel fuel at the filter by transferring heat from the circulating liquid coolant to diesel fuel passing through the diesel fuel filter;

said channel defined by the flexible elongate fluid jacket means being distributed and arranged to cover substantially the entire surface of the circumference of the diesel fuel filter thereby insulating and protecting the diesel fuel filter from cold air wind during operation of the vehicle;

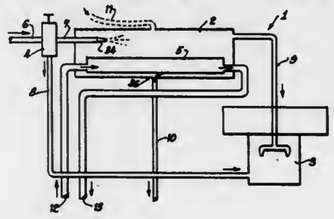
and means for removable and replaceably securing said flexible elongate fluid jacket means in operative position around a diesel fuel filter for rapid placement of the flexible elongate fluid jacket means around the diesel fuel filter during cold weather by an operator of the diesel powered vehicle.

4,498,447

GASOLINE VAPORIZER FOR INTERNAL COMBUSTION ENGINE

Richard Harvey, 10828 Buggywhip Dr., Spring Valley, Calif. 92078

Filed Oct. 6, 1983, Ser. No. 539,647
Int. Cl.³ F02M *31/00*
U.S. Cl. 123—557 **5 Claims**



1. A vaporizing apparatus for use in connection with the carburetor of a gasoline internal combustion engine which comprises:

a closed chamber having a gasoline inlet and a vapor outlet;

heating means within said chamber;

means for diverting a portion of the fuel supplied to the carburetor into said outlet;

means associated with said inlet for spraying said fuel against said heating means in order to produce vapors;

ducting means to deliver said vapors into the carburetor wherein: said means for diverting comprises:

a metering valve having an inlet port and first and second outlet ports;

an adjustable gate controlling the distribution of fuel admitted through said inlet between said outlet ports; and

ducting means connecting said inlet port to a pressurized fuel supply, said first outlet port to the fuel inlet of the carburetor and said second outlet port to the gasoline inlet chamber said heating means comprises a pipe through which a hot fluid derived from the engine cooling system is circulated; and

said chamber comprises a perforated septum lying horizontally across the lower half of the chamber;

said pipe is in contact with said septum;

said means for spraying includes at least one nozzle located above said septum.

4,498,448

RELEASE DEVICE

James D. Fletcher, P.O. Box 218, Bodfish, Calif. 93205

Filed Jul. 22, 1982, Ser. No. 401,028
Int. Cl.³ F41B *5/00*
U.S. Cl. 124—35 A **5 Claims**

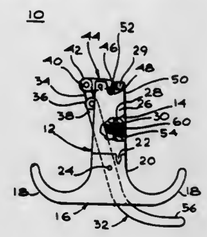
1. An improved mechanical bowstring release device automatically biased to the locked position, said device comprising, in combination:

a. a hollow housing having a longitudinal space therein extending to the front end thereof;

b. a bowstring retainer pivotably secured in said space and including a bowstring-retaining end extending transversely into and terminating in said housing at the front end of said space and pivotable between a locked bowstring-retaining first position blocking the front end of said space to trap said bowstring in said space and an unlocked bowstring-releasing space-opening second position, said retainer also including a coupling end extending laterally of said housing; and,

c. trigger means for locking said retainer in said first position and for urging said retainer into said unlocked second position to release said bowstring, said trigger means being:

i. an elongated lever arm pivotally secured in said space, the rear end of said arm curving rearwardly of said housing,



the front end of said lever arm positioned generally rearwardly of and adjacent said coupling end of said retainer,

ii. coupling means connected to and positioned between said coupling end of said retainer and said front end of said lever arm, said coupling means extending out of said housing and rotatable generally trasversely with the front end of said lever arm into said housing and into said unlocked position;

iii. a generally transverse biasing spring in said frame bearing against said lever arm forward of its pivot point in said space to bias said retainer into said locked position; and,

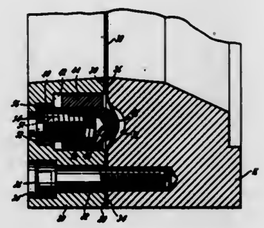
iiii. generally transverse retainer movement limit means rearward of said spring in said housing preventing rotational movement of said retainer into an unlocked position unbiased by said biasing spring towards said locked position.

4,498,449

PRECISION TENSIONING DEVICE FOR ID SAW BLADE

George S. Kachajian, Franklin Lakes; Robert E. Steere, Jr., Boonton, and Wesley Charles, Pompton Lakes, all of N.J., assignors to Silicon Technology Corporation, Oakland, N.J.

Filed Apr. 5, 1982, Ser. No. 365,301
Int. Cl.³ B28D *1/04*
U.S. Cl. 125—15 **3 Claims**



1. Apparatus for tensioning an inner diameter blade disposed within said apparatus comprising:

a first annular blade clamping member having a first annular clamping surface for confronting a first side of said blade, a first annular recess disposed radially inwardly of said first clamping surface, a plurality of cylindrical recesses in communication with said first annular recess and disposed in a circular array coaxial with said blade, and a plurality of access openings each connecting one of said cylindrical recesses to the ambient;

a second annular blade clamping member having a second annular clamping surface for confronting a second side of said blade which is opposite said first side of said blade, said second annular clamping surface adapted to be aligned with said first annular clamping surface, and a second annular recess adapted to face said first annular recess;

connecting means extending through said first annular clamping surface, said blade and said second annular clamping surface for securely clamping said first and second annular blade clamping members to each other along said first and second annular clamping surfaces with said blade therebetween thereby preventing any movement of said blade relative to said first and second annular clamping surfaces, said connecting means disposed internal to said first and second annular blade clamping members;

a tensioning ring disposed within said first annular recess, such that said tensioning ring is located radially inwardly of said first and second clamping surfaces and said connecting means, said tensioning ring formed with a protruding portion adapted to abut the portion of said blade located between the associated first and second annular recesses, and said tensioning ring having internal threads at a plurality of locations on the side of said tensioning ring opposite said protruding portion;

a plurality of tensioning screws disposed within said first annular recess with one end of each tensioning screw threadably engaging an associated one of said internal threads of said tensioning ring and the other end of each tensioning screw located within an associated cylindrical recess and being in communication with said ambient through an associated access opening, said tensioning screws having diameters greater than the diameters of said recess openings, and each of said tensioning screws being formed with an internal socket at the end remote from said associated tensioning ring and proximate to said access opening whereby said sockets communicate with the ambient through said access openings to permit movement of said tensioning screws to move said tensioning ring axially to selectively deform said blade into and out of said second annular recess while closing off said cylindrical recess and said first and second annular recess from the ambient.

4,498,450

GANG SAW FOR CUTTING BLOCKS OF STONE

Artur Klein, Netphen, Fed. Rep. of Germany, assignor to General Electric Company, Worthington, Ohio

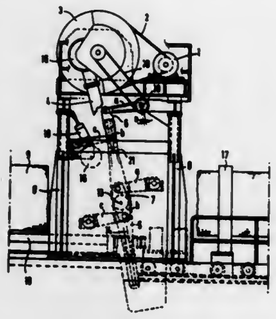
Continuation of Ser. No. 268,448, May 29, 1981, abandoned. This application Jul. 20, 1983, Ser. No. 515,448
Claims priority, application Fed. Rep. of Germany, Feb. 3, 1981, 3103482
Int. Cl.³ B28D *1/02*
U.S. Cl. 125—16 R **5 Claims**

1. An improved vertical gang saw for sawing blocks of stone or the like, having a saw frame which is symmetrically provided with saw blades, is attached to a support, and is driven by drive means, the improvement which comprises:

said frame being driven at its center by said drive means to provide an up stroke and a down stroke from said frame center;

said frame being attached to said support by straight line guide means connected to said frame respectively at an end and at said center of said frame, said straight line guide means arranged to provide approximately straight line movement of said frame;

said frame end straight line guide means being moveable to reciprocatingly pivot said frame about is center at the end of each stroke, whereby a first portion of said saw blades



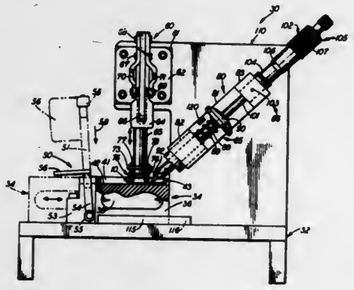
engage said blocks during each up stroke, a second portion of said saw blades engage said blocks during each down stroke, and each said portion contacts different portions of said blocks.

4,498,451

CUTTING ARTICLES ALONG KNOWN PLANES

Richard K. Beltz, Hamburg, and Donald M. Large, Temple, both of Pa., assignors to AT&T Technologies, Inc., New York, N.Y.

Filed Aug. 5, 1983, Ser. No. 520,662
Int. Cl.³ B28D *1/32*
U.S. Cl. 125—23 R **12 Claims**



1. A method of cutting an article having at least one plane known to facilitate splitting therealong, comprising:
- supporting the article in a laterally unrestrained manner on a surface capable of developing lateral restraint by force applied normal to and upon an exposed top surface of the supported article;
- applying resilient force substantially normal to and upon the exposed top surface of the article along the splitting plane sufficient to cause separation stresses along such plane and to develop lateral resistance to an expected cutting force; and
- advancing a cutter at an exposed top edge of the article into and along the splitting plane at a given angle to the exposed top surface, for a sufficient distance and with sufficient separation of cut surfaces, that a split develops and propagates through the article along the splitting plane.

4,498,452

KETTLE WITH ASH CATCHER

Erich J. Schlosser, Lindenhurst, and George Stephen, Jr., Palatine, both of Ill., assignors to Weber-Stephen Products Co., Palatine, Ill.

Filed Jun. 21, 1982, Ser. No. 390,242
Int. Cl.³ F24C *1/16*
U.S. Cl. 126—9 R **4 Claims**



1. Cooking apparatus comprising a hemispherical cooking vessel having a generally vertical center axis with a plurality of spaced openings and an ash catcher located below said cooking vessel with a plurality of legs supporting said cooking vessel and ash catcher, each of said legs having first and second ends and being generally U-shaped between said ends and having a threaded portion on said first end received into one of said openings in said cooking vessel with a fastener received on said threaded portion, said legs being circumferentially-spaced and extending radially outwardly to form lower support surfaces each of said legs having portions extending inwardly and upwardly with said second ends connected to said ash catcher, said ash catcher having a plurality of horizontal slots respectively receiving said second ends of said legs through a sliding connection whereby said cooking apparatus can be assembled without any tools and bases of said U-shaped legs define said lower support surfaces with said cooking vessel supported on said first ends of said legs and said ash catcher supported on said second ends of said legs and whereby said ash catcher forms a part of the support for said cooking vessel.

4,498,453

COOKING APPLIANCE

Katsuroh Ueda, Yamatokoriyama, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

PCT No. PCT/JP82/00448, § 371 Date Jul. 22, 1983, § 102(e) Date Jul. 22, 1983, PCT Pub. No. WO83/01991, PCT Pub. Date Jun. 9, 1983
PCT Filed Nov. 24, 1982, Ser. No. 522,363
Claims priority, application Japan, Nov. 25, 1981, 56-189741
Int. Cl.³ F24C *15/16*
U.S. Cl. 126—21 A **3 Claims**



1. A cooking appliance comprising:
- a heating chamber means for accommodating food to be heated;
- a combustion chamber being positioned behind the heating chamber means and having a gas burner means provided therein for generating hot combustion air;
- an air blast chamber surrounding the sides and back of the combustion chamber;

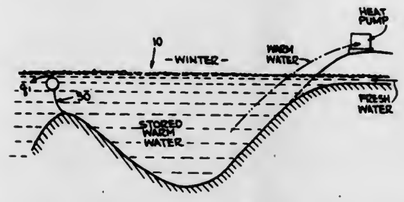
- a boundary wall means for separating the heating chamber means from the combustion chamber and the air blast chamber;
- said wall means having a plurality of vent hole means centrally located therein for allowing vapors from the heating chamber means to pass into the combustion chamber;
- said wall means also having a plurality of blast hole means, located along the periphery thereof, for allowing combustion air mixed with the vapors to be recirculated from the combustion chamber through the air blast chamber into the heating chamber means;
- a fan means, positioned in the air blast chamber behind the combustion chamber, for recirculating combustion air mixed with the vapors from the combustion chamber through the air blast chamber, through the blast hole means in the wall means, and back into the heating chamber means; and
- an exhaust passage means, arranged in direct communication with the combustion chamber, for creating a slight negative air pressure in the combustion chamber so that part of the combustion air mixed with the vapors is exhausted to the outside atmosphere and the rest is recirculated to the heating chamber means while the fan means is operating.

4,498,454

METHOD OF AND MEANS FOR SEASONALLY STORING HEAT IN A BODY OF WATER

Gad Assaf, 23 Keren Kayemet St., Rehovot, Israel

Filed Jan. 14, 1981, Ser. No. 225,004
Int. Cl.³ F24J *3/02*
U.S. Cl. 126—415 **18 Claims**



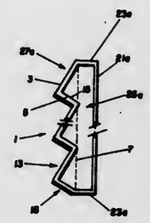
1. A method for storing heat in a closed basin having an upper layer of relatively fresh water connected by a strait to a larger body of relatively saltier water comprising the step of selectively controlling the exchange of water between the body of water and the basin as a function of the season of the year.

4,498,455

GLAZING MATERIAL

Ronald J. Gramm, 113 Snowden Dr., Pittsburgh, Pa. 15229

Filed Nov. 17, 1980, Ser. No. 207,449
Int. Cl.³ G02B *17/00*
U.S. Cl. 126—417 **7 Claims**



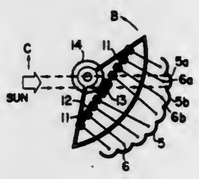
1. An apparatus for the selected admittance, absorption and reflection of radiant solar energy from a source thereof depending on the angle of incidence of said radiant solar energy relative to said apparatus, comprising: a first series of parallel planar members and a second series of parallel planar members contiguously and alternatively disposed along a common plane in an angled relation to each other; with one planar member from both of said series of planar members together with the common plane along which said members are angularly disposed forming a continuum of triangles in which the first angle of the triangle at the point of intersection of said planar member from the first series with said common plane is in the range of between about 15° to 60°, the second angle of the triangle, at the point of intersection of said planar member from said second series with said common plane is in the range of between about 30° to 90° and the third angle of the triangle is between about 60° to 120°; one of said series of members defining a transparent zone for admittance therethrough of radiant solar energy and the other of said series of planar members manufactured from a transparent material, and defining in at least a portion thereof, an opaque zone including a radiant solar energy absorbing material on one side thereof and a radiant solar energy reflecting material thereon between said absorbing material and the source of radiant solar energy, whereby radiant solar energy contacting one side of said planar members in said opaque zone is absorbed and radiant solar energy contacting the opposite side thereof is reflected; and a spaced transparent planar member mounted in a spaced relation with the first and second series of planar members, said spaced transparent planar member being generally parallel with the common plane.

4,498,456

SELF-TRACKING MECHANISMS FOR SOLAR COLLECTORS

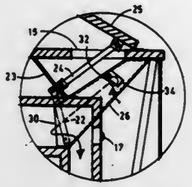
Kenichi Hashizume, Tokyo, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Dec. 23, 1983, Ser. No. 564,679
Claims priority, application Japan, Dec. 27, 1982, 57-232325
Int. Cl.³ F24J *3/02*
U.S. Cl. 126—425 **20 Claims**



1. A solar tracking mechanism comprising:
- a frame;
- a main collector attached to said frame;
- a plurality of elements each made out of a shape memory alloy and each contracting to a memorized shape when the temperature of said element is above a predetermined temperature;
- means for concentrating solar energy on said plurality of elements;
- stretching means for applying a stretching force to each of said elements to permit each element to contract when said element is heated past said predetermined temperature and to stretch each element when said element is not heated past said predetermined temperature; and
- means associated with said main collector and said stretching means, for transmitting mechanical motion caused by the stretching and contracting of said element to said main collector to rotate said main collector.

4,498,457
CONTROL FOR SOLAR SYSTEM
William Kreamer, P.O. Box 673, St. Joseph, Mich. 49085
Filed Apr. 22, 1983, Ser. No. 487,619
Int. Cl.³ F24J *3/02*
U.S. Cl. 126—429 **4 Claims**



1. In an exteriorly mounted solar heating system for heating an enclosed space such as a room in a building wherein air from said space is directed into the system housing through an inlet port, heated by being passed over an absorber exposed to solar energy and then redirected through an outlet port into said space, an improved control comprising

means for providing a vent to atmosphere from the top of said system housing

enclosure members for said outlet port and said vent

a temperature sensitive actuator connected to said members for simultaneously opening said outlet port and closing said vent and vice versa

said actuator being exposed to and sensing the temperature of air from said enclosed space passing through said inlet port and being powered solely by temperature sensitive phase-change material which exhibits a melting temperature in the upper region of the normal comfort range, changing phase responsive to the temperature sensed

whereby air heated by passing over said absorber is either vented to atmosphere when air passing from said space reaches a pre-determined elevated temperature or redirected into said space when said passing air drops to a pre-determined lower temperature, and

means for biasing the temperature of air sensed by said actuator so as to adjust said control's effective room temperature set-point

said biasing means comprising means for introducing a controllable fraction of air heated by said absorber into the air from said space to which the actuator is exposed so that it may sense the temperature of the combination.

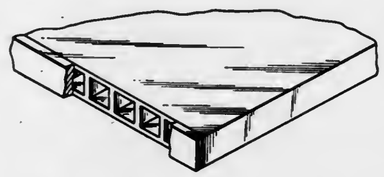
4,498,458
SOLAR HEATING PANEL
Louis H. Soper, 36742 Oak St., Fremont, Calif. 94536
Continuation-in-part of Ser. No. 228,111, Sep. 23, 1981, abandoned. This application May 12, 1983, Ser. No. 494,091
Int. Cl.³ F24J *3/02*
U.S. Cl. 126—429 **2 Claims**

1. A solar collector plate for use in a solar panel assembly comprising an elongated flat sheet metal plate of rectangular shape adapted to be positioned between adjacent studs or rafters forming part of the frame of a building structure which comprise the sidewalls of said solar panel assembly, said collector plate having a length corresponding to the length of said solar panel assembly and width corresponding to the distance between said adjacent studs or rafters and adapted to be positioned intermediate an outer transparent glazing panel and an inner insulating panel comprising the respective outer and inner faces of said panel assembly to thereby provide inner and outer sections within and along the length of said panel assembly, said collector plate including a base area having an opening through which air to be heated enters said assembly and flows upwardly in separate paths through said inner and outer sections and outlet means at the top of said panel assembly whereby said heated air may be discharged for use, a series of baffle members fastened to both the front and rear faces of said collector plate in parallel relation at spaced intervals along the length thereof, each of said baffle members having a length corresponding to the width of said collector plate with one series of baffle members thereof having a width extending from said front face of said collector plate to said outer transparent face and another series of baffle members having a width extending from said rear face of said collector plate to said



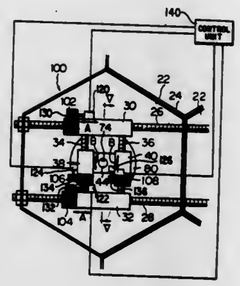
inner insulating wall, each said baffle member being a J-shaped channel having a flat top portion adapted to abut against said collector plate and a flat bottom portion adapted to abut against said outer transparent glazing panel and said inner insulating panel, respectively, and means in the base of each of said baffle members for directing the flow of air through and along the length of said inner and outer sections of said panel assembly.

4,498,459
PHASE-CHANGE HEAT STORAGE BUILDING PANELS
Eliyaho Korin, Beer Sheva; Elazar Rappaport, Ramat Ha-Sharon; Dov Pasternak, Arad; Aharon S. Roy, Beer-Sheva, and David Wolf, Omer, all of Israel, assignors to Ben-Gurion University of the Negev, Beer Sheva, Israel
Filed Dec. 3, 1982, Ser. No. 446,572
Int. Cl.³ F24J *3/02*
U.S. Cl. 126—430 **8 Claims**



1. A phase change heat storage, light and temperature control building panel comprising a sealed housing having at least two walls transparent to visible light delimiting at least one intermediate space filled with a liquid-solid phase-change heat-storage material wherein said material is a salt mixture comprising from about 10–90% $CaBr_2.6H_2O$, about 90–10% $CaCl_2.6H_2O$ and a neucleating agent, said material being substantially transparent to visible light in solid and in liquid phase, adsorbs heat while melting, releases heat while solidifying and undergoes phase change at a temperature range of from about 5°–28° C.

4,498,460
SOLAR COLLECTOR
Kei Mori, 3-16-3-501, Kaminoge, Setagaya-ku, Tokyo, Japan
Filed Dec. 27, 1983, Ser. No. 566,062
Int. Cl.³ F24J *3/02*
U.S. Cl. 126—440 **7 Claims**



1. In a solar collector having a lens for converging sunlight and a fiber optic cable having a light receiving end located at a focal point of the lens, the sunlight converged by the lens being guided by the fiber optical cable to a preselected location, the combination comprising:

a support block for supporting said fiber optical cable;

first positioning means on said support block for moving the light receiving end of the fiber optic cable along the optical axis of the lens;

said first positioning means comprising a through bore formed in the support block, a holder member for holding an end portion of the fiber optical cable which is adjacent to the light receiving end, a recess extending axially in one of the wall of said through bore and an outer peripheral surface of said holder member, a lug formed on the other of the wall of the through bore and the outer peripheral surface of the holder member to be engaged in said recess, a thread formed in an outer periphery of the holder member, and a first gear element engaged with said thread at an inner peripheral surface thereof, and having teeth formed in an outer peripheral surface thereof, the fiber optical cable being movable along an axis of the through bore through said first gear element;

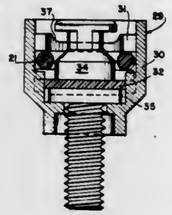
second positioning means for positioning the support block in two different directions which are perpendicular to the optical axis of the lens and to each other, said second positioning means comprising threaded guide rods which extend perpencidular to the optical axis of the lens and to each other, and second gear elements respectively held in threaded engagement with said guide rods, the support block being movable along the threaded guide rods through said second gear elements;

first drive means including a motor for driving said first gear element of the first positioning means; and

second drive means including motors for driving said second gear elements of the second positioning means;

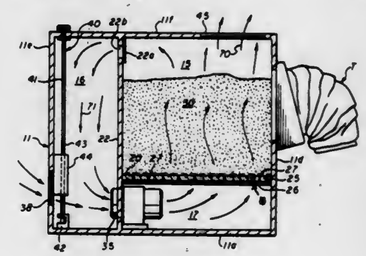
whereby the light receiving end of the fiber optical cable is movable along said optical axis and in two directions perpendicular to each other and perpendicular to said optical axis by the motors of said first and second drive means to thereby cause the light receiving end of the fiber optic cable to coincide with the focal point of the lens.

4,498,461
COUPLING TO A BONE-ANCHORED HEARING AID
Bo Hakansson, Sanatoriegatan 27, Göteborg, Sweden (416 53)
PCT No. PCT/SE82/00411, § 371 Date Jul. 26, 1983, § 102(e) Date Jul. 26, 1983, PCT Pub. No. WO83/02047, PCT Pub. Date Jun. 9, 1983
PCT Filed Dec. 1, 1982, Ser. No. 522,161
Claims priority, application Sweden, Dec. 1, 1981, 8107161
Int. Cl.³ H04R *25/00*; A61F *1/24*
U.S. Cl. 128—1 R **3 Claims**



1. Coupling, primarily intended for mechanical transmission of sound information from a vibration generating apparatus such as a transducer (8) to the skull of a hearing impaired person, comprising a first coupling part (5,9,29,39,52), tightly anchored in the skull, and a second coupling part (7,17,38,62) attachable to said first part and arranged at the transducer (8), so that at least one vibration transmitting surface is formed between the coupling parts, wherein the vibration transmitting surfaces (18,50) are located inside the outer surface (20) of the first coupling part (9,29,39,52), and said first coupling part (9,29,39,52) is disposed in such a way that the outer surface thereof (20) is located essentially at the same level as the outer surface (22) of the skull.

4,498,462
FLUIDIZED BED THERAPY APPARATUS
Ernest J. Henley, 359 Westminister Dr., Houston, Tex. 77024
Filed Nov. 5, 1981, Ser. No. 318,376
Int. Cl.³ A61H *29/00*
U.S. Cl. 128—24.1 **10 Claims**



7. Apparatus for therapeutic massage of parts of the human body comprising:

a. a cabinet;

b. a chamber in said cabinet having a bottom wall and side walls together defining a space wherein said bottom wall forms a distributor, a mass of solid particles contained in said space to constitute a bed in which the body part may be immersed;

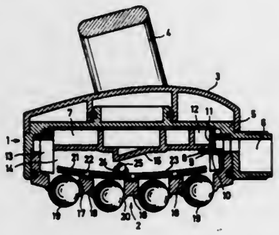
c. means to force gas upwardly through the distributor to create and maintain an ebullient condition of the particles;

d. a tubular member through which the body part may be passed for immersion in the bed;

e. means to conduct the gas from the chamber after it has passed through the mass of particles and recirculate it through said distributor;

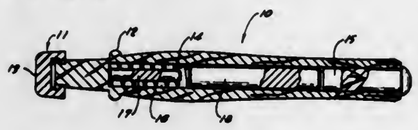
f. conducting means to conduct fresh gas for circulation upwardly through the distributor; and
g. means to regulate the amount of fresh gas received from said conducting means.

4,498,463
MASSAGE APPARATUS
Helmut Roming, Linberg 27, D-7230 Schramberg 11, Fed. Rep. of Germany
Filed Jan. 13, 1982, Ser. No. 339,148
Claims priority, application Fed. Rep. of Germany, Jan. 20, 1981, 3101538
Int. Cl.³ A61H *1/00*
U.S. Cl. 128—37 **18 Claims**



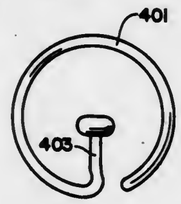
1. A massage apparatus comprising:
a casing having a water turbine therein, the turbine being rotatable about an axis, the casing having means for attachment to a supply of water, the casing having a working surface and the working surface having a plurality of openings therein arranged laterally around said axis;
a drive mechanism within the casing, the drive mechanism rotating the water turbine by water supplied to the casing, the turbine having at least one eccentric projection directed toward the working surface;
a movable transmission plate between the water turbine and the working surface for transmitting an axial movement produced by the eccentric projection; and,
a plurality of massage bodies movably mounted at the openings in the working surface and arranged around the axis defined by rotation of the turbine, the massage bodies being individually axially movable over an axial stroke between an extreme outward position at which the bodies are captive in the casing and located beyond the transmission plate, and a range of inward positions through which the bodies are moved under influence of the transmission plate.

4,498,464
CHIROPRACTIC INSTRUMENT
Darrell W. Morgan, Jr., 53-780 Avenida Diaz, La Quinta, Calif. 92253
Filed Jun. 21, 1982, Ser. No. 390,235
Int. Cl.³ A61N *23/00*
U.S. Cl. 128—54 **7 Claims**



1. A chiropractic instrument for adjusting a patient's spine by striking the instrument against the vertebrae of the spine, said instrument comprising:
an elongated body piece having a striking end and a second end;
a longitudinal bore formed axially in said elongated body piece, said bore having a first termination end wall near said striking end at one end of the bore and having a second termination end wall near the second end at the other end;
helical spring means having a first end and a second end, said helical spring means being positioned in said bore, said helical spring means having its first end resting against the first termination end wall and said spring means being positioned with its outer surface near the inner surface of the bore and having a longitudinal opening along its center;
a first elongated member positioned within said spring means, said first elongated member being longitudinally shorter than the free length of the helical spring means so that the helical spring means extends beyond the end of the first elongated member when both the spring means and the first elongated member are resting against the first termination end wall;
a second elongated means, unattached to any portion of the instrument and being larger in outside diameter than the longitudinal opening in said helical spring means, and resting at one end against the the second end of the helical spring means and spaced away from said first elongated member when the instrument is at rest, said second elongated means being longitudinally moveable within said longitudinal bore and being held completely within said bore; and
a blunt striking foot located at the striking end of the device whereby when the device is struck against a patient's spine, the second elongated means compresses the helical spring means by inertia and strikes the end of the first elongated means transmitting energy to the striking foot.

4,498,465
ERECTILE PROSTHESIS
Glenn E. Hagen, New Orleans, La., assignor to Hagen Medical Equipment Corporation, Carson City, Nev.
Filed Jun. 7, 1982, Ser. No. 385,446
Int. Cl.³ A61F *5/42*
U.S. Cl. 128—79 **3 Claims**



4a

1. A plastic surgery procedure for adapting a human penis to an erectile prosthesis comprising the step of:
gathering all available loose skin of a circumcised patient on the top of the penis by pulling it forward into a nap just behind the glans deferens,
slitting the nap longitudinally along the length of the penis by cutting both layers of skin,
stitching the cut layers of skin so as to form two flaps of skin,
laying down said flaps of skin, to produce extra slack skin on the bottom of the penis,
pulling forward the extra loose skin created at the bottom of the penis, somewhat beyond the head of the penis,
stretching this new extra loose skin, so it is stretched vertically, slitting the new nap of skin horizontally, stitching the slit skin to form a pocket capable of receiving the head of the prosthetic device.

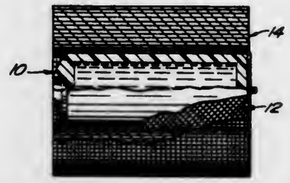
4,498,466
RECLOSABLE CONDOM HAVING SEALED CHAMBERS WITH A RHEOPEXIC MATERIAL WITHIN
Mark L. Pomeranz, 9760 Viceroy Dr. E., Jacksonville, Fla. 32217
Continuation-in-part of Ser. No. 388,107, Jun. 15, 1982, Pat. No. 4,432,357. This application May 2, 1983, Ser. No. 490,450
Int. Cl.³ A61F *5/00*
U.S. Cl. 128—79 **21 Claims**



1. A condom comprising:
an elongated generally tubular member of thin, flexible material;
an elongated opening provided along at least a substantial portion of the length of said elongated tubular member so as to facilitate placing said elongated tubular member over a flaccid penis;
said elongated tubular member having an open base end and a closed, continuous, substantially smooth head end portion at the end thereof opposite said open end, said closed head end portion being adapted to cover a head portion of a penis and to contain ejaculated spermatozoa; and
means for closing said elongated opening after placing of said condom on a flaccid penis.

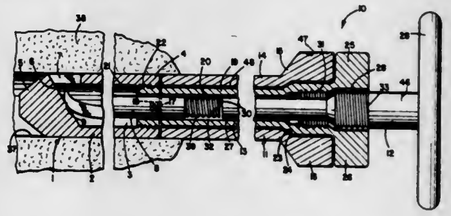
4,498,467
ORTHOPEDIC CAST, DEVICE AND METHOD FOR FORMING SAME AND PACKAGE THEREFOR
Harold B. Kirkpatrick, 349 Silver Hill Rd., Easton, Conn. 06612; Fred A. Ravreby, 56 Knight Rd. Extension, Framingham, Mass. 01701, and Henry L. Richbourg, Statesville, N.C., assignors to H. B. Kirkpatrick, Easton, Conn. and F. A. Ravreby, Framingham, Mass.
Filed Jan. 20, 1982, Ser. No. 341,190
Int. Cl.³ A61F *5/04*
U.S. Cl. 128—90 **47 Claims**

1. A device for forming an orthopedic cast comprising:
a fibrous porous tape rolled about a core, said tape being impregnated with a first liquid component of a two-component hardenable system; said core being composed of a sealed liquid impermeable pressure rupturable container and having therein a second component of said two-component hardenable system in liquid form which, on intermixing with said first component, reacts to form a hard resin at ambient temperatures; said tape and core being encased in a flexible package adapted to serve as a mixing chamber for intermixing the first and second components



upon the application of pressure to said package sufficient to rupture the core.

4,498,468
BONE FIXATION DRIVING INSTRUMENT
Lars I. Hansson, Norra Promenaden 13, S-222 40 Lund, Sweden
Filed May 10, 1982, Ser. No. 376,682
Claims priority, application Sweden, May 11, 1981, 8102929
Int. Cl.³ A61F *5/04*; A61C *8/00*
U.S. Cl. 128—92 B **6 Claims**



1. A device for the fixation of bone fragments, comprising:
a sleeve having a terminal end for inserting in a predrilled passage formed in a bone and having a side opening formed in said terminal end;
a pin slidably received in said sleeve and having an end portion adapted to be forced into a bone fragment and an opposite end provided with external threads for use in extracting said pin;
means connected to said sleeve for driving said end portion of said pin out of said sleeve through said side opening and into surrounding bone material;
means detachably connected to said sleeve for rotating said sleeve in said predrilled passage, said rotating means including means for indicating the orientation of said side opening; and
a pin extractor means comprising an extractor sleeve having internal threads for mating with said pin threads, and a free end surface for engagement with said first mentioned sleeve when said internal threads are screwed onto said external threads whereby, by screwing said extractor sleeve onto said pin, said pin end portion is pulled back into said first mentioned sleeve.

4,498,469

EAR PLUG AS WELL AS A METHOD AND APPARATUS FOR THE PRODUCTION THEREOF

Kalman Csiki, Landskrona, Sweden, assignor to Gullfiber AB, Billesholm, Sweden

PCT No. PCT/SE81/00283, § 371 Date May 20, 1982, § 102(e) Date May 20, 1982, PCT Pub. No. WO82/01312, PCT Pub. Date Apr. 29, 1982
PCT Filed Sep. 30, 1981, Ser. No. 403,657
Claims priority, application Sweden, Oct. 22, 1980, 8007422
Int. Cl.³ A61F 11/00, 11/02
U.S. Cl. 128—152 13 Claims



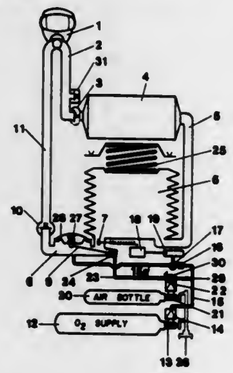
1. An ear plug intended for insertion in the auditory meatus of an ear including an elongate body of elastic material surrounded by a sheath of flexible plastics material characterized in that the sheath is a deep-drawn thermoplastic plastics film or foil which has portions that are thinner than the original film or foil thickness.

4,498,470

RESPIRATOR HAVING CIRCULATING BREATHING GAS

Ernst Warncke, Lubeck, Fed. Rep. of Germany, assignor to Drägerwerk AG, Fed. Rep. of Germany

Filed Dec. 9, 1982, Ser. No. 448,335
Claims priority, application Fed. Rep. of Germany, Jan. 28, 1982, 3202638
Int. Cl.³ A62B 7/04
U.S. Cl. 128—202.26 5 Claims



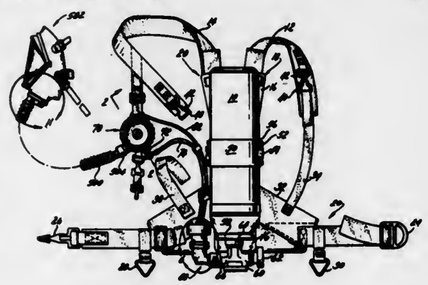
1. A respirator comprising:
a closed respiratory gas circulation line having a connection for a user;
a regenerator cartridge in said circulation line for regenerating respiratory gas passing through said cartridge;
a breathing bag connected to said circulation line for receiving and discharging respiratory gas from and to said circulation line;
spring means engaged with said breathing bag for biasing said breathing bag to increase a pressure of respiratory gas in said circulation line above an ambient pressure outside said circulation line;
an oxygen container for containing pressurized oxygen;
an oxygen supply line connected between said oxygen container and said circulation line;
a controllable oxygen valve in said oxygen supply line;
oxygen level control means having an oxygen sensor for sensing an oxygen level in said circulation line and connected to said controllable oxygen valve for controlling said oxygen valve to maintain a selected oxygen level in said circulation line;
equalizing air supply means for supplying pressurized equalizing air to said circulation line when a pressure of respiratory gas in said circulation line falls below a selected pressure level;
an equalizing air supply line connected between said equalizing air supply means and said circulation line for carrying pressurized equalizing air to said circulation line;
lung-controlled valve means connected to said equalizing air supply line and associated with said circulation line for opening said equalizing air supply line when pressure in said circulating line falls below said selected pressure level;
said equalizing air supply means having a capacity for supplying pressurized equalizing air which is less than a capacity of said oxygen container for containing pressurized oxygen;
said supply valve being connected to said oxygen container for opening and closing said oxygen container, said equalizing air supply means comprising a compressed air container, a second supply valve connected to said compressed air container for opening and closing said compressed air container, and a common actuator connected to said first and second supply valves for opening and closing said first and second supply valves together; and
a connection line connected between said oxygen supply line and said equalizing air supply line, a selector valve connected to said connecting line and equalizing air supply line and having a first position for connecting said equalizing air supply means to said circulation line while disconnecting said equalizing air supply line from said oxygen supply line and a second position connecting said equalizing air supply means to said equalizing air supply line while disconnecting said equalizing air supply means from said circulation line.

4,498,471

FIRST AND SECOND STAGE REGULATOR SYSTEM FOR BREATHING GAS

Max L. Kranz, La Habra, and Donald L. Gadberry, Huntington Beach, both of Calif., assignors to U.S.D. Corp., Santa Ana, Calif.

Filed Sep. 28, 1982, Ser. No. 425,405
Int. Cl.³ A62B 7/04
U.S. Cl. 128—204.26 29 Claims



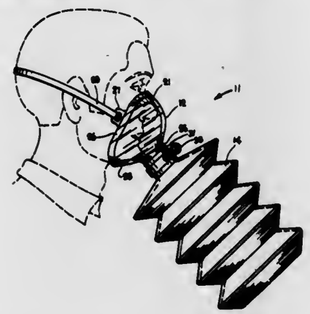
1. A breathing gas regulator comprising:
a housing having an inlet adapted to be connected to a source of pressure, and an outlet;
a first piston having first and second ends and slidably mounted in said housing, a chamber in said first piston between said ends, a first passage extending at least partially through said first piston from said first end thereof to said chamber;
first valve means operatively connected to said first end of said first piston for controlling gas through said inlet from said source of pressure, through said first passage, and into said chamber;
a second piston having first and second ends and slidably mounted in said first piston, a second passage means extending through said second piston from said first end to said second end, second valve means operatively connected to said first end of said second piston for controlling gas from said chamber through said second passage means;
said second ends of said first and second pistons having surfaces fluidically communicating with said outlet thereby being subjected to outlet pressure;
first spring biasing means for biasing said first piston away from said inlet to regulate gas flow by said first valving means from said source of pressure through said inlet and then to said outlet; and,
second spring biasing means for biasing said second piston within said first piston away from said chamber to maintain said second valve means open until said first piston fails to regulate gas from said source of pressure whereupon said second piston is operated to regulate gas from said source of pressure.

4,498,472

SMOKE MASK

John S. Tanaka, 1080 Siskiyou Dr., Menlo Park, Calif. 94025

Filed Jan. 27, 1983, Ser. No. 461,625
Int. Cl.³ A61M 16/00
U.S. Cl. 128—205.17 4 Claims



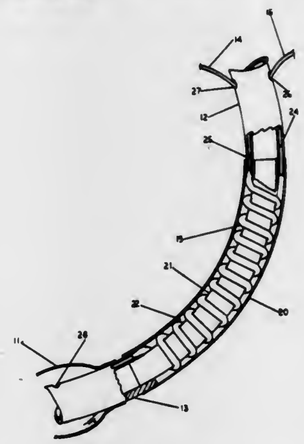
1. A protective breathing apparatus comprising,
a face-fitting nose and mouth face mask made of gas-impermeable material having a first air passage port, said first air passage port being the sole opening to and from said mask,
a vessel having an expandible second air passage port, said second air passage port being the sole opening to and from said vessel, said vessel having a capacity, when fully expanded, of at least 60 cubic inches, said vessel made of a substantially non-porous, gas impermeable material and having a lengthwise axis with a collapsed first position and an expanded second position, said vessel having pleats compressible in the direction of said lengthwise axis and capable of retaining said vessel in said expanded position when manually extended to allow for a capacity of at least 60 cubic inches of ambient air, and
a common air passageway between the face mask and vessel created by the joining of said first port and second port.

4,498,473

VARIABLE STIFFNESS TRACHEAL TUBE

Gordon A. Gereg, 159 Saw Pit Hill Rd., Woodbury, Conn. 06798

Filed Dec. 7, 1982, Ser. No. 432,568
Int. Cl.³ A61M 25/00
U.S. Cl. 128—207.15 4 Claims



1. A catheter comprising semirigid tubular proximal and distal ends interconnected by a flexible tubular intermediate portion, said intermediate portion further including an inner tube and an outer tube coaxially spaced from each other to form a lumen, said lumen having within it a small tube contacting the inner tube and outer tube and connecting the distal and proximal tubes providing an air passage between same and taking a helical path, said air passage continuing into both the proximal and distal end tubes through a lumen in the wall of each tube and exiting at a notch in the wall thereby connecting on the proximal end to an extending tube ending in a closure, said notch in the distal end being positioned under a thin walled cuff sealed to the distal tube, said lumen being closed after the notch under said cuff, said proximal tube having a second lumen in the wall also having a notch and an extending tube ending in a closure providing a connecting passage to the space between said outer and inner coaxial tubes and said helical wound tube, said space being an airtight helix by way of bonding.

4,498,474

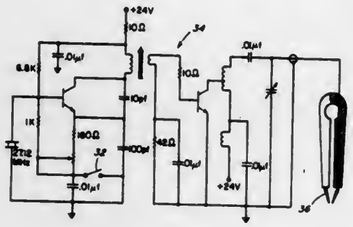
EPILATION METHOD

Edward Chalmers, 31 Benjamin Rd., Arlington, Mass. 02174, and William H. Huggins, 26 Heritage Cir., Clinton, Conn. 06413

Continuation-in-part of Ser. No. 344,494, Feb. 1, 1982, abandoned, which is a continuation of Ser. No. 42,799, May 29, 1979, Pat. No. 4,317,450. This application Mar. 25, 1982, Ser. No. 361,630
Int. Cl.³ A61B 17/41
U.S. Cl. 128—303.13 22 Claims

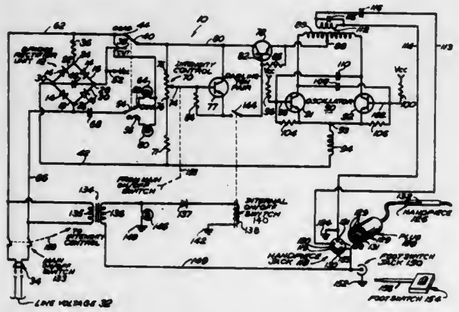
1. A method of removing a hair from a living being comprising the steps of:
applying a fluid having ionic activity and wetting characteristics for hair and surrounding skin, to the hair and surrounding skin,
said fluid having an ionic activity equivalent to at least about 25 ppm sodium chloride in water solution,

allowing said ionic, wetting fluid to penetrate into the follicle containing said hair,



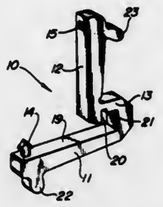
applying a regulated voltage to the vicinity of said wetted hair, and
drawing said hair out of said follicle.

4,498,475
ELECTROSURGICAL UNIT
Max Schneiderman, Clifton, N.J., assignor to Ipco Corporation, White Plains, N.Y.
Filed Aug. 27, 1982, Ser. No. 412,230
Int. Cl.³ A61B *17/39*
U.S. Cl. 128—303.14 **19 Claims**



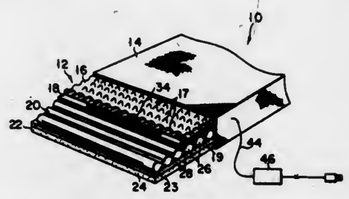
1. An electrosurgical unit for producing from a power source a modulated oscillating signal for coagulation procedures and an unmodulated oscillating signal for cutting procedures, comprising:
a four-arm bridge rectifier having two pairs of diagonally opposing terminals, means for directly coupling a first pair of said opposing terminals to the power source, filter means coupled across said other pair of said opposing terminals for smoothing the signal at said opposing terminals, cutting signal output means coupled across said other pair of said opposing terminals and producing a fixed level signal, coagulation signal output means coupled across one arm of said bridge rectifier, and producing a modulating signal;
oscillation means for producing an oscillating output signal at a given frequency; and
switching means for selectively coupling one of said output means directly to said oscillation means to selectively provide the signals from the oscillation means to thereby produce an unmodulated and a modulated signal.

4,498,476
NON-METALLIC, BIO-COMPATIBLE HEMOSTATIC CLIPS WITH INTERLOCKING LATCH MEANS
Robert J. Cerwin, Pittstown, N.J.; Madhusudan Joshi, E. Aurora, N.Y.; John R. Menges, Woodbridge, N.J.; Robert W. Mericle, Lebanon, N.J., and William J. Zwaskis, Carteret, N.J., assignors to Ethicon, Inc., Somerville, N.J.
Division of Ser. No. 296,672, Aug. 27, 1981, Pat. No. 4,449,531.
This application Nov. 17, 1983, Ser. No. 552,638
Int. Cl.³ A61B *17/00, 17/12*
U.S. Cl. 128—346 **5 Claims**



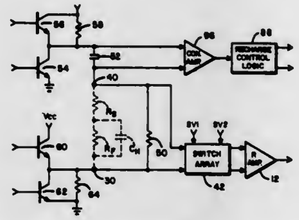
1. A hemostatic clip comprising first and second leg members, each member having an elongated vessel clamping inner face in opposition to a vessel clamping inner face of the other leg member, said first leg member terminating at its proximal end in a bend forming a hooked member extending from said vessel clamping inner face, said second leg member terminating at its proximal end in a configuration adapted for engagement by said hooked member of said first leg member, hinge means joining said first and second leg members adjacent said proximal ends, said first and second leg members being rotatable about said hinge means from an open position to a closed position, said leg members terminating at their distal ends in latch means including means for preventing relative lateral movement between vessel clamping inner faces of the leg members when the clip is in the closed position.

4,498,477
MATTRESS
Teruo Masuda; Takeo Abe, and Matsuhiro Koike, all of Tokyo, Japan, assignors to France Bed Co., Ltd., Tokyo, Japan
Filed Apr. 1, 1982, Ser. No. 364,205
Claims priority, application Japan, Jul. 22, 1981, 56-108690; Jul. 29, 1981, 56-112464
Int. Cl.³ A61N *1/40*; A47C *27/16*
U.S. Cl. 128—378 **13 Claims**



1. A mattress comprising:
an upper layer formed of foamed plastic capable of being deformed by compressive load and restored, and said upper layer having a number of projections formed integrally on the top surface thereof;
a lower layer formed plastic capable of being deformed by compressive load and restored;
a hygroscopic layer formed of a highly hygroscopic material and underlying the upper layer;
a middle layer having a number of columnar core members formed of relatively hard foamed plastic and interposed between the hygroscopic layer and the lower layer, the core members of the middle layer being arranged parallel to and spaced from each other and formed integrally with coupling portions therebetween so as to define upper elongated spaces between adjacent core members and between the middle and hygroscopic layers and lower elongated spaces between adjacent core members and between the middle and lower layers, said coupling portions having communication passages formed therein through which the upper and lower spaces are in air communication with each other;
and
an air permeable outer covering which covers the upper, hygroscopic, middle, and lower layers;
said upper and lower elongated spaces extending to said outer covering so as to be in air communication with said outer covering, whereby moist air in said upper and lower spaces permeates to the outside through said outer covering.

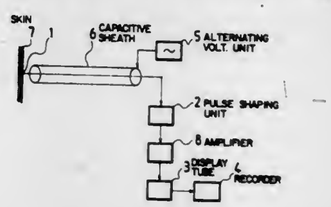
4,498,478
APPARATUS FOR REDUCING POLARIZATION POTENTIALS IN A PACEMAKER
Ivan M. Bourgeois, Thimister, Belgium, assignor to Medtronic, Inc., Minneapolis, Minn.
Filed Sep. 13, 1982, Ser. No. 417,256
Int. Cl.³ A61N *1/36*
U.S. Cl. 128—419 PG **16 Claims**



1. In a heart stimulator having a source of supply voltage, timing circuit means for providing first and second time intervals, a pair of output electrodes for applying a stimulating pulse to heart tissue, and an output capacitor coupled to one of said output electrodes, the improvement for attenuating polarization currents/voltages at said output electrodes comprising:
first means for coupling said supply voltage source to said output capacitor during said first time interval for charging said output capacitor to a certain voltage;
second means for coupling said output capacitor to both of said output terminals during said second time interval to discharge said output capacitor voltage into, and thereby stimulate heart tissue; and
resistor means coupled across said output electrodes for providing a current path for the discharging of the effective capacitance of previously stimulated heart tissue and the charging of said output capacitor during said first time interval, said resistor means having a resistance sufficiently low to discharge said effective capacitance.

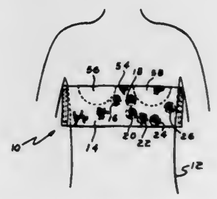
4,498,479
ELECTROCARDIOGRAPH (ECG) ELECTRODE TESTING SYSTEM
Asko Martio, Espoo; Ilpo Reitmaa, Kaipola, and Esa Lautamo, Espoo, all of Finland, assignors to Kone Oy, Helsinki, Finland
Filed Jun. 24, 1982, Ser. No. 391,950
Claims priority, application Finland, Jun. 24, 1981, 811978
Int. Cl.³ A61B *17/36*
U.S. Cl. 128—639 **4 Claims**

1. A system for testing the attachment of an ECG electrode intended to be used in connection with an electrode monitoring the function of the heart, muscles or other human organs to indicate detachment of the electrode from its fixing base on the human skin, said system comprising:
an ECG electrode having a fixing base for connecting the electrode to the skin of a patient, wherein the electrode comprises a conductive capacitive sheath electrically insulated from the electrode and from said fixing base;



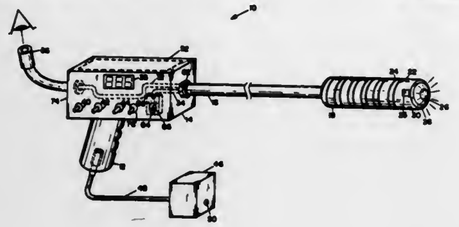
an alternating voltage source supplying a signal voltage to the sheath; and
voltage monitoring and display apparatus electrically connected to said electrode, so that on any detachment of the electrode from said fixing base an alternating voltage from said voltage source is immediately induced from the sheath to the electrode and is displayed in said voltage monitoring and display apparatus.

4,498,480
ADJUSTABLE PROBE BELT ASSEMBLY
John L. Mortensen, 270 Elm St., Windsor Locks, Conn. 06096
Filed Jul. 1, 1983, Ser. No. 510,261
Int. Cl.³ A61B *5/04*
U.S. Cl. 128—644 **16 Claims**



1. An adjustable probe belt assembly for hooking up a patient to an electrocardiograph, said assembly comprising:
(a) a sheet of material having a pocket at each end with a weight inside, wherein said sheet is adapted in length to fit across the chest of a patient with the weights draped over the patient's sides and said sheet has a plurality of spaced grommets for housing detachable electrodes;
(b) a plurality of electrodes respectively mounted within said grommets for eccentric rotation therein: and,
(c) wherein each electrode includes a lower portion on one side of said sheet for contacting the patient's skin and an upper portion on the other side of the sheet for adjusting the location of the patient-contacting portion on the patient's chest, said electrode's lower portion comprising a metal disk with an undersurface for contacting the patient and an eccentrically mounted post that extends perpendicularly from the top surface of the disk toward the grommet in which the electrode is mounted, said post having a channel for removably receiving a stem of said upper electrode portion, said upper portion having a rotator arm on the opposite side of said sheet from said disk, wherein said arm is integral with a stem that fits through a hole in said grommet and into the channel of said post, whereby said electrodes can each be eccentrically rotated through a wide arc by turning their arms to quickly adjust the disks to fit the particular patient's chest size.

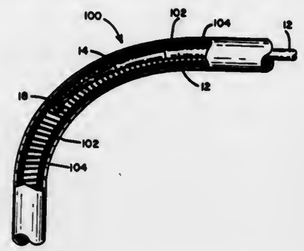
4,498,481
ESTRUS CYCLE MONITORING SYSTEM
Judith K. Lemke, 4263 170th St. E., Rosemount, Minn. 55068
Filed Sep. 28, 1982, Ser. No. 425,893
Int. Cl.³ A61B *5/05*
U.S. Cl. 128—734 **8 Claims**



1. Estrus cycle monitoring system for determining the preferred ovulation time of a female animal or female human, said system comprising:
a. pistol-grip handle means having a flat upper surface;
b. electronic housing means secured to said flat upper surface of said handle means;
c. elongated rod secured to a forward end of said housing means, a molded rounded end probe sized for a respective animal and supporting two wound geometrically configured helix electrodes on an outer circumference of said probe, said probe including a cylindrical shape with a rounded end, said helix electrodes being longitudinally wound at an axis at an angle to said axis of said probe and rod, said probe secured to an end of said rod, wires running between said electrodes through said rod;
d. signal processing means connected to a signal generating means connected to said electrode wires;
e. signal display means connected to said signal processing means and positioned on a rear portion of said housing;
f. light source means positioned in said housing means, objective lens and diffuser lens surrounding said objective lens and positioned on a rounded end of said probe, random fiber-optic bundle connected between said light source means and said diffuser lens including a covering thereabouts; coherent fiber-optic bundle extending from said objective lens, through said random fiber bundle, through said housing means, through said rear end of said housing means, and an eye-imaging optic connected to an end of said coherent fiberoptic bundle for observing the surrounding vaginal cabity and related anatomy of location of said probe; and,
g. power means connected through a flexible cable to said housing means whereby said electrodes and electrical generating means and signal processing means display on said display means electrical resistance of mucus in a vaginal cavity of a female animal or human.

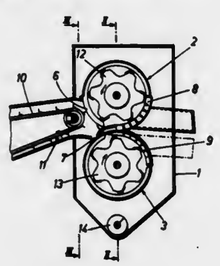
4,498,482
TRANSVENOUS PACING LEAD HAVING IMPROVED STYLET
Terrell M. Williams, Coon Rapids, Minn., assignor to Medtronic, Inc., Minneapolis, Minn.
Continuation of Ser. No. 296,740, Aug. 27, 1981, abandoned, which is a continuation of Ser. No. 103,249, Dec. 13, 1979, abandoned. This application Jul. 28, 1983, Ser. No. 518,278
Int. Cl.³ A61N *1/04*
U.S. Cl. 128—786 **8 Claims**

1. In a transvenous pacing lead of the type having a wound coil surrounded by insulation and a stylet, removably insertable in said pacing lead, an improvement wherein said stylet is provided with first means for allowing easy control around bends and curves of said transvenous pacing lead, and is provided with second means coupled to said first allowing means



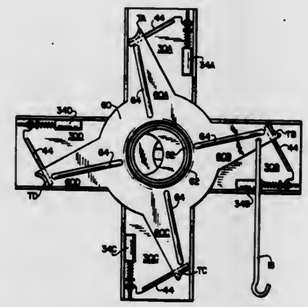
for preventing said stylet from violating said wound coil or protruding through said insulation.

4,498,483
AXIAL THRESHING AND SEPARATING ARRANGEMENT
Johannes Dammann, Harsewinkel, Fed. Rep. of Germany, assignor to CLAAS OHG, Harsewinkel, Fed. Rep. of Germany
Filed Jan. 20, 1984, Ser. No. 572,925
Claims priority, application Fed. Rep. of Germany, Feb. 5, 1983, 3303952
Int. Cl.³ A01F *12/18*
U.S. Cl. 130—27 T **3 Claims**



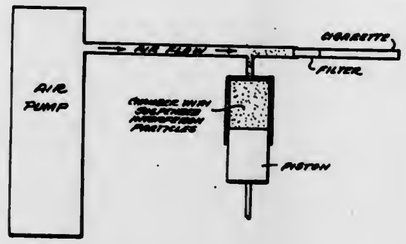
1. An axial threshing and separating arrangement located in a housing, comprising two threshing drums rotatable about parallel axes of rotation; and two casing units each circumferentially surrounding a respective one of said threshing drums with retaining a small gap, each of said casing units being subdivided into a thresh basket and a sieve and said thresh basket being provided with a product supply opening at its one end and with a product discharge opening at its another end, said thresh basket and sieve forming casing unit being arranged relative to one another so that the distance between said axes of rotation of said threshing drums corresponds to the diameter of one of said thresh basket-sieve casing units, and said thresh basket-sieve casing units overlap with their ends in a product supply region by substantially a double width of each product supply opening, said thresh basket-sieve forming casing units being arranged over one another and said product supply openings being located adjacent to one another in an upright direction.

4,498,484
TOBACCO STRIPPER
Jerald G. Gilbert, Rte. 9, Box 352B, London, Ky. 40741
Filed Jul. 21, 1982, Ser. No. 400,235
Int. Cl.³ A01D *1/00*
U.S. Cl. 130—30 R **12 Claims**



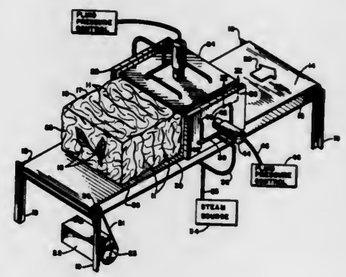
1. A blade assembly for stripping leaves from a substantially circular plant stalk comprising:
blade guide means including four channel sections defining a cruciform shape and extending outwardly from a central opening adapted for passing said stalk therethrough as said leaves are stripped;
a stripper blade disposed in each of said channel sections for reciprocating movement with respect to said central opening, each of said blades having a substantially circular aperture therein overlying said central opening and superimposed with respect to the respective circular apertures of the other blades and an outboard end having an actuating cam surface thereon, said circular apertures of said blades collectively defining a substantially circular stripper opening in all positions of said blades, the size of which is adjustable in response to a mechanical force applied to said actuating cam surfaces;
blade pusher means for simultaneously engaging said actuating cam surfaces for applying said mechanical force thereto to move said blades outwardly in said channel sections and thereby enlarge said stripper opening defined by said blade apertures; and
spring tension means for yieldably biasing said blades toward said central opening to positions defining a minimum size stripper opening.

4,498,485
INTERFERON AND INTERFERON INDUCERS COMBINED WITH TOBACCO PRODUCTS
William A. Carter, Birchrunville, Pa., assignor to Hem-Sub, Inc., Philadelphia, Pa.
Filed Aug. 5, 1982, Ser. No. 386,447
Int. Cl.³ A24B *15/20, 15/30*
U.S. Cl. 131—331 **32 Claims**



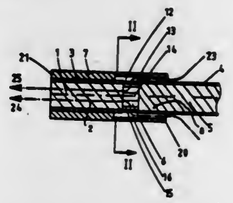
1. A process of medicating a smokable tobacco product comprising exogenously adding interferon or biologically active fragments thereof to said product.

4,498,486
TOBACCO BALE STEAM INJECTION
Robert N. Smith, Richmond, Va., assignor to Philip Morris Incorporated, New York, N.Y.
Filed Nov. 9, 1982, Ser. No. 440,463
Int. Cl.³ A24B *3/02, 3/12, 1/02*
U.S. Cl. 131—300 **5 Claims**



1. A tobacco bale steam injection device comprising:
at least one injection plate, each having a plurality of orifices formed in a substantially flat surface thereof;
means for urging said surface of said at least one injection plate in flush contact with a corresponding at least one side of a bale of tobacco; and,
means for supplying pressurized steam to said plate so that said steam is fed to said plurality of orifices to discharge therefrom at said surface and into said corresponding side of said bale.

4,498,487
ROD-LIKE SMOKING ARTICLE WITH SECONDARY AIR CHANNELS AND APPARATUS FOR PRODUCING SUCH AN ARTICLE
Antonio P. A. Frattolillo, Neuchatel, Switzerland, assignor to Fabriques de Tabac Reunies, S.A., Neuchatel, Switzerland
Filed Feb. 12, 1982, Ser. No. 348,571
Claims priority, application Fed. Rep. of Germany, Feb. 14, 1981, 3105456
Int. Cl.³ A24D *3/04*
U.S. Cl. 131—336 **5 Claims**



1. A rod-like smoking article comprising:
a tobacco rod,
a covering paper surrounding said tobacco rod,
a rod-like mouthpiece core positioned at an end of said tobacco rod,
an air-tight adhered wrapping paper having a mouth end and a tobacco rod end and enveloping the entire periphery of said mouthpiece core and at the tobacco rod end thereof further enveloping the entire periphery of a piece of said tobacco rod and having a plurality of notches on the inside surface thereof, said notches extending from said tobacco rod end of the wrapping paper and terminating at a dis-

tance from the mouth end of said wrapping paper and forming a plurality of secondary air channels having at the tobacco rod end of said wrapping paper a corresponding plurality of inlets for the entry of sucked-in secondary air into the channels, the channels at the mouth end being blocked by the wrapping paper being adhered to the mouthpiece core and the channels issuing into at least one gap between the mouthpiece core and the tobacco rod end and between at least one pair of filter sections of the mouthpiece core.

4,498,488

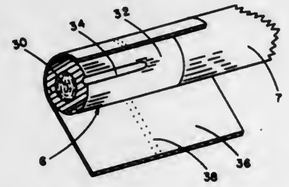
CIGARETTE FILTER

Robert R. Johnson, Louisville, Ky., assignor to Brown & Williamson Tobacco Corporation, Louisville, Ky.

Continuation of Ser. No. 243,168, Mar. 12, 1981, Pat. No. 4,365,641, which is a continuation-in-part of Ser. No. 29,230, Apr. 11, 1979, Pat. No. 4,256,122. This application Dec. 21, 1980, Ser. No. 451,892

Int. Cl.³ A24D *3/04*

U.S. Cl. 131—336 **9 Claims**



1. A filter cigarette whose filter comprises a porous plug affixed to the end of a cigarette for drawing smoke from the cigarette through the plug, and a plurality of between three and seven ventilating air ducts positioned and distributed circumambiently around said plug, each of said ducts having an air egress opening at the mouth end of the filter and having an air ingress opening exteriorly of the filter cigarette located remote from said end along the filter, whereby ventilating air can flow from said ingress openings through said ducts to said egress openings, said filter being additionally characterized by the equation:

$$K = \frac{UA_f}{100n} - A_v$$

wherein K is a number greater than 0.035, A_v is the average cross-sectional area of the individual ducts, A_f is the total cross-sectional area of the filter, n is the number of ducts and U is the percent ventilation air for the total flow rate through the filter which is between about 60 and about 95 and is defined by the equation:

$$U = \frac{100q_v}{q_v + q_s}$$

wherein q_v is the total flow rate through the ducts and q_s is the flow rate through the plug, and wherein the filter is further characterized by the equation:

$$A_v/A_f \leq 0.01$$

whereby substantial dispersion of the smoke drawn through the filter is obtained within about a one centimeter distance from the end of the filter when drawn at the rate of 17.5 cc./sec.

4,498,489

HAIR CURLER

Heinz K. Bornhauser, Zwinglistrasse 21, 9000 St. Gallen, Switzerland

Continuation of Ser. No. 337,905, Jan. 7, 1982, abandoned. This application Nov. 1, 1983, Ser. No. 548,020

Claims priority, application Switzerland, Jan. 16, 1981, 286/81

Int. Cl.³ A45D *2/00*

U.S. Cl. 132—40 **5 Claims**



1. A hair curler, comprising: an elongated curler body having a circular cross-sectional configuration, said curler body having at least two curvilinearly extending portions with a longitudinal extent thereof being shorter than or equal to the cross-sectional diameter of the curler, longitudinal planes of said curvilinearly extending portions intersect each other at an angle of approximately ninety degrees, said successive curvilinearly extending portions differ regarding their direction of curvature; and at least one rectilinearly extending portion arranged intermediate said curvilinearly extending portions is such manner that said curvilinearly extending portions extend away from said rectilinearly extending portion.

4,498,490

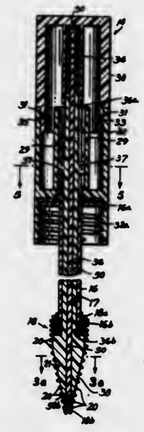
ADJUSTABLE PRODUCT APPLICATOR

David Seidler, Forest Hills, N.Y., assignor to Max Factor & Co., Hollywood, Calif.

Filed Jul. 23, 1982, Ser. No. 401,068

Int. Cl.³ A45D *40/30*

U.S. Cl. 132—88.5 **7 Claims**



1. A product applicator comprising:

a stem;

an applicator head coupled to said stem and including a plurality of coating surfaces defining an opening;

a platform within the opening, in fluid communication with said applicator head, said platform including at least two arcuate surfaces having different radii; and

handle means including first and second portions rotatably coupled together, said stem being coupled to said first portion and said platform being coupled to said second portion, with rotation of said second portion relative to said first portion rotating said platform to bring a selected arcuate surface of said platform into alignment with said coating surfaces.

4,498,491

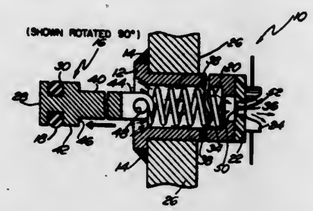
THERMO-ELECTRIC VALVE

Roger R. Chamberland, Oakdale, and Andrew J. Staniland, Old Lyme, both of Conn., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jun. 8, 1983, Ser. No. 502,030

Int. Cl.³ F16K *13/04*

U.S. Cl. 137—72 **15 Claims**



1. A thermo-electric valve for scuttling buoyant devices comprising:

a cylindrical sleeve, adapted to be inserted through an aperture in a bulkhead separating a pressurized medium in a higher pressure space from a lower pressure space, said sleeve further including a flanged higher pressure end, an internal bore therethrough and a lower pressure end having a surface extending into said bore such that a smaller diameter aperture than said bore is formed thereby providing a lip at the low pressure end of the bore, said low pressure end extending beyond the low pressure surface of said bulkhead;

a piston, slidably insertable into said sleeve bore, said piston further including a cylindrical shaft having a larger diameter head at the end of said piston shaft facing said higher pressure space, said piston head having an annular groove thereabout, and said shaft having a tang on the opposite end thereof, said tang having a circular aperture therethrough;

a compression spring, the outer diameter of which is selected to moveably fit within said sleeve bore, while the inner diameter thereof is selected so as to slip over said piston shaft such that one end of said spring rests against said sleeve lip and the opposite end thereof rests against the face formed by the difference in diameters of said piston shaft and said piston head;

an O-ring, selected so as to mount within said piston head annular groove, for providing an occlusive seal between said piston head diameter and said sleeve bore thereby preventing said pressurized medium from entering said low pressure space;

a rigid, dielectric washer, placed against the exterior surface of said low pressure end of said sleeve, said washer having an aperture therethrough, the diameter of which is selected to permit said piston tang to extend therethrough when said piston is totally inserted within said bore to fully compress said spring, the full area of said tang aperture extending beyond said washer;

a low power resistor, adapted to receive low control circuit current, said resistor having a diameter such that said resistor may be inserted through said tang aperture said resistor resting against said washer thereby holding said spring in compression within said sleeve bore; and

a sealing bead, sealably attaching said sleeve flange to said bulkhead;

whereby, upon application of said low current to said resistor, said resistor disintegrates thereby releasing the stored energy of said spring whereupon said spring expands and ejects said piston into said higher pressure space thus permitting said pressurized medium to flow through said sleeve bore and said sleeve aperture into said low pressure space.

4,498,492

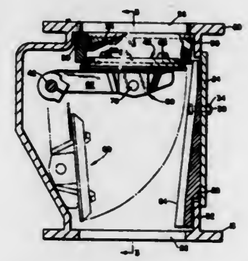
DUST VALVE AND TRAP

Urgel R. Carpentier, Plattsburgh, N.Y., assignor to Plattsburgh Foundry, Inc., Plattsburgh, N.Y.

Filed Mar. 25, 1982, Ser. No. 361,799

Int. Cl.³ F16K *1/16*

U.S. Cl. 137—315 **5 Claims**



1. A dust valve body having a flow path therethrough from one end to the other;

a conduit member removably mounted in said valve body and forming a valve seat, the flow path through said conduit member being substantially coaxial with the flow path through said valve body, said conduit member being substantially cylindrical and forming said valve seat on a radial internal edge thereof;

a valve actuator shaft passing through said valve body adjacent a side of said valve body and means for rotating said shaft;

a frustro conical valve flap and self aligning means carried thereby for engaging said flap at its frustro conical surface with the radial edge of said seat, said flap removably coupled to said valve actuator shaft for moving into and out of engagement with said valve seat whereby a seal will be maintained between the frustro conical surface of said flap and the radial edge of said seat; means for deflecting the flow through said conduit and said valve body so that when said flap is fully rotated out of engagement with said valve seat said flow will not impinge upon the surface thereof; and access means carried by said valve body for providing access to the interior of said body for removal of said conduit member and said valve flap from inside said valve body;

said conduit member being disposed adjacent the upper portion of said valve body and said valve seat is disposed substantially perpendicular to the vertical longitudinal axis of said valve body;

said means for deflecting the flow includes a semicircular flange disposed within said conduit member opposite said valve seat to deflect the flow towards a further deflecting means comprising a wear plate;

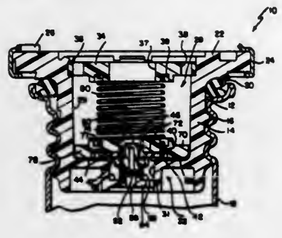
said wear plate disposed adjacent the side of said valve body opposite the valve actuator shaft.

4,498,493

PRESSURE VALVE ASSEMBLY FOR A FUEL TANK FILLER NECK CAP

Robert S. Harris, Connersville, Ind., assignor to Stant Inc., Connersville, Ind.

Continuation-in-part of Ser. No. 276,880, Jun. 24, 1981, abandoned. This application Aug. 17, 1983, Ser. No. 523,836
Int. Cl.³ F16K *17/196*
U.S. Cl. 137—469 2 Claims



1. A cap for a filler neck of a fuel tank comprising a housing providing a vent passageway for venting fuel vapors out of the tank when pressure in the tank increases to a predetermined superatmospheric pressure, the housing including an axially outwardly facing surface and a radially inwardly facing surface, a vent opening provided in the axially outwardly facing surface, a pressure valve assembly in the housing for controlling the venting of fuel vapor, the valve assembly including a first valve member having a first axially inner surface area exposed to the pressure in the tank, yieldable means urging the first valve member against a valve seat provided by the housing axially outwardly facing surface normally to close the vent opening, a second valve member disposed between the first valve member and the yieldable means for controlling flow of fuel vapors from the tank through the vent passageway, the second valve member including a radially outer surface and a second axially inner surface area encircling the first valve member, the first and second axially inner surface areas providing a combined axially inner surface area that is at least about 350% greater than the first axially inner surface area, the second inner surface area forming a first annular restricted opening with the housing axially outwardly facing surface for the flow of fuel vapor in the vent passageway, the radially outer surface of the second valve member forming a second annular restricted opening with the housing radially inwardly facing surface for the flow of fuel vapor in the vent passageway, the predetermined superatmospheric pressure applying a force to the first axially inner surface area to urge the first valve member in opposition to the yieldable means and open the vent opening to urge the first valve member away from the valve seat, exposure of the combined axially inner surface area to a relatively small pressure increase in the first restricted opening producing a relatively larger force in opposition to the yieldable means to rapidly increase the flow of fuel vapor, the second restricted opening limiting the flow of fuel vapor to maintain a generally constant pressure against the combined axially inner surface area to keep the vent opening open until a safe pressure level below the predetermined superatmospheric level is reached in the tank.

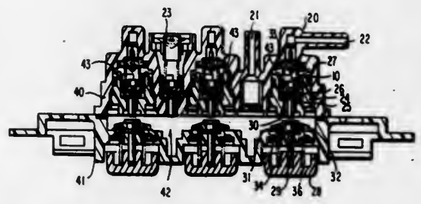
4,498,494

AIR CONTROL FOR A LUMBAR SUPPORT DEVICE

Shigeru Nishio, Kariya, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Mar. 29, 1983, Ser. No. 480,176
Claims priority, application Japan, Mar. 31, 1982, 57-046227[U]
Int. Cl.³ F16K *15/06, 15/20*
U.S. Cl. 137—514 2 Claims

1. Air controlled valve assembly or a lumbar support device having at least one air bag located in a seat back comprising a hollow housing, inlet means adapted to be connected to a source of air under pressure for introducing air into said housing, at least one outlet means adapted to be connected to an air bag for supplying air from said hollow housing to said air bag, a valve seat located in said outlet means, a check valve located in said outlet means for movement into and out of engagement with said valve seat, spring means located in said outlet means for normally biasing said check valve into engagement with said valve seat and a spring guide member located in said outlet means intermediate said spring means and said check valve means, said spring guide member having a plurality of spaced



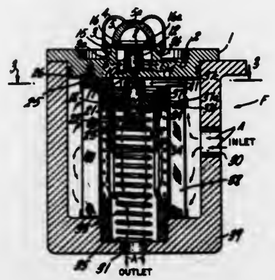
apart projections including an outer circumferential surface disposed in sliding engagement with said outlet means with an oil reservoir groove formed in said outer circumferential surface of each projection for holding a supply of high viscosity oil to dampen the oscillating movement of said guide member and said check valve in response to rapid fluctuations in air pressure wherein said spring guide member is further comprised of a central portion and a plurality of radially extending support members having said projections at the outer end thereof respectively whereby said support members are adapted to engage said spring means.

4,498,495

MAGNETIC DIFFERENTIAL PRESSURE VALVE WITH AN INDICATOR SHOWING WHEN VALVE HAS OPENED OR CLOSED

Bryan H. Worwood, and Paul Stallard, both of Clanfield, England, assignors to Pall Corporation, Glen Cove, N.Y.

Filed Aug. 4, 1981, Ser. No. 289,866
Int. Cl.³ F16K *37/00*
U.S. Cl. 137—557 15 Claims



1. A magnetic differential pressure valve having an indicator showing when the valve is moving but before the valve has moved into one of the open and closed positions, comprising a housing including a valve seat; valve means reciprocably mounted in the housing for movement towards and away from the valve seat between open and closed positions; providing a neutral zone in which during valve movement therethrough the valve has moved away from the closed or open position but has not reached the open or closed position, respectively; first magnetic means reciprocably movable with the valve means

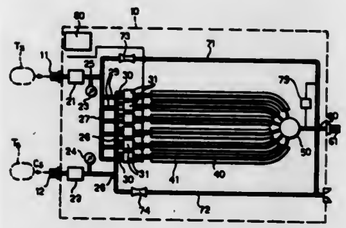
toward and away from the valve seat; first bias means urging the valve means the first magnetic means to move in one direction and normally retaining the valve means and first magnetic means in one of the closed and open positions; first fluid duct means communicating with a source of fluid under pressure and with first and second pressure-receiving surfaces on the valve means to urge it and the first magnetic means in the opposite direction; second fluid duct means communicating with the first fluid duct mens for fluid flow past the valve means only when the valve means has moved a sufficient distance away from the valve seat to be beyond the neutral zone second magnetic means movable toward and away from the first magnetic means and normally retained in a first nonindicating position, reacting with the first magnetic means whenever the two means are spaced a sufficient distance apart to be within their mutually reactive magnetic fields of force, said distance being less than the distance the valve must move to reach one of the closed and open positions; and corresponding to the neutral zone; and second bias means urging the second magnetic means into one of the nonindicating and indicating positions when the first magnetic means has moved to a predetermined distance from the second magnetic means within the neutral zone that is less than the distance at which the valve has moved into one of the open and closed positions, the second magnetic means thereby moving into its nonindicating or indicating position before the valve means has moved into the other of its closed and open positions, and in that position indicating that the valve means is either opening or closing fluid flow communication between the first and second fluid duct means, the first fluid duct means communicating fluid pressure only to the first pressure-receiving surface with the valve in one of the closed and opened positions to urge the valve away from said closed or open positions towards one of the open and closed positions respectively; the second pressure-receiving surface on the valve being exposed to fluid pressure via the first fluid duct means only after the valve has moved away from the closed or open position but while the valve is still in the neutral zone before the valve has moved into one of the open and closed positions; thereby to increase the rate of travel of the valve and ensure movement of the second magnetic means by the second bias means into one of the nonindicating and indicating positions before the valve has moved out from the neutral zone into one of the open and closed positions.

4,498,496

MIXING OF GASEOUS SUBSTANCES

Alessandro Barcellona, Turin; Guido Ferrando Gorin, Cirié, and Aldo Lausarot, Torre Pellice, all of Italy, assignors to Fiat Auto S.p.A., Turin, Italy

Filed Jul. 16, 1982, Ser. No. 399,150
Claims priority, application Italy, Jul. 22, 1981, 68016 A/81
Int. Cl.³ F16K *19/00*
U.S. Cl. 137—599 2 Claims



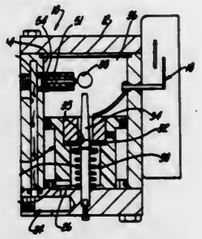
1. Apparatus for the controlled mixing of two gasses supplied by two separate sources, comprising:
a plurality of identical capillary tubes;
a distributor device;
two connectors each defining a respective inlet to said distributor device and each connectable to a respective one of said sources; said distributor device being arranged to connect each said inlet to a different group composed of a selected number of said capillary tubes for supplying a respective one of said gasses to each respective group;
a mixing chamber communicating with said capillary tubes for receiving said gasses therefrom and forming a gaseous mixture of said gasses; and
an outlet duct connected to said mixing chamber for receiving said gaseous mixture therefrom and supplying it to an outlet connector defining an outlet from the apparatus, said gaseous mixture containing said two gasses in proprotions which differ according to the number of capillaries in each said group,
said distributor device comprising:
a first intake manifold connected to a first connector of said two connectors;
a first plurality of outlet ducts from said first intake manifold;
a second intake manifold connected to the other connector of said two connectors;
a second plurality of outlet ducts from said second intake manifold;
a plurality of valves each of which is connected to a respective outlet duct of said first plurality of outlet ducts, to a respective outlet duct of said second plurality of outlet ducts, and to a first end of a respective capillary tube, each said valve being operable independently to put the respective capillary tube into communication with a selected one of said outlet ducts,
each manifold being connected to a respective one of said connectors through a respective pressure regulator and a respective vent duct having constriction means therein being provided downstream of the pressure regulator for partially venting gas from the respective source from the apparatus.

4,498,497

FLOW METER BYPASS VALVE ASSEMBLY

Lars O. Rossen, Plymouth, Mich., assignor to Universal Filters, Inc., Hazel Park, Mich.

Filed Jul. 16, 1982, Ser. No. 398,878
Int. Cl.³ F16K *17/04*
U.S. Cl. 137—599.1 4 Claims



1. In a fluid flow meter having a housing, a meter inlet, a meter outlet, fluid passage means formed in said housing for fluidly connecting said meter inlet to said meter outlet, and a flow rate responsive member contained in said fluid passage means, the improvement therein comprising,
an elongated valve body having an elongated axial bore,
a fluid passageway formed in said body, said fluid passageway having an inlet end and an outlet end, said axial bore forming a portion of said fluid passageway,
means for detachably threadably securing said body to said housing so that said axial bore in said valve body is axially aligned with said flow meter inlet and so that said fluid passageway inlet end is open to said flow meter inlet and said fluid passageway outlet end is open directly to said meter outlet whereby said fluid passageway bypasses said flow rate responsive member,

a valve member carried within said body and axially movable within said valve body bore between an open position in which said valve member establishes fluid communication between the ends of said fluid passageway and a closed position in which said valve member prevents fluid flow between said ends of said passageway, said valve member including an impingement surface adjacent the inlet end of said fluid passageway when said valve member is in said closed position and said impingement surface facing said meter inlet,

means for moving said valve member to said closed position when fluid flow into said flow meter inlet is less than a predetermined rate;

wherein said fluid passage means comprises an inlet fluid passage formed in said housing and extending substantially perpendicular to said meter inlet,

wherein said impingement surface is disposed closely adjacent said flow meter inlet; and

wherein said impingement surface has a cross-sectional area substantially the same as that of said meter inlet so that influent through said meter inlet directly and perpendicularly impinges upon said impingement surface of said valve member and causes movement of said valve member in response to the rate of said influent flow.

4,498,498

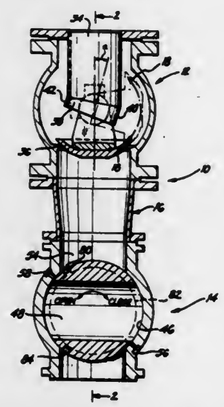
DOUBLE VALVE ASSEMBLY

Enrique Martinez-Vera; Gilberto Guerra-Garcia, both of Monterrey, and Jose L. L. Tovalin, San Nicolas de Los Garza, all of Mexico, assignors to Hylsa, S.A., Monterrey, Mexico

Filed Oct. 26, 1981, Ser. No. 315,250

Int. Cl.³ F16K *3/36*

U.S. Cl. 137—613 **6 Claims**



1. A valve assembly adapted to be used in regulating the flow of a particulate material to or from a pressure vessel, said valve assembly comprising a substantially vertically disposed casing, a dish-shaped valve member pivotally mounted in the upper side walls of said casing for swinging movement about a substantially horizontal axis, a feed tube located at the top of said casing for conducting particulate material into said casing above said valve member, said valve member being selectively swingable between a first position in which its upper surface closely confronts the lower end of said feed tube and a second position at one side of said feed tube, and a plug valve including a valve plug and seat substantially horizontally arranged in the lower part of said casing, said plug valve seat having a passage therethrough and said valve plug having a port adapted to register with said passage, said valve plug being selectively rotatable to bring said port into or out of registry with said passage, said lower end of said feed tube including guide means to guide particulate material flowing out said lower end of said feed tube away from said one side thereof to facilitate movement of said dish-shaped valve member from said first position to said second position, said guide means including a member laterally canted in a direction away from said one side of the feed tube.

4,498,499

VALVE FOR GASEOUS AND/OR LIQUID FLOW MEDIA

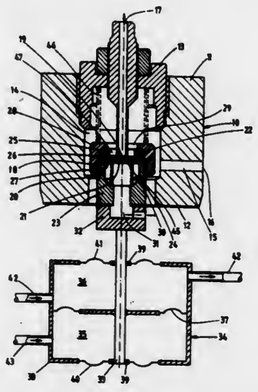
Peter Knorreck, Weissach; Wolfgang Kühne, Stuttgart, and Norbert Müller, Tamm, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed May 11, 1983, Ser. No. 493,472

Claims priority, application Fed. Rep. of Germany, Jul. 15, 1982, 3226409

Int. Cl.³ F16K *11/16*

U.S. Cl. 137—627.5 **2 Claims**



1. A valve for gaseous and/or liquid pressure media, in particular a pressure control valve for producing a control pressure of a pressure-medium-actuated exhaust gas recirculation valve in an internal combustion engine, comprising a valve housing, a valve interior in said housing which is exposed to a control pressure to be imposed, a stationary first valve seat which surrounds a first valve opening between a first pressure source and a valve interior exposed to said control pressure to be imposed, a flat valve closing plate that cooperates with said first valve seat which valve closing plate simultaneously forms a valve closing member for a second valve seat located coaxially with said first valve seat and oriented in the same manner as said first valve seat with respect to said valve closing member, in which said second valve seat surrounds a second valve opening between said valve interior and a second pressure source, a valve spring that urges said valve closing member in a closing direction, and a carrier which receives said second valve seat, said carrier being acted upon on one side by a control force which controls said control pressure and on an opposite side by a restoring spring in combination with said control pressure in said valve interior, said carrier being displaceable by a force resulting therefrom and a throttle opening, which is defined by said valve closing plate and said first valve seat which connects said valve interior continuously with the first pressure source.

4,498,500

MANIFOLD VALVE ASSEMBLY

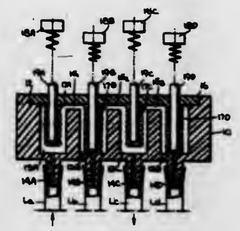
William Miller, Westport, Conn., assignor to Michael Ebert, Mamaroneck, N.Y.

Continuation-in-part of Ser. No. 2,027, Jan. 9, 1979, Pat. No. 4,241,761. This application Nov. 21, 1980, Ser. No. 209,256

The portion of the term of this patent subsequent to Dec. 30, 1997, has been disclaimed.

Int. Cl.³ F16K *11/20*

U.S. Cl. 137—883 **5 Claims**



1. A manifold valve assembly for selectively interconnecting a group of lines to control the flow of fluid therethrough, said assembly comprising:

A a valve block having a row of cylinders formed therein which communicate at their lower ends with a like row of ports coupled to the respective lines in the group, the upper ends of the cylinders being interconnected whereby fluid admitted into any cylinder in the row thereof flows into the other cylinders;

B a corresponding row of axially-expandable tubular nipples of elastomeric material coaxially supported within the respective cylinders to define fluid chambers therein, the ends of said nipples in their substantially unexpanded state reaching a first point;

C a row of push-buttom actuated rods supported in an actuator block joined to said valve block, said rods projecting into said nipples; the push-buttons associated with the rods being disposed above said actuator block, the push-buttons in the row being axially depressible from a raised position to a depressed position to push in the associated rod, the button position being indicative of the status of the related valve; each rod, when pushed in by its associated button, acting to axially expand the related nipple to cause it to reach a second point; and

D a valve seat in each cylinder cooperating with the end of the nipple therein to cut off fluid flow in the cylinder only when the nipple end reaches one of the points, the flow resuming when the nipple end is shifted to the other point.

4,498,501

MULTIPLE LONGITUDINAL TRAVERSING SHED WEAVING MACHINE CONTAINING A WEAVING ROTOR

Alois Steiner, Rieden, Switzerland, assignor to Sulzer-Rüti Machinery Works Ltd., Rüti, Switzerland

Filed Nov. 28, 1983, Ser. No. 555,622

Claims priority, application Switzerland, Dec. 14, 1982, 7264/82

Int. Cl.³ D03D *41/00*; D03C *13/00*

U.S. Cl. 139—28 **12 Claims**

1. A multiple longitudinal traversing shed weaving machine comprising:

a weaving rotor rotatable in a predetermined direction of rotation;

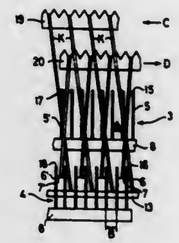
beat-up combs and guide combs arranged at said weaving rotor in alternating fashion in respect of said direction of rotation of said weaving rotor;

each said beat-up comb defining a lamella comb containing in an alternating arrangement first and second lamellae for beating-up weft threads inserted through warp threads;

each said guide comb defining a lamellae comb containing in an alternating arrangement first and second guide lamellae for said warp threads and shed-retaining elements defining an upper shed position of said warp threads;

said second beat-up lamellae and said second guide lamellae, in comparison to said first beat-up lamellae and said first guide lamellae, each being provided with a recess;

said recesses being located at those locations at said lamellae combs which first immerse into said warp threads when



said weaving rotor is rotated in said predetermined direction of rotation;

control means arranged forwardly of said weaving rotor relative to a predetermined direction of travel of said warp threads for laterally deflecting said warp threads and selectively allocating each one of said warp threads to a respective one of said shed-retaining elements; and

said control means providing maximum lateral deflection of said warp threads after either said first beat-up lamellae or said first guide lamellae have been immersed into said warp threads.

4,498,502

APPARATUS FOR MANUFACTURING A WOVEN SLIDE FASTENER STRINGER

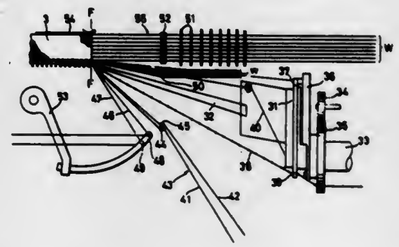
Noritaka Tsubata, Uozu, Japan, assignor to Yoshida Kogyo K. K., Tokyo, Japan

Division of Ser. No. 330,382, Dec. 14, 1981,. This application Nov. 15, 1983, Ser. No. 551,926

Claims priority, application Japan, Dec. 18, 1980, 55-179485

Int. Cl.³ D03D *41/00*

U.S. Cl. 139—35 **1 Claim**



1. An apparatus for manufacturing a woven slide fastener stringer, comprising:

(a) a loom for weaving a stringer tape of warp threads progressively at a fell;

(b) a support;

(c) a mandrel fixed to said support for being disposed alongside of the warp threads and extending toward the fell;

(d) a rotor rotatably mounted on said support and having a guide hole for passage therethrough of an element-forming filamentary material, said rotor being rotatable for

coiling said element-forming filamentary material in a conical orbital path around said mandrel into a row of coupling elements as they are woven into the stringer tape in synchronization with the weaving of the stringer tape;

(e) a set of heddles disposed outside said conical orbital path in opposite relation to the warp threads across said mandrel for supplying binding warp threads onto the coupling elements to fasten the latter to the stringer tape; and

(f) a pair of filling carriers positioned alongside of said mandrel for introducing a pair of weft threads over and under the coupling elements into interlooped engagement with said binding warp threads.

4,498,503

METHOD AND APPARATUS FOR MANUFACTURING WOVEN SLIDE FASTENER STRINGERS

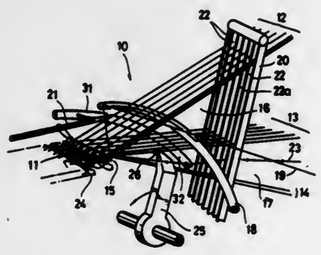
Masaatsu Ofusa, Kurobe, Japan, assignor to Yoshida Kogyo K. K., Tokyo, Japan

Filed Nov. 12, 1982, Ser. No. 441,397

Claims priority, application Japan, Nov. 19, 1981, 56-185658; Dec. 29, 1981, 56-197188[U]

Int. Cl.³ D03D *49/50, 47/00;* A44B *19/42*

U.S. Cl. 139—116 **8 Claims**



1. A method of manufacturing a woven slide fastener stringer, comprising the steps of:

(a) weaving a stringer tape of warp threads and a single weft thread progressively at a fell; and

(b) coiling an element-forming filamentary material, supplied to said fell longitudinally along a path extending between and substantially parallel to said warp threads, into a row of coupling elements as they are woven into said stringer tape in synchronism with the weaving of said stringer tape, said coiling step including

(1) displacing by pushing said element-forming filamentary material out of said path into a position outside said warp threads, remote from the fell to enable it to become hooked and the pushing terminates,

(2) hooking said element-forming filamentary material at said position to form a coupling element, and

(3) moving said coupling element from said position to another position located outside said warp threads in alignment with said fell.

2. An apparatus for manufacturing a woven slide fastener stringer, comprising:

(a) a loom for weaving a stringer tape of warp threads and a single weft thread progressively at a fell, said loom including a reed having guide slots for the passage therethrough (1) of the warp threads and (2) of an element-forming filamentary material along a path extending between and substantially parallel to the warp threads, and a filling carrier disposed at one edge of the warp threads and reciprocable for introducing the weft thread into interlaced engagement with the warp threads; and

(b) means operable in synchronism with said loom for coiling the element-forming filamentary material into a row of coupling elements, whereby the row of coupling elements are woven into the stringer tape as the latter is woven, said coupling means including

(1) a hook disposed at said one edge of the warp threads and angularly movable, about an axis parallel to the general plane of the stringer tape, and in a plane perpendicular to the general plane of the stringer tape being woven, between a first position located in alignment with the fell and a second position remote from the fell, and

(2) means disposed at the opposite edge of the warp threads for displacing the element-forming filamentary material out of said path beyond the warp threads beyond the plane of movement of said hook while said hook is at said second position.

4,498,504

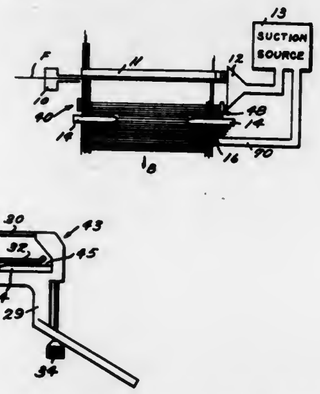
FILLING FRINGE WASTE REDUCTION

Danny H. Allen, and John H. Sumner, both of Greensboro, N.C., assignors to Burlington Industries, Inc., Greensboro, N.C.

Filed Sep. 23, 1982, Ser. No. 421,730

Int. Cl.³ D03D *47/40, 49/70*

U.S. Cl. 139—302 **17 Claims**



1. In an air jet loom for weaving fabric, including a main jet, a reed, a suction source mounted on the opposite side of the reed from the main jet, temples, a fringe cutter mounted on the same side of the fabric being woven as the suction source, and downstream of the temples in the directin of woven fabric movement, and a filling detector between the reed and suction source: a filling fringe waste reduction means for eliminating outer or auxiliary leno selvage waste from both sides of favric being woven and avoiding the utilization of outer leno yarns, said waste reduction means including:

a filling yarn mechanical clamping means operatively disposed between said filling detector and said suction source for holding filling yarns from said main jet; and

a second suction source mounted adjacent and exterior of said fringe cutter for removing fabric ends cut by said fringe cutter.

14. A method of minimizing outer or auxiliary leno selvage from both sides of fabric being woven on an air jet loom without utilizing outer leno yarns, comprising the steps of: effecting combined mechanical clamping and cutting of the filling yarn at the loom left hand side immediately adjacent the left hand edge of the fabric being woven so that acceptable fringe length, without subsequent trimming, is provided on the left hand edge of the fabric being woven; and

mechanically clamping the filling yarn ends at the right hand side of the loom to provide adequate yarn tension on each filling yarn over a period of time, beginning slightly before beatup and continuing until several picks later, so that the fabric edge is woven tightly without looseness or kinks.

4,498,505

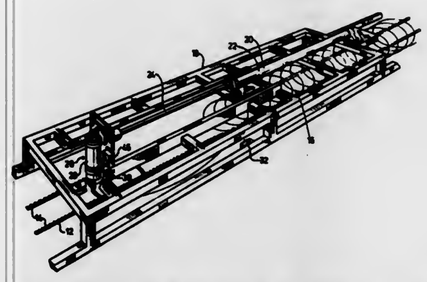
APPARATUS FOR SEPARATING A COIL FROM FOLLOWING COILS OF COILED WIRE ROD

Jan H. Kamping, 1804-2160 Lakeshore Rd., and Elmer R. Bridge, both of Burlington, Canada

Filed Jun. 21, 1983, Ser. No. 506,556

Int. Cl.³ B26D *7/14*

U.S. Cl. 140—2 **6 Claims**



1. Apparatus for separating coils of coiled wire rod from following coils travelling along a moving conveyor comprising a coil engaging device mounted above the conveyor, means for advancing the coil engaging device in the same direction as the conveyor from a first position to a second position at a speed greater than that of the conveyor and for returning the coil engaging device to the first position and means for moving the coil engaging device downwardly to engage a selected coil at the first position to cause the selected coil to be moved ahead relative to following coils by said advancing movement of the coil engaging device and for moving the coil engaging device upwardly to disengage from the coil at the second position.

4,498,506

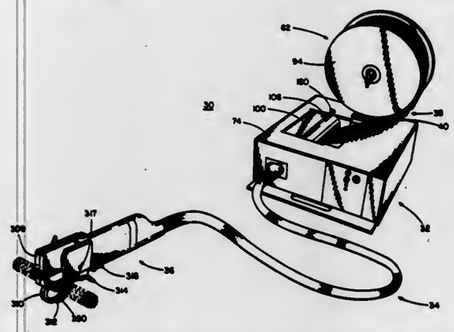
TOOL FOR THE AUTOMATIC INSTALLATION OF DISCRETE CABLE TIES PROVIDED ON A CONTINUOUS RIBBON OF CABLE TIES

Roy A. Moody, Flossmoor; John J. Bulanda, New Lenox; Robert F. Levin, Bollingbrook; Steven S. Timian, Lockport, and Stephen A. Waltasti, Bollingbrook, all of Ill., assignors to Panduit Corp., Tinley Park, Ill.

Filed Nov. 24, 1982, Ser. No. 444,495

Int. Cl.³ B21F *9/02*

U.S. Cl. 140—93.2 **20 Claims**



1. An automatic cable tie installation tool for fastening a discrete cable tie around a bundle of wires or the like, comprising:

dispenser means for accepting a ribbon of cable ties having a laterally disposed strip portion of sufficient rigidity to define a substantially planar ribbon, wherein said cable ties extend from said strip portion and are connected to said strip portion by connecting means, said dispenser means including separating means for removing individual cable ties from said ribbon whereby said dispenser means provides discrete cable ties from said ribbon;

tool means for positioning, tensioning and severing the tail of the discrete cable tie provided by said dispenser means around the bundle of wire or the like, said dispenser means being spaced from said tool means and not being supported by said tool means; and

tubular conveyance means for delivering the discrete cable tie provided by said dispenser means to said tool means.

16. An improvement in a cable tie installation tool having a tool member for positioning, tensioning and severing the tail of a cable tie around a bundle of wires or the like, the tool member having a cable tie receiving tube for orienting and positioning the cable tie in the tool member, the cable tie being provided to the receiving tube by a propulsion means at a velocity sufficient to propel the cable tie through the receiving tube and into position in the tool member, said improvement comprising:

means for decelerating, stopping and gripping the cable tie as it passes through the receiving tube to correctly position the cable tie in the tool member and to minimize the likelihood of impact damage to the cable tie due to abrupt deceleration; said means having opposing pads, each of said pads having an inwardly directed ramp and an inwardly directed gripping tab, said ramps of said opposing pads effecting deceleration of the cable tie and said tabs of said opposing pads stopping the forward motion of the cable tie and gripping the cable tie; and each of said pads being resiliently mounted in a manner to project said ramps and said gripping tabs into the receiving tube and to resiliently bias said pads inwardly.

4,498,507

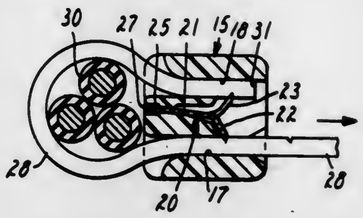
CABLE TIE

Craig D. Thompson, Oakdale, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Jun. 28, 1983, Ser. No. 508,812

Int. Cl.³ B21F *9/02;* B65D *63/14*

U.S. Cl. 140—93.2 **12 Claims**



1. A cable tie system comprising:

a tool,

a series of cable tie heads retained in aligned end to end relation in said tool, each said cable tie head comprising:

a rectangular plastic head having a pair of parallel cable tie strap passages therethrough, and

a metal pawl in said plastic head, said pawl having a planar body extending generally parallel to and lying between said strap passages and at least two teeth at one end of said body, said pawl teeth being bent out of the plane of said body to provide pawl teeth that can simultaneously project one into each of said passages at an angle to the length thereof to engage a cable tie strap at two spaced locations, each of said teeth being bent out of the plane of said body through an angle less than 90°, said pawl body being retained in said plastic head by its end opposite the end having said teeth such that said pawl body is cantilev-

ered and normally positioned with no pawl tooth extending into a first of said cable tie passages, and

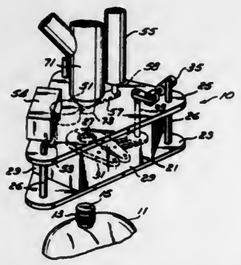
a spool of cable tie strap material formed and supported on said tool to permit the free end thereof to be slid through said first strap passage in at least one of said cable tie heads from the end thereof adjacent the toothed end of said pawl, looped around a bundle of wires and then threaded back into the second of said passages in said one cable tie head from the end of said body in which said pawl body is retained by said plastic head and past the pawl tooth projecting into said second passage to deflect said pawl and engage the pawl teeth with the strap in both strap passages to prevent backward movement of the strap in said second strap passage and any further forward movement of said strap in said first strap passage.

4,498,508

CONTAINER FILLER

William R. Scholle, Corona Del Mar, and William Lloyd-Davies, South Laguna, both of Calif., assignors to Scholle Corporation, Irvine, Calif.

Filed Feb. 4, 1983, Ser. No. 464,112
Int. Cl.³ B65B *31/02*
U.S. Cl. 141—5 **11 Claims**



11. A method of aseptically filling a container with a product using filling apparatus in a sterile chamber, comprising the steps of:

providing an enclosed sterile chamber having a wall opening therein and supplying said chamber with a fluid at a positive pressure with respect to the outside environment;

placing a spout of a container to be filled in the opening;

clamping the spout with clamping means within the opening to seal the opening to control fluid communication between the enclosed chamber and the outside environment around the spout, said clamping means being substantially enclosed to limit fluid communication between said enclosed chamber and the outside environment when said clamping means is in an open position.

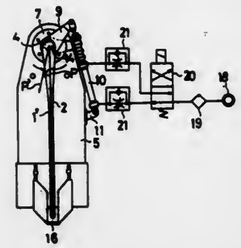
4,498,509

FILLING METHOD OF PARTICULATE MATERIAL INTO VALVED PACKING BAG AND APPARATUS EMPLOYED THEREFOR

Katsuhiko Kojima, Shiga; Toyomi Tanaka, Miyakoshi, and Shigeo Nakajima, Mukoh, all of Japan, assignors to Nakajima Seisakusho Co., Ltd., Japan

Filed Feb. 7, 1983, Ser. No. 464,464
Claims priority, application Japan, Feb. 16, 1982, 57-23799
Int. Cl.³ B65B *1/04, 1/10*
U.S. Cl. 141—10 **2 Claims**

1. A method of filling a particulate material into a valved packaging bag having a central plane, which comprises the steps of inserting a filling tube in a direction parallel to the central plane of the bag into a valve hole of a side valve type valved packaging bag having a filling opening side face thereof, supplying particulate material into said bag through said filling tube, and rotating the filling tube about its axis during filling of the bag so that the direction in which the particulate material is introduced into the bag from the end of



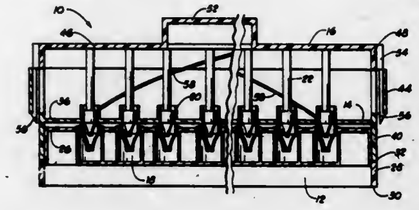
said filling tube moves through an angle with respect to the central plane toward one side of said bag.

4,498,510

DEVICE FOR DRAWING, HOLDING AND DISPENSING LIQUID

Edward C. Minshew, Jr., 3271 F Matthews, Fort Worth, Tex. 76118, and Ray F. Chesley, 2903 Meadow Ave., Norman, Okla. 73069

Filed Aug. 20, 1982, Ser. No. 409,824
Int. Cl.³ B65B *3/04*
U.S. Cl. 141—27 **16 Claims**



1. A device for drawing, holding and dispensing a plurality of distinct liquid masses comprising:

a reservoir plate having a first set of vertical sides surrounding a plurality of liquid reservoirs disposed in an array configuration;

a draw tube plate having a draw tube plate frame and a plurality of draw tubes disposed in and connected to said draw tube plate frame in an array configuration, said draw tube plate including a second set of vertical sides which removably mate with said first set of vertical sides of said reservoir plate such that, when mated, each of said draw tubes extends to a predetermined depth into a selected one of said liquid reservoirs for drawing liquid therefrom and dispensing liquid thereto; and

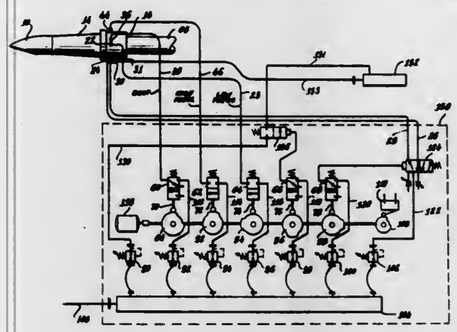
a plunger plate having a plunger plate frame which is captively received by said draw tube plate frame for sliding reciprocating motion therewith and having a plurality of plungers connected thereto and extended therefrom in an array configuration such that each of said plungers sealingly extends into a selected one of said draw tubes and such that application of an external hand pressure on an upper exterior portion of said plunger plate causes a corresponding axial stroke of said plungers, said stroke having a selectable axial length which results in the drawing and dispensing of a predetermined liquid volume.

4,498,511

APPARATUS FOR FILLING A VALVE BAG

J. George Lepisto, Middletown, Ohio, assignor to Champion International Corporation, Stamford, Conn.

Filed Sep. 28, 1982, Ser. No. 424,893
The portion of the term of this patent subsequent to Sep. 18, 2084, has been disclaimed.
Int. Cl.³ B65B *1/18*
U.S. Cl. 141—85 **6 Claims**



1. A system for controlling the filling of a valve bag with particulate material, said bag including a generally tubular filling valve, said system being used with a source of pressurized air and a filling nozzle dimensioned to fit in the filling valve, said system comprising:

first, second and third cams;

means for driving said cams;

a supply air manifold;

means for coupling said supply air manifold to the source of pressurized air;

a first cam actuated valve means coupled to said supply air manifold and adapted to be sequentially opened and closed by said first cam for providing a high pressure blast of air into the filling nozzle after a valve bag has been filled to clear remaining particulate material from said nozzle;

a second cam actuated valve means coupled to said supply air manifold and adapted to be sequentially opened and closed by said second cam after said first cam actuated valve means has been closed for providing a low pressure blast of air into the filling valve externally of the filling nozzle, to suspend particulate material accumulated in the filling valve; and

a third cam actuated valve means coupled to said supply air manifold and adapted to be sequentially opened and closed by said third cam after said second cam actuated valve means has been closed for providing a vacuum for introduction into the filling nozzle to remove the suspended particulate material from said filling valve as the nozzle is removed therefrom.

4,498,512

LUMBER SAW-SIZING TOOL

Wilfred Hiestand, 8806 Birchleaf Ave., Downey, Calif. 90240, and Everett O. Oliver, 15504 E. Hornell, Whittier, Calif. 90604

Filed Aug. 2, 1982, Ser. No. 404,446
Int. Cl.³ B27C *9/00*
U.S. Cl. 144—2 R **6 Claims**

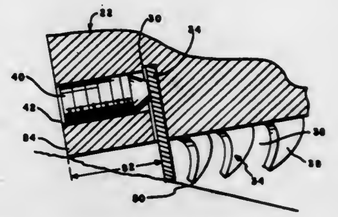
1. A lumber dressing tool comprising,

(a) a rigid circular disc;

(b) a hub dependent from one side of said disc;

(c) drive attachment means carried on said center hub permitting the removable attachment of said disc to a rotary drive unit;

(d) a single peripheral circular groove spaced from 0.1 to 0.5 inch inward of the periphery of said disc, and on the side of said disc opposite said hub, and having a sufficient depth to receive a length of a band saw blade and band saw blade lock means removably received in said disc to removably secure said blade; and



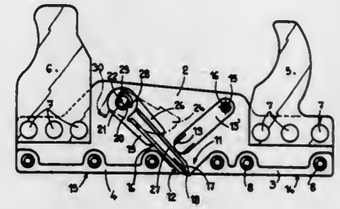
(e) blade depth limiting stop means in said groove permitting a maximum exposure of said saw blade from 0.1 to 0.3 inch.

4,498,513

PLANE

Charles Derivaz, La Tour-de-Peilz, Switzerland, assignor to Samvaz S.A., Feail-sur-Vevey, Switzerland

Filed Dec. 27, 1983, Ser. No. 565,885
Claims priority, application Switzerland, Jan. 24, 1983, 378/83
Int. Cl.³ B27G *17/02*
U.S. Cl. 145—11 **4 Claims**



1. Plane comprising a body having two parallel side walls (1,2) disposed on either side of a front sole (3) and a back sole (4), the lower faces of said soles (14,15) being located in a common plane and said soles defining between them an opening having the general shape of a V, a blade-holder pivotally mounted on an axle (20) journalled between the side walls, said blade-holder comprising a lower blade (16) having a forward free end having thereon positioning means (17) for a cutting blade (18); a removable cutting blade (18) having locating means cooperating with said positioning means (17); said blade-holder also comprising a counter-blade (27) angularly displaceable relative to said lower blade (16); said axle (20) of the blade-holder (21) having trunnions pivoted in said side walls (1,2), said axle (20) comprising a central part which is eccentric to said trunnions (21); a working lever (24) angularly fast with said axle (20) to control the rotation of said axle (20) and thereby the displacement of the blade-holder perpendicularly to said axle (20), an arresting device (13) articulated on the side walls (1,2) and pinching strongly the cutting-blade (18) between the lower blade (16) and the counter-blade (27) and maintaining, in service position, the blade-holder against a bearing face (12) of the back sole (4); said counter-blade (27) being displaceable linearly with respect to said lower blade (16) to modify the free width of the cutting edge of the cutting blade (18), and control means controlling said linear displacement of said counter-blade (27).

4,498,514

REINFORCING BELT FOR TIRES WITH RADIAL CASING

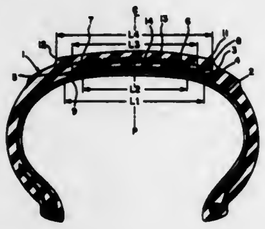
Antoonis G. Maathuis, Foubren, and Anthony W. Parsons, Schieren, both of Luxembourg, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Feb. 22, 1983, Ser. No. 468,255

Claims priority, application Luxembourg, Feb. 26, 1982, 83980

Int. Cl.³ B60C *9/20, 9/08*

U.S. Cl. 152—356 R **4 Claims**



1. A tire with radial carcass, a ground engaging tread, a reinforcing belt structure disposed between the carcass and said tread, said reinforcing belt structure comprising a radially outwardly disposed belt layer and a radially innermost belt layer of filaments or cords having a width L_2 and a width L_1 respectively, the filaments or cords of each of said belt layers forming an angle of 15°–35° with respect to the circumferential direction of the tire, characterized in that the reinforcing belt structure is covered by a first layer of textile cords of axial width L_4 which is at least equal to the width L_2 of the radially outermost belt layer and that the end portions of the radially innermost belt layer have disposed radially outward thereof a second layer of textile cords comprising two axially spaced bands each having a width between 10 and 30% of the width L_4 of said first layer of textile cords, the outer lateral edges of said second layer of textile cords being spaced apart a distance L_3 such that L_3 is comprised between the width of the narrowest and the width of the widest belt layer of said reinforcing belt structure, the filaments or cords of said first and second layers of textile cords being disposed such that they form an angle of between 0° and 10° with respect to the circumferential direction of the tire.

4,498,515

ONBOARD TIRE INFLATION SYSTEM

Joseph C. Holtzhauser, Kalamazoo, and Dale L. Kwasniewski, Battle Creek, both of Mich., assignors to Eaton Corporation, Cleveland, Ohio

Filed Oct. 3, 1983, Ser. No. 538,295

Int. Cl.³ B60C *29/00, 23/16*

U.S. Cl. 152—417 **26 Claims**

1. An onboard tire inflation system for remotely controlling the inflation pressure of at least one inflatable tire, said system comprising:

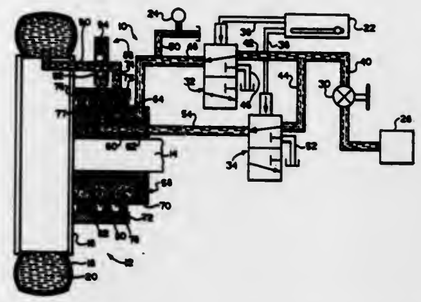
an axle wheel end assembly comprising an axle housing spindle end having a first fluid passage therein opening to an exterior surface thereof, a wheel hub and rim assembly rotatably supported on said axle housing spindle end, said tire sealingly mounted on said wheel hub and rim assembly to define a selectively pressurized interior tire chamber, a second fluid passage in said wheel hub and rim assembly leading from said interior tire chamber to an exterior surface of the hub and rotary seal means associated with said axle housing spindle end and said hub defining a seal chamber establishing constant fluid communication between said first and second fluid passages;

an onboard source of pressurized fluid;

a third fluid passage fluidly connecting said source and said first fluid passage;

first valve means connected in series in said third fluid passage interposed said source and said first fluid passage, said first valve means having a first position for fluidly connecting said first passage and said source and a second position for sealing said source from said first passage and connecting said first passage to an exhaust;

second valve means mounted on said hub and connected in series in said second passage interposed said interior tire chamber and said seal chamber, said second valve having a first open position establishing fluid communication between said interior tire chamber and said seal chamber and a second closed position blocking fluid communication between said interior tire chamber and said seal chamber; and



a control member remote from said wheel end assembly having a selectable first setting for increasing the inflation pressure of said tire, a selectable second setting for decreasing the inflation pressure of said tire and a selectable third setting for maintaining the existing inflation pressure of said tire, said control member operating said first and second valves whereby in said first setting said first and second valves are in said first positions thereof, in said second setting said first valve is in said second position thereof and said second valve is in said first position thereof and in said third setting said first and second valves are in said second positions thereof.

4,498,516

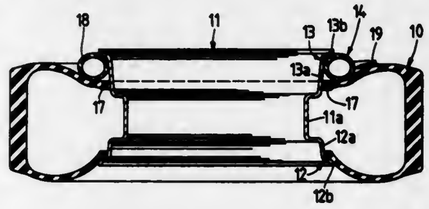
TUBELESS TIRE BEAD SEATER AND METHOD OF EMPLOYING THE SAME

Hugh M. Parker, 718 Cherokee St., Talladega, Ala. 35160

Continuation of Ser. No. 346,849, Feb. 8, 1982, abandoned. This application Feb. 14, 1984, Ser. No. 580,104

Int. Cl.³ B60C *25/00*

U.S. Cl. 157—1.1 **4 Claims**



1. A device for seating a tubeless, pneumatic tire on a wheel rim having outwardly extending inclined ledge portions terminating in annular outturned lips comprising:

(a) a resilient, inflatable, firm, reinforced endless tubular member having a poisson's ratio above 0.55 and adapted to be placed within an annular gap between a bead of a tire and an adjacent inclined ledge portion of said wheel rim and constructed and arranged so that upon inflation there is constrictive movement of said tubular member as it moves radially and inwardly relative to said adjacent inclined ledge portion and exerts a force radially and inwardly thereon as said tubular member moves into sealing engagement with said adjacent inclined ledge portion and said bead and fills said annular gap in response to inflation of said tubular member to a pressure to provide a fluid-tight seal between said bead and said adjacent inclined ledge portion,

(b) means for inflating said tubular member to a pressure to provide said fluid-tight seal, and

(c) means for inflating said tire after inflating said tubular member to said pressure to provide said fluid-tight seal so that said bead is moved outwardly along said adjacent ledge portion of said wheel rim and forces said tubular member outwardly of said annular gap.

4,498,517

BRAKING DEVICE FOR USE IN A ROLLER BLIND

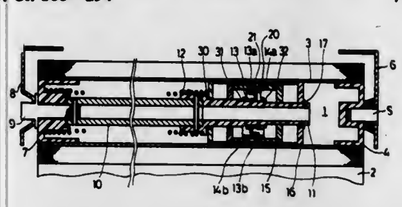
Ryoichi Mase, Tokyo, Japan, assignor to Toso Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 15, 1983, Ser. No. 466,499

Claims priority, application Japan, Feb. 19, 1982, 57-024514

Int. Cl.³ E06B *9/208*

U.S. Cl. 160—294 **7 Claims**



1. A braking device for use in a roller blind of the type having two backets, a fixed shaft non-rotatably supported by one of the two brackets, a tube having an end thereof fitted on the fixed shaft and the other end rotatably supported by the other bracket, a screen wound on the tube, and a spring-motor interposed between the fixed shaft and the tube, said braking device comprising a brake drum non-rotatably supported by the fixed shaft, a coil spring brake mounted on said brake drum, a cam casing integrally fitted in the tube, a cam sleeve mounted on said coil spring brake formed with a cam groove, said coil spring brake having one end thereof connected to said cam sleeve and the other end disposed along said cam groove, said cam groove being Y-shaped and centrally formed with a V-shaped land to form twin top inlets, a central inlet and a bottom inlet, whereby said cam pin moves from said bottom inlet to one of said twin top inlets to loosen said coil spring brake when the screen is pulled down to a first position from the uppermost position, removes from said top inlet to said central inlet to fasten said coil spring brake on said brake drum when the screen is released at said first position, and returns from said central inlet through said other top inlet to said bottom inlet to loosen said coil spring brake when the screen is released after pulled down from said first position.

4,498,518

CONTINUOUS CASTING MOLD PROVIDED WITH ULTRASONIC VIBRATORS

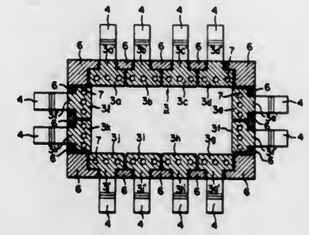
Nobuhisa Hasebe; Hiroshi Kawada, both of Yokohama, and Isamu Komine, Yokosuka, all of Japan, assignors to Nippon Kokan Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 473,978, Mar. 11, 1983, abandoned, which is a continuation of Ser. No. 213,043, Dec. 4, 1980, abandoned. This application Jan. 23, 1984, Ser. No. 572,962

Claims priority, application Japan, Dec. 21, 1979, 166365/79

Int. Cl.³ B22D *11/04*

U.S. Cl. 164—416 **4 Claims**



1. In a continuous casting mold having side walls, and which comprises:

a plurality of ultrasonic vibrators, fitted to the outer surface of each of said side walls of said mold, along each of a plurality of spaced apart straight lines which extend in the axial direction of said mold, said plurality of ultrasonic vibrators fitted along a respective one of said plurality of straight lines being spaced apart from each other at prescribed intervals in said axial direction, said plurality of axially directed straight lines being arranged spaced apart from each other at prescribed intervals in the width direction of said mold, and said side walls of said mold being mutually independent of each other with respect to vibration waves applied by said plurality of ultrasonic vibrators to said side walls;

the improvement wherein:

each of said side walls of said mold comprises a plurality of side wall sections (3*a*, 3*b*, 3*c*, etc.) which are spaced apart from each other in the width direction of said mold, each of said plurality of side wall sections corresponding to a respective one of said plurality of straight lines of said plurality of ultrasonic vibrators fitted to the outer surface of each of said side walls, and each of said plurality of side wall sections having, along said respective one of said plurality of straight lines, said plurality of ultrasonic vibrators coupled to the outer surface thereof to apply vibrations to same;

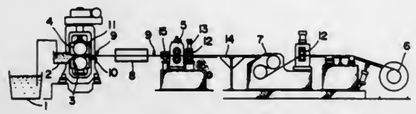
whereby said plurality of side wall sections of each of said side walls of said mold are mutually independent of each other in the width direction of said mold with respect to vibration waves applied by said plurality of ultrasonic vibrators to said plurality of side wall sections, and said vibration waves caused in said plurality of side wall sections of each of said side walls of said mold by said plurality of ultrasonic vibrators substantially do not interfere with each other in the width direction of said mold.

4,498,519

APPARATUS FOR CONTINUOUS MANUFACTURING LEAD OR LEAD ALLOY STRIP

Yasushi Watanabe, Nikko; Yuichi Suzuki; Yukihiro Nagata, both of Yokohama, and Kiyotaka Hoshino, Nikko, all of Japan, assignors to The Furukawa Electric Co., Ltd., Tokyo and The Furukawa Battery Co., Ltd., Yokohama, both of, Japan

Filed May 4, 1983, Ser. No. 491,381
Claims priority, application Japan, May 11, 1982, 57-78588
Int. Cl.³ B21B *13/22*
U.S. Cl. 164—417 **7 Claims**



1. An apparatus for continuously manufacturing lead or lead alloy strip, comprising:

(a) means for continuously applying molten lead or lead alloy having a melting point T_0 to a pair of cooling rolls;

(b) a pair of cooling rolls which simultaneously solidifies said molten lead or lead alloy and shapes the metal into a continuously moving strip having a temperature T_1 which is the temperature of the strip immediately after rolling, said cooling rolls necessarily being cooled in order to continuously cool the molten metal applied to the surface of the pair of rolls;

(c) means for applying forward tension to said continuously moving strip such that said strip has a forward slip ratio δ, the forward tension being such that the following relationship is maintained:

$$K=\sqrt{\delta}\times T_1/T_0$$

wherein $0.45 \geqq K \geqq 0.17$

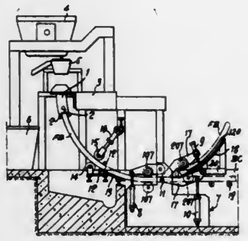
(d) take-up means for coiling said continuously moving strip.

4,498,520

APPARATUS FOR THE CONTINUOUS CASTING OF METALS

Piero Colombo, Udine, Italy, assignor to Continua International Continuous Casting S.p.A, Ferrara, Italy

Filed Jan. 29, 1982, Ser. No. 343,817
Claims priority, application Italy, Jan. 30, 1981, 12426 A/81
Int. Cl.³ B22D *11/128*
U.S. Cl. 164—426 **7 Claims**



1. An apparatus for the continuous casting of metals in a curved path, comprising:

a mold for producing a casting bar;

a rigid curved starter bar for initiating the casting process;

a reversible withdrawing and straightening mechanism including an inlet end and an outlet end, said withdrawing and straightening mechanism including a pair of powered extractor rollers at said outlet end;

means for supporting said powered extractor rollers in a relatively movable fashion;

means for selectively displacing said powered extractor rollers between an opened and closed position;

means for storing said starter bar laterally adjacent said withdrawing and straightening mechanism after said starter bar has initiated the casting process; and

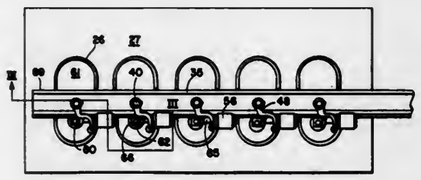
means for transversely shifting said starter bar between a first and second position when said powered extractor rollers are in the opened position, in said first position said starter bar is located out of the casting path supported by said storing means and in said second position said starter bar is located in the casting path for engagement by said powered extractor rollers when in the closed position.

4,498,521

MOLTEN METAL LEVEL CONTROL IN CONTINUOUS CASTING

Susumu Takeda, Danville, Calif.; Allen W. Mann, Spokane, Wash.; David G. Goodrich, Danville, and Theodore C. Zaniger, Livermore, both of Calif., assignors to Kaiser Aluminum & Chemical Corporation, Oakland, Calif.

Filed May 26, 1981, Ser. No. 266,788
Int. Cl.³ B22D *11/16*
U.S. Cl. 164—453 **11 Claims**



1. A method for controlling the level of molten metal in a plurality of vertically disposed continuous or semicontinuous conventional D.C. or E.M. casting units having feed and discharge ends during the startup thereof so that the molten metal levels in the casting units are maintained in essentially the same horizontal plane at the end of the startup, wherein molten metal flows to the upper feed ends of the casting units and solidified or partially solidified ingots or billets supported by bottom blocks exit from the discharge ends of the casting units at the same rate comprising:

A. simultaneously and precisely sensing the level of molten metal in each of said casting units;

B. generating signals representing the molten metal level sensed in each of said casting units;

C. when the molten metal in any of the casting units reaches a predetermined level, generating a set point signal which increases in magnitude with respect to time and which represents a desired molten metal level which rises to a final level over a period of time;

D. comparing each of the signals representing the molten metal level sensed in each of the casting units with the increasing set point signal representing the rising molten metal level desired;

E. regulating the flow of molten metal to the individual casting units in response to differences between the signals compared to control the molten metal level in each of the casing units to essentially the same desired rising level; and

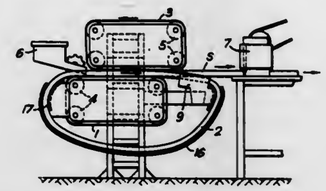
F. when the molten metal levels in all of the casting units are in essentially the same horizontal plane, dropping the bottom blocks so the solidified or partially solidified ingot or billets exit from the discharge ends of the casting units at the same rate.

4,498,522

ELECTROLYTIC REFINING OF METAL

William Nelson, Birkenhead, and John P. Bearpark, Lymm, both of England, assignors to BICC Public Limited Company, London, England

Continuation of Ser. No. 180,000, Aug. 21, 1980, abandoned, which is a continuation of Ser. No. 897,355, Apr. 18, 1978, abandoned. This application Jun. 28, 1982, Ser. No. 392,762
Claims priority, application United Kingdom, Apr. 20, 1977, 16499/77; May 20, 1977, 21387/77
Int. Cl.³ B22D *11/06*
U.S. Cl. 164—460 **3 Claims**



1. A method of forming unrefined electrodes in quantity for use in the electrolytic refining of metal, which method comprises continuously casting molten metal into a mould formed at least in part by a moving endless belt which provides a supporting surface for molten metal and two laterally spaced moving edge dams, which are positioned immediately above the belt, to form a cast strip which, in each of a plurality of longitudinally spaced minor portions of its length separating longitudinally spaced major portions of the length of strip, has at least one area which constitutes a major portion of said minor portion and in which the amount of metal is substantially less than that of a similar area of the major portion of the length of the strip; and cutting the strip so cast at positions spaced along its length and so related to said at least one area of each minor portion of the length of the strip as to form a plurality of unrefined electrodes, each of which electrodes has, in that portion of the electrode that will protrude above the level of the electrolyte solution when the electrode is supported in an electrolytic cell, at least one area which constitutes a major portion of said protruding portion of the electrode and in which the amount of metal is substantially less than that in a similar area of the main body of the electrode wherein said area or at least one of said areas in each of said longitudinally spaced minor portions of the length of the strip is a hole formed by one of a plurality of substantially rigid elongate members which extend transversely at least partly across the belts and are carried by the laterally spaced moving edge dams at spaced positions along their lengths, wherein said area or at least one of said areas in each of said longitudinally spaced minor portions of the length of the strip is a region of substantially reduced thickness as compared with that of the major portion of the length of the strip, which region is formed by one of a plurality of substantially rigid elongate members which extend transversely at least partly across the belts and are carried by the laterally spaced moving edge dams at spaced positions along their lengths and wherein each elongate member is of such a form that at least a part of one of its surfaces is spaced from the surface of one of the belts and extends lengthwise of the belt from one side edge of the elongate member to the other and molten metal flows over or under said part to form a region of the cast strip of substantially reduced thickness as compared with that of the major portion of the length of the strip.

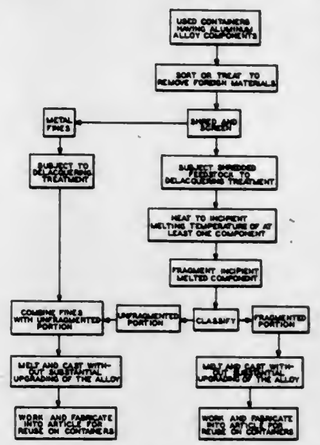
2. Apparatus for forming unrefined electrodes in quantity for use in the electrolytic refining of metal, which apparatus comprises a strip-casting mould formed at least in part by a moving endless belt which provides a supporting surface for molten metal and two laterally spaced moving edge dams which are positioned immediately above the belt; shaping means carried by at least one of the edge dams and the belt at spaced positions along its length and protruding into the mould, which shaping means will form in each of a plurality of longitudinally spaced minor portions of the length of a strip separating major portions of the length of a strip as it is being cast in the mould, at least one area which constitutes a major proportion of said minor portion and in which the amount of metal is substantially less than that in a similar area of the major portion of the length of the strip; and means for cutting the case strip at portions spaced along its length and so related to the said at least one area of each minor portion of the length of the strip as to form a plurality of unrefined electrodes, each of which electrodes will have in that portion of the electrode that will protrude above the level of the electrolyte solution when the electrode is supported in an electrolytic cell, at least one area which constitutes a major proportion of said protruding portion of the electrode and in which the amount of metal is substantially less than that in a similar area of the main body of the electrode, said mold being closed by a second moving endless belt which is positioned immediately above the edge dams, the shaping means comprising a plurality of substantially rigid elongate members which extend transversely at least partly across the belts and are carried by the laterally spaced moving edge dams and wherein each elongate member has at least a part of one of its surfaces spaced from the surface of one of the belts and extending lengthwise of the belts from one side edge of the elongate member to the other such that molten metal will flow over or under said part to form a region of a cast strip of substantially reduced thickness as compared with that of the major portion of the length of the strip.

4,498,523

CONTINUOUS METHOD FOR RECLAIMING, MELTING AND CASTING ALUMINUM SCRAP

Kenneth A. Bowman, Allegheny Township, Allegheny County, and Marvin E. Gantz, Jr., Ligonier, both of Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.

Filed May 12, 1983, Ser. No. 494,071
Int. Cl.³ B22D *11/10*
U.S. Cl. 164—477 **24 Claims**



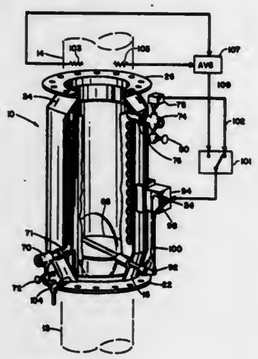
1. A continuous process for the recovery of an aluminum alloy from aluminum scrap containing more than one alloy, the recovery made in a manner which will conserve energy, the process which comprises:

(a) providing a feedstock containing at least two components therein comprised of different aluminum alloys having different incipient melting temperatures, the components having at least parts thereof joined to each other;

(b) heating and agitating the feedstock sufficiently to cause said joined components to become detached from one

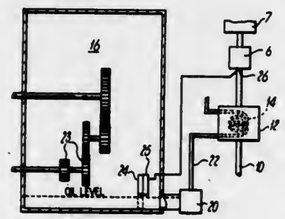
another by fragmentation of the component having the lower incipient melting temperature;
(c) separating one of the detached components from the remainder of the feedstock;
(d) melting at least one of the separated components; and
(e) thereafter continuously casting an aluminum alloy from said melted component without substantially upgrading the composition thereof to provide a cast alloy having a composition substantially the same as that from which said separated component was fabricated.

4,498,524
HEAT EXCHANGER WITH BY-PASS
Orval E. Jacobsen, Box 3429, #2 Caravaca La., Hot Springs Village, Ark. 71909
Division of Ser. No. 822,712, Aug. 8, 1977, Pat. No. 4,371,027, which is a continuation-in-part of Ser. No. 612,043, Sep. 10, 1975,. This application Sep. 30, 1982, Ser. No. 429,038
Int. Cl.³ G05D *23/00*; B60H *1/00*; F28F *27/02*
U.S. Cl. 165—36 **7 Claims**



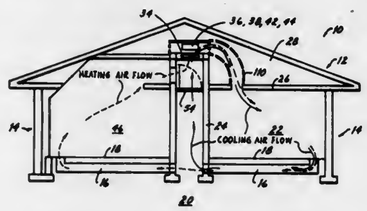
1. An in-line exhaust gas heat exchanger for use with a vertical exhaust stack having a lower portion below the heat exchanger and an upper portion above the heat exchanger, comprising:
(a) a pair of concentrically spaced vertically disposed cylindrical segments forming a vertical central passageway having a diameter substantially equal to the inside diameter of the exhaust stack upper and lower portions, and a vertical annular passageway between the cylindrical segments having a cross-sectional area greater than that of the central passageway, both said passageways being in open communication with upper and lower portions of the exhaust stack at the respective ends of the heat exchanger, a pair of oppositely disposed coaxial upper and lower end coupling members attachable to the exhaust stack upper and lower portions respectively and a plurality of vertical load carrying stringers connected between the coupling members to support the weight of the upper exhaust stack;
(b) fluid carrying heat exchange coils disposed in the annular passageway and having fluid inlet and outlet ports;
(c) a temperature probe means in communication with the exhaust gas passing through at least one of said passageways;
(d) a butterfly valve disposed in the lower end of the central passageway;
(e) means operably connected to the butterfly valve and responsive to the output of the temperature probe means for controlling the position of the butterfly valve within preselected limits; and
(f) said lower end coupling member being provided with a trough in communication with the annular passageway for trapping condensation moisture, and a drain attached to the lower portion of said trough and in communication with said trough for draining same; wherein the position of the butterfly valve may be controlled by preselected temperature limits detected by the temperature probe means.

4,498,525
FUEL/OIL HEAT EXCHANGE SYSTEM FOR AN ENGINE
Stanley Smith, Gloucestershire, England, assignor to Rolls-Royce Limited, London, England
Filed Nov. 30, 1982, Ser. No. 445,567
Claims priority, application United Kingdom, Dec. 10, 1981, 8137324
Int. Cl.³ F02M *31/00*
U.S. Cl. 165—39 **4 Claims**



1. A fuel/oil heat exchange system for an engine having a fuel system, an oil system and a gearbox, the heat exchange system comprising:
a heat exchanger located to receive fuel flowing through the engine fuel system,
a scavenge system for removing oil from the gearbox and passing it through the heat exchanger in heat exchange relationship with the fuel therein,
a temperature sensitive device for sensing the temperature of the fuel at a location downstream of the heat exchanger, and,
means controlled by the temperature sensitive device for varying the level of the oil in the gearbox in order to vary the heat input to the oil due to churning of the oil by the gears thereby controlling the temperature of the fuel at the location of the temperature sensing device.

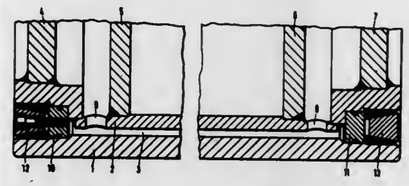
4,498,526
SOLAR EFFICIENT STRUCTURE
Frank B. Arenas, 5303 W. Kennedy, Tampa, Fla. 33609
Continuation-in-part of Ser. No. 319,789, Nov. 9, 1981,. This application Sep. 30, 1982, Ser. No. 430,965
Int. Cl.³ F28D *1/00*; F24J *3/02*
U.S. Cl. 165—45 **24 Claims**



1. A solar efficient structure including an attic and a ceiling operable to cool one or more rooms thereof, comprising in combination:
insulation means for thermally insulating the attic from the environment outside of the structure;
a chase;
first duct means positioned in thermal contact with the ground;
said first duct means being connected in fluid communication with at least one room of the structure and said chase;

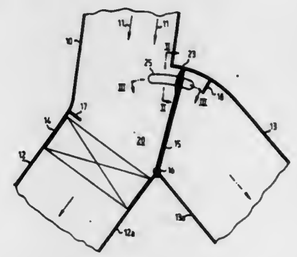
perforated attic duct means connected in fluid communication with the room of the structure and the said chase;
fan means positioned to circulate air from said first duct means, through said chase, through said perforated attic duct means and into the room of the structure to return to said first duct means; and
said perforated attic duct means including a porosity sufficient to maintain the temperature within the attic to approximately equal to the temperature of the ground to assure that the ceiling functions as a radiant surface at a temperature approximately equal to the temperature of the ground.

4,498,527
HEAT-EXCHANGING ROLLER
Wilhelm Gerarts; Gerd Thielen, both of Krefeld, and Eberhard Derichs, Steinrath 10, D-4150 Krefeld, all of Fed. Rep. of Germany, assignors to Eberhard Derichs, Krefeld, Fed. Rep. of Germany
Filed Oct. 26, 1981, Ser. No. 314,967
Claims priority, application Fed. Rep. of Germany, Oct. 25, 1980, 3040359
Int. Cl.³ F28D *11/02*; F28F *5/02*; B60B *7/06*
U.S. Cl. 165—89 **6 Claims**



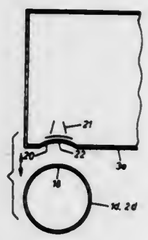
1. An heat-exchanger roller, comprising:
(a) an outer substantially cylindrical casing having spaced ends;
(b) an inner substantially cylindrical casing having spaced ends, said inner casing ends generally aligned with said outer casing ends;
(c) an annular space between said casings adapted for flow therethrough of an heat exchange medium;
(d) each of said inner casing ends has a groove therein providing a radially extending support surface and an axially extending centering surface;
(e) each of said outer casing ends has a groove therein providing an axially extending centering surface aligned with the associated inner casing centering surface;
(f) another groove is disposed in said inner casing at each of said ends adjacent said inner casing centering surface and spaced from said associated support surface;
(g) centering ring means bounding said annular space at each of said ends and are engaged with and supported by said inner casing centering surface and said support surface and said outer casing centering surface;
(h) a lock washer is mounted in said another groove and is engaged with said centering ring means and holds said centering ring means against said support surface;
(i) first and second spaced lock washer means are associated with said ends of each of said casings, each of said lock washer means is supported by one of said inner and outer casings;
(j) each of said lock washer means has a conical surface thereof cooperating with and aligned with an associated conical surface of the adjacent lock washer means;
(k) a double clamping ring is disposed between said first and second lock washers at each of said ends, said double conical clamping ring is engaged with and supported by said conical surfaces of said lock washer means; and,
(l) screw means are associated with said clamping ring and engage said centering ring means for centering said inner and outer casings upon tightening of said screw means.

4,498,528
MEANS FOR HOLDING A FLAP WHICH IS ROTATABLY MOUNTED IN A CONDUIT, AND HOUSING CONTAINING SAID MEANS, FOR A VEHICLE AIR CONDITIONING INSTALLATION
Maurice Jacquet, Maurepas, France, assignor to Valeo, Paris, France
Filed Feb. 28, 1983, Ser. No. 470,399
Claims priority, application France, Mar. 8, 1982, 82 03863
Int. Cl.³ F28D *15/00*
U.S. Cl. 165—42 **5 Claims**



1. Means for holding a flap rotatably mounted in a conduit having a fluid such as air flowing therealong, in particular in an installation for heating, ventilating or air conditioning the cabin of a motor vehicle, wherein the conduit has a wall over which an edge of the flap moves when the flap rotates, and said wall has a rib or thickening suitable for cooperating by means of friction with said edge of the flap, said rib or thickening extending only over a portion of the travel of the edge of the flap with which it cooperates, said conduit forking into first and second branches, with the first branch containing a heat exchanger and the second branch being free, and with the flap being mounted to rotate between a first limit position in which it closes the first branch and a second limit position in which it closes the second branch, said rib or thickening extending only over a portion of the travel of the flap relatively close to said second limit position.

4,498,529
HEAT EXCHANGER
Jacques de Palézieux, Hauterive, and Georges F. Jobin, Cormondrèche, both of Switzerland, assignors to Runtal Holding Company S.A., Glarus, Switzerland
Filed Nov. 2, 1981, Ser. No. 317,492
Claims priority, application Switzerland, Nov. 20, 1980, 8586/80
Int. Cl.³ F28F *1/40, 9/00*
U.S. Cl. 165—176 **4 Claims**



1. A heat exchanger for exchanging heat with a fluid, comprising:
a plurality of flat, mutually parallel, spaced apart tubes each having a longitudinal axis, first and second end portions,

first and second depressed surface portions adjacent said first and second end portions, respectively, and an expanded wall portion formed about said first and second depressed surface portions;

a plurality of collector pipes for directing said fluid to and from said heat exchanger, each of said pipes having a longitudinal axis disposed perpendicular to said longitudinal axis of each one of said tubes and having a plurality of connecting apertures formed within a wall portion of each one of said pipes;

said longitudinal axis of each of said plurality of tubes being disposed in a plane different from a plane in which said longitudinal axis of each of said collector pipes is disposed;

said first and second depressed surface portions of said tubes each defining a surface contour which corresponds to and registers with the exterior wall portion of said pipes and each having a connecting port formed in a central portion of each of said depressed surface portions; and

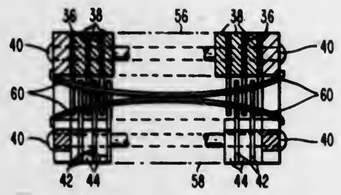
a plurality of projection welds interconnecting each of said tubes with each of said pipes such that each said connecting port coaxially communicates with one of said plurality of connecting apertures.

4,498,530

FLEXIBLE THERMAL CONDUCTION ELEMENT FOR COOLING SEMICONDUCTOR DEVICES

Lewis D. Lipschutz, Poughkeepsie, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 3, 1981, Ser. No. 289,025
Int. Cl.³ F28F 7/00
U.S. Cl. 165—185 **10 Claims**



1. A thermal bridge element for use in a semiconductor package to conduct heat from the back side of a solder bonded semiconductor device to a cold plate located in close proximity to the device, comprising,

a first set of flat, thin, flexible leaf elements, each leaf element having a thickness in the range of 0.2 to 5 mils,

a first flat spacer means spacing said first set of individual leaf elements, a portion of each of said leaf elements projecting beyond said spacer means,

means to hold said first leaf elements and said first spacer means in rigid laminated relation as a first unit,

a second set of flat, thin, flexible leaf elements with portions thereof disposed in slidable overlapping relation to said first set of leaf elements, each leaf element having a thickness in the range of 0.2 to 5 mils.

a second flat spacer means spacing said second set of individual leaf elements,

said second leaf elements having a portion that extends beyond said second spacer means,

a means to hold said second leaf elements and said second spacer means in rigid laminated relation as a second unit,

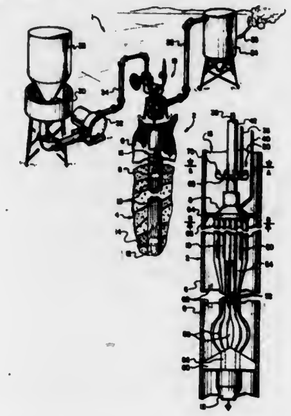
a spring means to bias said first and said second units in outwardly extending relation.

4,498,531

EMISSION CONTROLLER FOR INDIRECT FIRED DOWNHOLE STEAM GENERATORS

John J. Vrolyk, Northridge, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Oct. 1, 1982, Ser. No. 432,179
Int. Cl.³ E21B 43/24
U.S. Cl. 166—59 **10 Claims**



1. An indirect downhole steam generator system comprising:

an indirectly fired downhole steam generator;

a well casing leading from a well head to said downhole steam generator, said well casing comprising a flue for directing a flow of exhaust gases from said downhole steam generator to said well head, said flow of exhaust gases containing pollutants;

an injector located within said well casing for injecting a suspension containing an alkaline reactant into said flow of exhaust gases; said suspension being carried along and mixed within said flow of exhaust gases and said alkaline reactant reacting with said pollutants to form a dispersed waste material;

means for supplying said suspension to said injector; and

means for collecting said waste material at said well head for removal.

4,498,532

PUMP DOWN TOOL AND CHECK VALVE

Charles E. Mason, Fairmont, W. Va., assignor to Conoco Inc., Ponca City, Okla.

Filed Apr. 18, 1983, Ser. No. 485,992
Int. Cl.³ E21B 23/08
U.S. Cl. 166—70 **3 Claims**

1. A device for use in pumping an instrument probe through a conduit, and in retrieving said probe from said conduit, said device comprising:

(a) a valve housing having a flow passage therethrough;

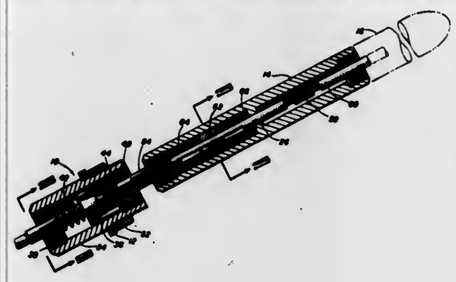
(b) a swab member extending from the exterior of said valve housing and adapted to prevent fluid flow between said valve housing and said conduit;

(c) a valve piston axially movable within said housing,

(d) front and rear stop members in said valve housing, said front stop member including valve seat means formed therein which prevents flow of fluid therethrough when said valve piston is seated thereagainst;

(e) a flexible cable extending through said valve housing, said flexible cable being connected to a probe cable extending from said probe, and said flexible cable being adapted to move longitudinally with said valve piston in said valve; and

(f) connector means including a connector housing, said connector housing including clamp means therein for gripping said flexible cable, said connector housing further enclosing cable connector means for joining said



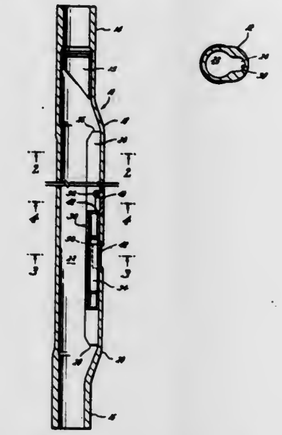
flexible cable and said probe cable, and said connector housing being attached to said valve piston by a connector stub threaded into said piston and said connector housing.

4,498,533

KEYHOLE MANDREL WITH INSERT POCKET

Russell A. Johnston, Houston, Tex., assignor to Camco, Incorporated, Houston, Tex.

Filed Mar. 5, 1984, Ser. No. 586,491
Int. Cl.³ E21B 23/03
U.S. Cl. 166—117.5 **5 Claims**



1. A sidepocket mandrel for use in a well comprising,

a one piece body section having a keyhole cross section extending from one end of the body to the other end of the body, said keyhole cross section shape forming an open bore extending therethrough for aligning with ends, and forming a smaller offset bore adjacent the open bore,

a one piece integral insert having a locking shoulder and a sidepocket, said pocket adapted to receive flow control devices, and said shoulder adapted to coact with a well lock for securing said flow control devices in the sidepocket,

said body including at least one opening extending into the offset bore for welding the insert to the body,

said insert positioned in the offset bore in the lower portion of the body whereby the upper portion of the offset bore functions as a discriminator for allowing the entrance of flow control devices but preventing the entrance of open bore tools in the offset bore, and

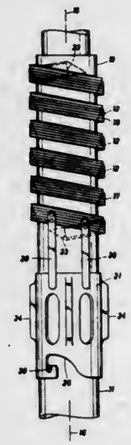
end members connected to said body, said members adapted to receive connections for connection in a well tubing.

4,498,534

LINER HANGER ASSEMBLY

Hiram E. Lindsey, Jr., Midland, Tex., assignor to MWL Tool and Supply Company, Midland, Tex.

Filed Sep. 26, 1979, Ser. No. 79,037
Int. Cl.³ E21B 23/00
U.S. Cl. 166—208 **4 Claims**



1. A liner hanger assembly for use in hanging a tubular string of pipe in a tubular casing in a well bore comprising:

tubular anchor body means adapted for connection to a tubular string of pipe, said tubular body means having an outer diameter sized relative to the inner diameter of a casing in a well bore to provide an annular clearance space therebetween, said tubular body means having a spiral surface along its length and disposed in said clearance space, said spiral surface extending outwardly toward an inner wall of a cased well bore, said spiral surface in vertical cross-section having a tapered configuration between an upper, outwardly extended shoulder portion and a lower outer diameter portion of said body means where the vertical space between a shoulder portion and the outer diameter portion of said body means above a shoulder portion defines a spiral bypass around the body means thereby to permit the clearance space to define a longitudinal fluid passageway, said spiral bypass being sized in cross-section to pass fluid and bore cuttings;

slip means on said body means, said slip means being constructed and arranged for anchoring engagement with the wall of a tubular member, said slip means being comprised of a spiral element of material having outer, serrated surface gripping means and inner tapered surface means disposed on said spiral surface on said body means so as to extend along the length of said body means within said clearance space;

said slip means being movable upon relative longitudinal movement between said body means and said slip means between an unset condition where the outer gripping means are proximate to but not in engagement with a cased well bore and a set condition where said gripping means are in gripping engagement with a cased well bore; and

means for selectively permitting relative longitudinal movement between said body means and said slip means.

4,498,535

APPARATUS AND METHOD FOR IN SITU CONTROLLED HEAT PROCESSING OF HYDROCARBONACEOUS FORMATIONS WITH A CONTROLLED PARAMETER LINE

Jack E. Bridges, Park Ridge, Ill., assignor to IIT Research Institute, Chicago, Ill.

Filed Nov. 30, 1982, Ser. No. 445,672
Int. Cl.³ E21B *43/24, 36/04*
U.S. Cl. 166—248 **22 Claims**



1. A system for preferential in situ heating of earth formations comprising:

a plurality of elongated conductive electrodes emplaced in boreholes in earth formations in respective spaced rows bounding a particular volume of said earth formations and forming a transmission line extending in the direction of said electrodes with said particular volume of said earth formations providing a dielectric medium between respective said rows of electrodes, each electrode being in a different respective borehole,

means for supplying electromagnetic energy to said transmission line at a frequency at which the spacing between respective said rows is less than about twice the skin depth at the frequency of said applied energy, and

reactance means disposed along respective said electrodes to provide predetermined effective transmission line characteristics for developing a predetermined heating pattern in said earth formations.

4,498,536

METHOD OF WASHING, INJECTING SWABBING OR FLOW TESTING SUBTERRANEAN WELLS

Richard J. Ross, and David J. Speller, both of Houston, Tex., assignors to Baker Oil Tools, Inc., Orange, Calif.

Filed Oct. 3, 1983, Ser. No. 538,118
Int. Cl.³ E21B *43/22*
U.S. Cl. 166—250 **3 Claims**

1. The method of chemical treatment and testing of the formation in a production zone adjacent to the well casing perforations by a single trip of a tubing string into the well comprising the steps of:

1. Assembling a circulating washer tool in series relation to a tubing carried resettable packer, said washer having a pair of vertically spaced packing elements expandable by tubing applied fluid pressure into sealing engagement with the casing bore to isolate an axially extending group of perforations;
2. Inserting the assembled washer, packer and tubing string into the well until the expandable packing elements on the washer straddle a selected group of casing perforations and the packer is positioned above all of the casing perforations;
3. Setting the packer to isolate the casing annulus below the packer from the surface;
4. Applying pressurized chemical treatment fluid down the tubing string to expand the expandable packing elements on the washer into sealing engagement with the casing bore and injecting said pressurized chemical treatment fluid into the formation adjacent the isolated casing perforations;
5. Reducing the tubing pressure;
6. Unsetting the packer and moving the washer adjacent a second set of casing perforations;
7. Repeating steps 3 and 4 to successively treat substantially all portions of the formation adjacent the perforations;



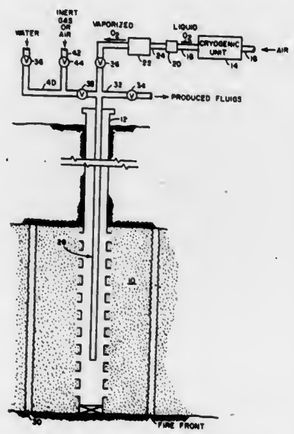
8. Reducing the tubing string fluid pressure to retract the washer packing elements;
9. Unsetting the packer and moving the entire assembly above the perforations and resetting the packer; and
10. Performing a test to indicate the production flow into the washer.

4,498,537

PRODUCING WELL STIMULATION METHOD - COMBINATION OF THERMAL AND SOLVENT

Evin L. Cook, Dallas, Tex., assignor to Mobil Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 232,107, Feb. 6, 1981, abandoned. This application Dec. 23, 1982, Ser. No. 452,854
Int. Cl.³ E21B *43/243*
U.S. Cl. 166—257 **19 Claims**



1. A method for stimulating the recovery of oil from a subterranean reservoir having a relatively heavy crude oil, into which has been drilled at least one production well which comprises the steps of:

(a) injecting a fluid containing at least 75% by volume of oxygen into said reservoir through said production well to initiate an in-situ combustion zone containing a high concentration of carbon dioxide in the vicinity of said production well;

(b) continuing to inject said fluid to propagate said combustion zone into said reservoir a radial distance of about 5 to 50 feet from said production well thereby reducing the viscosity of the reservoir oil by the heat generated from in-situ combustion and the in-situ produced carbon dioxide dissolving in the reservoir oil;

(c) terminating the flow of said fluid into said reservoir; and

(d) recovering oil from said production well.

4,498,538

METHOD FOR MAINTAINING THE PERMEABILITY OF FINES-CONTAINING FORMATIONS

David R. Watkins, Irvine, and Leonard J. Kalfayan, Pasadena, both of Calif., assignors to Union Oil Company of California, Los Angeles, Calif.

Filed Jun. 21, 1983, Ser. No. 506,537
Int. Cl.³ E21B *43/22*
U.S. Cl. 166—295 **37 Claims**

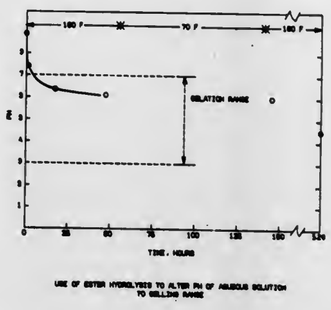
37. A method for treating a subterranean formation which contains formation fines, to minimize impairment of formation permeability due to the the presence of the formation fines, comprising, without drying said formation, injecting into said formation about 0.5 to 100 gallons per vertical foot of formation to be treated a composition consisting essentially of γ-aminopropyltriethoxysilane.

4,498,539

SELECTIVE PLUGGING OF HIGHLY PERMEABLE SUBTERRANEAN STRATA BY IN SITU GELATION OF POLYMER SOLUTIONS

Donald D. Bruning, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Nov. 16, 1983, Ser. No. 552,558
Int. Cl.³ E21B *43/22, 43/20, 33/138*
U.S. Cl. 166—294 **28 Claims**



11. A process of controlling sweep efficiency in a subterranean formation which comprises the sequential injection of effective quantities of:

(1) an aqueous preflush slug to adjust connate water salinity,

(2) an in situ gelable aqueous thickened slug comprising a sequestered polyvalent metal cation, a gelable polymeric viscosifier, and a hydrolyzable pH-reducing organic ester, and

(3) an aqueous drive fluid;

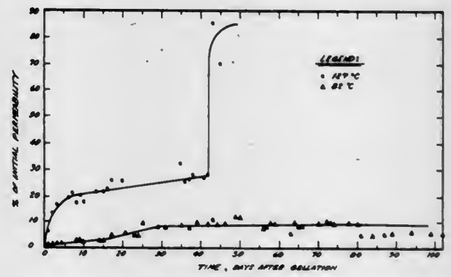
wherein said ester is a hydrolyzable-pH-adjusting ester effective to decrease in situ of the pH of said thickened slug so as to trigger delayed in situ gelation of the thickened slug thus effecting preferential decrease in water permeability of the otherwise highly permeable thief zones.

4,498,540

GEL FOR RETARDING WATER FLOW

Matthew L. Marrocco, Santa Ana, Calif., assignor to Cities Service Oil and Gas Corporation, Tulsa, Okla.

Filed Jul. 18, 1983, Ser. No. 514,557
Int. Cl.³ E21B *43/22*
U.S. Cl. 166—295 **70 Claims**



1. A process for retarding the flow of water in a subterranean zone comprising introducing an effective amount of a gel-forming composition into a subterranean zone, said gel-forming composition being operable when gelled in said zone for retarding the flow of water therein, said gel-forming composition being formable into a gel in the presence of an acidic catalyst from

i. an aqueous solution comprising a first substance selected from the group consisting of polyvinyl alcohol, a polyvinyl alcohol copolymer, and mixtures thereof, and

ii. a second substance comprising an aldehyde.

4,498,541

METHOD OF WELL COMPLETION

Emmet F. Brieger, Albuquerque, N. Mex.; Flint R. George, and Edward A. Colle, Jr., both of Katy, Tex., assignors to GEO Vann, Houston, Tex.

Continuation of Ser. No. 490,295, May 2, 1983,. This application Mar. 19, 1984, Ser. No. 590,680
Int. Cl.³ E21B *43/116*
U.S. Cl. 166—297 **15 Claims**



1. Method of completing a formation located downhole of a borehole, comprising the steps of:

(1) locating a perforating gun downhole in the borehole adjacent to the formation to be completed by using a lower tubing string for connecting the perforating gun in

underlying relationship relative to a packer device and setting the packer device at the appropriate elevation downhole in the borehole; and, providing a gun firing head at the upper end of the gun for detonating the charges of the gun;

(2) forming a passageway which extends through the packer and to the gun firing head;

(3) placing a barrier within the passageway at a location closely adjacent to the packer to prevent debris from falling downhole towards the gun firing head;

(4) placing a seal nipple on the end of an upper tubing string and running the string downhole until the seal nipple engages the packer and the lower end of the seal means penetrates the barrier to communicate the gun firing head with the upper tubing string;

(5) detonating the gun by running a gun firing device downhole through the tubing string and to the gun firing head so that the gun firing head is actuated and the borehole wall is perforated;

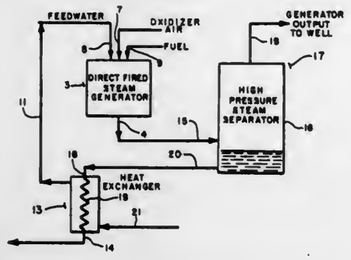
(6) forming a flow path which extends from the formation through the perforations, into the lower annulus, into the lower tubing string at a location below the packer, up through the packer and the upper tubing string, and to the surface of the ground where the production can be gathered.

4,498,542

DIRECT CONTACT LOW EMISSION STEAM GENERATING SYSTEM AND METHOD UTILIZING A COMPACT, MULTI-FUEL BURNER

Stephen Eisenhawer, Albuquerque; Anthony J. Mulac, Tijares; A. Burl Donaldson, and Ronald L. Fox, both of Albuquerque, all of N. Mex., assignors to Enhanced Energy Systems, Albuquerque, N. Mex.

Filed Apr. 29, 1983, Ser. No. 489,829
Int. Cl.³ E21B *43/24, 43/34*
U.S. Cl. 166—303 **7 Claims**



1. A method for thermal stimulation of existing petroleum wells comprising the steps of;

generating a first mixture of combustion products in a high pressure combustor having fuel and oxidizer inlets, and an outlet for delivery of said products;

generating a second mixture of steam and combustion products in a steam generator having a feedwater inlet, an inlet for receiving said combustor combustion products, adjacent said combustor outlet, and an outlet;

separating said water, and other combustion products from said second mixture, forming a third mixture of steam and combustion gases;

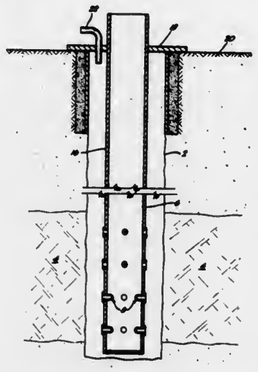
injecting said third mixture into said petroleum well in order to enhance crude oil output.

4,498,543

METHOD FOR PLACING A LINER IN A PRESSURIZED WELL

David S. Pye, Indio; Donald L. Ash, and Robert W. Rardin, both of Santa Rosa, all of Calif., assignors to Union Oil Company of California, Los Angeles, Calif.

Filed Apr. 25, 1983, Ser. No. 488,105
Int. Cl.³ E21B *43/10*
U.S. Cl. 166—376 **12 Claims**



1. A method for placing a perforated liner in a well penetrating a reservior containing a high pressure fluid comprising:

(a) inserting, into openings in the sidewall of the liner, solid hollow plugs capable of withstanding a pressure differential wherein the pressure on the outside of the liner is greater than the pressure on the inside of the liner, said plugs each having a head end protruding into the interior of the liner and a flange portion in contact with the exterior of the liner;

(b) running the plug-containing liner into the well; and

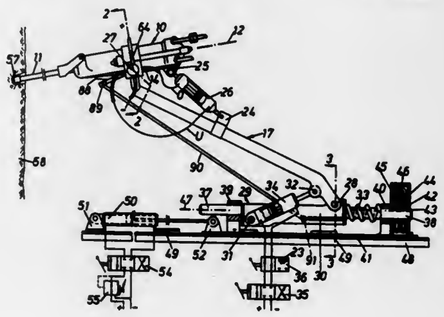
(c) running a cutting or scraping tool down the inside of the liner to remove the heads of the plugs and open the openings in the liner.

4,498,544

METHOD FOR ROCK DRILLING

Alexis Molin, Saltsjöbaden, Sweden, assignor to Atlas Copco Aktiebolag, Nacka, Sweden

Continuation of Ser. No. 287,056, Jul. 27, 1981, abandoned, which is a division of Ser. No. 916,492, Jun. 19, 1978, abandoned. This application Oct. 7, 1983, Ser. No. 540,094
Claims priority, application Sweden, Jun. 21, 1977, 7707139
Int. Cl.³ E21B *15/04*
U.S. Cl. 173—1 **13 Claims**



1. A method for feeding a drilling tool during rock drilling by means of a rock drilling machine equipped with a drill steel, said rock drilling machine being carried swingably with respect to a drill boom and a boom support, said rock drilling machine being pivotally connected to said drill boom,

the method comprising the steps of:

starting drilling a hole with the pivotal connection in a position maintaining the drilling machine and drill steel in alignment with the desired drilling axis;

moving during continued drilling said boom laterally by power so as to produce by lateral displacement thereof a main feeding movement of said pivotal connection;

simultaneously with said moving step, taking alignment with the drilled hole and the drilling axis at the hole penetrating portion of said drill steel while permitting the drilling machine to pivot about said pivotal connection relative to the drilling axis;

simultaneously with said moving step producing a corrective feeding movement of said pivotal connection by positioning said drilling machine angularly relative to the drilled hole and to the drill boom about said pivotal connection by a pressure fluid driven positioning motor connected to the drill boom;

maintaining said rock drilling machine, during said continued drilling, at a fixed distance to said pivotal connection of said rock drilling machine to said drill boom;

and simultaneously with said moving step, further governing said corrective feeding movement via the positioning motor by means of a servo control system so as to cause, by correction of said angular positioning said drilling machine to remain on the drilling axis;

said correction step comprising:

(a) feeding the angular position in space of the rock drilling machine as an actual angle value to the servo control system;

(b) feeding a fixed angular direction which is parallel with the direction of the drilling axis as a set angle value for the drilling machine to the servo control system; and

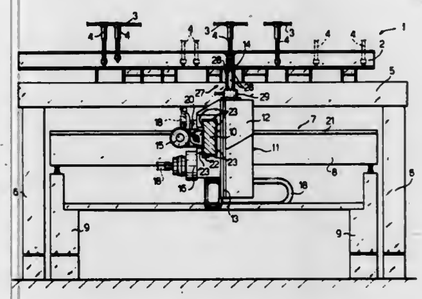
(c) continuously governing the positioning motor by means of the servo control system such that the positioning motor causes said actual angle value to coincide with said set angle value.

4,498,545

AUTOMATIC DEVICE FOR TIGHTENING BOLTS

Fabrizio Grassi, and Luigi Iannarelli, both of Turin, Italy, assignors to Prima Progetti S.p.A., Turin, Italy

Filed Jul. 2, 1982, Ser. No. 394,714
Claims priority, application Italy, Jul. 6, 1981, 67935 A/81
Int. Cl.³ B25B *13/50*
U.S. Cl. 173—43 **6 Claims**



1. An automatic bolt tightening device for assembling mechanical member placed on a buck arranged above said tightening device, comprising:

(a) a headstock which is translatable along three mutually perpendicular axes;

(b) a spindle arranged on and rotatable with respect to said headstock;

(c) a plurality of actuating means which control the translation of said headstock and the rotation of said spindle;

(d) a processing means for controlling said actuating means;

(e) reference means for indicating the position of bolts to be tightened on said members; and

(f) first sensor means for sensing engagement with said reference means,

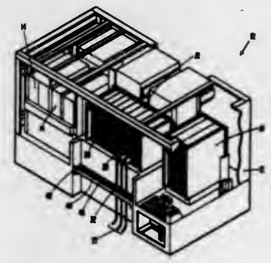
wherein in response to engagement of said reference means, said first sensor means outputs error signals to said processing means, which in turn controls said actuating means to translate said headstock.

4,498,546

APPARATUS FOR LIMITING ELECTROMAGNETIC INTERFERENCE RADIATION

Thomas D. Peterson, Coon Rapids, Minn., assignor to Sperry Corporation, New York, N.Y.

Filed Feb. 28, 1983, Ser. No. 470,685
Int. Cl.³ H05K *9/00*
U.S. Cl. 174—35 R **12 Claims**



1. Apparatus for limiting electromagnetic interference radiation from a housing containing sources of electromagnetic radiation comprising:

a cable extending through the housing, said cable having a plurality of conductive strands, and an electrically conductive shield member surrounding said conductive strands;

an electrically conductive cable retainer bar electrically connected to the housing; and

an electrically conductive adapter ring carried by the cable, said ring having a first portion electrically coupled to said shield member, and a second portion in electrical contact with said cable retainer bar, whereby electromagnetic radiation picked up by said shield member within the housing is substantially drained through said adapter ring and said cable retainer bar to the housing.

4,498,547

EARTH SOIL SAMPLER

Wayne Herkness, II, Box 511, Lewisburg, W. Va. 24901

Filed Dec. 22, 1983, Ser. No. 564,503
Int. Cl.³ E21B *25/02*
U.S. Cl. 175—244 **8 Claims**

1. An earth soil sampler for the probing extraction and containment of multiple samples of soil, comprising:

(A) a rigid shaft which is of substantial mass, relative to the overall sampler;

(B) an elongated bottle retainer secured to one end of the shaft, said retainer mounting

(B_1) shock-resistant bottle securing means intermediate ends of the retainer and

(B_2) a hollow probe in extenaion of the lower end of the

retainer, said probe having interconnection with the retainer interior of the retainer;



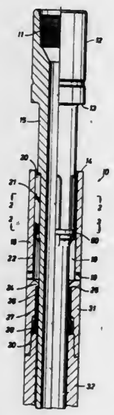
(C) a removable sampler bottle held in shock-resistant inverted containment by the retainer and in coactive in-feed relationship to the hollow probe.

4,498,548

WELL JAR INCORPORATING ELONGATE RESILIENT VIBRATION SNUBBERS AND MOUNTING APPARATUS THEREFOR

Chuan C. Teng, Houston, Tex., assignor to Dailey Petroleum Services Corp., Conroe, Tex.

Filed Jun. 20, 1983, Ser. No. 505,981
Int. Cl.³ E21B *31/107*
U.S. Cl. 175—299 **17 Claims**



1. A rotary well jar subject to severe lateral and longitudinal drill string forces in a fluid-filled wellbore wherein the well jar has an elongate body with an axial passageway for fluid flow, the body having threaded connections at its ends for assembly in a string of pipe, the body having an annulus exposed to well fluid between a mandrel and barrel, the annulus defining an elongate fluid receiving chamber and wherein an impact between hammer and anvil surfaces on the mandrel and barrel jars the pipe, the rotary well jar comprising:

(a) a plurality of elongate resilient vibration snubbers supported externally of said mandrel at an upper end of said annulus and internally of said barrel;

(b) longitudinal groove means receiving said snubbers and said groove means are undercut to define a locking means securing said snubbers therein after insertion and said groove means terminate at a narrow neck;

(c) said snubbers slidably engaging between said barrel and said mandrel through relative telescoping movement;

(d) said snubbers disposed in circumferential spaced relationship about said annulus forming flow channels therebetween in said annulus; and

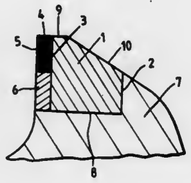
(e) said snubbers having an exposed surface for engaging a surrounding inner surface to dampen vibration and permit telescoping movements between said mandrel and said body.

4,498,549

CUTTING MEMBER FOR ROTARY DRILL BIT

Rainer Jürgens, Altencelle, Fed. Rep. of Germany, assignor to Norton Christensen, Inc., Salt Lake City, Utah

Filed Mar. 15, 1982, Ser. No. 358,079
Claims priority, application Fed. Rep. of Germany, Mar. 21, 1981, 3111156
Int. Cl.³ E21B *10/56*
U.S. Cl. 175—329 **2 Claims**



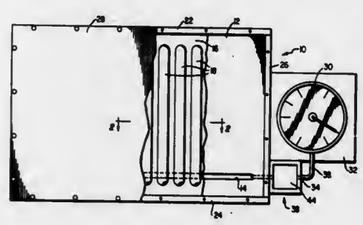
1. A cutting member for rotary drill bits comprising a carrier member having a supporting surface, to which is connected a back surface of a supporting member of hard metal having on its front surface a cutting layer having an exposed front surface and a cutting edge and consisting of polycrystalline synthetic diamond material, and in which the supporting member together with its cutting layer occupies only a portion of the supporting surface of the carrier member and that the remaining supporting surface of the carrier member is occupied by supplementary member of hard metal or other high-strength substances having a free exposed front surface extending the front surface of the cutting member and in which the supplementary member has a shape which complements the supporting member together with the cutting layer to form a complete circular face.

4,498,550

WEIGHT MEASURING APPARATUS WITH CORRUGATED SPRING ELEMENTS

Narendranath Menon, Arlington, Tex., assignor to General Electrodynamics Corp., Arlington, Tex.

Filed May 23, 1983, Ser. No. 497,149
Int. Cl.³ G01G *5/04*
U.S. Cl. 177—209 **21 Claims**



1. An apparatus for measuring weight, comprising:
a base having a planar upper surface;

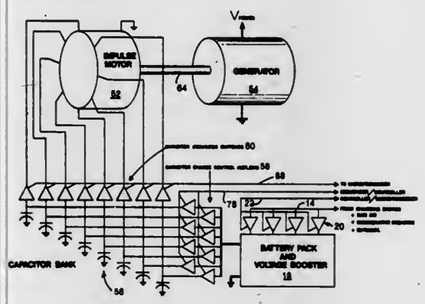
a layer of elastically deformable material disposed on the planar surface of said base, said deformable layer having a plurality of concavities formed therein protruding outward from said base, the inner surface of said concavities and the planar surface of said base forming a plurality of deformable chambers;
channel means for communicating with said deformable chambers to form a common reservoir;
said deformable chambers and said channel means filled with a fluid;
a load bearing layer disposed on the outer surface of said concavities for receiving the weight to be measured, said load bearing layer deforming said deformable chambers such that the volume of said deformable chambers is altered; and
means for measuring a physical characteristic of said fluid in said deformable chambers as a function of the deformation of said deformable chambers resulting from the weight applied to said load bearing layer and converting the measured physical characteristic of said fluid to a weight measurement.

4,498,551

BATTERY-DRIVEN VEHICLE AND RECHARGING SYSTEM

Dominic S. Arbisi, 13001 Berkshire Dr., Minnetonka, Minn. 55343

Filed Sep. 29, 1982, Ser. No. 427,839
Int. Cl.³ B60K *7/00*
U.S. Cl. 180—65.5 **1 Claim**



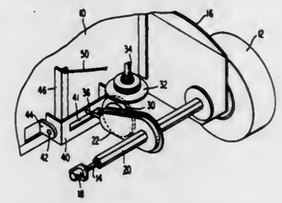
1. A battery-driven vehicle comprising,
a wheeled vehicle,
at least one combination motor/generator set mounted on a wheel of the vehicle,
a battery pack and a DC to DC voltage booster component forming a basic power source,
an impulse motor,
a bank of capacitors with charge control switches and discharge switches providing a pulsating current to said impulse motor,
a generator driven by said impulse motor and supplying current to the motor of the wheel-mounted motor/generator set for driving the wheel,
a microprocessor controlling the current flow from said generator and to said battery pack during charging from the wheel mounted recharging generator, depending upon the position of the accelerator switch,
said accelerator control including means for converting the motor/generator unit to a generating mode through said microprocessor control system whenever the accelerator pedal is released and the battery pack requires charging.

4,498,552

LAWN MOWER FRICTION DRIVE MECHANISM

Russell V. Rouse, Conyers, Ga., assignor to Snapper Power Equipment, Division of Fuqua Industries, Inc., McDonough, Ga.

Filed Mar. 31, 1983, Ser. No. 480,905
Int. Cl.³ F16H *15/08*; B62D *51/04*
U.S. Cl. 180—70.1 **21 Claims**



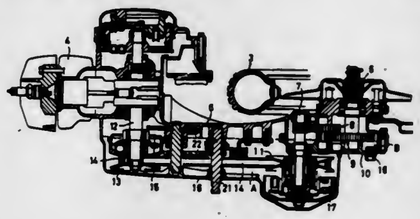
1. A friction drive mechanism comprising in combination, a rotatable driving member having a driving surface, a rotatable driven member to be driven by the driving member and extending in a plane generally at right angles to the driven surface, said driven member having a peripheral surface and a ring concentrically mounted on the peripheral surface for movement relative thereto, said ring having an outer peripheral surface tangentially engageable with said driving surface and said ring having an inner surface engageable with the peripheral surface of the driven member, and wherein the coefficient of friction between the driving surface and said outer surface of the ring and the coefficient of friction between the inner surface of the ring and the peripheral surface of the driven member is such that upon initial engagement with the driving surface, the ring will be rotatable relative to the driven member.

4,498,553

POWER TRANSMISSION CASING APPARATUS IN MOTORIZED TWO-WHEELED VEHICLE

Noboru Kurata, Kamifukuoka; Kunio Miyazaki, Saitama, and Kuniyuki Yamamoto, Kodaira, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 408,685, Aug. 16, 1982, , which is a division of Ser. No. 178,942, Aug. 15, 1980, Pat. No. 4,344,500. This application Apr. 5, 1983, Ser. No. 482,204
Claims priority, application Japan, Aug. 21, 1979, 54-105543
The portion of the term of this patent subsequent to Aug. 17, 1999, has been disclaimed.
Int. Cl.³ B62D *7/00*
U.S. Cl. 180—230 **3 Claims**



1. A power transmission casing apparatus in a motorized two-wheeled vehicle comprising:
a case main body extending from one lateral side of an internal combustion engine to one lateral side of a rear wheel positioned rearwardly of said engine, said case main body being partitioned into front and rear casing sections and having a longitudinally extending lateral wall, said rear casing section rotatably supporting a wheel axle of said rear wheel and having a recessed portion for partially

housing a reduction gear means which includes said wheel axle, an unput shaft, and a gear train operatively interconnecting said input shaft to said wheel axle,

a transmission cover member sealingly engaging at least a portion of the lateral wall of said case main body to cover the recessed portion thereof in a fluid tight manner; and

a V-belt cover sealingly engaging said case main body;

said case main body including on the lateral wall thereof transverse projections which extend to such a position that said transmission cover member and said V-belt cover engage the lateral wall of said case main body;

said casing apparatus housing V-belt means including a rear pulley on said input shaft, a forward pulley on an output shaft of said engine and a V-belt operatively connecting said pulleys, each of said pulleys having a circumferential periphery wherein said reduction gear means are positioned closer to said rear wheel than said V-belt means, and a centrifugal clutch is provided on an outer end of said input shaft furthermost from said rear wheel via said reduction gear means and said V-belt means;

wherein said transmission cover member extends to enclose said reduction gear means to form a wet type chamber to hold a lubricant to immerse said reduction gear means; and

wherein said V-belt cover extends from beyond the forwardmost portion of the periphery of said forward pulley to beyond the rearmost portion of the periphery of said rear pulley to enclose said V-belt means for form a dry type chamber;

said case main body being integrally provided at the front casing section thereof with an engine casing to form a power unit with said transmission cover member and said V-belt cover, the power unit being swingably mounted on the vehicle body; and

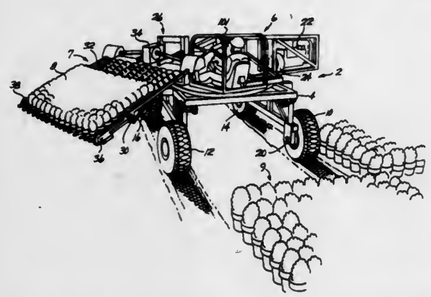
said V-belt cover and said transmission cover member being both on the same side of said case main body in an opposed relation to said engine and said rear wheel.

4,498,554

HIGHLY MANEUVERABLE PRIME MOVER

Roy E. Young, Clemson University, Agricultural Engineering Dept., Clemson, S.C. 29631; Douglas K. Stricklin, 170 Lilac Ln., Brea, Calif. 92621, and Henry M. W. Givens, 3818 So. K St., Tacoma, Wash. 98405

Filed May 3, 1982, Ser. No. 374,226
Int. Cl.³ B62D *5/00*
U.S. Cl. 180—236 **35 Claims**



1. A highly maneuverable prime mover which comprises:

a. a main frame;

b. rotatable turret means mounted on the frame;

c. means to supply motive and control power to the prime mover wheels and turret;

d. means for mounting an operating tool head on the turret means;

e. four supporting drive wheels mounted in a spaced rectangular relationship on the frame;

f. steering arm means operatively connected to each wheel;

g. mode shifting means acting on the steering arm means, said shifting means adapted to shift each wheel through a 90° horizontal arc between a first position and a second position orthogonal to the first; and

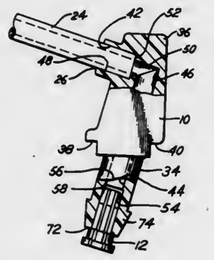
f. steering means operating on the steering arms to control direction of travel by Ackermann steering at least one side-by-side wheel pair when the wheels are in the first position, the mode shifting means serving as a linkage between the steering means and steering arm means, said prime mover being adapted for skid steering or hybrid steering when the wheels are in the second position, wherein said hybrid steering involves steering only a single wheel of one pair.

4,498,555

HEARING AID NUBBIN AND ACOUSTIC DAMPER

Elmer J. Cerny, Des Plaines, Ill., assignor to Beltone Electronics Corporation, Chicago, Ill.

Filed Mar. 30, 1983, Ser. No. 480,411
Int. Cl.³ H04R *25/02*
U.S. Cl. 181—129 **15 Claims**



1. A hearing aid nubbin and acoustic damper, the nubbin including a hollow portion with an internal surface, the acoustic damper including,

a plug having a plurality of grooves, the plug mateable with the internal surface of the hollow portion of the nubbin;

a block, affixed to the plug and forming a shoulder between the block and plug, the block having grooves aligned and continuous with the plug grooves; and

a plate, affixed to the block and forming a shoulder between the plate and block, the plate having grooves aligned and continuous with the plug and block grooves, whereby sound may be transmitted along the grooves, the block shoulder may limit the extent of insertion into the nubbin, and the plate shoulder may function as a graspable flange for removal of the damper from the nubbin.

4,498,556

VERTICALLY MOVABLE, ROAD TOWABLE WORK PLATFORM

John W. Garton, Pursron, nr. Pontefract, England, assignor to Access Engineering Ltd., England

Filed Feb. 15, 1983, Ser. No. 466,501
Claims priority, application United Kingdom, Sep. 11, 1982, 8225960
Int. Cl.³ E04G *1/18*
U.S. Cl. 182—19 **7 Claims**

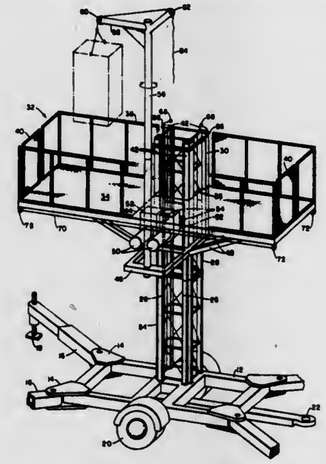
1. Apparatus comprising, in combination,

a wheeled chassis having a vertically extending mast section secured thereon, the mast section having a pair of parallel vertical racks secured thereto,

a platform having an aperture partially surrounding said mast section and being vertically displaceable thereon, the platform and mast section having mutually cooperative parts comprising a normally closed top working limit switch operable when the platform is elevated to a predetermined position on the mast,

a pair of mutually independent drives on the platform each comprising an electrical motor, a reduction gear train driven by the motor and a pinion driven by said gear train and engaging a separate one of said racks, and

a control circuit comprising terminals for connection to a source of electrical power, a circuit breaker having contacts connected to each of said terminals, a raise coil and a lower coil each having contactors connecting between the circuit breaker contacts and said motors, said motors being connected in parallel, the contactors of said coils being connected for opposite directions of rotation of the motors, and a coil energizing circuit including a normally energized lead and a pair of circuits extending therefrom to the raise and lower coils respectively, said circuit to the raise coil including said normally closed top working limit switch.

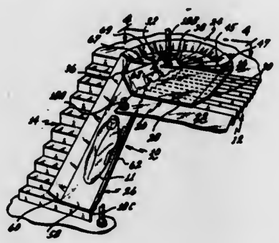


4,498,557

EMERGENCY ESCAPE APPARATUS AND METHOD OF USING SAME

June B. Horne, 1713 W. 90th St., Chicago, Ill. 60620

Filed Jun. 20, 1983, Ser. No. 506,106
Int. Cl.³ A62B *1/20*
U.S. Cl. 182—49 **7 Claims**



1. Emergency escape apparatus adapted to be used with a staircase adjacent to an upright railing or the like, comprising:

slide means adapted to be installed at the staircase, said slide means including an elongated slide member for extending at an incline over the staircase when disposed in a use position;

hinge means connected at one side edge of said slide member to enable it to swing upwardly about said hinge means into an upright storage position adjacent to the railing or the like;

mounting means for fixing said slide means to said staircase;

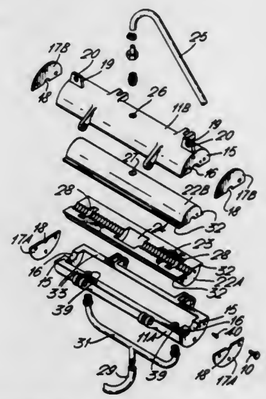
latching means for maintaining said slide member in its upright storage position in a releasable manner, wherein the first-mentioned staircase is disposed in a vertically displaced position adjacent to a second staircase in a side-by-side manner to provide a continuous inclined path of travel along the first-mentioned staircase over a horizontal landing and from there along the second staircase; and further includes second slide means for installation at the second staircase, landing slide means for installation at the landing to provide a continuous substantially uninterrupted path of travel between the first-mentioned and the second slide means when disposed in their use positions, wherein said landing slide means includes a series of landing slide members for extending over the landing surface flat thereagainst, said landing slide members being disposed in overlapping positions, wherein said landing slide means includes hinge means connecting the side edges of said landing slide members to enable said landing slide members to swing upwardly about said hinge means into an upright storage position adjacent to the railing or the like; said hinge means is connected to the landing; and latching means maintains each one of said landing slide members in their upright storage positions in a releasable manner; and a plurality of socket means mounted fixedly in the landing, and a plurality of corresponding studs mounted individually on each one of the landing slide members to engage the respective socket means when the landing slide members move into their horizontal use positions.

4,498,558

CABLE LUBRICATING DEVICE

Samuel H. Bendahan, London, England, assignor to Dynalube Holdings Limited, Jersey Channel Islands, England

Filed Nov. 22, 1982, Ser. No. 443,718
Claims priority, application United Kingdom, Mar. 2, 1982, 8206014; Jun. 18, 1982, 8217767
Int. Cl.³ F16N *11/00*
U.S. Cl. 184—15.1 **7 Claims**



1. A cable lubricating device for greasing wire ropes and cables comprising:

a cylindrical housing formed of two generally semi-cylindrical half-housings that fit together at a diametrical axial plane of the housing,

said two half-housings being designed and arranged to fit together around a wire cable, the cable travelling axially through said housing,

clamps for clamping said two half-housings together,

a center grease-application chamber within the housing having a larger diameter than the cable,

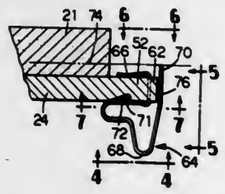
said cable passing through the center grease-application chamber,
a grease supply line connected to said center grease-application chamber,
a first and a second seal in the housing in axial alignment with said center grease-application chamber, said first and said second seals defining opposite ends of said center grease-application chamber,
said cable passing through said seals when the cable enters and leaves said center chamber, and
two further chambers in the housing located axially outward of said first and second seals to collect surplus grease escaping through the seals, said seals defining inner ends of said further chambers,
a grease return line communicating with said further grease-collecting chambers,
wherein each said seal is moulded of elastomeric material with an internal profile contacting the cable and consists of two seal portions, one of said portions on each side of said diametrical, axial plane,
said two seal portions being substantially in the form of two matching halves, said halves comprising an internal triangular section thread with thread peaks and valleys, the thread directions of the two seal portions being mutually reversed from one another,
the diameter of the thread valleys being greater than the maximum diameter of the cable,
the diameter of the thread peaks being substantially equal to the maximum diameter of the cable whereby the threads of said seals contact the cable at the peaks of the threads only.

4,498,559

FRICTION-PAD WEAR-LIMIT WARNING DEVICE FOR DISC BRAKES

Masayoshi Katagiri, Toyota, and Toshio Kondo, Okazaki, both of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota and Aisin Seiki Kabushiki Kaisha, Kariya, both of, Japan

Filed Apr. 14, 1982, Ser. No. 368,412
Claims priority, application Japan, Oct. 27, 1981, 56-159753[U]; Oct. 27, 1981, 56-159754[U]
Int. Cl.³ F16D *63/00*
U.S. Cl. 188—1.11 **13 Claims**



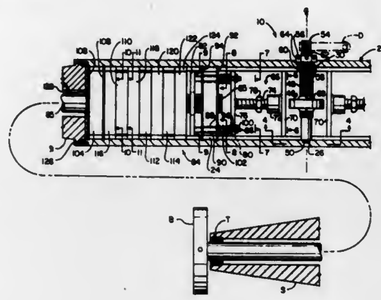
1. A friction-pad wear-limit warning device for a disc brake including a disc rotor, a torque member and a pair of friction pads each having a friction member and a backing plate fixed thereto, supported by said torque member and forced against the mating friction surface of said disc rotor for restraining rotation of said disc rotor, said wear-limit warning device generating a warning sound when a wear limit of said friction member is reached, said warning device comprising:
a projection protruding sideways from a sidewise end face of said backing plate; and
a warning member made from a sheet material which has: a mounting leg portion gripping a sidewise end portion of said backing plate on both front and rear sides thereof and further gripping said projection on both upper and lower sides thereof; a contact portion extending along and being in contact with a sidewise end face of said projection with a free end of said contact portion reaching a wear limit level of said friction member; and a spring portion connecting said contact portion to said mounting leg portion and generating a resilient force, said contact portion being pressed against said sidewise end face of said projection by the resilient force of said spring portion and being forced away from said mounting leg portion by said projection, whereby, when said wear limit of said friction member is reached, said free end of said contact portion comes into contact with said mating friction surface of the rotating disc rotor and said contact portion vibrates, generating said warning sound, but a part of said contact portion is kept in contact with said sidewise end face of said projection by the resilient force of said spring portion, thereby assuring the generation of a stable and clear warning sound.

4,498,560

EMERGENCY STOPPING BRAKE SYSTEM FOR TRACTORS AND TRAILERS

Ronald R. Purdy, 4288 Manor La., Ellicott City, Md. 21043

Filed Feb. 28, 1983, Ser. No. 470,765
Int. Cl.³ F16D *55/38, 66/00*
U.S. Cl. 188—1.11 **9 Claims**



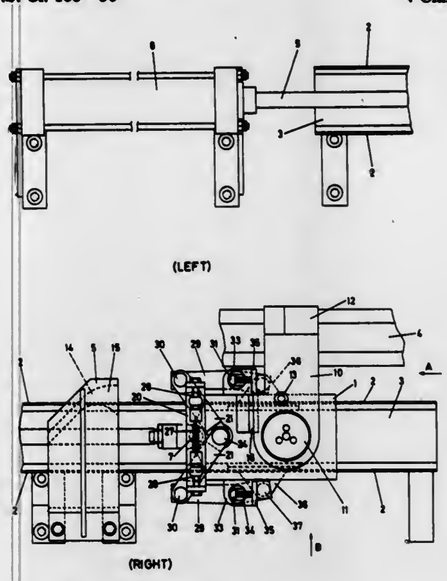
1. In a system for braking vehicle axle-attached wheels and including a stub-axle-in-housing mechanism, a first array of discs, a second array of discs, first means for attaching a first plurality of discs of each of said first and second arrays of discs to said axle, second means for attaching a second plurality of discs of each of said first and second arrays of discs to said housing, and means for releasably compressing together each of said first and second arrays of discs for braking, the improvement comprising: means providing for all said means for attaching discs to be means for slidably attaching, said axle comprising a first stub axle and a second stub axle, each of said first and second stub axles having an inboard end and an outboard end, said housing containing said first array of discs about said first stub axle and containing said second array of discs in axially spaced relation thereto about said second stub axle, means for mounting a respective wheel on each outboard end of the stub axles, said means for releasably compressing including said system having a transverse centerline, and a two-lobe cam symmetrically disposed on said transverse centerline, means rotatably mounting said two-lobe cam and means for rotating said two-lobe cam and exerting equal force in opposite directions simultaneously along said housing, said means providing for all said means for attaching to be means for slidably attaching including said first plurality of discs having splined bores and said first and second stub axles having respective splined portions proportioned for slidably engaging said splined bores, said means providing for all said means for attaching to be means for slidably attaching further including said second plurality of discs having splined peripheries and said housing having a splined bore portion proportioned for slidably engaging said splined peripheries, said means for releasably compressing including a respective first bearing assembly in each of said opposite directions along said housing, and means for affixing each said first bearing assembly to said housing, and said means for affixing including a respective snap-ring in a groove on each side of each said first bearing assembly.

4,498,561

RETRACTABLE WHEEL CHOCK FOR RAILWAY WAGONS

Maurice R. Sanders, Bristol, England, assignor to Godwin Warren Engineering Limited, Bristol, England

Filed Jun. 14, 1982, Ser. No. 387,733
Claims priority, application United Kingdom, Jun. 24, 1981, 8119624
Int. Cl.³ B61H *13/00*
U.S. Cl. 188—36 **4 Claims**



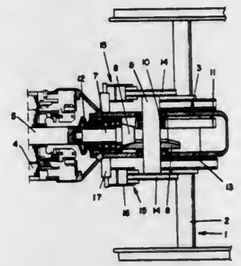
1. A wheel chock assembly for a railway wagon, comprising:
guide rail means mountable fast alongside a railway track;
carriage means mounted for longitudinal reciprocal movement on said guide rail means;
ram means associated with said carriage means for moving said carriage means longitudinally of said guide rail means to and from a rest position;
a cantilever arm having a wheel chock thereon, said cantilever arm being pivotally mounted on said carriage means and being pivotable between an operative position in which said wheel chock overlies said railway track in alignment with a wheel of a wagon on said track, and an inoperative position in which said cantilever arm is parallel to the track and said wheel chock is laterally displaced from said track;
two-way cam means associated with said guide rail means and said cantilever arm for camming said cantilever arm to its inoperative position on movement of said carriage means to its rest position and for caming said cantilever arm to its operative position on movement of said carriage means from its rest position;
friction brake means mounted on said carriage means, including a pair of brake shoes engageable with opposite sides of said guide track; and
brake actuating means associated with said cantilever arm for applying said friction brake means in response to a reaction force of a wagon wheel against said wheel chock when said ram means moves said carriage means to bring said cantilever arm into engagement with said wagon wheel.

4,498,562

DISC BRAKE ARRANGEMENT FOR RAIL VEHICLES

Ernst Piepenbreier, Essen, Fed. Rep. of Germany, assignor to Thyssen Industrie AG, Fed. Rep. of Germany

Filed Nov. 23, 1981, Ser. No. 324,066
Claims priority, application Fed. Rep. of Germany, Dec. 17, 1980, 3047412
Int. Cl.³ B61C *9/50*; B61F *3/04*; B61H *1/00*
U.S. Cl. 188—58 **1 Claim**



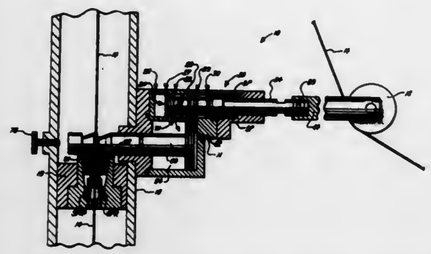
1. A brake and drive arrangement for a rail vehicle comprising:
at least one track wheel set (1) having a track wheel shaft (2);
a multi-stage reduction gear unit (3) connected to said wheel shaft having a unit housing (13) and at least one intermediate power transmission shaft (9) rotatably mounted therein and extending therefrom said multi-stage reduction gear unit comprises a two-stage miter gearing unit, a bevel gear (8) connected to and carried by said intermediate shaft, a spur pinion (1) connected to said intermediate shaft, a spur gear (11) connected to said track wheel shaft and engaged with said spur pinion to form a slow spur gear stage, a drive shaft (7) having a pinion (6) engaged with said bevel gear and forming a fast bevel gear stage, and a bearing connected between said drive shaft and said housing for rotatably supporting said drive shaft;
at least one brake disc (14) connected to said intermediate shaft outside said housing;
an electric motor (4) having an armature spindle (5) extending in a direction of travel of the rail vehicle and having opposite ends;
an elastic coupling (12) connected between one of said armature spindle ends and said shaft for centering and rotatably supporting said armature shaft and for transmitting torque from said motor to said drive shaft;
an additional multi-stage reduction gear unit connected to an opposite end of said armature spindle, said additional multi-stage reduction gear unit having an additional intermediate power transmission shaft, and an additional unit housing;
an additional brake disc connected to said additional intermediate shaft; and
caliper means engageable with each disc to stop rotation of each disc concurrently, and connected directly to each unit housing respectively;
said first mentioned and additional multi-stage reduction gear unit being formed as mirror images of each other on opposite sides of said electric motor, said electric motor having a motor housing rigidly connected to said first mentioned and additional multi-stage reduction gear unit housings.

4,498,563

WIRELINE CATCHER

Wilson J. Trahan, Rte. 2, Box 54-A, Scott, La. 70583

Filed Aug. 23, 1982, Ser. No. 410,517
Int. Cl.[3] B60T 7/12
U.S. Cl. 188—65.1 6 Claims



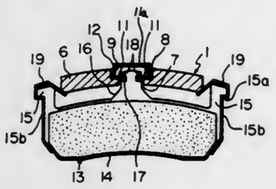
1. An oil well wireline cable catcher apparatus comprising:
a. a housing having a bore which passes vertically therethrough so that a wireline to be caught can pass vertically therethrough and then into the oil well bore;
b. sensing means for monitoring tension of the wireline, so that a break in the wireline can be detected;
c. a pair of slip surfaces disposed within the housing on opposite sides of the wireline at least one of which is movable between gripping and retracted positions, the pair of respective surfaces facing one another so as to grip the wireline in the gripping position;
d. spring means mounted in the housing for biasing at least one of the slip surfaces toward the retracted position in which the wireline is not engaged by the slip surfaces; and
e. slip actuator means carried by the housing and cooperatively connected to the sensing means for moving at least one of the slip surfaces relative to the other slip surface responsive to a break in the wireline, including a powered shaft carrying at one end portion thereof means for urging the two slip surfaces together.

4,498,564

DISC BRAKE SUBASSEMBLY HAVING FRICTION PAD RETAINING MEANS

Koichi Tamura, Tokyo, Japan, assignor to Tokico Ltd., Kawasaki, Japan

Filed Sep. 14, 1982, Ser. No. 418,175
Claims priority, application Japan, Sep. 18, 1981, 56-138503
Int. Cl.[3] F16D 55/224, 65/02
U.S. Cl. 188—73.32 4 Claims



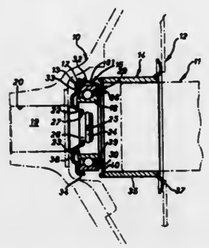
1. A disc brake subassembly comprising:
a caliper adapted to be slidably mounted on a stationary carrier integrally formed on the body of a vehicle, said caliper consisting of spaced opposing leg portions and a bridge portion connecting said leg portions and being for straddling the outer circumference of a rotatable disc;
a pair of friction pads for acting on opposite surfaces of the disc and being adapted to be slidably mounted on the carrier;
said bridge portion of said caliper having an opening extending therethrough in the direction of the radius of the disc, said opening being elongated in the direction of the axis of the disc;
a projection on each of said friction pads and projecting radially outwardly with respect to the disc and radially outwardly of the edge of said opening on the radially outer side of said bridge portion and having on the distal end thereof a retaining portion, said projection being received in said opening;
an elongated guide member having a generally C-shaped cross-section on the radially outer side of said opening and having flange portions directed inwardly of said C-shaped guide member with opposing spaced edges, the flanges being normally spaced from the remainder of the cross-section of said C-shaped guide member for being positioned between the retaining portions of said brake pads and the outer side of said bridge portion, whereby said guide member can be slidably moved along the radially outer side of said bridge portion along said opening for sliding said flange portions between said retaining portions and said bridge portion; and
pad springs between said caliper and said friction pads for radially inwardly biassing said friction pads with respect to said caliper.

4,498,565

CLUTCH RELEASE BEARING

Pierre Renaud, Le Plessis-Trevise, France, assignor to Valeo, Paris, France

Filed Jan. 19, 1982, Ser. No. 340,707
Claims priority, application France, Feb. 2, 1981, 81 01933
Int. Cl.[3] F16D 23/14
U.S. Cl. 192—98 15 Claims



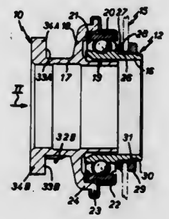
1. A clutch release bearing assembly, comprising an operating element adapted to be acted upon by a control member such as a disengagement fork, an actuator comprising an axial extension, one end of said actuator under the effect of said operating element being adapted to act on the disengagement mechanism of a clutch, and a bearing element located axially between the operating element and a portion of the actuator axially remote from said one end, which bearing element is movable transversely in all directions relative to the operating element, the bearing element also being movable transversely in every direction relative to the actuator, wherein said operating element engages with a support member mounted for axial movement, said operating member being acted upon by the associated control member, and wherein swivel means are provided between said operating element and said support member.

4,498,566

PULL TYPE CLUTCH RELEASING BEARINGS AND METHOD OF ATTACHING CLUTCH RELEASE BEARING TO CLUTCH FORK

Pierre Renaud, Le Plessis-Trevise, France, assignor to Valeo, Paris, France

Filed May 11, 1982, Ser. No. 377,069
Claims priority, application France, May 15, 1981, 81 09710
Int. Cl.[3] F16D 23/14
U.S. Cl. 192—98 16 Claims



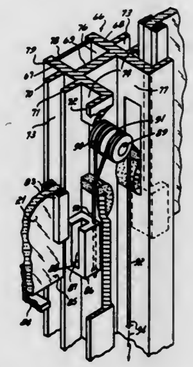
1. A clutch release bearing comprising an operating member cooperable with an actuator fork, a drive element rotatably mounted with respect to said operating member, said drive element adapted to coact with release means of a clutch for effecting clutch disengagement, said operating member comprising a sleeve having axial guide flats diametrically opposite each other, transverse flats defining axial bearing surfaces formed respectively on radial arms protruding radially outwardly from said sleeve, said transverse flats being disposed axially to a side of said axial guide flats remote from said drive element, said clutch release bearing having a median axial plane perpendicular to said axial guiding flats, one of said axial guide flats being disposed entirely on one side of said median axial plane and the other said axial guide flat being disposed entirely on the other side of said median axial plane.

4,498,567

PERIMETER GUARD FOR A MACHINE

Thomas R. Aultz, Loveland, Ohio; Charles C. Hughes, Villa Hills, Ky., and Stanley F. Humbert, Cincinnati, Ohio, assignors to R. A. Jones & Co., Inc., Covington, Ky.

Filed Sep. 30, 1982, Ser. No. 431,562
Int. Cl.[3] F16P 1/00
U.S. Cl. 192—133 7 Claims



1. In a machine having a drive train operated by a main power supply, a perimeter guard comprising,
at least three vertical posts spaced horizontally around at least a major portion of the machine, said posts having free upper ends,
each post having three projecting flanges forming with an adjacent post two sets of vertical facing channels on each side thereof,
a single transparent window slidably mounted in each one set of the facing channels of adjacent posts,
counterbalance means normally holding each window in an upper position, said window adapted to be lowered by pushing downwardly on it to expose operating mechanisms on the machine for attendance by an operator,
panels each slidably mounted in the other set of facing channels of adjacent posts independently of said windows, said panels normally being disposed in a lower portion of said posts and being raisable to expose the drive train of the machine for maintenance work,
and means for locking said panels in a raised position,
said windows and panels being removable by raising them past the free upper ends of said posts.

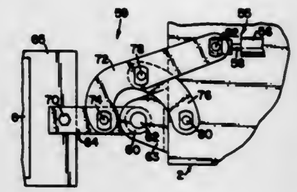
4,498,568

SWINGING CHUTE LINKAGE ASSEMBLIES

Ronald E. Christenson, Dodge Center, Minn., assignor to McNeilus Truck & Manufacturing Co., Inc., Dodge Center, Minn.

Division of Ser. No. 346,011, Mar. 29, 1982, Pat. No. 4,458,800.
This application Jan. 31, 1984, Ser. No. 575,659
Int. Cl.[3] B65G 11/00
U.S. Cl. 193—10 3 Claims





1. A swinging chute assembly for a concrete mix truck or the like, comprising:
a chute section;
said chute section being of generally semi-circular cross-section for channeling flow of concrete mix;
hinge means interconnecting said chute section and the truck for pivotal movement about a generally upright swinging hinge axis over a lateral arc extending between left and right lateral positions;
a first arcuate link having two ends, one end being pivoted to said chute section at a point in predetermined spaced relationship with the upright swinging hinge axis;
a double-acting cylinder coupled with the other end of said first link and the truck; and
a second arcuate link having two ends, one end having pivoted to the truck and the other end of said second link being pivoted to said first link at a point between the ends thereof.

4,498,569

COMMODITY RACK FOR AUTOMATIC VENDING MACHINES

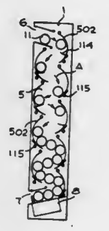
Nobuyasu Tanaka, Yokkaichi; Mitunari Ohashi, Kuwana, and Shohzoh Iwamoto, Yokkaichi, all of Japan, assignors to Fuji Electric Co., Ltd., Tokyo, Japan

Filed Jul. 14, 1982, Ser. No. 398,196

Claims priority, application Japan, Jul. 14, 1981, 56-109609; Aug. 25, 1981, 56-125323[U]

Int. Cl.³ G07F *11/34*

U.S. Cl. 193—27 **2 Claims**



1. For use in automatic vending machines, a commodity rack including:

first and second side walls;

front and rear walls joined to said first and second side walls to form the outer shell of said commodity rack;

said front wall having an inlet port in the upper portion thereof and an outlet port in the lower portion thereof;

a pair of vertical guide rails each comprising a series of concave rail segments, each rail segment having a pair of edges and being supported by at least one side wall and being vertically displaced with respect to each other within each guide rail and with respect to corresponding but oppositely directed concave rail segments in the other guide rail but having the respective pairs of edges on each of said pair of vertical guide rails spaced, horizontally, from said pairs of edges on said oppositely directed concave rail segments and being positioned on the opposite side of a vertical plane passing centrally through said pair of vertical guide rails, from said pairs of edges on said oppositely directed concave rail segments, thereby defining a vertically disposed, open passageway coupling said inlet port and said outlet port; and,

a plurality of auxiliary rail segments each of which is pivotably supported below a respective one of said concave rail segments by way of at least one of said side walls and each of which contains biasing means which cause each auxiliary rail segment, in the unloaded state, to protrude into said passageway with an upwardly inclined attitude;

each of said auxiliary rail segments being pivotably supported along its upper edge from at least one of said first and second side walls and being pivotable to a downwardly inclined attitude in response to a weight being applied thereto.

4,498,570

MULTIPLE PURCHASE DISCOUNT MODULE FOR A SINGLE PRICE VENDING MACHINE

Eddie W. King, and Annis R. Morgan, Jr., both of Atlanta, Ga., assignors to The Coca-Cola Company, Atlanta, Ga.

Filed Jan. 29, 1982, Ser. No. 343,905

Int. Cl.³ G07F *9/08*

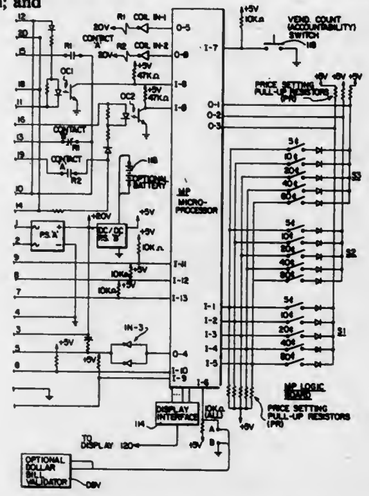
U.S. Cl. 194—1 N **17 Claims**

14. A vending machine for vending goods in discrete sales units, each unit comprising one or more articles, comprising:

a first manually adjustable digital price setting switching device for generating a digital price code for setting a first sales price for a first unit vended in a single sales transaction;

a second manually adjustable digital price setting switching device for generating a digital price code for setting a second price for a second unit when two units are vended in a single sales transaction;

first means for receiving and determining the amount of currency deposited by a purchaser during a sales transaction; and



second means for determining if said amount deposited equals or exceeds said first price and for permitting a purchaser to select one unit when said amount deposited equals or exceeds said first price, and for determining if said amount deposited equals or exceeds the sume of said first and second prices and for permitting a purchaser to select two units when said amount deposited exceeds said sum.

4,498,571

PALLET CHANGER

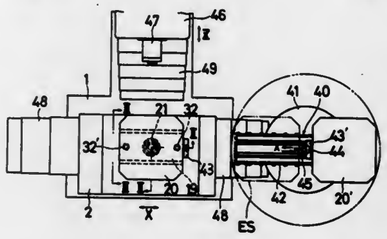
Kenji Nomura, Aichi; Tetsuro Yamakage, Anjo, and Katsuyoshi Noro, Kariya, all of Japan, assignors to Toyoda Koki Kabushiki Kaisha, Kariya, Japan

Filed Jun. 9, 1982, Ser. No. 386,671

Claims priority, application Japan, Aug. 19, 1981, 56-121771[U]

Int. Cl.³ B65G *47/00*

U.S. Cl. 198—339 **4 Claims**



1. A pallet changer for a machine tool having a work pallet for setting up a workpiece thereon and a rotary table capable of removably supporting said work pallet thereon, comprising:

loading and unloading means for loading said work pallet onto, and unloading the same from said rotary table;

a pallet clamper having a rectangular shape and adapted to guide said work pallet in a longitudinal direction thereof when the same is horizontally transferred by said loading and unloading means onto and from said rotary table, said pallet clamper being vertically movable for clamping said work pallet on, and unclamping the same from said rotary table;

main support and operating means rotatably carrying said rotary table thereabout and including a first hydraulic cylinder device connected with the center portion of said pallet clamper for vertically supporting and moving said pallet clamper so as to clamp said work pallet on, and unclamp the same from said rotary table; and

auxiliary support and operating means disposed between said rotary table and said pallet clampler and including a second hydraulic cylinder device vertically operable synchronously with the operation of said first hydraulic cylinder device for auxiliarily supporting at least one longitudinal opposite end portion of said pallet clamper while said work pallet is unclamped from said rotary table.

4,498,572

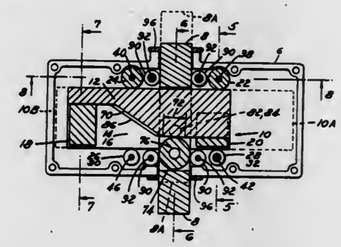
WORKPIECE CLAMPING MECHANISM FOR MULTIPLE STATION TRANSFER MACHINES

John H. Brems, Apt. 16-D, 2800 S. Ocean Blvd., Boca Raton, Fla. 33432

Filed Dec. 4, 1981, Ser. No. 327,517

Int. Cl.³ B65G *47/00*

U.S. Cl. 198—345 **1 Claim**



1. In a multiple station transfer machine in which workpieces are progressively transferred from station to station in said machine and in which said workpieces are individually clamped in each station by movable clamping means, a unified mechanism for clamping said workpieces in the individual stations which comprises:

A. one or more individual self-contained linear clamp modules mountable in various positions of orientation at each station and in which each linear clamp module comprises:

1. a housing,

2. an input member mounted for substantially linear movement in each said housing,

3. an output member mounted for substantially linear movement in said housing in a direction transverse to the linear movement of said input member to be operatively associated with said clamping means in said station, said output members being oriented to move in a plane normal to the linear movement of said input member but at selected angles in said plane,

4. cam means mounted for substantially linear movement in said housing,

5. elastic means connecting said input member and said cam means,

6. cam follower means mounted on said output member engaging said cam means, and

B. reciprocating drive means mounted on said machine operatively connected to drive multiple said input members of said multiple linear clamp modules simultaneously in the same direction, whereby each said input member is driven through a substantially constant stroke and progressively drives said elastic means, said cam means, said cam follower means, said output member, and said clamping means, until said clamping means movement is stalled by clamping contact with said workpiece thereby arresting the movement of said cam means and causing any differential movement of said cam means and said input member to be absorbed by said elastic means,

C. said output member having a transverse opening and said cam means comprising a load cam member projecting through said opening with a cam surface in contact with a load cam follower roller in said opening, and a return cam mounted on and parallel to said load member comprising parallel spaced cam plates slideable along each side of said output member and cooperating with return cam follower rollers on each side of said output member on surfaces outside said opening.

4,498,573

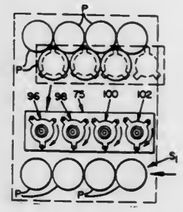
PAIL PALLETIZER WITH ROTATABLE CLAMPS

Larry A. Anderson and Charles H. Shultz, both of Vancouver, Wash., assignor to Columbia Machine, Inc., Vancouver, Wash.

Filed Apr. 11, 1980, Ser. No. 139,234

Int. Cl.³ B65G *47/24*

U.S. Cl. 198—374 **10 Claims**



1. Apparatus for transferring an article from a first station to a second station comprising:

carriage means operable for selective shifting along a path between said first and second stations;

gripping means mounted on said carriage means operable for selectively gripping and releasing the article;

orienting means operably connected to said gripping means for selectively imparting rotation thereto, said orienting means including a rotatable sleeve rotatably mounted on said carriage means;

said gripping means including holder means rigidly mounted on said rotatable sleeve for supporting a plurality of pivotally mounted clamping arms, said gripping means further including first actuating means connected to an extendible-retractable rod slidably received in said rotatable sleeve, one end of said rod being connected to said clamping arms so that when said rod is extended or retracted, said clamping arms are pivoted;

second actuating means mounted on said carriage means operable for selectively imparting rotation to said rotatable sleeve; and

mounting means interposed between said first actuating means and said rotatable sleeve, said first actuating means being secured to said mounting means with said mounting means being connected to said carriage means and restrained from rotation relative thereto, said mounting means being provided with retainer means permitting limited rectilinear shifting of said mounting means relative to said rotatable sleeve, said mounting means being provided with a bore for receiving said rod therethrough, said mounting means further including a slot radially extending from the bore, said rod further including pin means radially extending therefrom for slidable reception in the slot so that upon rotation of said rotatable sleeve relative to said mounting means, said rod remains isolated from rotation.

4,498,574

APPARATUS FOR ALIGNING TUBULAR TRANSPORT CONTAINERS HAVING A SUBSTANTIALLY U-SHAPED HOLLOW CROSS-SECTION FOR DIL HOUSING PRIOR TO THE EMPTYING OF SUCH TRANSPORT CONTAINERS

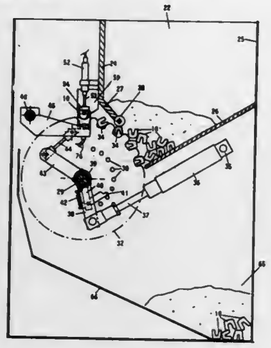
Georg Fischer, Inkofen, Fed. Rep. of Germany, assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Aug. 3, 1982, Ser. No. 404,789

Claims priority, application Fed. Rep. of Germany, Aug. 7, 1981, 3131317

Int. Cl.³ B65G *47/24*

U.S. Cl. 198—380 **8 Claims**



1. Apparatus for aligning an elongated tubular container comprising:

. means for delivering said container;

means for receiving said container from said delivering means and transporting said container to first and second locations;

means adjacent said receiving and transporting means at said first location for engaging at least the ends of said container, and for temporarily lifting said container free from said receiving and transporting means, and thereafter returning said container to said receiving and transporting means, said engaging and lifting means having a semi-circular cutout in an upper edge thereof within which said container is received;

means at said first location for directing gas upward against said container for aligning said container to a desired alignment while said container is temporarily lifted from said receiving and transporting means;

means for clamping said aligned container within said semi-circular cutout against said upper edge of said engaging and lifting means;

means for moving particles along a longitudinal center line of said tubular container while said container is clamped at said first position before said container is returned to said receiving and transporting means; and

means at said second location for receiving said container from said receiving and transporting means after said container has been returned to said receiving and transporting means to store said container therein.

4,498,575

METHOD AND APPARATUS FOR CONVEYING ARTICLES

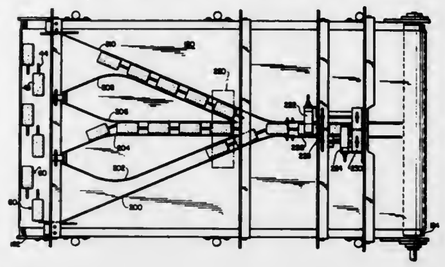
Horst F. W. Arfert, Midlothian, and Reynaldo P. Leyco, Chesterfield County, both of Va., assignors to Reynolds Metals Company, Richmond, Va.

Division of Ser. No. 419,573, Sep. 17, 1982, Pat. No. 4,473,027. This application Mar. 12, 1984, Ser. No. 588,199

Int. Cl.³ B65G *47/24*

U.S. Cl. 198—400 **2 Claims**

1. Apparatus for conveying and reorienting articles having a major axis and a minor axis and which are oriented and conveyed in a direction parallel to their minor axis and positioned in a plurality of rows comprising a conveying surface, baffle means positioned above said conveying surface, said baffle means being constructed and arranged to contact the sides of successive articles in said rows to guide said articles along said conveying surface, reorient said articles along their major axis



and combine said articles from adjacent ones of said plurality of rows into a plurality of columns, a first control means to selectively permit a plurality of said articles from said columns to advance to a passageway to thereby combine the articles from said plurality of columns into a single stream, and a second control means within said passageway to space said articles in said single stream as said articles exit said apparatus.

4,498,576

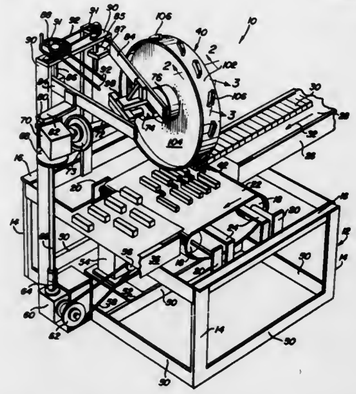
PRODUCT CONVEYOR LANE DIVIDER

Vernon J. Anderson, 3404 Iowa St., Alexandria, Minn. 56308

Filed Apr. 22, 1982, Ser. No. 371,002

Int. Cl.³ B65G *47/26*

U.S. Cl. 198—426 **12 Claims**



1. Product separator and lane divider apparatus comprising a conveyor means coupled to a drive means, the conveyor means receiving a single infeed lane of products from a product infeed conveyor onto a conveyor surface of the conveyor means, rotatable wheel means positioned above the conveyor surface, the wheel means having a cylindrical surface mounting thereon at least one abutment means for cyclically engaging with predetermined ones or groups of the lane of products on the conveyor surface for pushing said ones or groups across the conveyor surface from the single lane on the conveyor surface to an adjacent laterally displaced lane thereon distinct from said single lane, and lane separator projections mounted on the conveyor means in a lengthwise array projecting from the conveyor surface between the infeed lane and the adjacent lane for engaging alternate products in the single lane between said predetermined ones or groups of products to prevent the alternate products being transferred by said wheel means to the adjacent lane.

4,498,577

SCRAPING DEVICES FOR CONVEYOR BELT AND PULLEY DRUM

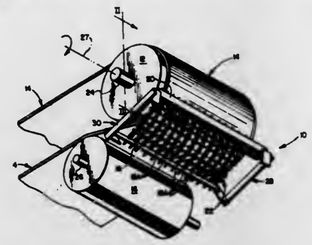
Willem D. Veenhof, 705 Main St., Destin, Fla. 32541

Continuation-in-part of Ser. No. 184,044, Sep. 4, 1980, Pat. No. 4,349,098. This application Aug. 21, 1981, Ser. No. 294,924

Claims priority, application South Africa, Sep. 7, 1979, 79/4738; Canada, Sep. 5, 1980, 359680; United Kingdom, Sep. 5, 1980, 8028685

Int. Cl.³ B65G *45/00*

U.S. Cl. 198—499 **16 Claims**



6. A cleaning device for conveyor belts and the like comprising a flexible tension member, a plurality of wear resistant scraper elements movably supported on said tension member, and means movably coupled between said tension member and said scraper elements for yieldably maintaining said scraper elements at separate scraper positions along said tension member.

4,498,578

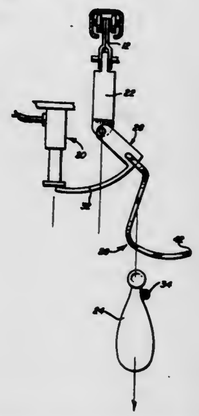
EASY-DROP SIZING CARRIER FOR POULTRY

Paul J. Altenpohl, High Point, N.C., assignor to W. F. Altenpohl, Inc., High Point, N.C.

Filed Feb. 5, 1982, Ser. No. 346,216

Int. Cl.³ B65G *17/32*

U.S. Cl. 198—680 **2 Claims**



1. In combination with a conveyor, a plurality of load carriers operatively connected to the conveyor for travel along a conveyor path, hook means for suspending loads from the carriers, and load release means mounted in laterally spaced relation to the conveyor path, the improvement residing in hook mounting means pivotally connecting each of the hook means to the carriers for supporting the loads in a free suspension position during travel, actuating means engageable by the load release means for lateral displacement of the hook means relative to the conveyor path from said free suspension position to a releasing position, and stop means spaced from the loads and engageable therewith in response to said lateral displacement of the hook means for limiting lateral movement of the loads during approach of the hook means to the releasing position and release of the loads therefrom, each of said hook means comprising a closed-loop rod element having a lower end portion diverging in an upwardly inclined direction in the free suspension position, said actuating means comprising an actuating member rigidly connected to the hook mounting means and extending laterally therefrom relative to the conveyor path, said actuating means maintaining the hook means in the releasing position when unloaded and in the free suspension position laterally spaced from the stop means prior to said engagement by the load release means when loaded.

4,498,579

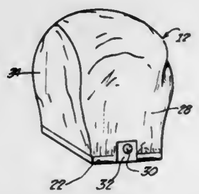
COMBINATION TOWEL AND RAIN COVER FOR A GOLF BAG

Jack Brick, 10800 N. Military Trail, Palm Beach Gardens, Fla. 33410

Filed Jun. 25, 1984, Ser. No. 624,721

Int. Cl.³ A63B *55/00, 57/00*

U.S. Cl. 206—315.4 **13 Claims**



1. A golf bag cover for being attached to a golf bag comprising:

a reversible hood having inner and outer surfaces, said inner surface being a towel material and said outer surface being a water repellant material;

means for attaching said hood to the shoulder strap area of said golf bag; and

means for fastening said hood over said golf bag with said outer surface being exposed;

said hood being inverted when not fastened over said golf bag so that the exposed inner surface serves as a towel hanging from said shoulder strap area.

4,498,580

LAMP BULB CARTON, AND RESULTING LAMP BULB PACKAGE

Edward J. Getz, Irvington, N.J., and Gerald T. Lombardi, Florida, N.Y., assignors to North American Philips Electric Corp., New York, N.Y.

Filed Jan. 13, 1983, Ser. No. 457,789

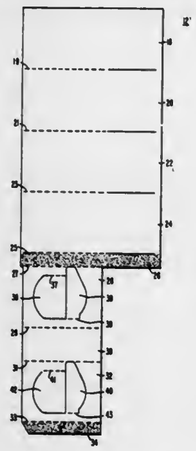
Int. Cl.³ B65D *85/42, 81/02*

U.S. Cl. 206—418 **7 Claims**

1. A carton for packaging an electric lamp bulb, which comprises four interconnected walls of paperboard defining a collapsible open-ended tubular sleeve; and internal liner means for protectively retaining a lamp bulb inserted into said sleeve and concurrently maintaining the sleeve in erect tubular form, said liner means including a pair of liner-panels hingedly connected to one set of oppositely disposed walls of the sleeve, said liner-panels being disposed in side-by-side spaced-apart relationship with each other and with the other set of oppositely disposed walls of said sleeve when the sleeve is in erect tubular form and thereby providing a dual-partition-like liner extending longitudinally within the sleeve and across the inte-

rior thereof; each liner-panel having a pair of flaps hinged to opposite longitudinally extending side portions of the associated liner-panel and swingable in criss-cross fashion along arcuate paths from the plane of the associated liner-panel toward the respective adjacent wall of the sleeve; both pairs of flaps being so shaped and arranged that, when displaced from the respective planes of the liner-panels, they provide cradle-like structures and a single opening in each liner-panel adapted to nestingly receive and effect a frictional interlock with the bulbous portion of the lamp bulb inserted into the sleeve and between the liner-panels; said flaps also being of such length that, when in displaced cradle-like position within the erected sleeve, the free end portions of the flaps are in pressured engagement with the respective adjacent walls of the sleeve along locations proximate different corners of the sleeve and exert buttressing forces on the sleeve walls at such locations to counteract the inherent tendency of the sleeve to collapse; one of the flaps in each pair of flaps being longer than the other flap in the pair, said longer flaps being so oriented that they extend into and engage corner portions of the erected sleeve diagonally opposite one another and thus also serve to lock the sleeve in erect tubular form.

6. An electric lamp bulb package, which comprises an electric lamp bulb having a bulbous-shaped portion; and a collapsible paperboard carton of open-ended tubular configuration



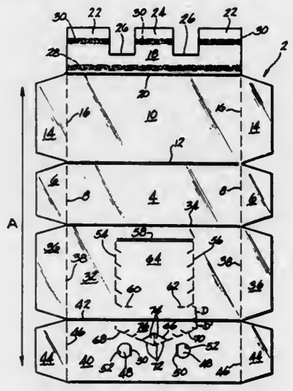
snugly enclosing said lamp bulb and having an internal lining means in interlocked relationship with the bulbous-shaped portion of the lamp bulb for retaining the lamp bulb within the carton, said carton having four interconnected walls defining a rectangular cross section when fully erected; said liner means being constituted by a pair of liner-panels extending across the carton interior and joined to one set of oppositely disposed walls of the carton and spaced inwardly from the other set of oppositely disposed walls of the carton; each liner-panel having a pair of flaps hinged to opposite side portions of the associated liner-panel and swingable in opposite directions from the plane of said associated liner-panel in criss-cross fashion toward the adjacent carton wall, the pairs of flaps being so arranged and shaped that they form a single opening in each liner-panel and a pair of cradle-like structures when the flaps are displaced outwardly from the planes of the liner-panels; the bulbous-shaped portion of the lamp bulb being disposed between said pair of liner-panels and displacing both pairs of flaps outwardly toward the adjacent walls of the carton and thus protruding into the openings formed in the liner-panels by the displaced flaps so that the packaged lamp bulb is in nested interlocked relationship with the liner-panels; the displaced criss-crossed flaps being of such length that they are in pressured engagement with the respective adjacent walls of the carton and exert buttressing forces thereon to counteract the inherent tendency of the carton to collapse; one of the flaps in each pair of flaps being longer than the other flap in the pair, said longer flaps in their displaced position being so oriented that they engage corner portions of the carton diagonally opposite one another and thereby serve to maintain the carton in fully erected form.

4,498,581

BEVERAGE CAN CARTON WITH OPENING PANEL

Daniel P. Dutcher, Blaine, Minn., assignor to Champion International Corporation, Stamford, Conn.

Filed Oct. 11, 1983, Ser. No. 540,377
Int. Cl.³ B65D *5/46, 75/68*
U.S. Cl. 206—427 **2 Claims**



1. A paperboard carton for holding a plurality of beverage cans, said carton comprising:
(a) side, bottom and top walls foldably connected together to form a tubular container;
(b) end flaps foldably connected to end edges of said walls and overlapped and secured to each other to form end closures for said container;
(c) said top wall comprising an outer top wall panel foldably connected to one of said side walls, said outer top wall panel including means forming centrally disposed finger openings in said outer top wall panel;
(d) said top wall further comprising an inner top wall panel foldably connected to the other of said side walls, said inner top wall panel underlying and being adhesively secured to an inner surface of said outer top wall panel to provide a medial weight-bearing portion of said top wall which is two-ply in construction, and said inner top wall panel having an inner free edge which includes a medial tab which extends between said finger openings and which is flanked by recesses providing for insertion of fingers through said finger openings into the interior of said container;
(e) an opening panel comprising a first portion disposed in said one of said side walls, opposite ends of said first portion being defined by two generally parallel arrays of cut score lines extending toward said top wall with bottom extremities of said arrays being interconnected by a hinged fold line which is parallel to and spaced upwardly from said bottom wall, said generally parallel arrays of cut score lines merging into respective series of converging cut score lines, with the uppermost one of each series of merging cut score lines being spaced apart from 5/16 inch to ½ inch from the fold interconnecting said first side wall and said outer top wall panel, said opening panel further comprising a second portion disposed in said outer top wall panel, said second portion being defined by diverging cut score lines which diverge from a common apex toward said end closures of said container, the outermost

ones of said diverging cut score lines being disposed substantially colinearly with said generally parallel arrays of cut score lines and being spaced apart from ¼ inch to 1¼ inches from said fold interconnecting said one side wall and said outer top wall panel, there being flanking shearing marginal portions of said opening panel extending between said converging and diverging cut score lines; and
(f) the grain of the paperboard in said outer top wall panel and said one side wall being generally parallel to said end closures to facilitate linear shearing of said shearing marginal portions of said opening panel when the latter is pulled away from the remainder of the container to open the carton.

4,498,582

ARTICLE CARRIER

Roberto Tomassi, Chateauroux, and Claude Martin, Deols, both of France, assignors to The Mead Corporation, Dayton, Ohio

Continuation of Ser. No. 403,111, Jul. 29, 1982,. This application Mar. 23, 1984, Ser. No. 592,745
Int. Cl.³ B65D *5/02*
U.S. Cl. 206—427 **2 Claims**

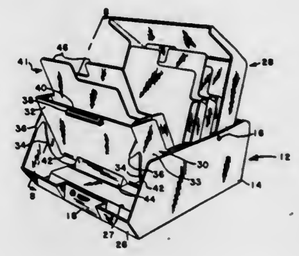
1. A wraparound type article carrier having a plurality of articles disposed in a side by side rectilinear arrangement and secured therein by article retaining apertures formed in said carrier for receiving parts only of the heels and tops of the packaged articles and comprising a pair of side walls, a unitary top wall overlying the tops of the packaged articles, and a bottom wall interconnected to form a sleeve, and a pair of unitary end panels foldably joined respectively to the ends of said top wall, a separate tubular closure element telescoped over at least one article disposed at one end of the carrier and secured in place by said article, said closure element comprising a main panel of a size and configuration to substantially close an end of the carrier, an auxiliary panel foldably joined directly to the upper edge of said main panel, a pair of side panels joined respectively to the end edges of said main panel, and a back panel joined to the edges of said side panels remote from said main panel to form said tubular closure element, said auxiliary panel extending inwardly of said carrier at an angle greater than 90° to the inner surface of said main panel, and one of said end panels being disposed in overlapping face contacting relationship with said auxiliary panel to form a substantially complete closure for the acjacent end of the carrier, said closure element being retained within said sleeve by the article disposed at said one end and the end article being retained in said carrier by said article retaining apertures formed in the carrier.

4,498,583

DISKETTE STORAGE CONTAINER FOR STORING A LARGE QUANTITY OF DISKETTES

Jerry M. Long, Pleasanton, and James A. Womack, Los Gatos, both of Calif., assignors to Innovative Concepts, Inc., San Jose, Calif.

Continuation-in-part of Ser. No. 502,188, Jun. 8, 1983,. This application Sep. 1, 1983, Ser. No. 528,398
Int. Cl.³ B65D *85/30*
U.S. Cl. 206—444 **23 Claims**



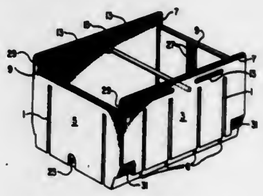
1. An improved storage container comprising:
a generally rectangular base member having a means forming a bottom surface and four upturned walls forming an open top, and camming means disposed adjacent to two of said walls;
a closure member attached to said base member by first pivot means having a portion configured to provide a closure for the open top of said base member with two downwardly turned side walls pivotally attached to corresponding walls of said base member; and
a diskette support member having means forming a diskette support surface and a pair of side walls pivotally attached to the said side walls of said closure member by second pivot means and forming camming surfaces for engaging said camming means, said camming surfaces having a notch formed therein for receiving said camming means when said closure member has been rotated through a predetermined arc about said first pivot means thereby allowing said support member to rotate about said second pivot means away from said closure member.

4,498,584

STACKABLE CONTAINER FOR USE IN A CONTAINERIZATION SYSTEM

Arthur D. Newbury, St. John's, Canada, assignor to Contrawl Limited, St. John's, Canada

Filed Jul. 26, 1982, Ser. No. 402,111
Int. Cl.³ B65D *21/02, 90/02, 90/06*
U.S. Cl. 206—510 **6 Claims**



1. A stackable container, comprising:
(i) a rectangular bottom wall;
(ii) a pair of end walls extending upwardly from the opposed short sides of said bottom wall;
(iii) a pair of side walls extending upwardly from the opposed long sides of said bottom wall and having vertically

extending upper portions at a displacement above the tops of said end walls, the bottom portions of said side walls being inwardly recessed a sufficient amount that each of said containers at the bottom thereof presents a portion having a reduced width dimensioned to be received between the extending upper portions of the side walls of a similar container stacked vertically therebelow, said portion of reduced width being of a vertical dimension substantially equal to the vertical dimension of the extended upper portions of said side walls;

(iv) a laminar cover dimensioned to fit closely between said upper portions of said side walls, said end walls being provided near the tops thereof, and said cover being provided at the ends thereof with mating elements for removably securing said cover in an engaged position in a horizontal plane at the top of said end walls to enclose the interior of said container; and

(v) a rigid stiffener rod extending transversely between and rigidly secured to opposed locations on the interior faces of said side walls generally mid-way between said end walls, the vertical level of said opposed locations being determined by said engaged position of said cover so that in said engaged position said cover is supported below by the upper surface of said stiffener rod,

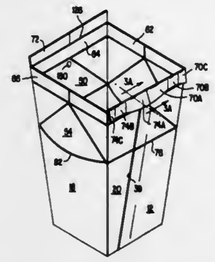
said side walls being provided with gripping sites in the vertically extending upper portions thereof adapted to be engaged by overhead mechanical gripping means operating between said upper portions of said side walls and above said cover in its engaged position, so that a container at the top of a stack may be removed without disturbing the contents of said container or similar containers stacked below or adjacent thereto.

4,498,585

DENESTING PAPERBOARD CONTAINER

Robert L. Gordon, Monroe; Andrew J. Alba, Warwick; Michael Bodary, Middletown, and Barbara Mesquida-Feirman, New York, all of N.Y., assignors to International Paper Company, New York, N.Y.

Filed Dec. 23, 1983, Ser. No. 565,066
Int. Cl.³ B65D *21/00*
U.S. Cl. 206—518 **11 Claims**



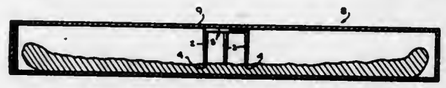
1. A container fashioned from a single blank of resilient, stiff and foldable sheet material, such as paperboard, the container being in the general form of a truncated, tapered prism, the container having a bottom and having means for forming a top closure, the container adapted to be nested or stacked with like containers, the containers when nested having their top portions still open, a container from the nested stack being withdrawn, filled with a potable liquid or other foodstuff, and then closed at its top, the container having at least one top sealing, denesting flap extension, the flap extension being folded along its base fold line towards the outside of the container and being tacked at spaced portions therealong to an outside wall of the container, the natural resiliency of the sheet material forming the container causing the flap extension to bulge outwardly at its non-tacked portions, to thereby form a denesting lip or skirt, whereby similar containers may be stacked and one container of such a stack may be withdrawn without sticking.

4,498,586

PACKAGE SAVER

Carmela Vitale, 1076 Carll Straight Path, Dix Hills, N.Y. 11746

Filed Feb. 10, 1983, Ser. No. 465,642
Int. Cl.³ B65D *85/72*
U.S. Cl. 206—525 **4 Claims**



1. in combination a package having a flexible cover, a food article packaged therein and spaced downwardly from the cover, a unitary molded plastic package saving device for positioning between the cover and the article for supporting the package cover thereby preventing damage to the packaged food article by the cover, said device comprising the combination of three or more spaced legs, each leg having one relatively flat end adapted for engaging the packaged article and having its opposite end attached to a device cover portion.

4,498,587

APPARATUS FOR THE CONTROL OF LARVAE OF THE GYPSY MOTH AND OTHER HARDWOOD DEFOLIATORS

Bohdan O. Hreschak, and Christine Hreschak, both of 55 Cecelia Dr., Wayne, N.J. 07470

Continuation-in-part of Ser. No. 356,738, Mar. 10, 1982, Pat. No. 4,447,447. This application Mar. 23, 1984, Ser. No. 592,952
Int. Cl.³ A01N *43/08*; B65D *85/00, 85/72*
U.S. Cl. 206—525 **12 Claims**

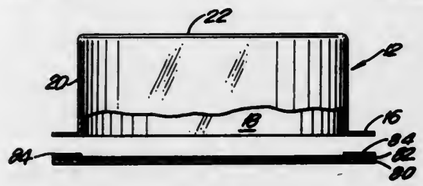
1. A cartridge containing a composition effective to prevent gypsy moth caterpillars and other hardwood defoliators from ascending trees and devouring their foliage, said cartridge being packed with a composition comprising a mixture of (a) 0.05–10.0 parts of at least one aliphatic aldehyde with 2–7 carbon atoms, (b) 0.05–10.0 parts of at least one sulfur compound which is dibutyl disulfide, or a mixture of dibutyl disulfide and dimethyl sulfide, (c) 0–10.0 parts of at least one diketofuran with carbon atoms ranging from 5 to 7, (d) 0.10–20 parts of at least one carboxylic acid with 4–6 carbon atoms, (e) a solvent in the amount of 0–50 parts and (f) 50–99.5 parts of a bulking agent.

4,498,588

RECLOSABLE PACKAGING SYSTEM AND METHOD FOR FORMING SAME

Raymond G. Scott, Oak Brook, Ill., assignor to Champion International Corporation, Stamford, Conn.

Filed May 3, 1984, Ser. No. 606,637
Int. Cl.³ B65D *85/62, 43/16*; B65B *31/00, 25/08*
U.S. Cl. 206—526 **23 Claims**



1. A sealable and reclosable package comprising:

a polygonal body member of semi-rigid preformed plastic having a first planar marginal portion and a central portion shaped to provide a packaging chamber defined by a closed side wall and a transversely extending top wall integral therewith;

a polygonal base member having a second planar marginal portion and a central raised panel shaped to project into

and provide a snug fitting closure for said packaging chamber, with said first and second planar marginal portions being in spaced relationship; and

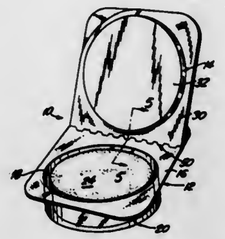
means disposed between said first and second planar marginal portions for permanently attaching one side edge of said portions together, and for peelably attaching the remaining side edges of said planar marginal portions together.

4,498,589

LOCKING HINGE FOR RECLOSABLE PACKAGE

Raymond G. Scott, Oak Brook, and Sherry M. McNulty, Chicago, both of Ill., assignors to Champion International Corporation, Stamford, Conn.

Filed May 4, 1984, Ser. No. 606,911
Int. Cl.³ B65D *43/24, 85/62, 25/08*
U.S. Cl. 206—526 **13 Claims**



1. In a reclosable package having:

a body member of semi-rigid preformed plastic with a first planar marginal portion and a central portion shaped to provide a packaging chamber, and

a base member having a corresponding second planar marginal portion and a central panel to provide a closure for said packaging chamber,

said body member and base member permanently bonded together along one pair of adjacent sides of said first and second planar marginal portions;

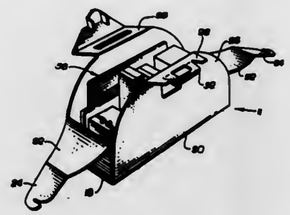
the improvement comprising a hinge situated within said pair of adjacent sides, and locking means for automatically locking said hinge when said package is open and unlocking said hinge when said package is closed.

4,498,590

PACKAGING FOR HEALTH CARE PRODUCTS

Laura M. Burdick, 330 4th Ave. #B, Venice, Calif. 90291

Filed Mar. 25, 1983, Ser. No. 478,755
Int. Cl.³ A45C *11/00*; B65D *85/00*
U.S. Cl. 206—581 **15 Claims**



1. Improved packaging for a plurality of health care products which are designed to be removed from such packaging before being put to their intended use, including:

an outer container member having lower wall means for defining a foot portion and having upper wall means for defining a head portion, and which is manually convertible between an open position where said lower wall means remains intact while said upper wall means are partially displaced outwardly to allow easy removability of the health care products and a closed position to securely store the health care products when not in use;

an inner positioning member located in said foot portion, and having separator means for separately positioning each item of the health care products in said foot portion in a substantially upright position extending above said foot portion into said head portion to facilitate visual inspection of and manual access to each item of the health care products when said outer container member is in said open position; and

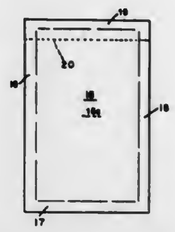
said upper wall means includes a pair of opposing side panels which constitute an upward extension of said lower wall means and which remain upstanding when said outer container is in the open position, and opposing end panel means movable from being non-convergent when said outer container member is in said open position to being upwardly convergent to be removably attachable together by flap means for forming a lid above said head portion when said outer container is in said closed position, with said opposing end means having a width less than the width of said opposing side panels, and with both opposing side panels and said opposing end means for enclosing said head portion when said outer container member is in said closed position and for limiting the upward movement of the health care products relative to said inner position member to prevent each item of the health care products from becoming accidentally dislodged from its storage position in said inner positioning member.

4,498,591

OPENABLE FLEXIBLE PACKET

George B. Smith, II, Portland, Me., assignor to Drug Concentrates, Inc., Annandale, N.J.

Division of Ser. No. 845,472, Oct. 26, 1977, Pat. No. 4,261,253, which is a continuation-in-part of Ser. No. 362,741, May 22, 1973, abandoned. This application Oct. 20, 1980, Ser. No. 198,544
Int. Cl.³ B65D *27/32*
U.S. Cl. 206—620 **6 Claims**



1. A thin, flexible, generally flat and rectangular pouch packet containing a finely-divided material therein, comprising a pair of generally flat substantially parallel opposed fluid-impervious rectangular walls having inside surfaces in generally face to face confrontation with the walls completely joined together around their peripheral top, bottom, and side edges and having a weakened tearing line substantially parallel with and in close proximity to be joined top edge of the packet defining a tear away marginal strip to facilitate the opening of the pouch packet to cup-like form, at least one of the walls having a thin elongated embossment providing a concave deformation relative to the inside surface of the wall, the concave deformation protruding outwardly from the generally flat inside surface of the wall to provide a channel between the inside surfaces of the opposing walls disposed in the generally face to face confrontation, the concave deformation starting at the tearing line at a position midway between joined inner side

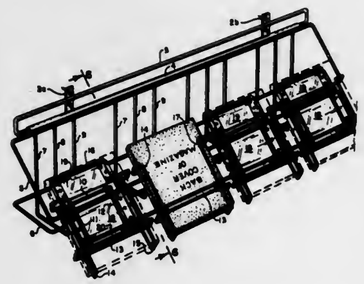
edges of the pouch packet and extending toward the bottom edge of the pouch packet and being dimensioned and arranged to facilitate folding of said wall outwardly to enable the packet to open into generally cup-like form upon the removal of the tear-away marginal strip and the application of pressure urging the side edges of the packet toward one another, whereby fluid may be added to the finely-divided material in said packet while in its generally cup-like form.

4,498,592

MAGAZINE DISPLAY RACK

James Colucci, Fountain Valley, Calif., assignor to Design Wire Products, Inc., Los Angeles, Calif.

Filed Jan. 26, 1984, Ser. No. 574,078
Int. Cl.³ A47F 5/01
U.S. Cl. 211—42 **4 Claims**



1. A magazine display rack comprised of

a trough-like housing having a front wall, a bottom and a rear wall, said rear wall having brackets connected thereto for securing said housing to a display panel or wall,

a plurality of magazine cages for securing magazines on display standing upright in said housing against the front wall thereof, each of said cages being closed at the top and open at the bottom,

means for pivoting each cage on the upper edge of said front wall to gain access to the open end thereof for insertion or removal of a magazine, the pivot of each cage being at a position between its open and closed ends selected so that in its upright position, a magazine in the cage rests on said bottom of said housing, and the spacing between said front wall and said rear wall being selected so that a magazine held firmly in its cage will just clear the rear wall while its cage is being pivoted outwardly, and

an opaque sheet across the front of each cage to screen the cover of a magazine secured therein except that portion thereof bearing the title.

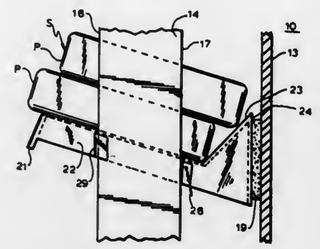
4,498,593

MODULAR SHELF STRUCTURE

William Silver, New York, N.Y., assignor to Thomson-Leeds Company Inc., New York, N.Y.

Filed Mar. 2, 1983, Ser. No. 471,230
Int. Cl.³ A47F 7/00
U.S. Cl. 211—49 D **7 Claims**

1. In combination with a rearwardly disposed vertical wall having a front face and a pair of laterally spaced vertically extending strips lying in planes perpendicular to said wall front face, a shelf module comprising a rear wall having a rear face, a base member projecting forwardly from said rear wall between said strips, a pair of forwardly-rearwardly spaced stop members located on each side of said base member and embracing a respective strip to restrict the forward-rearward movement of said module, said front and rear stop members of each pair thereof delineating a side opening permitting passage of a strip therethrough into the space between said stop members and a pad located on said module rear face and having a pressure sensitive adhesive on its rear face engaging said vertical wall front face to restrict the vertical movement of said module.

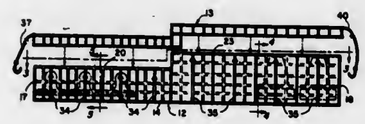


4,498,594

NIPPLE, RING AND CAP DISHWASHER ACCESSORY

Ivan R. Elder, 116 Greengate Dr., Columbia, S.C. 29204

Filed Sep. 13, 1982, Ser. No. 417,046
Int. Cl.³ A47F 7/00
U.S. Cl. 211—181 **8 Claims**



1. An accessory for use in a conventional automatic dishwashing machine for holding the nipples and the ring and cap components of infant feeding bottles, comprising, in combination:

a perforated, rectangular, open top, bottom section, having front and rear walls, main transverse wall, opposed side walls and a flat base; and

a plurality of spaced apart prong-like positioning means attached to and extending upwardly from said flat base, arrange in a plurality of spaced apart rows, each positioning means adapted to receive thereover a nipple or associated ring and cap components to hold them in a fixed position during the dishwashing machine cycles; and

a perforated top section having means for engaging and closing the open top of said bottom section to confine said nipple and ring and cap components positioned within said bottom section; and

securing means attached to said accessory for fastening said accessory at front and rear walls to an article rack of said conventional automatic dishwashing machine.

4,498,595

ICE BLOCK MAKING AND STORAGE SYSTEM

Roland B. Wilson, 1207 S. Lafayette St., Fort Wayne, Ind. 46802

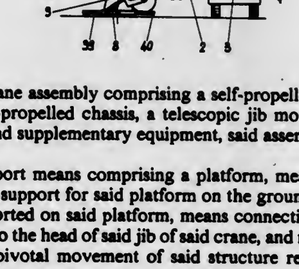
Filed Sep. 28, 1982, Ser. No. 424,901
Int. Cl.³ A47B 47/00
U.S. Cl. 211—194 **3 Claims**

1. An apparatus for the freezing of water in large blocks of ice comprising in combination:

a plurality of support racks each of a generally truncated pyramidal configuration with open generally parallel top and bottom faces each of a generally rectangular shape and trapezoidal side walls of an open mesh configuration;

a plurality of relatively flat floor panels of generally rectangular outline each having a first groove on the lower face spaced inwardly around the entire periphery and adapted to receive upper edges of the side walls of a subadjacent rack for locking said panel and subadjacent rack together to prevent sideward movement;

said floor panels having a second groove on the upper face spaced inwardly around the entire periphery and adapted to receive the lower edges of a superior rack for locking said superior rack with said floor panel to prevent sideward movement and permit said panels and racks to form a columnar configuration; and



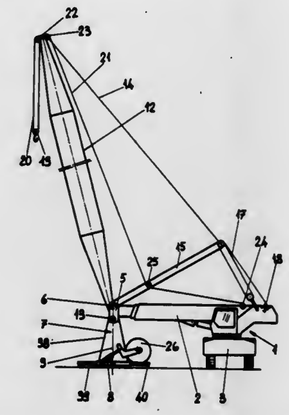
a plurality of containers adapted to be filled with water and arranged in a vertical column with the lowermost container resting on the floor of a freezer and subsequent containers each resting on one of said floor panels and each container except the uppermost one being surrounded by one of said racks.

4,498,596

SUPPLEMENTARY EQUIPMENT FOR USE WITH A SELF-PROPELLED CRANE WITH A TELESCOPIC JIB

Georges Haulotte, La Ravoire, France, assignor to Société des Ateliers de Construction, La Ravoire, France

Filed May 27, 1983, Ser. No. 498,992
Claims priority, application France, Jun. 11, 1982, 82 10185
Int. Cl.³ B66C 23/78, 23/04, 23/26
U.S. Cl. 212—189 **4 Claims**



1. A crane assembly comprising a self-propelled crane having a self-propelled chassis, a telescopic jib mounted on said chassis, and supplementary equipment, said assembly comprising

(a) support means comprising a platform, means providing fixed support for said platform on the ground, a structure supported on said platform, means connecting said structure to the head of said jib of said crane, and means permitting pivotal movement of said structure relative to said platform;

(b) an auxiliary jib having a head and a foot, means articulating said foot of said auxiliary jib relative to said head of said jib of said crane, pulley means for a hoisting cable, and means mounting said pulley means at said head of said auxiliary jib;

(c) strut means, means articulating one end thereof to the foot of said auxiliary jib, auxiliary reeving connecting the other end of said strut means to a first winch on said crane, and cable means connecting said other end of said strut means to said head of said auxiliary jib; and

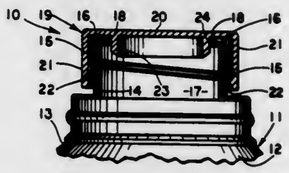
(d) lifting mans, and a hoisting cable therefor passing over said pulley means on said head of said auxiliary jib and connected to a second winch.

4,498,597

CONTAINER AND CLOSURE

Joseph E. Bashour, R.R. #3, Glynwood, Wapakoneta, Ohio 45895

Filed Jan. 20, 1984, Ser. No. 572,403
Int. Cl.³ B65D 41/04
U.S. Cl. 215—329 **6 Claims**



1. In combination, a container and a closure; the container having a threaded neck portion and a flexible lip portion extending inwardly and upwardly from the top of said neck portion defining the opening for the container; the closure having a top portion, a threaded annular skirt depending from the periphery of said top portion for cooperating with said threaded neck portion of the container, and an annular sealing ring depending from said top portion and spaced from said annular skirt such that said sealing ring enters the opening in the container when said annular skirt threadably engages said neck portion; said sealing ring of the closure having an outer diameter which is smaller than the inner diameter of said lip portion of the container so that said lip portion first engages said top portion of the closure and thereafter said top portion bends said lip portion toward said sealing ring and in contact therewith when said annular skirt threadably engages said neck portion.

4,498,598

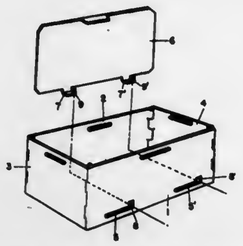
COLLAPSIBLE CONTAINER

Ik J. Bae, Taegu, Rep. of Korea, assignor to Dong Hwa Engineering Co. Ltd., Seoul, Rep. of Korea

Filed Jun. 29, 1983, Ser. No. 509,179
Claims priority, application Rep. of Korea, Nov. 3, 1982, 1866/82
Int. Cl.³ B65D 7/24
U.S. Cl. 220—6 **3 Claims**

1. A collapsible container comprising four plates forming the front, back, left and right walls respectively, said walls being hingedly connected to one another, said container further comprising a bottom plate having at least two L-shaped projections at one side thereof, the lower part of said front wall having at least two openings corresponding to said L-shaped projections, said L-shaped projections being characterized by having holding protuberances substantially parallel to the surface of said bottom plate, said two openings being characterized by having a variable cross section sufficiently large in part to allow said L-shaped projections to pass therethrough

when said bottom plate is placed on said front wall, and sufficiently small in part to prevent said L-shaped projections from



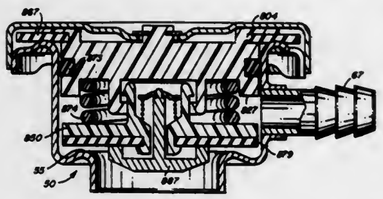
passing therethrough when the respective positions of said front wall and said bottom plate are changed.

4,498,599

CLOSURE AND VALVING APPARATUS

Walter C. Avrea, 1405 Whalers Way, Tempe, Ariz. 85283

Filed Aug. 15, 1983, Ser. No. 523,447
Int. Cl.³ B65D *51/16*
U.S. Cl. 220—203 59 Claims



1. In a closure and valving apparatus for use in connection with the filler neck of a pressurized liquid cooling system, which filler neck includes

a tubular body having a generally cylindrical inner surface,

an upper open end having an annular gasket seat,

engagement receiving means proximate said open end and having a lock position and an unlock position,

and which closure and valving apparatus includes

an attachment member having engagement means connectable with the engagement receiving means of said filler neck,

said attachment member being rotatable between said lock position and said unlock position,

an upper carrier having an upright cylindrical sidewall and an upper end wall,

union means for rotatably securing said upper carrier to said attachment member, and

an atmospheric seal, comprising a first atmospheric seal, carried by the cylindrical sidewall of said upper carrier and sealingly engagable with the inner surface of said filler neck,

improvements therein for sealingly closing the open end of said filler neck, said improvements comprising:

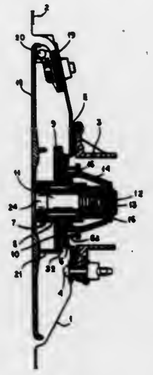
atmospheric seal means, comprising a second atmospheric seal, for sealing engagement with the annular gasket seat at the open end of said filler neck.

4,498,600

FILLER CAP HAVING A HINGED COVER

Didier Blion, Le Chesnay, France, assignor to Automobiles Citroen, Neuilly s/Seine and Automobiles Peugeot, Paris, both of, France

Filed May 24, 1983, Ser. No. 497,763
Claims priority, application France, May 25, 1982, 82 09316
Int. Cl.³ B65D *51/18*
U.S. Cl. 220—255 7 Claims



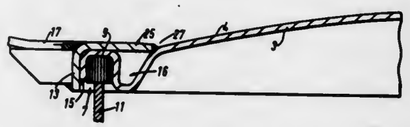
1. In a filler cap, particularly for automobile vehicle gas tanks, which comprises a hinged flap coupled with a lockable closing element, the flat and the closing element being coupled together in such a manner as to give way when an effort exerted on the flap reaches a certain threshold, said flap being fast with at least two flexible tongues directed inwardly of the cap and whose ends comprise retaining hooks adapted to clip on the closing element.

4,498,601

LIDS FOR PRESSURE VESSELS

Edward S. Fort, Ashcroft, Crow Trees Brow, Chatburn, Clitheroe, Lancashire, England

Filed May 12, 1982, Ser. No. 377,590
Claims priority, application United Kingdom, May 13, 1981, 8114559
Int. Cl.³ B65D *51/18*
U.S. Cl. 220—256 17 Claims



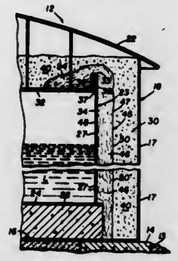
1. A man-lid for a container tank comprising a one piece inner skin having an inturned flange which defines in part an annular seal groove formed in the inner skin by pressing and a reinforcing member disposed externally of the inner skin and having a part which is L-shaped in cross-section and which backs-up the inner skin in the region of the seal groove, an inturned peripheral flange of said L-shaped part being contigous with the inturned flange of the inner skin and an external edge of said peripheral flange being welded to the inturned flange of the inner skin.

4,498,602

RESILIENT BLANKET WITH INTEGRAL HIGH STRENGTH FACING AND METHOD OF MAKING SAME

Stanley E. Sattelberg, Naperville, and George A. Baker, Batavia, both of Ill., assignors to Chicago Bridge & Iron Company, Oak Brook, Ill.

Filed Dec. 8, 1983, Ser. No. 559,485
Int. Cl.³ B65D *7/22*
U.S. Cl. 220—452 9 Claims



1. A tank for storing liquids at cryogenic temperatures, comprising:

an inner storage vessel for receiving and retaining the liquids and having top and bottom walls and an upstanding cylindrical side wall;

an outer vessel enclosing said inner storage vessel and having top and bottom walls and an upstanding cylindrical side wall respectively spaced from the top, bottom, and cylindrical side wall of said inner storage vessel, said spaced cylindrical side walls defining an annular insulating space therebetween;

a composite resilient blanket having opposite sides and a low temperature compressive resiliency disposed in and filling a portion of said insulating space between said cylindrical side walls;

a free mass of substantially free-flowing, lightweight, granular insulating material disposed in the remainder of said insulating space between said cylindrical side walls;

the compressive resiliency of said composite blanket being such as to compensate for changes in the radial thickness of said annular insulating space between said cylindrical side walls, due to expansion or contraction of one or both of said vessels relative to the other of said vessels, so that attrition of said mass of granular insulating material is minimized; and

at least one side of said composite resilient blanket having a layer of flexible, strengthening material bonded thereto, said layer of strengthening material being effective to resist the vertical drag forces imposed on said blanket by said free flowing mass of granular insulating material during relative expansion and contraction of the cylindrical side walls of said vessels and to prevent said blanket from shifting downwardly in said insulating space in the event of local tearing or rupturing of the same.

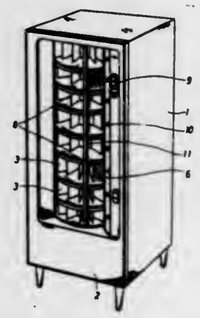
4,498,603

VENDING MACHINE COMPRISING AT LEAST ONE DRUM

Poul E. Wittenborg, Odense, Denmark, assignor to Wittenborgs Automatfabriker A/S, Odense, Denmark

Filed Sep. 14, 1982, Ser. No. 417,925
Claims priority, application Denmark, Nov. 3, 1981, 4846/81
Int. Cl.³ G07F *11/54*
U.S. Cl. 221—76 8 Claims

1. In a vending machine comprising at least one drum pivotably mounted about a vertical shaft and provided with vertical partitions defining a discharge opening at the periphery of each of the at least one drum, through which opening an article is removable when a customer has activated the vending machine in an appropriate manner, said vending machine furthermore comprising a front pane rendering it possible for the customer to see the articles contained in the drum, the improvement comprising that the front pane (4) comprises an outer pane (11) and an inner pane (12) associated with each of the at least one drum, the inner and outer panes being pivotably mounted about a vertical shaft, that the outer pane (11) is connected to a motor (21) so that at activation of the vending machine said outer pane is temporarily opened by being turned a predetermined distance to one side until the customer has removed the desired article, that the inner pane (12) comprises a first and second dog (64, 63), the first (64) of said dogs being adapted to cooperate with the outer pane (11) in such a manner



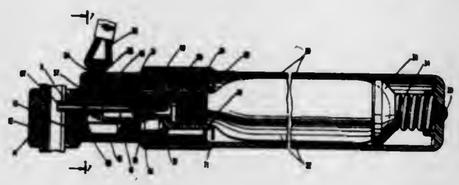
that a chosen inner pane (12) follows at least part of the opening movement of the outer pane (11), the second dog (63) being adapted to co-operate with the outer pane (11) so that the chosen inner pane (12) follows the closing movement of the outer pane, and that one of the inner pane (12) and the parts permanently connected thereto comprises separately releaseable catching means (46) releasably engaging abutting means (49) during the opening movement so that the inner pane (12) is stopped and the discharging opening (8) is laid open, said abutting means being associated with a partition (6) of the discharge opening (8), which is situated adjacent the open position of the outer pane (11) so that the drum follows the inner pane (12) during the closing movement thereof.

4,498,604

AUTOMATIC INFLATOR

Glenn H. Mackal, 4923 59 Ave. S., St. Petersburg, Fla. 33702

Filed Jul. 26, 1982, Ser. No. 401,652
Int. Cl.³ B67B *7/24*
U.S. Cl. 222—5 11 Claims



1. An automatic inflator which inflates gas-inflatable articles by the release of compressed gas from a gas-containing capsule by the piercing of a sealing means on the capsule, comprising

an elongated housing having first and second end portions, the housing receiving a compressed gas-containing capsule for longitudinal movement with respect thereto and with the sealing means on the capsule disposed adjacent the second end portion of the housing,

a piercing pin mounted on the second end portion of the housing to confront the sealing means of a capsule

mounted therein, resilient means at the first end portion of the housing for constantly urging the capsule longitudinally of the housing toward the second end portion thereof,

a releasable blocking means adjacent the second end portion of the housing and interposed between the sealing means-containing end of the capsule and said end portion of the housing to hold the sealing means of the capsule spaced from the piercing pin,

the blocking means including a water-sensitive means which when wet releases the blocking means so that the resilient means moves the capsule toward the piercing pin so that the sealing means of the capsule is pierced thereby,

the blocking means comprising telescopically disposed inner and outer parts disposed with their axes aligned longitudinally of the housing, one of said inner and outer parts of the blocking means engaging the capsule and the other of said inner and outer parts of the blocking means being disposed in thrust transmitting relationship with the second end portion of the housing, and

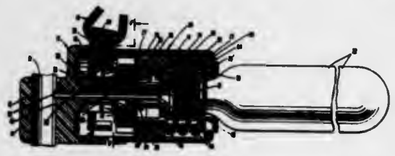
a supporting means interposed between the said other of said inner and outer parts of the blocking means and the second end portion of the housing.

4,498,605

AUTOMATIC INFLATOR

Glenn H. Mackal, St. Petersburg, and John S. TenBarge, Clearwater, both of Fla., assignors to Halkey-Roberts Corporation, St. Petersburg, Fla.

Filed Jul. 29, 1982, Ser. No. 402,918
Int. Cl.³ B67B *7/24*
U.S. Cl. 222—5 **10 Claims**



1. An automatic inflator which inflates gas-inflatable articles by the release of compressed gas from a gas-containing capsule by the piercing of a sealing means on the capsule, comprising

an elongated housing having first and second end portions,

the housing receiving the neck of a compressed gas-containing capsule for longitudinal movement with respect thereto and with the sealing means on the capsule disposed adjacent the second end portion of the housing,

a piercing pin mounted in the first end portion of the housing to confront the sealing means of said capsule mounted in the housing, resilient means at the second end portion of the housing for constantly urging the capsule longitudinally of the housing toward the first end portion thereof,

and a releasable blocking means within the housing and interposed between the sealing means-containing end of the capsule and said first end portion of the housing to hold the sealing means of the capsule spaced from the piercing pin,

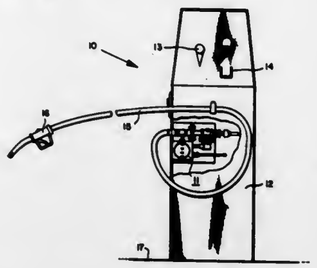
the blocking means including a water-sensitive means which when wet releases the blocking means so that the resilient means moves the capsule toward the piercing pin so that the sealing means of the capsule is pierced thereby, the blocking means comprising telescopically disposed inner and outer parts disposed with their axes aligned longitudinally of the housing, one of said inner and outer parts of the blocking means engaging the capsule and the other of said inner and outer parts of the blocking means being disposed in thrust transmitting relationship with the first end portion of the housing.

4,498,606

EMERGENCY FUEL FLOW SHUT-OFF DEVICE

Armand DiRienzo, 803 New Chestnut St., Bristol, Pa. 19007

Filed Nov. 18, 1982, Ser. No. 442,632
Int. Cl.³ B67D *5/32*
U.S. Cl. 222—52 **10 Claims**



1. For use in combination with a fuel dispenser having a delivery hose and a pipe for supplying fuel under pressure to said hose, emergency fuel flow cut-off apparatus comprising:

an electrically actuated servo control valve adapted to be connected to said pipe,

a short length of conduit having a zone of reduced wall thickness providing a frangible section located between opposite ends thereof,

means connecting one upstream end of said conduit to said control valve,

means adapted to connect the other downstream end of said conduit to said delivery hose,

means mounted closely adjacent to said upstream end of said conduit to detect breakage of said frangible section and to produce an electrical signal, said breakage detecting means including an actuator disposed adjacent to the outside of said conduit only between said zone of reduced wall thickness and said hose connected other end, and operable in response to breakage of said reduced wall thickness zone to produce said electrical signal, and

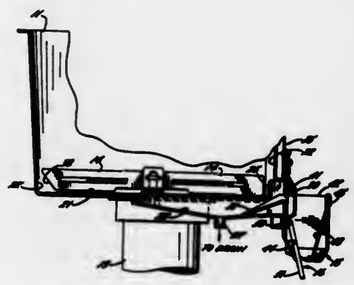
means for transmitting said signal to said control valve for causing the same to halt the flow of fuel from said delivery pipe.

4,498,607

ADJUSTABLE RATE ICE CUBE DISPENSER

John J. Jaschinski, Two Rivers, Wis., assignor to The Manitowoc Company, Inc., Manitowoc, Wis.

Filed Nov. 1, 1982, Ser. No. 438,330
Int. Cl.³ B67D *5/62*
U.S. Cl. 222—146.6 **4 Claims**



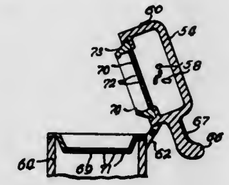
1. An ice cube dispenser comprising, in combination, an ice cube storage bin having a bottom and a generally cylindrical lower wall surrounding said bottom, said bottom having an arcuate ramp spiraling down from the level of the bottom along a section of said wall and ending at an opening in the wall substantially larger than the largest ice cubes intended to be dispensed, a motor driven agitator blade mounted for rotation within said wall and just above said bottom so as to sweep ice cubes in said bin along said ramp and out of said opening, a deflector plate having an elongated surface resting at one end of said ramp and extending at the other end through said opening, means for vertically adjusting the point where said plate surface passes through said opening so as to vary the size of said opening with the plate surface effectively changing the ice cube path from the ramp to the adjustably sized opening.

4,498,608

MOISTURE ABSORBENT CONDIMENT CONTAINER

Robert A. Mercil, Star Rte., Box 315, Wetmore, Mich. 49895

Filed Apr. 5, 1982, Ser. No. 365,624
Int. Cl.³ B67D *5/58*
U.S. Cl. 222—190 **2 Claims**



1. A condiment container comprising,

a body forming a container proper in the form of a jar having an interior space and an opening at the top of substantial width relative to the width of the jar,

a first perforated disc detachably secured to the jar in position extending across the opening, enabling gases to pass freely through the perforations thereof while enabling particles of condiment in the jar to pass therethrough in response to shaking the jar in inverted position,

a cap having an open end and a closed end and movable between a closed position closing the opening and having its open end directed to the jar in that position, and an open position exposing the opening, the cap being of a width similar to the width of the jar,

a second perforated disc detachably secured in and carried by the cap and positioned therein so that when the cap is in closed position it is adjacent to and parallel with the first perforated disc,

the cap being of such dimensions and the second perforated disc being so positioned in the cap, as to form an interior space therein between the second perforated disc and the closed end of the cap, for containing an absorbent material,

the two discs enabling the passage of gases and vapors therethrough between the two interior spaces for carrying of moisture from the condiment to the absorbent material, and the discs being so positioned that when the cap is in closed position, they interengage and seal the interior spaces against the exterior,

hinge means mounting the cap on the container proper, and

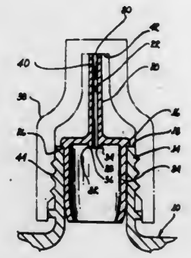
the first perforated disc in the jar being dish shaped and extending into the interior of the jar, and the second perforated disc in the cap including a depending flange which, when the cap is in closed position, extends into the dish shaped first perforated disc, and operates to locate the cap in centered position.

4,498,609

DROPPER FOR CYANOACRYLATE ADHESIVES

Hugh J. Stock, Saratoga, Calif., assignor to Pacer Technology and Resources, Inc., Campbell, Calif.

Continuation-in-part of Ser. No. 69,748, Aug. 27, 1979,. This application Dec. 26, 1979, Ser. No. 107,334
Int. Cl.³ B65B *47/18*
U.S. Cl. 222—420 **3 Claims**



1. A self-clearing dispenser for dispensing adhesives, which adhesives cure by polymerization, said dispenser comprising in combination:

(a) a necked container for housing the adhesive prior to dispensation;

(b) a nozzle of monolithic contruction having an annular flange defining an essentially planar surface from which surface depends a skirt and which skirt is press fitted into the neck of said container to effect a seal between said nozzle and said container;

(c) a boss depending from said planar surface into said container, said boss including a sharp edged perimeter;

(d) an inlet disposed in said boss and defined by a sharp edged orifice; and

(e) an adhesive conveying passageway extending from said inlet through said nozzle, said passageway terminating at an outlet having a sharp edged orifice;

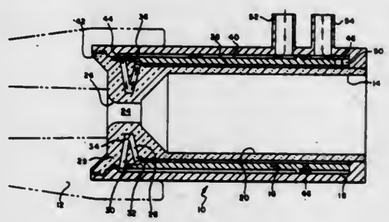
whereby, the configuration of structure attendant said inlet minimizes clogging of said inlet by the adhesive.

4,498,610

ULTRAHIGH VELOCITY WATER-COOLED COPPER TAPHOLE

Patrick J. Wooding, Moorestown, N.J., assignor to Wooding, Indian Mills, N.J.

Filed Oct. 13, 1981, Ser. No. 311,042
Int. Cl.³ B22D *41/08*
U.S. Cl. 222—592 **8 Claims**



1. A taphole for a melting furnace comprising:

a metallic member having an axially extending inner working surface defining an orifice and a substantially tubular portion through which molten material from a furnace can pass;

a coolant guide disposed coaxially around at least part of said tubular portion and closely spaced therefrom thereby defining an annular space therebetween extending sub-

stantially the length of said coolant guide and forming a first highly restrictive narrow flow passage;

a second highly restrictive narrow flow passage in the area around said orifice, said second passage being in relatively close proximity to but being isolated from said working surface; and

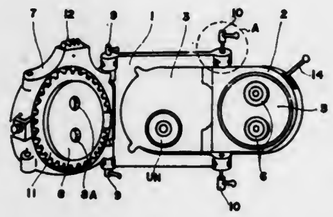
liquid coolant supply means in communication with said passages for supplying coolant thereto whereby the velocity of the coolant will be accelerated to an ultrahigh velocity across and against the surface of the passage walls as it passes through the passages.

4,498,611

DUAL DOOR TYPE ROTARY NOZZLE

Tetsuya Yoshihara, Yokohama, Japan, assignor to Nippon Kokan Kabushiki Kaisha, Tokyo; Nippon Rotary Nozzle Co., Ltd.; Kokan Kikai Kogyo Kabushiki Kaisha, both of Kawasaki and Tokyo Yogyo Kabushiki Kaisha, Tokyo, all of, Japan

Filed Mar. 4, 1982, Ser. No. 354,535
Int. Cl.³ B22D *37/00*
U.S. Cl. 222—599 **8 Claims**



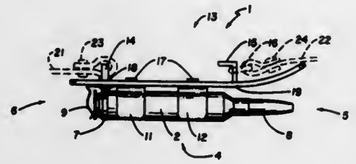
1. A dual door type rotary nozzle for a ladle used in iron or steel making, said nozzle comprising: a bottom plate brick and a sliding plate brick each having plural nozzle openings, said sliding plate brick being rotatable and disposed under said bottom plate brick, said bottom and sliding plate bricks being swingably mounted for opening and closing in a dual door configuration, said bottom plate brick housed in and rotatably carried by a receiver metal fixture, which in turn is carried by one side of a base plate having a recess for housing the bottom plate brick, said sliding plate brick housed in and rotatably carried by a sliding plate receiver-rotor metal fixture which in turn is carried by the other side of said base plate.

4,498,612

CARTRIDGE AND SHOTGUN SHELL CARRYING BUCKLE

James A. Geekie, Jr., 443 Merrimac St., Newburyport, Mass. 01950

Continuation-in-part of Ser. No. 463,320, Mar. 9, 1983, abandoned. This application Aug. 6, 1984, Ser. No. 637,350
Int. Cl.³ A44B *11/22*; A45C *11/00*
U.S. Cl. 224—163 **6 Claims**



1. A belt buckle adapted for use as a cartridge and shotgun shell holder, comprising:

a flat buckle with a generally rectangular shape, having a front side, a back side, a top, a bottom, a forward end, and a rearward end, the forward end of which is bent backwards approximately thirty-five degrees;

a pluality of spring clips attached to the buckle front side for holding a plurality of cartridges and shotgun shells having conventional primer ends and heads in a generally horizontal configuration with cartridge and shotgun shell heads positioned at the buckle forward end and cartridge and shotgun shell primer ends positioned at the buckle rearward end;

a shield for protection of the cartridge and shotgun shell primers attached to the buckle front side in a vertical arrangement near and parallel to the buckle's rearward end; and

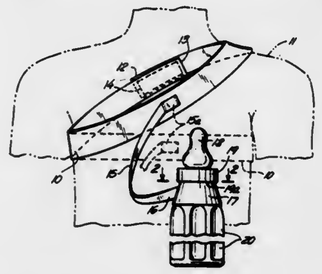
a means for attaching the buckle to a belt.

4,498,613

SUPPORT DEVICE FOR NURSING BOTTLES AND AMUSEMENT ITEMS

Barbara S. Donahue, 27 Madison St., Glen Ridge, N.J. 07028, and Irene Ficca, 12 Gilbert Pl., Clifton, N.J. 07011

Filed Oct. 11, 1983, Ser. No. 540,310
Int. Cl.³ A45F *3/14*; A47D *15/00*; A61J *9/06*
U.S. Cl. 224—251 **4 Claims**



1. A support device for nursing bottles and young child amusement items, said device comprising a body encircling, resilient and adjustable strap of a length to selectively permit mounting of the device on a young child in either an angular, over-the-shoulder, or transverse, under-the-arm, orientation, said strap having secured to a center, front portion thereof one end of a pliable, but non-extendible, band member about 9-inches long, the other end of said band member being fixedly secured to the exterior side of a frustoconically contoured and circumferentially elastic loop member between the ends of said loop member, said loop member having a top diameter of about 1¾-inches and a bottom diameter of about 1⅞-inches adapted to interlockingly engage the neck portions of nursing bottles, below the nipple retainers thereof, and undercut portions of amusement devices.

4,498,614

STORAGE DEVICE FOR SPARE TIRE

David Guarr, 6130 Westgate, Shawnee, Kans. 66216

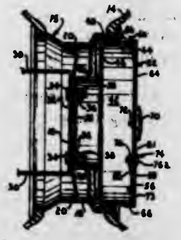
Filed Jun. 23, 1983, Ser. No. 507,132
Int. Cl.³ B60R *11/06*
U.S. Cl. 224—273 **19 Claims**

18. A storage device for installation on a spare tire assembly mounted on the exterior of a vehicle and having a wheel rim, said device comprising:

a rigid container having a hollow interior presenting a storage compartment and an open end providing access to said storage compartment, said container having sufficient size to hold and store loose articles such as tools and said container having a size and shape to fit closely within the wheel rim;

means for securing said container to said spare tire assembly at a location within the wheel rim and with said open end at an accessible location to permit the loose articles to be inserted into and removed from said container through said open end;

a cover for said container having a size to cover the open



end thereof to enclose said storage compartment and the contents thereof; and

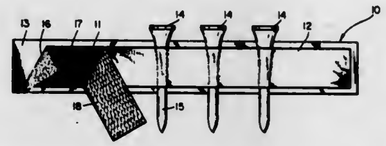
means for locking said cover on said container in position to cover said open end, whereby to enclose said storage compartment and the contents thereof.

4,498,615

GOLF TEE HOLDER

Elizabeth A. Johnson, Indianapolis, Ind., assignor to Edward J. Erpelding, Indianapolis, Ind.

Filed Aug. 26, 1983, Ser. No. 526,552
Int. Cl.³ A63B *57/00*
U.S. Cl. 224—274 **3 Claims**



1. A method of removably transporting golf tees for use, comprising the steps of:

overlying two strips of synthetic fabric comprising a hook and loop fabric fastening means so as to tightly hold said strips together along their entire contacting surfaces; and

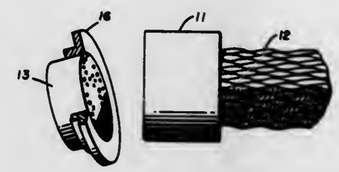
pushing in a golf tee between said strips so as to separate said strips around the shank of said golf tee and hold said golf tee therebetween, said strips being unseparated until said golf tee is pushed in between said strips.

4,498,616

METHOD FOR FRACTURING A TUBE SHEET

Charles J. Runkle, Wake County, N.C., assignor to Monsanto Company, St. Louis, Mo.

Filed Nov. 21, 1983, Ser. No. 553,591
Int. Cl.³ B26F *3/06*
U.S. Cl. 225—1 **6 Claims**



1. A process for severing a tube sheet made from a polymeric material to expose bores of hollow fibers having the ends thereof embedded in the tube sheet, said tube sheet having a cylindrical configuration and a stress raiser extending around the periphery thereof in a plane substantially perpendicular to the axis of the tube sheet comprising

(a) positioning a ring on the tube sheet to encircle a portion of said tube sheet at a location adjacent to the stress raiser, said ring having a coefficient of expansion less than the coefficient of expansion of said polymeric material, and

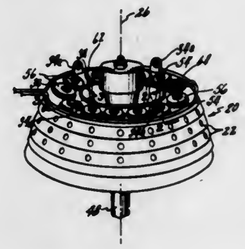
(b) heating the tube sheet to expand said tube sheet to the point where stress causes the tube sheet to fracture off said portion from the remainder of the tube sheet to expose the bores of the fibers.

4,498,617

METHOD FOR RESHAPING A GAS TURBINE ENGINE COMBUSTOR PART

Joseph J. Guertin, Bristol, and Earl J. Provencal, Plainville, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Mar. 31, 1983, Ser. No. 480,658
Int. Cl.³ B23K *9/235, 9/225, 37/04*
U.S. Cl. 228—119 **6 Claims**



1. The method of shaping an annular combustor liner made of a high temperature alloy and usable in a gas turbine engine, wherein the liner is comprised of a generally cylindrical wall section centered about an axis, a circular flange section attached to the cylindrical wall section and extending generally transverse to the axis, and a plurality of circumferentially spaced apart rings attached to the flange, each defining an opening through the flange which is suitable for receiving a fuel nozzle or the like; which method comprises simultaneously heating a first circumferential band of the liner where the wall section joins the flange section and a second circumferential band around the flange on the opposing side of the rings from the first band; and while the bands are heated, moving the rings generally radially with respect to the axis to a position displaced from their start position, and then cooling the heated band regions while holding the rings in their displaced position.

4,498,618

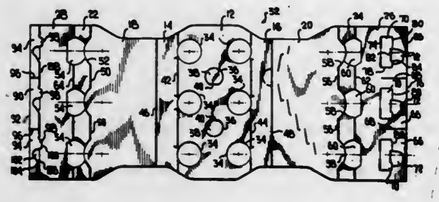
LOCK ARRANGEMENT BETWEEN TWO CARTON CLOSURE PANELS

Robert L. Sutherland, Campbell Hall, N.Y., assignor to Federal Paper Board Co., Inc., Montvale, N.J.

Filed Aug. 12, 1983, Ser. No. 522,575
Int. Cl.³ B65D *5/02*
U.S. Cl. 229—40 **16 Claims**

1. A lock arrangement between two carton closure panels, one of said closure panels being an inner panel and the other of said closure panels being an outer panel, each of said closure panels having a free edge, said inner panel having struck therefrom a secondary flap hingedly connected to said inner panel remote from said inner panel free edge and carrying generally at one side thereof a secondary locking tab projecting towards said inner panel free edge, the striking of said secondary flap and said secondary locking tab define in said inner panel a

locking aperture having at a side thereof remote from said secondary locking tab a primary locking shoulder facing away from said inner panel free edge, said outer panel carrying a primary locking panel generally along a hinge line, said primary locking panel carrying a primary locking tab struck from said outer panel and extending across said hinge line, locking means for said secondary locking tab spaced along said hinge



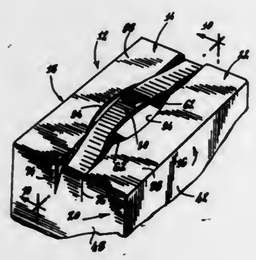
line from said primary locking tab, and an aperture in said terminal flap between said primary locking tab and said locking means for said secondary locking tab, said secondary flap being aligned with and fully extending the width of said primary locking tab, said aperture in said primary locking panel and said locking means being of a combined dimension generally equal to the width of and being aligned with said secondary locking tab.

4,498,619

CARTON WITH CARRYING HANDLE

Harry I. Roccaforte, Western Springs, Ill., assignor to Champion International Corporation, Stamford, Conn.

Filed Oct. 24, 1983, Ser. No. 544,866
Int. Cl.³ B65D 5/46
U.S. Cl. 229—52 B **14 Claims**



1. A carton, comprising
top and bottom walls;
front, back and side walls connected to said top and bottom walls;
said top wall having inner and outer panels extending from said front and back walls, respectively, and having portions thereof overlapped and secured together;
first and second side flaps extending from opposite top edges of said side walls having portions thereof secured to the lower surface of said overlapped inner and outer top wall panels;
inner and outer elongated handle panels connected together formed from the overlapped portions of said inner and outer top panels and said side flaps, extending substantially parallel to and equally spaced from the top edges of said front and back walls and substantially perpendicular to said side walls,
said outer handle panel being defined by a perforated score line formed in said outer top panel which extends lengthwise across said outer top panel and substantially parallel to the top edges of said front and back walls; and
said inner handle panel being defined by
perforated score line formed in said inner top panel which extends lengthwise across said inner top panel and is substantially parallel to and spaced from the top edges of said front and back walls and the perforated scoreline in said outer top panel, and
a substantially U-shaped tab in each of said side flaps having a pair of parallel spaced perforated score lines substantially colinear with and beneath the spaced perforated parallel score lines of said overlapped inner and outer top panels,
whereby a handle for said carton is formed by severing said handle panels along said perforated score lines,

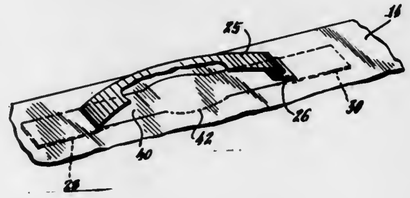
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4,498,620

CARTON WITH CARRYING HANDLE

James C. Dickert, Hinsdale; Harry I. Roccaforte, Western Springs, and Lawrence S. Wysocki, Chicago, all of Ill., assignors to Champion International Corporation, Stamford, Conn.

Continuation of Ser. No. 408,012, Aug. 13, 1982, abandoned. This application Apr. 11, 1984, Ser. No. 598,403
Int. Cl.³ B65D 5/46
U.S. Cl. 229—52 A **6 Claims**



1. A carton, comprising:
a top closure including inner and outer overlapping flaps, each of said flaps having an identically shaped and coaxially aligned opening therein, said opening in said outer flap being completely open;
a carrying handle having opposite ends secured to an inner surface of said inner flap adjacent said opening therein and a central portion extending upwardly through said openings; and
a panel shaped identically to said opening in said inner flap and hingedly coupled to said inner flap along a curved fold line defining a portion of said opening in said inner flap, said panel being pivotable between an open position permitting said handle to pass through said opening in said inner flap and a closed position substantially sealing said opening in said inner and outer flaps.

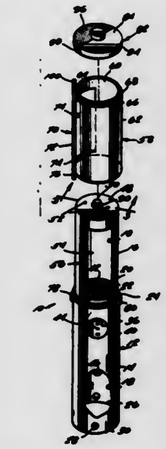
4,498,621

COMBINED MAILBOX AND SUPPORTING POST

Jeffrey S. Diamond, 330 Brazilian Ave., Palm Beach, Fla. 33480

Filed Mar. 2, 1984, Ser. No. 585,372
Int. Cl.³ B65D 91/00
U.S. Cl. 232—35 **20 Claims**

1. A combined mailbox and supporting post comprising:
an upright, vertically elongated generally tubular cylindrical body comprising sidewall means defining a lower, post portion having an upper, receptacle portion juxtaposed thereupon and united therewith;
transversally extending wall means provided in said body between said receptacle portion and said post portion and being constructed and arranged to serve as a floor for said receptacle portion;
means defining a radially directed opening through said sidewall means above said floor for providing access to within said receptacle portion;
means providing an upper end wall on said body for said receptacle portion; and
a tubular cylindrical closure sleeve having a sidewall provided with means defining an opening radially therethrough, said closure sleeve being coaxially rotatably mounted on said body in surrounding relation to said sidewall means of said receptacle portion and being constructed and arranged for angular movement between one extreme wherein both of said openings are aligned so that



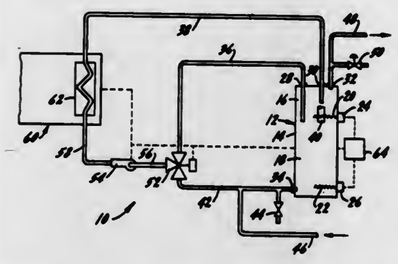
mail may be inserted into and retrieved from the receptacle portion through said openings, and another extreme wherein said opening of said closure sleeve is entirely non-aligned with said opening of said receptacle portion and said closure sleeve fully closes said opening of said receptacle sleeve.

4,498,622

QUICK RECOVERY HEAT PUMP WATER HEATER

James R. Harnish, York, Pa., assignor to Borg-Warner Corporation, Chicago, Ill.

Filed May 23, 1983, Ser. No. 497,481
Int. Cl.³ F28F 27/00
U.S. Cl. 236—25 R **10 Claims**



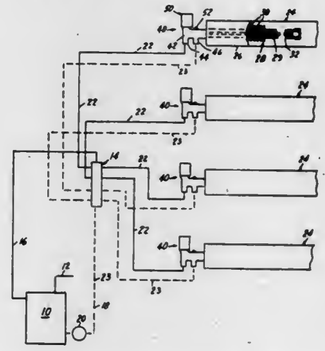
1. A quick recovery water heater comprising a water storage tank defining first and second tank portions, sensing means for indicating the demand for hot water in said first and second tank portions, an external heat source including a heat exchanger having a water inlet and a water outlet, means for selectively communicating said first and second tank portions with said water inlet and for communicating said water outlet with said tank, means for pumping water from said tank through said communicating means to said water inlet and from said water outlet to said tank, and control means for said communicating means, said control means being responsive to an indication from said sensing means of a demand for hot water in said first tank portion for initially establishing communication of said first tank portion with said water inlet and turning on said external heat source and pumping means, said control means being responsive to an indication from said sensing means that the demand for hot water in said first tank portion has been satisfied for subsequently establishing communication of said second tank portion with said water inlet, and said control means being responsive to an indication from said sensing means that the demand for hot water in said second tank portion has been satisfied for turning off said external heat source and pumping means.

4,498,623

HOT WATER HEATING SYSTEM

Derek E. Rodd, San Anselmo, Calif., assignor to Minitube Systems, San Anselmo, Calif.

Filed Jan. 15, 1982, Ser. No. 339,306
Int. Cl.³ F24D 3/00
U.S. Cl. 237—8 R **8 Claims**



1. A forced circulation heating system comprising:
water heating means,
a radiator, a manifold,
a supply conduit connected from said heating means to said supply chamber and a return conduit connected from said return chamber back to said heating means.
a divider wall across manifold to form a supply chamber and a return chamber on opposite sides thereof,
a supply duct connecting said supply chamber to the inlet of said radiator,
a return duct connecting the outlet of said radiator to said return chamber,
said divider wall being formed with a relatively small aperature therethrough positioned to permit the restricted passage of water directly from said supply chamber to said return chamber.

4,498,624

CONTROL UNIT WITH SEPARATE DAMPERS FOR MAKE-UP AND COMBUSTION AIR CIRCULATION

Jimmy A. Kogut, 14660 Cavell, Livonia, Mich. 48154

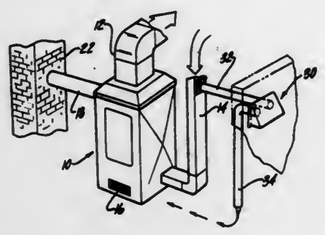
Filed May 7, 1984, Ser. No. 607,439
Int. Cl.³ F24D 5/00
U.S. Cl. 237—53 **5 Claims**

1. In an air circulating system for a building, said system being of the type including a furnace having a combustion chamber and a heat exchanger, a first duct for conducting air to said heat exchanger, a second duct for conducting air from said heat exchanger, an intermittently operable blower for forcing air flow through said heat exchanger, the passage of air through said first duct causing a reduced pressure in said first duct, and make-up air supply means communicating between the outside of said building and said first duct, the improvement comprising:
a control unit adapted to be mounted in an outside wall of said building and including a baffle defining separate

make-up and combustion air inlets and including a weather protective hood,

said baffle also including a first damper disposed within said make-up air inlet and a second damper disposed within said combustion air inlet, said dampers being mounted for pivotal motion inwardly of said baffle,

coupling means between said dampers for causing concurrent pivotal motion thereof,



said make-up air supply means comprising a conduit extending from said make-up air inlet to said first duct whereby reduced pressure in said first duct causes said damper to open inwardly and admit outside air to said first duct,

and combustion air supply means comprising a conduit extending from said combustion air inlet to a location in communication with said combustion chamber.

4,498,625

ELECTROMAGNETIC UNIT FUEL INJECTOR AND METHOD FOR CALIBRATING

Michael M. Schechter, Southfield, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Jun. 27, 1983, Ser. No. 508,398
Int. Cl.³ F02M 45/00
U.S. Cl. 239—5 10 Claims

1. An electromagnetic unit fuel injector having a solenoid valve; an injector nozzle; a cam actuated plunger type pumping unit with a spill port adapted to be closed and opened by the action of the solenoid valve during a plunger pumping stroke, the spill port permitting fuel to enter and escape from the pumping unit when the spill port is open and preventing the escape of fuel from the pumping unit when the spill port is closed; the solenoid valve being adapted to receive voltage pulses of variable and controllable duration and timing, the voltage pulse duration and timing controlling the duration and timing of the spill port closing, the duration of the spill port closing controlling the quantity of fuel injected and the timing of the spill port closing controlling the fuel injection timing; the solenoid valve having a mechanism for adjustment of a solenoid air gap associated with the solenoid valve, said mechanism including:

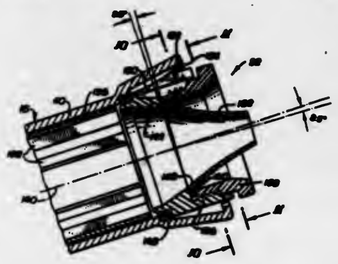
a differential thread arrangment having two pairs of threads so that relative rotation can take place between two threads of each of said two pairs of threads simultaneously and the accuracy of adjustment is determined by the difference between the pitches of said two pairs of threads, so that fine adjustment of the solenoid air gap provides fine adjustment of the quantity of fuel injected without change in the voltage pulse duration.

4,498,626

REACTION DRIVE SPRINKLER

Edward J. Pitchford, Glendora, Calif., assignor to Rain Bird Sprinkler Mfg. Corp., Glendora, Calif.

Division of Ser. No. 377,552, May 12, 1982, Pat. No. 4,434,937.
This application Sep. 22, 1983, Ser. No. 534,964
Int. Cl.³ B05B 3/08
U.S. Cl. 239—230 21 Claims



1. In a rotatable water sprinkler having a range tube for rotatable connection with respect to a water supply pipe to receive water therefrom and to project the water in the form of a stream from a discharge barrel portion extending laterally outwardly with a selected angle of inclination with respect to the supply pipe, and means for rotating the range tube with respect to the supply pipe, the improvement comprising:

a discharge nozzle assembly mounted generally at the discharge end of the barrel portion and including a nozzle insert through which the water stream is projected, a support member including means defining a seat presented axially outwardly in slight axial misalignment with respect to the barrel portion for seated reception of said nozzle insert, means for connecting said support member generally to the end of the barrel portion at a selected one of at least two different angles of inclination with respect to the supply pipe, and means for retaining said nozzle insert in seated relation upon said seat means.

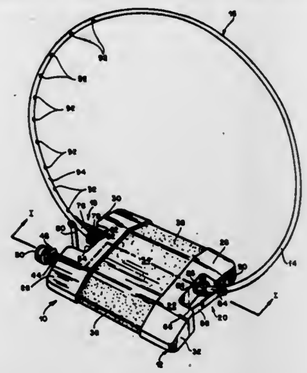
4,498,627

SPRAY HOOP

Richard C. Arginsky, Ellenville, N.Y., assignor to Master Juvenile Products, Ellenville, N.Y.

Filed Aug. 30, 1982, Ser. No. 412,956
Int. Cl.³ B05B 15/06
U.S. Cl. 239—279 4 Claims

1. A spray hoop, comprising a base including an interior chamber of a capacity sufficient to retain enough water to stabilize said spray hoop, an inlet located at one end of said base in fluid communication with said interior chamber thereof, a manually adjustable valve positioned in said inlet, a first outlet located at said one end of said base in fluid communication with said interior chamber thereof, and a second outlet located at an opposite end of said base in fluid communication with said interior chamber thereof; a semi-rigid hose connected between said first and second outlets of said base such that said hose is bent into a generally vertically arranged hoop which is in constant fluid communication with said interior chamber of said base when said hose is connected between said first and second outlets and which is sized and shaped to permit an individual to pass therethrough when said hose is connected between said first and second outlets of said base, said hose including a plurality of orifices spaced at intervals along an inner circumferential surface of said hose, each of said



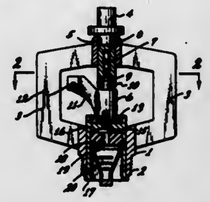
orifices directing water radially inward relative to the hoop formed by said hose to thereby spray an individual running through the hoop; and locking means for releaseably locking the hoop formed by said hose in a generally vertical position.

4,498,628

BUTTERFLY SPRINKLER

Alfred D. Tucker, Adelaide, Australia, assignor to RIS Irrigation Systems Pty Ltd, Elizabeth, Australia

PCT No. PCT/AU80/00101, § 371 Date Jul. 15, 1981, § 102(e) Date Jul. 15, 1981, PCT Pub. No. WO81/01528, PCT Pub. Date Jun. 11, 1981
PCT Filed Nov. 28, 1980, Ser. No. 285,089
Claims priority, application Australia, Nov. 29, 1979, PE1532
Int. Cl.³ B05B 3/06, 3/08
U.S. Cl. 239—381 8 Claims



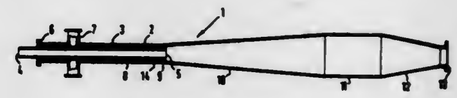
1. A butterfly sprinkler having a rotational head and comprising a body having means to fix it to a support and having upstanding arm means thereon to support a bearing in axial alignment with an orifice in said body and shaped to define a space to accommodate said head characterized by a shaft upwardly projecting from the said head arranged to engage in the said bearing, the said shaft having a larger diameter portion at the said rotational head, the said bearing having a depending skirt arranged to encircle the said larger diameter portion of the shaft to form a protective shroud against ingress of foreign matter to the said bearing, further characterized in that the said bearing is positionable on the said arm means to allow the rotating head to be positioned over the said orifice and then held confined with some axial movement between the said bearing and the said body when the said bearing is positioned, said body being hollow, a cylindrical sleeve lining the said hollow body arranged co-axially with the said bearing and having a membrane extending across it near one end with said orifice therethrough co-axial with the said sleeve, said membrane with the said sleeve forming a recess in which that end of the said head remote from the said bearing is freely accommodated to prevent significant lateral displacement of that end of the said head.

4,498,629

APPARATUS FOR VAPORIZATION OF A HEAVY HYDROCARBON FEEDSTOCK WITH STEAM

Alexander Grendman, Klundert, Netherlands, assignor to Shell Oil Company, Houston, Tex.

Filed Mar. 23, 1983, Ser. No. 477,994
Claims priority, application United Kingdom, May 26, 1982, 8215352
Int. Cl.³ B05B 7/04
U.S. Cl. 239—434.5 6 Claims



1. Apparatus for the vaporization of a heavy hydrocarbon feedstock with steam, said apparatus comprising:

first and second tubular elements, said tubular elements having a uniform cross-section and disposed coaxially to form an annular space surrounding said first tubular element;

first inlet means, said first inlet means being coupled to said first tubular element for introducing a heavy hydrocarbon feedstock to said first tubular means;

second inlet means, said second inlet means being coupled to said second tubular element for introducing superheated steam to said annular space;

both said first and second tubular elements terminating in open ends arranged in a plane perpendicular to the longitudinal axis of the tubular elements, said open ends supplying said steam as a nonswirling annulus around a core of said hydrocarbon; and

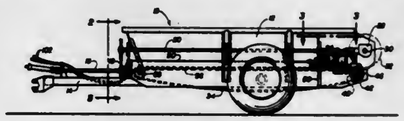
a frustoconical shaped element, having an apex angle of less than 20 degrees, the small end of said frustoconical shaped element being coupled to the open end of said second tubular element, the axis of said frustoconical element being coaxial with said first and second elements.

4,498,630

DRIVE MECHANISM FOR A MANURE SPREADER

Loren G. Sadler, Stevens, Pa., assignor to Sperry Corporation, New Holland, Pa.

Filed Aug. 30, 1982, Ser. No. 413,106
Int. Cl.³ A01C 17/00
U.S. Cl. 239—677 12 Claims



1. A manure spreader having a box-like mobile body with a rear discharge end, a driven transverse distributor shaft at the discharge end supporting distributor elements, an endless apron having a span extending along the bed of the body and movable toward the discharge end by a driven transverse shaft, drive means for said shafts comprising a first drive shaft extending along one side of said body between the opposite ends thereof, means at the forward end of said drive shaft connectable to a source of power, a first clutch connecting the rearward end of said first drive shaft with said transverse distributor shaft, a secondary drive shaft parallel to said first drive shaft and extending therealong from the rearward end of

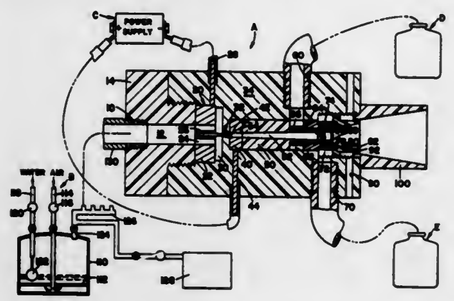
said body a limited distance toward the forward end of the body, gear means connecting said secondary drive shaft to said driven transverse shaft of said apron, spaced similar drive sprockets fixed to said first drive shaft, sprocket gears of different diameters freely rotatable on said secondary drive shaft opposite said drive sprockets and sprocket chains respectively extending therearound, a second clutch member slidable on and rotatable by said secondary drive shaft between said sprocket gears and the opposite ends of said second clutch member respectively being engageable selectively with said sprocket gears respectively to drive said secondary drive shaft at relatively slow and fast speeds and correspondingly move said apron at such speeds, first shift means operable to move said second clutch member between said sprocket gears for selective driving engagement therewith, and supplemental shift means for said first clutch member operable by said first shift means to disengage said distributor shaft to permit independent drive of said apron, the improvement comprising the inclusion of direct drive means between said first drive shaft and secondary drive shaft operable to drive said driven transverse shaft and apron at a speed still greater than said fast speed while said first clutch is disconnected to idle said distributor and effect rapid cleanout of said body by said apron moving at said still greater speed.

4,498,631

ELECTROGASDYNAMIC COATING SYSTEM

Meredith C. Gourdine, East Orange, N.J., assignor to Energy Innovations, Inc., East Orange, N.J.

Division of Ser. No. 310,534, Oct. 13, 1981, Pat. No. 4,433,003. This application Dec. 6, 1982, Ser. No. 447,478
Int. Cl.³ B05B 5/00
U.S. Cl. 239—692 **14 Claims**



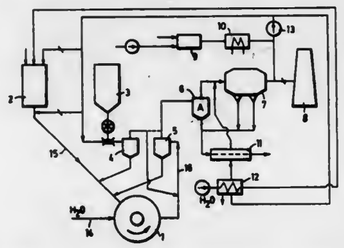
1. An electrogasdynamic apparatus comprising:
a gas inlet adapted for receiving pressurized gas having a condensable vapor entrained therein;
corona and attractor electrodes disposed in communication with said gas inlet for ionizing said vapor such that ionized vapor passes downstream therefrom:
a dielectric tube having an unobstructed dielectric passage therethrough extending unobstructed downstream from the corona and attractor electrodes to a downstream end;
a first material inlet for receiving a first fluid material, the first material inlet terminating adjacent the dielectric tube downstream end in a first material entraining outlet in communication with a mixing chamber, whereby the first material is prevented from contacting the electrodes; and,
said mixing chamber in communication with, linearly aligned with and disposed downstream from said dielectric tube downstream end said mixing chamber having an unobstructed mixing chamber outlet opening in communication with the atmosphere outside the apparatus at a mixing chamber outlet end and having an unrestricted transverse cross section which is larger than a transverse cross section of the dielectric passage, such that an unobstructed line of sight path without inward projections or obstructions is defined from said electrodes through at least said dielectric passage, said mixing chamber and to the atmosphere outside the apparatus, such that a pressure drop occurs (a) causing first fluid material to be aspirated from the first material entraining outlet, (b) causing turbulence which mixes the first material with said gas entrained with ionized vapor, and (c) causing the ionized vapor to condense on the first material such that said first material becomes charged and is carried from the mixing chamber with the gas.

4,498,632

PROCESS FOR GRIND-DRYING WET SOLID FUEL

Bernhard Rüter, Königsdorf, Fed. Rep. of Germany, assignor to Rheinische Braunkohlenwerke AG, Cologne, Fed. Rep. of Germany

Filed Sep. 16, 1982, Ser. No. 418,623
Int. Cl.³ B02C 19/12
U.S. Cl. 241—18 **7 Claims**



1. A process for grind-drying wet solid fuel of different grain sizes into fine-grained particles, in a fan-type mill and in the presence of a stream of hot drying gas with a low oxygen content supplied to the mill, comprising the steps of:
separating off particles of the fuel which are already substantially of fine-grained size, grains of fuel in the remaining portion of the fuel requiring grinding;
selectively introducing grains of fuel in the remaining portion of the fuel into the stream of the drying gas upstream from the mill in dependence on the grain size of the fuel in such a way that the residence time of the fuel grains in the stream of drying gas decreases with decreasing grain size; and,
grinding the remaining portion of the fuel in the mill, whereby loss of volatile constituents from the fuel during the grind-drying is substantially reduced.

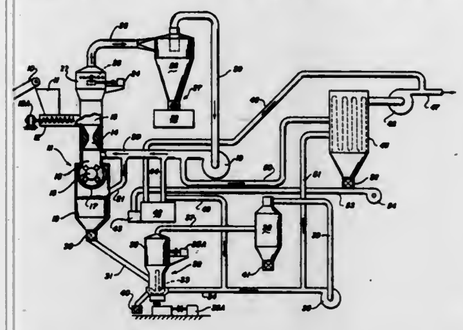
4,498,633

APPARATUS FOR PROCESSING COAL

Robert M. Williams, Ladue, Mo., assignor to Williams Patent Crusher and Pulverizer Company, St. Louis, Mo.

Filed Nov. 4, 1982, Ser. No. 439,050
Int. Cl.³ B02C 23/24
U.S. Cl. 241—48 **7 Claims**

1. An apparatus for processing coal to extract pyrites which are present in coal, the combination which comprises:
(a) a first coal and air moving circuit containing an impact mill for reducing coal and pyrites into fractions consisting of fines, principal coal and mixed coal and pyrites, a particle size control separator, a centrifugal separator, and blower means connected in series, said blower means creating the movement of air in said first circuit for transporting the fractions of coal fines initially present in the coal and created by the reduction of the coal by said impact mill into principal coal fractions and mixed coal and pyrites; and
(b) a second coal and air moving circuit connected to said first circuit adjacent said impact mill to receive the mixed coal and pyrite fractions reduced by said impact mill, said second circuit containing air induced specific gravity separator means, a second centrifugal separator and second blower means connected in series, said specific gravity separator means being operable to agitate the mixed coal and pyrite fraction from said impact mill, and said specific gravity separator having an outlet for further



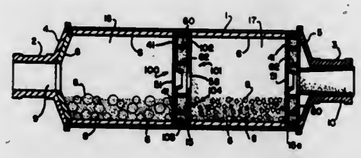
separating pyrites from the mixed coal and pyrites and said second blower means effecting the movement of coal fractions and air in said second circuit to said second centrifugal separator, whereby said specific gravity separator effects the separation of heavy pyrite fractions out of the coal fractions through said outlet.

4,498,634

DIVISION HEAD FOR GRINDING MILL

Jeffrey A. Nelson, Bethlehem, and Kenneth W. Hanstine, Walnutport, both of Pa., assignors to Fuller Company, Bethlehem, Pa.

Filed Sep. 1, 1983, Ser. No. 528,677
Int. Cl.³ B02C 17/06
U.S. Cl. 241—72 **11 Claims**



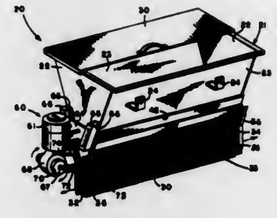
1. In a tubular grinding mill having a shell supported at its ends for rotation about its own axis, an inlet for coarse material to be ground, an outlet for fine ground material, and grinding media such as grinding balls within the shell for comminuting material, a division head for dividing the mill into a first compartment and a second compartment, permitting the flow of material being ground from the first compartment to the second compartment, while substantially preventing the flow of grinding media between the first and second compartments and controlling the level of material within the first compartment comprising:
means defining a rim member adapted to be secured to the inside of the shell;
a plurality of hollow pie shaped contiguous panel members secured to each other and to said rim member to form a hollow annular member having a center cone and each panel member having one side facing the first compartment and another side facing the second compartment;
a plurality of grates having openings therethrough, each mounted on one side of the panel members for permitting material in the first compartment to flow into the annular member;
a plurality of solid liners, each mounted on the other side of the panel members for preventing direct communication between the hollow annular member and the second compartment;
at least some of said pie shaped members having an internal partition dividing the pie shaped member into radially inward and radially outward sections;
said radially inward section being flow connected to the center cone so that material in the first compartment can flow through the grates into the radially inward section and from the radially inward section through the center cone to the second compartment;
at least some of said pie shaped panel members having an opening in its internal partition so that when the mill rotates, material in the radially outward sections above the mill axis will flow into the radially inward section, and the remaining pie shaped members having solid partitions; and
a plurality of valve means each operative associated with one of the openings in said internal partitions for controlling the flow of material from the radially outward section to the radially inward section.

4,498,635

MATERIAL DISPENSING MACHINE

Randy L. Fielding, Fremont, Ohio, assignor to Christy Machine Company, Fremont, Ohio

Filed Nov. 18, 1982, Ser. No. 442,599
Int. Cl.³ B02C 17/02
U.S. Cl. 241—94 **29 Claims**



17. A material dispensing machine comprising a chute for receiving material to be dispensed, said chute having horizontally spaced downwardly converging upper side portions terminating at closely spaced vertical bottom side portions forming a narrow depending channel, grid means forming at least one of said upper and bottom side portions of said chute, and means for horizontally reciprocating said grid means to effect refinement of material passing downwardly through said chute.

4,498,636

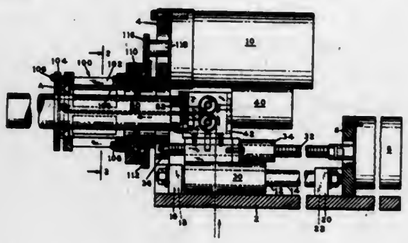
STATOR WINDING APPARATUS AND METHOD

Chester C. Boosewetter, Radford; Lawrence W. Langley, Christiansburg, and John H. Mabie, Radford, all of Va., assignors to Kollmorgen Technologies Corporation, Dallas, Tex.

Filed Feb. 25, 1982, Ser. No. 352,349
Int. Cl.³ B65H 54/10
U.S. Cl. 242—1.1 R **12 Claims**

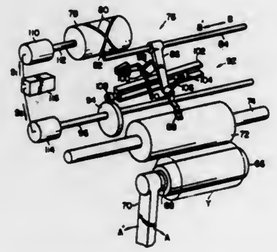
1. A winding machine for a stator with inwardly facing slots comprising:
means for holding said stator;
a cylindrical winding member, closely fitted to the inside circumference of said stator and extending beyond the ends of said stator at all times during the winding process, to prevent wire from escaping from the inwardly facing slots of the stator, and having a wire-dispensing aperture on its outside diameter;
wire-dispensing means for pushing wire through the aperture;
reciprocation means for producing longitudinal relative

motion between said cylindrical winding member and said stator; and



rotation means for producing rotary relative motion between said cylindrical winding member and said stator.

4,498,637
METHOD OF WINDING YARN ON BOBBIN
Shigeru Yamamoto; Yuzuru Miyake, and Isao Nohara, all of Matsuyama, Japan, assignors to Teijin Seiki Company, Limited, Osaka, Japan
Filed Jul. 19, 1982, Ser. No. 399,808
Claims priority, application Japan, Jul. 22, 1981, 56-114887
Int. Cl.³ B65H 54/32, 54/38
U.S. Cl. 242—18.1 35 Claims



1. In a yarn take-up device having a plurality of successive traverse cycles in each of which a continuous yarn is to be helically wound on a rotating bobbin and traversed first in one direction and thereafter in the opposite direction substantially parallel with the axis of rotation of the bobbin, a method of winding the yarn on the bobbin, comprising

producing first signals effective to control the traverse velocity of the yarn to vary between predetermined minimum and maximum limits within a predetermined range and second signals effective to control the traverse distance of the yarn to vary between predetermined maximum and minimum limits within a predetermined range,

at least during a limited time interval, controlling the traverse velocity to periodically vary between the predetermined minimum and maximum limits thereof on the basis of said first signals and controlling the traverse distance to periodically vary between the predetermined maximum and minimum limits thereof on the basis of said second signals,

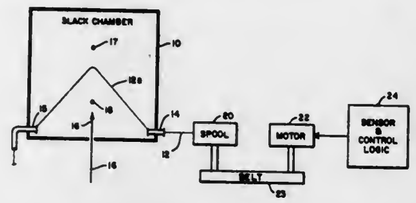
the cycles of periodic variation of the traverse velocity being respectively identical and synchronized with the cycles of periodic variation of the traverse distance,

each of the traverse velocity and the traverse distance being controlled to vary throughout all of the traverse cycles,

each of the minimum limits of the traverse velocity and each of the maximum limits of the traverse distance occurring substantially at the beginning of each of the cycles of periodic variation of the traverse velocity and traverse distance and each of the maximum limits of the traverse velocity and each of the minimum limits of the traverse distance occurring substantially simultaneously during each of the cycles of periodic variation of the traverse velocity and traverse distance,

wherein the traverse distance of the yarn is controlled to periodically vary at a rate which increases progressively as the traverse distance decreases from each of the maximum limits to each of the minimum limits thereof during each of the cycles of periodic variation of the traverse distance and which decreases progressively as the traverse distance increases from each of the minimum limits to each of the maximum limits thereof during each of the cycles of periodic variation of the traverse distance.

4,498,638
APPARATUS FOR MAINTAINING RESERVE BONDING WIRE
John A. Kurtz; Donald E. Cousens, both of Saco, and Mark D. Dufour, Portland, all of Me., assignors to Fairchild Camera & Instrument Corporation, Mountain View, Calif.
Filed Jun. 24, 1983, Ser. No. 507,340
Int. Cl.³ B65H 59/38, 63/00
U.S. Cl. 242—45 19 Claims



1. Apparatus for maintaining lead wire between a spool and a wire bonding tool comprising:

spool mounting means for mounting the spool for rotation about the spool axis;

spool drive means operatively coupled to the spool mounting means for driving and rotating a spool about the spool axis;

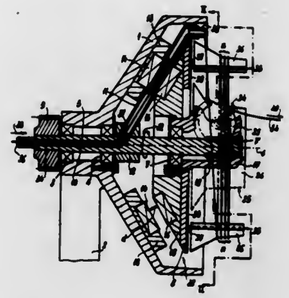
slack chamber means for maintaining a reserve length of lead wire in untangled condition, said slack chamber means comprising a housing enclosure, inlet guide means on one side thereof for guiding lead wire into the slack chamber means from a spool, outlet guide means formed on the opposite side of the housing enclosure for guiding lead wire out of the slack chamber means towards the wire bonding tool, and wire sensing means operatively positioned for sensing the offset of lead wire passing through the slack chamber means from the inlet guide to the outlet guide and for generating corresponding signals;

means for directing a gaseous flow into the slack chamber means between the inlet and outlet guides in the direction of the wire sensing means whereby a length of lead wire passing through the slack chamber means between the inlet guide and outlet guide is maintained and suspended in the gaseous flow in a configuration offset from an imaginary line between the inlet and outlet guides thereby maintaining a slack reserve length of lead wire under slight tension for delivery in untangled condition to the bonding tool;

and wire feed control means operatively coupled to receive signals from said wire sensing means for controlling the delivery and feeding of lead wire by the spool drive means from a spool on the spool mounting means into the slack chamber means in response to said signals for maintianing the slack reserve length of lead wire in the slack chamber means within a predetermined range;

said spool mounting means further comprising axial drive means for translating said spool in an axial direction to maintain the angle of entry of lead wire from the spool into the inlet guide of the slack chamber means within a desired angular range.

4,498,639
WEFT PREDELIVERY AND MEASURING DEVICE FOR A SHUTTLELESS LOOM
Albert H. Deborde, and Pierre Rémond, both of Bourgoin Jallieu, France, assignors to Saurer-Diederichs Societe Anonyme, Bourgoin Jallieu, France
Filed Sep. 17, 1982, Ser. No. 419,468
Claims priority, application France, Oct. 13, 1981, 81 19628; Mar. 31, 1982, 82 05893
Int. Cl.³ B65H 51/20
U.S. Cl. 242—47.01 7 Claims



1. A weft predelivery and measuring device for a shuttleless loom, comprising:

a tubular member rotatable about an axis and integral with a rotary shaft which is traversed by an axial channel along which a weft yarn can pass into the tubular member;

a drum fixed with respect to said axis and defined by a plurality of radially adjustable members orbited by an end of said tubular member to allow said weft to be wound on said drum;

a worm on said shaft within said drum;

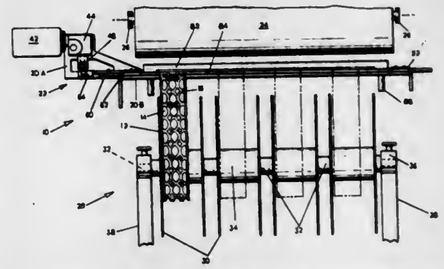
a worm gear within said drum meshing with said worm;

a second shaft connected to said worm gear and driven by the first mentioned shaft through said worm and said worm gear with a speed bearing a fixed ratio ot the speed of said first shaft determined by a transmission ratio of said worm and said worm gear;

a claw wheel on said second shaft provided with a plurality of angularly equispaced claws each having a concave face permitting retention of weft yarn until the respective claw is rotated with rotation of said claw wheel, said claw wheel being disposed relative to said radially adjustable members of said drum to enable each claw to retain successive turns of weft yarn deposited on said drum and then upon such rotation to release the turns retained by each claw and deposited on said drum all at once, said radially adjustable members being angularly equispaced adjustable weft supports, said drum further comprising a diak, and means angularly equispaced around said disk for receiving the respective weft supports and enabling the radial and concentric adjustment with respect to the axis of said first shaft, said second shaft being radially aligned with said one of said supports; and

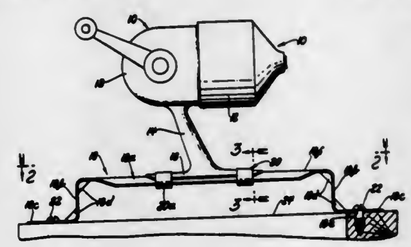
means for radially adjusting a position of said wheel with respect to said worm gear in accordance with the position of said one of said supports.

4,498,640
APPARATUS AND METHOD FOR UNIFORMLY WINDING ELONGATE SHEET MATERIALS
Frank J. Nowak, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio
Filed May 5, 1982, Ser. No. 375,155
Int. Cl.³ B65H 17/02, 19/04, 57/28
U.S. Cl. 242—67.1 R 12 Claims



1. An apparatus for facilitating uniform winding of sheet material comprising, in combination a shuttle member having at least one material receiving channel disposed therein, said channel having a width substantially equal to the width of said sheet material, a retaining member extending across said channel, said retaining member disposed for movement between a first position in which said material is retained in said channel and a second position in which said retaining member is spaced from said shuttle member, means for moving said retaining member between first and second positions drive means for reciprocating said shuttle member, and coupling means for interconnecting said drive means and said shuttle member.

4,498,641
MOUNTING BRACKET ASSEMBLY FOR FISHING REELS
Ernst W. Steudle, Fraser, Mich., assignor to U.S. Properties Inc., Fraser, Mich.
Filed Mar. 19, 1984, Ser. No. 590,834
Int. Cl.³ B65H 17/52; A47H 1/00; B65D 85/00; A63B 55/00; A01K 27/06
U.S. Cl. 242—106 10 Claims



1. A mounting bracket assembly for storing fishing reels of the type having a pedestal portion terminating in a foot portion of arcuate cross section, said assembly comprising:

A. a bracket having

1. an elongated main body portion defining an elongated arcuate seating surface having a radius of curvature generally corresponding to that of the foot portion of a fishing reel to be stored,

2. leg portions extending from each end of said main body portion in a direction toward the center of curvature of said seating surface, and

3. mounting means on the free ends of said leg portions for coaction with fastener elements to mount said bracket

on a suitable support surface with said main body portion spaced from the support surface; and

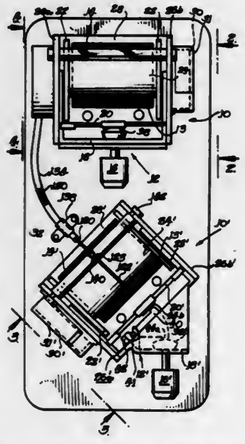
B. a pair of retainer clips slidably mounted on said main body portion and dimensioned and configured to slide snugly over the opposite ends of a fishing reel foot portion seated on said seating surface to firmly secure the foot portion and thereby the fishing reel to the bracket.

4,498,642

SEAT BELT RETRACTORS

Gerald A. Doty, Crown Point, Ind., assignor to Gateway Industries, Inc., Hazel Crest, Ill.

Filed Mar. 7, 1983, Ser. No. 472,634
Int. Cl.³ A62B *35/02*; B65H *75/48*
U.S. Cl. 242—107.4 A **4 Claims**



1. A safety belt retractor system comprising:

a first retractor and a second retractor, each of said retractors having its own separate and discrete frame having opposed sides, a reel in each retractor supported for rotation between said sides, a belt portion wound around said reel for protraction from and retraction onto said reel, spring means biasing the reel to retract and rewind the belt portion onto the reel, locking means in each retractor for locking the belt portion against further protraction at the time of sudden vehicle velocity change, said first retractor being spaced at a substantial distance from said second retractor, said second retractor having its reel mounted for rotation about an axis at a substantial angle to the vertical and to the axis of rotation for the first retractor, each of said locking means being discreet and separated from each other and being mounted in a different retractor frame, each of said locking means comprising a separate movable weight member, lock bar and ratchet wheel assembly independently operable of the other, a tension relieving means mounted coaxially with the axis of rotation of the first retractor and associated with said first retractor for relieving spring means tension from the belt portion of said first retractor when worn about a passenger; said tension relieving means allowing the passenger to move forward and backward without releasing,

means for releasing said tension relieving means to permit retraction of the belt portion associated with said first retractor; and

cable means extending in a nonlinear path between said first and second retractors for actuating said releasing means upon retraction of the belt associated with said second retractor; and

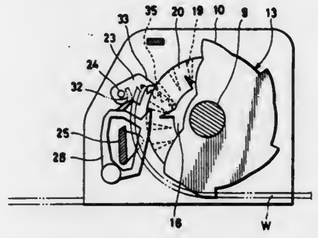
guide means guiding the cable for movement along said nonlinear path.

4,498,643

AUTOMATIC LOCKING RETRACTOR

Katsuyasu Ono, Fujisawa, Japan, assignor to NSK-Warner K.K., Japan

Filed Nov. 10, 1983, Ser. No. 550,578
Claims priority, application Japan, Nov. 17, 1982, 57-173900[U]
Int. Cl.³ A62B *35/00*; B65H *75/48*
U.S. Cl. 242—107.4 D **6 Claims**



1. An automatic locking retractor comprising:

a casing;

a take-up spindle rotatably supported on the casing and urged in the winding direction of a webbing;

a cog wheel mounted integrally on the take-up spindle;

a ratchet wheel and latch gear integrally rotatable together with the cog wheel;

a lock lever displaceable between a first position where the lock lever is in engagement with the cog wheel and a second position where the lock lever permits free rotation of the cog wheel;

a pawl displaceable between an engagement position where the pawl is in engagement with the ratchet wheel, an intermediate position where the pawl is engageable with the ratchet wheel and a non-engagement position where the pawl is kept out of engagement with the ratchet wheel;

a control member normally biased to a position, where the control member is engageable with the latch gear, and capable of assuming a first working position where the control member is brought into contact with the path of rotation of the circumference of the latch gear by a rotation of the take-up spindle in the pulling-out direction of the webbing and a second working position where the control member is brought into contact with the path of rotation of the circumference of the latch gear by a rotation of the take-up spindle in the winding direction of the webbing; and

sensor means coupled with the pawl and adapted to hold the pawl in the non-engagement position when the webbing has been wound up over at least a predetermined length;

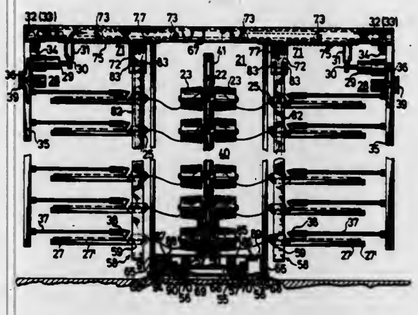
wherein the control member moves toward the first working position and is brought into engagement with the pawl and the pawl assumes the non-engagement position when the webbing which has been wound up on the take-up spindle is pulled out, the control member moves toward the second working position and is disengaged from the pawl and the pawl moves to the intermediate position when the webbing has been wound back over a predetermined small length, and the pawl is then guided to the engagement position when the webbing is pulled out again; and means for displacing the lock lever from the second position to the first position as the pawl is displaced from the intermediate position to the engagement position.

4,498,644

CREEL

Wilhelm Küpper, Wegberg, and Gerhard Koslowski, Monchen-Gladbach, both of Fed. Rep. of Germany, assignors to W. Schlafhorst & Co., Monchen-Gladbach, Fed. Rep. of Germany

Filed Nov. 19, 1982, Ser. No. 442,899
Claims priority, application Fed. Rep. of Germany, Nov. 21, 1981, 3146170
Int. Cl.³ D02H *1/00*; B65H *49/02*
U.S. Cl. 242—131.1 **5 Claims**



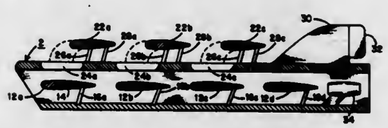
1. Creel, comprising a stationary supporting frame, at least one yarn tensioning holding element and at least one thread guiding element supported by said stationary supporting frame, bobbin holding assemblies disposed in vicinity of said stationary supporting frame, a plurality of bobbin holding elements carried on each of said bobbin holding assemblies, drive rollers connected to said bobbin holder assemblies for supporting said assemblies on a floor, separate hood-shaped sliding frames, each of said sliding frames being connected to a respective one of said assemblies, and separate upper cover plates each being disposed on a respective one of said sliding frames covering said drive rollers and part of the floor for preventing accidents and dust accumulation.

4,498,645

WINGLESS AIRCRAFT WITH DUCTED VARIABLE PITCH AIRFOILS

Arthur L. Hardy, Lowell Rd., Windham, N.H. 03087

Filed Oct. 28, 1982, Ser. No. 437,215
Int. Cl.³ B64C *3/10*
U.S. Cl. 244—12.6 **1 Claim**



1. A wingless aircraft comprising

a fuselage,

a power channel integrally secured to said fuselage having front and rear openings and first and second parallel horizontal linear ducts extending the length of said power channel,

a first plurality of movable airfoils positioned in spaced relationship within and along said first duct,

a second plurality of movable airfoils positioned in spaced relationship within and along said second duct,

first and second drive engines positioned respectively within said ducts,

control means for adjusting the pitch of each of said airfoils, the pitch of said second plurality of airfoils being adjustable independently from those of said first set of airfoils,

said power channel having a plurality of top openings each positioned above one of said airfoils,

a plurality of auxiliary wing panels each positioned in and substantially sealing one of said openings,

pivot means for raising each of said auxiliary wing panels from its associated opening to a position above and at least partially laterally offset from its said associated opening, and

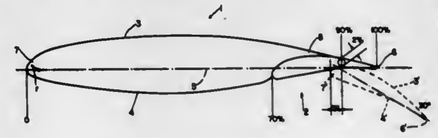
means for controlling the pitch of said auxiliary wing panels.

4,498,646

WING FOR SHORT TAKE-OFF AND LANDING AIRCRAFT

Hans-Jörg Prokach, Hagnau; Dieter Welte, Markdorf; Herbert Zimmer, Friedrichshafen, and Michael Lotz, deceased, late of Immenstaad, all of Fed. Rep. of Germany (by Carla Lotz, née Post, Andreas Lotz, heirs), assignors to Dornier GmbH, Friedrichshafen, Fed. Rep. of Germany

Filed Mar. 9, 1982, Ser. No. 356,418
Claims priority, application Fed. Rep. of Germany, Jul. 1, 1981, 3125916
Int. Cl.³ B64C *3/26*
U.S. Cl. 244—35 R **2 Claims**



1. A profile shape for wings of short take-off and landing aircraft, for cruising speeds up to about 700 km/h, which comprises a profile having a center line in combination with a nose radius to achieve the maximum possible lift as well as the least possible trimming drag for take-off or cruising, where the center line (S) includes a first forward point (b_1) at about $x/l=0.15$ with a first camber maximum of about 1.54% of the length (l), a rear point (b_2) at about $x/l=0.7$ with a second camber maximum which is about 1.94% of the length (l), a point (b_3) located between the points (b_1 and b_2) and at about $x/l=0.4$ representing a camber minimum of about 1.4% of the length (l), and where a profile droplet is superposed on the center line (S) and evinces a thickness distribution D having a forward point of about $y_D/l=0.059$ at about $x/l=0.15$, by a point $y_D/l=0.08$ at about $x/l=0.42$, a point of about $y_D/l=0.052$ at about $x/l=0.7$, and by a rear point of about $y_D/l=0.007$ at about $x/l=1.0$, and said profile also having a nose radius (r) of about $r/l=0.0145$.

4,498,647

SURFACE HOLD-DOWN MECHANISM

Wilfred E. Boehringer, Fullerton, and Vincent J. Pastor, El Toro, both of Calif., assignors to McDonnel Douglas Corporation, Long Beach, Calif.

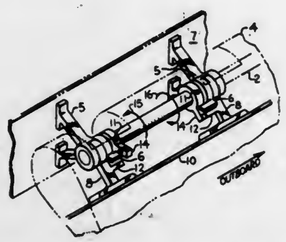
Filed Mar. 15, 1982, Ser. No. 358,320
Int. Cl.³ B64C *9/02*
U.S. Cl. 244—75 R **6 Claims**

5. In an airfoil having a hinged, driven control surface, a control surface hold-down mechanism comprising:

a torsion bar anchored to said airfoil remote from said hinge axis of said control surface;

two 4-bar linkage means attached to said torsion bar so as to

pre-load said torsion bar to provide a biasing force to maintain said control surface in the neutral position; and



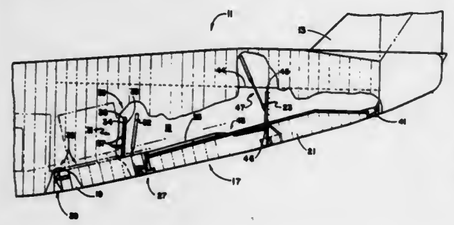
means to drive said two 4-bar linkage means so that said biasing force always increases with either clockwise or counterclockwise rotation of said control surface.

4,498,648

CARGO DOOR ASSEMBLY

Frank T. DeLuca, Marietta, and Gordon A. Dobson, Woodstock, both of Ga., assignors to Lockheed Corporation, Burbank, Calif.

Filed Jun. 27, 1983, Ser. No. 507,964
Int. Cl.³ B64D *9/00*; B64C *1/22*
U.S. Cl. 244—118.3 **12 Claims**



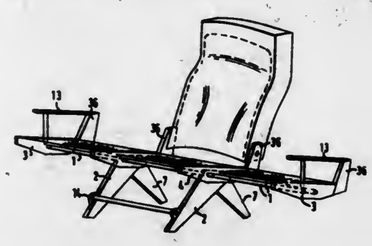
1. A plug-type door assembly for the storage compartment of a cargo aircraft having a fuselage comprising:
(a) a cargo ramp pivotally mounted for longitudinal as well as outward and downward rotation from a closed position to first, second, and third positions;
(b) ramp actuator means for lowering and raising said cargo ramp;
(c) ramp locking means for locking said ramp in the closed position;
(d) a ramp extension selectively affixed to said ramp;
(e) a ramp extension locking means for selectively locking said extension to said ramp;
(f) a cargo door pivotally mounted for inward and upward rotation from a closed to an open position;
(g) door locking means for locking said door in the closed position;
(h) a hinged pressure bulkhead, one end being attached to torque deck of the storage compartment, the other end being slidably affixed to said door;
(i) bulkhead actuator means for folding and opening said bulkhead to lift and lower said cargo door; and
(j) sealing means for forming a pressure tight seal at ramp, door, pressure bulkhead and fuselage intersections.

4,498,649

AIRCRAFT SEATING

Ian C. Toll, Hamworthy, England, assignor to Futaire Limited, Poole, England

PCT No. PCT/GB82/00096, § 371 Date Nov. 23, 1982, § 102(e) Date Nov. 23, 1982, PCT Pub. No. WO82/03366, PCT Pub. Date Oct. 14, 1982
PCT Filed Mar. 30, 1982, Ser. No. 449,001
Claims priority, application United Kingdom, Mar. 30, 1981, 8109903
Int. Cl.³ B64D *11/06*
U.S. Cl. 244—118.6 **19 Claims**



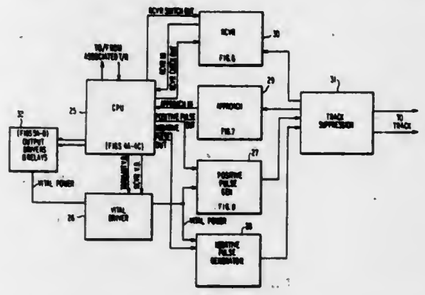
1. A seat frame assembly for an aircraft or like seat comprising a leg terminating at its lower end in a mechanical anchor for location in a floor fixing track, at least one laterally extending spar means fastened to the leg and at least two seat support members fastened to the spar, the seat support members, leg and spar having load bearing shells of fibre reinforced plastic defined by inner layers of carbon fibre disposed in an anisotropic like structure and an outer layer of aramid fibres so that loads on the seat frame members are transmitted through the spar means to the leg and the assembly acts as an integral structure.

4,498,650

MICROPROCESSOR BASED TRACK CIRCUIT FOR OCCUPANCY DETECTION AND BIDIRECTIONAL CODE COMMUNICATION

Barry L. Smith; James R. Hoelscher, and William A. Petit, all of Rochester, N.Y., assignors to General Signal Corporation, Stamford, Conn.

Filed Mar. 10, 1982, Ser. No. 356,861
Int. Cl.³ B61L *25/00, 21/00*
U.S. Cl. 246—122 R **23 Claims**



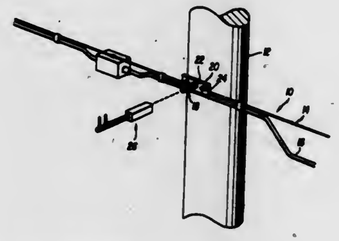
1. A railroad track circuit comprising a transmitter and a receiver spaced apart along a section of railroad track, in which said transmitter comprises:
a source of electrical energy and means coupling said source of electrical energy to said section of railroad track,
and in which said receiver comprises:
microprocessor means with at least one input port and at least one output port for producing signals at said output port in response to signals at said input port, means connecting said input port to said section of track at a location spaced from said means coupling said source of electrical energy, output means for driving an indication device coupled to said output port,
whereby said output means is capable of controlling an indication device to indicate the occupancy condition of said section of track between said transmitter and said receiver.

4,498,651

APPARATUS FOR TEMPORARILY SUPPORTING A CABLE

Frank W. Allen, Wall Township, Bellmar County, N.J., assignor to Project Packaging, Inc., Manasquam, N.J.

Filed Mar. 15, 1983, Ser. No. 475,697
Int. Cl.³ F16L *3/08*
U.S. Cl. 248—65 **12 Claims**



1. A pole line comprising:
(a) a plurality of poles;
(b) a plurality of cable hanging apparatus one of which is mounted on each of said plurality of poles in position to receive and support a cable system, each of said plurality of cable hanging apparatuses comprising a tie bolt which extends through the corresponding one of said poles and a cable clamp threadedly received on said tie bolt, said tie bolt having a threaded end which extends through said cable clamp and which protrudes beyond said cable clamp;
(c) a replacement cable system received in and supported by said plurality of cable hanging apparatuses; and
(d) a plurality of apparatuses for temporarily supporting a cable which is being removed from said pole line while said replacement cable is being strung on said pole line in the position formerly occupied by the cable being replaced, each of said apparatuses comprising:
(i) a first member extending linearly along an axis and containing a threaded bore which receives and is threadedly secured to the projecting end of the corresponding one of said tie bolts;
(ii) two cable receiving members projecting from sid first member perpendicularly to the axis of said first member, said two cable receiving members being spaced apart by a distance slightly greater than the diameter of the cable being replaced; and
(iii) cable retaining means for securely holding the cable being replaced between said two cable receiving members in position to be supported by said first members.

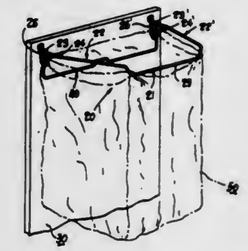
4,498,652

WIRE RACK FOR PLASTIC BAG

James J. Malik, 6618 Bennington Dr., Parma Heights, Ohio 44130

Filed Jul. 29, 1983, Ser. No. 518,550
Int. Cl.³ B65B *67/04*
U.S. Cl. 248—99 **4 Claims**

1. A wire rack for mounting to the inner surface of a door of a cabinet so as to be able to open and close the door with a plastic bag suspended open-mouthed by its handle loops removably secured on the rack, said rack comprising,
a generally trapezoidal device including in combination,
(a) a main wire member for supporting said plastic bag in the open-mouthed position for receiving material, and
(b) a wire bail upon which a package of plastic bags is removably secured, the bail forming the base of a trapezoid, said main member comprising,
(i) a pair of side members angulated in the horizontal plane to include an obtuse angle so that the side members converge symmetrically into
(ii) a front longitudinal member stepped down from the horizontal plane of the side members by downwardly extending portions inclined inwardly from the vertical, said side members being provided near their ends with
(iii) U-shaped portions, each of which has one vertical arm



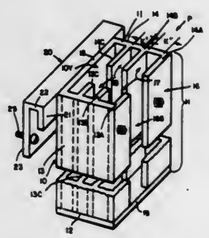
which terminates in a mounting ear integrally formed by deforming an end of said main member to provide parallel faces, said mounting ear having a through-aperture for mounting said main member to said door's inner surface,
whereby said side members form tab-shaped protrusions upon which said handle loops are secured; and,
said wire bail comprising,
(i) a longitudinal member terminating in oppositely disposed vertical side members having integral end-loops through each of which one said mounting ear is inserted so the bail is swingably disposed in the trough of each said U-shaped portion, and,
(iii) an inverted-U-shaped portion formed integrally in said bail, at the center thereof, to provide a vertical protrusion upon which a package of plastic bags may be stored.

4,498,653

ADAPTER FOR RECEIVING MULTI-HOOKS BRACKETS OF VARIOUS MODEL-DESIGNS

Thomas A. Quest, 9205 Timberline Dr., Omaha, Nebr. 68152

Filed May 31, 1983, Ser. No. 499,289
Int. Cl.³ E04G *5/06*; A47G *29/02*
U.S. Cl. 248—225.2 **11 Claims**



1. Adapter for engageably receiving multi-hooks brackets of various model-designs and being anchorable to a suitable wall

environment whereby the bracket engaged multi-hooks bracket might suspendably support office equipment relative to said environmental wall, said wall anchorable adapter comprising:

(A) an upright tubular housing having a finite-height between a top-end and a bottom-end and comprising four interconnected upright-panels including laterally separated rear-panel and frontal-panel and transversely separated leftside-panel and rightside-panel, the housing bottom-end being closed by a base-plate, said four upright-panels providing a vertical-bore of regular non-circular cross-sectional shape for said tubular housing and which shape includes laterally consecutive channels commencing at the frontal-panel, respective housing member channels being cross-sectionally defined by a pair of transversely separated bifurcate housing wings emanating from the leftside-panel and the rightside-panel, each of said housing channels being adapted to slidably receive a selectable receiver-bar downwardly insertable from the housing top-end and thereby providing with respect to the frontal-panel lateral adjustment means for said receiver-bar, said upright frontal-panel having an upright frontal-face extending directionally transversely and uprightly along a frontalface-plane, said frontal-panel being centrally provided with a vertical-groove therethrough and communicating with the channels of the housing vertical-bore;

(B) anchoring means associated with and extending laterally rearwardly of the rear-panel member, said anchoring means being employable for anchoring the frontal-panel with respect to the upright wall environment; and

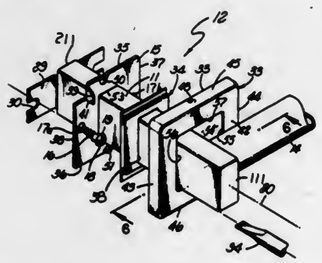
(C) a said receiver-bar having a uniform lateral-extent thickness therealong and provided with at least a vertical first-row and a vertical second-row of laterally horizontal apertures therethrough, said first-row apertures being at a regular vertical-spacing of a first-spacing value, and each of said first-row apertures having a substantially constant aperture-height, said second-row apertures being at a regular vertical-spacing of a second-spacing value differing from said first-spacing value, and each of said second-row apertures having a substantially constant aperture-height differing from the aperture-height for the first-row, whereby upon inversion of the selected receiver-bar within a housing channel, either the first-row or the second-row apertures might be made in lateral registry with said frontal-panel vertical-groove for engagement by the bracket hooks.

4,498,654

SUPPORT FOR BATHROOM FIXTURE OR THE LIKE

Leo Cooper, Los Angeles, Calif., assignor to Tubular Specialties Mfg., Inc., Los Angeles, Calif.

Filed Jun. 3, 1982, Ser. No. 384,548
Int. Cl.³ A47H 1/14
U.S. Cl. 248—251 **20 Claims**



1. A fixture comprising:

a mounting plate adapted to be attached by fastener means to a supporting wall;

a post supported by said mounting plate and projecting outwardly therefrom in a predetermined direction away from said wall and which is of non-circular external cross-section transversely of said direction;

a cover plate disposed about said non-circular post outwardly of said mounting plate and having an inner edge defining an opening through which said non-circular post extends;

said opening being larger than said post to fit loosely thereabout in a relation permitting movement of the cover plate transversely of the post and relative to the post and mounting plate, during attachment of the fixture to a wall, and between a first position of the cover plate allowing access to said fastener means by a tool and a second position covering the fastener means; and

a part disposed about said post and adapted to bridge across the space between said post and said inner edge of the cover plate and which contains a non-circular opening fitting closely about said non-circular post;

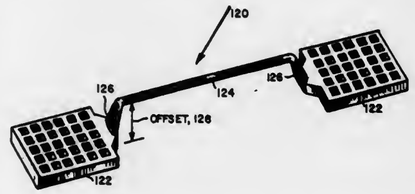
said cover plate being movable relative to said part transversely of the post in moving between said first and second positions.

4,498,655

WALL HANGER

Robert K. Tendler, Buckridge Dr., Amherst, N.H. 03031

Division of Ser. No. 921,041, Mar. 30, 1978, Pat. No. 4,309,016, which is a division of Ser. No. 831,092, Sep. 6, 1977, which is a continuation of Ser. No. 639,594, Dec. 10, 1975, which is a continuation-in-part of Ser. No. 446,394, Feb. 27, 1974, Pat. No. 3,926,399, which is a continuation-in-part of Ser. No. 400,662, Sep. 25, 1973, Pat. No. 3,868,086, which is a continuation-in-part of Ser. No. 235,174, Mar. 16, 1972, Pat. No. 3,788,588. This application Aug. 10, 1981, Ser. No. 291,491
The portion of the term of this patent subsequent to Dec. 16, 1992, has been disclaimed.
Int. Cl.³ A47F 7/14
U.S. Cl. 248—467 **9 Claims**



1. Apparatus for hanging articles on a wall which has a member protruding therefrom and from which said articles are hung, comprising:

a wall hanging, and

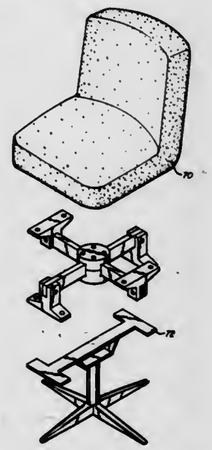
a unitary picture hanger of resinous material including two flat, separated pad portions lying substantially in one plane; an integral, flexible wire-like strand member depending between said pad portions, said flexible wire-like strand being formed by stretching; and integral riser means at each end of said flexible member for attaching said flexible member to said pad portions and for offsetting said flexible member from the plane in which said pad portions lie by a distance sufficient for said protruding member to engage said strand member when said wall hanging is hung on said wall, said picture hanger being affixed to the back of said wall hanging such that said separated pad portions contact the back of said wall hanging, and such that said strand member runs horizontally, said wall hanging being aligned with said wall by changing the point of engagement between said protruding member and said strand member, whereby a stable mounting system is provided with centering and balancing a function of the length of said strand member and the point of engagement between said strand member and said protruding member.

4,498,656

UNIVERSAL MECHANICAL LINKAGE

Tor Arild, 76 Morse La., Woodside, Calif. 94062

Continuation of Ser. No. 207,132, Nov. 17, 1980, abandoned. This application Jan. 28, 1983, Ser. No. 461,945
Int. Cl.³ F16M 13/00
U.S. Cl. 248—608 **11 Claims**



1. A torsioned linkage element for interconnecting and supporting a first movable body with respect to a second movable body, said element comprising:

first and second lineal bars, said bars being substantially coplanar and intersecting one another at a central location with the opposed free ends of said first bar being connectable to said first movable body and with the opposed free ends of said second bar being connectable to said second movable body;

first means for rigidly connecting at least one free end of said first bar to said first movable body;

second means for rigidly connecting at least one free end of said second bar to said second movable body; and

clamping means for securely fastening said bars at said central location, said bars being configured such that said linkage element is capable of motion in three axes whereby said linkage element provides support and torsionally restrained relative motion between said bodies in all axes.

4,498,657

SIGN STANDARD FOR SUPPORTING AND DISPLAYING A SIGN

William A. Werner, 6338 Woodlawn Dr., NE., Salem, Oreg. 97303, assignor to William A. Werner, Oreg.

Continuation of Ser. No. 120,677, Feb. 11, 1980, , which is a continuation-in-part of Ser. No. 950,466, Oct. 11, 1978,. This application Jun. 21, 1982, Ser. No. 390,550
Int. Cl.³ F16M 13/00
U.S. Cl. 248—623 **6 Claims**

1. A windproof sign stand, comprising:

a base;

a first post connected to the base and having an end extending therefrom;

spring means connected to said end of the first post extending away from the base;

means for adjusting the distance between the spring means and the base;

a second post connected to the spring means such that the spring means is between the first and second post;

a third post mounted to the second post to have a range of slidably adjustable, reciprocal telescoping motion therewithin;

a first sign mounting flange connected to the second post for securing a first portion of a sign thereto; and



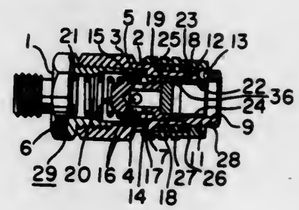
a second sign mounting flange connected to the third post for securing a second portion of a sign thereto, the first and second mounting flanges and the range of motion of the third post within the second post cooperating to permit adjustment of the distance between the first and second sign mounting flanges, the spring means, said spring means, adjusting means and the first, second and third posts cooperating to support the sign at a predetermined distance from the base such that the sign tilts in response to wind forces thereon, thereby limiting tilting moments about the base resulting from wind forces on the sign.

4,498,658

PIPE COUPLER ARRANGEMENT

Toshio Mikiya, Tokyo, Japan, assignor to Nitto Kohki Co., Ltd., Tokyo, Japan

Filed Sep. 7, 1982, Ser. No. 415,381
Claims priority, application Japan, Sep. 7, 1981, 56-139820
Int. Cl.³ F16L 37/28
U.S. Cl. 251—149.6 **8 Claims**



1. A pipe coupler arrangement including a socket having therein a valve member provided with fluid passage means and a plug provided at one end face with means engageable with said valve member, and a locking ball being provided in the outer periphery of said socket and being engageable within, or disengaged from, a groove formed in the outer periphery of said plug, thereby coupling or decoupling said plug into or out of said socket comprising:

said valve member including a blank flange which is nor-

mally in abutting contact with an annular seal disposed in said socket while said plug is separated from said socket, thereby closing up said passage means;

said socket including a separate locking ball-bearing annulus which is not affixed to and is independently slidable toward said valve member by said plug in the course of coupling of said plug with said socket just before disengagement of said flange from said seal;

a single O-ring being disposed between said valve member and said locking ball-bearing annulus, said O-ring being axially compressed into engagement with both the inner surface of said socket and the outer surface of said plug when said locking ball-bearing annulus receives a force exerted by said plug, and said O-ring being not subjected to any axially excessive force to retain its original shape when said locking ball-bearing annulus receives no force from said plug due to the positioning of said O-ring between said valve member and said separate locking ball-bearing annulus.

4,498,659

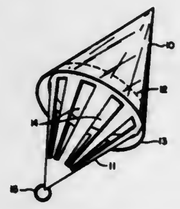
CONICAL LINE-PULLING CARRIER

Pete Brockelsby, III, 880 King Ave., Columbus, Ohio 43212

Continuation-in-part of Ser. No. 354,128, Mar. 2, 1982, abandoned. This application Apr. 11, 1983, Ser. No. 484,063

Int. Cl.³ B66F *3/00*

U.S. Cl. 254—134.4 6 Claims



1. A carrier for pulling a messenger line through conduit comprising a single, unitary, lightweight, flexible, plastic cone whose base is approximately the same diameter as the interior of the conduit being traversed, a plurality of flexible strands, each of said strands being attached at one of its ends to, and each of said strands extending inwardly directly from, the interior of said cone only at a location essentially parallel to the base of said cone and spaced between said base and the apex of said cone, said strands being equi-spaced around the interior of said cone, the other end of each of said strands being joined together and attached to means to which a messenger line may be attached.

4,498,660

MODULAR FENCE STRUCTURE

Robert J. Brema, Thornhill; Gerald J. Adamson; Philip L. Poissant, both of Toronto, and John H. Cleminson, Orangeville, all of Canada, assignors to Union Carbide Canada Limited, Toronto, Canada

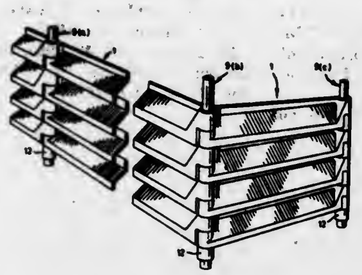
Filed Nov. 28, 1983, Ser. No. 555,766

Claims priority, application Canada, Dec. 2, 1982, 416843

Int. Cl.³ E04H *17/14*

U.S. Cl. 256—19 3 Claims

1. A fence comprising a first, a second and a third post aligned in parallel and having at least two modular panels mounted between each of said posts; each said modular panel comprising a rail section, a first connector member at one end of said rail section and a second connector member at the opposite end of said rail section, each of said connector members positioned offset from the longitudinal axis of said panel on opposite sides of said axis from each other and having a central passage for passing a length of one of said posts therethrough and including an expansion joint within said central passage for gripping said post; said rail section including a central louvered portion angled with respect to the connector members and a lip portion extending along the end of said louvered portion; said modular panels being so mounted on said posts that the central louvered portion of one modular panel is angled in opposite direction to the louvered portion of



the adjacent modular panel so that a lip portion of one panel abuts the lip portion of the adjacent panel and the first connector member of the modular panel between the second and third post is positioned below the second connector member of the modular panel mounted between the first and second posts to provide an interconnecting of said modular panels.

4,498,661

TEEMING LADLE

Vladimir E. Kobzar, ulitsa Kosiora, 32, kv. 71, Dnepropetrovsk, U.S.S.R.

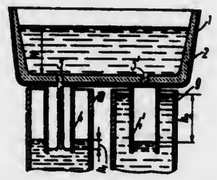
PCT No. PCT/SU82/00015, § 371 Date Dec. 23, 1982, § 102(e) Date Dec. 23, 1982, PCT Pub. No. WO82/03582, PCT Pub. Date Oct. 28, 1982

PCT Filed Apr. 23, 1982, Ser. No. 459,640

Claims priority, application U.S.S.R., Apr. 23, 1981, 3279495

Int. Cl.³ B22D *39/00*

U.S. Cl. 266—239 24 Claims



1. A teeming ladle for use in making molds from a melt comprising a body with a bottom having at least one tapping hole with a gas-impermeable sleeve being arranged around each tapping hole substantially coaxially therewith and having one of its ends tightly connected with the ladle bottom and the other end immersable in the melt during casting, the diameter of said sleeve being substantially larger than that of the tapping hole that after immersing the sleeve in the melt, a space is left in the sleeve interior capable of being filled with a gaseous medium under a pressure ranging from 0.02 to 1.0 times the pressure under which the melt is discharged from the ladle.

4,498,662

ADJUSTABLE PIPE CLAMP HOLDERS

Wilbur C. Halter, 3348 Uniontown Rd., Uniontown, Md. 21157

Filed May 4, 1983, Ser. No. 491,273

Int. Cl.³ B25B *1/00*

U.S. Cl. 269—101 2 Claims

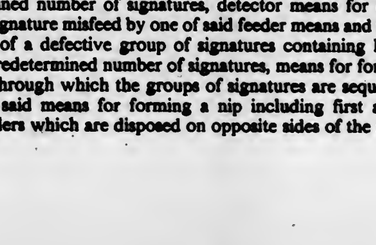
1. A holding apparatus for effecting an attachment of an adjustable pipe clamp or the like to a working surface, such as the working surface of a folding workbench or the like, said holding apparatus comprising:

a body portion;

a substantially cylindrical aperture directed through said body portion, said substantially cylindrical aperture being designed to retain said adjustable pipe clamp therein;

interference prevention means, said interference prevention means comprising a through-extending slot cut into said substantially cylindrical opening whereby an internal wall portion of said substantially cylindrical opening is discontinuous, thereby to permit a circumferential surface of said adjustable pipe clamp to extend outwardly from said substantially cylindrical opening and above a topmost portion of said body portion;

clamping means, said clamping means comprising a threaded member selectively movable into and out of said substantially cylindrical opening, said threaded member being selectively brought into engagement with said adjustable pipe clamp retained within said substantially cylindrical



opening, thereby to frictionally engage and retain said adjustable pipe clamp within said opening;

attachment post means, said attachment post means extending out of a bottommost portion of said body portion and being positionable through an opening provided in said working surface, thereby to retain said body portion at a desired location on said working surface, said attachment post means including a substantially smooth surfaced cylindrical portion and a threaded end portion; and

working surface attachment means, said working surface attachment means including a washer means positionable over said threaded end portion of said attachment post means and being engageable with a bottommost surface of said working surface and further including an internally threaded member positionable over said threaded end portion, said internally threaded member being operable to force said washer into engagement with said bottommost surface of said working surface, thereby to frictionally secure said holding apparatus in a particular desired location.

4,498,663

SIGNATURE HANDLING APPARATUS FOR DETECTION OF SHORT SIGNATURE GROUPS

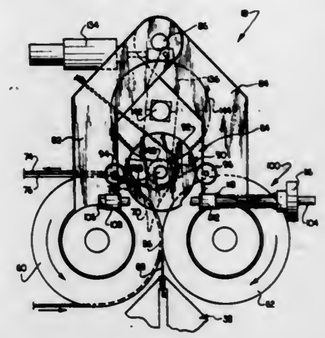
Richard D. Wamsley, Swanton, Vt., and David J. Polman, Brook Park, Ohio, assignors to Harris Graphics Corporation, Melbourne, Fla.

Filed Sep. 23, 1983, Ser. No. 535,034

Int. Cl.³ B65H *39/02*

U.S. Cl. 270—54 10 Claims

1. An apparatus comprising conveyor means for transporting signatures, a plurality of feeder means disposed in an array along said conveyor means for feeding signatures onto said conveyor means to form groups of signatures containing a predetermined number of signatures, detector means for detecting a signature misfeed by one of said feeder means and the formation of a defective group of signatures containing less than the predetermined number of signatures, means for forming a nip through which the groups of signatures are sequentially fed, said means for forming a nip including first and second rollers which are disposed on opposite sides of the nip with the centers of rotation of said rollers spaced a first distance apart during the feeding of groups of signatures containing the predetermined number of signatures, and control means



for decreasing the spacing between the centers of rotation of said rollers to feed a defective group of signatures containing less than the predetermined number of signatures in response to said detector means detecting a signature misfeed.

4,498,664

APPARATUS FOR REMOVING FROM A PRODUCT STREAM CONVEYED BY MEANS OF A CONVEYOR DEVICE FLEXIBLE, FLAT PRODUCTS, ESPECIALLY PRINTED PRODUCTS

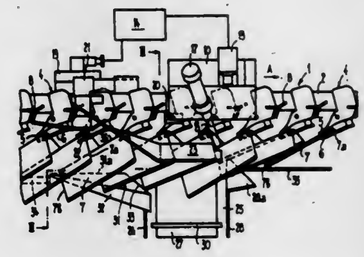
Walter Reist, Hinwil, Switzerland, assignor to Ferag AG, Hinwil, Switzerland

Filed Mar. 22, 1982, Ser. No. 360,212

Claims priority, application Switzerland, Apr. 9, 1981, 2388/81

Int. Cl.³ B65H *29/04*

U.S. Cl. 271—204 23 Claims



1. An apparatus for removing flexible, substantially flat products, especially printed products, from a product conveying stream moving in a predetermined product conveying direction and defining a product conveying path comprising:

a conveyor device;

said conveyor device being provided with gripper elements arranged in spaced relationship from one another at said conveyor device;

said gripper elements releasably retaining said flexible products;

at least one release device which can be selectively switched-on and switched-off;

said release device, when assuming its switched-on condition, opening the individual gripper elements moving therepast for releasing said products; and

means for bending said products into a substantially saddle-shaped configuration about a line extending essentially in the product conveying direction and which bending

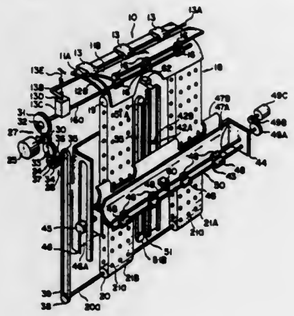
means are arranged, viewed in the product conveying direction, in the region of the product conveying path upstream of said release device, the products being kept in said substantially saddle-shaped configuration until the gripper elements are opened by said release device.

4,498,665

PAPER SORTING/STORING APPARATUS

Junji Watanabe, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Mar. 24, 1983, Ser. No. 478,640
Claims priority, application Japan, Apr. 16, 1982, 57-63661
Int. Cl.³ B65H *39/11*
U.S. Cl. 271—289 3 Claims



1. A paper sorting/storing apparatus, comprising:
transfer direction selecting means for selectively switching a transfer direction of a paper sheet between first and second transfer directions;
first paper transferring means for transferring the paper sheet in the first transfer direction selected by said transfer direction selecting means;
second paper transferring means for transferring the paper sheet in the second transfer direction selected by said transfer direction selecting means;
nonsorting/storing means for storing the paper sheet transferred by said first paper transferring means;
sorting/storing means for sorting and storing the paper sheet transferred by said second paper transferring means; and
paper transferring/driving means for stopping at least said second paper transferring means while said first paper transferring means is in motion, said paper transferring/-driving means including,
(a) a reversible drive source,
(b) a first one-way clutch section for transmitting a rotational force of said drive source in one direction to said first paper transferring means; and
(c) a second one-way clutch section for transmitting the rotational force of said drive source in the other direction to said second paper transferring means.

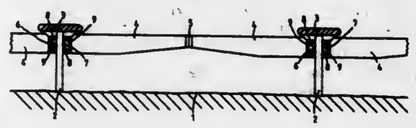
4,498,666

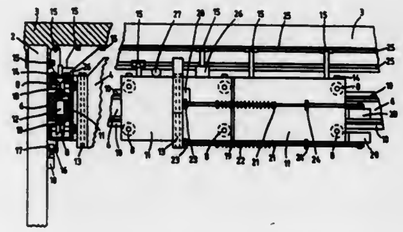
RACETRACKS

Neville C. McCallum, 2/111 Wingewarra St., Dubbo, NSW 2830, Australia

PCT No. PCT/GB82/00074, § 371 Date Oct. 28, 1982, § 102(e) Date Oct. 28, 1982, PCT Pub. No. WO82/03336, PCT Pub. Date Oct. 14, 1982
PCT Filed Mar. 8, 1982, Ser. No. 438,962
Claims priority, application United Kingdom, Mar. 24, 1981, 8109128; Nov. 16, 1981, 8134407
Int. Cl.³ A63K *1/00*
U.S. Cl. 272—5 20 Claims

1. A racetrack at least part of which comprises a plurality of discrete, adjoining running lanes defined by a plurality of parallel barrier rails, each of said running lanes having an associated pair of starting gates each of which are pivotally mounted relative a respective barrier rail on one side of each lane via a housing which is movable lengthwise along a beam attached to running lane posts which support each said barrier rail, said starting gates of each pair being movable between a closed position in which they meet to form a barrier across said lane and an open position in which they lie substantially parallel to said barrier rails, the racetrack further comprising:





means for moving said pairs of starting gates relatively along the length of said barrier rails,
means for controlling movement of said pairs of starting gates such that said pairs of starting gates may be moved in unison at a controlled rate of acceleration, and
means for opening each of said pairs of starting gates simultaneously automatically when said gates are at a predetermined position.

4,498,667

PROCESS FOR COATING BALL CORES

Julius Tomar, Port-au-Prince, Haiti, assignor to Home of Champions, S.A., Port-au-Prince, Haiti

Continuation-in-part of Ser. No. 943,145, Sep. 18, 1978, Pat. No. 4,211,407, which is a division of Ser. No. 858,415, Dec. 17, 1977, Pat. No. 4,144,297. This application Apr. 12, 1979, Ser. No. 29,295
Claims priority, application Haiti, Dec. 28, 1976, 139
The portion of the term of this patent subsequent to Jul. 8, 1997, has been disclaimed.
Int. Cl.³ A63B *37/06*
U.S. Cl. 273—60 B 2 Claims



1. A coated ball selected from the group consisting of a baseball and a softball having substantially the same weight and rebound characteristics as a conventional baseball or softball comprising a thermoplastic core with foam at the center thereof gradually reducing in cell size radially outwardly to a skin, and a coating selected from the group consisting of thermoplastic rubber or plasticized vinyl resin, said thermoplastic core being an ethylene-vinyl acetate copolymer having 12 to 30 percent by weight polymerized vinyl acetate units therein.

4,498,668

SCORE KEEPING DEVICE

Jack Bowen, 939 Rays Rd., Stone Mountain, Ga. 30083

Filed Mar. 26, 1984, Ser. No. 593,694
Int. Cl.³ A63B *49/00*
U.S. Cl. 273—73 R 10 Claims



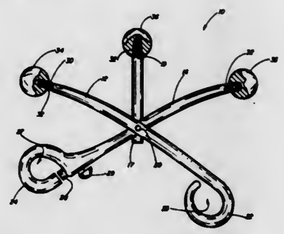
1. Score keeping device comprising:
(a) an elongated structure of a transparent flexible plastic material on which indicia for scoring a game are superimposed;
(b) at least one marker of a contrasting color to that of the indicia is enclosed and slideable within the structure; and
(c) means for holding the score marker in a fixed position relative to the indicia so that it will not move inadvertently during the game.

4,498,669

HAND-HELD DEFENSE WEAPON

Dai S. Chun, 408 Urbantale St., Marrero, La. 70072

Filed Jul. 13, 1983, Ser. No. 513,364
Int. Cl.³ F41B *15/00*; B25B *15/00*
U.S. Cl. 273—84 R 10 Claims



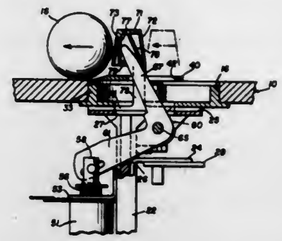
1. A hand-held defense weapon comprising:
a. a pair of first and second shafts connected together at a common pivot located at the central portion of each shaft;
b. a pair of handles respectively on one end of each shaft;
c. a pair of blunt elements mounted on each shaft at the end opposite the handle; and
d. a third shaft connected to the common pivot at one end, and carrying a blunt element at the other end, the three shafts being independently movable with respect to the other shafts and having a cross-section with a blunted outer surface so that the shafts can be positioned between the fingers of a user's hand and tightly gripped without injuring the user's hand, the shafts collapsing with respect to each other for storage to a position where the shafts are generally aligned side by side.

4,498,670

WIDE FACE HORIZONTALLY MOVABLE KICKER FOR PIN BALL GAME

Albin Peters, Chicago, Ill., assignor to Wico Corporation, Niles, Ill.

Filed Aug. 19, 1982, Ser. No. 409,411
Int. Cl.³ A63F *7/00*
U.S. Cl. 273—129 V 7 Claims



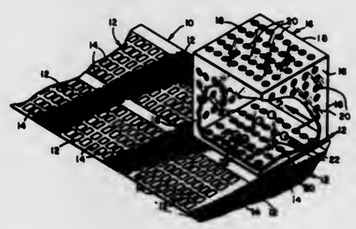
1. A pin ball game kicker apparatus for propelling a pin ball with a predetermined diameter into rolling engagement with a playfield board, said kicker apparatus comprising a frame, track means on said frame defining a rectilinear path, a kicker member cooperating with said track means for reciprocating movement with respect thereto along said path between a normal rest position and a kicking position, said kicker member having a kicking surface with a dimension in a direction transverse to said path and parallel to the playfield board greater than the predetermined diameter of an associated pin ball, said kicking surface being disposed above the playfield board for engagement with an associated pin ball when said kicker member is moved to its kicking position, and drive means carried by said frame and coupled to said kicker member for effecting movement thereof between the rest and kicking positions thereof.

4,498,671

LOTTO DICE

Michael Kostow, 224 Lincoln Ter., Norristown, Pa. 19403

Filed May 6, 1983, Ser. No. 492,369
Int. Cl.³ A63F *7/04*
U.S. Cl. 273—144 B 8 Claims



1. A chance device in combination with lotto game cards of at least two different lotto games, the cards each having a grid bearing a plurality of written numbers, a predetermined number of which are to be selected from the grid by a player in entering one of the lotto games, the device comprising:
six face members joined together in the form of a cube, at least two of the face members of the approximate size of the grids of said two different lotto games, each face member having recessed pockets corresponding in number and positioning to the numbers of the grid of one of the lotto game cards, said at least two of the face members having different patterns of pockets making the game

device operable in combination with lotto game cards of said at least two different lotto games;

a group of balls in corresponding number to the predetermined number of numbers to be selected in the lotto games; and,

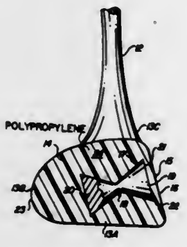
means to keep the balls loosely in the vicinity of the face members, whereby the face members can be shaken and positioned upon the one of the lotto game grids with the pockets corresponding to the numbers of the grid to allow the group of balls to randomly fall into certain of the pockets thus providing a random selection of numbers on the one of the lotto grids.

4,498,672

GOLF CLUB HEAD WITH FLEXURE FREQUENCY MATCHED WITH DISTORTION-RELAXATION FREQUENCY OF BALL

John G. Bulla, 2720 N. 10th St., Phoenix, Ariz. 85006

Continuation of Ser. No. 365,294, Apr. 5, 1982, abandoned. This application Oct. 17, 1983, Ser. No. 542,479
Int. Cl.[3] A63B *53/04*
U.S. Cl. 273—169 5 Claims



1. A golf club head formed of a moldable plastic material comprising:

a body member formed of polypropylene having a sole, toe, heel and a planar striking face extending upwardly from said sole between said toe and heel and having a predetermined acute loft angle measured with respect to a plane passing through the axis of a shaft fastenable to said body member,

said body member being formed into a portion of an arcuate configuration with a plane surface thereof forming said striking face, and

an elongated solid steel insert with a modulus of elasticity of approximately 30 million cycles per second embedded in said body member and arranged so as to be completely surrounded by said plastic material with one end thereof spaced one-eighth of an inch from the center of and substantially perpendicular to said striking face,

said insert forming at least a part of the path for the shock wave produced when a ball having a resonant frequency of approximately 19 million cycles per second is struck by the head at approximately the center of said striking face, which shock wave moves through said one-eighth of an inch of the polypropylene material forming said body member, then longitudinally through said steel insert and the remainder of the polypropylene body member to the arcuate configuration of said body member and back the same path to the point of impact of the ball with the striking surface,

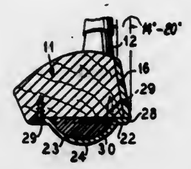
the density of the plastic material of said body member and said insert being such that the recovery rate of the flexure frequency of the head substantially equals the distortion-frequency of the golf ball when propelled from the face of the golf club head.

4,498,673

GOLF CLUB

Arthur P. Swanson, 1454 Estate La., Glenview, Ill. 60025

Filed Feb. 21, 1984, Ser. No. 581,804
Int. Cl.[3] A63B *53/04*
U.S. Cl. 273—172 2 Claims



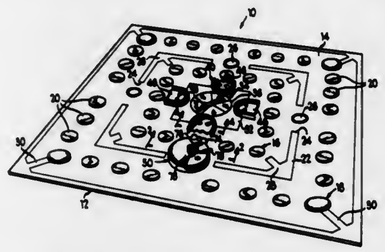
2. A golf head for a driving type golf club which comprises a member having a round nose, an arcuate back, a round heel, a hosel extending upwardly and rearwardly from the heel, a top, an upstanding front striking face inclined rearwardly 14° to 20° and having a central sweet spot, a generally flat sole, a single fragmental spherical projection integral with and depending from the central portion of the sole centered behind the sweet spot, said projection having a major diameter of 1 to 1½ inches and extending ⅛ to ½ inch below the sole, and said sole having a margin surrounding the projection of less width than said major diameter of the projection.

4,498,674

BOARD GAME WITH A COMMON PIECE HAVING A SPINNER

Michael J. Ferris; Paul H. Wise, both of Chicago, and Jeffrey D. Breslow, Highland Park, all of Ill., assignors to Marvin Glass & Associates, Chicago, Ill.

Filed Feb. 4, 1983, Ser. No. 463,920
Int. Cl.[3] A63F *3/00*
U.S. Cl. 273—243 18 Claims



13. A board game comprising:

an individual playing piece for each player;

a general playing piece that may be used by each player;

first chance means;

second chance means;

a board having a plurality of spaced indicia;

the individual and general playing pieces being movable from indica to indicia;

the general playing piece having a top with a depending wall and bearing the second chance means;

the depending wall having a bottom positionable on the board;

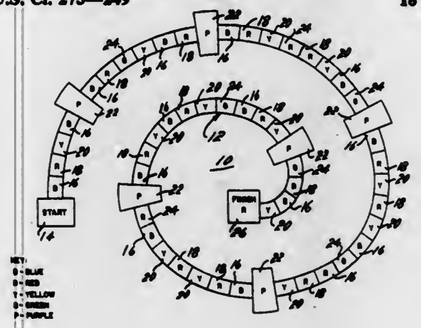
the second chance means including a spinner disc mounted for rotation below the top with only a portion of the disc viewable from the top of the general playing piece.

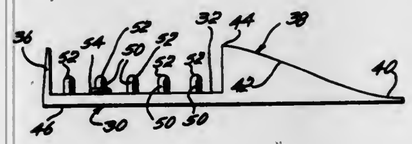
4,498,675

BOARD GAME WITH QUOITS MOVEMENT INDICATOR

William P. Jones, P.O. Box 297, Rochester, Wash. 98579

Filed Apr. 25, 1983, Ser. No. 488,173
Int. Cl.[3] A63F *3/00, 9/02*
U.S. Cl. 273—249 18 Claims





1. A game comprising:

a. a playing track;

b. said playing track having a plurality of areas for indicating position on said playing track;

c. said plurality of areas being of different first colors;

d. said playing track having a starting place and a finishing place;

e. a selection area for selecting one of said plurality of areas for indicating position on said playing track;

f. said selection area having a first means for selecting said one of said plurality of areas for indicating position on said playing track;

g. said first means comprising various means corresponding to various areas on said playing track;

h. a second means for associating with one of said various means for selecting said one of said plurality of areas for indicating position on said playing track;

i. said first means comprising different second colors corresponding to the colors of said plurality of areas;

j. said second means associating with one of said second colors for selecting one of said first colors for indicating position on said playing track;

k. said first means comprising a plurality of pegs of a first exterior cross-sectional dimension;

l. each of said pegs having a color and having indicia indicating said color of said peg;

m. said second means being an article having a passageway of a second interior cross-sectional dimension;

n. said second interior cross-sectional dimension being larger than said first exterior cross-sectional dimension so that said article can move around said pegs; and,

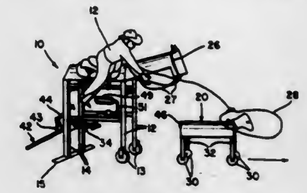
o. with said article around one of said pegs then said one of said pegs indicating an appropriate area for indicating position on said playing track.

4,498,676

SYSTEM FOR PRACTICING ROPING

Robert R. Runner, P.O. Box 307, Pavillion, Wyo. 82523

Filed May 2, 1984, Ser. No. 606,160
Int. Cl.[3] F41J *9/02*; A63B *67/06*
U.S. Cl. 273—336 21 Claims



1. A system for practicing the art of roping a moving target simulating an animal; said system comprising:

(a) stationary support means adapted to support the person roping in a seated position;

(b) movable target means simulating an animal to be roped;

(c) propelling means adapted to propel said target means away from said stationary support means in a manner such that said person may practice the art of roping said target means; and

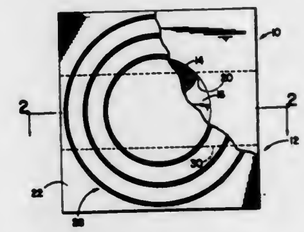
(d) actuating means, controlled by said person, which is adapted to actuate said propelling means.

4,498,677

EXPLOSIVE TARGET

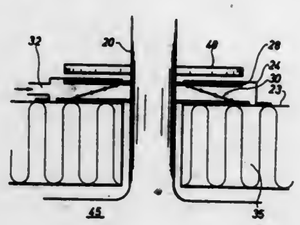
John G. Dapkus, P.O. Box 180, Cromwell, Conn. 06416

Filed Mar. 22, 1983, Ser. No. 477,819
Int. Cl.[3] F41J *5/06*
U.S. Cl. 273—380 15 Claims



1. An explosive target comprising a hollow body assembly having a generally rectangular block-shaped configuration and including a body having an opening extending therethrough, front and rear end walls attached to said body and forming closures for the front and rear ends of said opening, explosive charge means contained within said opening for detonation upon projectile impact, a charge retaining disc mounted in fixed position within said opening and maintaining said explosive charge means generally adjacent one of said end walls, and target indicia imprinted on the outer surface of said front end wall and including a central target area having a shape substantially identical to the cross sectional shape of said opening and aligned in registry with said opening.

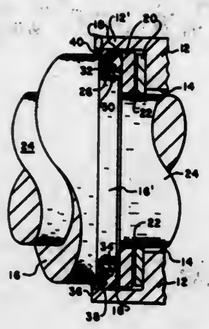
4,498,678
SHAFT SEAL
Alex D. Vestergaard, Kastrup, Denmark, assignor to Ingeniørfirmaet Lytzen KS, Herley, Denmark
Filed Feb. 28, 1983, Ser. No. 470,184
Claims priority, application Denmark, Mar. 3, 1982, 913/82
Int. Cl.³ F16J 15/40
U.S. Cl. 277—3 9 Claims



1. In an oven for connectively separating two otherwise independent, isolated medium chambers, seal means for a seal about a rotatable shaft extending through an opening in a wall of the oven, said seal means comprising
means forming a chamber surrounding a portion of the shaft and located at the lead-in of the shaft through the oven wall and including a pair of opposed walls extending parallel to the oven wall through which the shaft extends;
a pair of displaceable gaskets surrounding the shaft adjacent the opposed walls of said chamber, said gaskets having only a slip-fit on the shaft and said shaft after rotation is begun having no physical contact with the oven wall, the means forming the chamber and the displaceable gaskets, thus avoiding the creation of wear particles;
spring means urging the pair of gaskets to abut the opposed walls of the chamber to provide sealing cooperation with said walls; and
means communicating with said chamber providing pressure above atmospheric pressure within said chamber, creating a positive pressure therein to overcome the low pressure area that normally surrounds the shaft while the shaft rotates and to avoid penetration of impurities along the shaft from either side of said chamber surrounding the shaft, whereby the atmosphere on one side of said chamber does not extend through and mix with the atmosphere on the other side thereof.

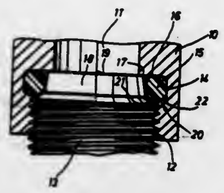
4,498,679
GREASE SEAL
Paul J. Balczun, Erie, Pa., assignor to Lord Corporation, Erie, Pa.
Filed Jan. 16, 1984, Ser. No. 571,234
Int. Cl.³ F16J 15/32; B62D 55/20
U.S. Cl. 277—92 4 Claims

1. An annular grease-purgable seal for use in a trunnion assembly or the like including a grease housing having a bore opening from one end thereof, and a spindle having an end portion projecting into said bore and spaced radially from the periphery of said bore, comprising:
a substantially rigid base member adapted to closely encircle said end portion of said spindle;
a unitary annular body of resilient elastomeric material;
said body being of generally C-shaped cross-sectional configuration and including an inner section overlying and bonded to said mounting member, a bendable pivot section extending outwardly from said inner section adjacent one end portion thereof, and an outer section engageable with said chamber bore periphery and mounted by said pivot section for pivotal movement into engagement with the other end portion of said inner section;
said body during use of said seal being in a stressed condition wherein said outer section and said other end portion of said inner section are in said engagement with each other and are stressed in compression, and wherein said pivot section is under bending stress;



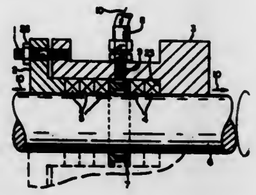
said outer section being biased outwardly toward said periphery of said chamber bore by the tendency of each of said stressed body sections to return to an unstressed condition.

4,498,680
SEALING-RING ARRANGEMENT FOR THREADED CLOSURE BOLT
Hermann Schobbe, Fellbach, Fed. Rep. of Germany, assignor to Daimler-Benz Aktiengesellschaft, Stuttgart, Fed. Rep. of Germany
Filed Mar. 6, 1984, Ser. No. 586,705
Claims priority, application Fed. Rep. of Germany, Mar. 7, 1983, 3308043
Int. Cl.³ F16J 15/10
U.S. Cl. 277—112 12 Claims



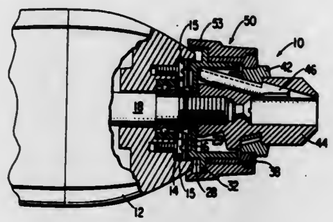
1. Sealing ring arrangement including a housing wall orifice extending through a housing wall of a high pressure vessel or the like, a threaded closure bolt for closing the orifice, and an elastomeric sealing ring interposed between the closure bolt and the housing wall to aid in sealing the housing orifice with an inserted closure bolt,
wherein said housing orifice includes an outer threaded portion, an intermediate relief groove portion adjacent to and having a diameter greater than the outer threaded portion, and an inner portion adjoining the relief groove portion,
wherein the threaded closure bolt includes a threaded portion, a thread run out collar portion adjoining the threaded portion, and a stud portion adjoining the thread run out collar portion,
and wherein, with an inserted closure bolt, the sealing ring is clampingly abuttingly engaged by the thread run out collar portion and the stud portion, and the stud portion abuttingly engages an annular housing surface adjoining the inner end of the relief groove portion.

4,498,681
UNIVERSAL SEAL CAGE LANTERN RING WITH CHANNELS AND FLUID SLOTS
Larry Heinz, 4691 Anthony Pl. NW., Albany, Oreg. 97321
Filed May 16, 1984, Ser. No. 610,969
Int. Cl.³ F16J 15/18
U.S. Cl. 277—215 19 Claims



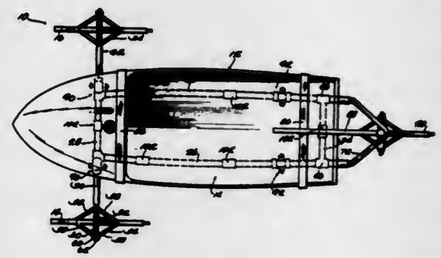
1. A universal seal cage/lantern ring comprising:
(a) at least one continuous land;
(b) a plurality of body webs joined together by said continuous land;
(c) at least one intermittent land projecting from each said body web;
(d) a plurality of fluid slots defined by adjacent faces of body webs;
(e) intermittent channels defined by intermittent lands and a plurality of intermittent body web bases; and
(f) continuous channels defined by continuous lands and a plurality of continuous body web bases.

4,498,682
FREE FLOATING ACTUATING SLEEVE FOR KEYLESS CHUCK
Thomas G. Glore, Easley, S.C., assignor to The Singer Company, Stamford, Conn.
Filed Nov. 17, 1982, Ser. No. 442,408
Int. Cl.³ B23B 31/10
U.S. Cl. 279—1 K 3 Claims



1. A keyless chuck for a motorized tool having a body supporting a drivemotor, a spindle shaft rotatable by said drive motor, and a chuck supported for rotation on said spindle shaft, said chuck comprising:
a chuck body; chuck jaws retained for rotation with said chuck and constrained for sliding movement on said chuck body toward and away from the axis thereof; grip actuating means responsive to rotation of said chuck by selective manipulation by an operator for sliding said chuck jaws into and out of gripping relation about a rotatable work tool; said grip actuating means including an annular collar axially constrained and rotatable on said chuck body; and means threadedly interconnecting said collar and each of said chuck jaws;
the improvement rendering said chuck keyless comprising:
a sleeve freely slidable and rotatable about said chuck body and encircling said annular collar; and means cooperating with means on said body and rendered effective by operator influenced slidable motion of said sleeve for establishing effectiveness of said grip actuating means to slide said chuck jaws about a rotatable work tool in response to rotation of said chuck, whereby movement of said grip actuating means is isolated from said operator by said sleeve.

4,498,683
STEERABLE CARRIAGE FOR A SAILBOAT
James R. Johaan, 593 High Knoll Dr., Cedarburg, Wis. 53012
Filed Mar. 25, 1983, Ser. No. 478,706
Int. Cl.³ B62B 15/00
U.S. Cl. 280—16 11 Claims



1. A carriage for supporting a sailboat such that the sailboat can be operated on land or on ice, the carriage comprising:
a frame including
a pair of generally spaced apart elongated structural members adapted to extend along opposite sides of a sailboat, said elongated structural members being adapted to be positioned under the sailboat with one of said elongated structural members positioned under one side of said sailboat and with the other of said elongated structural members positioned under the other side of said sailboat and to support the sailboat thereon, and with a portion of said sailboat cradled between said elongated structural members and extending downwardly between said elongated structural members, the elongated structural members being parallel to the center line of the sailboat and each including forward ends adapted to support the bow of the sailboat and rearward ends adapted to support the stern, and
a forward frame member extending transversely to said parallel elongated structural members and connecting said forward ends of said elongated structural members, said forward frame member including opposite ends, and said forward frame member being adapted to be positioned beneath the bow of the sailboat so as to support the bow,
said frame defined by said elongated structural members and said forward frame member being resilient and flexible so as to be adapted to resiliently support the sailboat for movement of a sailboat in water,
a first ground engaging member supporting one of said opposite ends of said forward frame member,
a second ground engaging member supporting the other of said opposite ends of said forward frame member, and
a pivotable ground engaging member for supporting the stern of the sailboat, said pivotable ground engaging member supporting the rearward ends of said elongated structural members.

4,498,684

MANUPEDAL BICYCLE

Franklin S. Istanqua, Hialeah, Fla., assignor to John H. Faro, Coral Springs, Fla.

Continuation of Ser. No. 272,361, Jun. 10, 1981, Pat. No. 4,417,742. This application Nov. 14, 1983, Ser. No. 550,805
The portion of the term of this patent subsequent to Nov. 29, 2000, has been disclaimed.
Int. Cl.³ B62M 1/00
U.S. Cl. 280—234 2 Claims



1. An occupant propelled vehicle having an indirect steering system comprising:
a main frame;
a rear wheel assembly and a front wheel assembly, each such assembly being rotatably mounted on said main frame in supporting relation thereto;
said main frame including an indirect steering system having a steering assembly comprising a steering column movably mounted on said main frame in co-axial relation to the seat for the operator of said vehicle;
means for indirectly connecting said steering assembly with a steering means;
a steering arm connected to and extending outwardly from said steering column and movable therewith;
a manual crank assembly (i) connected to a leading portion of said steering arm and movable therewith, (ii) positioned for operational rotation by the hands of the operator and comprising a central crank axis of rotation disposed and maintained at substantial perpendicular relation to a plane defined by the central axis of said steering column and steering arm, and (iii) interconnected in driving relation to at least one of said front and rear wheel assemblies and activating relation to breaking means of said vehicle whereby propulsion and breaking of said vehicle may be selectively accomplished through the operation of said manual crank assembly; and
said steering column, steering arm and manual crank assembly collectively pivotal relative to a remaining portion of said main frame coincident to said central axis of the operator's seat.

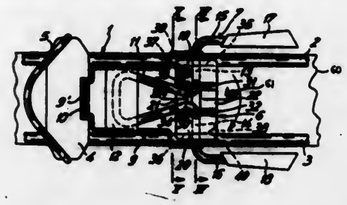
4,498,685

SKI BINDING

Reinhold Zoor, Munich, Fed. Rep. of Germany, assignor to Heinrich Wunder GmbH & Co. KG, Dachau, Fed. Rep. of Germany

Filed Dec. 17, 1981, Ser. No. 331,928
Claims priority, application Fed. Rep. of Germany, Dec. 19, 1980, 3048175
Int. Cl.³ A63C 7/10
U.S. Cl. 280—605 32 Claims

1. A ski, comprising a slat; retaining means for an article of footwear, said retaining means having a recess; support means carrying said retaining means and designed to support an article of footwear, said support means being mounted on said slat for pivotal movement between a first position in which both the toe and heel of a skier are adjacent to said slat and a second position in which the heel is lifted away from said slat; ski braking means including a brake movable between an inoperative position and an operative position in which forward and backward movement of said slat are inhibited, said braking means being mounted on said support means for movement therewith and said braking means further comprising a carrier for said brake, said carrier having means for urging said brake to said operative position in all positions of said support means when said support means is free of an article of footwear, said brake being held in the inoperative position by an article of



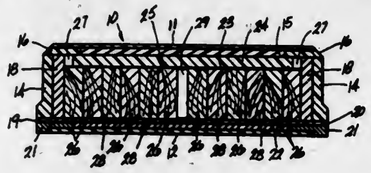
footwear on said support means; and arresting means for fixing said braking means in a predetermined position on said support means, as considered in the longitudinal direction of said slat, said arresting means comprising a spacer having an arresting end and being mounted on said carrier for movement between a free position and an arresting positioned in which said recess receives said arresting end to thereby fix said braking means in said predetermined position.

4,498,686

LAMINATED SKI REINFORCEMENT MEMBERS

Edward Pilpel, Manchester, and Franklin Meatto, Cromwell, both of Conn., assignors to Olin Corporation, Cheshire, Conn.

Continuation of Ser. No. 318,190, Nov. 4, 1981, Pat. No. 4,455,037. This application Mar. 5, 1984, Ser. No. 586,180
Int. Cl.³ A63C 5/12
U.S. Cl. 280—610 9 Claims



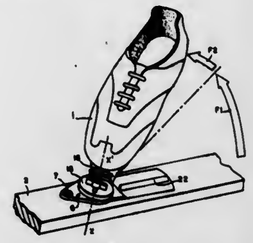
1. In a snow ski of predetermined length having in combination:
(a) a top surface;
(b) a bottom running surface with two opposing sides and bounded thereon by bottom metal edges extending the predetermined length of the ski;
(c) two opposing sides positioned generally perpendicularly to the top surface and the bottom running surface;
(d) a core of predetermined width formed from a predetermined material of known modulus of elasticity less than about 10.4×10^6 pounds per square inch positioned centrally between the two opposing sides;
(e) top edges formed from a predetermined material at least partially beneath the top surface adjacent and above the two opposing sides extending substantially the predetermined length of the ski;
(f) a layer of material of predetermined selection at least particlly above the bottom metal edges and of predetermined thickness;
(g) a layer of bonding material between the layer of material of predetermined selection and the bottom metal edges; and
(h) at least two reinforcement rib members positioned exteriorly of the core and adjacent and interiorly of the two opposing sides extending a distance less than the predetermined length of the ski connected on a first end to the top edges and on a second end to the layer of material of predetermined selection, the reinforcement rib members further being positioned generally vertically to the top surface and the bottom running surface and being formed from a predetermined material of predetermined thickness with a modulus of elasticity greater than about 10.4×10^6 pounds per square inch greater and than about 8 to 1 in comparison to the modulus of elasticity of the core material for imparting increasing rate of return and a controllably designed natural frequency to the ski.

4,498,687

PIVOTABLE CROSS-COUNTRY SKI BINDING

Georges P. J. Salomon, and Jean Hue, both of Annecy, France, assignors to Salomon S.A., Annecy, France

Filed Dec. 29, 1981, Ser. No. 335,523
Claims priority, application France, Jan. 6, 1981, 81 00358
Int. Cl.³ A63C 9/10
U.S. Cl. 280—615 39 Claims



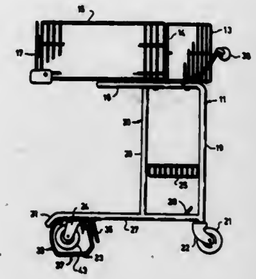
1. A ski binding comprising means for securing the front of a ski shoe to a ski, and wherein said binding further comprises means permitting the heel of said shoe to be lifted vertically while allowing for substantially free torsional movement of said shoe around a vertical axis of said binding after said heel has been lifted to a predetermined extent, and wherein said binding further comprises means for preventing lateral movement of said shoe until said heel has been lifted to a predetermined extent.

4,498,688

SHOPPING CART INCORPORATING REMOVABLE SKID, RUNNER OR SKI ATTACHMENT

Donald N. Walters, 7655 Arnold Dr., Westfield, N.Y. 14120, and Theodore P. Link, 222 West Ave., Lockport, N.Y. 14094

Continuation-in-part of Ser. No. 109,833, Jan. 7, 1980, Pat. No. 4,320,904. This application Mar. 23, 1982, Ser. No. 360,898
The portion of the term of this patent subsequent to Mar. 23, 1999, has been disclaimed.
Int. Cl.³ B60F 5/00
U.S. Cl. 280—7.12 7 Claims



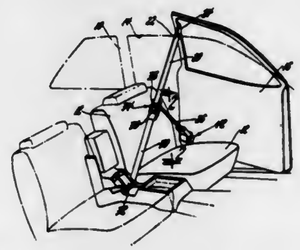
1. A shopping cart incorporating a removable attachment to facilitate use of such cart in snow, which comprises a nestable supermarket shopping cart, nestable with other such carts by relative horizontal motion thereof, which cart includes a pair of front wheels, each of which is rotatable about a horizontal axis which is transverse to the longtiudinal axis of the shopping cart when the cart is being moved forwardly, and which wheels are movable about a vertical axis, and a pair of rear wheels, each of which is rotatable only about a horizontal transverse axis in a vertical plane parallel to the longitudinal axis of the cart, a removable skid, runner or ski attachment which includes a pair of cart supporting skids, runners or skiis, which are simultaneously movable into inoperative and into operative positions, as desired, with respect to the shopping cart, so that when such cart supporting members are in operative positions they are below the shopping cart front wheels and alongside and outside of such wheels, bearing the weight of the cart instead of the front wheels bearing such weight, and so that when such members are in inoperative positions, which are retracted or storage positions, they are above the bottoms of the shopping cart front wheels, inside such wheels and substantially horizontal, and combination mounting and positioning means for selectively holding the pair of cart supporting members in operative or inoperative positions on the shopping cart and near the front wheels thereof and away from the back wheels thereof and for moving the pair of such members between operative and inoperative positions, during which movements the members pass under the shopping cart front wheels, which shopping cart-attachment combination is nestable with other such combinations when the attachments thereof are in inoperative positions.

4,498,689

STORAGE REEL FOR DOOR MOUNTED RESTRAINT BELT

Thomas P. Duffield, Pontiac, and James A. Winnale, Warren, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed May 13, 1983, Ser. No. 494,403
Int. Cl.³ B60R 21/02
U.S. Cl. 280—803 3 Claims



1. In combination with a vehicle seat belt system including a restraint belt having shoulder belt and lap belt ends mounted on the door and an anchor belt having a first end mounted inboard of the seat and a second end releasably connected to the restraint belt by a disconnect buckle, a storage retractor mounting one of the shoulder and lap belt ends on the door to store the restraint belt upon release of the disconnect buckle comprising:
a reel rotatably mounted on the door and having the belt end connected thereto, a spring biasing the reel in the belt winding direction, a pawl and ratchet mechanism selectively operable between a locked condition to block the reel from spring wound rotation in the belt winding direction and an unlocked condition enabling spring wound rotation of the reel, control means effective to operate the pawl and ratchet mechanism to the locked condition in response to full unwinding of the belt from the reel, so that the belt is held at the fully extended length for restraint of a seated occupant and means adapted to selectively oper-

ate the pawl and ratchet mechanism to the unlocked condition whereby the spring wound reel retracts and stores the restraint belt upon release of the disconnect buckle coupling the anchor belt with the restraint belt.

4,498,690

DRIVE DEVICE FOR PASSIVE VEHICLE OCCUPANT RESTRAINT BELT SYSTEM

Juichiro Takada, 3-12-1, Shinmachi Setagayaku, Tokyo, Japan

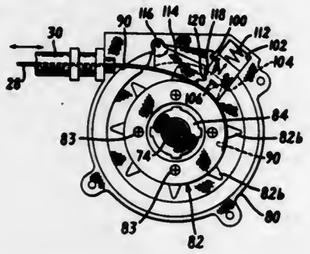
Filed Jul. 9, 1982, Ser. No. 396,804

Claims priority, application Japan, Jul. 20, 1981, 56-106638[U]; Aug. 26, 1981, 56-125285[U]

The portion of the term of this patent subsequent to Oct. 18, 2000, has been disclaimed.

Int. Cl.³ B60R 21/10

U.S. Cl. 280—804 7 Claims



1. A passive vehicle occupant restraint belt system having a belt, a belt transfer guide that is movable between restraint and release locations in the vehicle in which it holds the belt in occupant-restraining and occupant-releasing positions, respectively, and a reversible drive device that is coupled by a flexible drive element to the belt transfer guide and is operable in response to opening and closing of the vehicle door to move the guide between the release and restraint locations characterized in that the drive device includes a rotatable sprocket wheel having a multiplicity of teeth extending radially outwardly with respect to the axis of rotation of the wheel, in that the drive element is a tape, one end of which is fastened to the belt transfer guide and the other end to the sprocket wheel, the tap having spaced-apart holes in at least the portion thereof adjacent said other end that are adapted to receive the sprocket teeth such that the tape is wound onto and unwound from the sprocket wheel to move the guide between said locations, in that there is a guideway closely adjacent the sprocket wheel through which the tape passes and by which it is guided into and out of engagement with the sprocket wheel and in that there is a movable guide mechanism for guiding the part of the tape between the sprocket wheel and the guideway, the guide mechanism including a guide member engaging said part of the tape and movable generally radially of the sprocket wheel and a guide control member that is engageable with the guide member and is adapted to establish selected positions of the guide member in relation to the number of wraps of the tape on the sprocket wheel, whereby the wraps of the tape wound on the sprocket wheel are prevented from loosening in the event that the belt transfer guide should stop abruptly while the tape is pushing it and is unwinding from the reel.

4,498,691

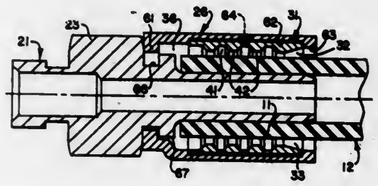
HOSE FITTING AND METHOD OF ASSEMBLY

Horise M. Cooke, Weatherford, Tex., assignor to Stratoflex, Inc., Fort Worth, Tex.

Continuation-in-part of Ser. No. 295,792, Aug. 24, 1981, abandoned, which is a continuation of Ser. No. 122,840, Feb. 20, 1980, abandoned. This application Oct. 14, 1982, Ser. No. 434,265

Int. Cl.³ F16L 25/00

U.S. Cl. 285—12 31 Claims



1. Apparatus for use in a hose and fitting assembly, the fitting and an end section of the hose being adapted to be secured together by permanently deforming parts of the fitting to compress the end section of the hose therebetween, said apparatus comprising a fitting comprising a socket-nipple including a tubular nipple part adapted to be inserted into the end section of the hose and a cylindrical socket part adapted to extend around the end section, said nipple and socket parts being spaced to form an annular opening which is adapted to receive the end section of the hose, a plurality of generally cylindrical inserts sized for insertion in said opening and between the end section and said socket part, and said inserts having different radial thicknesses which are inversely related to different radial thicknesses of hose sections, said socket part and a selected insert from said plurality of inserts being adapted to be permanently deformed radially inwardly and thereby to substantially uniformly compress the end section of the hose between said nipple part and said insert by reducing the width of said annular opening, said insert having hose gripping teeth formed on the inner periphery thereof, the radial thickness of said selected insert matching the radial thickness of the hose section to produce optimum compression on the hose end section.

4,498,692

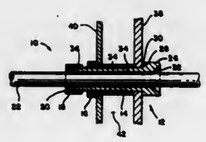
PENETRATION SEAL

Mervin D. Swanson, 1625 - 13th Ave. NW., Puyallup, Wash. 98371

Filed Sep. 2, 1983, Ser. No. 529,149

Int. Cl.³ F16L 39/00

U.S. Cl. 285—20 1 Claim



1. A penetration seal kit adapted to provide a fluid tight seal for the penetration of a conduit through spaced apart first and second side wall means of a chamber; wherein said penetration seal kit comprises:

a penetration sleeve having a head at one end, a shank, and a longitudinal bore passing completely through said penetration sleeve; wherein said bore is adapted to permit the passage of said conduit therethrough; wherein said head defines a closed knife edge; and wherein said shank of said penetration sleeve is adapted to pass completely through said spaced apart first and second side wall means;

a connection means, adapted to engage said shank of said penetration sleeve outside said both of side wall means, for pulling said knife edge of said penetration sleeve firmly against one of said side wall means to form a fluid tight bite seal between said knife edge and said one of said side wall means;

a tubular compression sleeve adapted to permit the passage of said shank of said penetration sleeve therethrough; wherein said compression sleeve is adapted to extend from said connection means to said one of said side wall means to transfer loading from said connection means to said one of said side wall means to help to prevent undesireable deformation of at least one of said side wall means when said connection means pulls said knife edge firmly against said one of said side wall means; and wherein said compression sleeve has an outer diameter sized at least about as large as the diameter of said knife edge to be adapted to support said one of said side wall means beneath said knife edge to help to prevent undesired deformation of said one of said side wall means adjacent said knife edge when said connection means pulls said knife edge firmly against said one of said side wall means;

a ferrule adapted to receive said conduit adjacent one end of said shank of said compression sleeve; and

a seal connection means, adapted to engage said shank of said compression sleeve, for making a firm compression seal between said conduit, said ferrule and said shank of said compression sleeve;

wherein one end of said shank of said penetration sleeve defines a chamfer adapted to engage a corresponding portion of said ferrule; and

wherein, when said penetration seal kit is installed on said first and second side wall means, said head of said penetration sleeve is adapted to be located within said chamber to enable any pressure within said chamber to act against said head to tend to more firmly engage said knife edge on said head with said one of said side wall means.

4,498,693

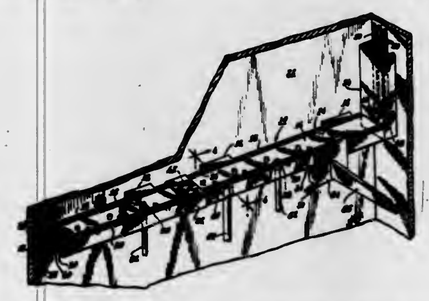
RAIL SYSTEM WITH PASSAGEWAYS FOR THE CONDUCTION OF FLUID FLOW

Ernst F. Schindele, 505 W. Hill Rd., Stamford, Conn. 06905

Filed Feb. 22, 1983, Ser. No. 468,081

Int. Cl.³ F16L 39/00

U.S. Cl. 285—137 R 6 Claims



1. A rail system for providing conduction of fluid flow with ready access at a convenient location to said fluid flow comprising:

a rail having two or more passageways extending therein adapted to provide a conduit for at least two different types of fluid flow therethrough,

said passageways having coupling threads on the ends thereof for accommodating coupling fluid flow to said passageways and for providing a means for intercoupling one rail to another,

mounting means for removably mounting said rail on a surface,

means on said rail for accommodating removably mounting said rail onto a wall and accommodating the mounting of equipment on said rail,

coupling means connected to said coupling threads on one end of said rail for coupling said passageways in said rail to at least two different types of external sources of fluid flow to be conducted by said passageways in said rail,

and access means coupled to said passageways in said rail for providing convenient access to the fluid flow conduction paths provided by said passageways in said rail.

4,498,694

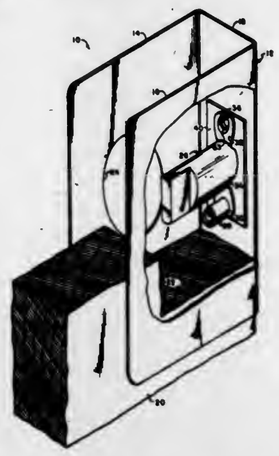
DOOR REPAIR SYSTEM

David R. Warwick, P.O. Box 202, Lafayette, Calif. 94549

Filed Oct. 31, 1983, Ser. No. 547,731

Int. Cl.³ E05C 21/00

U.S. Cl. 292—337 2 Claims



1. A device for repairing a door comprising

a generally rectangular U-shaped member adapted to enclose and engage the edge of a door proximate the latch and door handle location, said U-shaped member comprising

a pair of leg members and a saddle portion, said saddle portion defining a generally flat surface,

means defining a hole in each of said leg members adapted to receive a door handle latch actuating mechanism,

means defining a hole in said saddle portion adapted to permit a latch bolt to pass therethrough,

a latch plate adapted to engage the inside surface of said saddle portion between said leg members, said latch plate having means defining a hole proximate each end thereof, the region around said holes deformed to define countersunk portion projecting inwardly of said saddle portion,

means defining a pair of holes in said saddle portion aligned coincident with said holes in said latch plate,

a door latch apparatus housing having a pair of fastening ears proximate the base thereof, said ears comprising means defining a hole therethrough aligned coincident with said holes in said latch plate and deformed to define a countersunk area adapted to nest with said countersunk region of said latch plate hole,

an extension member defining a hollow, generally cylindrical, shaft having one end adapted to engage the outwardly projecting portion of said countersunk hole in said door latch housing ears,

a machine screw having a threaded shank and a head, said head adapted to engage the other end of said extension member,

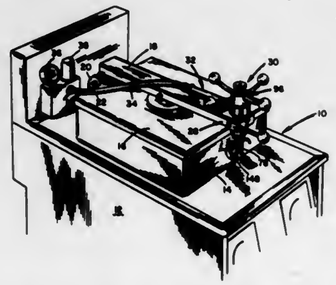
a fastening member comprising an internally threaded hollow shank and a flat head having tapered sides adapted to match the taper of said countersunk holes, said internal threads of said hollow shank adapted to engage the threads of said machine screw whereby, said machine screw pulls said fastener member into engagement with the edges of said hole in said saddle portion and deforms said edges to a countersunk position matching the countersunk portions of said hole in said latch plate.

4,498,695

PRESSURE COOKER LID LATCH AND LOCK

Warren A. Pardo, Bel Air, Md., assignor to Robert C. Duckett, Baldwin, Md., a part interest

Filed Sep. 1, 1981, Ser. No. 298,481
Int. Cl.³ E05C 5/02
U.S. Cl. 292—260 **40 Claims**



1. Apparatus for securing a lid of a pressure vessel over an opening thereof, the pressure vessel having a catch located on the body of the vessel, comprising:

a bar pivotally connected at a first end to the vessel and engaging the lid at a location along the length of the bar;

latching means carried on a second, free end of the bar for biasing the bar against the lid to force the lid into a secured position over the opening of the vessel, a portion of the latching means engaging the catch on the body of the vessel for latching the bar and associated lid over the opening; and,

locking means carried by the bar and disposed adjacent to and engageable with the latching means for inhibiting unlatching of the latching means in response to pressure conditions existing within the pressure vessel, at least a portion of the locking means being mounted on the bar for horizontal movement to engage at least a portion of the latching means.

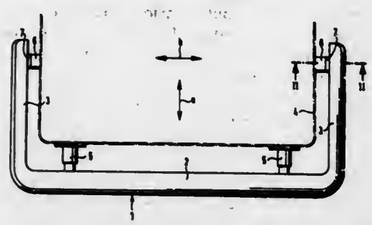
4,498,696

BUMPER FOR AUTOMOTIVE VEHICLES

Dietmar Kalchschmied, Munich; Hartmut Bonemberger, Puchheim, and Bernd Huber, Munich, all of Fed. Rep. of Germany, assignors to Bayerische Motoren Werke AG, Fed. Rep. of Germany

Filed Jun. 6, 1983, Ser. No. 501,281
Claims priority, application Fed. Rep. of Germany, Jun. 5, 1982, 3221293
Int. Cl.³ B60R 19/04
U.S. Cl. 293—126 **18 Claims**

1. A bumper for automotove vehicles with a central section displaceable in the longitudinal direction of the vehicle and two lateral end sections adjoining the central section, each of the end sections positioned relative to the vehicle by a retaining member projecting away from the vehicle body in the transverse direction of the vehicle and by a sliding member attached, respectively, to each of the end sections, one of the retaining member and the sliding member for each of the end sections encompassing the other in a fork-like fashion so that the end sections are diplaceable in the longitudinal direction of



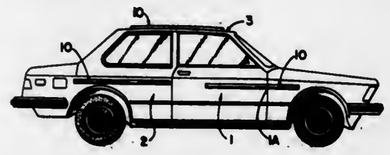
the vehicle as well as in the transverse direction of the vehicle, one of the retaining member and the sliding member for each of the end sections including at least one inclined surface inclined toward a plane of symmetry associated with a mouth of the fork, the retaining member and sliding member for each of the end sections cooperating by way of said at least one inclined surface to absorb and dissipate an impact received by the respective end section.

4,498,697

PORTABLE, POSITIONABLE, LOCKING MAGNETIC MOLDING TUBES FOR VEHICLE PROTECTION

William E. McGlone, and Leonard J. Genest, both of P.O. Box 2759, Mission Viejo, Calif. 92691

Filed Jun. 2, 1983, Ser. No. 377,006
Int. Cl.³ B60R 19/08
U.S. Cl. 293—128 **5 Claims**



1. A system of locking, readily positionable, impact-absorbing protective molding tube for metal vehicle body panels or other ferous surfaces; which attaches to said panels or surfaces by magnetic attraction, comprising:

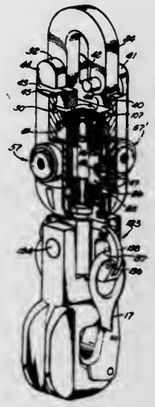
an extruded tubing of a "D" channel configuration, formed of rubber or plastic which adheres to any ferous surface by means of an adhesively attached magnetic strip which is attached to the length of the molding in the underside recess of the "D" channel where said molding incorporates an internal flat semi-rigid member that maintains the molding in a straight and lateral attitude when attached to a ferous panel and also provides extra impact-absorbing and dispersion characteristics to the molding while providing adequate flexing to allow the length of the molding to follow the contour on the surface of which it is attached and a circumferential locking device consisting of a formed and coated wire retainer loop culminating in two reverse-band locking members where said locking device fits over the molding and the distally protruding locking members are then available for attachment to panel edges or the inside lip of automobile doors to prevent theft.

4,498,698

DRILL RIG HOOK

Abraham Zimmermann, Irvine, Calif., assignor to Varco International, Inc., Orange, Calif.

Filed Apr. 18, 1983, Ser. No. 485,595
Int. Cl.³ B66C 1/40
U.S. Cl. 294—82 R **28 Claims**



1. A device for suspending a load in a well rig, comprising:

a tubular vertically extending outer body;

first connector means attached to said outer body and connectable to a suspending element to support said body in the rig;

a tubular vertically extending inner body contained within said outer body and movable upwardly and downwardly relative thereto;

second connector means supported by said inner body for movement upwardly and downwardly therewith and adapted to be connected to and suspend the load;

yielding means within said tubular inner body yieldingly urging it upwardly relative to said outer body and first connector means;

a structure supported by said first connector means and received within said tubular inner body applying upward force to said yielding means to support said inner body and load through said yielding means and for downward movement relative to the outer body against the tendency of said yielding means; and

stop means acting upon downward movement of said inner body relative to said outer body to a predetermined positive load transmission position to prevent further downward movement of the inner body beyond said position and thereby transmit load forces from said inner body to said outer body through said stop means.

4,498,699

LIFTING CLAMP LOCKING MECHANISM WITH PUSH BUTTON RELEASE HANDLE

William Davies, Jacksonville, Fla., assignor to J. C. Renfroe and Sons, Inc., Jacksonville, Fla.

Filed Oct. 29, 1982, Ser. No. 437,799
Int. Cl.³ B66C 1/48
U.S. Cl. 294—101 **6 Claims**

1. A lifting clamp for articles such as steel plates comprising:

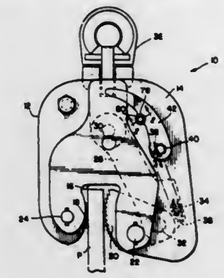
a clamp body having spaced side plates defining a slot to receive the article to be lifted;

a pair of opposed jaws mounted on opposite sides of said slot with one of said jaws being pivotally mounted for opening and closing movements relative to the other jaw;

a shackle mounted for guided movement in said clamp body and adapted for connection to a lifting force;

link means connecting said shackle to said pivotally mounted jaw to close said jaws when a lifting force is applied to said shackle, said link means and said pivotally mounted jaw forming an assembly;

shiftable locking mechanism engagable with said assembly to lock said jaws in respective open or closed positions including a pivotally mounted handle operable from the exterior of the clamp body to shift said mechanism from open jaw position to closed jaw position;



lock means independent of said locking mechanism mounted on said clamp body engagable with said handle to latch said handle to hold said mechanism in its closed jaw position; and

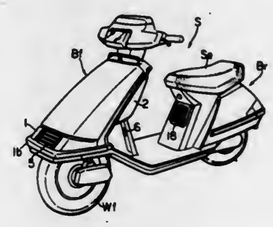
manually engagable means movably mounted on said handle to be engagable with said lock means to release said handle from its latched position.

4,498,700

VENTILATOR FOR TWO- OR THREE-WHEELED VEHICLE

Takayuki Fujii, Ooi, and Norio Tanaka, Tokyo, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 4, 1983, Ser. No. 455,516
Claims priority, application Japan, Jan. 7, 1982, 57-1129
Int. Cl.³ B62J 17/02
U.S. Cl. 296—78.1 **11 Claims**



1. A ventilator for a two- or three-wheeled vehicle including a front body having at least a front panel covering the front of a head pipe and a leg shield covering legs and feet of a rider sitting on a seat, said front panel having its front edge portion located forwardly and upwardly of a front wheel of the vehicle, said front panel extending rearwardly while surrounding said head pipe by side wall portions thereof and being connected to said leg shield to define an interior space between said front panel and said leg shield, said ventilator comprising:

an air inlet means provided in said front panel for the intake of airflow produced by movement of the vehicle;

an air outlet means provided in said leg shield for exhausting said airflow; and

an air passage for communicating said air inlet and outlet means, said interior space between said front panel and said leg shield serving as said air passage of the ventilator.

4,498,701

RETRACTABLE CLOSURE PARTICULARLY SLIDING ROOF APPARATUS FOR A MOTOR VEHICLE

Gerard Quevenu, Amik-Farm, Le Pin, 79140 Cerizay, France

Filed Mar. 1, 1983, Ser. No. 471,160
Claims priority, application France, Mar. 1, 1982, 82 03346; May 19, 1982, 82 08877
Int. Cl.³ B60J 7/18
U.S. Cl. 296—216 12 Claims



1. A retractable closure for an aperture in a generally planar structure having upper and lower surfaces and a relatively thin cross-section comprising:

an area adjacent to and somewhat larger than the aperture in which the upper surface of the structure is recessed to form a first stationary panel;

a second panel mounted for translation between a first, closed position substantially flush with the upper surface of the structure and covering said aperture and a second, open position over the first panel in the recessed area adjacent said aperture;

a third panel mounted above the first panel for movement having a component normal to the upper surface of the structure, the third panel being mounted for movement between a first, lowered position substantially flush with the upper surface of the structure and covering the recessed area and a second, raised position in which it creates a vertical space between its lower surface and the stationary panel into which vertical space the second panel translates in moving into its second, open position, the path of movement of the third panel between its first and second positions being defined by lifting members connected between the third panel and the upper surface of the structure within the area of the recess; and

means for actuating the second and third panels to effect movement between their respective first and second positions, the third panel being actuated during at least the initial stages of movement from its first position to its second position by the initial translational movement of the second panel from its first position toward its second position, the third panel being actuated during the remainder of its movement from its first position to its second position by separate actuating means associated with the lifting members.

4,498,702

SEATING UNIT WITH FRONT FLEX AREA

William B. Raftery, Arlington, Tex., assignor to Steelcase Inc., Grand Rapids, Mich.

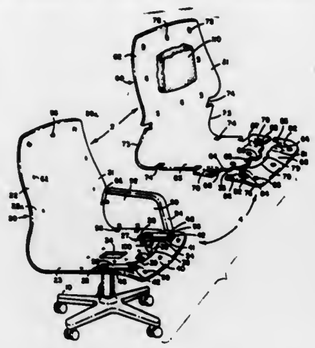
Filed Jun. 11, 1982, Ser. No. 387,415
Int. Cl.³ A47C 1/034
U.S. Cl. 297—312 44 Claims

1. A seating unit comprising:

a seat element for supporting a user;

a thigh support disposed in front of said seat element so as to contact at least a portion of the thigh area of a user; and

leaf spring means flexibly resiliently connecting said seat element and said thigh support, such that said thigh support will be deflected downward under the weight of a user's legs, said leaf spring means being sufficiently stiff to provide at least some support for the weight of a user's legs when the user is seated in the seating unit, said leaf spring means providing the sole substantial support for



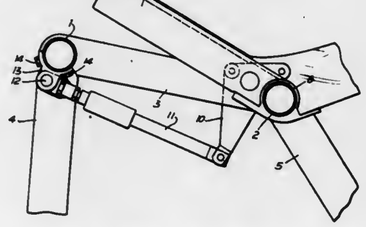
said thigh support through the range of deflection of said thigh support.

4,498,703

SEAT FOR AIRPLANES AND BUSES

Karl Schmidhuber, Nürtingen; Helmut Wall, Kirchheim, and Vojtech Demovic, Kircheim, all of Fed. Rep. of Germany, assignors to Keiper Recaro GmbH & Co., Fed. Rep. of Germany

Filed May 24, 1982, Ser. No. 381,560
Claims priority, application Fed. Rep. of Germany, Jun. 4, 1981, 3122224
Int. Cl.³ A47C 1/032
U.S. Cl. 297—328 9 Claims



1. A seat for airplanes, buses, and the like, comprising:

a seat frame having a front cross member, side beams, and a rear cross member formed by a rear pipe with a longitudinal axis therethrough;

a seat upholstery support connected near its rear edge with the rear cross member of the seat frame, said seat upholstery support being pivotable about the longitudinal axis of the rear pipe;

means for locking both sides of the seat upholstery support in a selectable pivot position;

a stepless adjustable-length bar forming a part of the locking means and being arranged beneath one of the side beams of the seat frame, said stepless adjustable-length bar further having a front end and a rear end;

a connecting body forming another part of the locking means and being arranged beneath the front cross member of the seat frame, said connecting body further being rigidly connected to the seat frame and also being attached to the front end of the stepless adjustable-length bar; and

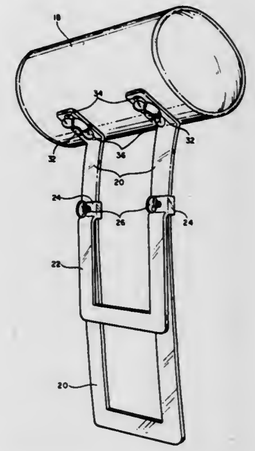
a pivot lever forming a third part of the locking means, having its one end attached to the rear end of the stepless adjustable-length bar and having its other end attached to the seat upholstery support near the longitudinal axis of the rear pipe.

4,498,704

HEADREST FOR CHAIR WITH SOFT BACKREST

Joseph R. Hildreth, 5015 Old Cheney Hwy., Orlando, Fla. 32807

Filed Jun. 17, 1982, Ser. No. 389,215
Int. Cl.³ A47C 7/36
U.S. Cl. 297—397 4 Claims



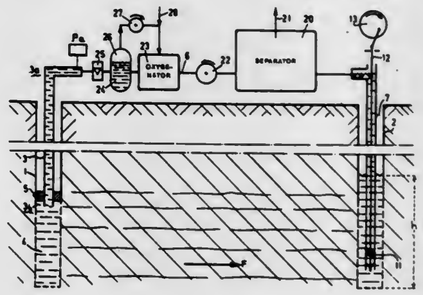
1. A headrest device particularly adapted for removable installation upon a non-rigid backrest of a chair or wheelchair, comprising a first elongate member of generally U-shaped configuration, a pillow-like head-contacting member mounted upon the upper end of said first member, a second generally U-shaped member residing in a plane generally parallel to the plane of said first member, means provided on said second member for slidable attachment to portions of said first member, with said second member being slidable in order that a height adjustment for said head-contacting member can be achieved, a major portion of said second member being spaced close to said first member so as to define a relatively narrow slot between said members, into which slot the fabric backrest portion of a chair or wheelchair can be received, with the length of said first member and said second member being such that they extend down along opposite sides of a backrest portion of the chair or wheelchair for a sufficient distance as to provide a stable mounting for said head-contacting member, said first and second members each having a comparatively wide lateral spacing for stability reasons, and said first member possessing a slight degree of out-of-plane curvature in order to essentially coincide with the natural curvature of the spine of the occupant of the chair or wheelchair, said head-contacting member being adjustably mounted upon said first member, so that adjustments of said head-contacting member in a direction substantially perpendicualr to the plane of said first member can be accomplished.

4,498,705

METHOD AND APPARATUS FOR IN-SITU MINING BY LEACHING ORES CONTAINING METAL VALUES

Jacques Roussel, Hauterives, France, assignor to L'Air Liquide, Societe Anonyme Pour L'Etude et L'Exploitation des Procedes Georges Claude, Paris, France

Filed Mar. 11, 1983, Ser. No. 474,270
Claims priority, application France, Mar. 17, 1982, 82 04480
Int. Cl.³ E21B 43/28
U.S. Cl. 299—4 19 Claims



1. In a method for in-situ mining by leaching ore with a two-phase lixiviant comprising a leach solution or liquor admixed with oxygen, circulating the lixiviant down an injection pipe arranged in an injection hole and opening at its downstream end into a leach zone at the bottom of the injection hole, allowing the lixiviant to leach the ore thereby producing pregnant lixiviant containing metal compounds of the ore, recovering the pregnant lixiviant from a production hole, separating the metal compounds from the lixiviant, regenerating and reoxygenating the lixiviant, and recycling the reoxygenated lixiviant down the injection pipe, the improvement comprising the steps of:

(a) selecting the inner diameter of the injection pipe taking into account the volumetric flow rate of the lixiviant, the hydrostatic increase in pressure and the drop in pressure due to loss of head during the transportation of the lixiviant from the upstream end to the downstream end of the injection pipe so that the pressure of the lixiviant at the downstream end of the injection pipe is substantially equal to the pressure of the lixiviant at the upstream end of the injection pipe and the pressure of the lixiviant being transported down the injection pipe is at no time substantially less than the pressure at the upstream end of the pipe;

(b) maintaining the pressure of the lixiviant at the upstream end of the injection pipe less than the fracturing pressure of the rock at the top of the leach zone; and

(c) maintaining the concentration of the dissolved oxygen in the lixiviant at a value less than the saturation point for the pressure of the lixiviant at the upstream end of the injection pipe.

4,498,706

SOLUTION MINING OF TRONA OR NAHCOLITE ORE WITH AQUEOUS NAOH AND HCL SOLVENTS

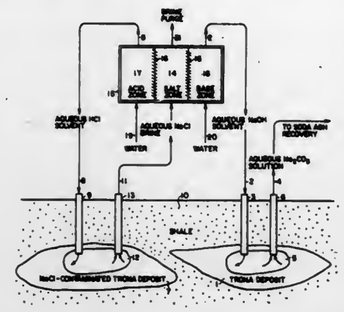
Joseph M. Ilardi, De Witt, N.Y., and David Goldstein, East Brunswick, N.J., assignors to Intermountain Research & Development Corp., Green River, Wyo.

Filed Aug. 15, 1983, Ser. No. 523,486
Int. Cl.³ E21C 41/08; E21B 43/28
U.S. Cl. 299—5 13 Claims

1. A cyclic method for solution mining subterranean ore deposits of trona or nahcolite which comprises

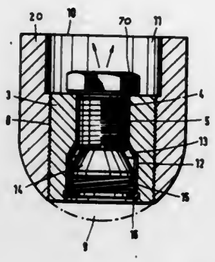
(i) contacting a first subterranean trona or nahcolite ore deposit with aqueous sodium hydroxide solvent to form an aqueous sodium carbonate solution;

(ii) withdrawing aqueous sodium carbonate solution from the region of the first ore deposit, whereby soda ash may be recovered from the withdrawn sodium carbonate solution;
(iii) contacting a second subterranean trona or nahcolite ore deposit with aqueous hydrogen chloride solvent to form an aqueous sodium chloride brine;
(iv) withdrawing the aqueous sodium chloride brine from the region of the second ore deposit;



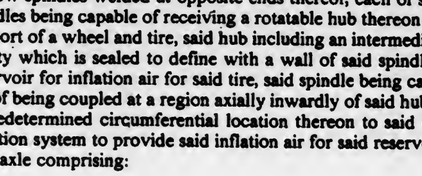
(v) introducing the withdrawn sodium chloride brine as feed solution into an electrodialysis cell and electrodialyzing the brine to yield aqueous sodium hydroxide and aqueous hydrogen chloride; and
(vi) recycling the aqueous sodium hydroxide and the aqueous hydrogen chloride to the first and second subterranean ore deposit, respectively, to repeat the solution mining recovery cycle.

4,498,707
CUTTING ROLLER
Gerd Best, Sprockhövel, and Norbert B. Weikert, Dortmund, both of Fed. Rep. of Germany, assignors to Krampe & Co. Fertigung in Bergbaubedarf GmbH Zweigniederlassung, Pelkum, Fed. Rep. of Germany
Filed Aug. 24, 1983, Ser. No. 526,164
Claims priority, application Fed. Rep. of Germany, Jan. 22, 1983, 3302103
Int. Cl.³ E21C *7/08*
U.S. Cl. 299—81 **5 Claims**



1. A cutting roller, comprising at least one blade with a peripheral surface; a plurality of cutting tools arranged on said peripheral surface; a plurality of interchangeable spraying nozzle units inserted in said blade and each being arranged near the respective cutting tool and assigned thereto to spray a hydraulic fluid thereonto; each nozzle unit including a spraying nozzle, a nozzle-receiving member formed with a bore to receive said spraying nozzle therein, and locking valve also mounted in said bore immediately against said spraying nozzle to abut the latter when the nozzle is fully inserted into said bore; said nozzle receiving member, said spraying nozzle and said locking valve being arranged in each unit coaxially to each other in a cartridge-like manner, said blade being formed with a plurality of connection passages arranged in communication with a source of hydraulic fluid and each connected to the respective bore of the nozzle-receiving member to supply fluid to the respective nozzle; said locking valve continually opening said bore so as to allow the fluid to flow from the respective connection passage into the spraying nozzle of the respective unit and then towards the respective cutting tool when the spraying nozzle is fully inserted into said bore and automatically sealingly blocking said bore to prevent the fluid from flowing from the respective connection passage towards the respective cutting tool when the nozzle is completely removed from said bore.

4,498,708
CONTINUOUS METHOD AND APPARATUS FOR MAKING A BRUSH
Jonathan J. Bromboz, 11 Chaparrel Ct., Novato, Calif. 94947
Filed Jan. 3, 1983, Ser. No. 455,282
Int. Cl.³ A46D *1/08*
U.S. Cl. 300—2 **24 Claims**

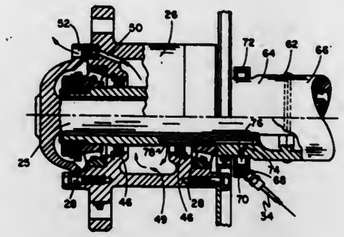


1. A method for continuously making a brush-like material comprising:
winding and adhering filament onto the outer surface of a tubular member;
opening said tubular member axially about its length with said filament adhering thereto to form a strip, said filament extending across the width arranged in a spaced manner about the length of said strip;
severing said strip to form strands of filament segments along a line extending axially the length of said strip;
exposing an end section of said filament segments;
gathering a plurality of said strips holding said filament segments and stacking said strips side by side in a spaced manner;
immersing portions of said exposed section of said filament segments in liquid anchoring material;
curing said liquid material to secure said filament segments; and,
removing remaining strips from embedded filament segments to form a finished band of brush-like material.

4,498,709
AXLE FOR USE WITH A TIRE INFLATION SYSTEM
Calvin G. Wells, and Steve B. Szabo, both of Warren, Mich., assignors to Rockwell International Corporation, Pittsburgh, Pa.
Filed Jun. 30, 1983, Ser. No. 509,578
Int. Cl.³ B60C *23/00*
U.S. Cl. 301—5 VH **3 Claims**

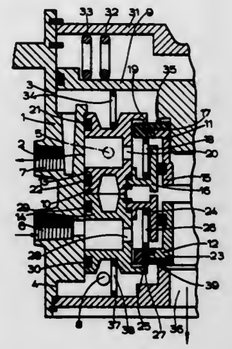
1. An axle for use with a tire inflation system, said axle being of the type which includes a central portion with a pair of hollow spindles welded at opposite ends thereof, each of said spindles being capable of receiving a rotatable hub thereon for support of a wheel and tire, said hub including an intermediate cavity which is sealed to define with a wall of said spindle a reservoir for inflation air for said tire, said spindle being capable of being coupled at a region axially inwardly of said hub at a predetermined circumferential location thereon to said tire inflation system to provide said inflation air for said reservoir, said axle comprising:

said spindle having a cylindrical outer surface at said region;
said spindle having an axially extending passage in said wall thereof beginning at an interior surface thereof and terminating in alignment with said intermediate cavity of said hub;
said spindle having a first radially extending passage from said cylindrical outer surface to terminate at said axially extending passage;
said spindle having a second radially extending passage in said wall connecting said axially extending passage with said reservoir;
said axially extending passage being sealed at said interior surface;



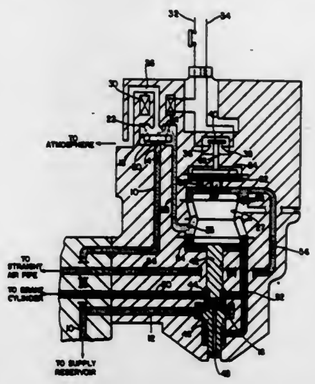
a pair of collar elements, each said collar element having a cylindrical inner surface matching said cylindrical outer surface of said spindle, a coupling passage and a fitting for mating with said tire inflation system;
a circumferential groove in said cylindrical inner surface of said collar element intersecting said coupling passage; and
each of said collar elements being respectively mounted on said cylindrical outer surface of each of said spindles with said first radially extending passage and said coupling passage connected by said circumferential groove and said fitting positioned at said predetermined circumferential location for mating with said tire inflation system.

4,498,710
DUAL BRAKE VALVES
Robert J. Smith, Blackwood, Wales, assignor to Lucas Industries public limited Company, Birmingham, England
Filed Mar. 15, 1983, Ser. No. 475,524
Claims priority, application United Kingdom, Mar. 17, 1982, 8207834
Int. Cl.³ B60T *15/04*
U.S. Cl. 303—6 R **4 Claims**



1. A dual brake valve assembly for use in fluid pressure-operated vehicle braking systems embodying two independent braking circuits, said valve assembly comprising a housing provided with a bore and with sets of primary and secondary ports associated respectively with the two braking circuits and each said set of ports comprising a supply port for connection to a source of fluid under pressure and a delivery port for connection to a brake actuator, an exhaust, two co-axial primary and secondary valves which are operative when actuated to isolate said delivery ports from said exhaust and connect said delivery ports to the said respective supply ports, a primary piston working in said bore in said housing, and a secondary piston also working in said bore in said housing, wherein said primary piston operates said primary valve directly and acts through said primary valve and said secondary piston to operate said secondary valve, and said secondary piston is provided with a through-bore in which said primary and secondary valves are located, said through-bore providing communication between said respective supply and delivery ports of each said set when said respective supply and delivery valves are operated, and each said valve comprising a hollow valve member which is guided to slide in said through-bore, a seating at an adjacent end of said through-bore, and a spring normally urging said valve member into engagement with said seating whereby said valves isolate said supply ports from said delivery ports, and wherein passage means defined through said hollow valve members and a communicating portion of said through-bore provide communication between said primary delivery port and said exhaust when said valve assembly is in an inoperative position, in which said inoperative position said secondary delivery port communicates directly with the said exhaust which is common to both braking circuits.

4,498,711
PNEUMATIC CONTROL FOR BRAKING SYSTEM PROVIDING SNOW BRAKE OPERATION
Keith W. Langley, Bath, England, and Jack Washbourn, Frazer, Pa., assignors to Westinghouse Brake and Signal, England
Filed Nov. 5, 1982, Ser. No. 439,434
Int. Cl.³ B60T *15/46*
U.S. Cl. 303—13 **10 Claims**



1. In a railway vehicle braking system of the type providing "snow brake" operation wherein light braking pressure is provided by the braking system responsive to the actuation of a controller for initiating such "snow brake" operation, a control system for controlling the initiation and termination of the "snow brake" operation comprising:
control means, actuated in response to said controller, for, when actuated, initiating "snow brake" operation;
first pneumatic valve means for controlling the braking pressure applied to the brake cylinders of the braking system and for, in a first operating mode, providing for the supply of a first, relatively low braking pressure during "snow brake" operation and for, in a second operating mode, providing for the supply of supply pipe pressure responsive to a demand for service or emergency braking; and

further pneumatic valve means, responsive to said control means and operatively connected to the first valve means, for, when actuated, causing said first valve means to operate in the first operating mode thereof absent a demand for service or emergency braking;

said first valve means further comprising means associated therewith for, responsive to a demand for service or emergency braking, (1) providing for operaion of said first valve means in the second mode thereof wherein supply pipe pressure is supplied to the brake cylinders and (2) deactuating said control means to thereby deactuate said further valve means so that the first valve means no longer provides for "snow brake" operation, and for, responsive to termination of such a demand, (3) providing full release of the pressure supplied to the brake cylinders and (4) reactuating said control means to thus reinitiate the "snow brake" operation after a predetermined time delay

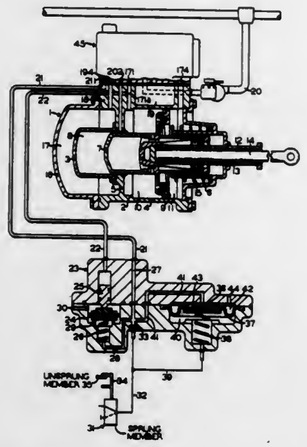
the means associated with said first valve means including a first chamber connected to receive straight air pipe pressure and a second chamber connected to said first chamber through a path providing free transfer of pressure in one direction and restricted transfer of pressure in the opposite direction, said second chamber including actuator means responsive to pressurization and de-pressurization of said second chamber for respectively deactuating and reactuating said control means whereby pressurization of the straight air pipe provides pressurization of said second chamber through said path in said one direction to provide deactuation of said control means and de-pressurization of the straight air pipe provides de-pressurization of said second chamber through said path in said other direction-to provide reactuation of said control means after said time delay.

4,498,712

EMPTY/LOAD BRAKE CONTROL ARRANGEMENT

James E. Hart, Trafford, Pa., assignor to American Standard Inc., Wilmerding, Pa.

Filed Jun. 16, 1983, Ser. No. 505,138
Int. Cl.[3] B60T *8/18*
U.S. Cl. 303—23 R **11 Claims**



1. Fluid pressure brake apparatus for a railway vehicle operative in response to variation of fluid pressure in a brake pipe of said vehicle normally charged to a certain chosen value comprising:

(a) a brake cylinder device including at least one piston forming an application chamber and a release chamber on opposite sides thereof in which fluid pressure is normally stored at a value corresponding to said certain chosen value;

(b) control valve means including an exhaust passage operative in response to a reduction of said brake pipe fluid pressure for connecting fluid under pressure from said release chamber to atmosphere via said exhaust passage, said at least one piston being operative in response to said exhaust of fluid under pressure from said release chamber to provide a brake application force in accordance with the pressure differential between said application and release chambers;

(c) changeover valve means for sensing an "empty" condition of vehicle loading so as to interrupt said connection of fluid under pressure from said release chamber to atmosphere; and

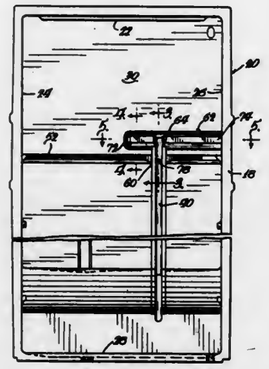
(d) check valve means for connecting said exhaust passage to atmosphere in bypass of said changeover valve means so long as the pressure in said exhaust passage exceeds a predetermined value, said predetermined value being different for different values of said normally chosen brake pipe fluid pressure.

4,498,713

THERMAL STRESS RELIEF IN REFRIGERATORS

Louis W. Fellwock, Sebastian County, Ark.; Kenneth L. Hortin, and Charles G. Fellwock, both of Scott Township, Vanderburg County, Ind., assignors to Whirlpool Corporation, Benton Harbor, Mich.

Filed Oct. 25, 1982, Ser. No. 436,520
Int. Cl.[3] A47B *81/00*
U.S. Cl. 312—214 **12 Claims**



1. In a refrigeration apparatus having a cabinet, a plastic cabinet liner within the cabinet and defining a refrigerated space with the liner including a generally planar wall, and insulation disposed between said liner and said cabinet and having a coefficient of thermal expansion different from that of said liner, thermal stress relief means for said liner comprising:

a first stress relief rib formed in said wall member and extending thereacross;

means defining an interruption in said first stress relief rib; and

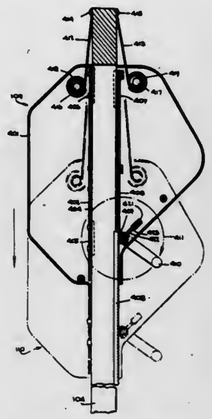
a second stress relief rib formed in said wall member and extending generally parallel to said first rib and across said interruption, whereby said first and second ribs define an effectively continuous stress relief rib across said wall member.

4,498,714

OVERHEAD RETAIL MERCHANDISING UNIT FOR CIGARETTES

Lee Wiese, Upper Nyack, N.Y., assignor to Philip Morris Incorporated, New York, N.Y.

Filed Feb. 8, 1983, Ser. No. 464,868
Int. Cl.[3] A47B *57/10*
U.S. Cl. 312—312 **9 Claims**



1. An overhead retail merchandising unit for cigarettes, comprising:

an elongated cigarette dispensing enclosure including a bottom wall, a front wall, a top wall and two side walls, and further having a plurality of generally upright passages therethrough;

a plurality of generally upright supports slidably received within said passages, each of said upright supports comprising two telescoping box beams and means for adjusting the height of said support to one of a plurality of discrete positions;

means for translating said enclosure vertically along each of said supports simultaneously to any one of an infinite number of selected heights for continuous fine adjustment after installation at one of said discrete positions; and

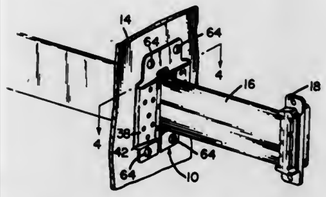
means for retaining said enclosure in a desired position relative to said supports.

4,498,715

CABLE SHIELD GROUNDING CLAMP

Michael S. Peppler, Lancaster, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Mar. 29, 1983, Ser. No. 480,041
Int. Cl.[3] H01R *4/24, 4/66*
U.S. Cl. 339—14 R **12 Claims**



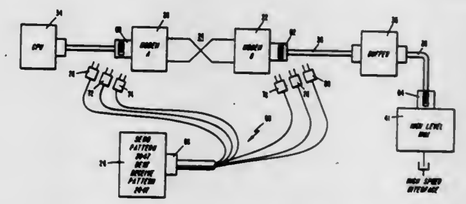
1. A clamp for securing a shielded cable to a panel, said panel having an aperture through which a cablé passes and said cable having a plurality of insulated conductors enclosed within conductive shielding and an outer insulative sheath, said clamp comprising a conductive body having a central passage through which the cable extends and a pair of integral lateral flanges aligned with said central passage, a rolled edge formed on each elongated side of said passage to protect the cable, a plurality of lances and corresponding apertures formed in said clamp body and said flanges, each aperture surrounded by a plurality of tines, all said tines and said lances extending from a single face of said clamp, and means to mount said clamp on said panel whereby the insulation and shielding of said cable are secured by folding said flanges upon said body crimpingly engaging the shielding and insulation with said lances and said tines.

4,498,716

DATA MONITORING CONNECTOR FOR TESTING TRANSMISSION LINKS

Marvin W. Ward, 7838 Goldphin Dr., Springfield, Va. 22153

Filed Apr. 1, 1982, Ser. No. 364,231
Int. Cl.[3] H01R *9/09*; G06F *11/30*
U.S. Cl. 339—17 R **11 Claims**



1. In an arrangement for testing data transmission links in a multiple cable, computer based system, a multiple conductor connector provided at least at one piece of equipment on one of the links to enable monitoriing of data flow during normal operation of the system, the connector comprising a housing, an electrical cable having multiple conductors extending from one end of said housing, a multiple conductor coupling including at least two rows of electrical coupling elements for connecting to corresponding conductors of a piece of equipment, a circuit board supported within said housing, said circuit board carrying a conductive pattern including conductors corresponding to said coupling elements; jumper wires for electrically interconnecting said at least two rows of coupling elements and said conductor pattern on one side of the circuit board; means for electrically interconnecting said cable conductors and said conductor pattern; and terminal means connected respectively to the conductors of said conductive pattern, which connect to said at least two rows of coupling elements, said circuit board spaced longitudinally apart from said coupling elements and said terminal means on said circuit board positioned to be accessed from a common side of said housing to monitor data signals, the connector remaining in circuit during normal operation of said system to enable continuous monitoring of said system by accessing data patterns on said link at said terminal means of said connector.

4,498,717

PRINTED WIRING BOARD INTERCONNECT ARRANGEMENT

William A. Reimer, Wheaton, Ill., assignor to GTE Communication Systems Corp., Northlake, Ill.

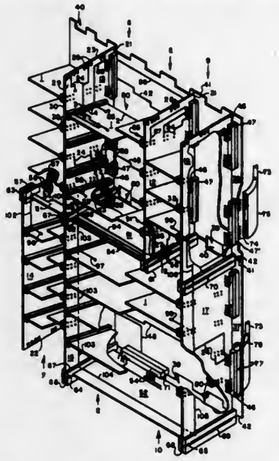
Filed Aug. 29, 1983, Ser. No. 527,636
Int. Cl.[3] H01R *9/09*
U.S. Cl. 339—17 LM **23 Claims**

1. A printed wiring board interconnect arrangement comprising:

a plurality of printed wiring boards arranged in at least first and second columns, each of said printed wiring boards, within each column, including at least a first edge, said edges within a column lying in a common plane;

at least first and second interconnect planes, each interconnect plane including at least a first and a second edge, said

interconnect plane first edges lying in a common plane, said interconnect plane second edges lying in a common plane, each of said interconnect planes positioned adjacent to a corresponding one of said printed wiring board edge common planes, and interconnecting said printed wiring boards having edges in said corresponding common plane;



a backplane positioned adjacent to said interconnect plane first edges and connecting said interconnect planes; and

at least one cross-connect board, positioned adjacent to said interconnect plane second edges and connecting said interconnect planes.

4,498,718

ELECTRICAL CONNECTORS

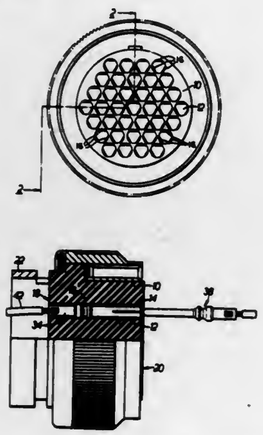
William C. W. Duncan, Bugbrooke, England, assignor to Plessey Overseas Limited, Ilford, England

Continuation of Ser. No. 359,909, Mar. 19, 1982, abandoned. This application May 24, 1984, Ser. No. 614,376

Claims priority, application United Kingdom, Mar. 21, 1981, 8108940

Int. Cl.³ H01R *13/40*

U.S. Cl. 339—59 M **9 Claims**



1. An electrical connector comprising a cylindrical body, said cylindrical body having a one-piece insulator located therein, said one-piece insulator having a plurality of parallel circular through-bores in a closely packed array formed therein, each of said bores being formed with three circumferentially spaced inwardly projecting protuberances intermediate of its ends, each said protuberance comprising a lead-in shape gently rising from the internal surface of said bore and a retaining face perpendicular to the axis of said bore, said retaining faces of all the protuberances in said plurality of bores being in the same plane, and the edge of each protuberance forming a chord through the respective bore, an elongated cylindrical electrical contact located in each of said bores, said contact having at least two spaced flange portions of substantially the same diameter as said bore, said plurality of protuberances being radially aligned within said cylindrical body and being positioned between said spaced flange portions to locate said contact in position in said bore, the shape of said protuberances permitting said contacts to be inserted and removed from either end of said bores by triangulating the respective bore during insertion or removal wherein insertion and removal in one direction along said bores requires less force than insertion and removal from the other direction along said bores.

4,498,719

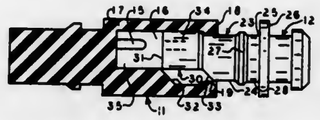
ENVIRONMENTAL CONNECTOR ASSEMBLY

Mitchell A. Juris, Chicago, and David A. Gallagher, Romeoville, both of Ill., assignors to Allied Corporation, Morristown, N.J.

Continuation of Ser. No. 236,369, Feb. 20, 1981, abandoned, which is a continuation of Ser. No. 864,975, Dec. 27, 1977, abandoned. This application Nov. 30, 1982, Ser. No. 445,403

Int. Cl.³ H01R *13/52, 13/627*

U.S. Cl. 339—60 R **3 Claims**



1. A connector assembly for coupling a first elongate termination element for a signal communication conductor to a second elongate termination element for a signal communication conductor comprising:

an elongate receptacle member having a longitudinal axis and a forward end portion having a forward extremity which is open for receiving a mating plug member and a rearward end portion rearward of said forward end portion for receiving a signal communication conductor,

said receptacle member including a cylindrical recess within said forward end portion defined by a continuous resilient annular wall element having an internal diameter adjacent the forward extremity of said forward end portion of a first dimensional value,

said wall element terminating at the plug receiving extremity of said forward end portion in a continuous circumferential lip integral at its base with the inner surface of said wall element and radially extending in a direction toward the axis of said receptacle to define a circular recess access opening having a diameter of a second dimensional value less than said first dimensional value,

said lip being contoured to provide a sealing surface thereon defined around the innermost extremity of said lip relative to said axis,

said receptacle including means within said rearward end portion for supporting said first elongate termination element with the axis thereof parallel to said receptacle member axis,

an elongate plug member having a longitudinal axis and a first end portion having a mating face at its forward extremity for mating with said receptacle member and a second end portion disposed rearwardly of said first end portion for receiving a signal communication conductor with means within said plug member for supporting said

second elongate termination element with its axis parallel to the axis of said plug member,

the first end portion of said plug being comprised of four cylindrical longitudinally contiguous sections, the first and forwardmost of said sections having a diameter no greater than said second dimensional value to define a neck portion, the second of said sections having a maximum diameter larger than said second dimensional vaue to define a collar portion, the third of said sections having a maximum diameter not less than said second dimensional value to define a sealing surface portion, and the fourth of said sections having a maximum diameter greater than said first dimension to define a shoulder portion for abutting against the forward extremity and limiting longitudinal entry of the plug into the recess to determine fully mated condition of said receptacle and plug members,

the relative and aggregate longitudinal lengths of said first, second and third sections combined being such that when said plug is fully mated within said receptacle said lip sealing surface effects a seal against said plug sealing surface portion, and the outer periphery of said collar portion effects a seal against the inner surface of said annular wall element, the inner surface of said annular wall element being relatively smooth and of substantially uniform diameter over a longitudinal distance extending rearwardly from the rear extremity of said lip to a position sufficiently beyond the forwardmost extremity of said collar when said receptacle and plug members are in fully mated condition to allow said shoulder portion to act as a stop against which the forward extremity abuts when said receptacle and plug member are in said fully mated condition, in which said condition, the uniform diameter annular wall element surrounds said neck portion for a longitudinal distance at least as great as the maximum longitudinal extent of said collar.

4,498,720

FLAT PACK WITH HOUSING DEFORMATION PREVENTION MEANS

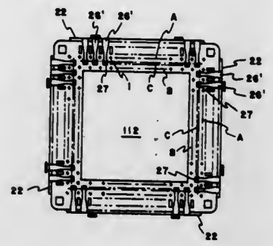
Yoshiaki Ichimura, Tokyo, Japan, assignor to Japan Aviation Electronics Industry Limited, Tokyo, Japan

Filed May 23, 1983, Ser. No. 496,847

Claims priority, application Japan, May 26, 1982, 57-87897; May 26, 1982, 57-87898

Int. Cl.³ H01R *9/09*

U.S. Cl. 339—75 MP **11 Claims**



1. In an electrical connector for mounting a first electric circuit board having terminal pads onto a second electric circuit board having conductor elements and electrically connecting the terminal pads with the conductor elements, said terminal pads being arranged along a peripheral edge of the first electric circuit board, said connector including an insulator housing having a top surface for receiving said first electric circuit board and a bottom surface to be opposite to said second electric circuit board, a plurality of contact elements each having a spring contact portion at one end thereof and a terminal pin portion at the other end thereof, said contact elements being mounted in, and arranged along a peripheral edge of, said insulator housing so that said spring contact portions extend to engage with respective terminal pads of the first circuit board received on said insulator housing while said terminal pin portions protruding from the bottom surface of said insulator housing to electrically connect with said conductor elements of said second electric circuit board, and clamping means for clamping said insulator housing and said first electric circuit board received thereon to press said terminal pads onto said spring contact portions, the pressure applied to each spring contact portion acting onto, and being supported by, said insulator housing through each contact element, the improvement which comprises said clamping means including upper means to engage with, and depress, the upper surface of said first electric circuit board received on said housing, lower means to engage with the bottom surface of said insulator housing, and connecting means connecting said upper means and said lower means, said lower means engaging with the bottom surface of said housing in the vicinity of an imaginary line on which the bottom surface of said insulator housing intersects with a line of action of the pressure acting onto said insulator housing from each contact element so that a torque due to the pressure acting onto said insulator housing through each contact element and a clamping force acting onto said insulator housing from said lower means of said clamping means may be substantially cancelled.

4,498,721

ELECTRICAL CONNECTOR FOR AN ELECTRONIC PACKAGE

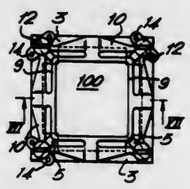
Petrus R. M. van Dijk, Hertogenbosch, Netherlands, assignor to AMP Incorporated, Harrisburgh, Pa.

Filed Aug. 15, 1983, Ser. No. 523,504

Claims priority, application United Kingdom, Sep. 16, 1982, 8226446

Int. Cl.³ H01R *9/09*

U.S. Cl. 339—75 MP **3 Claims**



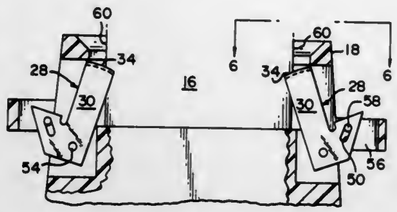
1. An electrical connector for mounting a planar leadless electronic component package on a substrate, comprising a housing of electrically insulating material carrying a plurality of electrical contacts providing first contact points for engagement with conductors on the package and second contact points for engagement with conductors on the substrate, and a lid which when connected to the housing in a closed condition serves to urge a package mounted on the housing, into contact with the first contact points of the contacts, and to secure the package to the connector, characterised in that the housing is formed at its periphery with a plurality of holes each to receive a bolt by which the connector is to be secured to the substrate, the lid being in the form of a spring member having a plurality of forked portions engageable under the heads of respective bolts when securing the connector to the substrate and having hold-down portions resilient relative to the forked portions and arranged to engage the package and hold the package on the housing said lid being comprised of an inner planar frame formed by side strips which in use serve as package hold-down portions, each side strip carrying outside the frame a pair of oppositely extending arms which extend parallel to the side strip and upwardly relative to the plane of the frame, adjacent free end portions of the arms together constituting the forked portions engageable under the heads of the bolts.

4,498,722

LATCH DEVICE FOR ZIF CARD EDGE CONNECTORS

James L. Fedder, and Michael A. Kandros, both of Harrisburg, Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Dec. 5, 1983, Ser. No. 557,977
Int. Cl.³ H01R *13/631*
U.S. Cl. 339—75 MP 2 Claims



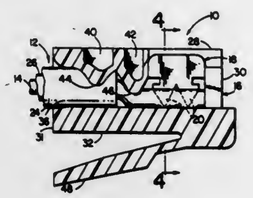
1. A latch device located at each end of a card receiving slot in a card edge connector of the type having a vertically moving upper housing, said device comprising a pair of spaced apart L-shaped sides connected at the lower ends and having turned in flanges at the upper ends of the elongated sections with the edges thereof defining a V-groove to receive there between the side of the card, and diagonal slots located in the short perpendicular sections of the sides, said device being pivotally mounted by a pin extending thru holes in the elongated sections and anchored in a non-movable part of the connector and with a pin passing thru the diagonal slots and anchored to the movable upper housing so that as the upper housing moves upwardly, the upper ends of the device move in towards the card receiving slot so that the side of a card which may be in the slot is gripped by the edges defining the V-groove.

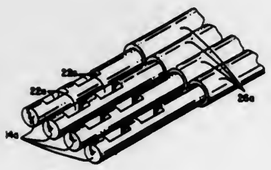
4,498,723

ELECTRICAL CONNECTOR AND METHOD FOR TERMINATING SOLID CONDUCTORS

James J. Johnston, Old Saybrook, Conn., assignor to Brand-Rex Company, Willimantic, Conn.

Filed Dec. 23, 1982, Ser. No. 452,780
Int. Cl.³ H01R *13/39*
U.S. Cl. 339—97 P 28 Claims





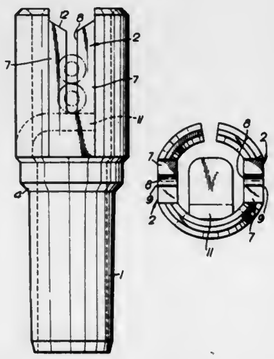
11. An article of manufacture comprising a plurality of solid electrical conductors having end portions disposed in closely spaced parallel relation to each other, each of said end portions having at least one pre-formed tine receiving opening therein, a plurality of electrical contacts, each of said contacts having at least one tine thereon, each of said contacts being assembled with an associated one of said solid conductors and having said one tine disposed within said one pre-formed opening in said one conductor and in press fit relation to said one conductor.

4,498,724

CIRCUIT BOARD COMPOSITE CONNECTOR

Cyril J. White, Chandlers Ford, and Christopher Joyce, Middenbury, both of England, assignors to Bicc Public Limited Company, London, England

Continuation of Ser. No. 303,509, Sep. 18, 1981, abandoned. This application Mar. 7, 1984, Ser. No. 587,309
Int. Cl.³ H01R *13/39*
U.S. Cl. 339—97 R 10 Claims



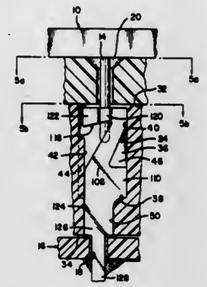
1. A composite connector for use with a circuit board of the kind comprising a board of electrically insulating material, which board has bonded to one of its surfaces a regular pattern of strips of electrically conductive metal or metal alloy and has, extending through the board and the overlying electrically conductive metal strips, a multiplicity of holes distributed at spaced positions along the strips, which composite connector is formed from a preform of electrically conductive sheet metal or metal alloy which is folded to form a tube having an open seam extending from end to end of the composite connector and which is shaped to form, at one end of the composite connector, a socket which will make a snap-fit in a hole in a circuit board and in which a terminal pin of a circuit component can be resiliently gripped and, at the other end of the composite connector, a tubular end portion of substantially circular cross-section having longitudinally extending slots which are at substantially diametrically opposed positions and whose axes lies in a plane transverse to the plane common to the axes of the composite connector and of said seam, each of which slots open into that end of the composite connector and is bounded by marginal portions of said tubular end portion, which marginal portions and the slot bounded thereby constitute the limbs and an insulated wire-receiving opening of a bifurcated contact, the limbs of each bifurcated contact having opposed faces which, over at least a major part of their widths, are substantially flat and lie substantially parallel to the transverse plane common to the axes of the diametrically opposed slots, the arrangement being such that, when a length of insulated wire is introduced into the opening between the limbs of each bifurcated contact, the limbs will displace the insulating covering of the wire to effect an electrical connection with the wire at at least two positions spaced along its length.

4,498,725

ELECTRICAL CONNECTOR

Edward J. Bright, Elizabethtown; Gary R. Marpoe, Jr., Hummelstown, both of Pa.; Klaus D. Schuemann, Los Gatos, Calif., and Wilmer L. Sheesley, Dauphin, Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Continuation of Ser. No. 384,359, Jun. 2, 1982, abandoned. This application Jun. 14, 1984, Ser. No. 619,641
Int. Cl.³ H01R *11/22, 13/629*
U.S. Cl. 339—176 M 2 Claims



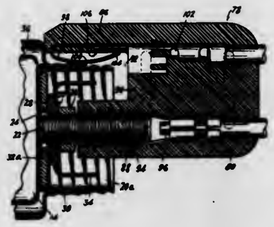
1. An electrical connector comprising a housing in which a plurality of contact elements are positioned, said elements having a pair of generally converging, horizontal fingers in between which a pin from an electronic device is laterally inserted, characterized in that the fingers are attached to upper ends of vertically extending, parallel arms such that each arm and attached finger define a figure seven shape, the arms being attached at their lower ends to a channel-shaped strap and being of sufficient length such that, upon laterally inserting a pin in between the fingers and thereby spreading them apart, the arms are twisted about their vertical axis to exert a torsional force against the inserted pin.

4,498,726

CONNECTOR RECEPTACLE FOR ELECTRIC CIGAR LIGHTER

Donald J. Mattis, Norwalk, Conn., assignor to Sun Chemical Corporation, New York, N.Y.

Filed Dec. 14, 1983, Ser. No. 561,159
Int. Cl.³ H01R *13/50*
U.S. Cl. 339—182 R 16 Claims



1. A dual-contact electrical connector receptacle for bringing current to an automotive vehicle's electric cigar lighter, said lighter being of the type having an ignitor-plug receiving socket with an annular electrically-conductive current-carrying sleeve at its inner end, said sleeve being electrically connected to the ground side of the cigar lighter circuit, said socket further having a central terminal post connected to the hot side of the cigar lighter circuit, the receptacle comprising in combination:

(a) a non-tubular, slab-like body of molded insulating material,

(b) said body having a pair of expansive, opposite, exteriorly exposed grip surfaces to facilitate manual engagement by an installer,

(c) said body comprising a U-shaped portion having two legs and a connecting yoke, the space between said legs providing clearance for said annular sleeve of the cigar lighter socket when the connector receptacle is installed thereon,

(d) at least one of said legs having a recess,

(e) a resilient tubular contact terminal disposed in and held captive by the walls of the recess, said terminal being slidable onto the central terminal post of the cigar lighter socket,

(f) a resilient spring contact finger carried by the other of said legs and having a bowed body portion extending into said space between the legs, the center of the bowed body portion being cooperable with and closely juxtaposed to one surface of the annular sleeve of the cigar lighter socket, and being adapted to provide a current path thereto when the receptacle is installed thereon, and

(g) a pair of electrical leads connected respectively with said tubular contact terminal and said spring contact finger, for connection to the vehicle's electrical system,

(h) said tubular contact terminal and spring contact finger being generally coextensive with one another and the force of the sleeve acting against the spring contact finger being balanced by a counteracting force of the central post acting on the tubular contact terminal, thereby to maintain adequate pressure between the contact finger and sleeve.

4,498,727

ELECTRIC CONNECTING MEANS

Anthony Steinmetz; Jacobus J. Arnold; Franciscus G. C. Verweg, and Hendrik Groeneboer, all of Hilversum, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 6, 1981, Ser. No. 241,267
Claims priority, application Netherlands, Mar. 17, 1980, 8001555
Int. Cl.³ H01R *3/00*
U.S. Cl. 339—278 C 2 Claims

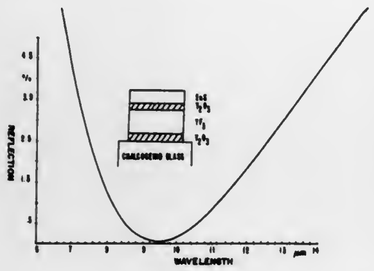


1. An electrical connector particularly suitable for use in low-voltage applications, said connector comprising an electrically insulating body and electrical conductors extending from said electrically insulating body characterized in that each of said electrical conductors comprises a substrate of a base metal readily oxidizable in air, an intermediate 0.1–2 μm thick gold layer on said substrate and an outer layer on said gold intermediate layer consisting of a mixture having a paste-like consistency of a binder selected from the group consisting of greases, oils and waxes and approximately 10–50% by weight of electrically conductive particles of a hardness in excess of any metal oxide capable of being formed by oxidation in air of said base metal and of a minimum diameter at least equal to the thickness of any layer capable of being formed by said oxide of said base metal.

4,498,728
OPTICAL ELEMENT

Werner Thöni; Peter Huber, both of Maienfeld, Switzerland, and Karl Hohenegger, Balzers, Liechtenstein, assignors to Balzers Aktiengesellschaft, Liechtenstein

Filed Mar. 1, 1983, Ser. No. 470,922
Claims priority, application Switzerland, Mar. 1, 1982, 1234/82
Int. Cl.³ G02B *5/28*
U.S. Cl. 350—1.7 **3 Claims**

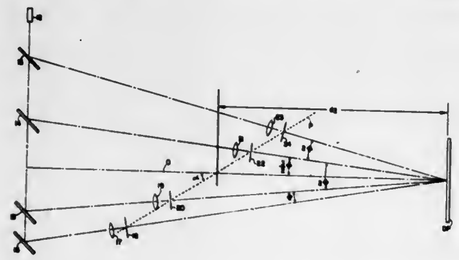


1. An optical element comprising a system of a plurality of infrared transmitting, optically effecting thin layers of substances of the group: germanium, zinc selenide, zinc sulfide, chalcogenide glasses, thorium fluoride, yttrium fluoride, and praseodymium fluoride, applied to an infrared transmitting substrate of a material of the group: germanium, zinc selenide, zinc sulfide, and chalcogenide glasses, an intermediate layer having a thickness of 100 nm at most, of a material of the group; hafnium oxide, yttrium oxide, and scandium oxide is provided between the substrate and the optically effective layer adjacent thereto.

4,498,729
METHOD AND APPARATUS FOR MAKING ACHROMATIC HOLOGRAMS

Stephen A. Benton, Somerville, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Aug. 13, 1979, Ser. No. 66,303
Int. Cl.³ G03H *1/20*
U.S. Cl. 350—3.69 **7 Claims**

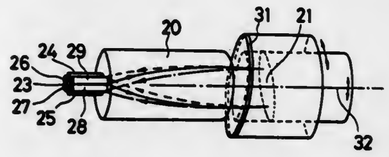


1. The process of making a hologram for the display of achromatic images comprising the steps of: arranging a multiply imaging diffractor plate between a first hologram of an object formed on a first photographic plate and a second photographic plate; illuminating a narrow elongated strip of said first hologram with monochromatic light in a first object beam conjugate to the reference beam with which the said first hologram was made while illuminating said second photographic plate with a first reference beam of light coherent with said first object beam; processing said second photographic plate to make a second hologram; arranging a third photographic plate adjacent said second hologram in position to record an image formed by said second hologram; illuminating said second hologram with a second object beam of monochromatic light conjugate to said first reference beam while illuminating said third photographic plate with a second reference beam coherent with said second object beam; and processing said third photographic plate to make a third hologram.

4,498,730
OPTICAL SWITCHING DEVICE

Tsutomu Tanaka, Nishinomiya; Yoshinobu Tsujimoto, Kashihara; Hiroyuki Serizawa, Hirakata, and Katsuji Hattori, Takarazuka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Continuation of Ser. No. 18,243, Mar. 7, 1979, Pat. No. 4,304,460. This application Apr. 22, 1981, Ser. No. 256,617
Claims priority, application Japan, Mar. 10, 1978, 53-028150; Sep. 1, 1978, 53-107903; Sep. 20, 1978, 53-116427; Sep. 20, 1978, 53-116428; Dec. 25, 1978, 53-165665
The portion of the term of this patent subsequent to Dec. 8, 1998, has been disclaimed.
Int. Cl.³ G02B *5/16*; G02F *1/00*
U.S. Cl. 350—96.16 **48 Claims**



1. An optical switching device comprising:
a focussing lens,
a plurality of optical waveguides having respective end faces disposed on a focal plane of said focussing lens,
reflection means disposed at an end of said focussing lens furthest from the focal plane thereof for reflecting rays incident thereupon, and
means for controllably moving said reflection means, the movement being a rotation about a central axis thereof, rays issuing from one of said end faces and transmitted through said focussing lens being controllably reflected by said reflection means in selected directions, including at least a specified direction to enter selectively into at least one respective end face other than the end face from which said rays issued.

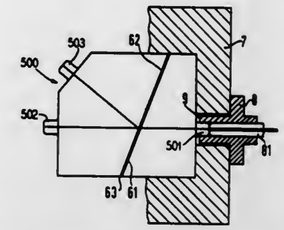
4,498,731
OPTICAL WAVEGUIDE BRANCH COUPLER AND METHOD OF MANUFACTURING

Gerhard Winzer, Munich, and Romuald V. Tomkewitsch, Ebenhausen, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Mar. 30, 1983, Ser. No. 480,318
Claims priority, application Fed. Rep. of Germany, Apr. 5, 1982, 3212619
Int. Cl.³ G02B *5/14*
U.S. Cl. 350—96.16 **26 Claims**

1. A method of forming a body having at least one cylindrical guide plug projecting from an outer surface concentrically receiving an optical waveguide extending into said body, said method comprising the steps of providing a first part and a second part, said first and second parts each having a lateral planar surface extending at right angles to an outer surface of the part to an opposite edge, said outer surface of each part having at least one projection having a surface in the plane of the lateral surface and a shape of approximately one-half of the cylindrical guide plug, at least one of the first and second parts having a guide groove for each of the semi-cylindrical projections extending inward at right angles to the outer surface to

the opposite edge of the lateral surface, said first and second parts having adjustment means comprising coacting recesses and projections for guiding the first and second parts as they are assembled with their lateral surface engaging and with the projections being matched to form a cylindrical guide plug; providing an optical waveguide in each of the guide grooves of

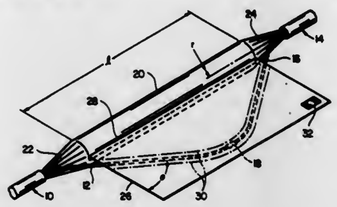


the one part, assembling the first and second parts together with the lateral surfaces engaging each other and the projections being received in the recesses to insure that the semi-cylindrical projections of the parts are matched to form the cylindrical guide plugs with the coaxially positioned waveguide, and securing the two parts together to form the body.

4,498,732
FIBER OPTIC SPLICE ORGANIZER

Bruce D. Campbell, Portola Valley, and Vernon A. Featress, Castro Valley, both of Calif., assignors to Raychem Corporation, Menlo Park, Calif.

Continuation-in-part of Ser. No. 339,275, Jan. 15, 1982, abandoned. This application May 25, 1982, Ser. No. 381,825
Int. Cl.³ G02B *7/26*
U.S. Cl. 350—96.20 **29 Claims**



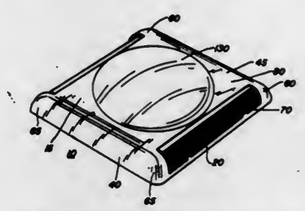
1. A device for helically wrapping an optical fiber about a cylindrical core, comprising:
(a) a cylindrical core having a radius of which is less than the minimum bending radius of said fiber
(b) a sheet of flexible material, which sheet is attached longitudinally to said core along one edge of the sheet, and is wrapped around said cylindrical core, said optical fiber being arranged on said sheet such that when said sheet is wrapped about said core a minimum helical pitch angle, θ, of said fiber is determined from $r' = r/\cos\theta$ where r' is the minimum bending radius of the fiber and r is the radius of the core.

4,498,733
REFLECTOR STRUCTURE

Robert M. Flanagan, Lincolnshire, Ill., assignor to Amerace Corporation, New York, N.Y.

Filed Jul. 2, 1982, Ser. No. 394,696
Int. Cl.³ G62B *5/122*
U.S. Cl. 350—102 **14 Claims**

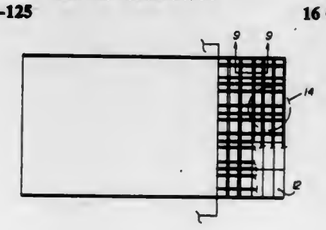
1. A pavement marker for providing a marking signal on a roadway surface capable of resisting impact forces exerted by vehicle tires impinging thereon and reflecting light back toward the source thereof, so as to be visible to a driver in an approaching vehicle, said pavement marker comprising:
a base having at least one support surface positioned in use in the direction of an approaching vehicle;
a lens member of light-transmitting synthetic resin having a front face and a rear face, said lens member being carried by said support surface;
said lens member having a plurality of cube-corner tye retrodirective reflector elements integrally formed in said rear face and extending outwardly therefrom;
each of said reflector elements being individually surrounded by a continuous peripheral wall, said walls extending between the plane of said rear face and said support surface, said peripheral walls defining individual cells round each said individual reflector elements, thereby forming an impact resistant structure;
the ratio between the maximum dimension of each said reflector element in plan view and the thickness of an adjacent peripheral wall being no less than about 2 to 1
said reflector elements being positioned and arranged to reflect light falling upon said front face of said lens member back toward the source thereof to render said marker highly visible at night.

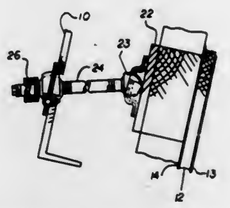


4,498,734
MEANS AND METHOD OF CONTROLLING REFLECTED IMAGE CONTAINMENT

Agis I. Mihalakis, deceased, late of San Luis Obispo County, Calif., and by Barbara L. Friend, legal representative, Cody, Wyo., assignors to William C. McGeehon and George Mihalakis, a part interest

Filed Sep. 13, 1982, Ser. No. 417,709
Int. Cl.³ G03B *21/56*
U.S. Cl. 350—125 **16 Claims**

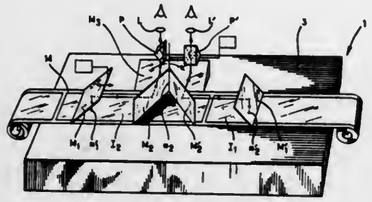




1. Means for adjusting an optical reflecting surface and the energy falling incident thereon, comprising:
a. a rigid mounting structure;

b. a flexible multi-panel structure disposed in front of the mounting structure;
c. means forming a reflection surface on the flexible multi-panel structure for a preselected field of reflected energy distribution;
d. a plurality of connecting means spaced in accordance with a preselected pattern and extending between the mounting structure and the flexible structure, each connecting means being individually extendable and retractable to effect adjustment in the position of a corresponding region of the flexible multi-panel structure whereby the flexible multi-panel structure may be effectively curved to change the presented field of reflected energy distribution; and
e. means for securing the flexible multi-panel structure once the desirable curvature is achieved, thus rendering it rigid.

4,498,735
STEREOSCOPIC VIEWER
Herve R. Gresse, Boulogne, and Annick R. Carn, Versailles, both of France, assignors to Compagnie de Materiel de Micrographie "C.M.M.", Saint Maur, France
Filed Jul. 2, 1982, Ser. No. 394,841
Claims priority, application France, Jul. 8, 1981, 8113384
Int. Cl.³ G02B *27/22*
U.S. Cl. 350—138 **4 Claims**



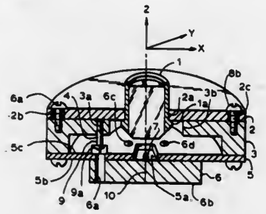
1. A stereoscopic viewer for aerial photographs, said viewer being intended to be located over a flat translucent support across which a film to be examined is unwound flatly, suitable lighting being arranged below said flat translucent support, said viewer comprising: optical means to examine simultaneously, through two eyepieces, two successive panoramic images in a film of panoramic exposures, said optical means defining an optical path between each of the two images and its relevant eyepiece; said optical means including, for each optical path, on the one hand, a set of mirrors providing an odd number of reflections and, on the other hand, a total-reflection prism; each said prism each being in the form of an isosceles triangle and each having a base and two faces, said base being the side where total reflection is effected, each said base extending substantially perpendicularly to the plane of the film to be examined, and said bases of said prisms extending at an angle of about 90° to one another; one of said bases lying in a plane extending perpendicular to the plane of the film to be examined, the set of mirrors being arranged between the two prisms and the film to be examined and comprising, for each of the two optical paths, successively, from the film to be examined;
a first mirror arranged at an angle of about 45° to the plane of the film to be examined and at right angles to the longitudinal plane of symmetry of the film, the reflecting surface of said mirror facing said film;
a second mirror receiving the beam reflected by the first mirror, the plane of said second mirror being at right angles to the plane of the film to be examined and forming an angle of about 45° with the longitudinal axis of said film;
and a third mirror reflecting the beam arriving from said second mirror and passing it to the inlet face of one of the two prisms.

4,498,736
METHOD AND APPARATUS FOR PRODUCING VISUAL PATTERNS WITH LENTICULAR SHEETS
Robert B. Griffin, 282 Tunxis Rd., West Hartford, Conn. 06107
Filed Feb. 2, 1981, Ser. No. 230,862
Int. Cl.³ G02B *27/00*
U.S. Cl. 350—167 **11 Claims**



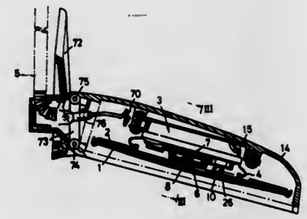
1. A display device forming a visible moire-like optical pattern comprising:
a first lenticular sheet adapted for cooperation with a corresponding second lenticular sheet to form a visible moire-like optical pattern, said first sheet bearing a pattern of closely spaced lens-like embossments on a first surface thereof, the opposed second surface of said first sheet being smooth;
a second lenticular sheet adapted for cooperation with said first lenticular sheet to form a visible moire-like optical pattern, said second sheet being transparent and bearing a pattern of closely shaped lens-like embossments on a first surface thereof, the opposed second surface of said second sheet being smooth;
a first transparent optical intensification coating on said first surface of said second sheet, said first coating filling the spaces between said lens-like embossments and being of sufficient thickness to cover said embossments, said first coating having an outer surface, said first coating having a refractive index which is different than the refractive index of said second sheet;
a second transparent optical intensification coating on said second surface of said second sheet, said second coating having a refractive index which is different than the refractive index of said second sheet; and
means for supporting said first and second sheets in spaced apart parallel relationship with an air gap therebetween to form a moire-like pattern visible outwardly from said transparent second sheet.

4,498,737
ADJUSTING MECHANISM FOR USE WITH DIODE LASERS
David E. Doggett, Cupertino, Calif., assignor to Benson Inc., San Jose, Calif.
Filed Feb. 26, 1982, Ser. No. 352,816
Int. Cl.³ G02B *7/00*
U.S. Cl. 350—237 **11 Claims**



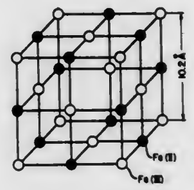
1. Structure for adjusting the position of a solid state laser diode along the optical axis of a lens system comprising:
first means for holding the lens system;
second means for holding the laser diode spaced relative to said lens system along said optical axis;
securing means for attaching the first means to the second means at two points, said points being spaced from the laser diode and substantially on opposite sides thereof; and means mounted between said laser diode and one of said points for adjusting the position of the laser diode relative to said lens system along the optical axis of said lens system without any appreciable movement of the laser diode transverse to the optical axis.

4,498,738
ELECTRIC MIRROR ANGLE ADJUSTING DEVICE WITH PIVOTING CROSS-SHAPED MEMBER
Toshiyuki Kumai, Fujieda, Japan, assignor to Murakami Kaimeido Co., Ltd., Shizuoka, Japan
Filed Feb. 23, 1982, Ser. No. 351,469
Claims priority, application Japan, Feb. 24, 1981, 56-024834
Int. Cl.³ G05G *7/00, 1/00;* G02B *8/05*
U.S. Cl. 350—637 **5 Claims**



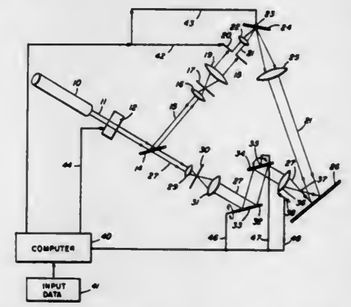
1. An electric mirror angle adjusting device comprising:
a mirror having a front and a back face
a mirror holder having a front and a back face said mirror holder being mounted on the back face of said mirror,
a stationary supporting pivot provided on the back face of said mirror holder,
an actuator unit including a housing pivotably connected to said mirror holder at the back face thereof, two actuators, two worm mechanisms respectively driven by said actuators, two pivot screws respectively disposed within worm wheels in said worm mechanisms, and adjusting nuts each having a movable pivot, each said adjusting nut being respectively moved forward or backward by rotation of said pivot screw engaged therewith, and
a guide means for controlling the direction of horizontal and vertical inclination of said mirror, said mirror holder being movable under the control of said guide means about said stationary supporting pivot, said guide means comprising a cross-shaped member disposed on said actuator unit housing, having adjacent its center a spherical bearing having an inner surface into which said stationary supporting pivot is fitted, and an outer surface, said cross-shaped member extending along the horizontal and vertical axes of said mirror, and a cross-shaped groove provided on the back face of said mirror holder pivotably engaging said cross-shaped member, the said outer surface of said spherical bearing being supported by internal members of said cross-shaped groove which abut said outer surface of said spherical surface.

4,498,739
ELECTROCHROMIC DISPLAY DEVICES USING IRON(III) HEXACYANOFERRATE(II) SALT
Kingo Itaya, Tagajo; Kimio Shibayama; Shinobu Toshima, both of Sendai; Tatsuaki Ataka, and Koji Iwasa, both of Tokyo, all of Japan, assignors to Seiko Instruments & Electronics Ltd., Tokyo, Japan
Filed May 25, 1982, Ser. No. 381,800
Claims priority, application Japan, May 26, 1981, 56-79911; Oct. 2, 1981, 56-156971; Dec. 7, 1981, 56-196623
Int. Cl.³ G02F *1/01;* C25D *11/00;* C25B *11/04*
U.S. Cl. 350—357 **28 Claims**



1. In an electrochromic display device: a pair of spaced-apart substrates; an electrolyte contained between the spaced-apart substrates; a set of electrodes disposed on at least one of the substrates in contact with the electrolyte; a layer of electrochromic material disposed on at least one of the electrodes to define a display electrode, the layer of electrochromic material comprising a color-reversible salt of iron(III) hexacyanoferrate(II) electrodeposited on the surface of the display electrode as an intimately adhering blue insoluble solid film; and means for effecting reversible electrochemical oxidation and reduction of the salt of iron(III) hexacyanoferrate(II) to effect a corresponding reversible color change exhibited by the display electrode.

4,498,740
HOLOGRAM WRITER AND METHOD
H. John Caulfield, Nagog Woods, Mass., assignor to Aerodyne, Research, Inc., Billerica, Mass.
Filed Apr. 18, 1983, Ser. No. 485,828
Int. Cl.³ G03H *1/08*
U.S. Cl. 350—3.66 **9 Claims**



1. Apparatus for hologram writing to record individual x, y, z data points on a holographic medium comprising
means to support a holographic medium,
means to generate coherent radiation and to form an information beam and a reference beam of said coherent radiation,
means to modulate said information beam comprising to x, y, z data,
means to focus said information beam at beam focal points at z positions adjacent to said holographic medium on said

support means and to present said beam to said holographic medium in individual areas, each corresponding to a fraction of the total area of said medium,

means to move said information beam across and along said holographic medium at positions corresponding to x, y, z data positions, and

means to present said reference beam to said holographic medium in interference with said information beam and to move said reference beam across and along said medium in conjunction with and in interference with said information beam.

4,498,741

COMPACT, WIDE MAGNIFICATION-VARIABLE ZOOM LENS SYSTEM

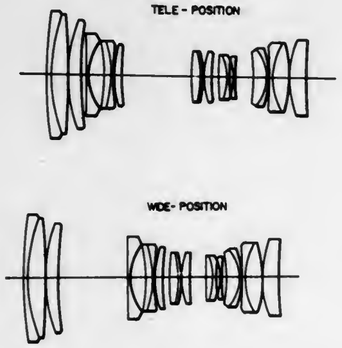
Shozo Ishiyama, Hino, Japan, assignor to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Apr. 1, 1982, Ser. No. 364,257

Claims priority, application Japan, Apr. 3, 1981, 56-49346

Int. Cl.³ G02B 9/64, 15/18

U.S. Cl. 350—427 **20 Claims**



1. A compact, wide magnification-variable zoom lens system comprising a first lens group having a positive focal length, a second lens group having a negative focal length, a third lens group having a positive focal length, a fourth lens group having a negative focal length and a fifth lens group having a positive focal length in the order from the object side, characterized in that

(1) over the entire range of zooming, a partial system consisting of the first lens group and the second lens group has a negative resultant focal length and a partial system consisting of the third through fifth lens groups has a positive resultant focal length;

(2) the third lens group and another positive lens group are moved integrally; and

(3) when zooming is carried out from the wide position to the tele position, the individual lens groups are moved so that an airspace formed between the first lens group and the second lens group and an airspace formed between the third lens group and the fourth lens group may be increased while an airspace formed between the fourth lens group and the fifth lens group may be decreased.

4,498,742

ILLUMINATION OPTICAL ARRANGEMENT

Makoto Uehara, Tokyo, Japan, assignor to Nippon Kogaku K.K., Tokyo, Japan

Filed Sep. 8, 1982, Ser. No. 416,029

Claims priority, application Japan, Sep. 10, 1981, 56-141677; Mar. 18, 1982, 57-43395

Int. Cl.³ G02B 21/06

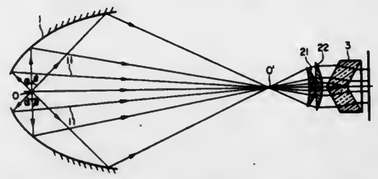
U.S. Cl. 350—523 **9 Claims**

1. An illumination optical arrangement comprising:

(a) light source means for supplying a substantially collimated light beam; and

(b) optical means for shifting the collimated light beam from said light source means toward the central axis of said light beam, said optical means including an entrance surface axis-symmetrically disposed with a predetermined inclination with respect to said central axis to cause said collimated light beam to be refracted toward said central axis substantially at the same angle, and an exit surface axis-symmetrically disposed with said predetermined inclination with respect to said central axis to cause the light beam from said entrance surface to be refracted in a direction parallel to said central axis,

wherein said optical means includes a prism having said entrance surface and exit surface, said entrance surface



is formed by a conical convex surface, said exit surface is formed by a conical concave surface, and the cones of said entrance surface and exit surface have their apexes lying on said central axis, and wherein said light source means supplies a collimated light beam having an annular distribution of quantity of light having a circular dark area of radius D_s around said central axis, and said prism is formed so as to satisfy the following condition:

$$(D_s/2) \leqq d \tan((\pi/2) - \sin^{-1}(\cos\theta/n) - \theta) \leqq 2D_s$$

where the apexes of the cones are represented by 2θ, the refractive index is represented by n, and the distance between the apexes of the cones of the entrance surface and exit surface is represented by d.

4,498,743

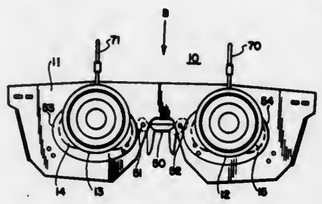
BINOCULAR FIELD OF VIEW SIMULATOR

William Feinbloom, New Paltz, N.Y., assignor to Designs for Vision, Inc., New York, N.Y.

Filed Nov. 22, 1982, Ser. No. 443,489

Int. Cl.³ G02C 7/16

U.S. Cl. 351—45 **16 Claims**



1. A binolcular field of view simulator for simulating a reduced peripheral field of view for a normal user, comprising:

a spectacle type frame adapted to be worn by said user,

first and second tubular assemblies positioned on the front surface and extending outwardly therefrom of said frame and each associated with an eye of said user to allow said user to view via said tubular assemblies each of said tubular assemblies being cylindrical and of a uniform circular cross section, and

means coupled to said tubular assemblies at an end remote from the front surface of said frame for selectively adjusting the field of view between 5 to 15 degrees according to the reduced peripheral field of view simulated to thereby simulate a restricted angular field of view as that associated with a visual defect.

4,498,744

METHOD OF AND APPARATUS FOR PRODUCING A PHOTOGRAPH OF A MOBILE SUBJECT

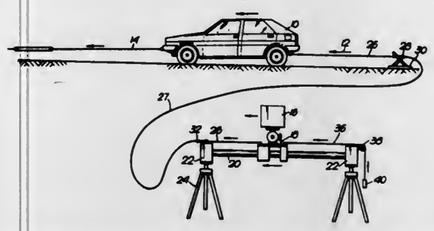
George D. Ealovega, Marley Lodge, Marley Heights, Haslemere, Surrey GU27 3LU, and Peter J. Langridge, 31 Southlands Close, Ash, Aldershot, Hants, both of England

Filed Jul. 26, 1982, Ser. No. 401,973

Claims priority, application United Kingdom, Jul. 28, 1981, 8123179

Int. Cl.³ A63J 5/00

U.S. Cl. 352—89 **2 Claims**



1. Apparatus for use in producing a photograph of a mobile subject such as a vehicle, comprising a support, a camera mount adapted to have a camera secured thereto, means mounting said camera mount for linear translational movement along said support in a predetermined direction, means for detecting linear displacement of a subject in said predetermined direction, and means for imparting linear displacement to the camera mount in said predetermined direction, along said support, in correspondence with a sensed displacement in said predetermined direction of the subject, wherein said means for detecting displacement of the subject includes a displacement transducer for producing an output signal indicative of the amount of the displacement of the subject relative to a fixed reference, means for receiving said signal and effecting a corresponding displacement of the camera mount along said support, the last-mentioned means including motor means for displacing the camera mount, and control means for receiving said signal and controlling said motor means to produce the appropriate displacement, said control means including a second displacement transducer for sensing movement of said camera mount along said support, and comparator means for comparing the displacements, sensed by said transducers, of the subject and the camera mount, and for controlling the energisation of said motor means in such a way as to tend to minimise differences in said displacements of the subject and the camera mount, each said displacement transducer comprising a first part, incorporating an optical grid, with a series of markings extending thereacross at regular intervals therealong, and a second part incorporating an electrical-optical sensor, and means mounting one of said parts for linear movement relative to the other to traverse the sensor along the grid to cross said markings in succession, to cause said sensor to produce a corresponding succession of electrical pulses, the apparatus including a respective counter, associated with each said sensor, for counting the signals produced thereby.

4,498,745

DEVICE TO CORRECT THE MALFUNCTION IN FILM FEED OF A PERFORATED FILM THROUGH A LIGHT BEAM

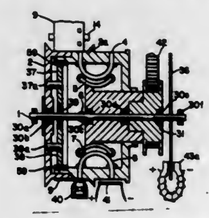
Viktor DeJeney, 6323 64th St., Riverdale, Md. 20737

Continuation-in-part of Ser. No. 292,702, Aug. 13, 1983, abandoned. This application May 23, 1983, Ser. No. 497,120

Int. Cl.³ G03B 41/04

U.S. Cl. 352—119 **8 Claims**

1. A device for correcting malfunctions of film feed in non-intermittent type motion picture projectors where said film is provided with regularly spaced transparent apertures, comprising: a hollow rotating cylinder turning on a rotatable shaft, the mantle of said cylinder being bisected transverse to the axis of rotation to form a first cylinder with a wall on one side and a mantle to engage the film and provide part of the support means for said film and a second cylinder, the mantle of which is also engaged with the film strip, providing the other part of said film support means, both being mounted to rotate on the same rotating shaft to turn independently of one another but adapted to be driven together by said film strip, an adjacent third hollow cylinder tightly connected on one side to said second cylinder, and on the other side connected to a sprocket drive means to turn with optical compensator means in synchronization with said film strip, an electrical brake means, comprising a metal disc tightly connected to said rotating shaft and a stationary electromagnet mounted exterior to the rotating cylinder and cooperating with said metal disc to release or restrain said shaft from turning said film support surface of said second cylinder; said second cylinder surface being provided with a first series of spaced circumferentially disposed apertures in a distance from each other which is the integral multi-



ple of the height of one picture section adapted to align and correspond with the apertures in the film strip for receiving light impulses from an external light source through said film apertures and the apertures of said second cylinder in case of malfunction in film feed each of said apertures being provided with conduit means for conducting the light it receives to one of a corresponding second set of apertures in said third cylinder, said second cylinder being further provided with an internal gear-ring means mounted therein to engage gear means on said rotatable shaft for turning said second cylindrical surface independently of said first cylindrical surface, stationary light detector means being disposed external to said third cylinder to receive light sequentially from each of said second set of apertures and to produce an electric impulse in case of malfunction of film feed, means being further provided for amplifying and transmitting said electrical current to said electrical brake means for restraining or releasing rotation of said rotatable shaft.

4,498,746

EXTENSION PLATFORM TO SUPPORT TRANSPARENCIES FOR AN OVERHEAD PROJECTOR

John S. Wright, 6115 N. Lake Dr. Ct., Milwaukee, Wis. 53217

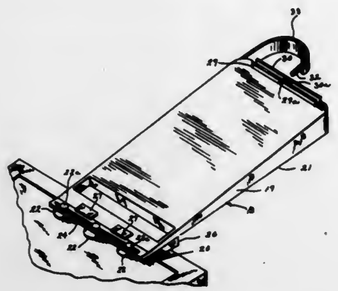
Continuation-in-part of Ser. No. 74,490, Sep. 11, 1979, abandoned. This application Oct. 7, 1983, Ser. No. 540,029

Int. Cl.³ G03B 21/00

U.S. Cl. 353—120 **9 Claims**

1. An extension platform for holding a pack of transparencies in an operative position on an overhead projector, said platform including an elongated body member for supporting a pack of transparencies, at least two suction cups on the underside of the body member at one end thereof for attaching it directly to the stage of an overhead projector, fulcrum means located beneath the body member adjacent the one end thereof, said fulcrum being positioned to contact the stage and to translate the downward gravitational force of the weight of the pack of transparencies into a substantially vertical upward pull on the suction cups, and means for securing the pack of transparencies to the body member, said means being an upward projection at the other end of the body member, which projection cooperates with the pack to prevent it from being separated from the extension platform, said pack is in a book

and the upward projection and the hinge of the book have aligned openings into which a plug can be inserted to lock the



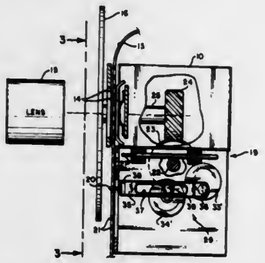
book to the body member and the fulcrum means is a generally wedge-shaped member attached to the underside of the body member.

4,498,747

MOTION PICTURE CAMERA

Bennie R. Brothers, 1731 N. Normandie, Hollywood, Calif. 90027

Filed Aug. 1, 1983, Ser. No. 519,484
Int. Cl.³ G03B *41/04, 9/10*
U.S. Cl. 352—191 **11 Claims**



1. A film pull down mechanism and shutter for a motion picture camera in which film is moved fron one frame to the next in a 360° operating cycle made up of a pull down time and a dwell time, said mechanism including:

(a) means for effecting pull down of said film in a period less than the dwell time of said film so that film exposure is increased over that occurring when the pull down time and dwell time are equal;

(b) a shutter having an opaque sector less than 180° and an open sector greater than 180° responsive to operation of said pull down mechanism to eclipse said film from exposure during said pull down time; and

(c) means for varying the length of film pulled down whereby film frames of different vertical dimensions can be properly exposed.

4,498,748

CAMERA FOR PHOTOGRAPHING SCALE MODELS

Peter W. J. Jones, Belmont; William T. Plummer, Concord, and Dennis W. Purcell, Medford, all of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Dec. 3, 1982, Ser. No. 446,598
Int. Cl.³ G03B *17/48*
U.S. Cl. 354—79 **12 Claims**

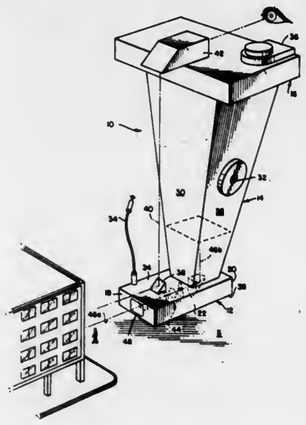
1. A camera for photographing scale models from the perspective of a scale person observing the model, said camera comprising:

a narrow, pedestal-like base capable of support on a flat surface and including at one end thereof an opening for admitting light into said base;

an elongated upstanding housing supported in said base and diverging therefrom with increasing distance from said base so that the dimensions of said housing at its end distant from said base are substantially larger in area than the end thereof connected to said base;

a film back supported on said housing distant end and including means for facilitating supporting film in an exposure plane of moderately large format;

an optical system supported within said base and including aligned along an axis parallel to said base in line with said opening in said base:



(a) a small aperture for providing said camera with a depth of field ranging from a few inches to infinity to simulate the depth of field a scale camera in the hand of a scale person would have; and

(b) an afocal component structured for increasing the angular field of view of said camera compared to what it would have with just said aperture and for minimizing distortion, said angular field of view approximating the visual field of a scale person observing a model; and

optical means for defining a folded optical path between said optical system and said exposure plane so that light emerging from said optical system is caused to travel toward said exposure plane to form a properly oriented image therein.

4,498,749

FOLDED OPTICAL LARGE FORMAT PHOTOMICROGRAPHIC CAMERA SYSTEM

Richard B. Hoover, 7706 Teal Dr., SW., Huntsville, Ala. 35802

Filed Apr. 1, 1983, Ser. No. 481,455
Int. Cl.³ G03B *17/48*
U.S. Cl. 354—79 **36 Claims**

1. A photomicrographic camera system comprising:

a microscope having an objective and an eyepiece;

a camera housing comprising:

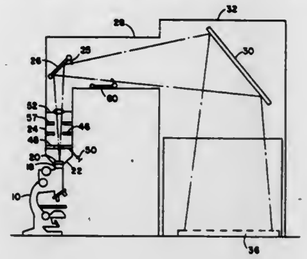
a main body, said main body comprising an enclosure having a flat base,

a horizontal arm section connected to the top side of said main body and extending laterally therefrom,

a vertical neck section attached to said horizontal arm section and suspended over said microscope and covering said microscope eyepiece;

a primary mirror located in the junction of said neck section and said arm section, directly above said microscope, said mirror being oriented at substantially a 45° angle with respect to the vertical, said mirror being arranged to be able to receive a vertically ascending and diverging light beam emanating from said eyepiece of said microscope and deflect it horizontally along the long axis of said arm;

a secondary mirror located in the top of said camera housing main body, said mirror being oriented at substantially a



45° angle with respect to the vertical, so as to receive said light beam from said primary mirror and deflect it downward;

a shutter arranged to interrupt said light beam;

a film holder resting on said base of said camera housing main body below said secondary mirror and positioned to receive an image carried by said light beam;

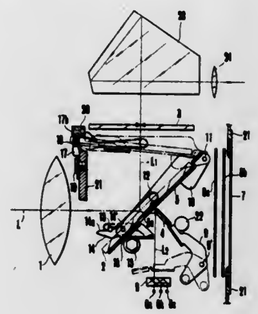
a film mounted in said film holder.

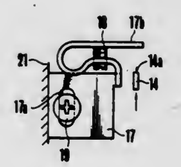
4,498,750

LIGHT SHIELDING DEVICE IN SINGLE LENS REFLEX CAMERA

Masayuki Suzuki; Masayoshi Yamamichi, both of Kanagawa, and Tsunemasa Ohara, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 25, 1982, Ser. No. 436,381
Claims priority, application Japan, Oct. 30, 1981, 56-162145
Int. Cl.³ G03B *19/12*
U.S. Cl. 354—154 **6 Claims**





1. A light shielding device for a single lens reflex camera including a reflex mirror provided with a light transmitting portion, comprising:

(a) means for covering said light transmitting portion when said reflex mirror is moved from a viewing position to an exposure position; and

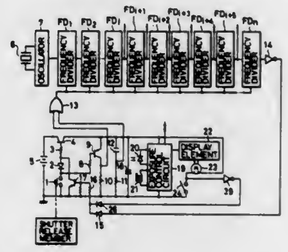
(b) means for controlling said covering means, said controlling means being arranged to contact with said covering means at a point during the movement of said reflex mirror from the viewing position to the exposure position and then to control the operation of said covering means, being able of adjusting the timing of contact with said covering means, and being resiliently supported to absorb shock at the time when said controlling means strikes said covering means, with the initial tensile force of that resiliency being made adjustable independently of the timing adjustment of the contact.

4,498,751

DISPLAY DEVICE FOR CAMERA

Tetsuro Goto, Kawasaki, Japan, assignor to Nippon Kogaku K.K., Tokyo, Japan

Continuation of Ser. No. 422,006, Sep. 23, 1982, abandoned. This application May 15, 1984, Ser. No. 610,187
Claims priority, application Japan, Nov. 20, 1981, 56-186694
Int. Cl.³ G03B *17/18;* H05B *37/00*
U.S. Cl. 354—289.1 **15 Claims**



1. Display device for camera, comprising:

(a) display means;

(b) a switch for display, said switch being of a self-return type and driving said display means at least while manual operation is being applied thereto;

(c) illuminating means capable of illuminating said display means;

(d) a switch for illumination, said switch being separate from said display switch and also of a self-return type, and driving said illuminating means at least while manual operation is being applied thereto; and

(e) holding means to hold the driving condition of said display means while manual operation is being applied to said illuminating switch.

4,498,752

ARRANGEMENT FOR SPACING AND CONVEYING OVERLAPPING PHOTOSENSITIVE ARTICLES

Günter Schirk, and Horst Köninger, both of Munich, Fed. Rep. of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

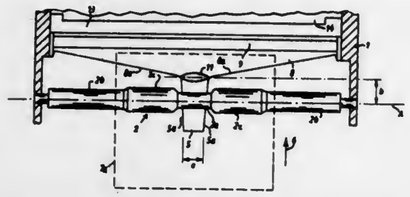
Filed Mar. 31, 1983, Ser. No. 481,047
Claims priority, application Fed. Rep. of Germany, Apr. 3, 1982, 3212478
Int. Cl.³ G03D *9/00*
U.S. Cl. 354—301 **28 Claims**

1. An arrangement for conveying overlapping photosensitive articles, particularly photographic sheets, comprising:

(a) conveying means for conveying a pair of overlapping photosensitive articles in a predetermined direction; and

(b) guide means arranged to guide the articles for movement

on opposite sides of a predetermined plane, said guide means including a sheet-like first portion which is located in said predetermined plane and has an upstream end provided with a corner, and said guide means further including a tongue-like second portion which extends



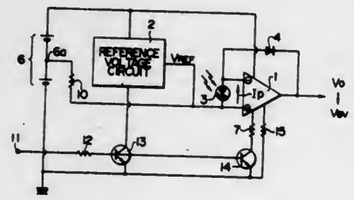
upstream from said upstream end, said first and second portions defining a junction region having opposite faces which flank said predetermined plane, and at least one of said faces being provided with a protuberance to thereby bias the respective article away from said predetermined plane.

4,498,753

PHOTOMETRIC APPARATUS FOR CAMERAS

Kazunori Mizokami, Hachioji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Sep. 16, 1983, Ser. No. 532,686
Claims priority, application Japan, Jan. 12, 1983, 58-2506[U]
Int. Cl.³ G03B *7/081*; G01J *1/44*
U.S. Cl. 354—425 **7 Claims**



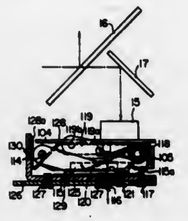
1. A photometric apparatus for a camera, comprising:
a power source for supplying power to a camera;
an impedance element connected to a voltage divider terminal of said power source;
a reference voltage circuit whose output terminal is connected to said voltage divider terminal through said impedance element, the circuit producing a reference voltage of a low impedance at said output terminal during its operable condition;
an operational amplifier which has an input terminal to which a voltage at the output terminal of said reference voltage circuit is constantly applied and which is constantly in an operable condition with a bias current of an extremely low power consumption, the amplifier producing a logarithmically converted voltage of a photocurrent flowing through a photoelectromotive element for photometry which is connected between both input terminals of said amplifier with a zero bias; and
a switching circuit for switching said reference voltage circuit from its inoperable condition and switches said operational amplifier from a condition that a bias current of an extremely low power consumption is supplied to a normal operable condition that a normal bias current is supplied, in synchronism with a photometry initiation signal.

4,498,754

SINGLE LENS REFLEX CAMERA

Yoshimi Ohno, Kawasaki; Ikuya Tsurukawa, and Tokio Ishino, both of Yokohama, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Jan. 12, 1983, Ser. No. 457,382
Claims priority, application Japan, Jan. 25, 1982, 57-9675; Jan. 25, 1982, 57-9676; Feb. 12, 1982, 57-20940; Feb. 15, 1982, 57-22232; Feb. 15, 1982, 57-22233; Feb. 26, 1982, 57-27085[U]
Int. Cl.³ G03B *7/099*
U.S. Cl. 354—479 **5 Claims**



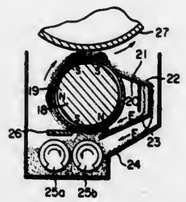
1. A single lens reflex camera having a mirror box and comprising:
a substrate;
a light receiving element mounted on said substrate;
a first and second stationary shaft;
a mechanism for adjusting tilting of said light receiving element, said adjusting mechanism being disposed within a bottom portion of said mirror box and which further comprises an element support plate having an end thereof pivotally connected with said substrate on which said light receiving element is mounted;
a first lever having a first end thereof pivotally mounted on said first stationary shaft and a second end thereof pivotally connected to said element support plate;
a second lever located on a side of said element support plate from said first lever and pivotally mounted on said second stationary shaft;
a relay lever pivotally mounted on the second lever and abutting against said substrate and said element support plate at different radii of rotation from a point of pivotal connection; and
means for adjusting the angular position of the first and second levers for tilting of the substrate in a lateral direction and in a fore-and-aft direction.

4,498,755

DEVELOPING DEVICE FOR USE IN ELECTROPHOTOGRAPHY

Masaharu Ohkubo; Nobuhiro Hayashi, and Tomohiro Aoki, all of Yokohama, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 7, 1981, Ser. No. 309,382
Claims priority, application Japan, Oct. 16, 1980, 55-144788
Int. Cl.³ G03G *15/09*
U.S. Cl. 355—3 DD **5 Claims**



1. A developing device for developing a latent image on an image holding member, comprising:
(a) magnetic field generating means having magnetic poles;

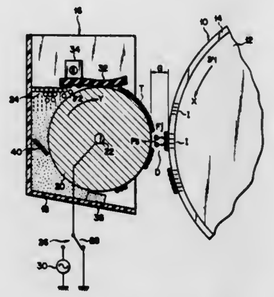
(b) non-magnetic sleeve means disposed around said magnetic field generating means for conveying developer on the surface thereof upto a developing position; and
(c) means for dividing developer which has left the surface of said sleeve means, after development, into two streams, said dividing means being positioned at the downstream side of a developing position in the moving direction of said developer on said sleeve means, and leading the first developer stream directly to said sleeve means, and leading the developer in the second stream to the side of agitating means for the developer,
said sleeve means carrying the developer of said first developer stream and the developer at the position of the agitating means, thereby developing the latent image on said image holding member.

4,498,756

DEVELOPING DEVICE

Masahiro Hosoya, Yokohama, and Tsuyoshi Ueno, Fujisawa, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Mar. 31, 1982, Ser. No. 363,933
Claims priority, application Japan, Apr. 7, 1981, 56-51048
Int. Cl.³ G03G *15/08*
U.S. Cl. 355—3 DD **15 Claims**



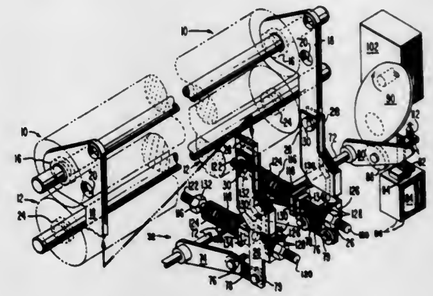
1. Apparatus for forming a visible image on the surface of an image bearer rotating in one direction at a given speed, said visible image corresponding to an electrostatic latent image on said surface, comprising:
non-magnetic toner;
a non-magnetized developing roll disposed at a position where any layer of said non-magnetic toner disposed on the outer circumferential surface of said developing roll does not contact the surface of said image bearer, said developing roll rotating in a direction opposite to said one direction, a developing area being defined between said outer circumferential surface of said developing roll and said surface of said image bearer;
toner hopper means for containing said non-magnetic toner and for causing said non-magnetic toner in said hopper to touch that part of said outer circumferential surface of said developing roll which is disposed between a first position and a second position located in the rotation direction of said developing roll from said first position between said first position and said developing area; and
regulating means, provided adjacent to said developing roll at said second position, for pressing that non-magnetic toner on said developing roll which passes through a gap between said regulating member and said developing roll, and charging said passed non-magnetic toner by slide-contacting said passed non-magnetic toner with said developing roll, so that said charged non-magnetic toner may be attracted to said developing roll by its charges and transferred to said developing area by rotation of said developing roll, and said non-magnetic toner which has passed through the gap forming a thin layer on that part of said developing roll which is located between said second position and said developing area.

4,498,757

DEMOUNTABLE, MODULAR TONER-FUSER ASSEMBLY FOR ELECTROGRAPHIC PRINT APPARATUS

Wayne E. Lance, Orlando, and Wilson P. Rayfield, Longwood, both of Fla., assignors to Burroughs Corporation, Detroit, Mich.

Filed Aug. 17, 1982, Ser. No. 409,023
Int. Cl.³ G03G *15/20*
U.S. Cl. 355—3 FU **10 Claims**



1. Apparatus for fusing toner in an elecrographic printing/-copying apparatus comprising
(a) a modular, demountable, toner fuser assembly comprising a pair of confronting roller members; means mounting one of said roller members for pivotal movement relative to the other of said roller members;
force regulator means interconnected to said mounting means including means for adjustably loading said rollers into engagement under a prescribed regulator loading force including means providing a visual indication of said loading force;
dead center linkage operably interconnecting said mounting means effective when moved in one direction to instantly separate said rollers;
(b) means for moving said dead center linkage from a non-load position wherein said rollers are out of engagement to a full load position wherein said load is effectively multiplied to the prescribed force with the rollers in tight engagement;
(c) signal activated means constraining said dead center linkage in said full load position; and
(d) means for automatically retracting said dead center linkage and said roller members to a nonload position effectively permitting said toner fuser assembly to be mechanically disengaged and removably separated from said means for moving said dead center linkage and said signal activated means.

4,498,758

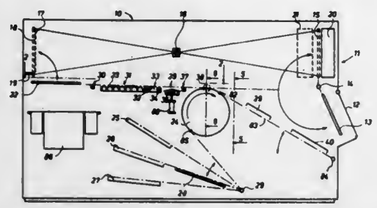
APPARATUS FOR TRANSFERRING XEROGRAPHIC IMAGES

Petrus R. Nelen, Essen, Belgium, assignor to Agfa-Gevaert N.V., Mortsel, Belgium

Filed May 25, 1983, Ser. No. 498,157
Claims priority, application United Kingdom, May 26, 1982, 8215317
Int. Cl.³ G03G *15/00*
U.S. Cl. 355—3 TR **17 Claims**

1. Apparatus for use in transferring a xerographic toner image from the surface of a first element to the surface of a second element, said apparatus comprising a rotatable member having a cylindrically curved periphery for supporting one

element in cylindrically curved condition, concentric with the axis of rotation of said rotatable member, a carriage for holding another element, in the form of a sheet, a track for guiding said carriage substantially tangentially to the path of motion of said curved periphery of said rotatable member at an image transfer station, at which station there is means for forming an electrical potential gradient for effecting such toner image transfer, and driving means for rotating said rotatable member and causing a displacement of said carriage past said image transfer



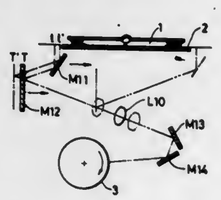
station, characterised in that said carriage displacement takes place in dependence of a traction force transmitted to said carriage by a flexible tie member one end of which is connected to said carriage and the other end of which is attached to said rotatable member in the vicinity of a cylindrically curved surface thereof so that said tie member becomes wound onto such surface by the rotation of said rotatable member, such surface having a radius of curvature such that the carriage is pulled past the transfer station at a speed substantially equal to that of such periphery of said rotatable member.

4,498,759

CONTINUOUS VARIABLE MAGNIFICATION-TYPE COPYING MACHINE CAPABLE OF ENLARGING AND CONTRACTING AN IMAGE

Ryota Ogawa, and Ikuo Negoro, both of Tokyo, Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 23, 1982, Ser. No. 422,500
Claims priority, application Japan, Sep. 24, 1981, 56-150916
Int. Cl.³ G03G *15/00*
U.S. Cl. 355—8 **18 Claims**



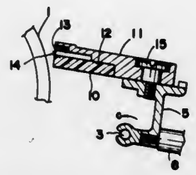
1. A continuous, variable magnification-type copying machine capable of enlarging and contracting an image, said copying machine having a stationary original placing plate, comprising; a full-speed mirror; means for moving said full-speed mirror to scan an original; a lens; means for moving said lens according to a desired magnification; a half-speed mirror system; means for moving said half-speed mirror system to a scanning starting position determined according to said desired magnification; said lens moving means and said half-speed mirror system moving means comprising numerical control motor means for controlling the scanning starting position of said half-speed mirror and the position of said lens in accordance with a desired magnification of said image; and means for continuously varying the full-speed and said half-speed mirror system scanning speeds according to said desired magnification.

4,498,760

BLADE CLEANING APPARATUS

Takashi Sugiyama, Okazaki, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Feb. 24, 1983, Ser. No. 469,571
Claims priority, application Japan, Mar. 2, 1982, 57-33244; Nov. 24, 1982, 57-206802
Int. Cl.³ G03G *21/00*
U.S. Cl. 355—15 **10 Claims**



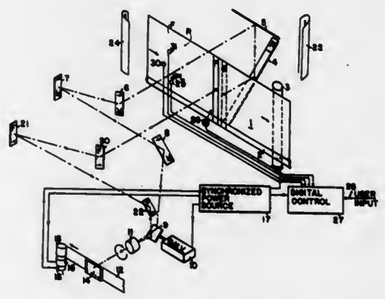
1. A blade cleaning apparatus comprising:
a cleaning blade having a free end portion for being held in pressing contact with a surface of a member movable past said cleaning blade and having residual toner deposited on the surface thereof which is to be removed therefrom;
holding means on which said blade is mounted for holding the end portion of the cleaning blade in pressing contact with the surface of the member to be cleaned for removing the residual toner from the surface;
a damper in spaced opposed relation to said end portion of said blade; and
means for causing said damper and said end portion of said blade to be in contact with each other at a part other than the part of the end portion of the blade contacting the surface of the member to be cleaned for pressing the end portion of the blade against the surface of the member to be cleaned with a force sufficient to damp vibrations of the end portion of said blade which would otherwise cause the blade to produce noise.

4,498,761

CINE-MODE CAMERA

Robert D. Therien, Newbury Park; Forrest L. Langford, Northridge; Armond Motamed, Encino, and Robert D. Williams, Agoura, all of Calif., assignors to Terminal Data Corporation, Woodland Hills, Calif.

PCT No. PCT/US83/00103, § 371 Date Mar. 17, 1983, § 102(e) Date Mar. 17, 1983, PCT Pub. No. WO84/02985, PCT Pub. Date Aug. 2, 1984
PCT Filed Jan. 21, 1983, Ser. No. 527,774
Int. Cl.³ G03B *27/32, 27/52*
U.S. Cl. 355—24 **14 Claims**



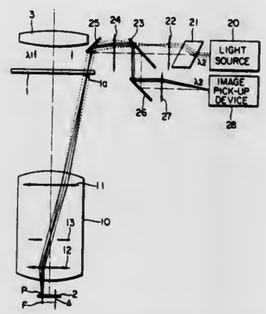
1. A film camera system for forming stationary images transversely disposed upon a film strip (12) of a continuously moving succession of spaced documents (1), comprising;
(a) means to move (2,3) said documents,
(b) plural mirrors (4–8; 20,22) positioned to bring an image of the front and rear of each document adjacently upon a single mirror (9),
(c) an objective lens (11) between said single mirror and said film strip,
(d) means to rotate (10) said single mirror (9) transversely of the length of said film strip,
(e) means to translate (15,16) said film strip, and
(f) electronic means (17,27) having microprocessor apparatus (35,36) to effect synchronous control of said means to translate (2,3) said documents, said means to rotate said single mirror (9), and intermittently said means to translate (15,16) said film strip (12),
to form a stationary image of both the front and the rear of each document adjacently and transversely of said film strip for the exposure thereof while it is stationary.

4,498,762

PROJECTION TYPE EXPOSURE APPARATUS

Makoto Uehara, Tokyo, and Satoru Anzai, Zama, both of Japan, assignors to Nippon Kogaku K.K., Tokyo, Japan

Filed Dec. 20, 1982, Ser. No. 451,394
Claims priority, application Japan, Dec. 25, 1981, 56-214795
Int. Cl.³ G03B *27/52*
U.S. Cl. 355—55 **10 Claims**



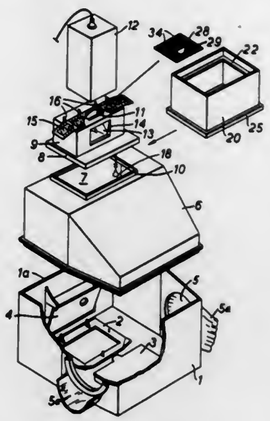
1. A projection type exposure apparatus having a projection objective lens, a projection negative having a predetermined shape pattern and an alignment mark, a photosensitive plate having an alignment mark, the shape pattern of said projection negative being projected upon said photosensitive plate by said projection objective lens, main illuminating optical means for illuminating said projection negative with a first wavelength light to which said photosensitive plate is sensitive, and alignment optical means for illuminating said projection negative with a second wavelength light to which said photosensitive plate is insensitive and for detecting the positional relation between said projection negative and said photosensitive plate by said second wavelength light through said projection objective lens, characterized in that one of the alignment mark on said projection negative and the alignment mark on said photosensitive plate has a zone pattern which forms a light-condensing point at a position spaced apart by a predetermined amount from the surface on which said one mark is formed, and said predetermined amount corresponds to the amount of chromatic aberration of said projection objective lens, at the side thereof adjacent to said zone pattern, for said second wavelength light relative to said first wavelength light.

4,498,763

FIXED FOCUS ENLARGER

George F. A. M. Turner, Ingatestone, England, assignor to Ciba-Geigy A.G., Basel, Switzerland

Filed Jun. 27, 1983, Ser. No. 508,291
Int. Cl.³ G03B *27/52*
U.S. Cl. 355—55 **8 Claims**



1. A fixed focus enlarger having a frame which encloses an image focussing area which comprises located on the frame a removable transparency holder having a transparency aperture and an enlarging lens located at a predetermined distance beneath the transparency aperture, the enlarger being characterised in that there is also provided an extension tube which is insertable between the top of the said frame and the said removable transparency holder and which when in position in the enlarger increases the distance between the image focussing area and the enlarging lens by a predetermined amount, there also being provided means either to increase the focal length of the enlarging lens by a predetermined amount, or means to decrease the distance between the enlarging lens and the transparency aperture by a predetermined amount, so that in either case when the extension tube is in position in the enlarger a predetermined area of part of a transparency can be focussed on the focussing area to form an image of that part of the transparency which is the same size as that formed of the whole transparency in the absence of the extension tube.

4,498,764

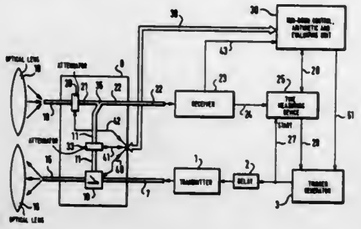
DYNAMIC CONTROL ARRANGEMENT FOR A DISTANCE MEASURING APPARATUS

Ludwig Bölkow, Oberfeldallee 9, D-8022 Grünwald; Walter Mehnert, Ottobrunn, and Holko Chaborski, Munich, all of Fed. Rep. of Germany, assignors to Ludwig Bölkow, Grünwald, Fed. Rep. of Germany

Filed Jun. 7, 1982, Ser. No. 386,026
Claims priority, application Fed. Rep. of Germany, Jun. 9, 1981, 3122806; May 24, 1982, 3219452
Int. Cl.³ G01C *3/08*
U.S. Cl. 356—5 **27 Claims**

26. Distance measuring apparatus for measuring the transit time of an individual unmodulated measuring light pulse to a target and therefrom, by reflection, back to the apparatus which for this purpose comprises a transmitter driven by a trigger signal from a trigger generator for emitting individual unmodulated measuring light pulses of short duration, an optical receiving means including an electro-optical receiver and a time measuring means for transit time measurement of an individual measurement light pulse, which measurement is initiated by a start signal related to the trigger signal from the trigger generator, said time measuring means also being operatively connected to said electro-optical receiver for receiving

therefrom a stop signal on receipt of an individual reflected unmodulated measuring light pulse by the receiver for stopping said transit time measurement of said individual measuring light pulse, a first light path from the transmitter to an optical transmitting means for transmitting individual light pulses toward said target, a second light path from said receiver to an optical receiving means for supplying to said receiver individual reflected measuring light pulses received by said optical receiving means from the target, a reference light path between the first and second light paths and communicating therewith, said reference light path establishing predetermined transit times for a reference light pulse, a light path



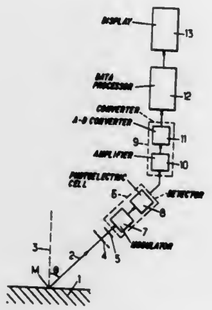
change-over switch communicating with the first and reference light paths for supply of a transmitted pulse to said optical transmitting means and to said reference light path, said trigger signal from said trigger generator being timed in relation to said light path change-over switch for sequentially directing light pulses into said first light path and said reference light path, said light path change-over switch comprising a rotating disc having a rotational axis parallel to the first light path and being provided with at least one opening for passing therethrough said transmitted light to said first path and further provided with at least one mirror for deflecting the transmitted light through a predetermined angle into the reference light path.

4,498,765

PROCESSES FOR THE REMOTE MEASUREMENT OF THE EMISSIVITY AND/OR THE TRUE TEMPERATURE OF A BODY WITH RELATIVELY SMOOTH SURFACE

Philippe Hervé, Paris, France, assignor to Universite Paris X - Paris, Nanterre, France

Filed Jun. 23, 1982, Ser. No. 391,380
Claims priority, application France, Jun. 25, 1981, 81 12539
Int. Cl.³ G01J *5/58, 5/32*
U.S. Cl. 356—43 **7 Claims**



1. A process for the remote measurement of the emissivity of a body with relatively smooth surface, by successive measurements of the luminance at the same point on the surface of the body, made respectively on thermal radiations polarized in different directions, characterized in that it comprises the succession of steps consisting:

in making a first measurement A of the luminance at said point on the surface of the body at an emission angle θ, the thermal radiation on which the measurement is made being polarized in a first direction with respect to the emission plane,

then in making a second measurement B of the luminance at the same point and at the same emission angle θ, the thermal radiation on which the measurement is made being polarized in a second direction with respect to the emission plane, this second direction being different from said first direction,

finally, in determining the emissivity ϵ of the body from the following functions:

$$\epsilon = a_1 + \left(1.05 - \frac{B}{A}\right) \times (9.3332 \times 10^{-8}\theta^5 - 2.6666 \times 10^{-5}\theta^4 + 2.9883 \times 10^{-3}\theta^3 - 0.162436\theta^2 + 4.18573\theta - 38.49)$$

$$\text{in which } \begin{cases} 0.82 < a_1 < 1.12 \\ 0 \leq \theta_1 \leq 15° \\ 75° < \theta_2 < 105° \end{cases}$$

θ_1 being the angle of the axis of the polarizer for measurement A with respect to a polarization perpendicular to the emission plane, and

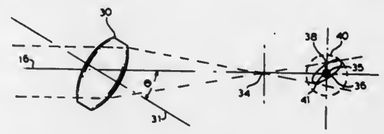
θ_2 being the axis of the polarizer for measurement B with respect to a polarization perpendicular to the emission plane.

4,498,766

LIGHT BEAM FOCAL SPOT ELONGATION IN FLOW CYTOMETRY DEVICES

Fred C. Unterleitner, Palo Alto, Calif., assignor to Becton, Dickinson and Company, Paramus, N.J.

Filed Mar. 25, 1982, Ser. No. 361,672
Int. Cl.³ G01N *21/64*
U.S. Cl. 356—73 **12 Claims**



1. Flow cytometry apparatus comprising: means for flowing particles in a stream of fluid; a source of light adapted to direct a beam of light at said flowing particles; beam focusing lens means positioned in the optical path of said light beam so that an axis of said lens means, through its optical center, forms an angle with the axis of said beam of light for astigmatically providing an elliptical beam spot at the fluid stream to thereby elongate the focal spot of said beam; and means for detecting one or more parameters of the particles in said stream related to light from said beam striking said particles.

4,498,767

APPARATUS FOR MEASURING LIGHT

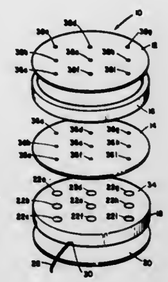
William E. McGovern, Hanover Park, and Kney Y. Tsao, Barrington, both of Ill., assignors to Teletype Corporation, Skokie, Ill.

Filed Sep. 7, 1982, Ser. No. 415,492
Int. Cl.³ G01J *1/06*
U.S. Cl. 356—121 **11 Claims**

1. An apparatus for measuring the collimation and perpendicularity of light, provided by an adjustable light source, to a plane comprising:

a pair of parallel, spaced, opaque first and second mask plates (12, 14) each having facing and outwardly disposed surfaces with the facing surface of said first mask plate (12) positioned opposite the facing surface of said second mask plate (14);

each of said first and second mask plates (12, 14) having a plurality of spaced, small holes (38*a–i*, 36*a–i*), a plurality of said holes (38*a–i*) in said first mask plate (12) being in alignment with corresponding holes (36*a–i*) in said second mask plate (14);



a plurality of photosensitive devices (26*a–i*) generating an electrical signal in response to light, each one of said photosensitive devices (26*a–i*) being positioned adjacent one of said holes in said second mask plate so that light passing through the holes (38*a–i*) of said first mask plate (12) which is substantially perpendicular to the plane of said first mask plate (12) will pass through the corresponding aligned holes (36*a–i*) of said second mask plate (14) striking the corresponding photosensitive devices (26*a–i*); and

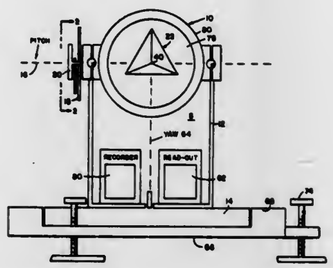
means (32) for providing an indication of the electrical signal from selected ones of said photosensitive devices (26*a–i*).

4,498,768

ANGLE OF ARRIVAL METER

Herbert B. Holl, Huntsville, Ala., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Feb. 16, 1982, Ser. No. 349,128
Int. Cl.³ G01B *11/26*
U.S. Cl. 356—141 **6 Claims**



1. Apparatus for the determination of the horizontal and vertical aspect angles of radiation received from a remote transmitter comprising:

a. a first platform;

b. a movable housing mounted on said first platform;

c. a triangular cube corner reflector mounted on said housing to receive radiation from said remote transmitter, said corner reflector being a triangular trihedral retroreflector having three mutually perpendicular mirror surfaces;

d. a plurality of detectors mounted in an array adjacent each of said three mutually perpendicular mirror surfaces and facing the inside of said reflector, said detectors disposed for receiving reflected radiation from said reflector and for providing an output in response to receiving said reflected radiation;

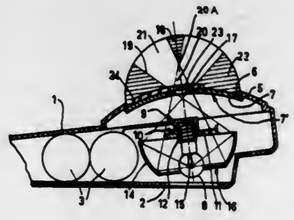
e. electronic processor means connected to said detector means for receiving said output from said detectors for determining the horizontal and vertical aspect angles of said received radiation by determining the number of detectors energized by said radiation reflected from said mirror surfaces.

4,498,769

DEVICE FOR EXAMINING AN OBJECT UNDER CONDITIONS OF LIGHTING ON A BLACK BACKGROUND

Jean-Pierre Cuvilly, Viels Maison, France, assignor to Essilor International, Cretell, France

Filed Apr. 13, 1982, Ser. No. 367,879
Claims priority, application France, Apr. 29, 1981, 81 08559
Int. Cl.³ G01N *21/01*; G02B *21/10*
U.S. Cl. 356—244 **2 Claims**



1. A device for examining under conditions of lighting on a black background an object such as the surface of a spectacle lens, and adapted to be used by an operator for examining different markings provided on a surface of a spectacle lens comprising, in a casing,

a support for supporting the object to be examined, said support being constituted by an opaque plate having a profile slightly curved outwardly, and said opaque plate being fixed beneath an oval opening of said casing, the width of said opening being so selected that it can receive large spectacle lenses, while its length is so selected that it renders it just possible to displace slidingly said lenses with a view to placing zones thereof provided with said markings in front of an aperture of of the support, and

black-background lighting means including an opaque screen adapted to arrest light rays issuing from a light source and capable of penetrating directly said aperture provided in said support, as well as reflecting and/or concentration means adapted to reflect laterally the light beams issuing from said light source, which are transmitted to said object through said aperture, said light source being disposed in a fixed position determined with reference to the periphery of said opaque screen, and

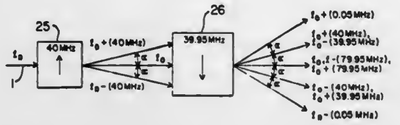
said casing comprises a mounting opening which opens into an opening of said reflecting and/or concentration means and allows said light source supported by said screen on the side opposite to the aperture of the support to be easily mounted in position and edges of the oval opening of the casing, which project above said opaque plate, constitute a stop rim for positioning the spectacle lens slidingly displaced by the operator with a view to observing the different markings engraved on said lens.

4,498,770

APPARATUS AND METHOD FOR DETERMINING THE CONFIGURATION OF A REFLECTIVE SURFACE

Richard R. Corwin, Xenia, and Stephen L. Moorman, Miamisburg, both of Ohio, assignors to Beta Industries, Inc., Dayton, Ohio

Continuation-in-part of Ser. No. 43,442, May 29, 1979, Pat. No. 4,316,670. This application Feb. 19, 1982, Ser. No. 350,339
The portion of the term of this patent subsequent to Feb. 23, 1999, has been disclaimed.
Int. Cl.[3] G01B 9/02
U.S. Cl. 356—349 24 Claims



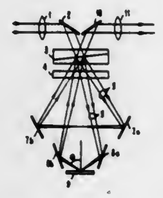
24. Apparatus for determining the position of a light reflecting surface with respect to time, comprising light transmitter means for producing two light beams forming a small angle therebetween, means receiving the light beams and for projecting a plurality of fringe patterns onto the surface with the patterns moving in predetermined non-coplanar directions and at predetermined frequencies, receiver means for observing at least one selected point on the surface from a direction forming a substantial angle with the bisector of the small angle and for producing an oscillatory signal corresponding to a fringe pattern component reflected by the surface point, means for determining the phase of the signal corresponding to the selected point with respect to a reference signal, and means responsive to the phase of the signal for the selected point on the surface for determining a location of the selected point as a function of time.

4,498,771

METHOD AND MEANS FOR INTERFEROMETRIC SURFACE TOPOGRAPHY

Günter Makosch, Sindelfingen-Maichingen, and Franz Schedewie, Boblingen, both of Fed. Rep. of Germany, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 3, 1982, Ser. No. 374,135
Claims priority, application European Pat. Off., Sep. 17, 1981, 81107336.0
Int. Cl.[3] G01B 9/02
U.S. Cl. 356—351 12 Claims



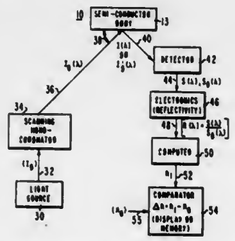
1. Apparatus for interferometrically determining the topography of a surface through point-by-point probing comprising:
laser means for providing a polarized beam of optical radiation:
a single birefringent crystal element for splitting said polarized beam into a measuring beam and a reference beam;
means for directing said measuring beam to impinge on said surface at an oblique grazing angle of incidence;
means for reflecting said reference beam and said measuring beam after impingement on said surface so that said measuring and reference beams are directed through said single birefringent crystal element;
means for collimating said reflected measuring and reference beams after passage through said element;
said collimated beams being characterized by phase differences representing variations in topography of said surface; and
means for detecting said phase differences so that variations in surface topography are determined.

4,498,772

METHOD TO DETERMINE THE CRYSTALLINE PROPERTIES OF AN INTERFACE OF TWO MATERIALS BY AN OPTICAL TECHNIQUE

Lubomir L. Jastrzebski, Plainsboro, N.J., and Jacek Lagowski, Woburn, Mass., assignors to RCA Corporation, New York, N.Y.

Filed Nov. 5, 1982, Ser. No. 439,562
Int. Cl.[3] G01B 9/02, 11/02
U.S. Cl. 356—357 4 Claims



1. A method for determining the crystalline quality of one material at an interface between said one material and a different material of different crystalline lattice, said one material (1) having an exposed surface opposed to said interface, (2) having negligible absorption in a given optical spectrum, and (3) having a known reflection coefficient at said exposed surface, comprising the steps of;
(a) exposing said exposed surface to a light beam scanned sequentially with wavelengths within said optical spectrum whereby light reflected from said exposed surface oscillates in intensity between extrema as a result of interference reflections between said exposed surface and said interface;
(b) measuring the intensity of reflections from said surface at each respective wavelength to obtain a series of reflection intensity signals corresponding to each said wavelength;
(c) determining from said reflection signals said reflectivity extrema;
(d) determining from said extrema the refractive index of said one material at said interface, said refractive index being a measure of the crystalline quality of said one material at or near said interface and comparing the bulk index of refraction of said one material to said determined index of refraction of said one material at or near said interface, the difference between said respective indexes being a measure of the quality of said one material at said interface.

4,498,773

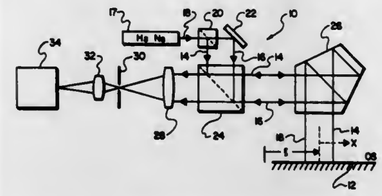
PENCIL BEAM INTERFEROMETER

Karlheinz von Bieren, Camarillo, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed May 4, 1983, Ser. No. 491,496
Int. Cl.[3] G01B 9/02
U.S. Cl. 356—360 7 Claims

1. A pencil beam interferometer for measuring optical surfaces, comprises:
a light beam;
a first beam splitter optically oriented to receive and to split

said incoming light beam into a first and a second pencil beam;
means for deflecting said second pencil beam, wherein said deflected second pencil beam is displaced from but parallel to said first pencil beam;
means for redirecting and transmitting said parallel pencil beams while concurrently maintaining them in parallel;
an alignment invariant optical device disposed to receive the output of said means for redirecting and transmitting said parallel pencil beams, and wherein said alignment invariant optical device directs said pencil beams to the optical surface to be measured;
an optical lens capable of focusing said two pencil beams in its back focal plane, and wherein said optical lens is disposed to receive the reflected pencil beams from said optical surface after they pass back through said alignment invariant optical device and said means for redirecting and transmitting said parallel pencil beams; and
a readout section optically positioned to detect the interference pattern generated by said focused beams.

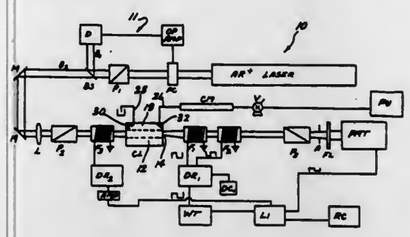


4,498,774

MICRO-POLARIMETER FOR HIGH PERFORMANCE LIQUID CHROMATOGRAPHY

Edward E. Yeung, Ames, Iowa; Larry E. Steenhoek, Wilmington, Del.; Steven D. Woodruff, Morgantown, W. Va., and Jeng-Chung Kuo, Skokie, Ill., assignors to Iowa State University Research Foundation, Inc., Ames, Iowa

Continuation-in-part of Ser. No. 286,026, Jul. 22, 1981, abandoned. This application Apr. 27, 1983, Ser. No. 489,031
Int. Cl.[3] G01N 21/21, 31/06
U.S. Cl. 356—368 12 Claims



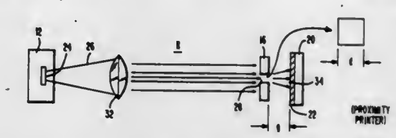
1. An apparatus for determining trace and micro levels of selected species of optically active molecules in a non-optically active eluent which is cycled through a calibrated system for high performance liquid chromatography, comprising:
a flow cell with flat ends through which the eluent is cycled along a central bore, the bore having an input opening in one end of the cell and an output opening in the other end, and wherein the volume of the flow path between the openings is sufficiently small to allow substantially only one species of the selected molecules to be in the volume at any time;
transparent, flat, cell windows which are mounted substantially strain free over the openings, and which allow light to pass without substantial scattering, reflection or refraction;
a laser adapted to irradiate said input opening along the longitudinal axis of the central bore and to output at least two milliwatts when energized, and wherein the operating wave length of the laser will not be substantially absorbed by the molecules or the eluent so that thermal lensing is prevented;
a polarizer positioned between the laser and flow cell so that a beam from the laser will be polarized before entering the input opening;
a lens focusing the laser beam positioned between the laser and the polarizer so that the laser beam will be polarized and collimated while passing through the flow cell without substantially being reflected off the flow cell walls;
means for aligning said laser and lens whereby said laser and said lens in combination will have a beam pointing stability of at least 0.5 milliradians;
an analyzer positioned after the exit opening so that the polarization of the laser beam after the beam has passed through the flow cell can be determined, said polarizer and analyzer being selected so that an extinction ratio of at least 10^{10} is achieved between the combination thereof;
means for isolating said polarizer, analyzer and flow cell from vibrations which would effect their relative angular position on the order of 10^{-3}°;
means for modulating the laser beam at a frequency in a substantially noise free region of the environment, and which is positioned between the polarizer and the analyzer in the path of the laser beam; and
means for filtering light, adapted to pass only light centered around the operating wave length of the laser beam and positioned in the path of the laser beam after the beam exits the analyzer so that the filtered, modulated beam can be converted to an electrical signal containing information on the direction and degree to which the polarized laser beam was rotated when it passed through the flow cell.

4,498,775

METHOD FOR DETECTING DISTANCE DEVIATIONS TO A PHOTORESIST SURFACE IN AN OPTICAL PRINTER

Lawrence K. White, Cranbury, N.J., assignor to RCA Corporation, New York, N.Y.

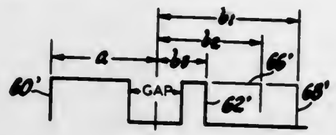
Filed Feb. 17, 1982, Ser. No. 349,515
Int. Cl.[3] G01B 11/02
U.S. Cl. 356—375 10 Claims



1. A method for monitoring a distance or spacial deviations in the distance between a mask and a photoresist surface on a substrate or wafer in an optical printer comprising the steps of:
forming a mask having a pattern of a plurality of differently-sized apertures, each aperture having square corners;
passing light having at least one given wavelength through said mask to produce a characteristic diffraction pattern formed by a different diffraction-induced image for each respective aperture on said photoresist surface spaced from said mask;
each image having a unique predetermined characteristic shape that is diffraction-induced as a function of both the optical distance between the mask and the photoresist surface and the size of the aperture inducing said image; and
microscopically examining the shape of the respective photoresist images of the pattern to determine the distance or spacial deviations in the distance between the mask and

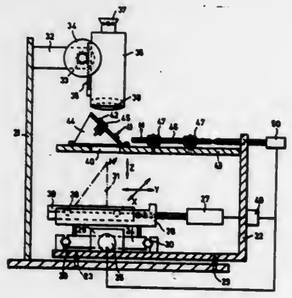
the surface of the photoresist according to associated apertures inducing the respective images;
the distance or spacial deviation thereof being determined from a predetermined correlation of each said unique image and the associated image-inducing aperture.

4,498,776
ELECTRO-OPTICAL METHOD AND APPARATUS FOR MEASURING THE FIT OF ADJACENT SURFACES
Paul R. Smith, Ortonville, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed Aug. 23, 1982, Ser. No. 410,401
Int. Cl.³ G01B 11/14
U.S. Cl. 356—375 11 Claims



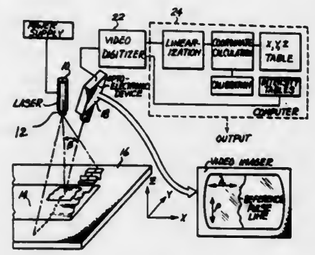
1. The method of measuring flushness and width of gap between two substantially parallel light reflective surfaces, the steps comprising:
forming an image of the gap and predetermined adjacent portions of the surfaces,
illuminating the gap and said adjacent portions of said surfaces by a pair of sharply defined beams having inboard beam edges substantially coincident on the gap and outboard beam edges within the said predetermined adjacent portions and at substantial angles to said surfaces so that the span of the image between its outboard edges varies with flushness, and
measuring the span of said image, said measurement identifying the location of a central dark spot corresponding to said gap and the outer edges of two illuminated regions corresponding to the illumination of adjacent portions of said surfaces by said beams.

4,498,777
APPARATUS FOR DETERMINING THE POSITION OF A POINT ON AN OBJECT OR THE SHAPE OF A PORTION THEREOF
Peter J. Scott, 9 Whitehall Park, London, England N19 3TS
Filed Feb. 9, 1982, Ser. No. 347,294
Claims priority, application United Kingdom, Feb. 16, 1981, 8104774
Int. Cl.³ B43L 13/16
U.S. Cl. 356—376 15 Claims



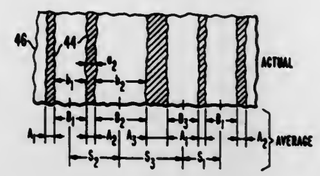
1. Apparatus, including a part-reflecting mirror device, for precisely determining the position of a point on a three-dimensional object despite parallax errors inherent in using said mirror device, the apparatus comprising:
a movable object table for supporting the three-dimensional object;
a measuring index;
an optical viewing device providing two non-parallel lines of sight directed toward the object table;
a part-reflecting mirror device arrange to enable an image of the measuring mark to be brought into coincidence with said point when the object is viewed through the optical viewing device;
means constraining the two lines of sight to be directionally constant in space, relative to the mirror device;
movement effecting means for effecting relative movement of the object table and of the measuring index so as to bring the image of the measuring index to said coincidence; and,
indicator means responsive to said movement effecting means for indicating the position of said point, whereby the constrained relationship between the two lines of sight and the mirror device renders all parallax errors constant, and therefore of no adverse consequence in making precise measurements.

4,498,778
HIGH SPEED SCANNING METHOD AND APPARATUS
Steven J. White, Seattle, Wash., assignor to Technical Arts Corporation, Seattle, Wash.
Continuation-in-part of Ser. No. 249,131, Mar. 30, 1981, abandoned. This application Sep. 29, 1982, Ser. No. 426,840
Int. Cl.³ G01B 11/24; G01C 25/00; H04N 7/02
U.S. Cl. 356—376 28 Claims



1. A method for determining spatial coordinates of a workpiece, comprising the steps of:
(a) illuminating said workpiece and a jig with a planar source of light, said jig inherently defining a geometric figure;
(b) storing the dimensions of the geometric figure inherent in said jig;
(c) electronically viewing the intersections of the planar source of light and said workpiece and jig from a location spaced apart from said workpiece, jig and source of light, said viewing location being at a known distance from said jig, and at a known angle relative to said planar source of light;
(d) scanning electronic images formed by said electronic viewing along a plurality of horizontal lines, each line including a reference pulse corresponding to the point at which the planar light intersects and illuminates said workpiece or jig;
(e) determining the centroid of the reference pulse on selected scan lines;
(f) calculating calibration parameters using the geometric figure inherent in said jig; and
(g) calculating the spatial coordinates of the workpiece using the centroid of the reference pulses, said calibration parameters, and the known distance from the viewing point to the jig.

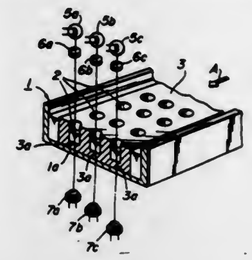
4,498,779
AUTOMATIC STRIPE WIDTH READER
Peter D. Southgate, Princeton; David W. Fairbanks, Monmouth Junction; Richard B. Davis, Trenton, and John P. Baltz, Willingboro, all of N.J., assignors to RCA Corporation, New York, N.Y.
Filed Sep. 4, 1979, Ser. No. 72,429
Claims priority, application United Kingdom, Jan. 10, 1979, 7900923
Int. Cl.³ G01B 11/02
U.S. Cl. 356—384 5 Claims



1. A system for determining the spacings between opaque stripes forming a light absorbing matrix on a color picture tube faceplate wherein the matrix has been formed by photoexposing the areas between the stripes in three separate exposures, said system comprising,
means for illuminating said faceplate,
photodetecting means positioned to receive light from said means for illuminating,
means for scanning said photodetecting means transversely across at least six stripes,
means for sweeping said photodetecting means in a direction substantially parallel to said stripes,
means for converting the output of said photodetecting means into a quantized signal,
means for dividing said quantized signal into separate signals representing stripe widths and opening widths between stripes,
means for accummulating stripe width and opening width signals associated with a particular exposure, and
means for converting the accummulated stripe width and opening width signals into three signals representative of corrections to be made in the three photoexposing steps.

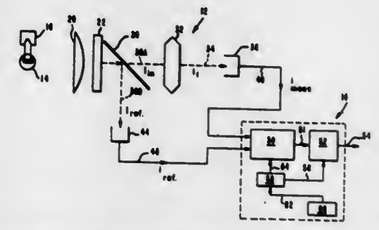
4,498,780
PHOTOMETERING APPARATUS FOR USE IN CHEMICAL ANALYZER
Taiichi Banno; Kazuo Hijikata, both of Hachioji, and Hiroshi Takekawa, Sagamihara, all of Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan
Filed Feb. 2, 1982, Ser. No. 345,052
Claims priority, application Japan, Feb. 10, 1981, 56-17391
Int. Cl.³ G01N 21/27, 21/01
U.S. Cl. 356—414 11 Claims

1. A photometering apparatus for use in a chemical analyzer comprising
a liquid type thermostat containing a temperature controlled liquid and having a bottom wall made of transparent materials;
a plurality of reaction vessels arranged in said thermostat and having bottom walls made of transparent material, the bottom walls of the reaction vessels contacting the bottom wall of the thermostat; and
a photometering unit including at least one light source for emitting a light beam and at least one light receiving element for receiving the light beam emitted from the light source and transmitted through test liquids contained in the reaction vessels, the light source and light receiving element being so arranged that they have an optical axis extending perpendicularly to a surface of said test liquids



through the bottom walls of said thermostat and reaction vessels.

4,498,781
DATA COMPRESSION SYSTEM FOR A PHOTOMETER
Michael Kaplit, Newark, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.
Filed Aug. 27, 1981, Ser. No. 296,851
Int. Cl.³ G01N 21/22
U.S. Cl. 356—435 2 Claims



1. In an apparatus for photometrically analyzing a sample having
a replaceable source of radiation receivable in a socket,
a first detector for generating a first analog electrical signal representative of the intensity of the radiation transmitted from the source through the sample, and
a second detector for generating a second analog electrical signal representative of the intensity of radiation from the source incident on the sample,
wherein the improvement comprises a data compression system itself comprising:
a logarithmic ratioing network for generating an analog electrical signal functionally related to the ratio of the first and second analog signals;
a dual slope analog-to-digital converter having a predetermined signal integrate time T_{int} for converting the analog ratio signal into a digital representation thereof;
the logarithmic ratioing network having a first and second chopper stabilized operational amplifier, the chopping frequency f_{chop} of each operational amplifier being proportional to an integer number N times the inverse of the signal integrate time t_{int} of the dual slope analog-to-digital converter such that the average value of the output from the converter due to chopping is zero; and
a network responsive to the position of the source within the socket for locating the same so as to produce the maximum light intensity therefrom, said network comprising:
a network for applying a predetermined supplemental current to the ratioing network to perturbate the signal output from the ratioing network, the magnitude of the perturbation being related to the position of the source within the socket; and

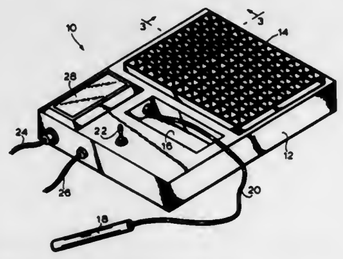
a monitoring arrangement for monitoring the output of the ratioing network as the position of the source within the socket is modified, the monitoring network being responsive to the position of the source within the socket to provide an indication of the location of the source which provides the greatest radiation intensity.

4,498,782

ASSEMBLY FOR DETERMINING LIGHT TRANSMISSIVENESS OF A FLUID

David R. Proctor, and Terry L. Foster, both of Abilene, Tex., assignors to Science Research Center, Inc., Abilene, Tex.

Filed May 29, 1981, Ser. No. 268,167
Int. Cl.[3] G01N *21/27*
U.S. Cl. 356—436 6 Claims



1. An assembly for determining the light transmissiveness of a fluid contained in a light-transparent well of a microtiter plate, wherein there are a plurality of wells in the microtiter plate, which comprises:

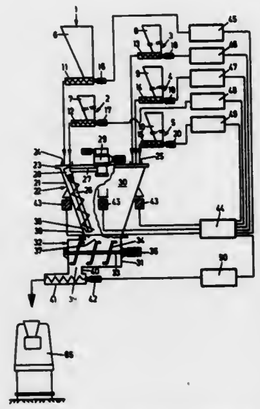
1. a light reception component, which comprises:
   (a) a light-shield adapted by size and configuration to receive the multiple well portion of the microtiter plate and the light-shield receives each well;
   (b) a plurality of apertures in the light-shield, each aperture having an entry and an exit into one of each wells;
   (c) a plurality of light-conducting means, each having a first and second end, the first end being associated with an exit of one of said apertures whereby light passing out of each exit is separately received and conducted to the second end of each of said means;
   (d) a photo-detector cell mounted to receive light from the second ends of each light-conducting means and to generate an electrical signal proportional to the light intensity; and
   (e) means in electrical connection with the photo-detector cell for receiving and converting the signal to visually observable indicia; and
2. a light transmission component, which comprises;
   (a) a light source;
   (b) a housing for the light source; and
   (c) an aperture in the housing, for passage of light out of the housing; said light transmission component being adapted to pass light separately through each well of a microtiter plate shielded by said light-shield, and separately into each entry of each aperture 1. (b).

4,498,783

PROCESS FOR MIXING AND PROPORTIONING SEVERAL MIXING COMPONENTS

Joachim Rudolph, Weil der Stadt, Fed. Rep. of Germany, assignor to Werner & Pfleiderer, Stuttgart, Fed. Rep. of Germany

Filed Sep. 23, 1982, Ser. No. 421,968
Claims priority, application Fed. Rep. of Germany, Nov. 25, 1981, 3146667
Int. Cl.[3] B01F *15/02*
U.S. Cl. 366—132 3 Claims



1. A process for mixing and proportioning a plurality of mixing components comprising

providing a plurality of separate mixing components, proportionally and successively feeding each component to a mixer,

continuously mixing the components in the mixer, weighing the material in the mixer as each component is fed to the mixer,

stopping the feed of the component being fed to the mixer after a predetermined weight in the mixer is obtained to provide a feed sequence pause,

gravimetrically removing a predetermined amount of mixed material during the feed sequence pause, and

volumetrically removing the mixed material during a feeding cycle.

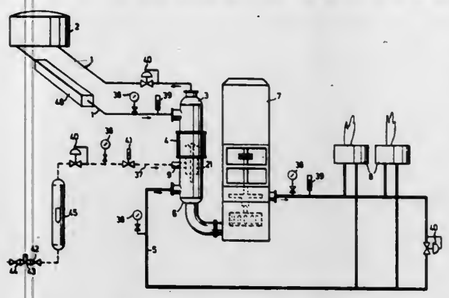
4,498,784

METHOD AND A DEVICE FOR MIXING AND HOMOGENIZATION OF A MAIN SUBSTANCE WITH AT LEAST ONE ADDITIVE SUBSTANCE, LIQUIDS IN PARTICULAR

Göran Bernhardsson, HedÅsgatan 4, S-412 53 Göteborg, and Tomas Jargell, Bävernsgränd 2, S-753 23 Uppsala, both of Sweden

PCT No. PCT/SE80/00271, § 371 Date Jun. 28, 1982, § 102(e) Date Jun. 28, 1982, PCT Pub. No. WO82/01478, PCT Pub. Date May 13, 1982
PCT Filed Oct. 31, 1980, Ser. No. 394,922
Claims priority, application Sweden, Oct. 26, 1979, 7908880
Int. Cl.[3] B01F *5/10*
U.S. Cl. 366—134 7 Claims

1. A method of continuous mixing and homogenization of a main substance with at least one additive substance, liquids in particular, characterized by the fact that the main substance is circulated in a primary conduit, that the additive substance is added to the main substance between said primary conduit and a secondary conduit, formed as a closed circuit within which the main substance and the additive substance are mixed together and circulated, whereby the pressure provided in the primary conduit is higher than the pressure in the secondary conduit, so that the main substance and the additive substance



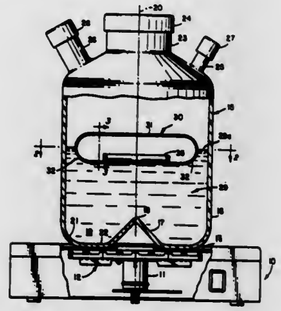
are supplied to said secondary conduit in dependence of a discharge from said secondary conduit.

4,498,785

FLOATING MAGNETIC STIRRER FOR CULTURE MEDIUM

Norman A. de Bruyne, Princeton, N.J., assignor to Techne Corporation, Princeton, N.J.

Continuation-in-part of Ser. No. 386,764, Jun. 9, 1982, abandoned. This application Sep. 30, 1982, Ser. No. 432,128
Int. Cl.[3] B01F *13/08*
U.S. Cl. 366—274 32 Claims



1. A stirrer apparatus for stirring a liquid medium in a flask comprising:

(a) a flask for holding liquid medium,

(b) stirrer means for stirring substantially all of the liquid medium in the flask comprising an element of magnetically attractable material, and buoyant means for supporting said element in the liquid medium in the flask, said element and said buoyant means having a density less than the density of the liquid medium, and

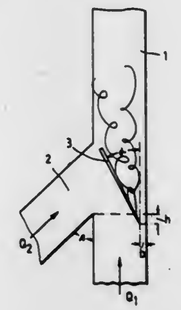
(c) means for causing said stirrer means to rotate while supported in the liquid medium generally about an axis substantially perpendicular to the surface of the liquid medium, said axis extending through said stirrer means, whereby the stirrer means is rotated by said rotating magnetic field and effects the stirring of substantially all of the liquid medium in the flask.

4,498,786

APPARATUS FOR MIXING AT LEAST TWO INDIVIDUAL STREAMS HAVING DIFFERENT THERMODYNAMIC FUNCTIONS OF STATE

Hans Ruscheweyh, Aachen, Fed. Rep. of Germany, assignor to Balcke-Dürr Aktiengesellschaft, Ratingen, Fed. Rep. of Germany

Filed Nov. 6, 1981, Ser. No. 318,722
Claims priority, application Fed. Rep. of Germany, Nov. 15, 1980, 3043239
Int. Cl.[3] B01F *5/00*
U.S. Cl. 366—336 5 Claims



1. In a device for mixing at least two individual gas flow streams, the individual streams each defining a flow cross-section and a main direction of flow and discharging into each other via at least one discharge mouth, and at least one embodiment arranged in the flow cross section of a corresponding of the individual streams, the improvement wherein

the element is a substantially, delta-shaped flat plate having planar surfaces and a sharp and free upstream V-shaped edge defining an upstream vertex and two portions of said edge on respective sides of said vertex, each of said two portions defining a sharp edge in cross-section,

said surfaces of said plate being oriented inclined at a relatively small acute angle relative to said main direction of flow of the corresponding individual stream,

said two portions of said edge extending transversely inclined to said main direction to flow of the corresponding individual stream, wherein

said two portions of said edge producing therefrom within the flow cross section of said corresponding individual stream two continuous vortex momentums respectively initiating two conically widening oppositely rotating vortexes from each of said two portions of the edge, respectively, the vortexes travelling from the respective portions downstream and inclined relative to said main direction of flow while widening conically including transversely to the main direction of flow of said corresponding individual stream, extending into the flow cross section of at least one other of the individual streams, and effecting, substantially exclusively via said vortexes, mixing of said corresponding individual stream with said other of the individual streams.

4,498,787

REMINDER

Lin Jung-Sun, No. 150-2, Hsi Ta Wang, Hsi Wang Tsun, Yung Kang Hsiang, Tai, Taiwan

Filed Jul. 31, 1984, Ser. No. 636,174
Int. Cl.[3] G04B *47/00, 21/08*
U.S. Cl. 368—10 7 Claims

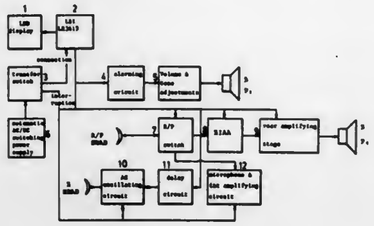
1. A reminder comprising:

a tape recoder capable of recording therein a tape recording of which something to be done at some time is reserved;

a clock electrically connected to said tape recoder, capable of time setting and adapted to be electrically connected to a power supply;

an alarming unit having an alarming circuit and a buzzing speaker and electrically connected to said clock so that said speaker can buzz when said time at which it is set in said clock arrives; and

two interlinking switches one of which is electrically connected to said alarming circuit which is energized and de-energized by said power supply respectively when said



one switch is switched on and off respectively, and the other of which is kept switched off and on respectively when said one switch is switched on and off respectively, and electrically connected to said tape recorder which can be energized and de-energized respectively, when said the other switch is kept switched on and off respectively

whereby said speaker will buzz when said time set in said clock arrives and when said one switch is switched off and said the other switch is switched on and thus said tape recorder will play to reproduce said tape recording to remind one to do said something.

4,498,788

ESCAPEMENT FOR A TIMER

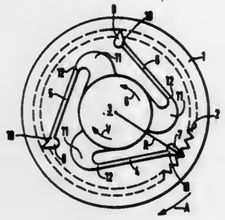
Horst Grimmer, Nurnberg-Oberasbach, and Alfred-Günther Lanz, Nuremberg, both of Fed. Rep. of Germany, assignors to Diehl GmbH & Co., Nuremberg, Fed. Rep. of Germany

Filed May 31, 1984, Ser. No. 615,894

Claims priority, application Fed. Rep. of Germany, Jun. 3, 1983, 3320242

Int. Cl.³ G04F 7/00

U.S. Cl. 368—106 **10 Claims**



1. In an escapement for a timer including a driving member for actuation of a time switching component which is manually settable relative to the driving member in one direction of rotation against a larger moment of resistance than in the other direction of rotation, said escapement including a ring having an internal toothing coupled with the driving member, and a ratchet wheel arranged coaxially with the ring and being connected with said time switching component secured against rotation relative thereto, said ratchet wheel having at least two arms located in the plane of said ring, each said arm having a finger having tooth sides spring-elastically radially engaging into the internal toothing, and having an operative pairing therewith, wherein said finger is forced out of the inner toothing during displacement in one or the other direction of rotation; the tooth sides of said operative pairing being angularly symmetrical relative to the radius of the ring; the improvement comprising in that one of said pairing components includes tooth sides of which one extends at a more acute angle relative to the radius than the tooth sides of the other pairing component, each said arm having a substantially constant cross-section along the entire length thereof and which spring-elastically bends radially and inwardly responsive to a manual displacement of the ratchet wheel through the time switching component in one or the other direction of rotation.

4,498,789

METHOD OF AND APPARATUS FOR MEASURING SURFACE TEMPERATURE OF MOVING OBJECTS, PARTICULARLY MEASURING THE TEMPERATURE OF FIBROUS PRODUCTS PARTICULARLY OF WIRES DURING PRODUCTION

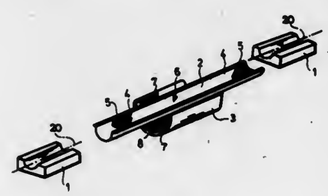
László Kiss; Árpád Faludi, both of Budapest; Gyula Gróf, Keszthöle; László Bolyó, Budapest; Csaba Szilgyén, Budapest; István Mihádák, Budapest, and Imre Varga, Budapest, all of Hungary, assignors to Híradástechnikai Gépgyár, Hungary

Filed Oct. 25, 1982, Ser. No. 436,401

Claims priority, application Hungary, Oct. 23, 1981, 3111/81

Int. Cl.³ G01K 7/00

U.S. Cl. 374—164 **10 Claims**



1. A method of measuring surface temperature of moving objects, especially of fibrous products or wires during production, comprising the steps of: arranging a moving object to move past one side of a sensing shell having a first and second surface of controlled and measured temperature, and past a cold point of the sensing shell; arranging in compensating element having a controlled temperature over said cold point on another side of said sensing shell; measuring the temperature of said first and second surfaces, of said cold point and of said another side of said sensing shell and, when their temperature values are different, varying the temperature of said first and second surfaces and of said another side of said sensing shell by said compensating element in order to equalize the temperatures with the temperature of said cold point.

4,498,790

BUSHING SECURING APPARATUS

James E. Fisher, Palm Beach Gardens, Fla., assignor to United Technologies Corporation, Hartford, Conn.

Filed Nov. 21, 1983, Ser. No. 553,935

Int. Cl.³ F03D 11/04; F16C 33/02

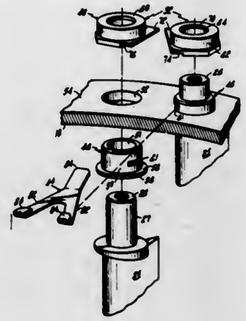
U.S. Cl. 384—428 **3 Claims**

1. A bushing assembly comprising:

wall means having a pair of adjacent circular openings therethrough, each of said openings having an axis, said wall means having first and second oppositely facing surfaces;

first and second bushing means, each including a cylindrical bearing disposed, respectively, within one of said cylindrical openings and axially concentric therewith, said cylindrical bearings each extending beyond said first surface of said wall means, each of said bushing means including means for preventing movement of said bearings in a first axial direction from said second toward said first surface through said circular opening, said bearings each having

an outer cylindrical surface with a slot therein and an inner cylindrical bearing surface, each slot being spaced immediately above said first surface of said wall means, said slot in one of said bearings being in facing relationship to said slot in said other of said bearings, each bushing means including a separate retainer cap having an external wall surface and an internal cylindrical surface surrounding and in contact with said outer cylindrical surface of its respective bearing, each cap having a bottom surface in contact with said first wall surface, each cap also including an elongated notch in its bottom surface, said notch cutting through said internal cylindrical surface of said cap defining a cutout aligned with said slot in said bearing, said notch also including a rear surface, said rear surface being in facing relationship to said rear surface of said notch in said cap of said other one of said bearings;



a sheet metal tablock disposed between said first and second bushing means, said tablock including a pair of oppositely facing edges, one of said edges being disposed in said notch and engaging said slot of said first bushing means, said other of said edges being disposed in said notch of said second bushing means and engaging said slot in said second bushing means, each of said retainer caps including flange means extending radially outwardly from said external wall surface, said flange means overlying said tablock, said tablock including a plurality of tabs folded over said flange means of each of said caps wherein said tablock is trapped in position between said first and second bushing means and prevents movement of said first and second bushing means in a second axial direction opposite said first axial direction and also prevents rotation of both bushing means.

4,498,791

PRINTER HAVING IMPROVED STORED ENERGY PRINTHEAD

Don M. Gilbert, Houston, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Mar. 28, 1983, Ser. No. 479,548

Int. Cl.³ B41J 3/12

U.S. Cl. 400—124 **15 Claims**

1. A multicopy printer for printing desired impressions on a print medium, comprising:

(a) a movable printhead carriage assembly for traversing the print medium; and

(b) a wire matrix printhead mounted on the printhead carriage assembly, comprising:

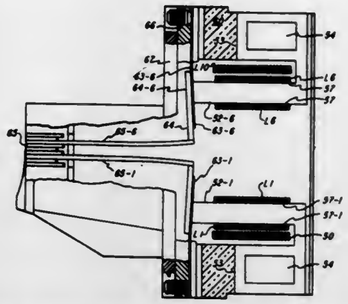
a plurality of print members, each having an impression end and an activation end,

front bearing means through which the impression ends pass, disposed in a confronting relation to the print medium,

magnetizable resilient means connected to each of the activation ends,

stored energy magnetic means positioned to provide an attracting force to flex the magnetizable resilient means, thereby setting the print members for activation,

a plurality of print member magnetic means associated with each of the print members, respectively, to selectively provide an attracting force in the opposite direction from that of the stored energy magnetic means thereby reducing its attracting force by a predetermined amount to rapidly release the selected flexed magnetizable resilient means, driving the associated print member impression end into contact with the print medium, and



opposing magnetic means, positioned to selectively oppose the attracting force of the stored energy magnetic means and connected to provide a strength of magnetic field that is directly proportional to the number of print member magnetic means selected, thereby reducing the resultant concentrated attracting force of the stored energy magnetic means in the unselected magnetizable resilient means.

4,498,792

PRINTING AND/OR CORRECTING DEVICE FOR PRINTING MACHINES

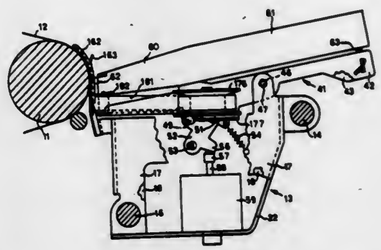
Remo Falconieri, S.Giorgio C., Italy, assignor to Ing. C. Olivetti & C., S.p.A., Ivrea, Italy

Continuation of Ser. No. 58,201, Jul. 17, 1979, abandoned. This application Apr. 9, 1982, Ser. No. 367,003

Claims priority, application Italy, Jul. 18, 1978, 68696 A/78

Int. Cl.³ B41J 35/22

U.S. Cl. 400—214 **32 Claims**



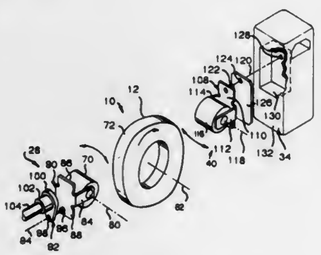
1. A printing and correcting device for printing machines comprising a platen including a printing point; a support structure for supporting a printing field and a correcting field and locating the correcting field beneath the printing field; means supporting said support structure to move the printing field and the correcting field from a rest position allowing the printing point to be seen to a printing position, locating the printing field in front of the printing point for the printing of characters and to a correcting position locating the correcting field in front of the printing point for the correcting of printed characters; spring means to hold the support structure in the rest

position; first and second electromagnetic actuators each actuatable from an inoperative state through a substantially identical working stroke for moving the support structure to the printing and the correcting position, respectively; and means selectively connecting said first electromagnetic actuator with said support structure for converting the working stroke of the first electromagnetic actuator to the movement of the support structure to the printing position in the inoperative state of the second electromagnetic actuator and for releasing said support structure from said first electromagnetic actuator in the inoperative state of the first electromagnetic actuator and in the operative state of the second electromagnetic actuator, wherein said connecting means comprise an element of said support structure and a cam cooperative with said element for moving said support structure from the rest position to the printing position against the action of said spring means, wherein said element releases said cam in the correcting position of the support structure, and wherein said cam comprises a slot cooperative with said element for positively positioning the support structure in said printing position without ribbon oscillation with respect to the printing point during the operative state of said first electromagnetic actuator.

4,498,793
PRINTER SHUTTLE DRIVE HAVING CASTERED CAM FOLLOWERS

Gordon B. Barrus, San Juan Capistrano; Leo J. Emenaker, El Segundo; Glen R. Radke, Westminster; Norman E. Farb, Villa Park, and Gerold Holzer, Costa Mesa, all of Calif., assignors to Printronix, Inc., Irvine, Calif.

Filed May 12, 1983, Ser. No. 493,818
Int. Cl.³ B41J *25/28*
U.S. Cl. 400—320 **10 Claims**



1. An arrangement for driving a printer shuttle comprising a mounting member coupled to the shuttle, a yoke assembly pivotally coupled to the mounting member to permit rotation of the yoke assembly relative to the mounting member about a first axis, a cam follower mounted on the yoke assembly for rotation about a second axis, and a rotatable cam disposed in engagement with the cam follower and mounted for rotation about a third axis lying in a common plane with the second axis, the first axis lying on one side of and spaced-apart from the common plane.

4,498,794
PRINTER FEEDER

Helmut K. Waibel, Fremont, Calif., assignor to Durango Systems, Inc., San Jose, Calif.

Filed May 21, 1984, Ser. No. 612,366
Int. Cl.³ B41J *13/10*
U.S. Cl. 400—629 **12 Claims**

1. A self-feeding feeder for use with a printer having a driven feed roller disposed about a drive shaft for frictionally engaging and advancing individual cut sheets of print media, comprising

a friction feed gear secured to said feed roller and coaxially therewith about a common drive shaft, the feed gear having a lesser diameter than the diameter of said feed roller;

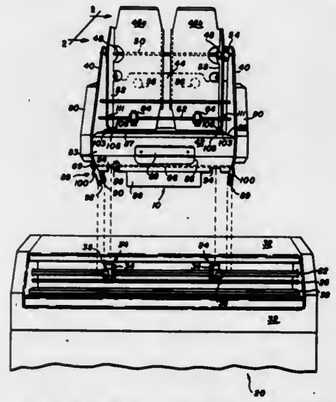
a mounting means for removably mounting about a printer;

an input media support means attached to the mounting means for supporting a plurality of sheets of media to be printed, the input media support means being vertically oriented, substantially L-shaped and of a width slightly greater than the width of the print media;

pivotable media guide means mounted on the mounting means and including a generally vertically oriented plate having at each outside lateral end a raised portion extending perpendicularly outward from the plane of the guide means, the media guide means resting within the input media support means and adapted for guiding a plurality of sheets of the media;

means for biasing the media guide means away from the input media support;

locking means attached to the mounting means and contacting the media guide means, the locking means being positional and having a first position wherein the media guide means is urged against the input media support and a second position wherein the media guide means is urged by the biasing means away from the input media support;



a first drive shaft and plurality of drive rollers rotatably attached to the mounting means and positioned over the input media support and media guide means wherein when the locking means is in the second position the guide means and the plurality of sheets of media contained therein will be urged against the drive rollers, the first drive shaft including driving means for transferring rotary motion from the friction feed gear to the drive rollers whereby the plurality of individual sheets of media may be driven thereby; and

media stripper means, pivotably attached to each outside edge of the media guide means and extending laterally below the media guide means and further including a vertically oriented flag disposed above the lower edge of the guide means near the lateral edges thereof.

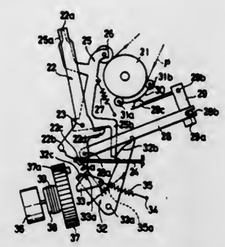
4,498,795
SEMIAUTOMATIC PAPER SETTING SYSTEM

Yoshikuni Tatara, Yokohama, Japan, assignor to Ricoh Company, Ltd., Japan

Filed Oct. 12, 1982, Ser. No. 433,920
Claims priority, application Japan, Oct. 12, 1981, 56-162515
Int. Cl.³ B41J *13/02*
U.S. Cl. 400—637.1 **16 Claims**

1. A method for semiautomatically setting a sheet of paper in a device such as a typewriter and printer prior to an operation of printing information on said sheet, said device including a platen roller around which a sheet of paper is to be set, a carriage which is provided reciprocatingly movably along its travelling path defined in parallel with said platen roller, said carriage being provided with a print head for forming printed information on said sheet and means including a paper guide for guiding the advancement of said sheet around said platen roller during the paper setting operation, and a control unit for controlling the semiautomatic paper setting operation, said method comprising the steps of:

moving said carriage to a first predetermined position which is approximately at the center of said sheet of paper across its widthwise direction under the control of said control unit when a paper setting initiation signal is supplied thereto;



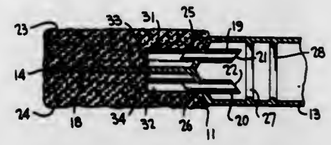
advancing said sheet around said platen roller over a predetermined distance under the control of said control unit when a line-feed control signal is supplied thereto after having the leading edge of said sheet inserted into said printer with said carriage located at said first predetermined position whereby said sheet is properly located between said platen roller and said paper guide; and

moving said carriage to a second predetermined position along said travelling path thereby completing the paper setting operation.

4,498,796
SURGICAL SCRUB

Marvin Gordon, East Windsor, and Joseph Lichtenstein, Colonia, both of N.J., assignors to Whitman Medical Corporation, Clark, N.J.

Continuation-in-part of Ser. No. 435,335, Oct. 19, 1982, , which is a continuation-in-part of Ser. No. 298,246, Aug. 31, 1981, Pat. No. 4,415,288, and a continuation-in-part of Ser. No. 241,486, Mar. 9, 1981, abandoned. This application Mar. 17, 1983, Ser. No. 476,348
Int. Cl.³ A47L *13/17*; A61M *35/00*
U.S. Cl. 401—132 **28 Claims**



1. A surgical scrub device comprising:

an absorbent compressible applicator member;

an elongated hollow handle member having first and second longitudinally-spaced ends, said first end being open, said second end being at least partially disposed in said absorbent applicator member, said handle member being adapted to receive an elongated fluid-containing cartridge in longitudinally slidably relation within said handle member, said cartridge having a rupturable forward end by which it is insertable into said open first end of said handle member; and

first and second transversely spaced hollow spikes disposed inside said handle member proximate said second end, each spike having a pointed end projecting longitudinally toward said first end, each hollow spike providing flow communication from within said handle member to within said applicator member through said second end of said handle member;

wherein said spikes are positioned to provide two transversely-spaced punctures in said forward end of said cartridge in response to a predetermined slidable insertion of said cartridge in said handle member;

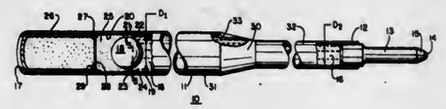
wherein said spikes include respective projecting portions which project in spaced relation externally of said hollow handle member beyond said second end; and

wherein said applicator member has first and second flow passages in the form of respective first and second bores defined therein oriented to receive respective projecting portions of said spikes, each flow passage extending beyond its received projecting spike portions.

4,498,797
PRESSURIZED CARTRIDGE FOR A WRITING INSTRUMENT

Henry Peper, Marblehead; Thomas E. Eaton, Topsfield, and Edward J. Ferguson, Avon, all of Mass., assignors to The Gillette Company, Boston, Mass.

Continuation-in-part of Ser. No. 39,705, May 17, 1979, abandoned. This application Jan. 22, 1980, Ser. No. 114,157
Int. Cl.³ B43K *7/00, 7/10*; C09D *11/18*
U.S. Cl. 401—141 **1 Claim**



1. A pressurized cartridge for a writing instrument comprising:

a paste-like ink having a yield value; a tubular reservoir having an inner wall for containing said ink;

ink dispensing means connected to one end of said reservoir for dispensing said ink;

follower means loosely disposed within said reservoir to float partially submerged in said ink and be separated from said reservoir wall to form a channel for containing said ink and causing plug flow while said ink is being dispensed, said follower means having a radius of 0.008 to 0.016 inch less than the radius of said inner wall, said follower means being shaped to reduce viscous drag between said follower means and said ink contained in said channel, the wettability of said follower means by said ink being greater than the wettability of said inner wall; and

compressed gas contained in a chamber at an opposite end of said reservoir for forcing said ink to move toward said ink dispensing means and said follower means to move with said ink wherein said compressed gas chamber includes a cup-shaped plug having a chamfered end sealed in position at said opposite reservoir end by an adhesive bead disposed between said chamfer and said reservoir wall.

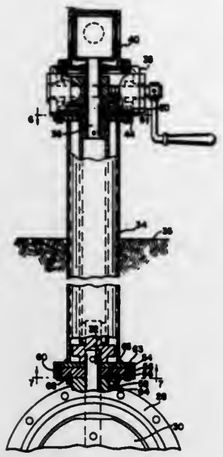
4,498,798
LOCATING PIN

Donald C. Day, Sugar Grove, Ill., assignor to AMSTED Industries Incorporated, Chicago, Ill.

Filed Sep. 26, 1983, Ser. No. 535,570
Int. Cl.³ F16B *13/00*
U.S. Cl. 403—24 **3 Claims**

1. A valve operating assembly comprising: a valve body, a valve platform affixed to the valve body, an adapter plate joined to the valve platform, a support column lower plate joined to said adapter plate, a support column having a lower end affixed to the support column lower plate and an operator

attached to the upper end of the support column, wherein said adapter plate is bolted to said valve platform and the said operator is bolted to an upper plate affixed to the upper end of said support column and proper alignment of the bolted parts is obtained by at least one locating pin having a threaded



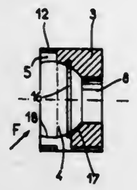
portion irremovably secured in a threaded receiving opening on one such part and a non-threaded cylindrical portion received in a cavity in the adjacent part bolted thereto, said threaded portion of said locating pin including means to lock said pin against further rotation in the threaded receiving opening whereby it is secured against removal.

4,498,799

BALL AND SOCKET JOINT AND METHOD OF FORMING IT

Claude Wartelle, and Charles Favey, both of Gouvieux, France, assignors to Centre Technique Des Industries Mecaniques, Senlis, France

Filed Aug. 17, 1981, Ser. No. 293,180
Claims priority, application France, Aug. 20, 1980, 80 18177
Int. Cl.³ F16C *11/06*
U.S. Cl. 403—140 **10 Claims**



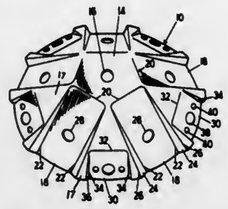
8. A ball and socket joint assembly comprising a ball head on the end of a rod, an externally cylindrical seating member, a part-spherical socket in said seating member having a surface larger than a hemisphere for receiving said ball head, a mouth for said socket in said seating member coaxial with the external cylindrical surface of said member, a set of circumferentially spaced radial slits in said seating member extending radially from said socket to the external surface of said seating member and axially from said mouth at least as far as a plane passing through the center of said socket and extending perpendicular to the axis of said external cylindrical surface of said seating member, a further component, a cylindrical recess in said component adapted to receive and fit said seating member, and means for squeezing and holding said seating member around said mouth comprising an external hoop-like clamping ring around said seating member adjacent said mouth.

4,498,800

JUNCTION PLATE

Ulrich Sielaff, Madison, Wis., assignor to United Steel Products Company, Montgomery, Minn.

Filed Dec. 13, 1982, Ser. No. 449,173
Int. Cl.³ F16D *1/00*
U.S. Cl. 403—172 **7 Claims**



1. A junction plate (10) formed by stamping from a metal disk and for securing a plurality of main struts (50) together to form a polygonal geodesic structure, the junction plate (10) comprising:
- a flat central portion (14);
- a skirt portion (17) of the plate (10) formed into a generally frusto-conical shape extending from the periphery of the plate to the central portion (14);
- a plurality of main strut channels (18) formed into the skirt portion (17) of the plate extending radially outward from the central portion (14), each of the main strut channels (18) bent relative to the central portion (14) by a first angle relative to said central portion, said first angle selected so that said main strut channels (18) are generally parallel to the main struts (50),
- an auxiliary strut channel (30) formed into the skirt portion (17) between each of the main strut channels (18), the auxiliary strut channels (30) being bent at a second angle relative to said central portion (14), said second angle selected so as to be generally parallel to the adjacent face of the polygonal geodesic structure defined by the corresponding main struts so that an auxiliary strut (52) inserted to support that face can be easily secured in the auxiliary strut channel (30) of the plate with a minimum of shaping to the auxiliary strut (52).

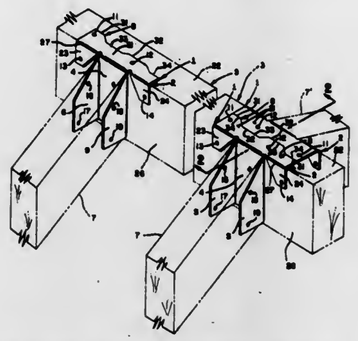
4,498,801

RIDGE RAFTER CONNECTOR

Tyrell T. Gilb, Berkeley, Calif., assignor to Simpson Strong-Tie Company, Inc., San Leandro, Calif.

Continuation of Ser. No. 223,817, Jan. 9, 1981, abandoned. This application Sep. 23, 1982, Ser. No. 422,156
Int. Cl.³ B25G *3/00*; E04B *1/41*
U.S. Cl. 403—232.1 **3 Claims**

1. In combination, a ridge board, a pair of rafters located on opposite sides of said ridge board, said rafters being secured to said ridge board by a pair of matching rafter connector adapted to secure said rafters to said ridge board, and to locate and maintain said rafters in axial alignment to each other; said connectors each comprising:
- a. a flange member having a top portion adapted for connection to a top face of said ridge board and lower portions adapted for connection to a side face of said ridge board;
- b. a back portion connected to said flange member and adapted for registration with said side face of said ridge board;
- c. a side member connected to said back portion and adapted for connection to said rafter;
- d. said flange member is formed with fastener openings for receiving fasteners therethrough for attachment of said connector to said rafter, and said top portion and said lower portion of said flange member are formed with fastener openings for receiving fasteners therethrough for attachment of said connector to said top face and said side face respectively of said ridge board;
- e. said flange member is formed with a straight line bend line connecting said top and lower portions which intersect the edge only of said back portion and said side members so as to permit said flange to be bent at an infinite number of angles from a planar condition;



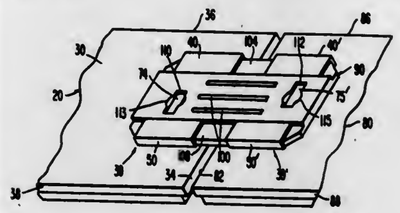
- f. said top portion of said flange member is formed with a distal edge having an irregular edge pattern forming a plurality of protruding portions and a plurality of indent portions with a fastener opening in at least one of said protruding portions; and
- g. said protruding and indent portions in said irregular edge of said flange are located so as to interfit with said protruding and indent portions in said irregular edge of said flange of said matching rafter connector when installed on opposite sides of said ridge board.

4,498,802

COUPLING ARRANGEMENT

Mark J. Del Tufo, Basking Ridge; Ralph J. Lake, Jr., Somerville, and Stephen R. Solomon, Cranford, all of N.J., assignors to Burroughs Corporation, Detroit, Mich.

Filed Sep. 29, 1983, Ser. No. 537,264
Int. Cl.³ F16B *1/00*
U.S. Cl. 403—300 **7 Claims**



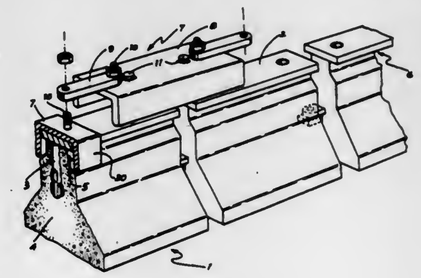
1. Coupling apparatus comprising
first and second members to be coupled together,
each member carrying first means for receiving a coupling member and second means for providing locking engagement with a coupling member, and
a coupling member having two ends, each end being adapted to engage and couple to one of said first means whereby said first and second members can be rigidly coupled together,
said first and second members and said coupling member having longitudinal axes which are all aligned when said first and second members and said coupling member are coupled together,
said coupling member comprising a relatively rigid metal plate having two openings positioned transverse to said axis to receive portions of each of said two members to provide locking engagement therewith, one opening lying primarily on one side of the longitudinal axis of said plate and the other opening lying primarily on the other side of the longitudinal axis of said plate,
one opening in said coupling member being adapted to receive a second means of said first member, and the other opening in said coupling member being adapted to receive a second means of said second member.

4,498,803

MOVEABLE LANE BARRIER LOCKING SYSTEM

John P. Quittner, Castle Cove, Australia, assignor to Quicksteel Engineering Pty. Ltd., Botany, Australia

Continuation-in-part of Ser. No. 485,622, Apr. 18, 1983, , which is a continuation-in-part of Ser. No. 344,755, Feb. 1, 1983, abandoned. This application Jun. 29, 1983, Ser. No. 509,184
Int. Cl.³ E01F *13/00*
U.S. Cl. 404—6 **11 Claims**



1. A transferable roadway lane divider comprising
a plurality of upstanding divider sections, each having a base and an upper end, disposed in closely spaced and tandem relationship relative to each other to form a barrier,
connecting means for pivotally connecting adjacent divider sections together for permitting them to pivot laterally relative to each other,
transfer means formed in unobstructed relationship longitudinally throughout the entire length of the upper end of each divider section and aligned with the transfer means of a next adjacent divider section for receiving a common transfer apparatus to permit said divider sections to be lifted and suspended above a roadway for transfer thereon,
lock means longitudinally bridging and engaging at least one pair of said divider sections for preventing them for pivoting laterally relative to each other, and
guide means for reciprocally mounting said lock means for vertical movements on at least said pair of divider sections to selectively release said lock means from engagement with said pair of divider sections to permit said pair of divider sections to pivot laterally relative to each other.

4,498,804

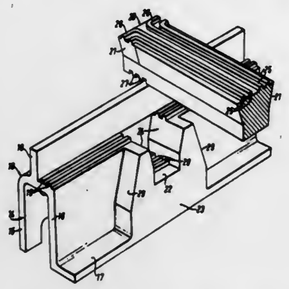
MANHOLE/ACCESS COVER AND FRAME ASSEMBLIES

Derek Ferns, Monmouth, Wales, assignor to Selflevel Covers (Jersey) Limited, Jersey, Channel Islands

Filed Jan. 19, 1983, Ser. No. 459,095
Claims priority, application United Kingdom, Jan. 20, 1982, 8201582
Int. Cl.³ E02D *29/14*
U.S. Cl. 404—25 **12 Claims**

1. A manhole/access cover and frame assembly wherein the

cover is supported on the frame by at least one pair of downwardly facing, oppositely inclined support surfaces on the cover which are engageable respectively with corresponding upwardly facing, oppositely inclined support faces on the frame, and wherein the cover has a substantially continuous downwardly facing peripheral sealing surface which, when the cover is supported on the frame, overlies a substantially continuous upwardly facing peripheral sealing surface on the frame, the engagement between the aforesaid support surfaces so locating the cover with respect to the frame that said peripheral sealing surfaces are held out of supporting contact with on another along the whole of their length and width, the peripheral sealing surfaces on the cover and frame having longitudinally extending ridges which interfinger to define a space of tortuous cross section between the sealing surfaces, said support faces being inclined in the direction of the longitudinal extent of said ridges, and grease disposed between said peripheral sealing surfaces, said space being open to the ambient in both directions laterally of said ridges whereby said grease can extrude from said space at both ends of said tortuous cross section.

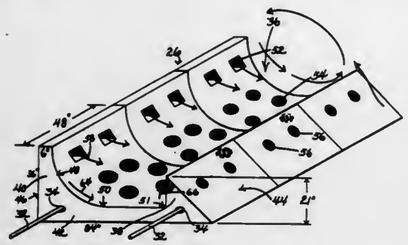


4,498,805

BREAKWATER MODULE AND MEANS FOR PROTECTING A SHORELINE THEREWITH

Frederick E. Weir, c/o Epernay Properties, Inc., R.R. #3, Spring Green, Wis. 53588

Filed Nov. 29, 1983, Ser. No. 556,004
Int. Cl.³ E02B *3/06*
U.S. Cl. 405—31 **12 Claims**



1. A breakwater module adapted to be placed with other like modules in water in a line offshore from a water front for preventing erosion due to wave action and for rebuilding water front property where erosion has already occurred, said module comprising:

an elongated body having a bottom base wall adapted to be supported on the ground bed below the water and having rear and front end walls facing onshore and offshore, respectively, said body having a single, large, upwardly-concave, wave-energy-absorbing trough of partly cylindrical contour the rear and front margins of which comprise cylindrical and flat horizontal surfaces extending along the rear and front end walls respectively;

said front end wall having an upwardly and rearwardly sloping front end surface to break incoming waves into spray and deflect it upwardly over the trough;

said rear end wall being substantially higher than said front wall to intercept waves and spray overtopping the front wall with said cylindrical surface and to re-direct them to cause water to move with a rolling and swirling action downwardly and forwardly along said cylindrical surface and forwardly along said flat horizontal surfact to erupt vertically along said front end wall and impinge in a counter-current manner against waves and spray overtopping the front wall to thereby counteract energy therein;

whereby under light wave conditions, fore-and-aft oscillation of water in the partly cylindrical contour trough absorbs wave energy; and

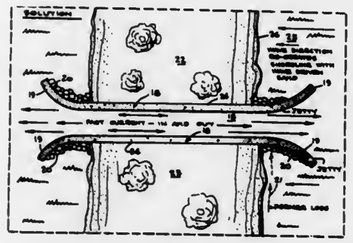
whereby further under moderate and severe wave conditions, the sloping front end surface of the front wall breaks the incoming waves into spray which overtops the front wall, some of which is intercepted by the rear wall and is re-directed downwardly, forwardly and upwardly in the trough providing said rolling and swirling action of water in the trough to impinge against and counteract energy in incoming waves and spray overtopping the front wall.

4,498,806

BEACH EROSION PREVENTION JETTY CONFIGURATION

Henry H. Szonnell, 2401 Georgetown Rd., Bradenton, Fla. 33507

Filed Jul. 12, 1983, Ser. No. 513,061
Int. Cl.³ E02B *3/08*
U.S. Cl. 405—34 **9 Claims**



1. In a beach erosion prevention jetty configuration for use with spaced apart shorelines having an inlet therebetween, jetties contiguous to said shoreline and said jetties being arranged on opposite sides of said inlet, said inlet permitting water current of different velocity and tides to flow between bays, oceans, and the like, each of said jetties having straight sections and curved, angling end portions.

4,498,807

DRAINAGE CHANNEL WITH MEANS FOR MAINTAINING PROPER SLOPE DURING INSTALLATION

Larry E. Kirkpatrick, and Barry C. Williams, both of Statesville, N.C., assignors to Polydrain, Inc., Troutman, N.C.

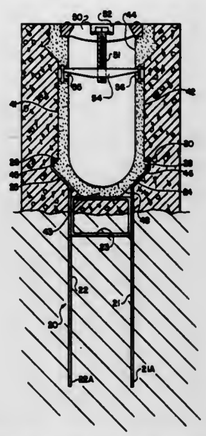
Filed Sep. 8, 1983, Ser. No. 530,271
Int. Cl.³ E02B *11/00*; E01C *11/22*; E01F *5/00*; E04G *17/00*
U.S. Cl. 405—43 **11 Claims**

1. In a line, such as a drainage channel, for being embedded in a trench in concrete at a pre-determined slope, said line being defined by an elongate body having outer walls and inner, spaced-apart walls defining a fluid-carrying space therebetween, the improvement which comprises anchor means for maintaining proper slope during installation of the line in concrete by counteracting the buoyancy of the line, said anchor means including:

(a) at least one relatively long spike for being inserted into earth defining the trench;

(b) clasp means carried by said spike; and,

(c) connecting means carried by the outer walls of said channel for connecting to and cooperating with said clasp means to retain the channel at its proper slope while the concrete is poured around the channel until the concrete hardens by preventing the channel from floating upwardly in the unhardened concrete; said connecting means comprising an outwardly projecting rib extending along the length of the channel and said clasp includes a detent for being placed over the upper surface of the rib in channel-retaining relation thereto.

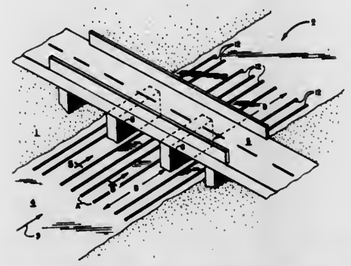


4,498,808

PROCESS FOR PREVENTION OF ICE BUILDUP AND REDUCTION OF ICE FORCES ON STRUCTURES DURING BREAKUP

Victor Manikian, and Giles N. McDonald, both of Anchorage, Ak., assignors to Atlantic Richfield Company, Los Angeles, Calif.

Filed Mar. 28, 1983, Ser. No. 479,416
Int. Cl.³ E02B *3/00, 15/02*
U.S. Cl. 405—61 **4 Claims**



1. In a method for aiding the prevention of ice buildup at a structure in a body of flowing water when the ice cover on said body of water starts to melt and breakup, the improvement comprising:

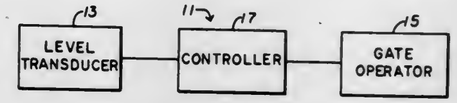
forming at said structure a plurality of side-by-side, essentially parallel slots in said ice cover before substantial melting of same, said slots being oriented so that the longitudinal axis of same is essentially parallel to the longitudinal axis of the flow of said body of water said slots extending a substantial distance both upstream and downstream of said structure and a substantial distance into the thickness of said ice cover, said slots being spaced from one another a distance such that if upon thawing the ice cover breaks apart at said slots the width of the resulting ice floes will readily pass by said structure.

4,498,809

FLOW COMPENSATED COMPUTING CONTROLLER

Edward J. Farmer, 839 Shoreside Dr., Sacramento, Calif. 95825

Filed Jun. 20, 1983, Ser. No. 505,941
Int. Cl.³ E02B *7/20, 7/40*
U.S. Cl. 405—92 **8 Claims**



1. A flow compensated controller for use in controlling the position of a control gate in an open channel in order to maintain the water level either upstream or downstream from said control gate at a desired level, said flow compensated controller comprising:

a. a first input port for receiving an electrical signal related to the actual water level,

b. an input amplifier for amplifying said signal received at said first input port,

c. a second input port for receiving an electrical signal corresponding to the desired level,

d. a set point amplifier for amplying said signal received at said second input port,

e. an error amplifier coupled to the output of said input amplifier and said set point amplifier for generating an error signal corresponding to the difference between said output of said input amplifier and said set point amplifier,

f. a proportional amplifier coupled to the output of said error amplifier means for generating an output signal proportional to the output signal of the error amplifier,

g. an automatic reset unit coupled to the output of the error amplifier for integrating the output signal of the error amplifier and providing an output indicative thereto,

h. a summing amplifier for summing the output signals of the error amplifier and the automatic reset unit,

i. a motor modulation driver coupled to the output of the summing amplifier for generating a modulated control signal for driving the gate operator,

j. a first relay coupled to the output of the motor modulation driver for moving the gate in one direction,

k. a second relay coupled to the output of the motor modulation driver for moving the gate in another direction,

l. a third relay coupled between said first and second relays and said gate operator,

m. a time proportioning comparator coupled to the input of said automatic reset unit automatic reset unit and coupled to said third relay, and

n. an oscillator for driving said time proportioning comparator.

4,498,810

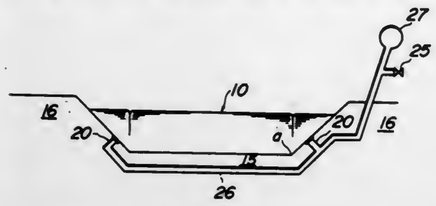
COLLAPSIBLE RUBBER DAM

Tateo Muramatsu, Yokohama; Mamoru Kurihara, Tokyo, and Yasushi Enami, Yokohama, all of Japan, assignors to Bridgestone Tire Company Limited, Tokyo, Japan

Filed Feb. 27, 1981, Ser. No. 238,892
Claims priority, application Japan, Mar. 6, 1980, 55-27,273; Jun. 27, 1980, 55-87,480; Jul. 24, 1980, 55-100,477; Aug. 25, 1980, 55-115,817
Int. Cl.³ E02B *7/20*
U.S. Cl. 405—115 **5 Claims**

1. A collapsible rubber dam secured to a riverbed portion

and slope portions of both riverbanks only at an upstream side of a river and inflated and deflated by supply and discharge of a gas, comprising; a pipe for supply and discharge of said gas one end of said pipe communicating with the inside of said rubber dam from only at least one slope portion of said slope portions of both riverbanks exclusive of said riverbed portion securing said rubber dam, said end of the pipe for supply and



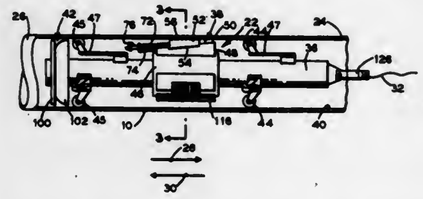
discharge of gas located in said one slope portion in a triangular region defined by a top end of said rubber dam located in said slope portion, a line connecting said top end of said rubber dam to substantially a middle position of a deflated width of said rubber dam along said riverbed portion, and a securing position of said rubber dam at a toe of the slope portion above an acceptable height of any remaining drainage in said rubber dam.

4,498,811

UNDERWATER PIPELINE SEALING APPARATUS

Derek T. Fern, Gretna, and Gary E. Harrison, Marrero, both of La., assignors to McDermott Incorporated, New Orleans, La.

Filed Feb. 17, 1982, Ser. No. 349,559
Int. Cl.³ F16L *1/04, 55/10*
U.S. Cl. 405—168 **18 Claims**



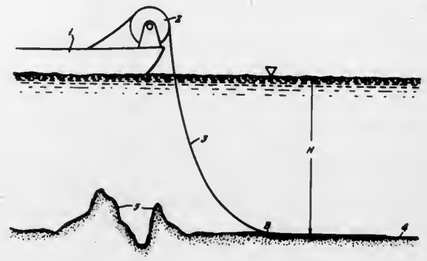
1. Apparatus for preventing flow of water from a first underwater pipeline portion forward of the apparatus to a second underwater pipeline portion rearward of the apparatus, the apparatus comprising: a carriage; at least one wedge-shaped member having a first surface for conforming to and engaging a pipeline internal wall and a second surface which slidably engages a complementary surface on said carriage, the spacing between said first and second surfaces increases from a lesser spacing at a forward portion of said member to a greater spacing at a rearward portion of said member; means for urging said member into gripping engagement with a pipeline wall upon application of force to said carriage in the rearwardly direction in a pipeline, said gripping means including spring means for urging said member first surface into sliding engagement with a pipeline internal wall during movement of the apparatus through a pipeline in a forwardly direction; and means responsive to water pressure from forwardly of the apparatus for sealing the pipeline against flow of water from the first underwater pipeline portion to the second underwater pipeline portion.

4,498,812

PROCESS FOR LAYING A SUBMARINE CABLE

Gianmario Lanfranconi, and Giuseppe Monti, both of Milan, Italy, assignors to Societa' Cavi Pirelli S.p.A., Milan, Italy

Filed Feb. 22, 1983, Ser. No. 468,501
Claims priority, application Italy, Feb. 22, 1982, 19785 A/82
Int. Cl.³ F16L *1/00*
U.S. Cl. 405—168 **9 Claims**



1. A process for laying an electric cable along an underwater course at the bottom of the water, said cable having a minimum radius of curvature below which it cannot be bent without damage and permitting a maximum distance between underwater points of suspension for a desired service life and said bottom being uneven by reason of first portions thereof which project above second, other portions thereof, said process comprising:

laying an elongated, flexible element different from said cable along said course;

adjusting the position of said element so that the radius of curvature thereof at any of said first projections encountered by said element is at least equal to said minimum radius of curvature of said cable;

adjusting the length of said element between underwater points of suspension thereof so that said length thereof is no greater than said maximum distance; and

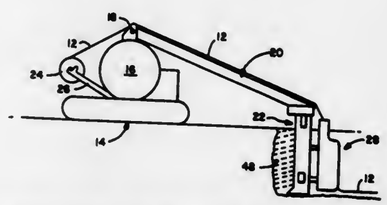
laying said cable alongside said element so that it follows the configuration of said element as adjusted.

4,498,813

UNDERGROUND CABLE INSTALLING APPARATUS AND METHOD UTILIZING A FLUID JET ASSISTED, VIBRATING BLADE ARRANGEMENT

Terry L. Nelson, Camas Valley, Oreg., and James M. Reichman, Issaquah, Wash., assignors to Electric Power Research Institute, Inc., Palo Alto, Calif.

Filed Jun. 3, 1981, Ser. No. 269,968
Int. Cl.³ E02F *5/10*; F16L *1/02*
U.S. Cl. 405—182 **11 Claims**



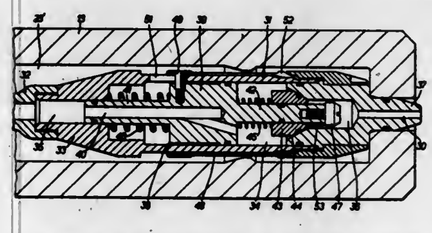
1. An apparatus for installing cable underground, comprising: a power driven land vehicle; an elongated cable laying plow blade having a top end portion, a bottom end portion, and a forward facing cutting edge extending along the front edge of said bottom end portion; means including a plurality of nozzles positioned along said cutting edge for receiving fluid under pressure and directing said fluid through said nozzles to form high impact fluid jets; means supporting said blade for movement with said vehicle in a way which places the bottom end portion of said blade in the ground with its cutting edge and said fluid jets disposed in the direction of movement of said vehicle; means including a supply of said cable supported on and movable with said vehicle; means for vibrating said blade at the natural frequency of said blade and means for feeding said cable from its supply downwardly along a path to the rear of said blade to a point to the rear of the bottom end portion of said blade and along the path taken by said blade.

4,498,814

RELEASABLE ANCHOR CONNECTOR FOR TENSION LEG PLATFORM

Arthur L. Brake, Winscombe, England, assignor to Vickers PLC of Vickers House, London, England

Filed Sep. 14, 1982, Ser. No. 418,011
Claims priority, application United Kingdom, Sep. 18, 1981, 8128307
Int. Cl.³ B63B *21/50*
U.S. Cl. 405—224 **8 Claims**



1. A releasable tether connector for mooring a tension leg platform, comprising:

an anchoring member secured to the sea bed;

a tether extending between the platform and the anchoring member and having means therein defining a hollow central first bore;

latching means attached at the lower end of the tether line, said latching means being constructed and arranged so as to be releasably fastened to the anchoring member;

a ram within said latching means, said ram being operative to release said latching means from said anchoring member in response to a supply of fluid to said ram;

portions of said latching means defining a second bore that communicates said ram with the first bore, said second bore having portions defining an inwardly projecting first shulder;

a fluid supply line adapted to be passed down said first bore in said tether;

a delivery had connected at a tip of the supply line that descends to a working position in said second bore;

sealing means that fluid-tightly seals the delivery head to the second bore when the delivery head is in said working position, so as to confine the pressure of the fluid to below the delivery head in a fluid flow direction; and

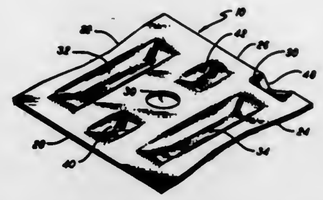
locking means in the delivery head, said locking means adapted to expand at a position upstream from said shoulder in response to passage of fluid through said supply line, said expanded locking means engaging said shoulder for holding the delivery head in said working position while fluid is fed under pressure into said ram to release said latching means.

4,498,815

ROCK FORMATION SUPPORT PLATE

Lester L. Dye, Rinard Mills, Ohio, assignor to The Eastern Company, Naugatuck, Conn.

Continuation of Ser. No. 186,825, Sep. 12, 1980, abandoned, which is a continuation of Ser. No. 19,324, Mar. 12, 1979, abandoned. This application Oct. 15, 1982, Ser. No. 434,673
Int. Cl.³ E21D *21/00*
U.S. Cl. 405—259 **12 Claims**



1. A bearing plate having a first surface for supporting engagement with the surface of a rock formation surrounding a drill hole in which one end of an elongated rod is securely anchored, the other end extending outside the drill hole and having engagement means for supporting contact with a second surface of the plate, said plate comprising a unitary sheet of high-strength metal having:

(a) first and second major surfaces on opposite sides thereof:

(b) a plurality of elongated, parallel, mutually distinct and separated areas embossed in said plate to extend inwardly into said first major surface and outwardly from said second major surface, said first and second major surfaces forming substantially the entire surface areas of said plate other than in said embossed areas;

(c) a peripheral border;

(d) a substantially centrally disposed opening for loose passage of said rod;

(e) said embossed areas all being spaced inwardly from said border and spaced from said opening by a distance sufficient to accommodate said engagement means between said embossed areas, at least one pair of said areas lying on opposite sides of said opening; and

(f) substantially all of said first and second major surfaces lying respectively in first and second parallel flat planes, and entirely surrounding said embossed areas, said opening and said border, whereby substantially all of said first major surface may be placed in supporting engagement with said rock formation surface, with said engagement means in supporting contact with said second major surface entirely inwardly of said embossed areas.

4,498,816

MINE ROOF SUPPORT SYSTEM

Thomas Korpela, Oil City, and Joseph Subrick, Connellsville, both of Pa., assignors to United States Steel Corporation, Pittsburgh, Pa.

Filed Aug. 25, 1983, Ser. No. 526,259
Int. Cl.³ E21D *20/00, 21/00*
U.S. Cl. 405—259 **10 Claims**

1. A clip for use in a mine roof truss bolt system comprising:

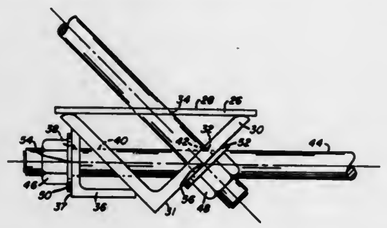
at least two ends aligned in a first plane for abutment against the mine roof;

a first downwardly extending portion having a planar surface facing away from the mine roof and inclined at an approximately 45° angle with respect to said first plane, said portion having a bore therethrough perpendicular to said inclined surface for receiving the lower end of an anchor member therethrough;

a second downwardly extending portion having a planar surface facing away from said inclined surface and substantially perpendicular to said first plane, said second

portion having a bore therethrough perpendicular to said substantially perpendicular surface for receiving one end of an elongated reinforcing member through the bore;

said bores for receiving the anchor member and reinforcing member having axes intersecting with said first and second surfaces at substantially the same distance in a normal direction from said first plane, said axes being displaced from each other in a second plane parallel to said first plane so as to prevent the intersection of said anchor member with said reinforcing member;



said first and second downwardly extending portions being rigidly connected in a third plane parallel to said first and second planes and spaced downwardly from said second plane;

said first and second downwardly extending portions having sufficient rigidity to permit the application of a force on each of said first and second surfaces of at least 5,000 pounds when the ends of said anchor and said reinforcing members are bolted down to bear on said first and second surfaces.

4,498,817

ROOF BOLTS FOR MINES AND THE LIKE WORKINGS

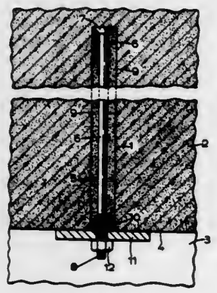
Bryon T. Oulsnam, Moon Fleet, Back Lane, Whiston, Near Cheadle, Stoke-on-Trent, Great Britain

Filed Mar. 2, 1983, Ser. No. 471,501

Claims priority, application United Kingdom, Mar. 4, 1982, 8206350

Int. Cl.³ E02D *5/74*

U.S. Cl. 405—260 **9 Claims**



1. A method of installing a roof bolt in a mine or like working comprising the steps of forming a hole in the rock above the roof of the mine or like working, the hole extending upwards and its lower end communicating with the mine or like working, inserting a roof bolt into the hole, blowing incompressible particulate material into the hole, around the bolt, and preventing the material subsequently falling from the hole, said particulate material being such that relative movement can continue to occur between the particles so as to enable the particles to shift and settle and thereby anchor the bolt firmly in position.

4,498,818

DEVICE FOR BATCH FEEDING OF A FLUIDIZABLE PARTICULATE MATERIAL

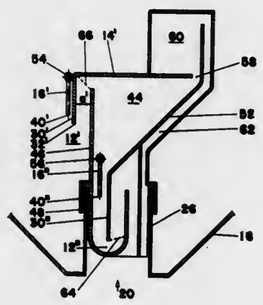
Gudmundur Bjarnason, Reykjavik, and Thorsteinn Eggertsson, Gardabae, both of Iceland, assignors to Swiss Aluminium Ltd., Chippis, Switzerland

Continuation of Ser. No. 359,266, Mar. 18, 1982, abandoned. This application Jun. 19, 1984, Ser. No. 622,241

Claims priority, application Switzerland, Mar. 30, 1981, 2130/81

Int. Cl.³ B65G *53/50*

U.S. Cl. 406—137 **6 Claims**



1. In a silo having a selectively closeable outlet, an exchangeable feeding unit positioned over said outlet for batch feeding a fluidizable particulate material from the silo to a reaction vessel, said exchangeable feeding unit comprising wall means for defining a siphon chamber, a feeding shaft for communicating said siphon chamber with said silo outlet, a dividing wall positioned in said siphon chamber, said dividing wall having a free lower edge spaced from said wall means defining said siphon chamber and a nozzle having an outlet opening positioned in said siphon chamber such that the nozzle opening is above said lower edge of said dividing wall wherein said siphon chamber comprises an upper siphon chamber provided with nozzles, a charge space and a lower siphon chamber provided with nozzles wherein the nozzles in said upper siphon chamber and said lower siphon chamber can be actuated sequentially.

4,498,819

MULTIPOINT SLURRY INJECTION JUNCTION

Ahmed A. El-Saie, Ponca City, Okla., assignor to Conoco Inc., Ponca City, Okla.

Filed Nov. 8, 1982, Ser. No. 439,671

Int. Cl.³ B65G *53/52*

U.S. Cl. 406—181 **3 Claims**

1. A new use for an apparatus comprising:

(a) a chamber having a side wall, a substantial portion of which is conical, a top at its base, and a longitudinal axis;

(b) a first inlet means mounted through said top and aligned with said axis;

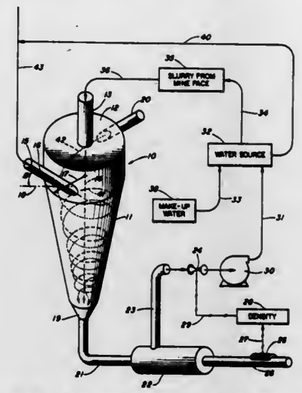
(c) a second inlet means mounted tangentially through said side wall and having an axis, the axis of said second inlet means forming an acute angle with a plane extending normal to the axis of said chamber;

(d) outlet means at the apex of said chamber and aligned with the axis of said chamber, said new use comprising a method of mixing the contents from at least a pair of pipelines;

said new use comprising:

(e) injecting a first fluid at a first pressure into said first inlet means;

(f) injecting a second fluid at a second pressure into said second inlet means; and



(g) removing said first and second fluids at said outlet means at said apex whereby said first and second fluids at different pressures are mixed together.

4,498,820

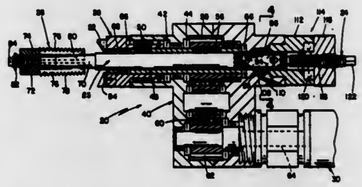
CUTTING TOOL

Albert T. Brennan, Sherborn, Mass., assignor to SMA Controls Inc., Medfield, Mass.

Filed Aug. 17, 1982, Ser. No. 409,012

Int. Cl.³ B23B *5/16*

U.S. Cl. 409—179 **9 Claims**



1. A portable tube end cutting tool comprising a tool support shaft with an alignment assembly at one end for insertion into the tube whose end surface is to be machined,

ratchet structure fixed to said support shaft,

a cutter head assembly mounted for rotation about the axis of said support shaft,

a first drive for moving said cutter head assembly axially relative to said shaft, a second drive for driving said cutter head assembly in rotation, and

an actuation mechanism for said alignment assembly that includes an asymmetrical drive mechanism that includes selector structure with latch portions arranged for alternate engagement with said ratchet structure for rotating said support shaft in a predetermined direction to actuate said alignment assembly while allowing reset of said asymmetrical drive mechanism without movement of said support shaft in the opposite direction.

4,498,821

DEBURRING APPARATUS

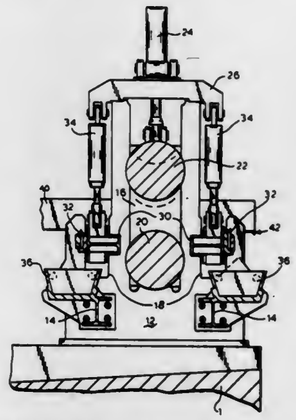
Joel Cazaux, Chelles, France, assignor to Fives-Cail Babcock, Paris, France

Filed Mar. 23, 1983, Ser. No. 478,058

Claims priority, application France, Apr. 6, 1982, 82 05918

Int. Cl.³ B23D *1/22*

U.S. Cl. 409—300 **4 Claims**



1. An apparatus for deburring a product of continuous casting, the product having a surface with burrs thereon and extending in a longitudinal direction, which comprises

(a) a support frame including

(1) two vertical side plates extending in said direction, the side plates defining respective guides in alignment with each other in a direction transverse to the longitudinal direction and the guides having open ends, the guides extending downwardly from the open ends in a direction substantially perpendicular to the surface of the product, and

(2) crossbeams extending in the transverse direction and interconnecting the side plates,

(b) a girder having two ends glidably mounted in two transversely aligned ones of the guides,

(c) a burr cutter mounted on the girder,

(d) two superposed rollers defining a nip therebetween for passage of the product, the rollers being rotatable for displacing the product in the longitudinal direction and having journals glidably mounted in two additional ones of the transversely aligned guides,

(e) headers affixed to the support frame and respectively arranged in the vertical plane of a respective one of the side plates above the open ends of the guides,

(f) jacks linking the ends of the girder to the headers for moving the girder towards the surface of the product to apply the cutter to said surface, and

(g) additional jacks linking the upper roller to the headers for moving the upper roller towards the lower roller to clamp the product between the rollers.

4,498,822

SOLAR PANEL HANDLING AND MOUNTING DEVICE

Keyvan T. Diba, Los Angeles, Calif., assignor to Solir Corporation, Van Nuys, Calif.

Filed Feb. 14, 1983, Ser. No. 466,162

Int. Cl.³ F24J *3/02*

U.S. Cl. 410—2 **19 Claims**

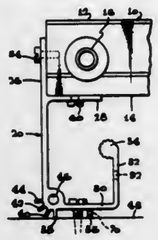
1. A handling and mounting device comprising:

a web forming the body of said device;

a bottom flange secured to said web at an angle with respect thereto;

a handgrip flange secured to said bottom flange at an angle

with respect thereto so that said handgrip flange can be manually grasped for manual handling thereof and handling of a panel secured to said device, attachment openings through at least one of said bottom flange and said



handgrip flange so that said device can be secured to a base; and

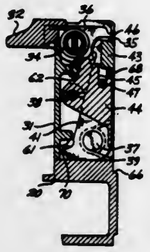
at least one attachment flange joined to said web so that said attachment flange can be secured to a panel.

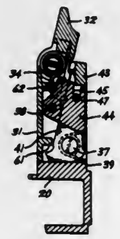
4,498,823

RETRACTABLE VERTICAL RESTRAINT MECHANISM FOR AN AIRCRAFT CARGO SYSTEM

Robert D. Trautman, Seattle, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Sep. 29, 1982, Ser. No. 428,433
Int. Cl.[3] B64D *1/12*
U.S. Cl. 410—84 11 Claims





1. A latch mechanism comprising:

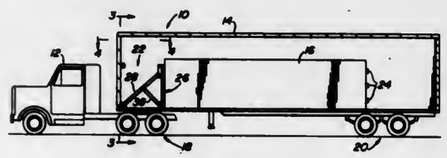
a retractable lip adapted to be hinged onto a support structure to pivot between a restraint position in which it extends essentially perpendicularly from the support structure, and a retracted position; resilient means to urge the lip into its retracted position; and at least one pawl assembly to control hinged movement of the lip, each pawl assembly including (a) a pivotal pawl member movable into locking engagement with the lip to prevent pivotal movement of the lip from said restraint position, and movable into latching engagement with the lip to prevent pivotal movement of the lip from the retracted position, (b) resilient means urging said pivotal pawl member into locking engagement with the lip, and (c) a pivotal lever to pivotally displace and hold the pawl member in a retracted position to thereby permit movement of the lip into its retracted position or into its restraint position.

4,498,824

EXTENDIBLE AND CONTRACTIBLE VEHICLE BULKHEAD

Robert W. Kinkle, Wayne, Pa., assignor to The Budd Company, Troy, Mich.

Filed Aug. 13, 1981, Ser. No. 292,630
Int. Cl.[3] B60P *7/14*; B61D *45/00*; B63B *25/24*
U.S. Cl. 410—121 13 Claims



1. An extendible and contractible bulkhead for attachment to a floor of a trailer including a front wall connected thereto comprising:

(a) a main frame adapted to receive load forces from a load on the floor of said trailer,

(b) a plurality of spaced arms pivotally connected to said main frame at one set of ends and to the floor of said trailer at the other set of ends to receive the forces developed in said main frame and transmit them to the floor and front wall of said trailer;

(c) said one set of ends of said arms being disposed to move vertically on said main frame when said bulkhead is extended and contracted;

(d) stabilizing means secured between said main frame and said plurality of arms to maintain said main frame vertically when said bulkhead is extended or contracted;

(e) said stabilizing means comprising a horizontal bar extending through said arms intermediate the ends of said main frame;

(f) a pair of stabilizing arms spaced from opposite sides of said plurality of arms and connected between opposite ends of said horizontal bar and bottom portions of said main frame;

(g) locking receptacles provided in the floor of said trailers;

(h) locking mechanisms including movable lock elements secured to said main frame; and

(i) said lock elements being disposed to move into said receptacles to lock said main frame at a predetermined position and removed from said receptacles to permit said main frame to be moved toward said front wall of said trailer.

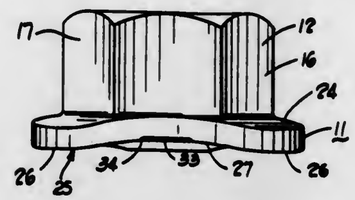
4,498,825

LOAD INDICATING FLANGE

Walter R. Pamer; James A. Zils, both of Parma, and Terry D. Capuano, Hinckley, all of Ohio, assignors to Russell, Burdsall & Ward Corporation, Cleveland, Ohio

Filed Sep. 27, 1982, Ser. No. 423,861
Int. Cl.[3] F16B *39/28*, *31/02*
U.S. Cl. 411—11 21 Claims

1. A load indicating annular flange for cooperation with first and second interengaging fasteners, such flange providing a seating surface and resilient portions, said resilient portions operating to engage an associated workpiece before said seating surfaces engage such workpiece, and when said fasteners are tightened to cause engagement of said seating surface with such workpiece, said resilient portions applying a predetermined force to such a workpiece, said flange also providing a peripheral gauging surface, said gauging surface moving to a predetermined minimum spacing from such workpiece when said seating surface is seated thereagainst and being spaced from such workpiece by a distance greater than said predetermined minimum spacing when said seating surface is not seated, whereby a gauge having a thickness slightly greater than said predetermined minimum spacing can be inserted



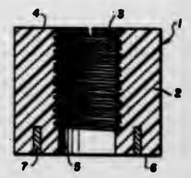
between said gauging surface and said workpiece until such seating surface is seated thereagainst, said predetermined minimum spacing being sufficiently great to render a gauge therefor thick enough to be durable, said gauging surface having a width greater than the thickness dimension parallel to the axis of the fasteners to render a gauge wide enough to be durable.

4,498,826

SELF LOCKING NUT INCLUDING AN AXIALLY EXTENDING REINFORCEMENT

Oliver E. Simmonds, Old Orchard, Checkendon, Near Reading, Berkshire, England

Continuation of Ser. No. 255,942, Apr. 20, 1981, abandoned. This application Dec. 1, 1983, Ser. No. 564,761
Claims priority, application United Kingdom, Apr. 30, 1980, 8014246
Int. Cl.[3] F16B *39/00*
U.S. Cl. 411—301 3 Claims



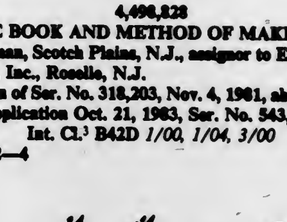
1. A self-locking nut made of a plastic material, said nut including a nut body including a coaxially aligned bore extending through said nut body and open to each axial end of said nut body, said axially aligned bore having a first bore portion extending from one axial end and terminating at a second bore portion which extends from the termination of said first bore portion to an axial end of said nut body, said first bore portion having a length and diameter which is greater than a length and diameter of said second bore portion of said axially aligned bore, said first bore portion having threads thereon extending inwardly from one axial end and terminating at said second bore portion and adapted to receive a threaded shank end of a cooperating bolt having the same thread as said threaded first bore portion, said second bore portion adapted to receive said threaded shank end of said bolt with said bolt forming its own threads within said second bore portion of said axially aligned bore thereby locking said nut body onto said bolt, a cylindrical reinforcement embedded within said nut body radially opposite said second bore portion, said reinforcement having a greater diameter than said threaded first bore portion, a length which is substantially the same as that of said second bore portion and a tensile strength which is greater than that of said nut body thereby forming a reinforcement for said non-threaded second bore portion of said axial bore during threading of a shank end of a bolt into said second bore portion of said axially aligned bore.

4,498,827

FASTENING DEVICE

Bernard Mair, 65 McMorran Crescent, Thornhill, Ontario, Canada L4J 2T4

Filed Jun. 2, 1983, Ser. No. 500,341
Int. Cl.[3] A44B *1/32*; F16B *21/08*
U.S. Cl. 411—349 14 Claims



1. A fastening device comprising:

a base portion and a key portion;

one said portion including a post member, the other a wall member defining an axially extending bore opening therein mounting said post member for rotation about its axis;

said members being provided on the axial wall surfaces thereof with cooperating elements so that as said portions are relatively rotated a radially compressive force is periodically generated between said elements, and

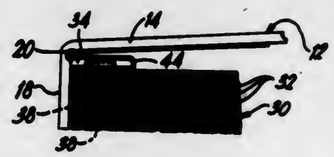
means retaining said post member within said socket opening.

4,498,828

SAMPLE BOOK AND METHOD OF MAKING SAME

Don Ackerman, Scotch Plains, N.J., assignor to Economy Color Card Co., Inc., Roselle, N.J.

Continuation of Ser. No. 318,203, Nov. 4, 1981, abandoned. This application Oct. 21, 1983, Ser. No. 543,791
Int. Cl.[3] B42D *1/00*, *1/04*, *3/00*
U.S. Cl. 412—4 37 Claims



1. A sample book for sample sheets comprising:

a cover member including first and second substantially planar cover sections joined by a substantially planar sturdy spine section, said first and second cover sections each being connected to said spine section by hinge means and each including an inner surface and an outer surface;

a plurality of individual sample sheets arranged in a stack;

sheet securing means disposed adjacent to one edge of said stack of sample sheets securing said plurality of individual sample sheets together to form a bound stack of sample sheets having a substantially planar edge surface defined by the edges of said sample sheets;

a pair of covering sheets for the outer surfaces of said bound stack, each of said covering sheets including a first portion and a second portion separated by a fold line, said first portions of said covering sheets each being secured to said

bound stack so that said fold line thereof is in alignment with the plane of said planar edge surface of said bound stack;

edge securing means for adhesively securing only said planar edge surface of said bound stack of sample sheets to said planar spine section of said cover member so that they are connected together in abutting planar relationship; and

means for adhesively securing only said second portions of said covering sheets to said inner surfaces of said first and second cover sections, respectively, whereby said hinge means are substantially in alignment with the plane of said planar edge surface of said bound stack so that said first and second cover sections of said sample book may be hingedly opened to lie in substantially the same plane as said planar spine section to permit substantially full viewing of said sample sheets.

24. A method of making a sample book for sample sheets comprising the steps of:

providing a cover member having first and second substantially planar cover sections joined to a substantially planar sturdy spine section by hinge means, said first and second cover sections each including an outer surface and an inner surface;

providing a plurality of sample sheets in a stack;

binding said plurality of sample sheets together with sheet securing means disposed adjacent to one edge of said stack of sample sheets to form a bound stack of sample sheets having a substantially planar edge surface defined by the edges of said sample sheets;

providing a pair of covering sheets for the outer surfaces of said bound stack of sample sheets, said covering sheets each including a first portion and a second portion separated by a fold line;

securing said first portions of said covering sheets to said bound stack of sample sheets so that said fold lines thereof are in alignment with the plane of said planar edge surface of said bound stack of sample sheets;

adhesively securing only said planar edge surface of said bound stack of sample sheets to said planar spine section of said cover member so that they are connected together in abutting planar relationship; and

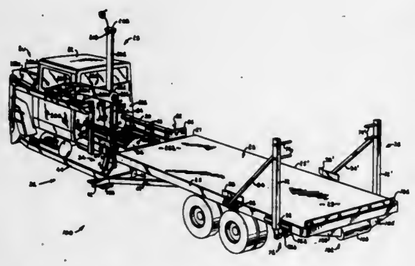
adhesively securing only said second portions of said covering sheets to said inner surfaces of said first and second cover sections, respectively, whereby said hinge means of said cover member are substantially in alignment with the plane of said planar edge surface of said bound stack so that said first and second cover sections may be hingedly opened to lie in substantially the same plane as said planar spine section to permit substantially full viewing of said sample sheets.

4,498,829

BIG BALE RETRIEVER AND STACKER

Warren W. Spikes, P.O. Box 759, Hugoton, Kans. 67951

Filed Dec. 21, 1982, Ser. No. 451,785
Int. Cl.³ A01D *87/12*
U.S. Cl. 414—24.5 27 Claims



1. A bale loader comprising:

a bale receiving platform;

an upstanding support member adjacent said platform;

a hoist arm having spaced-apart inner and outer ends;

means for mounting said hoist arm to said support member in longitudinal movement along the extent thereof and in pivotal movement about a generally horizontal axis and in rotatable movement about an upright axis;

said mounting means comprising:

sleeve means configured to fit about said support member in longitudinal movement along the extent of said support member and in rotatable movement about said upright axis; and

pivot means for mounting the inner end of said hoist arm to said sleeve means in said pivotal movement and in longitudinal and rotatable movement with said sleeve means to provide for said longitudinal, pivotal and rotatable movement of said mounted hoist arm;

grapple means operably mounted to said outer end of said arm member for releasably seizing a hay bale;

means for controlling said pivotal movement of said arm member to move said grapple means through a generally vertically disposed arc relative to said platform;

means for controlling said rotatable movement of said sleeve means to move said arm member and grapple means through a generally horizontally disposed arc relative to said platform; and

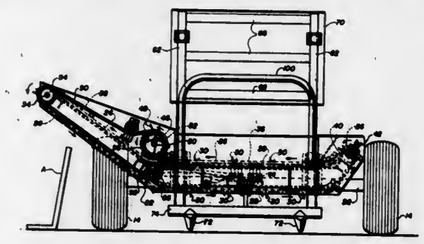
means for controlling said longitudinal movement of said sleeve means to move said arm member and grapple means between at least first and second vertically disposed stages of said controlled pivotal and rotatable movement to establish a multistage hoist having a first stage for picking up a first ground-adjacent hay bale and loading the same onto said platform and at least one subsequent stage for picking up a second ground-adjacent hay bale and stacking the same on said first hay bale previously loaded on said platform.

4,498,830

BALE UNROLLING APPARATUS

Shaun A. Seymour, New Holland, and James G. Greiner, Leola, both of Pa., assignors to Sperry Corporation, New Holland, Pa.

Filed Aug. 17, 1983, Ser. No. 523,996
Int. Cl.³ A01D *87/12*
U.S. Cl. 414—24.6 3 Claims



1. An apparatus for unrolling roll bales of crop material, said apparatus comprising:

(a) a frame;

(b) an apron movably supported on said frame having upper and lower runs extending through a first section extending substantially horizontally, a second section disposed at one end of said first section and being inclined upwardly from said one end of said first section, and a third section disposed at the other end of said first section and being inclined upwardly from said other end of said first section, said apron including a pair of endless chains connected together at spaced intervals by transverse members;

(c) a finger drum rotatably supported on said frame and located near the intersection of said first and second sections of said apron, said finger drum including a cylinder and a plurality of fingers which reciprocate into and out of said cylinder as said cylinder rotates, said finger drum being located close enough to said apron so that said transverse members of said apron strip material from said finger drum during rotation thereof;

(d) said apron being movable in a direction to move a roll bale resting thereon into contact with said finger drum so that material will be removed from said roll bale and delivered over said cylinder onto said second section of said apron; and

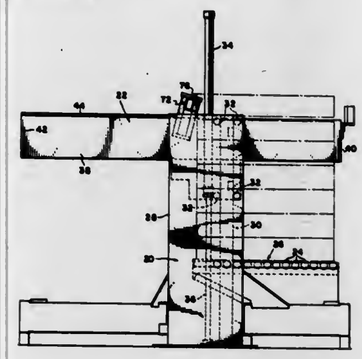
(e) said second section of said apron carrying said material upwardly to a height suitable for delivery into a feed trough while said third section of said apron prevents the remaining portion of said roll bale from rolling off said apron.

4,498,831

ARTICLE STACKING APPARATUS

Thomas R. Salts, Roanoke, Ill., assignor to Besser Industries, Inc., Roanoke, Ill.

Filed Apr. 27, 1983, Ser. No. 489,227
Int. Cl.³ B65G *57/10*
U.S. Cl. 414—46 12 Claims



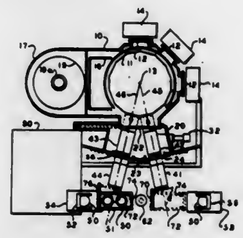
10. In an apparatus for stacking successive layers of articles into a multilayer stack including a fixed frame, a horizontally elongate elevator, first drive means for driving said elevator in vertical movement on said fixed frame from and to a lowered position, a horizontally disposed planar transfer plate mounted on said elevator for forward and rearward movement longitudinally upon said elevator between a retracted position at the rearward end of said elevator and an extended position at the forward end of said elevator, second drive means for driving said plate in a path of movement between said retracted and extended positions, a stripper member mounted on said elevator operable in a projected position to strip a layer of articles from said plate upon rearward movement of said plate from said extended position to said retracted position and operable in an inactive position to accommodate unobstructed movement of a layer of articles carried on said plate, third drive means for moving said stripper member between said projected position and said inactive position, and a stacking table on said frame having a stacking surface adapted to support a stack of articles located at substantially the level of said plate when said elevator is at its lowered position, the improvement wherein said stacking surface is located to underlie a front portion of said elevator and to underlie said plate when said plate is in its extended position; said stripper member is generally longitudinally intermediate said elevator and disposed below the path of movement of said plate when in inactive position, but is raised slightly above the path of movement of said plate when said stripper member is moved to a projected position, and wherein said plate is of a length less than half of the elevator and the plate's longitudinal path of movement such that when in forward position the rear edge of the plate is forward of the projected position of said stripper member.

4,498,832

WORKPIECE ACCUMULATING AND TRANSPORTING APPARATUS

Richard E. Corville, Alameda, Calif., assignor to The BOC Group, Inc., Montvale, N.J.

Filed May 21, 1982, Ser. No. 380,852
Int. Cl.³ C23C *15/00*
U.S. Cl. 414—217 9 Claims



1. An apparatus for vacuum processing of workpieces, comprising:

a sealable chamber;

a receiver for receiving and simultaneously supporting a plurality of workpieces inside the chamber;

a lock adjacent the chamber;

a first gate between the lock and the chamber having an opening through which workpieces can pass;

means for evacuating the chamber and the lock;

a first walking beam accumulator;

means for moving the first accumulator between a first position in which the first accumulator is entirely inside the lock, and a second position in which workpieces can be transferred between the first accumulator and the receiver via the first gate opening; and

means for operating the first walking beam accumulator to transfer a plurality of workpieces between the first accumulator and the receiver.

4,498,833

WAFER ORIENTATION SYSTEM

Richard J. Hertel, Bradford, Mass., assignor to Varian Associates, Inc., Palo Alto, Calif.

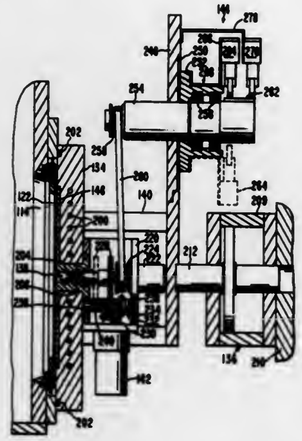
Filed May 24, 1982, Ser. No. 381,286
Int. Cl.³ B65H *1/00*
U.S. Cl. 414—217 16 Claims

1. Apparatus for positioning a generally circular wafer in a wafer processing chamber, said apparatus comprising:

wafer handling means associated with an entrance to said wafer processing chamber for receiving said wafer and moving said wafer into said processing chamber, including a processing chamber door movable between an open position in which said wafer is received and a sealed position in which said wafer is sealed into said wafer processing chamber and means for moving said chamber door between said open position and said sealed position;

means associated with said wafer handling means for engaging said wafer and rotating same through a programmable, preselected angular displacement about an axis generally perpendicular to said wafer and centrally located thereon, including a rotatable vacuum chuck extending from the inside surface of said chamber door for receiving said wafer when said chamber door is in said open position and

means for rotating said vacuum chuck and said wafer through said preselected angular displacement; and



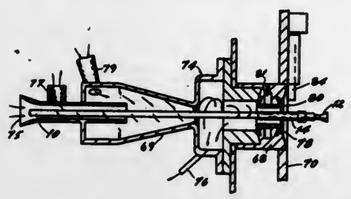
means for delivering said wafer to said wafer handling means, whereby the orientation of said wafer about said axis during processing is controlled.

4,498,834

VALVE FOR FUEL PIN LOADING SYSTEM

David W. Christiansen, Kennewick, Wash., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Nov. 30, 1982, Ser. No. 445,606
Int. Cl.³ G21C 21/00; E06B 7/00
U.S. Cl. 414—291 4 Claims



1. A valve for facilitating axial entry and exit of the open end of a fuel pin subassembly through a supporting apertured wall of an enclosure, comprising:

a valve base adapted to be sealed within an aperture in the wall, said valve base including an inflatable seal movable between an open condition capable of permitting passage of the open end of a fuel pin subassembly and a closed condition in which the periphery of a fuel pin is engaged about its circumference;

chamber means extending outward from the valve base in approximately coaxial open communication with the inflatable seal; the chamber means including an enclosed hood extending outward from the valve base;

gas inlet means spaced from said valve base for directing a stream of pressurized gas tangentially into the enclosed hood and toward the valve base to form a spiraling flow of gas about a fuel pin positioned therein; and

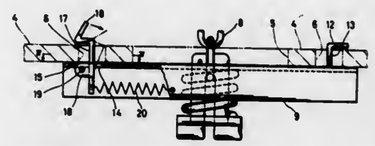
gas outlet means adjacent the valve base for exhausting gas flowing through the chamber means.

4,498,835

STOPPING DEVICE IN SPARE WHEEL HOLDING APPARATUS

Setsuo Yasue, Gifu, and Tomio Yamamoto, Aichi, both of Japan, assignors to Sanko Kiki Kabushiki Kaisha, Aichi, Japan

Continuation of Ser. No. 203,853, Nov. 4, 1980, abandoned. This application Feb. 28, 1983, Ser. No. 470,719
Claims priority, application Japan, Nov. 12, 1979, 54-146280
Int. Cl.³ B62D 43/04
U.S. Cl. 414—463 2 Claims



1. An apparatus for holding a spare wheel for a motor vehicle wherein the spare wheel includes a wheel disk with wheel mounting holes therethrough, said apparatus comprising

an elongated spare wheel support member having a "⌐" shaped cross-section;

a winch provided on said motor vehicle;

a flexible suspending member having one end coupled to said winch such that said suspending member can be wound up or unwound from said winch;

a resilient means for coupling another end of said suspending member to a center of said support member;

a stationary stopper of an inverted "L" shape provided adjacent one end of and formed integrally with said support member, said stationary stopper for engaging with one of said mounting holes in said spare wheel disk;

a hole provided in a top surface of said support member adjacent another end of said support member;

a movable stopper of a "⊰" shape pivotally coupled to said support member and extending through said hole, said movable stopper being coupled to said support member such that a "<" shaped portion of said "⊰" shape extends away from said center of said support member and such that said movable stopper is pivotable towards said center of said support, said movable stopper being engageable with another mounting hole in said wheel disk; and

a tension spring coupled between an end of said movable stopper and a side of said support member for biasing said movable stopper in a direction away from said center of said support member;

whereby said spare wheel is mounted on said support member by first passing said supporting member through a central hole in said wheel disk, then engaging said one mounting hole with said stationary stopper and then pressing said wheel disk against said movable stopper to cause said movable stopper to pivot towards said center of said support member, to fit through said another mounting hole and return to hold said wheel disk securely such that said wheel and support can be wound up by said winch.

4,498,836

LOADING RAMP FOR TRUCK BED

Richard R. Love, Box 468, Buhl, Id. 83316

Filed Sep. 17, 1982, Ser. No. 419,576
Int. Cl.³ B60P 1/26
U.S. Cl. 414—537 10 Claims

1. An equipment carrying truck or trailer in combination with a ramp or runway for loading and unloading such equipment comprising:

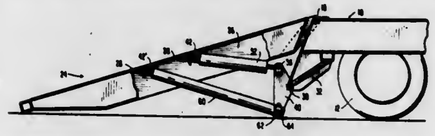
a longitudinally extending ramp hingedly connected to the rear of the truck for movement between a raised, level position and a downwardly inclined, ground engaging position;

a pair of brace members secured to the rear of said truck and depending therefrom in spaced parallel relation;

a pair of plate members arranged in spaced parallel relation to one another and connected to said brace members by a pivot pin;

a power cylinder and piston with one end of the cylinder pivotally connected to the central portion of said ramp;

an elongated tube having one end pivotally connected to the central portion of said ramp and arranged in longitudinally spaced relation to said power cylinder and piston;



said piston of said power cylinder and piston pivotally connected to one end of said plate members;

the other end of said tube pivotally connected to the other end of said plate members;

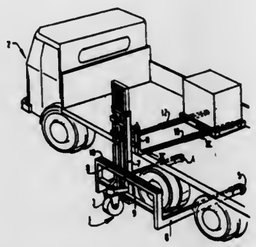
said pivot pin being positioned intermediate the ends of said plate members with said plate members being moved about said pivot pin by said power cylinder for moving said power cylinder and piston into parallel relationship with said tube contemporaneous with moving said ramp about its hinged connection to the rear of the truck to its raised, level position.

4,498,837

FORK LIFTER COMPRISING A SLIDABLE FORK

Hessel Kooi, TA Stiens, and Sjoerd Meijer, St. Jacobiparochie, both of Netherlands, assignors to Selectiebedrijf Kooi Beheer B.V., Vrouwenparochie and Machine- en Constructiewerkplaats Meijer, St. Jacobiparochie, both of, Netherlands

Filed Feb. 11, 1981, Ser. No. 233,435
Claims priority, application Netherlands, Feb. 19, 1980, 8001006
Int. Cl.³ B65G 47/00
U.S. Cl. 414—664 6 Claims



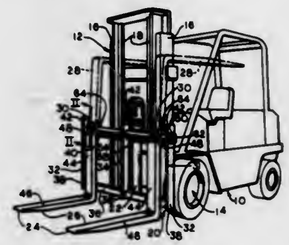
1. A fork lifter comprising a mobile frame, a pole arranged on said frame and a load carrier adapted to move up and down along said pole and having a fork protruding from the pole, the fork having prongs provided with extensible parts and each of said prongs having a limited thickness so that the extensible parts likewise are as thin as possible in order to be slid beneath a load, said extensible parts being driven by at least two cylinder-plunger combinations accommodated in each of the prongs of the fork and being located in a substantially horizontal plane, said cylinder-plunger combinations being limited in sectional areas by said limited thickness of the prongs, and means for operating such combinations in unison to extend and retract said extensible parts.

4,498,838

RETENTION DEVICE FOR A LOAD ENGAGING MEMBER

Richard J. Johansson, Dallas, Oreg., assignor to Townotor Corporation, Mentor, Ohio

Filed Apr. 4, 1983, Ser. No. 481,601
Int. Cl.³ B66F 9/14
U.S. Cl. 414—664 16 Claims



1. A retention device (30) for a load engaging member (24), said load engaging member (24) having a load carrying position (26) and a transport position (28) and being pivotally movable therebetween; comprising:

a flange (40) positioned at a location adjacent the load engaging member (24);

a stop (66) connected to the load engaging member (24) and engageable with the flange (40) at the transport position (28) of said load engaging member (24), said stop (66) and flange (40) supporting the load engaging member (24) at the transport position (28) and preventing pivotal movement thereof in a direction past said transport position (28) and away from load carrying position (26); and

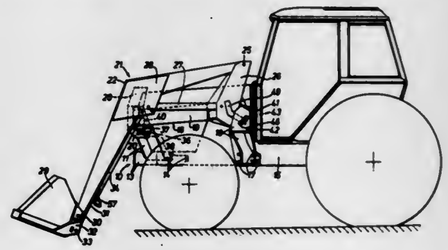
means (74) for engaging said stop (66) and preventing pivotal movement of said load engaging member (24) from said transport position (24) to said load carrying position (26).

4,498,839

TRACTOR FRONT LOADERS

Frederick Williams, Warrington, and Anthony D. Coe, Manchester, both of England, assignors to David Brown Tractors Ltd., Huddersfield, England

Filed Jun. 7, 1983, Ser. No. 502,051
Claims priority, application United Kingdom, Jun. 17, 1982, 8217601
Int. Cl.³ B66C 23/00
U.S. Cl. 414—686 9 Claims



1. A front loader designed for drive-in attachment to a tractor, comprising front and rear bracket means adapted to be permanently secured to the tractor frame, a sub-frame adapted to be temporarily secured to the bracket means, a loader boom assembly pivotably mounted on the sub-frame, a loader bucket or the like pivotably mounted on the boom assembly, and hydraulic piston-and-cylinder assemblies for selectively pivot-

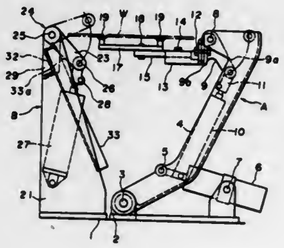
ing the boom assembly and the bucket, wherein the sub-frame locates on the front bracket means and is secured to the rear bracket means by respective easy-release pins each of which passes with substantial radial clearance through aligned axially-spaced holes in one rear bracket and fits, between said holes, in an eccentric bush which fits in a boss fixed to the sub-frame and is rotateable into an operative position in which the pin establishes contact with one side of said holes and the boss establishes contact with a cam-plate fixed to the rear bracket, or into an easy release position in which said contacts are disestablished.

4,498,840

REVERSING APPARATUS

Masaru Orii, Machida, Japan, assignor to Kabushiki Kaisha Orii Judoki Seisakusho, Japan

Continuation of Ser. No. 292,215, Aug. 12, 1981, abandoned. This application Feb. 22, 1984, Ser. No. 581,214
Claims priority, application Japan, May 15, 1981, 56-72220
Int. Cl.³ B65G *47/24*
U.S. Cl. 414—759 **1 Claim**



1. A reversing apparatus for turning a workpiece upside down including:

a. a base;

b. a first arm comprising:

1. a pair of L-shaped members each having a lower end pivotably connected to said base, and an upper end;
2. a first cylinder attached to said base, with a piston rod, an end of the piston rod being pivotably connected to said lower ends of said pair of L-shaped members and capable of pivoting said first arm from a first to a second position with respect to said base;
3. a pair of crank members being pivotably connected by connecting means to the upper ends of said pair of L-shaped members each having an operating end extending past said connecting means;
4. a second cylinder being connected to the lower ends of said pair of L-shaped members, and being coextensive with the upper ends of the pair of L-shaped members, and having a piston rod with a piston rod end being pivotably connected to said operating ends of said pair of crank members, said second cylinder being provided to pivot said crank members from a horizontal to an inclined position; and
5. a workpiece supporting member attached to said crank members and comprising:
   A. a holding member attached to said crank members;
   B. a T-shaped member attached to said holding member with two lateral extensions;
   C. a plurality of vacuum support members attached to said lateral extensions; and
   D. a plurality of bowl-shaped cups attached to said vacuum support members and adapted to hold a work piece when vacuum is applied to said cups; and

c. a second arm comprising:

(1) a first and second frame fixed upright to said base adjacent to said first arm, each having a lower frame end and an upper frame end;

(2) a pivoting member connected to the upper frame end of said first frame;

(3) a work-piece support member extending between said frames and being affixed to said pivoting member at one side and being pivotably affixed at another side to the second frame; and

(4) a third cylinder being connected to the lower frame end and having a piston rod with an end connected to said pivoting member and provided to pivot said work-piece support member between an inclined and a horizontal position;

said first arm being constructed and arranged to move a workpiece disposed on said workpiece supporting member from a horizontal position to an intermediate position by pivoting said crank members to said inclined position and then pivoting said first arm from said first to said second position, said workpiece in said intermediate position being oriented passed its vertical dead center; and

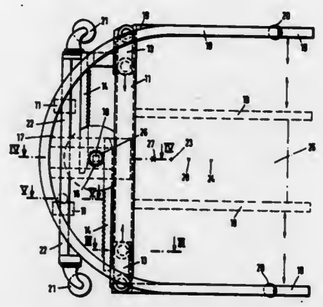
said second arm being constructed and arranged to receive said workpiece from said first arm when said first arm is in said intermediate position.

4,498,841

TURNOVER DEVICE

Claes G. Wickström, Halmstad, Sweden, assignor to Riensch & Held (GmbH & Co.), Hamburg, Fed. Rep. of Germany

Filed Jan. 18, 1983, Ser. No. 458,806
Int. Cl.³ B65G *7/02*
U.S. Cl. 414—778 **9 Claims**



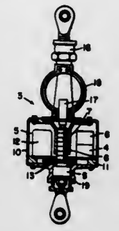
1. A turnover device, particularly for pallets, which has a frame structure with U-shaped runners and a mechanism having loading forks receiving the pallets, wherein the runners are so arranged with respect to the loading forks of the mechanism for receiving the pallets that the centre of curvature of the runners is located in the vicinity of the overall centre of gravity, including the pallets, and the free ends of the runners are provided with roller means, and at least one caster means is provided, which is positioned in the vicinity of the curvature area of the U-shaped runners, said caster means being movable between a position within the region of the runners and a position outside this region, said roller means and caster means being operable to support the device for horizontal movement to enable the loading forks to move into alignment with a pallet.

4,498,842

APPARATUS FOR ADJUSTING THE TRACK OF ROTOR BLADES THROUGH REMOTE CONTROL

Willy G. Fischer, Ahnatal, and Elmar Thom, Warburg, both of Fed. Rep. of Germany, assignors to Henschel Flugzeug-Werke AG, Kassel, Fed. Rep. of Germany

Filed Jul. 6, 1983, Ser. No. 511,319
Claims priority, application Fed. Rep. of Germany, Jul. 8, 1982, 3225571
Int. Cl.³ B64C *11/44, 27/68*
U.S. Cl. 416—155 **2 Claims**



1. An apparatus for adjusting the track of rotor blades through remote control, said apparatus comprising:

a respective two-part, lengthwise adjustable control rod associated with each rotor blade;

a control device, in the form of a potentiometer, and a measuring device installed in said control rod and operatively connected with an operating station which is provided with an indicator;

a supply unit for control of said rotor blade;

a servomotor associated with said unit and with said control rod; said unit including a receiving/transmitting part, and a source of energy for said servomotor, with said receiving/transmitting part and said source of energy being integrated into said control rod and being combined with said servomotor to form a structural unit; and

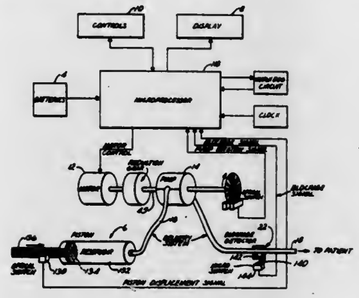
a housing for accommodating said structural unit formed by said source of energy, said servomotor, and said receiving/transmitting part.

4,498,843

INSULIN INFUSION PUMP

Philip H. Schneider, 2939A Cowley Way, San Diego, Calif. 92117; William J. Weber, 520 W. Ellis Ave., Inglewood, Calif. 90302, and Thomas A. Massaro, 1339 Hill Top Rd., Charlottesville, Va. 22903

Filed Aug. 2, 1982, Ser. No. 404,645
Int. Cl.³ F04B *49/06*; B67D *5/48*
U.S. Cl. 417—22 **12 Claims**



1. A microprocessor controlled peristaltic pump comprising:

a pump having a rotatable pump rotor, and a pump switch means coupled to the pump rotor which alternately opens and closes as the pump rotor rotates;

a motor coupled to and driving the pump rotor;

a reservoir having a cylinder, and a piston which moves into the cylinder as the reservoir is depleted;

a delivery tube connecting the reservoir to the pump, running through the pump, over the rotor, and thence to a delivery site;

a reservoir switch means coupled to the piston which alternately opens and closes as the reservoir is depleted; and

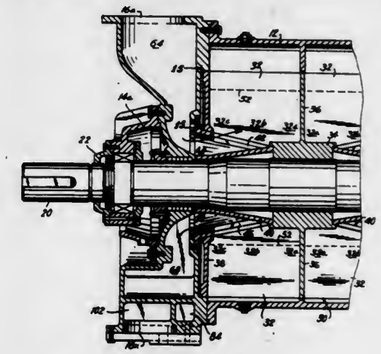
a microprocessor electrically connected to the pump switch means, the reservoir switch means, and the motor such that the microprocessor programmably controls the number of revolutions the pump rotor makes per unit of time in response to signals received from the pump switch and the reservoir switch.

4,498,844

LIQUID RING PUMP WITH CONICAL OR CYLINDRICAL PORT MEMBER

Douglas E. Bissell, Fairfield, and Charles M. Jozepaitis, Bridgeport, both of Conn., assignors to The Nash Engineering Company, Norwalk, Conn.

Filed Aug. 8, 1983, Ser. No. 521,449
Int. Cl.³ F04C *19/00*
U.S. Cl. 417—68 **5 Claims**



1. A liquid ring pump comprising:

a longitudinal annular housing;

a rotatable shaft having a longitudinal axis parallel to the longitudinal axis of the housing, the shaft being eccentrically mounted in the housing;

a rotor fixedly mounted on the shaft and including (1) a plurality of blades extending radially outward from the shaft in planes substantially parallel to the longitudinal axis of the shaft, each blade having first, second, and third portions which are spaced from one another along the length of the shaft, each blade being connected to the shaft adjacent the first portion and being radially spaced from the shaft adjacent the second and third portions, and (2) a planar toroidal shroud member disposed around and radially spaced from the shaft, the toroidal shroud member connecting the third portions of all of the blades, the surface of the second portion of each blade which is radially opposite and faces toward the shaft being defined as the inner surface of the blade;

an annular port member disposed around the shaft and extending into the annular space between the shaft and the second and third portions of the blades, the port member having an annular port surface which is immediately adjacent the inner surfaces of the blades and which faces radially away from the shaft, the port surface having first, second, and third orifices adjacent the second portions of the blades, the first orifice being an intake port for admitting gas to the rotor in an intake zone of the pump, the

second orifice being a discharge port for receiving gas discharged from the rotor in a compression zone of the pump, and the third orifice being a vent-recirculation port located after the intake port but before the discharge port in the direction of rotor rotation; and

a head member connected to the port member remote from the rotor and defining (1) a pump intake conduit for admitting gas to be pumped, (2) a pump discharge conduit for discharging gas pumped by the pump, and (3) a sump chamber for normally retaining a quantity of pumping liquid in the head member, the intake and discharge conduits and the sump chamber being axially spaced from the shroud member on the side of the shroud member remote from the blades;

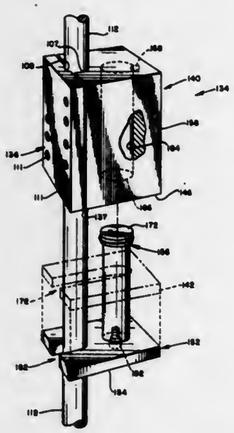
the port member and the head member further jointly defining (1) a first conduit connecting the pump intake conduit and the intake port, (2) a second conduit connecting the discharge port and the pump discharge conduit, the second conduit communicating with the sump chamber above the normal level of pumping liquid in the sump chamber and (3) a third conduit connecting the vent-recirculation port and a location in the sump chamber below the normal level of pumping liquid in the sump chamber, all of the first, second, and third conduits separately passing through the annular space between the shaft and the shroud member.

4,498,845

PUMPER BUMPER

Homer F. Pittman, 3414 Clearmont, Odessa, Tex. 79762, and Bobby D. Gage, 1410 W. 22nd St., Odessa, Tex. 79760

Filed Jun. 13, 1983, Ser. No. 503,711
Int. Cl.[3] F04B *39/00*
U.S. Cl. 417—545 6 Claims



1. In a pumpjack unit having a rod string supported by a polish rod which in turn is supported by a reciprocating mechanism, wherein the rod string extends downhole in a wellbore to a downhole pump having a pump piston reciprocatingly received within a pump barrel, with the downhole pump piston including a traveling valve assembly associated therewith, and the pump barrel having a stationary valve assembly associated therewith; the improvement comprising:

a jack means by which the rod string can be supported by the reciprocating mechanism; said jack means has a main body within which there is formed a cylinder, a piston reciprocatingly received within said cylinder and forming a variable chamber on one side of said piston; flow passageway means by which fluid flows into and out of said variable chamber to cause the piston to move respective to the main body;

said main body includes an elongated trough which outwardly opens and receives the polish rod therein; a plate member having a confronting surface affixed to said main body to capture the polish rod therebetween and thereby forms a polish rod clamp; a jack base plate affixed to the free end of the piston and supported by structure which reciprocates said rod string; wherein actuation of said jack means moves said polish rod clamp means and said base plate apart; and shim means removably received between said main body and said base plate for changing the relative position of the pump piston respective to the pump barrel;

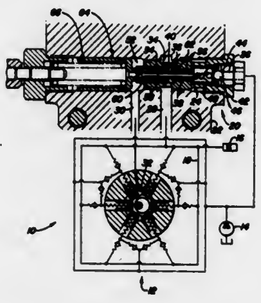
so that the jack means can be actuated into a first position until the pump piston structure impacts against the pump barrel structure with sufficient force to dislodge any debris which may be lodged in a valve of the pump, and thereafter the jack means can be actuated into a second position, so that the pump piston reciprocates and produces fluid from the wellbore.

4,498,846

STROKE CONTROL VALVE

Max P. Gassman, Waterloo, Iowa, assignor to Deere & Company, Moline, Ill.

Filed Jun. 20, 1983, Ser. No. 505,676
Int. Cl.[3] F04B *49/00*
U.S. Cl. 417—214 8 Claims



1. A stroke control valve for controlling communication of stroke control fluid pressure to a stroke control chamber of a main reciprocating piston pump which receives charge fluid from a charge pump, the stroke control valve comprising:

a housing defining a valve bore therein, a charge port communicating an end of the valve bore with an outlet of the charge pump via a first passage, a main port communicating working fluid from an outlet of the main pump to the valve bore via a second passage and an outlet port communicating the valve bore to the stroke control chamber via a third passage;

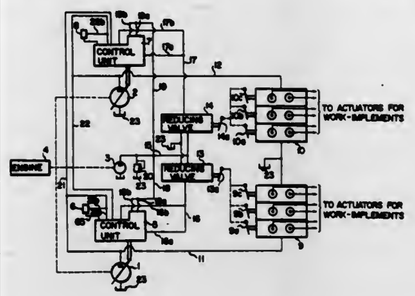
a valve member which cooperates with a wall of the valve bore and is movable in the valve bore between a first position blocking fluid communication of the working fluid from the main port to the outlet port and permitting communication of charge fluid from the charge port through the valve bore to the outlet port and a second position communicating the working fluid from the main port through the valve bore to the outlet port; and a check valve in the charge port, the check valve permitting fluid flow from the charge port to the outlet port via the valve bore when the valve member is in its first position, the check valve blocking fluid flow from the main port to the charge pump when the valve member is in its second position.

4,498,847

CONTROL SYSTEM FOR VARIABLE DISPLACEMENT HYDRAULIC PUMPS

Teruo Akiyama, Yokohama, Japan, assignor to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

Filed Jun. 27, 1983, Ser. No. 508,100
Claims priority, application Japan, Jun. 29, 1982, 57-110722; Jun. 29, 1982, 57-096540[U]; Jun. 29, 1982, 57-096541[U]
Int. Cl.[3] F04B *49/00*
U.S. Cl. 417—216 6 Claims



1. A control system for variable displacement hydraulic pumps comprising:

(a) a fixed displacement hydraulic pump for supplying a control fluid pressure for a hydraulic servo mechanism;

(b) a plurality of reducing valve means operatively interlocked with work implement control valve units disposed on the delivery sides of a plurality of variable displacement hydraulic pumps, said reducing valve means being adapted to convert the delivery pressure of said fixed displacement hydraulic pump into the output pressure of the reducing valve in proportion to respective displacements of said control valve units by the manipulation thereof;

(c) control units for controlling respective flow rate of said variable displacement pumps, each control unit including a servo piston section adapted to selectively receive the delivery pressure of said fixed displacement hydraulic pump on either side thereof to thereby control the delivery pressures of said variable displacement hydraulic pumps, a guide section adapted to control the delivery pressure of said fixed displacement hydraulic pump to selectively direct it on either side of said servo piston section, and an input signal section adapted to receive the delivery pressure of said fixed displacement hydraulic pump, the output pressure of said reducing valve means and respective delivery pressures of said variable displacement hydraulic pumps so as to control said guide section; and

(d) means adapted to exert the delivery pressure of said fixed displacement hydraulic pump, the output pressure of said reducing valve and respective delivery pressures of said variable displacement hydraulic pumps on said control units, respectively.

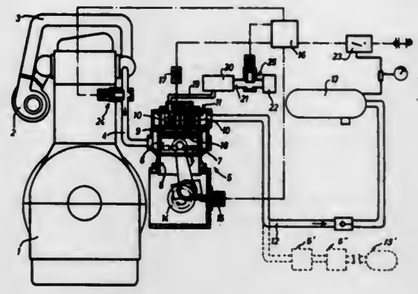
4,498,848

RECIPROCATING PISTON AIR COMPRESSOR

Ján Petrovsky, Schorndorf, and Heinz Roloff, Stuttgart, both of Fed. Rep. of Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart, Fed. Rep. of Germany

Filed Mar. 28, 1983, Ser. No. 479,148
Claims priority, application Fed. Rep. of Germany, Mar. 30, 1982, 3211598
Int. Cl.[3] F04B *25/00, 39/08, 39/10, 49/02*
U.S. Cl. 417—253 5 Claims

1. Reciprocating piston air compressor with slots in a cylinder wall and a piston driven by a crankshaft for controlling admission of pre-compressed air and with at least one outlet valve for the removal of the compressed air together with a second valve connecting a cylinder space with the external air, wherein the second valve is controlled as a function of an angle of the compressor crankshaft to form a regulating valve which opens during the piston return stroke between the closing of the outlet valve and the opening of the slots and which connects the cylinder space with an additional dead or storage space, which is in turn connected with the external air, and wherein the air is pre-compressed by a turbocharger, and wherein, when the air compressor is idling, the regulating valve is continuously open and respective shut-off valves close the passage between the turbo-compressor and the air compressor and the passage from the additional dead space to the external air.

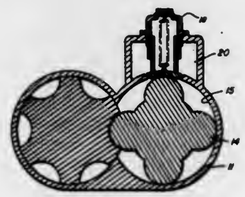


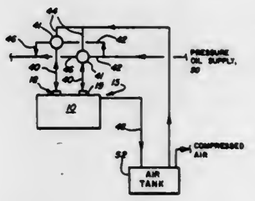
4,498,849

VALVE ARRANGEMENT FOR CAPACITY CONTROL OF SCREW COMPRESSORS

(Lars) Lauritz B. Schibbye, Saltsjö-Duvnäs, and Rolf A. England, Spånga, both of Sweden, assignors to Sullair Technology AB, Stockholm, Sweden

Continuation-in-part of Ser. No. 260,056, May 4, 1981, abandoned. This application Sep. 14, 1983, Ser. No. 532,296
Claims priority, application Sweden, Jun. 2, 1980, 8004091
Int. Cl.[3] F04C *18/16*
U.S. Cl. 417—299 9 Claims





1. In an oil injected screw compressor having a housing with a wall forming two intersecting bores, a pair of meshing rotors in said bores defining a compression space in the housing, and

inlet and discharge ports at the ends of said housing, a capacity control comprising:

a valve port in the housing wall between the inlet and discharge ports and communicating with the compression spaced in one of said bores; and

a valve formed of a valve housing and a cylindric valve piston slidable therein, which piston has a downwardly facing valve disk sealing against the housing wall, said valve being operably associated with said valve port and movable radially with respect to said one bore between a first position closing said valve port and a second position opening said valve port.

4,498,850

METHOD AND DEVICE FOR FLUID TRANSFER

Gena Perlov, 18 Disraeli St., Haifa, and Samuel Tuchman, 15 Hanarkissim St., Kiryat Bialik, both of Israel

Filed Apr. 22, 1981, Ser. No. 256,522
Claims priority, application Israel, Apr. 28, 1980, 59942
Int. Cl.³ F04B *43/14*
U.S. Cl. 417—322 **15 Claims**



1. A device for fluid transfer comprising:

a housing-like body with at least one wall having at least one concavity;

at least one elastically flexible magnetically activatable diaphragm consisting of an elastomer base to which is admixed permanent magnetic substances, said diaphragm being capable of forming, in conjunction with said concavity, one or more pocket-like chambers;

at least one inlet aperture and at least one outlet aperture located at opposite points along the periphery of said concavity; a plurality of electromagnets arranged in proximity to said concavity and adapted to generate, in a predeterminable sequence, a plurality of magnetic fields of controllably changing polarities and intensities producing, by a combination of forces of attraction and repulsion, cycles of dynamic deflections of said diaphragm, whereby by means of said magnetically generated dynamic deflections of said diaphragm, said pocket-like chambers are peristaltically manipulated to move fluid from the region of said inlet aperture through which said fluid is drawn in, towards the region of said outlet aperture, through which said fluid is expelled.

4,498,851

SOLID STATE BLOWER

Henry H. Kolm, Wayland, and Eric A. Kolm, Brookline, both of Mass., assignors to Piezo Electric Products, Inc., Cambridge, Mass.

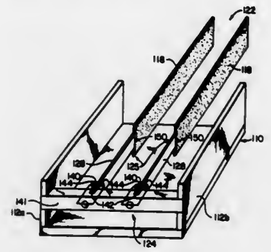
Continuation-in-part of Ser. No. 142,348, May 2, 1980, abandoned, which is a continuation-in-part of Ser. No. 036,812, May 7, 1979, abandoned. This application Mar. 22, 1983, Ser. No. 477,630
Int. Cl.³ F04B *35/04*
U.S. Cl. 417—322 **1 Claim**

1. A pumping device comprising:

a housing;

a piezoelectric element having one end mounted to said housing and one end free;

a generally planar impeller blade connected to the free end of said piezoelectric element and having its distal end unconstrained by said housing; said blade having a Q-factor of at least eight, a stiffness-to-density ratio of more than one million newton-meters per kilogram and a mass



per unit area which is less than 60% of the mass per unit area of said piezoelectric element; and

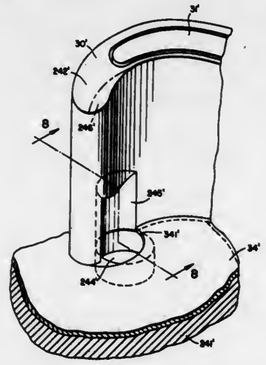
means for applying a voltage to said piezoelectric element for oscillating its free end perpendicular to its plane at or close to resonance and propagating a traveling quadrature wave along said blade to generate and shed vortices at the distal end of said blade.

4,498,852

SCROLL TYPE FLUID DISPLACEMENT APPARATUS WITH IMPROVED END PLATE FLUID PASSAGE MEANS

Masaharu Hiraga, Honjo, Japan, assignor to Sanden Corporation, Japan

Filed Mar. 9, 1982, Ser. No. 356,497
Claims priority, application Japan, Mar. 9, 1981, 56-33645
Int. Cl.³ F01C *1/02, 19/08*
U.S. Cl. 418—55 **18 Claims**



1. In a scroll type fluid displacement apparatus including first and second scroll members having, respectively, first and second end plates and first and second spiral wraps extending from one side surface of said first and second end plates, said spiral wraps interfitting at an angular and radial offset to make a plurality of line contacts between their spiral curved surfaces and axial contacts between the axial end surfaces of said spiral wraps and the opposed end plates thereby to define a plurality of fluid pockets, driving means operatively connected to at least one of said scroll members to effect relative orbital motion of said scroll members while preventing relative rotation thereof thereby to cause said fluid pockets to move and change in volume, fluid passage means through said first end plate

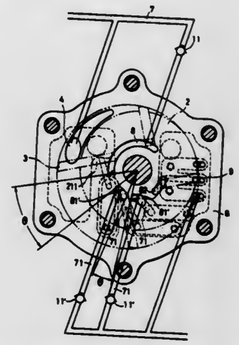
adjacent the inner end portion of said first spiral wrap, and an axial seal element on the axial end surface of said second spiral wrap in sliding, sealing relationship with said first end plate, said seal element terminating short of the inner end of said second spiral wrap so as not to contact said fluid passage means, the improvement wherein said fluid passage means has a generally elongated cross-section with the longer dimension thereof extending generally parallel to the adjacent portion of said first spiral wrap, said seal element terminating closer to the inner end of said second spiral wrap than it would for a fluid passage means having a less elongated cross-section, whereby a more complete axial seal is effected, thereby improving the volumetric efficiency of the apparatus.

4,498,853

VANE-TYPE COMPRESSOR

Hiroshi Sakamaki, Tochigi, and Yukio Suzuki, Saitama, both of Japan, assignors to Nippon Piston Ring Co., Ltd., Tokyo, Japan

Filed Dec. 8, 1980, Ser. No. 214,394
Claims priority, application Japan, Dec. 14, 1979, 54-172390[U]
Int. Cl.³ F01C *1/00;* F02C *2/00*
U.S. Cl. 418—268 **5 Claims**



1. A vane-type compressor comprising: a rotor housing; a pair of side housings; a rotor rotatably disposed within a rotor chamber defined between said rotor housing and said pair of side housings; a plurality of vanes slidably disposed within corresponding vane grooves radially formed in said rotor; means for applying intake fluid pressure to spaces defined between each said vane groove and a bottom of the corresponding vane during suction strokes, said pressure being applied through a first arcuate groove, a second arcuate groove being formed in an inner surface of said side housing at a position corresponding to said spaces during compression strokes, a pressure discharge passage connecting said second arcuate groove and an outlet port; and a check valve provided in said pressure discharge passage, wherein said second arcuate groove is subdivided into a plurality of grooves, each of said plurality of grooves being connected to a corresponding one of said pressure discharge passages and check valves.

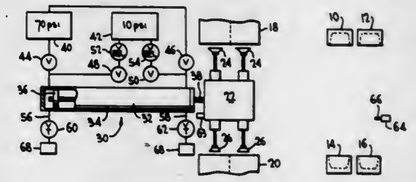
4,498,854

IN-MOLD LABELER—DUAL PARISON

John M. Roos, Des Plaines, Ill., assignor to Continental Packaging Company, Inc., Stamford, Conn.

Filed Oct. 13, 1982, Ser. No. 434,152
Int. Cl.³ B65C *9/00;* F15B *13/04, 15/22*
U.S. Cl. 425—116 **7 Claims**

1. A pneumatic back and forth feed system for a device having a dwell time at each end of its stroke, said feed system comprising a linear pneumatic motor having a fixed cylinder and a piston mounted in said cylinder for reciprocation, said cylinder having at each end thereof a supply port and a separate discharge port, a discharge line connected to each discharge port, said discharge line opening to atmosphere and having therein a restricted flow control member, a supply line connected to each supply port, a high pressure gaseous supply and a low pressure gaseous supply, a control valve separately connecting each of said gaseous supplies to each of said supply lines to selectively supply gas under pressure at one of said pressures to each end of said cylinder, said control valve for said high pressure supply being operable at the beginning of a stroke of said piston to admit high pressure gas to said cylinder at the beginning of a stroke with said high pressure gaseous supply being means for effecting rapid acceleration of said piston at the beginning of a stroke, said flow control members



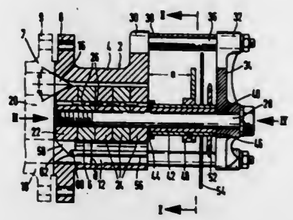
being operable to exhaust gas from each end of said cylinder at a rate lesser than the rate of gaseous supply into the opposite end of said cylinder from said high pressure source, said flow control members forming means for effecting deceleration of said piston near the end of a stroke, compressible shock absorber means at each end of said stroke, said control valve for said low pressure supply provides low pressure when a respective shock absorber means is compressed, and said low pressure reacting on said piston is sufficient to retain the compressed state of the respective shock absorber means.

4,498,855

APPARATUS FOR THE TREATMENT OF ANIMAL EXCREMENTS AND SEWAGE SLUDGES

Wolfgang Bander, Bundesallee 50, 3300 Braunschweig, Fed. Rep. of Germany

Division of Ser. No. 533,152, Sep. 16, 1983, , which is a continuation of Ser. No. 346,608, Feb. 8, 1982, abandoned, which is a continuation of Ser. No. 875,088, Feb. 3, 1978, abandoned. This application Nov. 28, 1983, Ser. No. 555,510
Claims priority, application Fed. Rep. of Germany, Feb. 8, 1977, 2705098
Int. Cl.³ B29C *23/00;* B29F *3/04*
U.S. Cl. 425—308 **9 Claims**



1. In an extrusion press for making briquettes of natural waste material including organic waste substance, the improvement comprising a die having two substantially concentric members defining an array of passages therebetween said passages being disposed about and substantially parallel to the axis of said concentric members, all pairs of adjacent said passages being connected by a slit therebetween and extending along said passage and at a distance from the outlet ends of said

passages a dividing finger being disposed and rotatable about said axis.

4,498,856

COMPACTING MILL

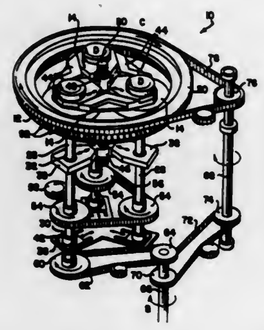
Charles F. Botha, and Adriaanus L. Lambrechts, both of Malmesbury, South Africa, assignors to Ru-Korrel (Propietary) Limited, South Africa

Filed Nov. 3, 1983, Ser. No. 548,507

Claims priority, application South Africa, Nov. 5, 1982, 82/8148

Int. Cl.³ B29F *3/012*

U.S. Cl. 425—331 6 Claims



1. A compacting mill for compacting particulate solids into briquettes, pellets, or the like, and comprising: a stationary structure; a cylindrical die plate mounted on said structure, the die plate having an axis of symmetry (the first axis of symmetry) and having die passages extending through the die plate; and at least two circumferentially spaced compacting rollers each having an axis of symmetry (the respective second axis of symmetry), having an outside diameter which is smaller than the inside diameter of the die plate, and being relatively displaceable along the inside of the die plate, thereby to press material to be compacted into the die passages;

wherein the die plate is fast with a first drive transmission member co-axial with the die plate;

wherein the compacting roller is fast with a second drive transmission member co-axial with the roller;

wherein there is a positive drive connection between the die plate and the roller via said first and second drive transmission members;

wherein the rollers are spaced apart circumferentially by more than 90° and are mounted such that each said roller is, during operation of the mill, displaceable radially inwardly with respect to the first axis of symmetry by the pressure exerted by said material on the roller as the material is being pressed into the die passages; and

wherein there is an interconnection between the rollers which is such that radially inward displacement of either one of the rollers is dependent on radially outward displacement of the other roller.

4,498,857

APPARATUS FOR FORMING ADOBE BRICKS AND DRILLING WELLS

Herbert D. Kinnamon, Queen Creek, Ariz., assignor to Loyce O. Burks, Phoenix, Ariz., a part interest

Filed Dec. 1, 1983, Ser. No. 556,983

Int. Cl.³ B28B *5/08*; E02D *7/06*

U.S. Cl. 425—361 6 Claims

1. A pressure applying apparatus for forming adobe bricks or driving well casings into the earth comprising:

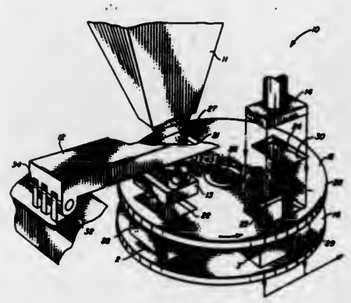
a platform;

a drive arm pivotally mounted at one end on said platform and movable in a predetermined arcuate path,

a hydraulic activated cylinder connected to said drive arm at the other end for pivotally moving said driven arm reciprocally along said arcuate path,

ram means connected to said drive arm at a point between its ends for moving in a relatively vertical direction upon arcuate movement of said drive arm,

said ram means comprising a first shaft, a guiding support connected at one end to said platform and forming a bearing at the other end for said first shaft, a first track angularly positioned on said drive arm relative to the longitudinal axis of said drive arm, a rotative first wheel mounted on one end of said first shaft supported by said first wheel on said first track for limited movement therealong and a pressure plate mounted on the other end of said first shaft,



said ram means activating said first shaft and said pressure plate upon movement of said drive arm in a first direction to remove said pressure plate from an associated mold, and

compression means for moving said shaft and pressure plate into an associated mold and applying a force to said ram means upon movement of said drive arm in a first direction comprising a plate mounted on said drive arm having a surface arranged angularly with respect to the longitudinal axis of said drive arm, a cradle mounted on said pressure plate and a roller bar mounted in said cradle for physical contact with said surface upon predetermined angular movement of said drive arm in said second direction, said drive arm upon movement in said second direction by said ram means causing said surface to engage said roller bar and a relative movement of said surface and said roller bar over each other to maintain a vertical movement of said shaft and pressure plate relative to the angular movement of said drive arm.

4,498,858

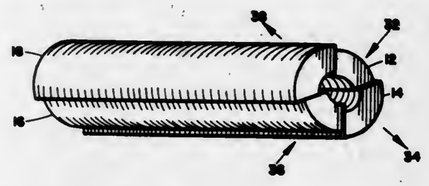
HEATED DIE FOR CARBONIZED MATERIAL

Donald A. Full, Richmond, Va., assignor to Philip Morris Incorporated, New York, N.Y.

Filed Aug. 23, 1982, Ser. No. 410,195

Int. Cl.³ A01J *21/00*

U.S. Cl. 425—466 6 Claims



1. A die for forming friable material comprising:

a. an axial elongated, segmented mold defining a passage having inlet and outlet ends; and

b. moving means capable of independently moving opposed segments of said mold perpendicularly of the axis of said mold and also capable of moving each pair of opposed segments of said mold in a direction parallel to the axis of said mold, wherein said moving means operates opposed segments in a synchronous manner.

4,498,859

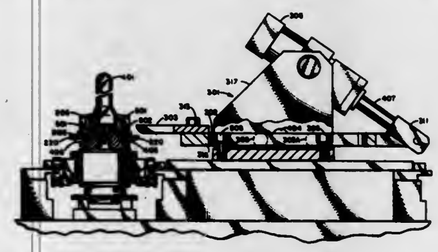
CHUCK ACTIVATING APPARATUS

Joseph F. Gibbemeyer, Cincinnati, Ohio, assignor to Cincinnati Milacron Inc., Cincinnati, Ohio

Filed Apr. 11, 1983, Ser. No. 483,886

Int. Cl.³ B29D *23/03*

U.S. Cl. 425—534 5 Claims



1. In a machine for blow molding a thermoplastic polymer container, said machine having a chuck for receiving and releasably retaining a thermoplastic polymer preform, the chuck comprising a housing, a gripper assembly attached to the housing for releasably grasping the preform and a release ring slidably mounted on the exterior of the housing for engaging the gripper assembly, an apparatus for activating the chuck to receive and releasably retain the preform comprising

(a) a frame,

(b) a slide having a forked end for engaging the release ring of the chuck movably supported on the frame for horizontal movement between a forward chuck engaging position and a rearward chuck disengaging position,

(c) a means for reversably moving the slide,

(d) limiting means for controlling the travel of the slide in a horizontal direction in the frame,

(e) pivoting means for causing pivoting of the slide at its forward limit of travel and

(f) means for producing substantially vertical movement of the forked end for engaging the release ring.

4,498,860

INJECTION MOLDING APPARATUS HAVING A SPRUE HOLDER WITH AN INCLINED RETRACTABLE RAM

Geoffrey D. Gahan, Great Missenden, England, assignor to Mouldmaking Design Centre Limited, Buckinghamshire, England

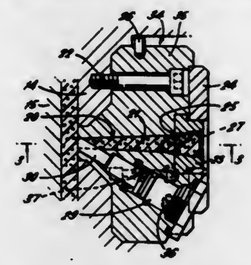
Filed Jul. 28, 1983, Ser. No. 518,277

Claims priority, application United Kingdom, Aug. 6, 1982, 8222794; May 11, 1983, 8312935

Int. Cl.³ B29F *1/03*, *1/05*; B29D *27/00*

U.S. Cl. 425—562 12 Claims

1. A holder for the sprue of an injection moulding machine, the holder comprising gate means having a passageway through which the material to be moulded is injected into the moulding space and within which a sprue is formed and from which the sprue is ejected during each operating cycle, the passageway having an inlet end and an outlet end open to the mould space, and the gate means including a retractable ram inclined to the passageway, the ram being movable between a withdrawn position and a position in which the ram closes the



outlet end of the passageway, the ram simultaneously cutting off the sprue from the moulding.

4,498,861

METHOD FOR CONTROLLING COMBUSTION IN INDUSTRIAL FURNACES

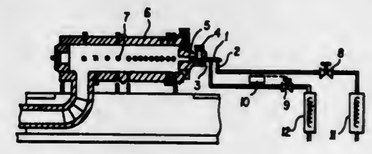
Tomio Suzuki, and Kotaro Morimoto, both of Kobe, Japan, assignors to Kobe Steel, Limited, Kobe, Japan

Filed Aug. 22, 1980, Ser. No. 181,384

Claims priority, application Japan, Apr. 9, 1979, 54-43211; Aug. 22, 1979, 54-107524; Aug. 22, 1979, 54-107525; Nov. 2, 1979, 54-142599; Nov. 2, 1979, 54-142600

Int. Cl.³ F23N *5/08*

U.S. Cl. 431—12 11 Claims



1. A method for controlling combustion of an atomized fuel in an industrial furnace in which the atomized fuel is injected into the furnace by a burner, said method comprising the steps of:

(a) establishing the correlation between total flame radiation in the industrial furnace and the feed rate of an atomizing medium per unit quantity of the fuel;

(b) establishing the correlation between the internal temperature distribution of the furnace and the feed rate of the atomizing medium per unit quantity of the fuel; then

(c) feeding signals indicative of the fuel flow rate to a rationing unit operating on said correlations; and

(d) automatically controlling the feed rate of the atomizing medium to an optimum value according to output signals from the rationing unit.

4,498,862

DEVICE FOR ADJUSTING THE VERTICAL POSITION OF WICK IN OIL BURNER

Kazuharu Nakamura, Nagoya, and Yutaka Nakanishi, Kounan, both of Japan, assignors to Toyotomi Kogyo Co., Ltd., Nagoya, Japan

Filed Nov. 28, 1983, Ser. No. 555,727

Claims priority, application Japan, Nov. 27, 1982, 57-179545[U]

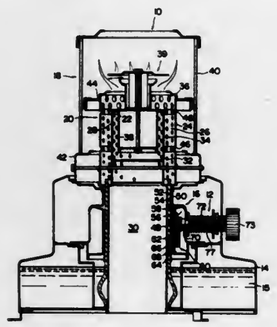
Int. Cl.³ F23N *5/24*

U.S. Cl. 431—88 9 Claims

1. A device for adjusting the vertical position of a wick in an oil burner, comprising:

a burner body;

a wick operating shaft mounted on said body and adapted to be rotated to vertically move such a wick;
a gear loosely fitted on said wick operating shaft and having a return spring connected between said gear and said body;
a stopper means mounted on said body and forced by a spring means toward said gear to be engaged with said gear;
means connected between said wick operating shaft and said gear for rotating said gear with said wick operating shaft to wind said return spring when said wick operating shaft



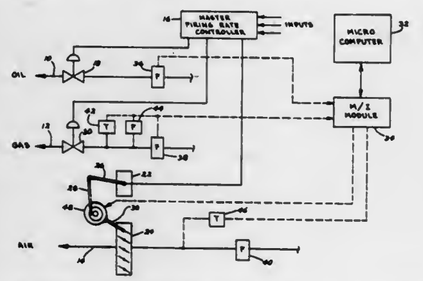
is rotated to move such a wick upwardly and for reversing said wick operating shaft as said return spring unwinds when said stopper means is moved to be disengaged from said gear;
a control member loosely fitted on said wick operating shaft and provided with a stopper actuating portion for moving said stopper means against said spring means to release the engagement between said stopper means and said gear; and
means for engaging said control member with said wick operating shaft and said gear at a desired position.

4,498,863

FEED FORWARD COMBUSTION CONTROL SYSTEM

Robert C. Hanson, Excelsior, and Leon C. Hanson, Bloomington, both of Minn., assignors to Hays-Republic Corporation, Riviera Beach, Fla.

Continuation of Ser. No. 253,713, Apr. 13, 1981, abandoned. This application May 23, 1983, Ser. No. 496,337
Int. Cl.³ F23N *1/00*
U.S. Cl. 431—89 **7 Claims**



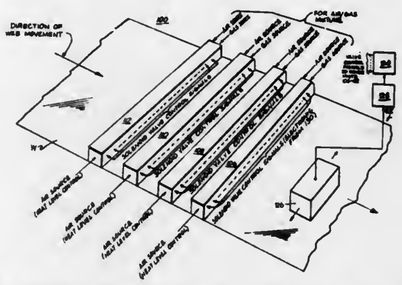
1. A method of controlling air supplied to a combustion process, prior to actual combustion, in which fuel is supplied to the combustion process through a fuel supply line and air is supplied to the combustion process through an air supply line, the method comprising:
sensing fuel flow rate in the fuel supply line; sensing air flow rate in the air supply line;
determining a desired stoichiometric air flow rate as a function of the sensed fuel flow rate;
determining the firing rate of the combustion process as a function of sensed fuel flow rate;
determining a desired excess air flow rate from stored values of excess air required for the determined firing rate;
determining a desired total air flow rate from the desired stoichiometric air flow rate and from the desired excess air flow rate; and
adjusting air flow in the air supply line as a function of the sensed air flow rate and the desired total air flow rate prior to the combustion process in an equal air flow percentage control action regardless of whether said firing rate is high or low, so that the trim action of said adjusting is greater at said high firing rate.

4,498,864

METHOD AND APPARATUS FOR UNIFORMLY DRYING MOVING WEBS

Reinhold C. Roth, Newport, and Richard F. Terra, Middletown, both of R.I., assignors to Techmark Corporation, Newport, R.I.

Filed Dec. 10, 1982, Ser. No. 448,619
Int. Cl.³ F27B *9/28*; F26B *19/00*; F23D *13/40*; F27D *19/00*
U.S. Cl. 432—8 **38 Claims**



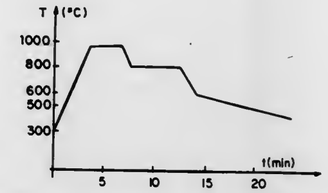
28. Apparatus for improving the uniformity and percent of moisture content across a web undergoing drying comprising:
a plurality of elongated dryer units arranged transverse to the direction of movement of the web and each comprised of a plurality of dryer sections, each dryer section arranged to dry a particular section of the web;
each dryer section comprising a radiant energy emitter and means for receiving an air/gas mixture for heating the emitter when ignited, the proportion of which mixture controls the radiant energy output level of the associated dryer section;
regulating means for selectively regulating the air/gas mixture for each dryer section between predetermined upper and lower energy levels, said lower energy level being at least sufficient to sustain combustion of the air/gas mixture;
means for individually operating said regulating means to control drying across each of said dryer units to provide localized drying at a selected one of said upper and lower energy levels of any desired longitudinal section of the moving web, the amount of localized drying being the cumulative sum of the individual dryer sections of said dryer units for drying a section of the web to thereby achieve a more uniform moisture distribution across the web.

4,498,865

PROCEDURE FOR FIRING DENTAL PORCELAIN ON METAL

Herbert G. Schulmeyer, Mensel, Fed. Rep. of Germany, assignor to Dentsply Research & Development Corp., Milford, Del.

Filed Aug. 24, 1983, Ser. No. 526,022
Claims priority, application Fed. Rep. of Germany, Aug. 25, 1982, 3231546
Int. Cl.³ F26B *9/12*
U.S. Cl. 432—18 **12 Claims**



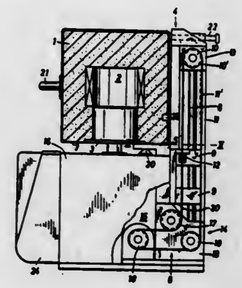
1. A method for preparing dental prostheses of the dental porcelain fused to metal type comprising, after the application of a dental porcelain material to a metal part to form a veneer, bringing the temperature of the veneer to a firing temperature, maintaining a firing temperature in the veneer for a time sufficient to provide a fusing of said dental porcelain, thereafter reducing the temperature of the veneer below said firing temperature by about 80° to about 280° C. to an intermediate temperature between the firing temperature and the ambient temperature, maintaining said intermediate temperature in the veneer, thereafter further reducing the temperature of the veneer to ambient temperature.

4,498,866

SAGGER FURNACE

Karl H. Meisiltzer, Wiesbaden, and Wigbert Hauner, Langen, both of Fed. Rep. of Germany, assignors to Dentsply Research & Development Corp., Milford, Del.

Filed Feb. 1, 1983, Ser. No. 462,916
Claims priority, application Fed. Rep. of Germany, Feb. 18, 1982, 3205729
Int. Cl.³ F27D *3/00*; C21D *1/74*
U.S. Cl. 432—239 **9 Claims**



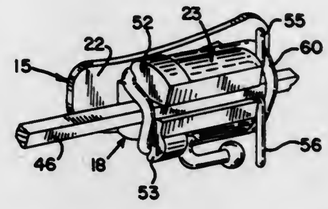
1. A dental ceramic firing furnace comprising a base supporting a stationary sagger platform, vertical guide rod means on said base at one side of said plateform, a firing chamber having an opening in the bottom thereof dimensioned for receiving said stationary sagger platform and including guide bushings slidable upon said guide rod means, and power means on said base engageable with said guide bushings and operable for lowering said firing chamber to receive said stationary sagger platform and raising said firing chamber above said stationary sagger platform to expose said stationary sagger platform for charging and emptying said stationary sagger platform.

4,498,867

CONVERTIBLE ORTHODONTIC APPLIANCE

Peter C. Kesling, LaPorte, Ind., assignor to TP Laboratories, Inc., Westville, Ind.

Filed Jan. 31, 1984, Ser. No. 575,657
Int. Cl.³ A61C *7/00*
U.S. Cl. 433—16 **2 Claims**



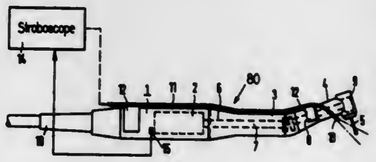
1. An orthodontic appliance for use in the light wire or edgewise system comprising, a sheath attachable to a tooth along an axis generally perpendicular to the long axis of the tooth and including an elongated mesiodistally extending body having a mesiodistally extending cylindrical opening and a mesiodistally extending slot on the side away from the tooth, and a wire receiving insert removably mountable in the opening of said sheath, and said insert including, a generally cylindrical body matingly slidable into said sheath opening, means coacting with said sheath for selectively locking the insert to the sheath, ligating wings on one end, said selective locking means on the other end and including a pair of bendable locking tabs which when bent over the corresponding end of said sheath function as ligating wings, means coacting with the sheath slot to prevent relative rotation between the insert and sheath, and a mesiodistally extending wire receiving opening or slot, said wire receiving opening being shaped to receive a rectangular or square wire and be open horizontally through the sheath slot to permit the appliance to function as an edgewise bracket, and said means preventing rotation being disposed to align the insert opening with the sheath slot.

4,498,868

DENTAL HAND PIECE

Werner Schuss, Heppenheim, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Jul. 14, 1982, Ser. No. 398,408
Claims priority, application Fed. Rep. of Germany, Jul. 29, 1981, 3129932; May 19, 1982, 3219017
Int. Cl.³ A61C *3/02*
U.S. Cl. 433—29 **16 Claims**



1. In a dental hand piece arrangement having a housing, a tool mounted in the housing for movement, drive means disposed in the housing for placing the tool in motion with a motion frequency, said dirve means including a drive motor and a drive train of at least one drive shaft, said drive train

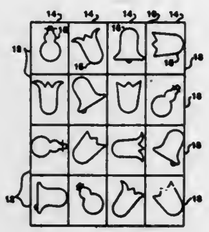
being coupled to the tool to rotate the tool, and illumination means having an exit end mounted adjacent the tool for projecting light from the exit end at a tip of the tool, the improvements comprising said illumination means including a stroboscopic means for creating light pulses having a light pulse frequency which coincides with the motion frequency of the tool in such a manner that the surface of the tool is visible during motion, said stroboscopic means comprising a stroboscopic diaphragm mounted on a drive shaft and the illumination means including at least one light conductor having a gap receiving said diaphragm.

4,498,869

SYSTEM FOR TEACHING VISUAL DISCRIMINATION OF SPATIALLY ORIENTED SUBJECT MATTER

Marilyn D. Faison, 1404 Giltspur Rd., Richmond, Va. 23233

Filed Mar. 12, 1984, Ser. No. 588,198
Int. Cl.³ G09B 17/00, 1/32
U.S. Cl. 434—184 **9 Claims**



1. An instructional system for training a person to more accurately interpret visually perceived stimuli, said system comprising a kit comprised of:

(a) figure pages, the front face of each having straight lines dividing the page into an array of rectangular spaces disposed in horizontal rows and vertical columns, said spaces containing randomly distributed closed line figures in at least two groups wherein the figures of a given group are identical but appear in different orientations, and identifying indicia in each rectangular space, and

(b) a set of checking cards for each figure page, the front faces of the cards of a given set containing figures corresponding to the figures on the front face of a corresponding figure page, and the rear face of each card containing identifying indicia corresponding to the identifying indicia on the front face of said figure page associated with the same figure, the number of cards in each set being equal to or greater than the number of spaces on the front face of the corresponding figure page.

4,498,870

STIMULUS/RESPONSE DEVICE

William J. Madonna, 100 Colette Ct., Oldsmar, Fla. 33557

Filed Apr. 9, 1984, Ser. No. 434,260
Int. Cl.³ G09B 7/06
U.S. Cl. 434—335 **7 Claims**

1. A device that provides a plurality of responses to a plurality of stimuli, wherein at least one preselected specific response is provided only when the operator of the device successfully matches a specific pair of said plurality of stimuli, and wherein said plurality of stimuli are divided into a first and second group of stimuli, said second group being subdivided into a plurality of sets of stimuli, the ordered arrangement of which differs as between different sets, so that a successful matching of a stimulus from said first group with a stimulus from a selected set of stimuli from said second group does not indicate to said operator how to make successive matches, wherein the improvement comprises, in combination,

a first generating means for generating a first plurality of encoded signals, each of which first encoded signals represents a specific stimulus included in said first group of stimuli,

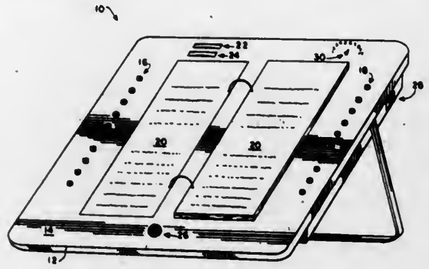
a second generating means for generating a second plurality of encoded signals, each of which second encoded signals represents a specific stimulus included in said second group of stimuli,

said first generating means being selectively operable to generate specific ones of said first plurality of encoded signals,

said second generating means being selectively operable to generate specific ones of said second plurality of encoded signals,

a memory means for storing all of the stimuli contained in said second group of stimuli,

a selector means having as many positions as there are sets of stimuli in said second group of stimuli for re-calling from



said memory means a specific set of stimuli from said second group of stimuli so that different sets of stimuli are re-called by each position of said selector means,

a comparison means operatively connected to said second generating means, and to said memory means,

said memory means adapted to transmit a first specific stimulus from a selected set of stimuli from said second group of stimuli to said comparison means responsive to selection by said operator of said first specific stimulus,

said first generating means adapted to transmit a second specific stimulus from said first group of stimuli to said comparison means responsive to selection by said operator of said second specific stimulus,

said comparison means providing a first response when said first specific stimulus matches said second specific stimulus, and providing a second response when said first specific stimulus does not match said second specific stimulus.

4,498,871

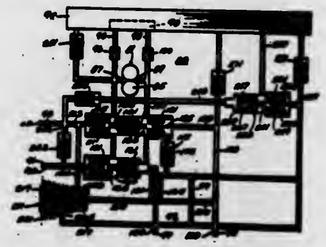
HYDRAULIC SYSTEM FOR MARINE PROPULSION DEVICE WITH SEQUENTIALLY OPERATING TILT AND TRIM MEANS

Charles B. Hall, Ingleside; Edward D. McBride, Waukegan, both of Ill., and Robert F. Young, Kenosha, Wis., assignors to Outboard Marine Corporation, Waukegan, Ill.

Continuation-in-part of Ser. No. 252,813, Apr. 10, 1981, Pat. No. 4,395,239, and a continuation-in-part of Ser. No. 183,209, Sep. 2, 1980, Pat. No. 4,363,629. This application Dec. 2, 1982, Ser. No. 446,351
The portion of the term of this patent subsequent to Jul. 26, 2000, has been disclaimed.
Int. Cl.³ B63H 5/12
U.S. Cl. 440—61 **12 Claims**

1. A marine propulsion device comprising transom bracket means adapted to be connected to a boat transom, a stern bracket, first pivot means connecting said stern bracket to said transom bracket means for pivotal movement therebetween about a first pivot axis which is horizontal when said transom bracket means is boat mounted, a swivel bracket, second pivot means connecting said swivel bracket to said stern bracket for

pivotal movement with said stern bracket and relative to said stern bracket about a second pivot axis parallel to said first pivot axis, a propulsion unit including, at the lower end thereof, a rotatably mounted propeller, means pivotally connecting said propulsion unit to said swivel bracket for steering movement relative to said swivel bracket and for common pivotal movement with said swivel bracket, a trim cylinder-piston assembly pivotally connected to said stern bracket and to said swivel bracket and including first and second ends, a tilt cylinder-piston assembly pivotally connect to said transom bracket means and to said stern bracket and including first and second ends, a reversible pump including first and second ports, first conduit means including first valve means communicating between said first pump port and said first end of said trim cylinder-piston assembly, second conduit means including second valve means communicating between said first pump port and said first end of said tilt cylinder-piston assembly, third conduit means including third valve means dividing said third conduit means into an upstream portion communicating



with said second pump port and a downstream portion communicating with said second end of said trim cylinder-piston assembly, fourth conduit means including fourth valve means dividing said fourth conduit means into an upstream portion communicating with said second pump port and a downstream portion communicating with said second end of said tilt cylinder-piston assembly, and let-down means communicating between said sump and said downstream portion of one of said third and fourth conduit means and including a let-down valve preventing flow from said sump to said downstream portion of said one of said third and fourth conduit means and selectively permitting flow from said downstream portion of said one of said third and fourth conduit means to said sump, and means for selectively opening said let-down valve including a piston engageable with said let-down valve, and a duct communicating between said piston and said second conduit means and including therein valve means preventing flow to said second conduit means and permitting flow from said second conduit means to said piston in response to pressure in said second conduit means above a predetermined level.

4,498,872

LIFESAVER TROLLING MOTOR MOUNT

Ivan T. Shonley, H.C. 55 Box 841, and Orville J. Rock, H.C. 55 Box 877, both of Sturgis, S. Dak. 57785

Filed Jul. 25, 1983, Ser. No. 381,589
Int. Cl.³ B63H 21/26
U.S. Cl. 440—63 **2 Claims**

1. A motor mount for attaching an auxiliary motor of limited horsepower to a boat having a main drive unit which main drive unit is pivotably movable between an up position wherein the drive unit is raised out of the water, a down position wherein the drive unit is lowered into the water and has horizontal movement to both right and left of center, said motor mount comprising:

(a) a first leg having means at its lower end for pivotal connection to the upper portion of the said drive unit;

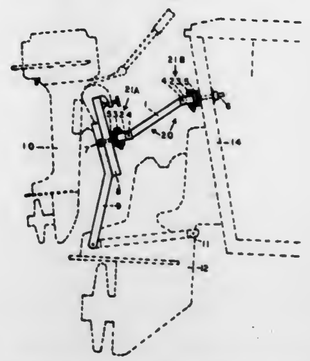
(b) a second leg having means at its lower end for pivotal connection to the upper portion of the said drive unit;

(c) a mounting board adapted to accept a clamping device on an auxiliary motor;

(d) said first and second legs being pivotably attached at their lower ends to opposite sides of main drive unit;

(e) said mounting board is attached to each leg at the upper end;

(f) a connecting arm connecting said mounting board to the transom of the boat;



(g) a first double swivel having means for bolting to the transom of the boat and means for attachment to one end of said connecting arm;

(h) a second double swivel having means for bolting to said mounting board and means for attachment to the other end of said connecting arm;

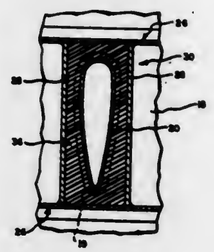
(i) said connecting arm having holes drilled through each end as a means to connect to said first and second double swivels.

4,498,873

SURFACE EFFECT SHIP PROPELLER MOUNT

John B. Chaplin, Covington, and Edward G. Ganczak, Slidell, both of La., assignors to Textron Inc., Providence, R.I.

Filed Jun. 23, 1983, Ser. No. 507,131
Int. Cl.³ B63H 23/32
U.S. Cl. 440—82 **6 Claims**



1. A ship having a hull including a side hull bottomed by an underwater operationally wet aluminum alloy keel plate having an opening extending therethrough and an interior operationally dry aluminum alloy structural member;

a steel strut having an inner end mechanically anchored to said structural member and an outer end for supporting bearing means for carrying a ship propeller shaft, said strut freely extending through said opening;

a fence formed of aluminum alloy and fixed to said keel plate within said side hull and arranged to surround said opening and said strut in spaced relationship therefrom; and

a solid but somewhat resilient body of material chemically inert to sea water filling said fence about said strut to

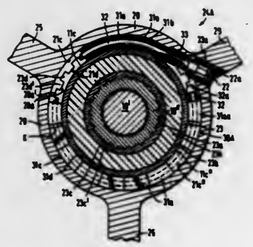
water-seal said opening and provide said strut with a support in the region of said keel plate for dampening vibrational stress traveling through said strut and avoiding dissimilar metal sea water electrolytic action between said strut and said keel plate.

4,498,874

BLOCKING DEVICE FOR PREVENTING AXIAL MOVEMENT IN SELECTED EXTENT

Heinz Pichl, Upsala, Sweden, assignor to Volvo Penta AB, Gothenburg, Sweden

Filed May 18, 1982, Ser. No. 379,348
Claims priority, application Sweden, May 21, 1981, 8103203
Int. Cl.³ B63H *23/34*
U.S. Cl. 440—83 **21 Claims**



1. In a blocking device for limited axial movement between a first body (20) having a cylindrical inner wall defining an opening, and a second body (23) having a cylindrical outer wall fitting into said opening, said inner and outer walls having a respective outer and inner circumferential groove (11*c*, 21*c*), and in juxtaposed position complementing each other to form a circumferential channel (K), said first body having an access port (22), a locking means (30A) introducible through said access port and including a plurality of massive and substantially rigid, separated link members (31*a*, 131*c*), said link members having in a radial direction substantially the same dimension as said channel and being circumferentially limited by an outer arc (31*c*) having the same radius (r') as the bottom of said outer groove, and an inner arc (31*d*) having the same radius (r'') as the bottom of said inner groove, said device is used for blocking a propeller shaft (10) in the hub of a boat propeller (24), said outer circumferential groove being located in the middle of the axial length of said hub to enable mounting of the propeller in two reversed positions.

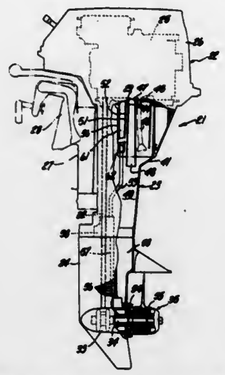
4,498,875

OUTBOARD MOTOR

Eifu Watanabe, Hamamatsu, assignor to Yamaha Hatsudoki Kabushiki Kaisha and Sanshin Kogyo Kabushiki Kaisha, both of, Japan

Filed Sep. 2, 1982, Ser. No. 414,034
Claims priority, application Japan, Sep. 10, 1981, 56-142664
Int. Cl.³ B63H *21/10*
U.S. Cl. 440—88 **8 Claims**

6. In an outboard motor or the like comprising a power head having an internal combustion engine having an exhaust system including an exhaust outlet pipe, an oil sump depending from said engine and adapted to contain lubricant therefor, the improvement comprising said oil sump having a wall encircling at least a portion of the length of said exhaust outlet pipe defining a vertically extending opening therethrough, said exhaust outlet pipe extending through said opening and being



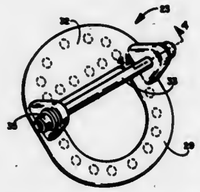
spaced inwardly from said wall to minimize the heat exchange between said exhaust pipe and the lubricant in said oil sump.

4,498,876

WATER SHUTTER

Alvin R. Zemlicka, Elkhart Lake, Wis., assignor to Brunswick Corporation, Skokie, Ill.

Filed Dec. 27, 1982, Ser. No. 453,450
Int. Cl.³ F01N *3/00*
U.S. Cl. 440—89 **3 Claims**



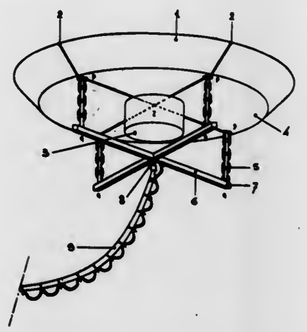
1. A stern drive for propulsion of a boat comprising:
(A) an inboard engine;
(B) an outboard drive unit coupled to said engine;
(C) an exhaust passageway coupled to receive exhaust from said engine, said exhaust passageway having a discharge end for discharging exhaust below the surface of the water on which said boat is operated;
and
(D) a valve mounted in said exhaust passageway for preventing the flow of water to said engine and allowing the passage of exhaust from said engine, said valve including:
(1) a pivot shaft extending across said passageway; and
(2) a valve member pivotally mounted on said shaft, said valve member having;
(a) a generally planar metal plate member with a lug on each side extending generally perpendicular to the plane of said plate member, said lugs having holes therethrough for pivotal attachment to said shaft; and
(b) an elastomer mechanically and chemically bonded to said metal plate member on both sides of said plate member, said elastomer forming a flexible lip around the periphery of said plate member to seal against the walls of said exhaust passageway when said valve member is positioned to close said exhaust passageway, said elastomer formed around said lugs to act as a bearing on said shaft.

4,498,877

ANCHORING SYSTEM FOR A BUOY, SPECIALLY A MEASURING BUOY

Petrus J. Rademakers, Aerdenhout, Netherlands, assignor to Datawell B.V., Netherlands

Filed Jan. 11, 1982, Ser. No. 338,625
Claims priority, application Netherlands, Jan. 15, 1981, 8100165
Int. Cl.³ B63B *21/52*
U.S. Cl. 441—23 **8 Claims**



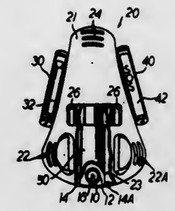
1. An anchoring system for a buoy, said buoy being adapted to follow the wave slopes of a water surface in which it floats, having an anchoring line connection member connected to an anchoring line at an anchoring line attachment point, at least two non-extensible and parallel links connecting said anchoring line connection member to said buoy, said links having equal length from their point of attachment to said anchoring line connection member to their point of attachment to said buoy, the mutual configuration in space of (a) said points of attachment to said anchoring line connection member and (b) said points of attachment to said buoy, being identical, and wherein the point of impact of the anchoring line force, taken with respect to the points of attachment of the links to the buoy, is fixed and located in the same position as is the anchoring line attachment point, taken with respect to the points of attachment of the links to the anchoring line connection member, said point of impact of the anchoring line force being located inside a body part of said buoy, said anchoring line and said links being connected to said anchoring line connection member and said buoy such that said line and said links are free to extend from said anchoring line connection member and said buoy in all directions having an vertical component.

4,498,878

SAFETY DIVING BACKPACK

Shin-Shi Shieh, 56-3, Kien Kwo N. Rd., Taipei, Taiwan

Filed Aug. 31, 1982, Ser. No. 413,283
Int. Cl.³ B63B *21/52*
U.S. Cl. 441—80 **4 Claims**



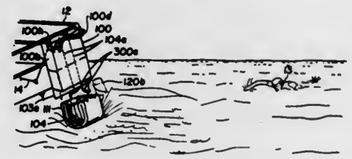
1. A safety diving backpack, comprising a salvage backpack body, a watertight handlight, a life buoy, a water kettle and a reel wheel, the backpack body being formed in one piece complete with two hollow cylinders on both sides thereof serving to set in the handlight and the life buoy respectively, the center portion of the backpack projecting outwards to let in a water kettle and a reel wheel wound with nylon ropes that will all come to service in case of emergency, thereby providing means for sustaining the life of an endangered diver or for releasing emergency help-seeking signals for search and rescue teams or other vessels or aircrafts passing by; the water kettle being complete with two passage holes on the bottom to be covered with two kettle cocks to keep drinkable water as contained therein intact from sea waters, and being complete with fixing fins to facilitate fixing onto the counterpart hollow spaces as provided in the backpack body by means of screws.

4,498,879

EMERGENCY RESCUE DEVICE

J. Kelsey Burr, Jupiter, Fla., assignor to Halkey-Roberts Corporation, St. Petersburg, Fla.

Filed Jan. 31, 1983, Ser. No. 462,213
Int. Cl.³ B63C *9/22*
U.S. Cl. 441—80 **7 Claims**



1. An emergency rescue assembly for deployment from a boat to rescue a person in a body of water comprising in combination:
a container including side walls and a top wall fixed together to define an open ended bottom;
said container further including a bottom panel adapted to be closed over said open ended bottom;
means for releasably securing said bottom panel over said open ended bottom;
means for attaching said container to the vehicle in an overhanging position above the body of water;
an inflatable personal flotation device stored within said container;
first means for automatically inflating said personal flotation device;
an inflatable signal cone comprising an elongated cone-shaped air-filled bladder capable of remaining erect upon inflation and a weight disposed at the bottom end thereof for maintaining said signal cone in an upright position in the body of water upon inflation of said bladder;
second means for automatically inflating said signal cone;
a sea anchor;
first tether means connecting said sea anchor to said personal flotation device or to said signal cone; and
second tether means connecting said personal flotation device and said signal cone together,
whereby, upon actuation of said securing means, said bottom panel falls open, said personal flotation device and said signal cone fall directly from within said container into the body of water, and both said inflating means are actuated to inflate said personal flotation device and said signal cone after dropping from within said container.

4,498,880

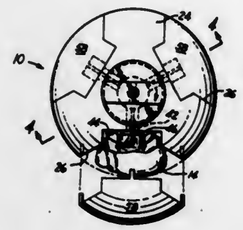
HURLABLE WATER RESCUE AID

Mark D. Curley, P.O. Box 296, Verdugo City, Calif. 91046

Filed Feb. 22, 1983, Ser. No. 455,538
Int. Cl.³ B63C *9/16*
U.S. Cl. 441—81 **16 Claims**

1. Hurlable, water rescue aid comprising a plurality of initially collapsed, gas-inflatable buoyancy elements each having a neck portion, a ball-shaped bracket supporting said buoyancy

elements in collapsed condition generally within the locus of said bracket, a compressed gas supply within said bracket for inflating said elements, means adapted to release said gas supply from compression in advance of hurling said aid toward a person to be rescued, and means metering flow of released gas



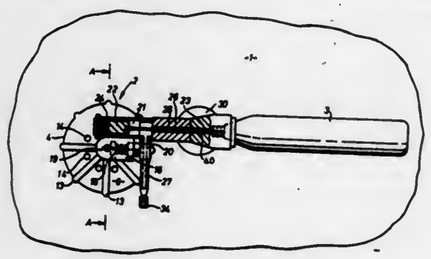
from said supply into each said buoyancy element comprising a passageway of greatly reduced diameter relative to said buoyancy element neck portion, whereby each said buoyancy element is substantially collapsed at the commencement of flight but substantially inflated at the termination of flight for use by said person.

4,498,881

INFLATABLE ARTICLES

Brain L. Buckle, Colwyn Bay, Wales, assignor to E. C. Hopkins Limited, West Midlands, England

Filed Sep. 16, 1981, Ser. No. 302,702
Claims priority, application United Kingdom, Sep. 16, 1980, 8029827; Mar. 16, 1981, 8108132
Int. Cl.³ B63C *9/12*
U.S. Cl. 441—93 **15 Claims**



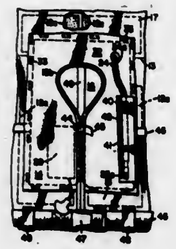
1. A device for automatically inflating an inflatable article on change of ambient pressure, the device including means for comparing the ambient fluid pressure with the pressure within a closed compartment, a container for a compressed gas for inflating the article, a piston slidably located in a cylinder and arranged to release compressed gas from the container to inflate the article on movement of the piston towards one end of the cylinder, means for resiliently biasing the piston towards the said end of the cylinder, an inlet valve to enable the cylinder to be pressurised to retain the piston against the said biasing means, and means responsive to the comparing means, to release pressure in the cylinder and thereby allow movement of the piston by the biasing means to release the compressed gas and inflate the article.

4,498,882

HYBRID PERSONAL FLOTATION DEVICE

Karla R. Evert, St. Cloud, Minn., assignor to Stearns Manufacturing Company, St. Cloud, Minn.

Filed Mar. 8, 1983, Ser. No. 473,221
Int. Cl.³ B63C *9/16*
U.S. Cl. 441—116 **11 Claims**



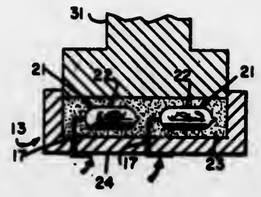
1. A hybrid personal flotation device comprising:
(a) a panel portion having a mass of buoyant material, said panel portion having an inner surface and an outer surface, said inner surface being adjacent a wearer's body;
(b) a buoyancy chamber having an interior zone and a peripheral zone, a portion of said interior zone cooperatively connected to said panel portion, said peripheral zone being unattached to said panel portion, whereby said peripheral zone may be folded and when said buoyancy chamber is folded, said buoyancy chamber covers a smaller area than when said buoyancy chamber is unfolded;
(c) means for inflating said buoyancy chamber; and
(d) a covering panel cooperatively connected to said panel portion, said buoyancy chamber positioned between said panel portion and said covering panel, said covering panel having outer edges releasably connected to said panel portion, whereby when said buoyancy chamber is uninflated, said outer edge of said covering panel is secured to said panel portion and said buoyancy chamber is folded and hidden from view by said covering panel and when said buoyancy chamber is inflated, said outer edges of said covering panel are released and said buoyancy chamber expands, unfolds and is visible.

4,498,883

METHOD OF ENCAPSULATING A PHOTOFLASH LAMP USING A POWDERED RESIN

Andre C. Bouchard, Peabody, and Harold H. Hall, Jr., Marblehead, both of Mass., assignors to GTE Products Corporation, Stamford, Conn.

Continuation of Ser. No. 308,636, Oct. 5, 1981, abandoned. This application Jul. 18, 1983, Ser. No. 514,440
Int. Cl.³ B29C *6/04*; H05B *41/32*
U.S. Cl. 445—28 **14 Claims**



1. A method of forming a protective coating on the glass envelopes of a plurality of photoflash lamps wherein each of said envelopes includes a combustion-supporting gas therein

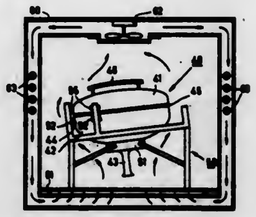
established at several atmospheres of pressure and a pair of thin lead-in wires projecting from said envelope, said method comprising:
providing a mold member including a plurality of openings therein;
positioning a first quantity of a powdered thermoplastic or thermosetting resin material capable of forming a light-transmitting, solid polymer upon application of heat and pressure thereto within said mold member to a preestablished depth within said mold member;
inserting each of said thin lead-in wires of said photoflash lamps within a respective one of said openings within said mold member to a predetermined depth and thereafter bending portions of said lead-in wires against an external surface of said mold member, each of said glass envelopes resting atop said first quantity of said powdered resin material and being spacedly positioned from the internal surfaces of said mold member, each of said lead-in wires being further bent at an angle of about 90 degrees from the longitudinal axis of the respective one of said glass envelopes from which said lead-in wire projects after said wire is inserted within said opening to enable said envelope to attain said resting position atop said first quantity of said powdered resin material;
positioning a second quantity of said powdered resin material within said mold member to cover each of said envelopes, said powdered resin material thereby surrounding the external surfaces of said envelopes;
simultaneously applying pressure and heat to said powdered resin material sufficient to liquify said powdered resin material about said glass envelopes, said pressure within the range of from about 500 to about 8000 pounds per square inch and said temperature sufficient to heat said powdered resin material about said glass envelopes within the range of from about 200 to about 400 degrees Farenheit, said thin lead-in wires assisting in retaining said glass envelopes in said spaced positioning relationship within said mold member during said simultaneous application of said heat and pressure to said powdered resin material;
cooling said liquified material to form said light-transmitting, solid polymer about said glass envelopes;
and
removing said solid polymer material having said glass envelopes therein from said mold member, portions of said lead-in wires projecting from said glass envelopes and extending from said solid polymer upon removal from said mold member, said method further including removing all of said extending portions.

4,498,884

METHOD OF MANUFACTURING A DISPLAY TUBE

Johannes H. Stöver, and Johannes A. Van Leeuwen, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Feb. 11, 1982, Ser. No. 347,765
Claims priority, application Netherlands, Mar. 16, 1981, 8101263
Int. Cl.³ F23M *9/04*
U.S. Cl. 445—45 **8 Claims**



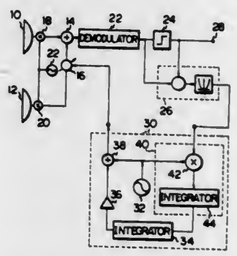
1. A method of manufacturing a display tube, comprising a funnel with a rectangular edge and a display screen having a rectangular upstanding edge, wherein heat is applied to the tube by means of a heated gas flowing across the tube's outer surface, the improvement comprising restricting said flow at a selected area of said outer surface by providing a heat shield including a pattern of apertures in the proximity of said area to minimize differences in thermal expansion between the tube's outer and inner surfaces.

4,498,885

SPACE DIVERSITY SYSTEM

Junji Namiki, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Jul. 11, 1983, Ser. No. 512,649
Claims priority, application Japan, Jul. 14, 1982, 57-122716
Int. Cl.³ H04B *7/08*
U.S. Cl. 455—273 **4 Claims**



1. A space diversity system in which a first antenna receives a first direct wave and a first interference wave and a second antenna receives a second direct wave and a second interference wave, the system controlling an output phase of the second antenna to combine an output thereof with an output of the first antenna so that the first and second interference waves cancel each other and a vector sum of the first and second direct waves is provided as a combined output, said system comprising:
a variable phase shifter for controlling the output phase of the second antenna;
a demodulator for receiving the combined output of the two antennas;
an identification circuit for identifying a digital signal output from said demodulator;
an error detector for detecting a magnitude of a difference between an input signal and an output signal of said identification circuit;
an oscillator for oscillating a signal having a short period;
a correlation circuit for determining a correlation between an output of said oscillator and an output of the error detector;
an integrator for integrating an output of said correlation circuit; and
means for controlling the phase shifter in such a manner as to minimize the output of the error detector by adding an output of the integrator and an output of the oscillator and supplying the sum to the phase shifter as a control signal.

4,498,886

WHEELED TURBINE-POWERED TOY VEHICLE AND LAUNCHER APPARATUS

Adolph E. Goldfarb, 1432 S. East Wind Cir., Westlake Village, Calif. 91361, and Delmar K. Everitt, Woodland Hills, Calif., assignors to Adolph E. Goldfarb, Westlake Village, Calif.

Continuation of Ser. No. 275,982, Jun. 22, 1981, Pat. No. 4,373,290. This application Feb. 14, 1983, Ser. No. 466,081
Int. Cl.³ A63H *33/40*
U.S. Cl. 446—202 **9 Claims**

1. In combination, a turbine-powered wheeled toy vehicle for energization by a child user's breath and for operation on a

play surface, and a launcher for such vehicle; said combination being adapted to permit such child user to hold the vehicle and launcher in his hand, in an energization position, and to use his breath to bring the vehicle turbine up to speed when the vehicle and launcher are held in such an energization position, and to place the vehicle and launcher in a proper release position upon such play surface after the turbine is up to speed, and to then release the vehicle onto such play surface in an operating position, with the turbine still up to speed and with the vehicle in a suitable orientation relative to such play surface; said combination comprising:

(a) a toy vehicle that is small enough to be readily hand-held by such child user and that has:

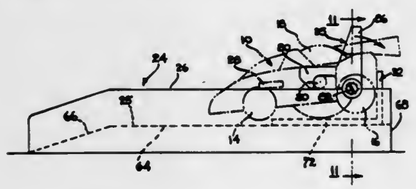
a flywheel that is rotatably mounted to the vehicle, and that is positioned and adapted to engage such surface and thereby to propel the vehicle relative to such surface,

an air turbine integral with the flywheel, and

an air conduit mounted to the vehicle, and having an inlet adapted to receive such a user's breath, and having an outlet disposed adjacent the turbine to effectively convey such breath to the turbine to energize the turbine;

(b) a small launcher that is small enough and otherwise adapted to be hand-held by such child user and that is adapted to be placed stablely upon such surface, and that comprises:

gripping means for releasably gripping the vehicle, while the launcher is hand-held by such child user, in condition for receipt of such user's breath by the conduit inlet,



supporting means for supporting the vehicle, with the flywheel disengaged from the launcher, and with the flywheel disengaged from such surface even if the launcher is placed upon such surface, for free-wheeling rotation by the flywheel when the vehicle is gripped by the gripping means and when such user's breath is received by the conduit inlet,

releasing means, actuable by such user, for releasing the vehicle from the gripping means, and

impelling means for impelling the vehicle, when it is released by the gripping means, from the launcher to such surface so that the flywheel can engage such surface to propel the vehicle;

whereby said combination assists such child user to use his breath to bring the vehicle turbine up to speed when the vehicle and launcher are held in the child user's hand in such an energization position, and to place the vehicle and launcher in a proper release position upon such play surface after the turbine is up to speed, and to then release the vehicle onto such play surface in an operating position, with the turbine still up to speed and with the vehicle in a suitable orientation relative to such play surface; and

a blow tube that is:

secured to the launcher;

adapted to be placed in such user's mouth, while the launcher is hand-held by such user, to receive such user's breath; and

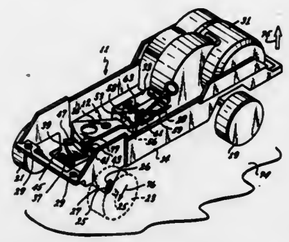
positioned, aligned, and adapted to convey such breath to the inlet of the air conduit of the vehicle, when the vehicle is gripped by the gripping means.

4,498,887

SHIFTING MECHANISM FOR TOY VEHICLE

John S. Cook, Redondo Beach, Calif., assignor to Mattel, Inc., Hawthorne, Calif.

Filed Apr. 20, 1983, Ser. No. 486,622
Int. Cl.[3] A63H 29/20
U.S. Cl. 446—462 10 Claims



1. In a toy vehicle combination comprising:

vehicle movement changing drive means mounted in said vehicle and responsive to actuation of a gear shift lever mounted in said vehicle from a first position to at least one other position, means in said vehicle for retaining said gear shift lever in said first position against biasing means in said vehicle urging said gear shift lever toward a said other position;

at least one non-driven support wheel member coupled to said vehicle for rotation in response to movement of the vehicle on the surface;

gear means coupled for rotation with said at least one wheel member;

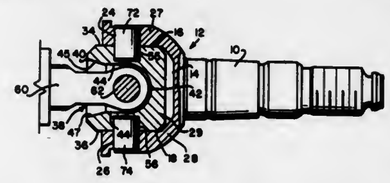
linkage means having a trigger portion configured mounted in said vehicle and positioned for engaging said gear shift lever in said first position; and a gear sector operatively coupled to said linkage means and coacting with said gear means for enabling movement of said trigger portion to enable actuation of said gear shift lever to said at least one other position for effecting vehicle movement changing during travel of said vehicle on a surface.

4,498,888

DRIVE ASSEMBLY COUPLING

William Pastor, Torrington, Conn., assignor to The Torrington Company, Torrington, Conn.

Filed Mar. 10, 1983, Ser. No. 474,152
Int. Cl.[3] F16D 3/26
U.S. Cl. 464—112 4 Claims



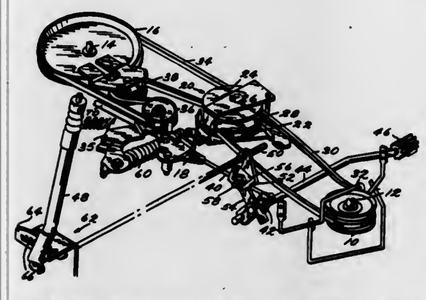
1. A drive assembly for a vehicle driving wheel column with a tiltable driving wheel comprising: a driving wheel shaft having an approximately bell-shaped end portion, the inside surface of the bell-shaped end portion having two diametrically opposite curved side surfaces, and two diametrically opposite flat top and bottom surfaces; a driven shaft; a solid coupling member received within said bell-shaped end portion and connecting together the driving wheel shaft and the driven shaft; the coupling member having curved side surfaces adjacent and spaced from the curved side inside surfaces of the bell-shaped end portion of the driving wheel shaft, top and bottom flat surfaces adjacent and touching the flat inside surfaces of the bell-shaped end portion of the driving wheel shaft and a slot on one side and receiving in said slot the end portion of the driven shaft the surfaces forming said slot being shaped to permit limited upward or downward pivotal movement, only of the coupling member with respect to the driven shaft; a long pin received in appropriate apertures in the coupling member, said pin extending across the slot and through an appropriate aperture n the driven shaft end portion; and a pair of diametrically opposite short pins received in appropriate apertures in the coupling member with their axes aligned and perpendicular to the axis of the long pin, each short pin also extending into an appropriate aperture in the bell-shaped end portion, whereby the driven wheel shaft and the coupling member, as a unit, may be pivoted a limited amount about the lon pin; the solid coupling member being completely solid except for said slot and said apertures in the coupling member.

4,498,889

VARIATOR DRIVE SYSTEM

Aaron A. Stevens, Springhill, and Randall K. Lawrence, Fairview, both of Tenn., assignors to The Murray Ohio Manufacturing Co., Brentwood, Tenn.

Filed Jul. 7, 1983, Ser. No. 511,624
Int. Cl.[3] F16H 7/12
U.S. Cl. 474—133 4 Claims



1. A variable speed drive system for a groundengaging vehicle having an engine power source, said system comprising:

a drive pulley connected to an output shaft of said power source;

a support member pivotally connected to said vehicle;

a variator rotatably supported adjacent an end of said member, said variator including first and second belt-receiving portions separated by an element movable along the axis of rotation of the variator for varying the widths of said portions in response to the relative tautness of belts received in said portions;

an additional pulley operatively connected to a shaft for powering said vehilcle;

a first belt operatively related to the drive pulley and received in the first belt-receiving portion of said variator;

a second belt operatively related to the additional pulley and received in the second belt-receiving portion of said variator;

a first idler pulley rotatably connected to said vehicle at a fixed position and engaging said second belt;

a second idler pulley also engaging said second belt and rotatably joined to one end of an idler arm, the opposite end of said arm being pivotally connected to said vehicle;

spring means extending between the support member and the idler arm for urging said member and idler towards one another in opposite directions about their respective pivotal connections whereby the tautness of the second belt is established by the relative positions of the idler pulleys and the variator;

a speed control shaft rotatably supported by said vehicle;

a pedal joined to said speed control shaft to cause rotation thereof in response to actuation of said pedal;

a control handle connected to the speed control shaft to cause rotation thereof in response to actuation of the handle;

means provided in the connection between said handle and the speed control shaft for permitting rotation of said shaft in response to actuation of the pedal independently of the position of said handle; and

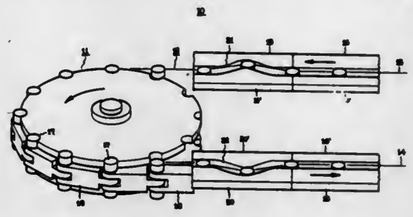
a variator drive control link connecting the speed control shaft to said support member whereby rotation of the speed control shaft is translated to pivotal movement of the support member to thereby alter the relative positions of the idler pulleys and the variator.

4,498,890

FIXED TRACK CHAIN DRIVE

George H. Sutherland, Richmond Heights, Ohio, assignor to General Electric Company, Schenectady, N.Y.

Filed Dec. 20, 1982, Ser. No. 450,854
Int. Cl.[3] F16H 7/18
U.S. Cl. 474—140 9 Claims



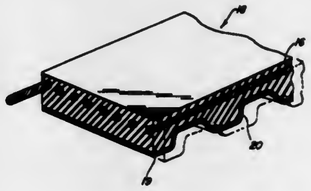
1. A guidance system to avoid velocity fluctuation in a fixed track chain drive caused when the chain enters and exits a drive sprocket during continued travel between straight tracks which comprises locating a pair of curved track sections between said drive sprocket and said straight tracks having different curvature paths, said curved track sections having a projected length approximately equal to the length of a chain link and with a varying curvature being defined by a depth from said projected length approximately equal to the locus of intersection between two circles each having a radius equal to the length of a chain link and with centers being located by adjacent pins, and with the curvature path in each of said curved track sections having a mirror image relationship with the other curvature path.

4,498,891

DRIVE BELT WITH TENSILE CORDS

Satoshi Mashimo, Akashi; Masayuki Tanaka, Kobe, and Takashi Kinoshita, Hyogo, all of Japan, assignors to Mitsuboshi Belting Ltd., Kobe, Japan

Filed Feb. 4, 1983, Ser. No. 463,805
Claims priority, application Japan, Feb. 5, 1982, 57-15334[U]
Int. Cl.[3] F16G 1/04
U.S. Cl. 474—205 24 Claims

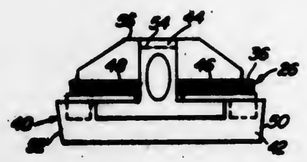


1. In a drive belt having a belt body, the improvement comprising

a plurality of Lang-twisted, fiber tensile cords extending longitudinally in the belt body, the cords having a ply

twist constant in the range of approximately 2.9 to 3.9 and a cable twist constant of less than the ply twist constant.

4,498,892
POWER TRANSMISSION BELT
Peter Huntley, Des Plaines, Ill., assignor to Borg-Warner Corporation, Chicago, Ill.
Filed Mar. 14, 1983, Ser. No. 475,006
Int. Cl.³ F16G 1/22
U.S. Cl. 474—242 10 Claims



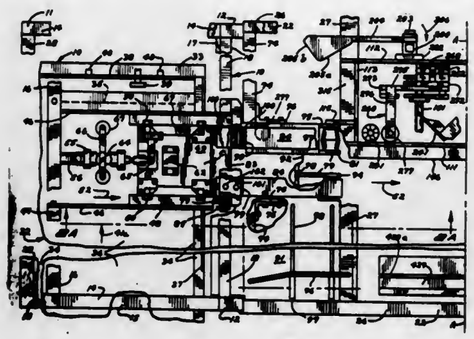
1. A composite load block for a power transmission belt especially adapted for interconnecting the pulleys of a pulley drive system, each pulley having a pair of flanges, said belt having at least one endless metal band with a plurality of said load blocks assembled thereon in adjacent relationship and with at least portions of front and rear block surfaces contacting one another, each load block also having side edges for drivingly contacting the pulley flanges, the improvement wherein the composite load blocks comprise:

a first block member having front, rear and top surfaces, at least one slot defined by at least one surface and adapted to receive the endless band, and a notch at an uppermost top surface; and

a second block member having tab portions embracing parts of said front and rear surfaces of said first block member at a location closely adjacent to said slot, including an elastically yieldable portion positioned between the endless band and the surface of said slot, and a lip portion extending outwardly from one of said tab portions;

said lip portion being received in a notch in a next adjacent one of said composite load block when said composite load blocks are assembled with said endless band.

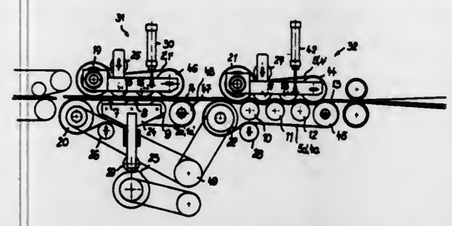
4,498,893
CASE ERECTOR AND BOTTOM SEALER APPARATUS
Robert E. Odom, Blaine, Minn., assignor to Bemis Company, Inc., Minneapolis, Minn.
Filed Jan. 28, 1982, Ser. No. 343,451
Int. Cl.³ B31B 1/80
U.S. Cl. 493—12 16 Claims



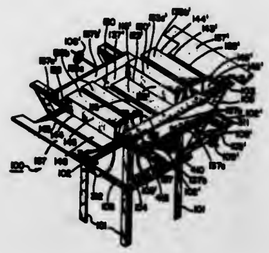
1. For erecting and folding a flat folded case blank having minor first and second flaps, which are respectively joined along fold lines to the to transverse ends of first and second minor side walls of a case blank, and major third and fourth flaps, which are respectively joined along fold lines to one transverse ends of major third and fourth sidewalls, each of said flaps having a longitudinally extending terminal edge substantially parallel to the respective fold line and substantially spaced therefrom and the minor sidewalls being joined to opposed edges of the major sidewalls, case erector and bottom sealer apparatus comprising a longitudinally elongated frame having a rear end portion and a front end portion, first means at the frame rear end portion for supporting a stack of the flat folded blanks in vertical stacked relationship with each blank having its first and third flaps and sidewalls above its second and fourth flaps and sidewalls second means on the frame for picking up a flat folded case blank from the stack of case blanks on the first means and feeding the picked up blank forwardly to a case blank erecting station on the frame, third means mounted on the frame for supporting a case blank at the erecting station, fourth means mounted on the frame for releasably grippingly engaging at least one of the fourth flap and fourth sidewall of a case blank at the erector station, operable fifth means mounted on the frame for releasably grippingly engaging at least one of the third flap and third sidewall of a case blank grippingly engaged by the fourth means and erecting the gripped case blank, operable sixth means mounted on the frame for movement between a retracted and a flap folded position for folding the second flap of the erected case blank to extend generally toward the first sidewall, operable seventh means mounted on the frame for movement between a retracted and a flap folded position for folding the first flap of the erected case blank to extend generally toward the second sidewall, operable eighth means mounted on the frame for movement between a retracted position and a flap folded position for at least partially folding the third and fourth flaps to hold the first and second flaps in their folded condition, ninth means for applying adhesive to at least some of the flaps on areas of the flaps to adhere the third and fourth flaps to the first and second flaps when the first and second flaps are pressed against the third and fourth flaps, operable tenth means mounted on the frame for moving the erected case blank from the erecting station, past the ninth means and to a compression station at the frame front end portion, eleventh means on the frame for supporting an erected case blank as it is moved from the erecting station to the frame front end portion, operable twelfth means on the frame at the frame front end portion to compress the flaps to form a sealed case closure and control means for operating the second and fourth means and controlling the operation of the fifth, sixth, seventh, eighth, tenth and twelfth operable means, the second means including means for supportingly conveying at least one of the fourth flap and the fourth sidewall, and the eighth means including lower flap folder means for moving from a retracted position to a flap folded position for folding the fourth flap and means joined to the lower folder means for movement therewith for stopping forward movement of a case blank on the supportingly conveying means when the lower folder means is in its folded position.

4,498,894
SEPARATION APPARATUS FOR SEPARATING PERFORATED PAPER TUBE SECTIONS
Gustav Kuckhermann, Achern-Oberachern, Fed. Rep. of Germany, assignor to Icoma Packtechnik GmbH, Achern, Fed. Rep. of Germany
Filed Jun. 3, 1983, Ser. No. 500,673
Claims priority, application Fed. Rep. of Germany, Jun. 3, 1982, 3220892
Int. Cl.³ B26F 3/02
U.S. Cl. 493—234 8 Claims

1. In a paper making machine of the type operative to produce an elongated paper tube consisting of a plurality of successive paper tube sections which are demarcated from one another by perforations in said tube, said machine including a forward pulling station for transporting said paper tube out of said machine and further including a separating station for separating said paper tube sections from one another at said perforations, the improvement wherein said forward pulling station comprises first endless conveyor belt means located above said elongated paper tube and second endless conveyor belt means located below said elongated paper tube, a first plurality of rollers in engagement with portions of said first conveyor belt means for urging said portions of said first conveyor belt means toward one side of said tube, a second plurality of rollers in engagement with portions of said second conveyor belt means for urging said portions of said second conveyor belt means toward the other side of said tube, the rollers in said first plurality of rollers being displaced, in the direction of movement of said paper tube, from the rollers in said second plurality of rollers whereby said paper tube follows a serpentine path of movement and it travels between said first and second endless conveyor belt means, said separating station being located downstream of said forward pulling station and comprising third and fourth endless conveyor belt means located above and below said elongated paper tube respectively, third and fourth pluralities of rollers in engagement with portions of said third and fourth conveyor belt means respectively, the rollers in said third plurality of rollers being displaced, in the direction of movement of said paper tube, from the rollers in said fourth plurality of rollers, and drive means coupled to the conveyor belt means in said forward pulling station and in said separating station, said drive means being operative to cause the conveyor belt means in said separating station to move at a greater transport speed than the conveyor belt means in said forward pulling station.



4,498,895
FOLDING PALLET JIG
Herbert V. White, Borger, Tex., assignor to J. M. Huber Corporation, Locust, N.J.
Filed Feb. 8, 1983, Ser. No. 464,830
Int. Cl.³ B21B 1/21
U.S. Cl. 493—476 6 Claims



1. An apparatus for erecting paperboard pallets from paperboard sheets comprising

a first pair and a second pair of spacers about which paperboard may be folded in forming a pallet,

said spacer pairs positioned in opposed spaced relation and defining a cavity-forming recess by the space therebetween which may be utilized to form a cavity in a pallet erected thereon,

each of said first and second pairs of spacers comprising an inner spacer adjacent to and defining limits of the cavity-forming recess therebetween, and an outer spacer having a horizontal planar surface which in combination with a horizontal planar surface of said inner spacer defines a land-forming portion about which paperboard may be folded in forming a pallet,

means for moving said inner spacer of said first spacer pair and said inner spacer of said second spacer pair toward or away from each other to vary the size of the cavity-forming recess defined therebetween,

means for moving said outer spacer of said first spacer pair and said outer spacer of said second spacer pair toward or away from each other to vary the size of the land-forming portion defined by the horizontal planar surfaces of said inner spacers and said outer spacers,

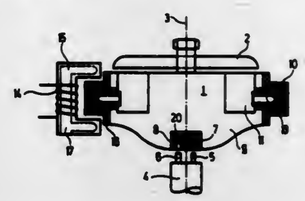
each of said outer spacers having an end-plate portion hingedly connected thereto for pivotal movement about the hinged connection toward said outer spacer to which said end-plate is hingedly connected,

sidewall-forming plates positioned in opposed spaced relation adjacent to said first and second pairs of spacers, with said first and second pairs of spacers extending therebetween,

each of said sidewall-forming plates being hingedly supported for pivotal movement toward said first and second pairs of spacers positioned therebetween for folding paperboard in forming a pallet, and

means for moving said sidewall-forming plates toward or away from each other in a direction transverse to the movement of said pairs of spacers positioned therebetween.

4,498,896
HEATABLE CENTRIFUGE
Hans Leis, Ottobrunn, Fed. Rep. of Germany, assignor to Messerschmitt-Bölkow-Blohm, Munich, Fed. Rep. of Germany
Filed Oct. 21, 1975, Ser. No. 624,263
Claims priority, application Fed. Rep. of Germany, Oct. 24, 1974, 2450482
Int. Cl.³ B04B 15/02, 15/08
U.S. Cl. 494—14 16 Claims



1. A heatable centrifuge comprising a rotor including a first portion and a second portion, said first portion having a central axis about which said first and second portions are rotatable, said first portion extends transversely of the central axis, said second portion is annular in shape and is secured to said first portion radially outwardly from and concentric to the central axis, said first portion being formed of an electrically insulating and heat insulating material, said second portion being formed of a high strength electrically conductive material, and means arranged for supplying heat energy to said second portion from a location exteriorly of said rotor.

4,498,897

CENTRIFUGE WITH A SELF-EMPTYING DRUM

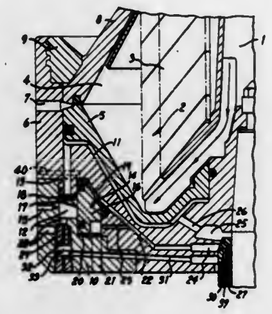
Hilbert Glanewig, Oelde, Fed. Rep. of Germany, assignor to Westfalia Separator AG, Oelde, Fed. Rep. of Germany

Filed Oct. 27, 1983, Ser. No. 546,126

Claims priority, application Fed. Rep. of Germany, Oct. 29, 1982, 3240093

Int. Cl.³ B04B *11/02*

U.S. Cl. 494—27 **8 Claims**



1. In a centrifuge having a self-emptying drum with ejection openings which are opened and closed by a piston valve movable in a response to pressure from closure fluid in a closure compartment having outlet channels therearound which are opened and closed by a hydraulically controlled valve body having control compartments and a first compartment fluid-tightly separated from the control compartments and into which the outlet channels communicate when opened by the valve body, the first compartment having choked outlets and configured to accommodate a part of the closure fluid from the closure compartment, the improvement comprising: means forming at least one run-off channel in fluid communication with the first compartment and fluid actuated valve means for blocking and unblocking the run-off channel to effect the complete emptying when the run-off channel is unblocked.

4,498,898

CENTRIFUGAL SEPARATOR

Mervyn T. Haggett, Langport, England, assignor to AE PLC, Warwickshire, England

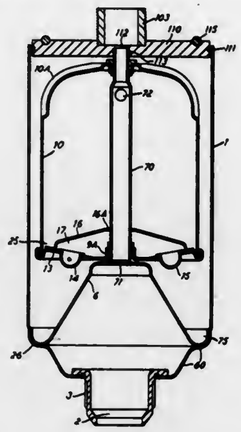
Filed Apr. 18, 1983, Ser. No. 485,651

Claims priority, application United Kingdom, Apr. 16, 1982, 8211100

Int. Cl.³ B04B *9/06*

U.S. Cl. 494—49 **8 Claims**

1. A centrifugal oil cleaner assembly adapted to be mounted on a support at its upper end and to depend from the support, the assembly comprising a housing member having a bottom portion defining an outlet and sidewalls extending upwardly therefrom to define an open upper end, closure means on said support sealingly engageable with said open upper end of said housing member to form a chamber, a substantially vertical shaft mounted in said chamber, a rotor journaled on said shaft within said chamber and having an interior chamber, said shaft serving to releasably secure said housing member to said support and to carry the weight of said housing member and said rotor, means for supplying oil to be cleaned under pressure through said shaft to the interior of said rotor, said means including a passageway in the upper end of said shaft, and jets



on said rotor to discharge oil from the interior of said rotor into said chamber and by reaction cause said rotor to rotate.

4,498,899

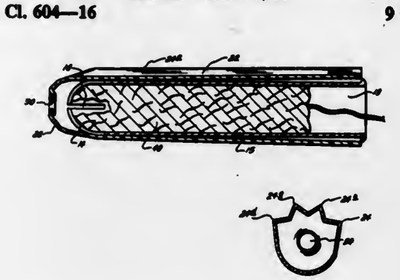
TAMPON APPLICATOR

Richard A. Gross, Richmond, Va., assignor to Ethyl Molded Products Company, Richmond, Va.

Continuation of Ser. No. 365,830, Apr. 5, 1982, abandoned. This application Jul. 2, 1984, Ser. No. 626,582

Int. Cl.³ A61F *15/00*

U.S. Cl. 604—16 **9 Claims**



1. A tampon applicator comprising:

(A) a first elongated hollow thermoplastic tube having an open end and a slotted hemispherical other end, said first elongated hollow thermoplastic tube being receivable of a tampon; and

(B) a second elongated hollow thermoplastic tube having an opening at its rear end to admit said first tube, a hemispherical wall at its front end, an imperforate body having a curved wall portion integrally formed with an accordian pleated wall portion made by a series of flexible, preformed, generally V-shaped grooves in a longitudinal extending portion of said body whereby the diameter of said second elongated hollow thermoplastic tube is changeable from a first diameter to a second diameter, said first diameter being sufficiently large to allow said second elongated hollow thermoplastic tube to receive within its interior said first elongated hollow thermoplastic tube, and said second diameter being sufficiently small to allow said second elongated hollow thermoplastic tube to be received in the interior of said first elongated hollow thermoplastic tube.

4,498,900

METHOD FOR THE AUTOMATIC SEMICONTINUOUS PERITONEAL DIALYSIS

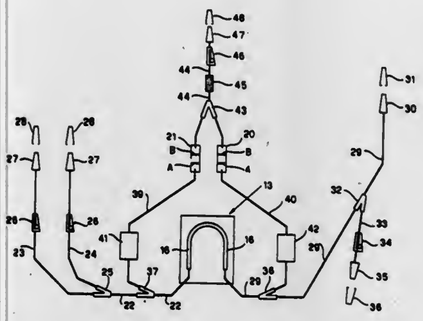
Vincenzo Buoncristiani, Via Marco Polo, 4, Foligno, Italy

Division of Ser. No. 200,425, Oct. 24, 1980, Pat. No. 4,381,003. This application Dec. 21, 1982, Ser. No. 452,513

Claims priority, application Italy, Oct. 26, 1979, 43514 A/79

Int. Cl.³ A61M *5/00*

U.S. Cl. 604—28 **8 Claims**



1. A method for automatic semicontinuous peritoneal dialysis of a patient in need of such dialysis, wherein dialysing solution is introduced into the peritoneal cavity of the patient and then discharged therefrom, comprising forming a closed circuit between said peritoneal cavity and a supply of dialysing solution, said supply of dialysing solution being a predetermined amount of solution; transferring the dialysing solution from said supply, in an amount predetermined consistently with the patient undergoing the treatment, to the peritoneal cavity of the patient in unchanged form from that in said supply; transferring at least a portion of said dialysing solution back from said cavity to said supply in unchanged form from that in which it is withdrawn from said cavity; and sequentially repeating said transfer of the dialysing solution to and from the said peritoneal cavity for a predetermined number of cycles, while maintaining the dialysing solution at a desired temperature.

4,498,901

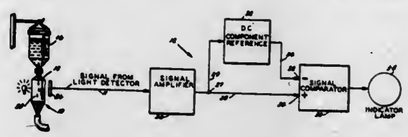
INTRAVENOUS MONITORING SYSTEM UTILIZING A DYNAMIC REFERENCE THRESHOLD

Dale E. Finch, McHenry, Ill., assignor to Abbott Laboratories, North Chicago, Ill.

Filed Jul. 30, 1982, Ser. No. 403,383

Int. Cl.³ A61M *5/16*

U.S. Cl. 604—65 **16 Claims**



1. An intravenous monitoring system for an intravenous feeding apparatus having a drip chamber through which the liquid to be administered to the patient passes, comprising:

a signal voltage generating means having an output terminal and adapted to be connected to the drip chamber which generates a detecting signal voltage in response to liquid passing through said drip chamber;

a comparator means having a first input connection coupled to said output terminal of said signal voltage generating means, a second input connection and an output connection which generates an output signal voltage when a signal voltage at one of the input connections exceeds the signal voltage at the other input connection;

a D.C. component reference circuit that generates a dynamic reference threshold voltage, said D.C. component reference circuit comprises a signal voltage reduction means that is coupled between said second input connection of said comparator means and said output terminal of said signal voltage generating means, said signal voltage reduction means reduces said detecting signal voltage thus outputting a reduced output signal voltage that is less than said dynamic reference threshold voltage, and an RC circuit coupled between said signal reduction means and said second input connection of said comparator means, wherein said RC circuit stores and emits a residual signal voltage, that is also less than said dynamic reference threshold voltage, to said comparator means whenever said detecting signal voltage changes in response to liquid passing through the drip chamber, whereby when said detecting signal voltage changes in response to liquid passing through the drip chamber said dynamic reference threshold voltage exceeds said detecting signal voltage and said comparator means generates said output signal voltage in response thereto.

4,498,902

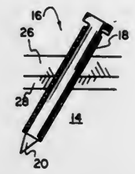
CATHETER GUIDE

Stephen R. Ash, Lafayette; Gordon C. Wolf, Rossville, and Richard Bloch, Lafayette, all of Ind., assignors to Purdue Research Foundation, West Lafayette, Ind.

Continuation of Ser. No. 321,128, Nov. 13, 1982, abandoned, which is a continuation of Ser. No. 92,031, Nov. 7, 1979, abandoned. This application Feb. 23, 1983, Ser. No. 469,096

Int. Cl.³ A61B *17/34*; A61M *25/00*

U.S. Cl. 604—164 **4 Claims**



1. A catheter placement unit having a trocar with a substantially cylidrical sheath, the improvement comprising:

guide means having an exterior surface and an interior surface which define a guide wall therebetween with said guide wall having a normally curved cross-sectional area of preselected diameter; and

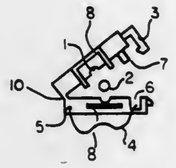
said guide means having an opening of adjustable dimensions extendable throughout the entire length thereof, said guide means being semi-rigid such that, when compressive forces are applied to the said exterior surface of said guide means the guide wall is coiled so that the diameter of said guide wall is reduced, but when said compressive forces are removed, said guide wall tends to return to its said normal diameter, with said guide means being readily deformable to allow adjustment of said diameter of said guide means with said guide means being rolled into an adjusted diameter to facilitate utilization placement and movement of said guide means relative to said sheath of said trocar, and said opening of adjustable dimensions allowing said guide means to receive a catheter of a material suitable for causing said deformation of said guide means so that said catheter may be inserted through said opening exterior of a patient, and so that said guide means may be withdrawn from a patient without disturbing the positioning and integrity of said catheter.

4,498,903

INTERORAL TUBE FIXING DEVICE

Christina C. Mathew, 1600 Hagy's Ford Rd. 2-0, Narberth, Pa. 19072

Filed Dec. 21, 1982, Ser. No. 437,614
Int. Cl.³ A61M 16/00
U.S. Cl. 604—174 3 Claims



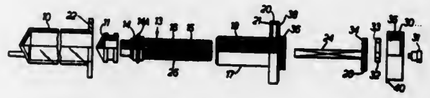
1. An interoral tube securing device having:
(a) a body having a passage therethrough, said passage being sized to securely hold said tube;
(b) a flexible cord attached at a first end to said body, adapted to pass through gaps between human teeth; and
(c) attachment means on said body for capture of and securing to a second end of said cord;
wherein said body has a first portion having a semicircular passage, said first portion attached to a second portion of said body and rotatable with respect thereto so as to bring the semicircular passage in said first portion in juxtaposition with a semicircular passage in said second portion thereby creating a passage adapted to secure a tube passed through said passage, and said second portion has a slot therethrough, and said first portion has a block adapted to mate with said slot thereby securing an end of said cord.

4,498,904

DOSE METERING PLUNGER DEVICES FOR USE WITH SYRINGES

Robert C. Turner, 13 Bolbroughton Rd., Oxford; Anthony B. Stone, 32 The Green, Charlbury, Oxford, and Rury R. Holman, 42 Meadow Close, Farmoor, Oxford, all of England

PCT No. PCT/GB82/00034, § 371 Date Oct. 12, 1982, § 102(e) Date Oct. 12, 1982, PCT Pub. No. WO82/02662, PCT Pub. Date Aug. 19, 1982
PCT Filed Feb. 12, 1982, Ser. No. 438,872
Int. Cl.³ A61M 5/00
U.S. Cl. 604—211 44 Claims



1. A dose metering device for a syringe having a cylinder in which a piston moves to express liquid therefrom, which device comprises an axially-movable plunger which is adapted in use to drive the piston axially in the cylinder for dose expression therefrom, a manually-rotatable operating member, a rotary screw mechanism operatively associated with the plunger, a unidirectional coupling by which the operating member is operatively coupled to the rotary screw mechanism, angular rotation of the operating member in one direction (referred to as the forward direction) being transmitted by the unidirectional coupling to the rotary screw mechanism which is arranged to convert said transmitted rotation into corresponding axial movement of the plunger, whereby in use successive rotary operating strokes of the operating member in the said forward direction are converted into successive axial movement steps of the plunger to express successive doses from the syringe whose volumes correspond to the angular extents of the respective operating strokes of the operating member, and stop means arranged to limit each of the said operating strokes of the operating member at the same predetermined angular finishing point, the unidirectional coupling permitting the manual angular retraction of the operating member independently of the plunger after each said operating stroke from its finishing point predetermined by the stop means to a selected angular position constituting a variable starting point for the next operating stroke, and scale means arranged to indicate selectable angular positions of a plurality of said starting points, whereby the volume of each dose to be expressed is variably preset in use by selection of the angular position, as indicated by the scale means, of the starting point of the respective operating stroke of the operating member.

4,498,905

METHOD FOR DEACTIVATING AND CONTROLLING THE DUSTING TENDENCIES OF DRIED PARTICULATE LOWER RANK COAL

James L. Skinner, Plano, Tex., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Continuation-in-part of Ser. No. 547,517, Oct. 31, 1983,. This application Aug. 31, 1984, Ser. No. 646,181
Int. Cl.³ C10L 1/00, 5/04, 5/24, 5/32
U.S. Cl. 44—1 C 10 Claims

1. A method for deactivating and controlling the dusting tendencies of dried particulate lower rank coal, said method consisting essentially of:
(a) intimately contacting said dried coal with a deactivating oil in an amount sufficient to reduce the reactivity of said dried coal by a desired amount, said deactivating oil having a 5 percent point in excess of about 900° F. to produce deactivated dried coal; and thereafter
(b) intimately contacting said deactivated dried coal with a dedusting oil in an amount sufficient to reduce the dusting tendency by a desired amount, said dedusting oil having a 5 percent point from about 400° F. to about 750° F. to produce deactivated dried coal having a reduced dusting tendency.

4,498,906

COAL-WATER FUEL SLURRIES AND PROCESS FOR MAKING

Robert S. Scheffee, Lorton, Va., assignor to Atlantic Research Corporation, Alexandria, Va.

Continuation-in-part of Ser. No. 360,523, Mar. 22, 1982, Pat. No. 4,465,495, which is a continuation-in-part of Ser. No. 197,853, Oct. 17, 1980, abandoned. This application Apr. 16, 1982, Ser. No. 368,921
Int. Cl.³ C10L 1/32
U.S. Cl. 44—51 68 Claims

1. A coal-water fuel slurry which comprises:
a. finely-divided coal having a particle size distribution such that about 100% passes through 50 mesh with at least about 50% passing through 200 mesh, said coal being in amount sufficient to provide a desired coal concentration in the slurry;
b. a minor amount of anionic alkali metal salt organic dispersant sufficient to reduce substantially viscosity of the slurry;
c. a minor amount of anionic alkaline earth metal salt organic dispersant sufficient to produce a slurry yield point larger than that obtained with said alkali metal salt alone and to maintain the slurry in substantially stable static dispersion; and
d. water in amount sufficient to provide the liquid carrier for the slurry.

21. Process for making stable coal-water fuel slurry, which comprises:
a. admixing:
(i) finely-divided coal having a particle size distribution such that about 100% passes through 50 mesh with at least about 50% passing through 200 mesh, said coal being in amount sufficient to provide a desired coal concentration in the slurry;
(ii) a minor amount of anionic alkali metal salt organic dispersant sufficient to reduce substantially viscosity of the slurry;
(iii) a minor amount of anionic alkaline earth metal salt organic dispersant sufficient to produce a slurry yield point larger than that obtained with said alkali metal dispersant alone and to maintain the slurry in substantially stable static dispersion; and
(iv) water in amount sufficient to provide the liquid carrier for the slurry, and
b. subjecting the mixture to high shear mixing at a shear rate of at least about 100 sec^{-1}.

41. Process for converting a coal-water pipeline slurry into a substantially stable fuel slurry, wherein the pipeline slurry contains particles of excessive size for efficient combustion, which comprises:
a. partially dewatering or adding finely-divided coal in an amount sufficient to increase the coal content in the pipeline slurry to a concentration desired in the fuel slurry, if the coal concentration in the aqueous pipeline slurry is less than that desired in the fuel slurry;
b. passing said slurry through a comminuting means to reduce excessively sized coal particles to sizes sufficiently small for combustion in a combustion chamber and to produce a particle size distribution such that about 100% passes through 50 mesh with at least about 50% passing through 200 mesh;
c. adding to the slurry a minor amount of:
(i) anionic alkali metal salt organic dispersant sufficient to reduce substantially viscosity of the slurry, and
(ii) alkaline earth metal salt organic dispersant sufficient to produce a slurry yield point larger than that produced with said alkali metal dispersant alone and to maintain the slurry in substantially stable static dispersion; and
d. subjecting the mixture comprising said coal, said alkali metal and alkaline earth metal dispersants and water to high shear mixing at a shear rate of at least about 100 sec^{-1}.

4,498,907

PROCESS FOR UPGRADING CUTS OF VERY HIGH CYCLOPARAFFINS CONTENT

Bernard Juguin, Rueil Malmaison; Germain Martino, Poissy, and Jean Miquel, Paris, all of France, assignors to Institut Francais du Petrole, Rueil Malmaison, France

Filed Jun. 30, 1982, Ser. No. 393,913
Claims priority, application France, Jun. 30, 1981, 81 13001
Int. Cl.³ C10L 1/02
U.S. Cl. 44—56 6 Claims

1. A process for upgrading a naphtha cut distilling between about 25° and 230° C. and comprising at least 70% by weight of naphthenic hydrocarbons, said cut being recovered from heavy petroleum products or from fractionation of oils obtained by liquefaction of coal with hydrogen, said cut containing at least 1000 ppm by weight as sulfur of sulfur compounds, at least 1000 ppm by weight as nitrogen of nitrogen compounds and at least 1000 ppm by weight as oxygen of oxygen compounds, said process comprising the steps of:
(a) subjecting said cut to a moderate hydrotreatment under such conditions that the resultant effluent contains about 60–500 ppm by weight as sulfur of sulfur compounds, about 40–100 ppm by weight as nitrogen of nitrogen compounds and about 500–1500 ppm by weight as oxygen of oxygen compounds; and
(b) conveying the effluent from step (a) directly to a dehydrogenation zone and contacting said effluent in said zone with a neutral or weakly acidic supported dehydrogenation catalyst whose neutralization heat by ammonia absorption is less than about 40 joules per gram at 300 mm Hg, said contacting being effected under such conditions that the resultant liquid effluent contains at least 75% by weight of aromatic hydrocarbons;
whereby said resultant effluent has a higher octane number than said naphtha cut and is suitable for use as a motor-grade gasoline and as a constituent of a blended fuel composition.

4,498,908

LIQUID FUEL COMPOSITION CONTAINING REACTION PRODUCT OF TETRAHYDROPYRIMIDINES

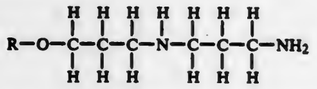
Sheldon Chibnik, Cherry Hill, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed May 3, 1984, Ser. No. 606,562
Int. Cl.³ C10L 1/22
U.S. Cl. 44—71 11 Claims

1. A fuel composition containing a major portion of a liquid

fuel and between about 1 and about 200 pounds of additive per 1000 barrels of liquid fuel, said additive having been prepared by:

(a) reacting a diamine or mixture of diamines generally having the structural formula:



wherein R is 1 to 70 carbon atoms in length, with a monocarboxylic or dicarboxylic acid, in a mole ratio of diamine to acid of between about 1:1 and about 1:2 at a temperature of about 100° to about 300° C.; and thereby obtaining a tetrahydropyrimidine reaction product; and

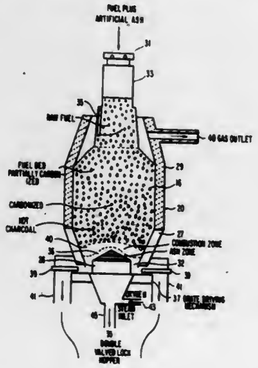
(b) reacting the tetrahydropyrimidine reaction product of (a) with an inorganic base, in a mole ratio of base to acid at between about 1:1 and about 5:1 at a temperature of about 175° to about 350° C. thereby obtaining said additive.

4,498,909

PROCESS FOR THE GASIFICATION OF FUELS

Geoffrey Milner, Stockton-on-Tees, England; Michael F. Butler, Lakeland, and Robert A. Ashworth, St. Petersburg, both of Fla., assignors to DM International, Inc., Houston, Tex.

Filed Nov. 2, 1982, Ser. No. 438,652
Int. Cl.³ C10J *3/02, 3/16, 3/42*
U.S. Cl. 48—209 **14 Claims**



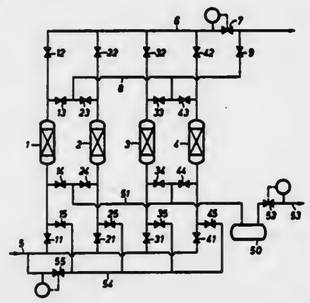
1. A method of gasifying pieces of solid, low-ash biomass fuel in raw or partially carbonized form to provide gas relatively rich in carbon monoxide and hydrogen comprising charging said pieces of fuel together with a quantity of particulate, nonfusing refractory material into the upper portion of a gasification zone in which the lower portion comprises a partial combustion zone to form, on a supporting grate positioned below said partial combustion zone, a downwardly moving, compact bed of said refractory material and said pieces of fuel undergoing gasification; supplying an oxygen-containing, combustion-supporting gas to the lower portion of the bed to conduct said gasification and produce ash; said refractory material being charged in an amount sufficient to maintain on said grate a protective layer of said refractory material and ash produced by said combustion to provide a layer having an adequate depth or thickness to protect said grate from substantial deleterious effects due to said combustion; mechanically ashing said bed by moving said grate at a rate that maintains the downward movement of the pieces of fuel of the bed undergoing gasification and removes from said grate refractory charged to said bed and said formed ash at a rate sufficient to prevent their excessive accumulation on said gate; and removing from said bed product gases relatively rich in carbon monoxide and hydrogen.

4,498,910

SAFE ADSORPTION PROCESS FOR THE SEPARATION OF HYDROCARBONS FROM OXYGEN CONTAINING GAS

Christian Benkmann, Grilfelfing, Fed. Rep. of Germany, assignor to Linde Aktiengesellschaft, Wiesbaden and Chemische Werke Huels Aktiengesellschaft, Marl, both of, Fed. Rep. of Germany

Filed Dec. 17, 1982, Ser. No. 450,596
Claims priority, application Fed. Rep. of Germany, Dec. 18, 1981, 3150137
Int. Cl.³ B01D *53/04*
U.S. Cl. 55—18 **21 Claims**



1. A pressure swing adsorption process conducted in a plurality of cyclically interchangeable adsorbers, for recovering a hydrocarbon from a gaseous feed stream containing hydrocarbons and a minor amount of oxygen, comprising the steps in a cycle of:

(a) selectively adsorbing the hydrocarbon to be recovered during an adsorption phase conducted under elevated pressure;

(b) during the adsorption phase and during at least one cocurrent expansion phase following the adsorption phase, withdrawing a residual gaseous stream, at the outlet end of an adsorber, which stream is depleted in the hydrocarbon to be recovered and enriched in oxygen;

(c) during a subsequent countercurrent expansion phase of desorption, withdrawing a stream enriched in the desorbed hydrocarbon to be recovered from the inlet end of the adsorber; and

(d) after the desorption in step (c), conducting a pressure buildup phase by repressurizing the adsorber to the adsorption pressure with the gaseous feedstream or a gas free of oxygen so as to prevent the occurrence of localized concentrations of oxygen within the adsorber of above 90% of the explosive limits thereof, and then repeating the cycle.

21. A pressure swing adsorption process conducted in a plurality of cyclically interchangeable adsorbers, for recovering a hydrocarbon from a gaseous feed stream containing hydrocarbons and a minor amount of oxygen, comprising the steps in a cycle of:

(a) selectively adsorbing the hydrocarbon to be recovered during an adsorption phase conducted under elevated pressure;

(b) during the adsorption phase and during at least one cocurrent expansion phase following the adsorption phase, withdrawing a residual gaseous stream from an adsorber, which stream is depleted in the hydrocarbon to be recovered and enriched in oxygen;

(c) during a subsequent countercurrent expansion phase of desorption, withdrawing a stream enriched in the desorbed hydrocarbon to be recovered from the adsorber; and

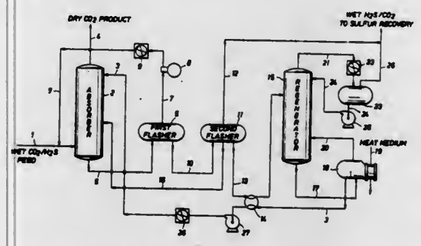
(d) after the desorption in step (c), conducting a pressure buildup phase by repressurizing the adsorber to the adsorption pressure with the gaseous feedstream or a gas free of oxygen so as to prevent the occurrence of localized concentrations of oxygen within the adsorber of above 90% of the explosive limits thereof, and then repeating the cycle.

4,498,911

SIMULTANEOUS REMOVAL OF WATER AND HYDROGEN SULFIDE FROM GASEOUS CARBON DIOXIDE

Carl H. Deal, and A. John Flynn, both of Houston, Tex., assignors to Shell Oil Company, Houston, Tex.

Filed Jan. 29, 1983, Ser. No. 508,778
Int. Cl.³ B01D *53/14*
U.S. Cl. 55—32 **10 Claims**



1. A process for simultaneously removing H_2S and H_2O from a gas stream containing between about 90 and about 99.5 percent volume CO_2 and between about 0.01 and about 5 percent volume H_2S, which process comprises:

(a) countercurrently contacting said gas stream at elevated pressure between about 1000 and 2000 psig in an absorption zone with a physical solvent selected from the group consisting of diethylene glycol, triethylene glycol, tetraethylene glycol and mixtures thereof, therein liberating a relatively dry CO_2-rich gas and a loaded H_2S-rich liquid absorbent solution;

(b) passing said loaded absorbent solution to a first flashing zone maintained at a pressure below the partial pressure of the CO_2 present in said loaded absorbent solution at a temperature present in said first flashing zone, therein liberating a gas stream comprising a major portion of relatively dry CO_2 and a minor portion of the H_2S present in said loaded absorbent solution, producing a semi-loaded absorbent absorbent solution, compressing and recycling said gas stream to said absorption zone;

(c) passing said semi-loaded absorbent solution to at least one additional flashing zone maintained at a pressure lower than that of the preceding flashing zone at the temperature in said flashing zone, therein liberating a gas stream comprising a major portion of the H_2S and a minor portion of the CO_2 present in said semi-loaded absorbent solution and producing a semi-lean absorbent solution; and

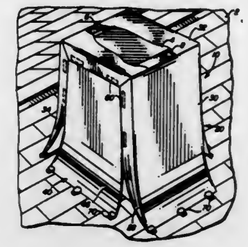
(d) passing said semi-lean absorbent solution to a regeneration zone, therein further separating H_2S, H_2O and CO_2 from said semi-lean absorbent solution, and returning the resulting lean absorbent solution to said absorption zone.

4,498,912

SUNSCREEN COVER APPARATUS FOR AN EVAPORATIVE COOLER

Theresia K. Wagner, 3110 N. 33rd St., Phoenix, Ariz. 85018

Filed Nov. 24, 1982, Ser. No. 444,318
Int. Cl.³ B01F *3/04*
U.S. Cl. 55—233 **5 Claims**



1. Cover apparatus for an evaporative cooler having a top and sides, comprising, in combination:

flexible, air pervious panel means draped over the top and the sides of the evaporative cooler, including

a refective top panel portion covering the top of the evaporative cooler, and

reflective side panel portions covering the sides of the evaporative cooler, said top and side panel portions reflecting radiant energy and allowing air to flow through the panel means to the evaporative cooler; and

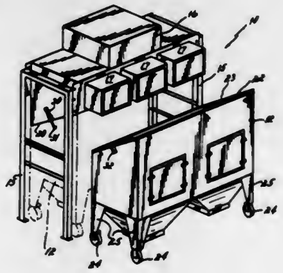
fastening means for securing the panel means to the cooler.

4,498,913

APPARATUS FOR FILTERING AIR FOR A POWDER SPRAY BOOTH

Gene F. Tank, Amherst; Samuel O. Dawson, Avon Lake, both of Ohio, and Phillip R. Barnett, Mishawaka, Ind., assignors to Nordson Corporation, Amherst, Ohio

Filed Oct. 6, 1983, Ser. No. 539,521
Int. Cl.³ B01D *46/00*; B05B *15/04*
U.S. Cl. 55—356 **2 Claims**



1. Apparatus for filtering air for a powder spray booth comprising,

a fan plenum,

vertical supports mounted on each side of said fan plenum to support said plenum above a floor,

said plenum having a lower edge which lies in a plane inclined at an angle to a horizontal plane,

a filter module,

wheels mounted on said filter module to support it on the floor,

said filter module having an upper edge lying in said inclined plane,

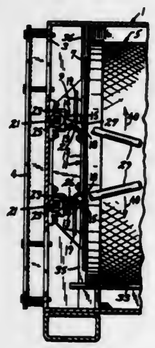
said edges being engageable when said filter module is rolled into position under said plenum.

4,498,914

FILTER APPARATUS INCLUDING APPARATUS FOR CLAMPING AN AIR FILTER ELEMENT IN A FILTER HOUSING

Donald J. Erickson, Minneapolis, Minn., assignor to Donaldson Company, Inc., Minneapolis, Minn.

Filed Mar. 3, 1983, Ser. No. 471,866
Int. Cl.³ B01D *46/24, 46/42*
U.S. Cl. 55—480 10 Claims



1. A filter apparatus comprising:

a filter housing having a filter element therein;

means, constructed and arranged to be rotatably mounted at one end of a filter element support structure in said housing, for applying pressure to said filter element contained within said support structure, said pressure applying means including portions coaxial with an axis about which said pressure applying means rotates and having portions offset from said axis, said support structure having a space formed therein for accepting said filter element and having a fixed surface, opposite the first mentioned end, against which said filter element is pressed by said pressure applying means;

clamping means movable between a first position in which said filter element is clamped in place against said fixed surface and a second position allowing removal of said filter element from said support structure, said clamping means being constructed and arranged to move to said first position when pressed against by said offset portions of said pressure applying means; and

support means attached to said clamping means for preventing lateral movement of said clamping means when said clamping means is in said second position, with said support means resting against said coaxial portions of said pressure applying means.

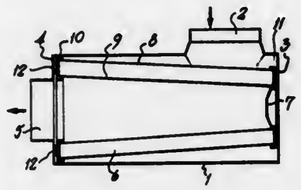
4,498,915

AIR FILTERS

Stanley P. Witchell, 17 Town Close, Vicarage Hill, Dartmouth, South Devon, England

Continuation-in-part of Ser. No. 558,496, Mar. 14, 1975, Pat. No. 4,200,444. This application Mar. 12, 1980, Ser. No. 129,786
Claims priority, application United Kingdom, Feb. 23, 1980, 8006177
Int. Cl.³ B01D *46/10*
U.S. Cl. 55—498 3 Claims

1. An air cleaner incorporating a generally tubular pleated paper filter element constructed in the form of a frustum of a cone with the pleats extending axially thereof, and the cone having an aspect ratio of 2 and an included angle of 4 degrees, said cleaner comprising a tubular casing having an opening in the tubular side wall towards one end thereof in communication with the relatively small diameter region of the element and an axial opening diameter substantially equal to the internal diameter of the relatively wide diameter end of the filter element, the casing having substantially the same internal diameter as the outside diameter of said wide diameter end of



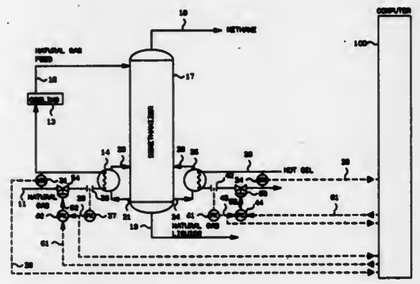
the filter element wherein the pleat depth is in the range of from 35 to 45% of the element outlet diameter.

4,498,916

CONTROL OF A FRACTIONAL DISTILLATION PROCESS

Bruce A. Jensen, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jun. 28, 1983, Ser. No. 508,638
Int. Cl.³ B01D *3/42;* F25J *3/02*
U.S. Cl. 62—21 10 Claims



1. Apparatus comprising:

a fractional distillation column;

means for supplying a heating fluid stream through a first control valve to said fractional distillation column;

means for supplying a waste heat stream through a second control valve to said fractional distillation column;

means for establishing a first signal representative of the actual flow rate of said waste heat stream;

means for establishing a second signal representative of the difference in the temperature of the waste heat stream provided to said fractional distillation column and the waste heat stream after said waste heat stream has provided heat to said fractional distillation column;

means for establishing a third signal representative of the actual flow rate of said heating fluid stream;

means for establishing a fourth signal representative of the difference in the temperature of the heating fluid provided to said fractional distillation column and the heating fluid after said heating fluid stream has provided heat to said fractional distillation column;

means for establishing a fifth signal representative of the total actual heat being provided to said fractional distillation column by said heating fluid stream and said waste heat stream in response to said first, second, third and fourth signals;

means for establishing a sixth signal representative of the total heat input required by said fractional distillation column;

means for comparing said fifth signal and said sixth signal and for establishing a seventh signal (C) which is responsive to the difference between said fifth and said sixth signal, wherein said seventh signal is scaled so as to be representative of the percentage of the heat, which could be supplied to said fractional distillation column if said first control valve and said second control valve were fully open, required to maintain the actual total heat supplied to said fractional distillation column substantially equal to the total heat represented by said sixth signal;

means for establishing an eighth signal representative of a desired flow rate of said waste heat stream in response to said seventh signal;

means for manipulating said second control valve in response to said eighth signal;

means for establishing a ninth signal representative of the desired flow rate of said heating fluid stream in response to said seventh signal; and

means for manipulating said first control valve in response to said ninth signal, wherein the manipulation of said first control valve in response to said ninth signal and the manipulation of said second control valve in response to said eighth signal results in the total heat actually supplied to said fractional distillation column being substantially equal to the desired total heat represented by said sixth signal.

6. A method for controlling the heat supplied to a fractional distillation column, wherein a heating fluid stream is supplied through a first control valve to said fractional distillation column and a waste heat stream is supplied through a second control valve to said fractional distillation column, said method comprising the steps of:

establishing a first signal representative of the actual flow rate of said waste heat stream;

establishing a second signal representative of the difference in the temperature of the waste heat stream provided to said fractional distillation column and the waste heat stream after said waste heat stream has provided heat to said fractional distillation column;

establishing a third signal representative of the actual flow rate of said heating fluid stream;

establishing a fourth signal representative of the difference in the temperature of the heating fluid provided to said fractional distillation column and the heating fluid after said heating fluid stream has provided heat to said fractional distillation column;

using computing means to establish a fifth signal representative of the total actual heat being provided to said fractional distillation column by said heating fluid stream and said waste heat stream in response to said first, second, third and fourth signals;

using computing means to establish a sixth signal representative of the total heat input required by said fractional distillation column;

using computing means to compare said fifth signal and said sixth signal and to establish a seventh signal (C) which is responsive to the difference between said fifth and said sixth signal, wherein said seventh signal is scaled so as to be representative of the percentage of the heat, which could be supplied to said fractional distillation column if said first control valve and said second control valve were fully open, required to maintain the actual total heat supplied to said fractional distillation column substantially equal to the total heat represented by said sixth signal;

using computing means to establish an eighth signal representative of a desired flow rate of said waste heat stream in response to said seventh signal;

manipulating said second control valve in response to said eighth signal;

using computing means to establish a ninth signal representative of the desired flow rate of said heating fluid stream in response to said seventh signal; and

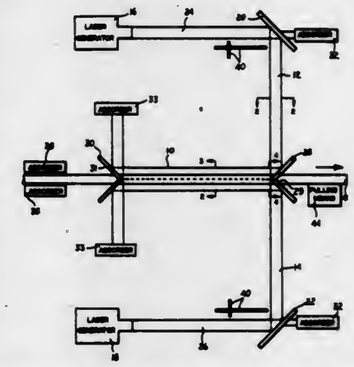
manipulating said first control valve in response to said ninth signal, wherein the manipulation of said first control valve in response to said ninth signal and the manipulation of said second control valve in response to said eighth signal results in the total heat actually supplied to said fractional distillation column being substantially equal to the desired total heat represented by said sixth signal.

4,498,917

METHOD AND APPARATUS FOR LASER SIZING OF OPTICAL FIBERS

Paul Weinstein, Orange, and Barry L. Kelmachter, Cheshire, both of Conn., assignors to Olin Corporation, New Haven, Conn.

Filed Jul. 26, 1983, Ser. No. 517,303
Int. Cl.³ C03B *37/10;* C03C *25/00*
U.S. Cl. 65—2 18 Claims



1. A method for sizing and machining a coated optical fiber having a buffer material surrounding a glass fiber to provide said optical fiber with a desired outer dimension, said method comprising:

forming a substantially cylindrical laser beam having a hollow central portion with a dimension substantially equal to said desired optical fiber outer dimension, said forming step comprising forming two substantially semi-cylindrical laser beams each having a hollowed-out core portion; and

passing said optical fiber through said hollowed-out core portions to vaporize with said laser beams oversized regions of said buffer material extending beyond said hollowed-out core portions into said laser beams.

4,498,918

METHOD FOR PRODUCING A GLASS ARTICLE

Thomas A. Seeman, 1152 Juliet, Toledo, Ohio 43614

Filed Jun. 8, 1983, Ser. No. 502,194
The portion of the term of this patent subsequent to Jun. 8, 1999, has been disclaimed.
Int. Cl.³ C03B *40/02*
U.S. Cl. 65—25.1 2 Claims

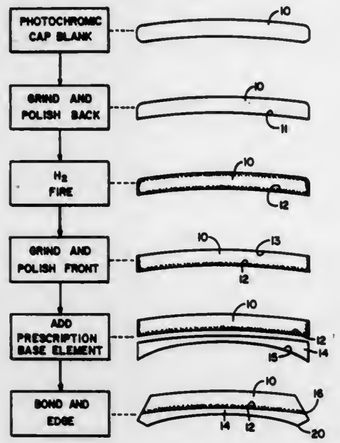
1. In a method for producing a glass article, which method includes the steps of lubricating the walls of a mold cavity by igniting a gas therein, introducing a gob into the mold cavity, and pressing the gob to a desired shape, the improvement wherein the gas is a mixture of a methyl acetylene/propadiene gas and a gas having an acetylenic triple bond, and the proportion of hydrocarbon having an acetylenic triple bond is controlled to one at which the flame which results from igniting the gas mixture is capable of penetrating an air lock in a deep mold cavity.

4,498,919

METHOD FOR MAKING COLORED PHOTOCHROMIC PRESCRIPTION OPHTHALMIC LENSES

George H. Maan, Corning, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed Oct. 31, 1983, Ser. No. 547,108
Int. Cl.³ C03C 3/26, 21/00
U.S. Cl. 65—30.11 4 Claims



1. A process for providing a colored photochromic prescription ophthalmic lens which comprises the steps of:
(a) providing a photochromic glass cap blank for a thin lens cap element to be provided with a convex front surface and a concave back surface;
(b) finishing the back surface of the cap blank to a standard base curvature in the range of about 2 to 10 diopters to provide a semifinished cap blank with a concave back surface;
(c) subjecting the semifinished cap blank to a heat treatment in a reducing atmosphere to cause the reduction of selected metallic constituents therein and the formation of an integral colored layer on the surfaces of the blank;
(d) finishing the front surface of the cap blank to generate a front surface curvature matching the standard base curvature of the back surface, to remove front surface color, and to provide a finished cap element having a thickness not exceeding about 1.5 mm and having a convex front surface and a concave back surface;
(e) providing a glass base element for the lens, said base element having a convex front surface with a standard base curvature matching that of the back surface of the finished cap element, and having a prescription-finished back surface imparting selected elements of power, cylinder, multifocal and prism correction to the base element; and
(f) cementing the back surface of the colored cap element to the front surface of the base element such that the standard base curvatures mate, to provide a finished tinted prescription ophthalmic lens.

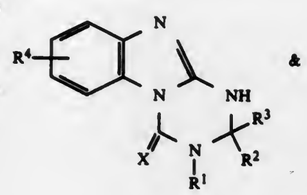
4,498,920

TETRAHYDROTRIAZINES FOR AQUATIC HERBICIDAL USE

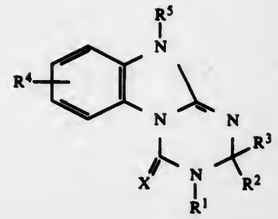
John F. Koerwer, Perkasie, Pa., assignor to Union Carbide Corporation, Danbury, Conn.

Filed Dec. 28, 1979, Ser. No. 108,280
Int. Cl.³ A01N 43/64
U.S. Cl. 71—66 20 Claims

1. A method for the control of aquatic plant life which comprises applying to the aquatic plant life a composition comprising an inert carrier, and as an essential active ingredient, in a quantity toxic to aquatic plant life, a compound selected from the group consisting of compounds having the general formula:



&



wherein
R^1 is hydrogen, lower alkyl (C_1–C_6), cycloalkyl (C_3–C_7) lower alkenyl (C_2–C_6), lower alkynyl (C_3–C_6), haloalkyl (C_1–C_6) and alkoxyalkyl (C_2–C_6);
R^2 and R^3 individually are hydrogen, ketoalkyl (C_3–C_5), lower alkyl (C_1–C_6), cycloalkyl (C_3–C_6), alkoxyalkyl (C_2–C_4), alkenyl (C_2–C_6), haloalkyl (C_1–C_6), and acyl (C_2–C_4); R^2 and R^3 taken together can also form a spirocyclic ring of C_3–C_5 carbon atoms;
R^4 individually can be H, alkyl (C_1–C_6), a maximum of two halogens selected from the group consisting of Cl, F, and Br, alkoxyl (C_1–C_4), nitro, alkylthio (C_1–C_4) and alkylsulfonyl (C_1–C_4);
R^5 may be hydrogen, carbamoyl, N-alkylcarbamoyl (C_2–C_{14}), N-arylcarbamoyl, N-(substituted aryl)carbamoyl, N-haloalkylcarbamoyl (C_2–C_{12}), N-carboalkoxyalkylcarbamoyl, N-carboxyalkylcarbamoyl (C_3–C_{14}), N-alkoxyalkylcarbamoyl (C_3–C_{14}), N-arylsulfonylcarbamoyl, acyl(C_1–C_{14}), aroyl, substituted aroyl, alkoxycarbonyl (C_2–C_{14}), aryloxycarbonyl, hydroxyacyl (C_2–C_8) alkoxyacyl (C_3–C_9), alkylthioacyl (C_3–C_9), alkylsulfonylacyl (C_3–C_7), N,N-dialkylaminoacyl (C_4–C_{10}), alkylsulfonyl (C_1–C_{14}), haloalkylsulfonyl (C_1–C_{14}), arylsulfonyl, substituted arylsulfonyl, alkyl (C_1–C_{14}), hydroxyalkyl (C_1–C_8), alkoxyalkyl (C_2–C_9), haloalkyl (C_1–C_8), cycloalkyl (C_3–C_7), alkenyl (C_2–C_{14}), cycloalkenyl (C_5–C_7), alkynyl (C_2–C_{14}), aryl and substituted aryl;
X is oxygen or sulfur.

4,498,921

TRICHLOROISOCYANURIC ACID COMPOSITION

John A. Wojtowicz, Cheshire, Conn., assignor to Olin Corporation, New Haven, Conn.

Division of Ser. No. 458,378, Jan. 17, 1983, Pat. No. 4,472,187. This application Sep. 29, 1983, Ser. No. 537,199
Int. Cl.³ E05B 67/38
U.S. Cl. 71—67 9 Claims

1. A method for sanitizing a water body which comprises:
(a) admixing dry trichlorocyanuric acid and a calcium or magnesium solubility promoting additive selected from the group consisting of the oxide, hydroxide, carbonate, and mixtures thereof of said calcium and magnesium to form a homogeneous dry mixture having a particle size in the range of about 40 to about 150 microns and having an additive/acid molar ratio of from about 0.3:1 to about 3:1, granulating said mixture to form homogeneous particles having a particle size in the range of between about 10 and about 100 mesh and further having a moisture content of less than about 0.2 percent by weight of said mixture; and
(b) feeding a sufficient portion of said mixture to said water body to produce available chlorine in situ whereby said water body is sanitized.

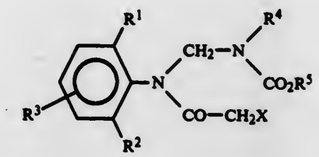
4,498,922

N-AMINOMETHYLHALOACETANILIDES AND THEIR USE FOR CONTROLLING UNDESIRABLE PLANT GROWTH

Karl Eicken; Wolfgang Rohr, both of Wachenheim, and Bruno Wuerzer, Otterstadt, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

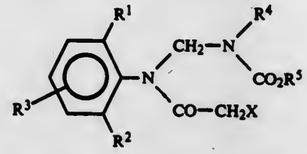
Filed Jul. 23, 1982, Ser. No. 401,355
Claims priority, application Fed. Rep. of Germany, Jul. 31, 1981, 3130302
Int. Cl.³ C07C 125/065; A01N 37/22
U.S. Cl. 71—111 6 Claims

1. A substituted N-aminomethylhaloacetanilide of the formula


(I)

where R^1 and R^2 are each C_1–C_2-alkyl, R^3 is hydrogen or C_1–C_4-alkyl, R^4 is —CO—NH_2, R^5 is C_1–C_6-alkyl and X is halogen.

3. A herbicidal agent containing inert additives and an N-aminomethylhaloacetanilide of the formula



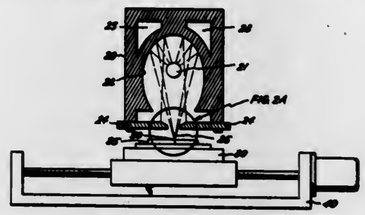
where R^1 and R^2 are each C_1–C_2-alkyl, R^3 is hydrogen or C_1–C_4-alkyl, R^4 is —CO—NH_2, R^5 is C_1–C_6-alkyl and X is halogen.

4,498,923

METHOD FOR PRODUCING EUTECTICS AS THIN FILMS USING A QUARTZ LAMP AS A HEAT SOURCE IN A LINE HEATER

Harvey E. Cline, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Division of Ser. No. 245,764, Mar. 20, 1981,. This application Dec. 5, 1983, Ser. No. 557,996
Int. Cl.³ C22B 61/00, 9/00
U.S. Cl. 75—65 ZM 4 Claims



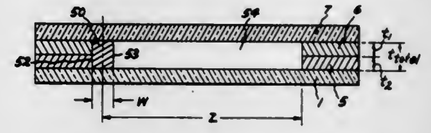
1. A method for making eutectics as thin films comprising the steps of:
(a) depositing sequentially the components of the eutectic system at a purity level of at least 99.99% as overlying thin planar layers on at least a portion of a substrate, said substrate having top and bottom major opposed substantially parallel surfaces and an outer peripheral edge area interconnecting said major surfaces and being of a material which is substantially inert relative to said eutectic system, forming thereby a preform;
(b) creating a longitudinally extending molten zone of said components by impinging on said preform a beam of heat from a quartz lamp heat source within a line heater, said molten zone extending through said planar layers and being contiguous with at least a portion of said top major surface of said substrate; and
(c) moving said molten zone across at least a portion of said preform melting thereby the components of said eutectic alloy at the leading edge of said zone, mixing said components in said zone, and freezing said components at the trailing edge of said zone, forming thereby a eutectic thin film of the eutectic composition of said components.

4,498,924

METHOD FOR PRODUCING EUTECTICS AS THIN FILMS USING A LINE HEATER

Harvey E. Cline, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Division of Ser. No. 245,764, Mar. 20, 1981,. This application Dec. 5, 1983, Ser. No. 557,997
Int. Cl.³ C22B 9/00, 61/00
U.S. Cl. 75—65 ZM 13 Claims



1. A method for making eutectics as thin films comprising the steps of:
(a) depositing sequentially the components of the eutectic system at a purity level of at least 99.99% as overlying thin planar layers on at least a portion of a substrate, said substrate having top and bottom major opposed substantially parallel surfaces and an outer peripheral edge area interconnecting said major surfaces and being of a material which is substantially inert relative to said eutectic system, forming thereby a preform;
(b) creating a longitudinally extending molten zone of said components, said molten zone extending through said planar layers and being contiguous with at least a portion of said top major surface of said substrate; and
(c) moving said molten zone across at least a portion of said preform melting thereby the components of said eutectic alloy at the leading edge of said zone, mixing said components in said zone, and freezing said components at the trailing edge of said zone, forming thereby a eutectic thin film of the eutectic composition of said components.

4,498,925

METHOD FOR PRODUCING EUTECTICS AS THIN FILMS USING AN ARC LAMP, AS A HEAT SOURCE IN A LINE HEATER

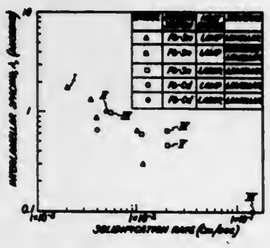
Harvey E. Cline, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Dec. 5, 1983, Ser. No. 557,998
Int. Cl.³ C22B 9/00, 61/00
U.S. Cl. 75—65 ZM 5 Claims

1. A method for making eutectics as thin films comprising the steps of:
(a) depositing sequentially the components of the eutectic system at a purity level of at least 99.99% as overlying thin

planar layers on at least a portion of a substrate, said substrate having top and bottom major opposed substantially parallel surfaces and an outer peripheral edge area interconnecting said major surfaces and being of a material which is substantially inert relative to said eutectic system, forming thereby a preform;

(b) creating a longitudinally extending molten zone of said components by impinging on said preform a beam of heat from a arc lamp heat source within a line heater, said



molten zone extending through said planar layers and being contiguous with at least a portion of said substrate; and

(c) moving said molten zone across at least a portion of said preform melting thereby the components of said eutectic alloy at the leading edge of said zone, mixing said components in said zone, and freezing said components at the trailing edge of said zone, forming thereby a eutectic thin film of the eutectic composition of said components.

4,498,926

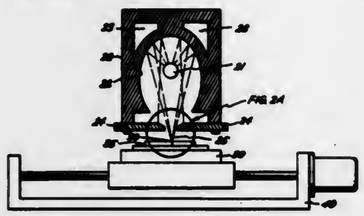
METHOD FOR PRODUCING EUTECTICS AS THIN FILMS USING A LASER DEVICE AS A HEAT SOURCE

Harvey E. Cline, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Division of Ser. No. 245,764, Mar. 20, 1981,. This application Dec. 5, 1983, Ser. No. 557,999

Int. Cl.³ C22B 9/00, 61/00

U.S. Cl. 75—65 ZM **4 Claims**



1. A method for making eutectics as thin films comprising the steps of:

(a) depositing sequentially the components of the eutectic system at a purity level of at least 99.99% as overlying thin planar layers on at least a portion of a substrate, said substrate having top and bottom major opposed substantially parallel surfaces and an outer peripheral edge area interconnecting said major surfaces and being of a material which is substantially inert relative to said eutectic system, forming thereby a preform;

(b) creating a longitudinally extending molten zone of said components by impinging on said preform a beam of heat from a laser device, said molten zone extending through said planar layers and being contiguous with at least a portion of said top major surface of said substrate; and

(c) moving said molten zone across at least a portion of said preform melting thereby the components of said eutectic alloy at the leading edge of said zone, mixing said components in said zone, and freezing said components at the trailing edge of said zone, forming thereby a eutectic thin film of the eutectic composition of said components.

4,498,927

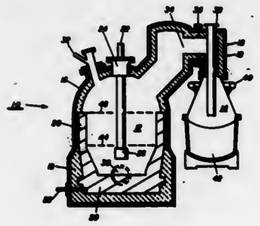
THERMAL REDUCTION PROCESS FOR PRODUCTION OF MAGNESIUM USING ALUMINUM SKIM AS A REDUCTANT

Kenneth A. Bowman, Leechburg, Pa.; Roy A. Christini, and Marlyn D. Ballain, both of Colville, Wash., assignors to Aluminum Company of America, Pittsburgh, Pa.

Filed Mar. 10, 1983, Ser. No. 474,738

Int. Cl.³ C22B 26/22

U.S. Cl. 75—67 R **31 Claims**



1. An improved process for the recovery of increased amounts of magnesium having low silicon contamination from a magnesium oxide containing ore, the process occurring in a system having a reaction zone and a condensation zone, the process comprising the steps of:

(a) charging to the reaction zone an ore containing 45 to 65% by weight calcium oxide and 25 to 60% by weight magnesium oxide and a reducing agent containing ferrosilicon and at least 25 wt.% aluminum skim;

(b) providing a molten calcium-silicon-aluminum-magnesium oxide slag in the reaction zone;

(c) contacting the reducing mixture with the slag or with magnesium oxide in the presence of the slag in the reaction zone at a temperature within the range of 1300° to 1700° C. and a pressure of between 35 and 100 torr to produce magnesium vapor;

(d) transporting the magnesium vapor from the reaction zone to the condensation zone; and

(e) condensing the magnesium vapor in the condensation zone.

4,498,928

DUCTILE DUPLEX IRON-BASED ALLOY CONTAINING ALUMINUM

Laurance L. Oden, Albany, and John S. Dunning, Corvallis, both of Oreg., assignors to The United States of America as represented by the Secretary of Interior, Washington, D.C.

Filed Feb. 6, 1984, Ser. No. 577,459

Int. Cl.³ C22C 38/40

U.S. Cl. 75—124 **4 Claims**

1. A duplex ductile iron-based alloy containing aluminum in which an alpha-iron phase is provided having little Al and in which a beta-iron phase is provided having the majority of the Al, consisting essentially of:

about 8 to 20 wt% of Cr;
about 6 to 30 wt% of Ni;
about 3 to 11.5 wt% of Al;
about 0 to 2 wt% of Mo;
about 0 to 1 wt% of Si;
about 0 to 2 wt% of Mn;
about 0 to 0.1 wt% of C;
about 0 to 0.02 wt% of S;
about 0 to 0.02 wt% of P;
about 0 to 1 wt% of Ti;
about 0 to 2 wt% of Nb plus Ta; and

the balance of Fe;
and wherein the Ni/Al weight ratio is between 1.7 to 2.6.

4,498,929

STABLE DISPERSIONS OF POLYISOCYANATES CONTAINING POLYSILOXANE MOLD RELEASE AGENTS

John R. Robertson, Glenn Mills, Pa., assignor to ICI Americas Inc., Wilmington, Del.

Continuation-in-part of Ser. No. 486,269, Apr. 18, 1983, abandoned. This application Feb. 21, 1984, Ser. No. 582,019

Int. Cl.³ B28B 7/36

U.S. Cl. 106—38.2 **22 Claims**

1. A stable liquid organic polyisocyanate fluid dispersion for use in preparing reaction injected molded polyurethane resins having improved mold release properties having dispersed therein from 1–15 percent by weight of a polysiloxane mold release agent which consists essentially of 0.5–20 mol percent of $R_aR'_bSiO_{(4-(a+b))/2}$ units and from 80–99.5 mol percent of $R''_cSiO_{(4-c)/2}$ units where R is an isocyanate reactive organic radical, a has an average value of from 1–3, R' and R" are both non-isocyanate reactive organic radicals, b has an average value of 0–2, a+b is from 1–3, and c has an average value of from 1–3, wherein

the ratio of the total molecular weight of said polysiloxane mold release agent to the total number of isocyanate reactive functional groups in said polysiloxane mold release agent ranges from 100–3500,

the combined formula weights of all isocyanate reactive organic radicals, R do not exceed 40% of the total molecular weight of said polysiloxane mold release agent,

the combined formula weights of all non-isocyanate reactive radicals, R'+R" together do not exceed 40% of the total molecular weight of said polysiloxane mold release additive,

the combined formula weights of all the organic radicals R+R'+R" in the molecule together do not exceed 60% of the total molecular weight of the molecule,

said polysiloxane mold release agent contains an average of at least two isocyanate reactive functional groups per molecule,

at least two of the isocyanate reactive functional groups in each molecule are located on separate organic radicals, R, attached independently to different silicon atoms in said polysiloxane,

said isocyanate reactive functional groups (R) are selected from the group consisting of alcohols, phenols, thiols, carboxylic acids, primary or secondary aromatic amines which contain no oxygen and which contain not more than one nitrogen atom attached directly to, in conjugation with, or incorporated within the aromatic ring nucleous, and secondary aliphatic amines wherein at least one of the alkyl carbon atoms bonded directly to the nitrogen atom is not a primary carbon atom,

the molecular weight of said polysiloxane mold release agent ranges from 1000 and 30,000, and

said polysiloxane mold release agent being substantially insoluble in said liquid polyisocyanate, and from 1–25 percent based on the weight of said polysiloxane mold release agent of a liquid silicone surfactant substantially free of isocyanate reactivity whereby said liquid remains substantially ungelled and fluid up to 25° C.

4,498,930

METHOD AND DEVICE FOR REGULATING THE BURNING PROCESS OF A CEMENT BURNING SYSTEM

Heinrich Rake, Aachen; Horst Herchenbach, Hennef; Gernot Jäger, Cologne, and Gerhard Franck, Aachen, all of Fed. Rep. of Germany, assignors to Klöckner-Humboldt-Deutz AG, Fed. Rep. of Germany

Filed May 20, 1983, Ser. No. 496,555

Claims priority, application Fed. Rep. of Germany, May 28, 1982, 3220085

Int. Cl.³ C04B 7/44

U.S. Cl. 106—100 **10 Claims**

1. A method of regulating the roasting or burning process in a cement roasting or burning plant, in which a stream of material travels successively through a preheating zone, a calcining zone, a sintering zone and a cooling zone, wherein the regulation is carried out using the degree of deacidification of the material in a region of the calcining zone as a control condition.

4,498,931

PIGMENTED ALUMINUM OXIDE POWDER AND METHOD OF PRODUCING THE SAME

Hidekimi Kadokura, and Hiroshi Umezaki, both of Niihama, Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Jun. 30, 1983, Ser. No. 509,808

Claims priority, application Japan, Jul. 9, 1982, 57-120351

Int. Cl.³ C04B 31/02; C08K 3/04; C09C 1/44

U.S. Cl. 106—307 **10 Claims**

1. Pigmented aluminum oxide powder obtained by adding to aluminum oxide powder, more than 0.5 weight % of carbon black having a mean particle size less than 100 nm and a specific surface area more than 30 m^2/g, and mixing them under the condition of an impact value more than 1 G.

3. A method of producing pigmented aluminum oxide powder characterized by adding to aluminum oxide powder, more than 0.5 weight % of carbon black having a mean particle size less than 100 nm and a specific surface area more than 30 m^2/g, and mixing them under the condition of an impact value more than 1 G.

4,498,932

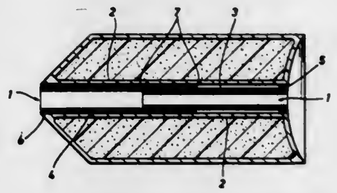
PIPELINE PIG WITH RESTRICTED FLUID BYPASS

Vitold R. Kruka, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Dec. 14, 1983, Ser. No. 561,497

Int. Cl.³ B08B 9/04

U.S. Cl. 134—8 **13 Claims**



12. A method for cleaning a pipeline comprising:

inserting a pig into the pipeline, said pig being a compressible polymeric cylindrical body having a restricted fluid bypass channel therethrough;

applying fluid pressure to the pig to force the pig through the pipeline;

passing a limited amount of fluid through the restricted fluid bypass channel; and

allowing the pig to axially compress by forming the bypass channel with two tubes respectively bonded to the cylindrical body at opposite ends thereof, each tube having a

free end positioned within the channel, with one tube being partially inserted into the other tube.

4,498,933

DIPHASE DRAIN CLEANER WITH HALOGENATED ALIPHATIC SOLVENT

Bernard Berkeley, Evanston, Ill., assignor to Hysan Corporation, Chicago, Ill.

Continuation-in-part of Ser. No. 374,450, May 3, 1982, Pat. No. 4,453,983. This application Mar. 15, 1984, Ser. No. 589,953
The portion of the term of this patent subsequent to Jun. 12, 2001, has been disclaimed.
Int. Cl.³ B08B *3/08, 9/02*
U.S. Cl. 134—22.14 **21 Claims**

18. A method for cleaning from a drain a blockage containing polystyrene and one or more organic and inorganic substances and covered by water prevented from draining through the blockage, said method comprising the steps of:

providing a two phase composition consisting essentially of at least 50% by weight of an aqueous solution of sulfuric acid of at least 20% concentration, as a heavier phase, and up to 50% by weight of a lighter phase consisting essentially of a polystyrene solvent, with the lighter phase floating atop the heavier phase and being immiscible therewith, said polystyrene solvent being one which is substantially unaffected by said sulfuric acid;

adding said two phase composition to said blocked drain;

contacting the blockage and the water in the blocked drain initially with said heavier sulfuric acid while maintaining the lighter phase containing said polystyrene solvent above the blockage and above the sulfuric acid;

melting or dissolving said organic and inorganic substances in said blockage as a result of said sulfuric acid contacting said blockage;

releasing said polystyrene from said blockage, as a result of said melting or dissolving of the other substances in the blockage, thereby causing the polystyrene to float upwardly into said lighter phase located above the sulfuric acid;

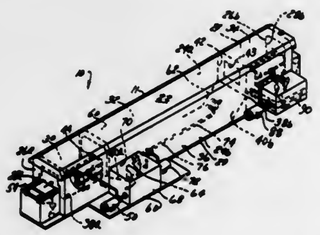
and then dissolving the polystyrene which has floated upwardly in said lighter phase.

4,498,934

MACHINE AND METHOD FOR CLEANING RECEPTACLES IN A SINGLE IMMERSION CHAMBER HAVING A SOAKING STATION AND A SCRUBBING STATION

Roger F. Potts, Georgetown, Canada, assignor to Convay Systems Limited, Canada

Continuation-in-part of Ser. No. 147,622, May 7, 1980, Pat. No. 4,344,448, and a continuation-in-part of Ser. No. 360,872, Mar. 22, 1982,. This application Aug. 16, 1982, Ser. No. 408,365
Claims priority, application Canada, Jul. 31, 1979, 332924
Int. Cl.³ B08B *3/02*
U.S. Cl. 134—254 **30 Claims**



14. An apparatus for removing dirt from dirty objects using cleaning fluid and rinsing fluid, said apparatus comprising:

a first spray tunnel;

at least one first spray nozzle in said first spray tunnel for mechanically scrubbing dirty objects with cleaning fluid as said dirty object passes through said first spray tunnel;

a first fluid supply means supplying pressurized cleaning fluid to said at least one first spray nozzle of said first spray tunnel;

a longitudinally extending immersion chamber having two ends, said longitudinally extending immersion chamber being interconnected at one of said two ends with said first spray tunnel and having the other of said two ends disposed remote therefrom, said longitudinally extending immersion chamber containing cleaning fluid for immersing said dirty objects therein as said dirty objects move through said longitudinally extending immersion chamber;

turbulator means in a location along said immersion chamber remote from said first spray tunnel;

at least one second spray nozzle on said turbulator means for turbulating said cleaning fluid in a portion of said immersion chamber spaced a predetermined distance from said one of said two ends of said longitudinally extending immersion chamber such as to turbulate said cleaning fluid in said portion of said immersion chamber;

second fluid supply means supplying pressurized cleaning fluid to said at least one second spray nozzle of said turbulator means;

a second spray tunnel interconnected with said other of said two ends of said longitudinally extending immersion chamber;

at least one third spray nozzle in said second spray tunnel for scrubbing said dirty objects with rinsing fluid as said dirty objects pass through said second spray tunnel;

a third fluid supply means supplying pressurized rinsing fluid to said at least one third spray nozzle of said second spray tunnel; and

transporting means for moving said dirty objects serially through said first spray tunnel, said longitudinally extending immersion chamber, and said second spray tunnel.

25. A method of removing the dirt from a dirty object using cleaning fluid and rinsing fluid, said method comprising the steps of:

spraying said dirty object with cleaning fluid from a first high pressure spray means so as to remove a first portion of said dirty from said dirty object;

immersing said dirty object in a first portion of an immersion chamber containing cleaning fluid, so as to loosen a second portion of said dirt from said dirty object by the action of said cleaning fluid;

immersing said dirty object in a second portion of said immersion chamber containing cleaning fluid;

turbulating said cleaning fluid using a second high pressure spray means in a second portion of said immersion chamber so as to remove said second portion of said dirt which has been loosened by the action of said cleaning fluid and so as to loosen and remove a third portion of said dirt by the mechanical action of said turbulated cleaning fluid;

rinsing said dirty object with rinsing fluid from a third high pressure spray means so as to remove the remaining dirt from said dirty object and to remove any cleaning fluid adhering to said dirty object; and

transporting said dirty objects progressively through said first high pressure spray means, said first portion of said immersion chamber, said second portion of said immersion chamber, and said third high pressure spray means.

4,498,935

ZINC PHOSPHATE CONVERSION COATING COMPOSITION

Gary D. Kent, Sterling Heights; Norbert B. Istorp, Farmington Hills, and Thomas H. Springstead, Pontiac, all of Mich., assignors to Parker Chemical Company, Madison Heights, Mich.

Filed Jul. 13, 1981, Ser. No. 282,480
Int. Cl.³ C23F *7/10*
U.S. Cl. 148—6.15 Z **16 Claims**

1. An aqueous zinc phosphate conversion coating solution comprising:

(A) from about 0.05% to about 2.5% zinc ions;

(B) from about 0.15% to about 7.5% phosphate ions;

(C) from about 0.05% to about 5.0% aromatic nitro anion having no more than two nitro groups; and

(D) from about 0.05% to about 5.0% chlorate anion, wherein the ratio of said chlorate anion to said aromatic nitro anion is from less than about 2:1 up to about 1:2.

4,498,936

INSULATIVE COATING COMPOSITION FOR ELECTRICAL STEELS

Michael H. Haselkorn, Franklin, Ohio, assignor to Armco Inc., Middletown, Ohio

Filed May 21, 1984, Ser. No. 612,450
Int. Cl.³ C23F *7/10*
U.S. Cl. 148—6.15 R **14 Claims**

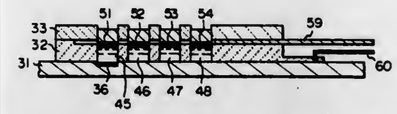
1. An aqueous coating composition for forming an insulative coating directly on electrical steels and on electrical steels having a mill glass thereon, said composition consisting essentially of, on a water-free basis, from 3 parts to 11 parts by weight Al^{+++} calculated as Al_2O_3, from 3 parts to 15 parts by weight Mg^{++} calculated as MgO, from 78 parts to 87 parts by weight $H_2PO_4^-$ calculated as H_3PO_4, the sum of said Al^{+++}, Mg^{++} and $H_2PO_4^-$ totaling 100 parts by weight on a water-free basis calculated as Al_2O_3, MgO and H_3PO_4, respectively, and from about 30 parts to about 250 parts by weight aluminum silicate calculated as $Al_2O_3.SiO_2$ per 100 parts Al_2O_3, MgO, and H_3PO_4, on a water-free basis, at least 50% by weight of said composition being water.

4,498,937

LIQUID PHASE EPITAXIAL GROWTH METHOD

Shoji Isozumi, and Toshihiro Kusunoki, both of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Apr. 28, 1983, Ser. No. 489,348
Claims priority, application Japan, Apr. 28, 1982, 57-072442
Int. Cl.³ H01L *21/208*
U.S. Cl. 148—171 **16 Claims**



1. A liquid phase epitaxial growth method for growing a compound semiconductor layer on a semiconductor substrate comprising the steps of:

(a) bringing a semiconductor material solution, containing at least one of the components forming the compound semiconductor layer, into contact with a crystalline plate which has a composition different from that of the semiconductor substrate and contains at least one of the components forming the compound semiconductor layer, the semiconductor component in the crystalline plate is dissolved into the semiconductor material solution and a supercooling condition occurs in the semiconductor material solution, the crystalline plate having a crystal face having a higher Miller index than that of the semiconductor substrate; and

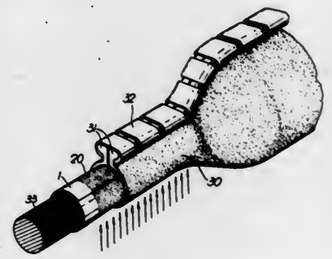
(b) bringing the semiconductor material solution into contact with the semiconductor substrate to form the compound semiconductor layer on the semiconductor substrate.

4,498,938

SPLICING, BRANCHING OR TERMINATING CABLE

Marc Moisson, Strombeek-Bever; Lodewijk Van Noten, LeUven; Noel Overbergh, Bertem; Joris Franckx, Bonheiden, and Valere Buekers, Zelem, all of Belgium, assignors to N.V. Raychem S.A., Kessel-lo, Belgium

Continuation of Ser. No. 494,691, May 17, 1983, abandoned, which is a continuation of Ser. No. 261,400, May 7, 1981, abandoned. This application Nov. 2, 1983, Ser. No. 549,002
Claims priority, application United Kingdom, May 12, 1980, 8015697; Dec. 2, 1980, 8038629
Int. Cl.³ B21F *15/06*; H01R *3/02*
U.S. Cl. 156—49 **47 Claims**



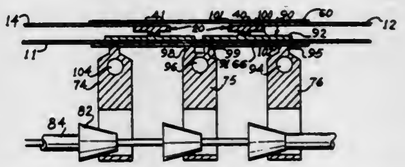
1. A method of enclosing a cable splice, branchout, or termination, having a plurality of insulated cable portions extending therefrom, which comprises positioning a heat-recoverable member around the splice, branchout or termination in such a manner that a plurality of insulated cable portions extend from at least one end of said member; placing around at least one of the cable portions individually a metal foil member of such stiffness as substantially to prevent radial distortion or indentation of the insulation of the cable portion during heat recovery of the heat-recoverable member; and heating said member to cause recovery thereof.

4,498,939

METHOD AND APPARATUS FOR MAKING ZIPPER BAGS

James R. Johnson, 3819 Greenhill Dr., Chamblee, Ga. 30341

Filed Jan. 3, 1983, Ser. No. 455,338
Int. Cl.³ B65D *27/20*
U.S. Cl. 156—66 **9 Claims**



1. A method for making plastic bags having zipper closures, wherein said bags are made of a light gauge thermoplastic and said zipper closures are made of a heavy gauge thermoplastic, said method including the steps of feeding bag material along a path, said bag material including a back and opposed front pieces, feeding a first strip of zipper material along said path adjacent to one front piece and feeding a second strip of zipper material along said path adjacent to the other front piece, lifting said front pieces from said back and feeding said zipper

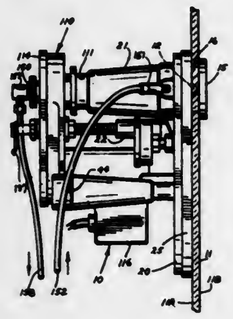
material into position between said back and said front pieces, aligning said first strip and said second strip of zipper material with said bag material, moving said bag material with said zipper material along said path while engaging the front of said bag material with a first belt and engaging the back of said bag material with a second belt, holding sealing rails against said second belt while heating said sealing rails sufficiently to seal said back to said zipper material, further feeding said bag material along said path, directing air against the front piece of said bag material, and heating said air sufficiently to seal said front piece to said zipper material, slitting said bag material longitudinally, and sealing transverse lines across said bag material to side seal and separate bags from said bag material.

4,498,940

PLATE GLASS REPAIR APPARATUS AND METHOD

Paul S. Petersen, Minnetonka, Minn., assignor to Novus Inc., Minneapolis, Minn.

Filed Sep. 1, 1983, Ser. No. 528,728
Int. Cl.[3] B32B *35/00*
U.S. Cl. 156—98 14 Claims



1. An apparatus for cutting a hole in a rigid sheet such as a glass pane to be repaired, comprising a plate, means forming a plurality of intersecting grooves in a first surface of said plate, first perimeter seal means defining an area of said plate surrounding said grooves and defining a plane, vacuum pump means mounted on said plate and operable to evacuate the area within the first seal means, to thereby hold the plate against a surface of glass to be repaired, a cutter member mounted on said plate for movement generally normal to the plane defined by the first seal means and operable to pass through such plate to engage a pane of glass on which the plate is supported, second seal means surrounding said cutter member and defining a chamber of larger size than the cutter member fluidly isolated from the rest of the area within the first perimeter seal means, and fluid pressure means to provide a flow of fluid across the edges of the cutter to exhaust passage means to provide for a flow of fluid across the cutter member during cutting operations.

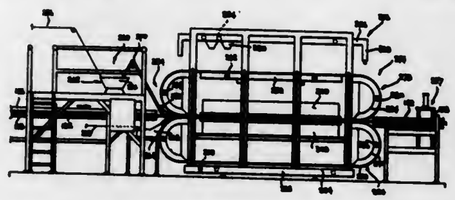
11. A method of repairing a crack in a pane of glass which comprises placing a substantially rigid plug on a first surface of said pane adjacent the crack area and of sufficient size to extend outwardly beyond the crack area a desired amount, securing said rigid plug on the surface of the glass, mounting a cutter member on an opposite surface of the pane of glass, cutting an annular slit through the pane of a diameter sufficient to form a glass plug which surrounds the crack but is of diameter less than the perimeter size of said rigid plug from the opposite side only, removing the cutting member, removing the rigid plug from the surface of the pane of glass and removing the glass plug, forming a cylindrical glass disc of only slightly smaller size than the hole left by the cutter, and affixing the glass disc into position in the opening in the pane of glass.

4,498,941

METHOD FOR PRODUCING FIBER REINFORCED SHEET STRUCTURES

William B. Goldsworthy, Palos Verdes Estates, Calif., assignor to Goldsworthy Engineering, Inc., Torrance, Calif.

Division of Ser. No. 290,357, Aug. 5, 1981, Pat. No. 4,402,778.
This application Aug. 29, 1983, Ser. No. 526,984
Int. Cl.[3] B32B *31/06, 31/20*
U.S. Cl. 156—148 12 Claims



1. A method of producing a reinforced plastic composite panel segments on a continuous basis comprising:

(a) endwise abutting a plurality of rigid panels in a generally common plane and where each of the rigid panels has a pair of spaced apart first sides and a pair of spaced apart second sides and pair of relatively flat opposite surfaces, such that the first sides are generally aligned on opposite sides of the panels and the second side of the panels are endwise abutted and the relatively flat opposite surfaces of said panels are generally coplanar,

(b) moving said endwise abutted panels successively and while in endwise abutted engagement through a first application station and a second application station,

(c) wrapping a plurality of first strands of fiber reinforcing material at said first application station in closely spaced relationship to one another about and around said pair of spaced apart first sides and across said relatively flat opposite surfaces of said endwise abutted panels,

(d) applying a plurality of second strands of fiber reinforcing material at said second application station in closely spaced relationship to each of the opposite flat surfaces of said endwise abutted panels so that the second strands extend beyond the spaced apart second sides of some of said panels, said plurality of first strands and plurality of second strands having been impregnated with a curable binder,

(e) curing the binder and bonding the binder impregnated first and second strands to one another to effect a woven strand sheet extending for the entire surface area of a plurality of the endwise abutted panels and to bond same to said panels to form a succession of endwise abutted panels with woven strand sheets bonded to opposite surfaces thereof, and

(f) severing the endwise abutted panels at desired positions lengthwise thereof to form panel segments of the desired length comprised of a portion of a rigid panel and formed woven strand sheets on the opposite surfaces thereof.

4,498,942

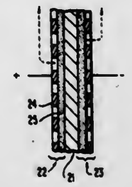
ELECTROLYSIS APPARATUS USING A DIAPHRAGM OF A SOLID POLYMER ELECTROLYTE, AND METHOD FOR PRODUCTION THEREOF

Hiroshi Asano; Takayuki Shimamune, and Toshiki Goto, all of Chiba, Japan, assignors to Permelec Electrode Ltd., Tokyo, Japan

Division of Ser. No. 217,608, Dec. 18, 1980, Pat. No. 4,457,822.
This application Jun. 13, 1983, Ser. No. 503,452
Claims priority, application Japan, Dec. 27, 1979, 54-169406
Int. Cl.[3] B32B *31/12;* C25B *9/00*
U.S. Cl. 156—151 5 Claims

1. A method for producing an electrolysis apparatus which comprises

forming a gas-permeable electrically conductive substrate,
bonding a film-like porous electrode catalyst layer integrally to the gas-permeable electrically conductive substrate to form at least one electrode structure, and then
providing a porous electrically conductive coating having substantially non-catalytic activity on the surface of said



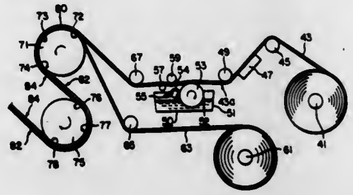
film-like porous electrode catalyst layer or on the surface of a diaphragm of a solid polymer electrolyte wherein said solid polymer electrolyte is an ion-exchange membrane, and then
bonding, through said coating, said film-like porous electrode catalyst layer to said diaphragm.

4,498,943

APPARATUS FOR PRODUCING COMPOSITE CORRUGATING MEDIA FOR THE MANUFACTURE OF CORRUGATED FIBERBOARD AND METHOD OF MAKING SAME

Shuji Itoh, and Koichi Hayashi, both of Tokyo, Japan, assignors to Kyokuto Fatty-Acid Corporation, Tokyo, Japan

Filed May 17, 1982, Ser. No. 379,017
Claims priority, application Japan, Jun. 8, 1981, 56-086924
Int. Cl.[3] B32B *31/08*
U.S. Cl. 156—164 13 Claims



1. A method for the manufacture of corrugating medium for producing corrugated fiberboard by laminating a first and second web of corrugating medium to produce a composite corrugating medium comprising the steps of:

(a) supplying a first and a second web of corrugating medium from different sources such that one of said webs is under tension and the other is substantially tension-free;

(b) applying a coating of a water-soluble adhesive onto the entire area of one side of at least one web of said first and second webs of corrugating medium;

(c) conveying said first and second corrugating mediums over the surface of a first heating cylinder such that the water-soluble adhesive is between the first and second corrugating medium to join them together into a loosely bound composite corrugating medium having first and second surfaces;

(d) applying heat to said first surface of said composite corrugating medium in a first heating step by means of said first heating cylinder such that the adhesive is not fully hardened so that the web under tension and the substantially tension-free web can mutually slide one over the other to smooth out and adjust for any surface irregularities; and

(e) passing said second and opposite surface of said composite corrugating medium over a second heating cylinder, which is substantially the same size as said first heating cylinder, to subject said composite medium to a second heating step;

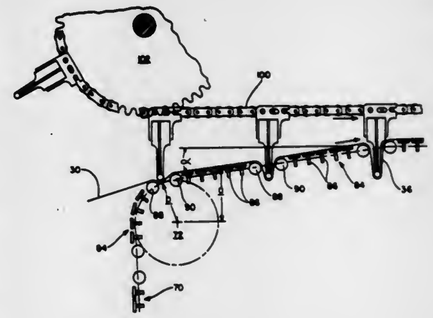
wherein said first and second heating cylinders are arranged in such relationship that the pathway of the composite corrugating medium is defined by gradual curves to avoid sharp bending and excessive stress on said composite corrugating medium.

4,498,944

METHOD AND APPARATUS FOR PRODUCING AN ELASTICIZED GARMENT BY TUCKING A PORTION OF THE DIAPER WEB DURING BONDING OF ELASTIC TO THE UNTUCKED PORTIONS OF THE WEB

Charles E. Krause, and William J. Moore, both of Appleton, Wis., assignors to Kimberly-Clark Corporation, Neenah, Wis.

Filed Jan. 18, 1982, Ser. No. 340,543
Int. Cl.[3] B32B *31/08*
U.S. Cl. 156—205 8 Claims



1. In an apparatus for applying elastic ribbon to spaced apart areas of a continuously moving web, said apparatus having a feed end at which the web is fed to the apparatus and an exit end at which the web and elastic leave the apparatus, the combination comprising:

first conveyor means onto which the web is fed including web supporting means engaging the web and having spaced apart gaps therein;

a plurality of tucker bar means;

second conveyor means for carrying the tucker bar means through the apparatus and moving the tucker bar means and spaced portions of the web into said gaps to form tucks in the web;

guide means for positioning the gaps of the first conveyor to permit gradual movement of the tucker bar means in the gaps and forming of the tucks;

each tucker bar means has a position, at the feed end of the apparatus, in that portion of the gap most adjacent said feed end and advances to a position, while moving through said apparatus, in that portion of the gap most adjacent said exit end;

means for moving the elastic ribon to a position spanning said tucks and in engagment with the spaced apart areas of the web; and

means for adhering the elastic ribbon to the web.

4,498,945

METHOD AND MEANS FOR SPOOLING TUBING

Peter Balsave, Glen Rock, N.J., assignor to Kable Engineering Company, Union City, N.J.

Filed Dec. 1, 1983, Ser. No. 556,967
Int. Cl.[3] B29B *3/00*
U.S. Cl. 156—256 12 Claims

1. An improved method of cutting lengths of tubing from a

spool of tubing of indeterminate length and handling the cut lengths comprising the steps of:

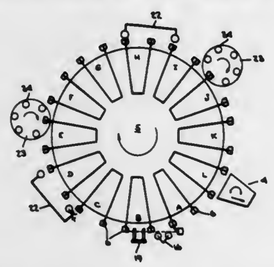
drawing the end of the spooled tubing generally downwardly to an end clamp;

moving the clamped end a predetermined distance horizontally and forming a vertically hanging slack loop of predetermined tube length between the clamped end of the tubing and the spool;

moving an intermediate portion of the tubing between said loop and spool downwardly into a second end clamp spaced from said first clamp;

cutting the tubing at the second clamp on the roll side of the tubing thereby forming a cut tube of predetermined length clamped at its opposite ends.

7. An improved means for cutting lengths of tubing from a



roll of tubing of indeterminate length and handling the cut lengths comprising the combination of:

a tubing feeder;

a tubing end clamp;

turret means for moving the end clamp a predetermined distance and a spool assembly on said turret means for forming a slack loop of predetermined tube length between the clamped end of the tubing and the spool;

feeder means on said turret for moving an intermediate portion of the tubing between said loop and spool into a second end clamp spaced from said first clamp;

a second tubing end clamp;

knife means for cutting the tubing at the second clamp on the roll side of the tubing thereby forming a cut tube of predetermined length including a slack loop clamped at its opposite ends.

4,498,946

APPARATUS AND METHOD FOR MANUFACTURING A SANDWICH WEB

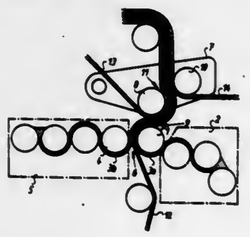
Ernst Schöllkopf, Rechthalten, and Walter Rimmele, Fribourg, both of Switzerland, assignors to Polytype AG, Switzerland

Filed Aug. 26, 1983, Ser. No. 526,799

Claims priority, application Sweden, Sep. 24, 1982, 8205481

Int. Cl.³ B32B *31/06*

U.S. Cl. 156—324 **7 Claims**



6. A method for the manufacturing of a sandwich web using a pair of applicator rollers which are coatable with adhesive and are separately rotatably driven and arranged so as to form a first roller nip therebetween and using a plurality of laminating rollers one of which may be arranged serially to form a nip with one of the applicator rollers and the other of which may be arranged serially to form a nip with said one laminating roller, comprising directing a substrate serially between the first roller nip between the applicator rollers while continuing to apply a film of adhesive over each of the applicator rollers and feeding it to respective sides of said substrate, directing the adhesive coated sides of the substrate in the nip between a first laminating roller and one of the applicator rollers while feeding a first lining web over the associated first laminating roller to bond it to the adhesive on the adjacent side of the substrate, releasing the other adhesively coated side from the applicator roller on the opposite side of the substrate and passing from the substrate through the nip between the first laminating roller and the other of said laminating rollers while feeding a second liner onto the adhesive on the opposite face of the substrate.

4,498,947

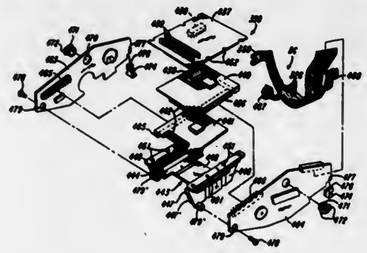
HAND-HELD LABELER

Paul H. Hamisch, Jr., Franklin, and James A. Makley, Dayton, both of Ohio, assignors to Monarch Marking Systems, Inc., Dayton, Ohio

Filed Feb. 28, 1984, Ser. No. 582,339

Int. Cl.³ B65C *11/02*

U.S. Cl. 156—384 **20 Claims**



1. A hand-held labeler adapted to print and apply pressure sensitive labels releasably secured to a carrier web, comprising: a housing having spaced wall members and a handle, means in the housing for advancing a carrier web, means for printing on labels including a print head having electrically selectable printing elements, means for delaminating printed labels, means for applying printed labels, means defining a path for guiding the web from a label supply roll to the printing means, to the delaminating means and to the web advancing means, a keyboard, circuitry for electrically connecting the keyboard and the print head, the circuitry including a first printed circuit board extending generally horizontally between the wall members and a second printed circuit board extending generally vertically, a plug-type connection connecting the first and second printed circuit boards, and means for resiliently mounting the first and second circuit boards within the housing.

20. A hand-held labeler adapted to print and apply pressure sensitive labels releasably secured to a carrier web, comprising: a housing having spaced wall members and a handle, means in the housing for advancing a carrier web, means for printing on labels including a print head having electrically selectable printing elements, means for delaminating printed labels, means for applying printed labels, means defining a path for guiding the web from a label supply roll to the printing means, to the delaminating means and to the web advancing means, a keyboard, circuitry for electrically connecting the keyboard and the print head, the circuitry including a printed circuit board, a resilient holder for mounting the printed circuit board, the holder including a pair of spaced holder members for holding the printed circuit board, each holder member having a flange, means for securing the flanges to the housing, the

circuitry including another printed circuit board, and plug-in type connectors connecting the printed circuit boards to each other.

4,498,948

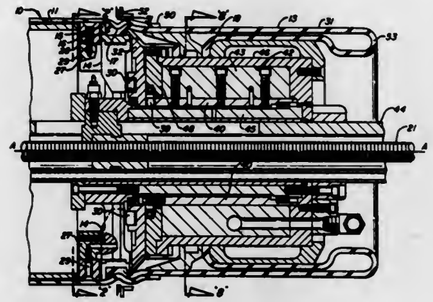
BEAD LOCKING DEVICE OF A TIRE BUILDING DRUM

Robert L. Brown; Virgil E. Henley, and Stephen J. Kovalchik, all of Akron, Ohio, assignors to GenCorp Inc., Akron, Ohio

Filed Aug. 24, 1983, Ser. No. 525,858

Int. Cl.³ B29H *17/22*

U.S. Cl. 156—401 **16 Claims**



1. A tire building drum, comprising:

(a) an outer cylindrical shell on which at least one carcass ply of unvulcanized rubbery material can be layered, the shell having a longitudinal center axis and a centerplane which divides the shell in half longitudinally, the shell having a pair of opposing ends;

(b) a set of bead lock members adjacent each of the opposing ends of the shell, each set of bead lock members being concentrically, disposed about the center axis of the shell and including a plurality of bead lock members which are angularly spaced about the center axis of the shell and which are reciprocative, in unison, in radial directions to and from the center axis of the shell;

(c) a scroll member disposed concentrically about the center axis of the shell in side-by-side relationship with each set of bead lock members and rotatable about the center axis of the shell;

(d) means for rotating the scroll members, in unison, about the center axis of the shell in either rotary direction; and

(e) means coacting between each scroll member and each set of bead lock members for moving the bead lock members radially in response to rotation of the scroll member.

4,498,949

SPLICING APPARATUS FOR CROSS-FLUTE CORRUGATED BOARD

Rolf Soennichsen, Hamburg, Fed. Rep. of Germany

Filed Sep. 16, 1982, Ser. No. 418,715

Claims priority, application Fed. Rep. of Germany, Oct. 29, 1981, 3142832

Int. Cl.³ B31F *1/20*

U.S. Cl. 156—462 **22 Claims**

7. Apparatus for splicing together a plurality of successive coplanar single facer corrugated paperboard sections (70) to form a continuous spliced corrugated web (2) having longitudinally extending flutes, each of said sections including rectangular planar upper and corrugated lower layers (70*a*, 70*b*) having corresponding length and width dimensions, respectively, the planar layer of each section being slightly offset relative to said corrugated layer in the direction of the flutes thereof, whereby portions of the planar and corrugated layers protrude at the rearward and forward ends of the sections, respectively, said sections being arranged with their flutes extending in parallel longitudinal alignment, respectively, comprising

(a) a frame;

(b) means for transporting the spliced web (2) longitudinally of the frame at a given linear velocity;

(c) means for supplying a plurality of said sections to a first position on said frame adjacent the trailing end of said spliced web, said section supplying means including

(1) single facer corrugator means (28; 50) for supplying a fibrous first web (2′) longitudinally of said frame, said first web having planar upper and corrugated lower layers (2*a*′, 2*b*′), respectively, the flutes of the lower layer extending tranversely of the web and the planar upper layer being slightly laterally offset relative to the lower layer, whereby portions of the layers protrude relative to each other at opposite longitudinal edges of the web, said first web being supplied longitudinally of the frame;

(2) deflecting means for progressively turning said first web through an angle of 90°, said deflecting means including a stationary web-deflecting roll member (54) arranged at an angle of 45° relative to the initial path of travel of said first web, said first web being progressively guided around said deflecting member to direct said first web laterally outwardly relative to said frame, whereby the flutes of the turned portion of the first web extend parallel with the initial direction of travel of said first web;

(3) severing means (32) arranged laterally outwardly of said frame for severing the turned portion of said first web into successive sections (70) the flutes of which extend parallel with the initial direction of travel of said first web;

(4) transverse conveyor means (66, 67) for transporting said severed sections laterally inwardly relative to said frame; and

(5) longitudinal conveyor means (74) arranged longitudinally of said frame for receiving the severed sections from said transverse conveyor means and for transporting the sections longitudinally toward said first position, whereby the sections (70) are arranged on said longitudinal conveyor means with the flutes extending longitudinally in the direction of the conveyance;

(d) means for accelerating successive sections (70) from said first position toward a splicing position in which the protruding corrugated layer portion (70*b*) at the forward end of the section is in generally underlying relation relative to the protruding planar layer portion (2*a*) at the trailing edge of the spliced web, the flutes of said protruding corrugated layer portion being in flute-enmeshing engagement with the adjacent corrguated layer portion (2*b*) of said spliced web; and

(e) upper and lower splicer roller means (140,142) for bonding the trailing portion of the spliced web with the leading portion of the section.

4,498,950

PORTABLE LABEL APPLYING MACHINE

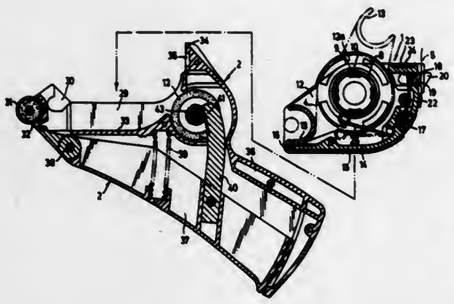
Yo Sato, Tokyo, and Tadao Kashiwaba, Kitagami, both of Japan, assignors to Kabushiki Kaisha Sato, Japan

Division of Ser. No. 452,707, Dec. 23, 1982, Pat. No. 4,436,573, which is a continuation-in-part of Ser. No. 368,732, Apr. 15, 1982, Pat. No. 4,440,592. This application Mar. 7, 1984, Ser. No. 587,274

Claims priority, application Japan, Apr. 30, 1981, 56-66223; Dec. 28, 1981, 56-210021; Jan. 20, 1982, 57-4943[U]

Int. Cl.³ B65C *11/00*

U.S. Cl. 156—577 31 Claims



1. A label applying device for applying labels peeled from a web of backing, the web being carried in a cassette, the device comprising:

a frame having a receiving section for receiving a cassette carrying a label web having a backing and a series of labels adhered to the backing; the receiving section defining a feed path for feeding the backing in a feed direction away from a peeling section of the cassette; and

a feeding mechanism on the frame for engaging the backing along the feed path and for feeding the backing in the feed direction for peeling the labels in series from the backing at the peeling section of the cassette as the backing is fed.

4,498,951

METHOD OF MANUFACTURING SINGLE-CRYSTAL FILM

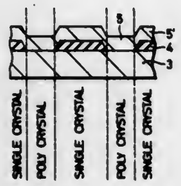
Masao Tamura, Tokorozawa; Naotsugu Yoshihiro, Matsudo; Nobuyoshi Natsuaki, Kodaira; Masanobu Miyao, Tokorozawa; Makoto Ohkura, Hachioji; Hideo Sunami, Nishitama, and Takashi Tokuyama, Higashikurume, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Sep. 24, 1982, Ser. No. 423,206

Claims priority, application Japan, Oct. 9, 1981, 56-160193

Int. Cl.³ C30B *25/04*

U.S. Cl. 156—612 18 Claims



1. A method of manufacturing a single-crystal film, comprising:

(1) a step of forming an insulating film in a desired position on a single-crystal substrate to provide a pattern with openings through which portions of the surface of said single-crystal substrate are exposed, said insulating film having a thermal conductivity lower than the thermal conductivity of said single-crystal substrate;

(2) a step of depositing a polycrystalline or amorphous semiconductor film to continuously cover said exposed surface portions of said substrate and said insulating film; and

(3) a step of irradiating a whole surface of said polycrystalline or amorphous semiconductor film with a laser beam or electron beam having an energy intensity below a critical energy so that the beam will not cause the polycrystalline or amorphous semiconductor film deposited on the substrate to turn into a single crystal and whereby those portions of said polycrystalline or amorphouse semiconductor film which are deposited on said insulating film are selectively melted and turned into a single crystal.

4,498,952

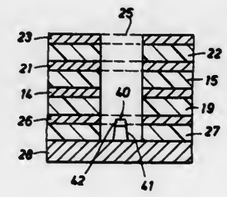
BATCH FABRICATION PROCEDURE FOR MANUFACTURE OF ARRAYS OF FIELD EMITTED ELECTRON BEAMS WITH INTEGRAL SELF-ALIGNED OPTICAL LENSE IN MICROGUNS

Alton O. Christensen, Milpitas, Calif., assignor to Condesin, Inc., Fremont, Calif.

Filed Sep. 17, 1982, Ser. No. 419,499

Int. Cl.³ B44C *1/22*; H01L *21/306*; C23F *1/02*; B05D *5/12*

U.S. Cl. 156—643 13 Claims



1. A method of manufacture for fabrication of an array of microguns assisted by a supportive substrate which method comprises the steps of

(a) defining a plurality of microgun locations on a substrate by forming aligned parallel ridges in a pattern of M by N wherein the M by N pattern defines sites of microguns in M columns and N rows and the pattern comprises upstanding ridges through the sites of the microguns;

(b) depositing conductive material aligned with the ridges in the form of deflection bars on opposite sides of the ridges at the microgun sites determined in the M by N pattern and further wherein the microgun sites in rows and columns have the respectively defined deflection bars therefore;

(c) depositing over the deflection bars an insulative layer;

(d) depositing over the insulative layer a conductive layer having an opening at each microgun site which opening is defined by the ridges;

(e) removing the ridge material to leave a cavity within the deflection bars and aligned below the opening in the conductive layer thereabove;

(f) forming a conductive substrate at the bottom of the cavity; and

(g) depositing a microgun in the cavity on the conductive substrate for emitting electrons into the cavity for deflection by the deflection bars wherein the electrons are directed through the opening formed in the conductive layer.

4,498,953

ETCHING TECHNIQUES

Joel M. Cook, Union Township, Hunterdon County; Vincent M. Donnelly, Berkeley Heights; Daniel L. Flamm, Chatham Township, Morris County; Dale E. Ibbotson, Westfield, and John A. Mucha, Madison, all of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Jul. 27, 1983, Ser. No. 517,754

Int. Cl.³ B44C *1/22*; C03C *15/00, 25/06*; C23F *1/02*

U.S. Cl. 156—646 22 Claims

1. A process for manufacturing a device comprising the steps of (1) subjecting a substrate to an etchant to produce selective etching of a first region of said substrate relative to a second region and (2) completing said device characterized in that said etchant comprises a polyatomic halogen fluoride and said first region comprises a non-oxide tantalum composition wherein said substrate is subjected to said polyatomic halogen fluoride in the substantial absence of a plasma.

4,498,954

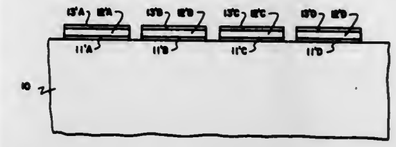
SELECTIVE PROCESS FOR ETCHING CHROMIUM

Dennis L. Huston, Crystal; Vahram S. Kardashian, Plymouth, both of Minn., and Arthur H. Mones, Oak Park, Ill., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Apr. 9, 1984, Ser. No. 597,952

Int. Cl.³ C23F *1/02*; B44C *1/22*; C03C *15/00, 25/06*

U.S. Cl. 156—651 14 Claims



1. A method of etching chromium, said method including a cycle of steps, said cycle comprising the steps of:

contacting said chromium with a first solution, said first solution including potassium permanganate;

thoroughly rinsing said chromium in order to remove said first solution;

contacting said chromium with a second solution, said second solution including oxalic acid; and

thoroughly rinsing said chromium layer in order to remove said second solution.

4,498,955

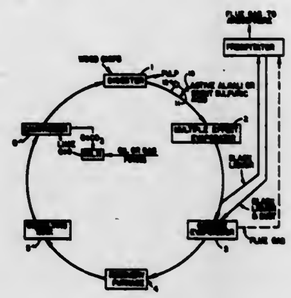
CONTROL OF ACTIVE ALKALI IN BLACK LIQUOR

H. Wharton Nelson, West Hartford, Conn., assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed Sep. 1, 1983, Ser. No. 528,483

Int. Cl.³ D21C *11/12*

U.S. Cl. 162—30.11 6 Claims



1. A Kraft process for producing pulp by dissolving lignin with a mixture of sodium hydroxide and sodium sulfide, including,

cooking wood chips in a digester containing sodium hydroxide and sodium sulfide,

drawing weak black liquor from the digester,

determining the concentration of active alkali in the weak black liquor on a dry solids basis,

generating a control signal proportional to the concentration of active alkali,

controlling the addition of alkali and/or acid to the weak black liquor flowing from the digester in accordance with the measurement of active alkali concentration to maintain the active alkali concentration at or above 3%.

4. In a Kraft pulping system circulating black liquor from a digester through evaporators for smelt recovery in a furnace, a control system for the active alkali concentration, including,

means arranged responsive to the concentration of active alkali in the black liquor flowing from the digester and generating a control signal proportional to the active alkali concentration on a dry solids basis,

a source of alkali and/or acid connected to add the alkali/acid to the weak black liquor flowing from the digester,

and means for controlling the amount of alkali/acid added from the source and responsive to the control signal of the responsive means to maintain the percentage of active alkali in the weak black liquor at 3% or above.

4,498,956

APPARATUS AND METHOD FOR THE MANUFACTURE OF A NON-WOVEN FIBROUS WEB

James O. Cheshire, Neenah; Douglas L. Lindgren, Appleton; Robert J. Marinack, Oshkosh; Bruce W. Janda, Neenah; Robert S. Thut, Green Bay; John T. Larkey, Green Bay, and Ray E. Jostad, Green Bay, all of Wis., assignors to James River-Norwalk, Inc., Norwalk, Conn.

Continuation of Ser. No. 305,738, Sep. 25, 1981, Pat. No. 4,443,297, which is a division of Ser. No. 179,229, Aug. 18, 1980, abandoned. This application Oct. 11, 1983, Ser. No. 540,566

The portion of the term of this patent subsequent to Apr. 17, 2001, has been disclaimed.

Int. Cl.³ D21D *3/00*

U.S. Cl. 162—101 5 Claims

1. A method for the production of non-woven fibrous web on a moving foraminous support which comprises:

a. forming a foamed fiber furnish by dispersing fibers in a foamed liquid comprising water and a surface active agent containing 55 to 75 percent air by volume and capable of supporting and transporting fibers as a dispersion therein;

b. supplying said foamed fiber furnish to a moving foraminous support web-forming means without substantial further turbulence or agitation effecting formation of said web whereby air is entrained in foamed liquid passing through said foraminous support;

c. collecting foamed liquid passing through said foraminous support;

d. storing said collected foamed liquid for a period of time sufficient to permit said foamed liquid to stratify into an upper frothy layer and a lower more dense layer of foamed liquid containing 55 to 75 percent air by volume capable of supporting and transporting fibers as a dispersion therein;

e. separating said more dense layer of foamed liquid containing from about 55 to about 75 percent air by volume from said frothy layer of less dense foam; and

f. recirculating said more dense layer of foamed liquid directly to step a. for the preparation of said foamed fiber furnish.

4,498,957
AROMATIC POLYAMIDE PAPER-LIKE SHEET AND PROCESSES FOR PRODUCING THE SAME

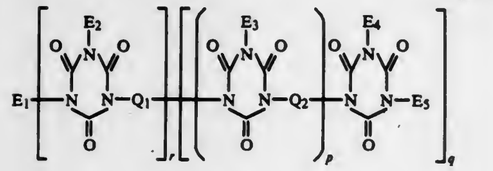
Hideharu Sasaki, and Keizo Shimada, both of Iwakuni, Japan, assignors to Teijin Limited, Osaka, Japan

Continuation of Ser. No. 341,540, Jan. 21, 1982, abandoned, which is a continuation of Ser. No. 144,341, Apr. 28, 1980, abandoned. This application Sep. 15, 1983, Ser. No. 532,304
Claims priority, application Japan, May 9, 1979, 54-55640; Aug. 28, 1979, 54-64938
Int. Cl.³ D21H *5/12*
U.S. Cl. 162—146 **20 Claims**

1. A process for producing an aromatic polyamide paper-like sheet, comprising the steps of:

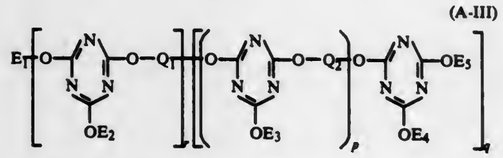
dissolving in an organic solvent an aromatic polyamide material together with a cross-linking agent comprising at least one compound selected from the group consisting of (A) cyanurate and isocyanurate type epoxy compounds of the formula (A-II) and (A-III):

(A-II)



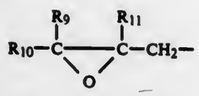
and

(A-III)



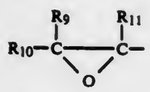
wherein Q_1 represents a di-, tri- or tetra-valent organic radical Q_2 represents a single bond or a di- or more valent organic radical; at least two members of E_1 through E_5 respectively represent, independently from each other, a radical selected from those of the formulae (A-IV) and (A-V):

(A-IV)



and

(A-V)



in which R_9, R_{10}, and R_{11} respectively represent, independently from each other, a hydrogen atom or an organic radical, and the remaining members thereof respectively represent, independently from each other, a radical selected from those of the formulae (A-IV) and (A-V) and a monovalent radical corresponding to the radical represented by Q_1; r represents zero or 1; p represents zero or an integer of from 1 to 10, and; q represents an integer of from 1 to 3;

bringing said polymer solution into contact with a coagulating liquid while vigorously stirring said coagulating liquid to prepare a number of amorphous particles of a mixture of said aromatic polyamide material with said cross-linking agent;

separating said amorphous particles from said coagulating liquid to provide an artificial pulp;

suspending said artificial pulp together with a fiber comprising a number of short fibers in water, to prepare a slurry by which the ratio in weight of said artificial pulp to said fiber is in a range of from 1:9 to 9:1;

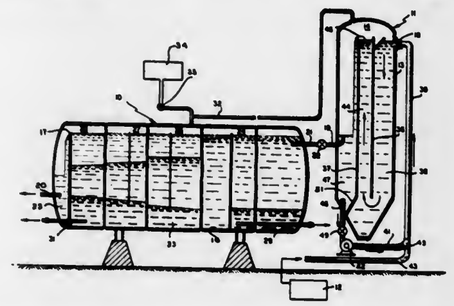
forming a precursory paper-like sheet from said slurry by a paper-making method, and;

cross-linking the molecules of said aromatic polyamide with said cross-linking agent in said precursory paper-like sheet by applying radiation of at least one member selected from ultraviolet rays and electron beams or heat to said precursory paper-like sheet.

4,498,958
APPARATUS FOR TREATING TAR SANDS EMULSION

Rene F. Bialek, Calgary, Canada, assignor to Texaco Canada Resources Ltd., Calgary, Canada

Filed May 4, 1983, Ser. No. 491,617
Int. Cl.³ B01D *11/04*; B01F *5/10*; C10G *33/04, 33/06*
U.S. Cl. 196—46 **5 Claims**



1. The combination of an aqueous emulsion separator having a pressurized emulsion separating compartment which is adapted to receive a flow of an aqueous bitumen emulsion comprising primarily water, bitumen and discrete additive materials, whereby to separate the bitumen from said aqueous emulsion,

a mixer element having a compartment for premixing said bitumen emulsion with said discrete additive materials to facilitate separation of bitumen from the emulsion and comprising;

a vessel,

panel means forming interconnected elongated passages in said vessel to define a disontinuous emulsion flow path, having inlet means at one end and outlet means at the other end, said outlet means being connected to said separator,

pump means having a discharge port which is communicated with said discontinuous flow path and with a source of the aqueous bitumen emulsion, respectively, and said pump means having a suction port communicated with the discontinuous flow path at a point intermediate the respective inlet and outlet means to receive a minor stream of the aqueous emulsion and to recirculate the same along said discontinuous flow path.

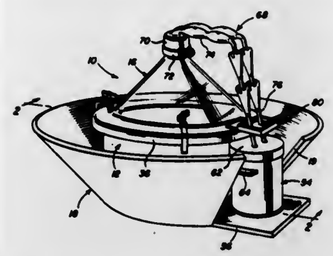
4,498,959
COOLING ATTACHMENT FOR SOLAR DISTILLER

Minoru Sakamoto, 3911 Nioi Place, Honolulu, Hi. 96816

Continuation-in-part of Ser. No. 94,918, Nov. 19, 1979, abandoned. This application Mar. 31, 1982, Ser. No. 363,821
Int. Cl.³ B01D *3/02*
U.S. Cl. 202—185.2 A **9 Claims**

1. In a distillation device having a heat conductive container storing a body of a liquid therein, an enclosure converging upwardly to an outlet and forming a chamber above the body

of liquid therein into which the liquid evaporates and means for condensing vapor within said chamber, the improvement comprising means designed, sized and arranged for both increasing condensation capacity and regulating venting, including conduit means adapted to be connected to the outlet of the enclosure, vent means formed in the conduit means at spaced locations for escape of non-condensibles therefrom, and means for regulating said escape of non-condensibles during flow of the vapor and gas through the conduit means.



4,498,960
ELECTROCHEMICAL METHOD FOR VISUAL DETECTION OF NONMETALLIC SURFACE INCLUSIONS IN METALLIC SUBSTRATES

Israel Rubinstein, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Nov. 1, 1982, Ser. No. 438,116
Int. Cl.³ B01D *59/40*
U.S. Cl. 204—1 T **11 Claims**

1. The method of preparing metallic objects for nondestructive inspection for the presence of nonmetallic surface inclusions comprising the steps of:

(a) immersing the metallic object to be nondestructively tested into an electrolytically conductive bath containing at least an active monomer material, and

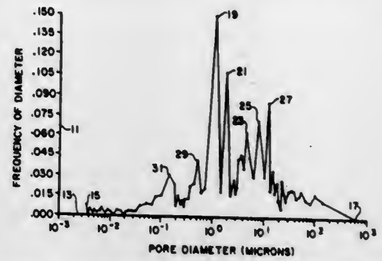
(b) passing a direct electric current between said object as a first electrode and a second electrode of a material inert in said bath and spaced apart from said object for a time sufficient to polymerize said monomer and deposit on the conducting portions of the surface of said object a thin, dark, substantially continuous film of polymer formed from said monomer.

4,498,961
METHOD OF ELECTROLYZING BRINE WITH STABLE LOW VOLTAGE MICROPOROUS DIAPHRAGM IN ELECTROLYTIC CELLS

Christine A. Lazarz, and Edward H. Cook, Jr., both of Niagara Falls, N.Y., assignors to Occidental Chemical Corporation, Niagara Falls, N.Y.

Division of Ser. No. 130,766, Mar. 17, 1980, Pat. No. 4,297,196. This application Jun. 26, 1981, Ser. No. 277,531
Int. Cl.³ C25B *1/14, 1/26, 9/00, 13/02*
U.S. Cl. 204—98 **2 Claims**

2. A method of electrolyzing brine which comprises passing a direct electrical current through the brine between an anode and a cathode, with the anode and cathode being separated by a microporous synthetic organic polymeric sheet having a thickness in the range of about 0.2 to 2 mm., a porosity in the range of about 70 to 90%, a non-uniform pore size distribution with the volume of pores in the 0.1 to 0.2 micron diameter range being less than 10% of the total pores volume, the volume of pores in the 1 to 2 micron diameter range being from 11% to 40% of the total pores volume, and the ratio of the number of such 0.1 to 0.2 micron diameter pores to the number of such 1 to 2 micron diameter pores being less than 40, which diaphragm is of a sufficiently low resistance so as to operate continuously at a voltage no higher than 4 and a current efficiency in the range of 70 to 98%.



4,498,962
ANODE FOR THE ELECTROLYSIS OF WATER

Yoshio Oda; Hiroshi Otouma, and Eiji Endoh, all of Yokohama, Japan, assignors to Agency of Industrial Science and Technology, Tokyo, Japan

Filed Oct. 7, 1983, Ser. No. 539,952
Claims priority, application Japan, Jul. 10, 1982, 57-175376; Oct. 7, 1982, 57-175375
Int. Cl.³ C25B *1/02, 11/08*
U.S. Cl. 204—129 **9 Claims**



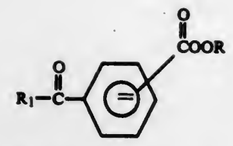
9. In a process for producing oxygen and hydrogen by electrolyzing an aqueous alkaline solution in an electrolytic cell comprising an anode and a cathode, the improvement comprising an anode comprising an electrode substrate and a coating layer formed on the substrate, said coating layer being made of an electrochemically active material comprising Component X selected from the group consisting of nickel, cobalt and mixture thereof, Component Y selected from the group consisting of aluminum, zinc, magnesium and silicon and Component Z selected from the group consisting of a noble metal and rhenium.

4,498,963
PHOTOPOLYMERIZABLE COMPOSITION CONTAINING PERESTER PHOTOINITIATOR AND PHOTOPOLYMERIZATION PROCESS

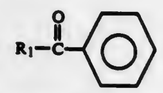
Douglas C. Neckers, Perrysburg, Ohio, assignor to Bowling Green State University, Bowling Green, Ohio

Division of Ser. No. 202,040, Oct. 29, 1980,. This application Aug. 29, 1983, Ser. No. 526,937
Int. Cl.³ C08F *2/50*
U.S. Cl. 204—159.19 **16 Claims**

1. A photopolymerizable composition comprising at least one photopolymerizable ethylenically unsaturated material and at least one photoinitiating compound of the formula:



wherein R is an alkyl group; and R_1 is an organic group free from non-benzenoid unsaturation and free from polymeric moiety from non-benzenoid unsaturated monomeric moiety such that the moiety



is a light-asorbing chromophore group which produces an excited stated by light absorption.

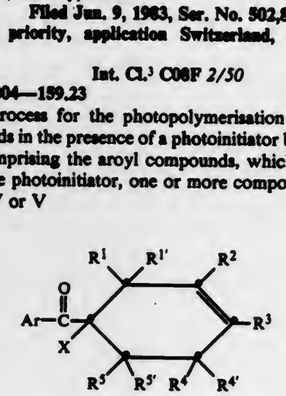
4,498,964

PROCESS FOR THE PHOTOPOLYMERIZATION OF UNSATURATED COMPOUNDS

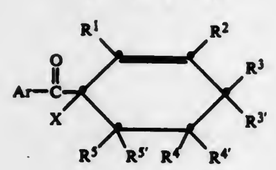
Rinaldo Hüsler, Basel; Werner Rutsch, and Kurt Dietliker, both of Fribourg, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Jun. 9, 1983, Ser. No. 502,860
Claims priority, application Switzerland, Jun. 15, 1982, 3690/82
Int. Cl.³ C08F 2/50
U.S. Cl. 204—159.23 9 Claims

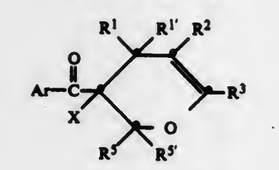
1. A process for the photopolymerisation of unsaturated compounds in the presence of a photoinitiator belonging to the series comprising the aroyl compounds, which comprises using, as the photoinitiator, one or more compounds formula I, II, III, IV or V



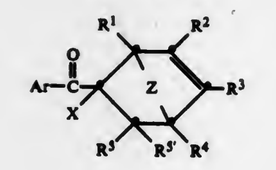
I



II

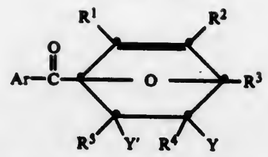


III



IV

-continued



V

wherein Ar is C_6–C_{12}-aryl, thienyl, pyridyl or furyl which is unsubstituted or substituted by one or more of the radicals halogen, phenyl, C_1–C_{12}-alkyl, C_5–C_8-cycloalkyl, —OH, C_1–C_4-alkoxy, phenoxy, —SH, C_1–C_4-alkylthio, phenylthio, 2-hydroxyethylthio, C_2–C_5-alkanoylamino, benzoylamino, C_2–C_{12}-dialkylamino, pyrrolidino, piperidino, morpholino, 4-methylpiperazino or benzoyl, R^1, $R^{1'}$, R^2, R^3, $R^{3'}$, R^4, $R^{4'}$, R^5 and $R^{5'}$ independently of one another are H, C_1–C_8-alkyl, phenyl or C_3–C_8-alkenyl, X is a radical —$N(R^6)$ (R^7), —OR^8 or —$OSi(R^9)_2$ (R^{10}) in which R^6 and R^7 independently of one another are H, C_1–C_{12}-alkyl or C_2–C_4-alkyl, C_3–C_5-alkenyl, cycloalkyl, C_7–C_9-phenylalkyl or phenyl which is substituted by OH, C_1–C_{12}-alkoxy, C_2–C_5-carboalkoxy or CN, or R^6 and R^7 together are C_3–C_5-alkylene which can be interrupted by —O— or —$N(CH_3)$—, R^8 is hydrogen, C_1–C_{12}-alkyl, C_3–C_{12}-alkoxyalkyl, C_3–C_5-alkenyl, benzyl, phenyl or 2-tetrahydropyranyl and R^9 and R^{10} are C_1–C_4-alkyl or phenyl, Y is hydrogen, —CN, —COOH, —$COOR^{11}$, —CO—R^{12} or —CO-phenyl, R^{11} being C_1–C_{12}-alkyl, C_2–C_4-hydroxyalkyl, C_3–C_8-alkoxyalkyl or cyclohexyl and R^{12} being hydrogen or C_1–C_4-alkyl, Y' is hydrogen, —COOH or —$COOR^{11}$, or Y and Y' together are —CO—O—CO— and Z is a group of the formula —CH_2—, —CH_2CH_2—, —$C(CH_3)_2$—,



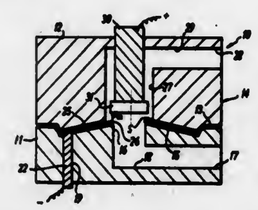
or —O—.

4,498,965

PLATING APPARATUS

Tsutomu Onda, Nishio; Keiichi Kano, Nagoya, and Shinji Itakura, Hekinan, all of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Oct. 16, 1981, Ser. No. 312,355
Claims priority, application Japan, Oct. 16, 1980, 55-144890
Int. Cl.³ C25D 7/04, 7/02, 3/12
U.S. Cl. 204—228 8 Claims



1. A plating apparatus for plating an inner peripheral portion of an annular diaphragm member, comprising:

a lower member including a first vertical passage formed therein having an upper opening, an outlet port in fluid communication with said first vertical passage, and a surface formed around said upper opening for mounting said annular diaphragm member thereon;

an upper member detachably mounted on said lower member so as to form a casing within which said annular diaphragm member is to be positioned, said upper member including a second vertical passage formed therein having a lower opening opposed to said upper opening, and an inlet port in fluid communication with said second vertical passage, said lower opening having a larger radius than that of said upper opening so as to define an area to be plated on said annular diaphragm member;

positive electrode means positioned above an upper inner peripheral portion of said annular diaphragm member;

means for supplying plating fluid under pressure to said inlet port;

control means for controlling current distribution from said positive electrode means to said upper inner peripheral portion of said annular diaphragm member;

negative electrode means electrically connected to said annular diaphragm member wherein plating fluid supplied to said inlet port under pressure is fed to and discharged from said outlet port and wherein said control means is made of non-conductive material and is positioned between said positive electrode means and said annular diaphragm member in said vertical passage; and

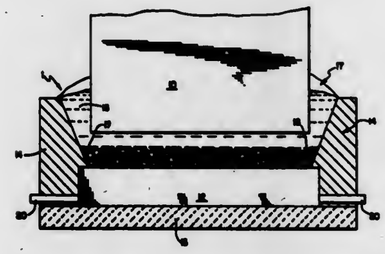
means for moving said control means in a vertical direction of said second vertical passage so as to control current distribution on an upper peripheral portion of said annular diaphragm member.

4,498,966

ALUMINA REDUCTION CELL

Alton T. Tabereaux, Sheffield, Ala., assignor to Reynolds Metals Company, Richmond, Va.

Filed May 7, 1984, Ser. No. 607,744
Int. Cl.³ C25B 9/00
U.S. Cl. 204—243 R 6 Claims



1. In an alumina reduction cell having an anode, a carbonaceous cathode and a packed bed of refractory hard metal (RHM) pieces lying on and in contact with said carbonaceous cathode but not attached thereto and within a pad of molten aluminum the improvement wherein said RHM pieces are hollow shapes between which and through which said molten aluminum may pass.

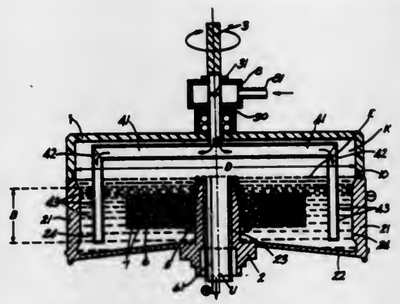
4,498,967

DEVICE FOR PRODUCING DISPERSION COATINGS

Jean-Francois Paulet, Siblingen, and Othmar Eisenlohr, Dottikon, both of Switzerland, assignors to Swiss Aluminium Ltd., Chippis, Switzerland

Filed Sep. 23, 1983, Ser. No. 535,269
Claims priority, application Switzerland, Oct. 6, 1982, 5960/82
Int. Cl.³ C25D 17/00, 21/10
U.S. Cl. 204—272 12 Claims

1. Device for producing dispersion coatings on surfaces of metallic parts by electrolyte deposition which comprises a suspension electrolyte which forms the treatment bath and which contains at least one dissolved metal salt and particulate solid which is in suspension, a cathodically polarized surface to be coated in contact with said bath, at least one feed pipe spaced from said surface and having at least one outlet opening, means to jet said surface in the bath with said suspension electrolyte via said feed pipe, and means to move said feed pipe along the workpiece surface which is to be coated spaced from said workpiece, thereby uniformly jetting said surface with said suspension electrolyte to achieve uniform co-precipitation of said particulate solid and dissolved metal.

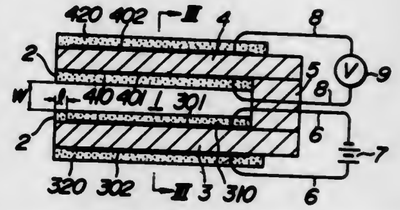


4,498,968

OXYGEN SENSOR

Tetsuyo Yamada, and Yutaka Nakayama, both of Nagoya, Japan, assignors to NGK Spark Plug Co., Ltd., Nagoya, Japan

Filed Aug. 23, 1983, Ser. No. 525,701
Claims priority, application Japan, Mar. 29, 1983, 58-53164
Int. Cl.³ G01N 27/58
U.S. Cl. 204—412 12 Claims



1. An oxygen sensor, comprising an oxygen pump element having a first oxygen-ion-conductive solid electrolyte board with electrode layers attached to opposite surfaces at one end of the first board, an oxygen concentration cell element having a second oxygen-ion-conductive solid electrolyte board with electrode layers attached to opposite surfaces at one end of the second board, a means for coupling said oxygen pump element and said oxygen concentration cell element in parallel to each other with a gap between the electrode layers attached to the opposing surfaces of the first board and the second board, and at least one oxygen diffusion resistive layer deposited on that electrode layer of said oxygen pump element which faces said gap, wherein said gap has a spacing W between opposing surfaces of said two elements, and said gap has an oxygen-diffusion-restricting zone depth S which is a distance from the edge of the electrode layer of the oxygen pump element in said gap to that point where the oxygen partial pressure is restricted to a minimum, said spacing W and said oxygen-diffusion-restricting zone depth S satisfying the condition of $(W/S)<0.13$, whereby said oxygen pump element transfers oxygen between said gap and the outside of said oxygen sensor therethrough under the presence of said oxygen diffusion resistive layer so as to produce such an oxygen concentration differential between said gap and the outside of the oxygen sensor that said oxygen concentration cell element generates an electomotive force in response to said oxygen concentration differential, a combination of an electric current and said elec-

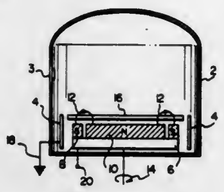
tromotive force being indicative of oxygen concentration at the outside of the oxygen sensor.

4,498,969

SPUTTERING APPARATUS AND METHOD

Kovilvila Ramachandran, Ottawa, Canada, assignor to Canadian Patents and Development Limited-Societe Candienne des Brevets et D'Exploitation (Limitee, Ottawa, Canada

Filed Nov. 17, 1983, Ser. No. 552,820
Claims priority, application Canada, Nov. 18, 1982, 415862
Int. Cl.³ C23C *15/00*
U.S. Cl. 204—298 7 Claims



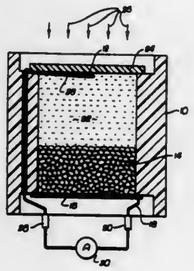
1. Sputtering apparatus adapted to form a metallic film on a workpiece, comprising
(a) a magnetron sputter device for establishing a glow discharge,
(b) a cathode target of material to be sputtered so as to coat at least part of said workpiece with said material,
(c) an anode at a different potential to said cathode target to form an electric field therebetween,
(d) a magnet adjacent said cathode target,
(e) an assembly supporting said magnet and capable of rotating said magnet to produce a rotating magnetic field in the vicinity of said cathode target and said workpiece, said magnet being disposed such that said magnetic field is substantially parallel to the surface of said target in the region to be sputtered.

4,498,970

ELECTROCHEMICAL GAS SENSOR

Ramesh Chand, Woodland Hills, Calif., assignor to GC Industries, Chatsworth, Calif.

Filed May 28, 1982, Ser. No. 383,145
Int. Cl.³ G01N *27/30, 27/54*
U.S. Cl. 204—415 5 Claims



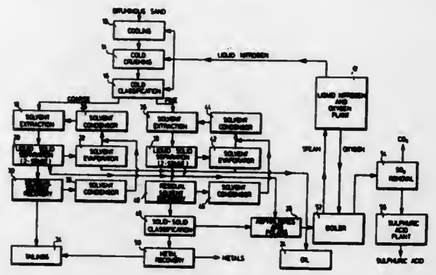
1. An electrochemical gas sensor, comprising:
a sensor body with a hollow interior;
an electrolyte filling said body;
a counter electrode disposed at one end of the interior of said body;
a sheet of porous material forming a closure at the other end of the interior of said body, and having an inner surface in contact with said electrolyte and an outer surface that is exposed to a gas sample for analysis;
a sensing electrode in the form of a relatively small area of powdered metal impregnated into the inner surface of said sheet by the application of pressure; and
a pair of wires for making contact with said sensing electrode and said counter electrode, respectively, to measure a current between said electrodes generated as a result of the diffusion of gas into said electrolyte through said porous sheet;
whereby said porous sheet ensures that gas diffuses into said electrolyte rapidly enough to yield insensitivity to temperature and a rapid response to pressure changes, but the relatively small area of said sensing electrode results in a relatively small electrical current and a correspondingly long useful life;
and wherein said sheet of porous material is approximately 0.050 to 0.060 inch thick, approximately 0.5 inch in diameter, and has a pore size of approximately 2 to 10 microns, and said sensing electrode is approximately 0.050 inch in diameter.

4,498,971

SEPARATION OF BITUMINOUS MATERIAL FROM OIL SANDS AND HEAVY CRUDE OIL

Georgi Angelov, Don Mills, and Paul W. M. Shibley, Oshawa, both of Canada, assignors to Bitumen Development Corporation Limited, Toronto, Canada

Filed Jun. 23, 1983, Ser. No. 507,241
Claims priority, application United Kingdom, Jul. 5, 1982, 8219359
Int. Cl.³ C10G *1/04*
U.S. Cl. 208—11 LE 14 Claims



1. A process for the separate recovery of oil and asphaltene/polar components from oil and asphaltene/polar bearing sand-containing material,
the process comprising cooling the material to a temperature in the range of from about minus 10° to about minus 180° C. at which the material behaves as a solid,
crushing the material at a temperature at which the material behaves as a solid to produce relatively coarse particles containing a major proportion of the sand and oil and relatively fine particles containing a major proportion of the asphaltenes and polars, mechanically separating the relatively coarse particles from the relatively fine particles at a temperature at which the material behaves as a solid,
treating the relatively coarse particles to recover oil, and
treating the relatively fine particles to recover asphaltenes and polars.

4,498,972

HYDROTREATMENT PROCESS FOR CONVERTING A HEAVY HYDROCARBON FRACTION CONTAINING SULFUR IMPURITIES AND METAL IMPURITIES TO A LIGHTER OIL, IN AT LEAST TWO STEPS

Hervé Toulhoat, Le Pecq; Jean-Claude Plumail, Le Vesinet; Alain Billon, Orliensas, and Alain Quignard, Rillieux La Pape, all of France, assignors to Institut Francais du Petrole, Rueil-Malmaison, France

Filed Dec. 30, 1983, Ser. No. 567,207
Claims priority, application France, Dec. 31, 1982, 82 22180
Int. Cl.³ C10G *65/02*
U.S. Cl. 208—59 15 Claims



1. A process for the hydrotreatment of a heavy hydrocarbon fraction containing sulfur impurities and metal impurities, comprising the steps of:
(a) passing said hydrocarbon fraction in admixture with hydrogen, under hydrodemetallation conditions, over a catalyst comprising a carrier and from 0.1 to 5% by weight, calculated as metal oxides, of at least one metal or compound of a metal from at least one of groups V, VI and VIII, said catalyst being in the form of a plurality of juxtaposed conglomerates each formed of a plurality of acicular plates, the plates of each conglomerate being generally oriented radially with respect to one another and with respect to the center of the conglomerate, wherein said catalyst contains a major proportion of wedge-shaped mesopores, and has an improved resistance to pore mouth plugging compared with bimodal or monomodal porous catalysts; and
(b) treating the effluent from step (a) with hydrogen, under hydrodesulfuration conditions, in contact with a catalyst containing a carrier and from 7 to 30% by weight, calculated as metal oxides, of at least one metal or compound of a metal from at least one of groups V, VI and VIII.

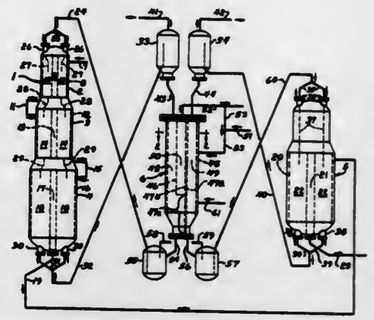
4,498,973

MULTIPLE-STAGE CATALYTIC REFORMING WITH GRAVITY-FLOWING DISSIMILAR CATALYST PARTICLES

John G. Sikonia, La Grange, and Richard W. Bennett, Western Springs, both of Ill., assignors to UOP Inc., Des Plaines, Ill.

Filed Jun. 17, 1983, Ser. No. 505,559
Int. Cl.³ C10G *35/08*
U.S. Cl. 208—63 17 Claims

1. A process for the catalytic conversion of a hydrocarbonaceous charge stock wherein said charge stock is contacted with at least two discrete catalytic composite entities comprising the steps of:
(a) contacting said charge stock with a first of said catalytic composite entities at hydrocarbon conversion conditions in a reactor system in which the first catalytic composite entity is downwardly movable via gravity flow to form a first reactor system effluent stream;
(b) serially contacting at hydrocarbon conversion conditions said first reactor stream effluent with at least one other of said catalytic composite entities, each displaced within separate reactor systems in which said catalytic composite entities. are downwardly movable via gravity flow;
(c) at least periodically withdrawing deactivated catalytic composite entities from the reactor systems and passing them in segregated fashion to a common regenerator through which said deactivated catalytic composite entities are downwardly movable via gravity flow;
(d) regenerating in segregated fashion the deactivated catalytic composite entities; and,



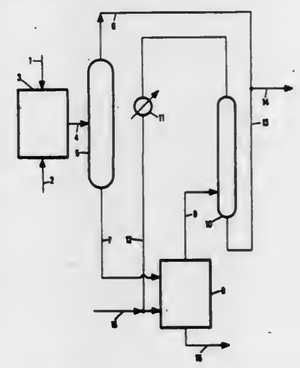
(e) withdrawing regenerated discrete catalytic composite entities from the regenerator in segregated fashion and at least periodically returning the regenerated discrete catalytic composite entities to their respective reactor systems.

4,498,974

PROCESS FOR CONVERTING A HIGHLY VISCOUS HYDROCARBON CHARGE TO A LESS VISCOUS, MORE EASILY TRANSPORTABLE AND MORE EASILY REFINABLE HYDROCARBON FRACTION

Alain Billon, Orliensas; Jean-Francois Le Page, Rueil-Malmaison, and Jean-Pierre Peries, Mornant, all of France, assignors to Institut Francais du Petrole, Rueil-Malmaison, France

Filed Sep. 16, 1983, Ser. No. 532,928
Claims priority, application France, Sep. 17, 1982, 82 15839
Int. Cl.³ C10G *45/58*
U.S. Cl. 208—96 9 Claims



1. A process for converting a highly viscous hydrocarbon charge to a less viscous, more easily transportable and more easily refinable hydrocarbon fraction, comprising the steps of:
(a) subjecting a hydrocarbon charge containing 10 to 30% by weight of constituents normally distilling below 375° C., including 8 to 25% by weight of constituents normally distilling between 200° C. and 350° C., the balance normally distilling above 375° C., to a hydrovisbreaking treatment under conditions wherein the conversion of the 375° C.+ fraction to a 375° C.− fraction is 10–30% by weight, said treatment being initially effected in a hy-

drovisbreaking furnace and completed in a soaking chamber;

(b) fractionating the effluent from step (a), and separately recovering an overhead fraction at least 90% of which normally boils below 375° C., and a distillation residue;

(c) deasphalting the distillation residue from step (b) with a C_4–C_6 hydrocarbon solvent, separately recovering an extract fraction and an asphaltenes fraction, fractionating the extract fraction, and separately recovering the deasphalting solvent and a deasphalted oil fraction; and

(d) admixing at least a portion of the overhead fraction from step (b) with at least a portion of the deasphalted oil fraction from step (c) to form a hydrocarbon fraction which is less viscous, more easily transportable and more easily refinable than said hydrocarbon charge.

4,498,975

PHOSPHORUS-CONTAINING CATALYST AND CATALYTIC CRACKING PROCESS UTILIZING THE SAME

Lloyd A. Pine, Baton Rouge, and Neville L. Cull, Baker, both of La., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Division of Ser. No. 381,388, May 24, 1982, Pat. No. 4,454,241. This application Jan. 9, 1984, Ser. No. 569,239
Int. Cl.³ C10G *11/05*
U.S. Cl. 208—114 **13 Claims**

1. A catalytic cracking process comprising contacting a hydrocarbonaceous feed at catalytic cracking conditions with a catalyst comprising a Y-type crystalline aluminosilicate zeolite prepared from a clay starting material, a residue derived from said clay, and at least about 0.1 weight percent phosphorus, based on the weight of said zeolite plus residue, said Y-type crystalline aluminosilicate zeolite having the structure of faujasite and having a silica to alumina mole ratio of at least about 3:1, said catalyst having been prepared initially by the steps which comprise:

(a) ion-exchanging a clay derived alkali metal-containing Y-type crystalline aluminosilicate zeolite and the clay derived residue with a cation other than an alkali metal to decrease the alkali metal content of said alkali metal-containing zeolite;

(b) calcining the resulting ion-exchanged zeolite and clay derived residue, and

(c) contacting the resulting calcined zeolite and clay-derived residue with a medium comprising an anion selected from the group consisting of dihydrogen phosphate anion, dihydrogen phosphite anion and mixtures thereof for a time sufficient to composite said amount of phosphorus with said calcined zeolite and residue.

4,498,976

SUPPRESSION OF LIGHT GAS PRODUCTION IN CRACKING PROCESSES BY THE ADDITION OF HIGHLY SILICEOUS MATERIALS HAVING HIGH SURFACE AREA AND LOW ACIDITY

Thomas F. Degnan, Yardley, Pa., and Randall D. Partridge, Princeton, N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Apr. 15, 1982, Ser. No. 368,548
Int. Cl.³ C10G *11/02*
U.S. Cl. 208—120 **13 Claims**

1. In a process for reducing light hydrocarbon production and increasing the overall yield of gasoline and distillate range products in a high temperature thermal process which employs temperatures ranging from about 510° C. to 650° C., the improvement which comprises adding to the hydrocarbon chargestock about 0.01 to 5 percent by weight of a highly siliceous zeolite catalyst material having a silica-to-alumina ratio of at least about 50 comprising at least about 98% by weight of silica having a particle diameter ranging from about 0.5 to 200 microns and a surface area of at least about 100 m^2/g of catalyst material.

4,498,977

CATALYTIC OXIDATION OF MERCAPTAN IN PETROLEUM DISTILLATE

Robert R. Frame, Glenview, Ill., assignor to UOP Inc., Des Plaines, Ill.

Filed Nov. 29, 1983, Ser. No. 555,910
Int. Cl.³ C10G *27/10, 29/00*
U.S. Cl. 208—207 **7 Claims**

1. A process for sweetening a sour hydrocarbon fraction containing mercaptan which comprises reacting mercaptans contained in said hydrocarbon fraction with an oxidizing agent in the absence of an alkaline reagent by passing said hydrocarbon fraction and said oxidizing agent without alkaline reagent into contact with a bed of a catalytic composite comprising a metal chelate mercaptan oxidation catalyst and a solid carrier material having an average particle size of less than about 110 mesh.

4,498,978

CATALYTIC OXIDATION OF MERCAPTAN IN PETROLEUM DISTILLATE

Robert R. Frame, Glenview, Ill., assignor to UOP Inc., Des Plaines, Ill.

Filed Nov. 29, 1983, Ser. No. 555,930
Int. Cl.³ C10G *27/10, 29/00*
U.S. Cl. 208—207 **11 Claims**

1. A process for sweetening a sour hydrocarbon fraction containing mercaptan which comprises reacting mercaptans contained in said hydrocarbon fraction with an oxidizing agent by passing said hydrocarbon fraction and said oxidizing agent into contact with a heterogeneous admixture of a supported metal chelate mercaptan oxidation catalyst and a solid desiccant, said desiccant being a component of said admixture in addition to the support for said catalyst.

4,498,979

HYDRODESULFURIZATION PROCESS WITH CONVERSION OF HEAVY HYDROCARBONS UTILIZING A CATALYST CONTAINING A GROUP IIA METAL COMPONENT

Paul E. Eberly, Jr., Baton Rouge, La., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Sep. 12, 1983, Ser. No. 530,906
Int. Cl.³ C10G *45/04*
U.S. Cl. 208—216 R **9 Claims**

1. A hydrodesulfurization process which comprises: contacting a sulfur-containing heavy hydrocarbonaceous feed comprising materials boiling above 1020° F. with a non-zeolitic catalyst comprising a hydrogenation component, a magnesium component, and an alumina support, the molar ratio of said magnesium component, calculated as metal oxide, to said alumina ranging from 0.012:1 to 0.13:1, in the presence of added hydrogen, in a hydro-desulfurization zone, under conditions to at least partially desulfurize said feed and to convert at least a portion of said 1020° F. materials to lower boiling products.

4,498,980

SEPARATION OF AROMATIC AND NONAROMATIC COMPONENTS IN MIXED HYDROCARBON FEEDS

Paulino Forte, Yonkers, N.Y., assignor to Union Carbide Corporation, Danbury, Conn.

Filed Feb. 14, 1983, Ser. No. 465,914
Int. Cl.³ C10G *21/16*
U.S. Cl. 208—321 **31 Claims**

1. The mixed extraction solvent for the separation of aromatic and nonaromatic components of a mixed hydrocarbon feed comprising a polyalkylene glycol of the formula:

$$HO—[CHR_1—(CR_2R_3)_n—O—]_mH$$

wherein n is an integer from 1 to 5, m is an integer from 1 to 10, and R_1, R_2 and R_3 may be each be hydrogen, alkyl, aryl, araalkyl and mixtures thereof; and between about 0.5 and 99 percent by weight based on the total weight of the mixed extraction solvent of a polyalkylene glycol ether of the formula

$$R_4O—[CHR_5—(CHR_6)_xO]_y—R_7$$

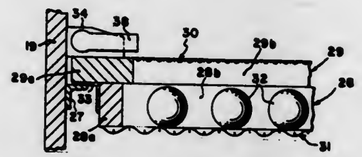
wherein x is an integer from 1 to 5 and y is an integer from 2 to 10 and wherein R_4, R_5, R_6 and R_7 may each be alkyl, aryl, aralkyl, alkyl aryl and mixtures thereof with the priviso that R_4 or R_7 are not both hydrogen.

4,498,981

VIBRATING ANTI-BLINDING CLEANING AND GRADING MACHINES

Robert E. Frevert, Saginaw, Mich., assignor to Crippen Manufacturing Co., Inc., Alma, Mich.

Filed Mar. 26, 1984, Ser. No. 592,537
Int. Cl.³ B07B *1/30, 1/54, 1/46*
U.S. Cl. 209—243 **4 Claims**



1. Improvements in gyrating anti-blinding grain, seed, and like particulate, cleaning and/or grading machines comprising, in combination:

a. a vertically open perimetral support frame assembly having opposite side members with upper and lower ends;

b. means mounting said assembly for vibratory movement;

c. means for vibrating said assembly;

d. laterally spaced apart horizontally inclined opposed guide members extending along said side members on the interior face thereof to project interiorly thereof, and having upper and lower ends;

e. an enclosed planar ball tray, open at its upper face, and having opposite, horizontally inclined side rails with upper and lower ends spaced apart to be disposed laterally inwardly of said guide members, the ball tray being closed at its bottom by a screen and crosswise partitions connecting the side rails, and there being a series of resilient balls retained within the frame over the length thereof by said lower screen and partitions;

f. relatively reduced thickness flanges fixed on said side rails of the ball tray projecting laterally outwardly from the upper edges thereof to overlie said guide members and be supported thereon;

g. a planar separating screen for separating overs and unders comprising a perforate body spanning opposite side rails which are spaced apart further than said side rails of the ball tray side rails such as to rest on said flanges;

h. clamp means on said assembly exerting a vertical pressure on said screen side rails along their lengths to clamp said screen side rails and ball tray side rails against said guide members; and

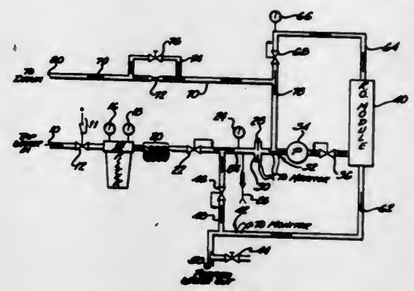
i. means for feeding material to be graded to the upper end of the separating screen.

4,498,982

REVERSE OSMOSIS WATER PURIFICATION SYSTEM

Christopher A. Skinner, St. Petersburg, Fla., assignor to Extracorporeal Medical Specialties, Inc., King of Prussia, Pa.

Filed Nov. 8, 1982, Ser. No. 439,680
Int. Cl.³ B01D *31/00*
U.S. Cl. 210—96.2 **7 Claims**



4. In a reverse osmosis water purification system, including a module containing a semipermeable membrane and having an inlet port for receiving water to be purified and an outlet port at which purified product water is produced; means for supplying water to be purified to said inlet port comprising:

a pump having an inlet, and an outlet connected to said module inlet port;

a pump motor connected to said pump for activating said pump;

a thermally conductive tubing segment having an inlet for receiving water to be purified and an outlet connected to said inlet of said pump, said tubing segment being thermally connected to said pump motor so as to enable a transfer of thermal energy from said pump motor to said water to be purified, wherein said thermally conductive tubing segment comprises a coil of metallic tubing wrapped around said pump motor;

first and second substantially curved sheets of metal, each having a flange at each end of the curved portion thereof, said curved sheets being located on opposing sides of said pump motor and wrapped tubing assembly so as to enclose said assembly,

wherein opposing flanges of said curved sheets of metal are connected to each other so as to fixedly retain said coil of metallic tubing in thermal contact with said pump motor.

4,498,983

PRESSURE CUFF DRAW MODE ENHANCEMENT SYSTEM AND METHOD FOR A SINGLE NEEDLE BLOOD FRACTIONATION SYSTEM

Arnold C. Bilstad, Deerfield; John T. Foley, Wheeling, and Walker P. Woodworth, Vernon Hills, all of Ill., assignors to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Filed May 26, 1983, Ser. No. 498,583
Int. Cl.³ A61M *5/00*
U.S. Cl. 210—97 **8 Claims**

1. A control system for a blood fractionation apparatus of the type which separates whole blood into cellular and noncellular components and utilizes a pressure cuff to increase whole blood collection rate, said system comprising:

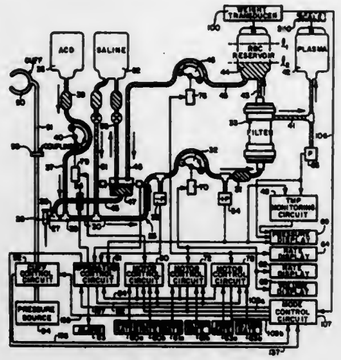
a first fluid reservoir for collecting the cellular component separated from the whole blood:

a second fluid reservoir for collecting the noncellular component separated from the whole blood;

means for monitoring the volume of the separated cellular component which is collected in said first fluid reservoir; and

control means operatively associated with said monitor means for depressurizing the pressure cuff and commencing the return of the separated cellular component from

said first fluid reservoir to the donor when the volume of the collected cellular component reaches a predetermined maximum level in said first fluid reservoir, and for pressurizing the pressure cuff and terminating the return of the



separated cellular component from said first fluid reservoir to the donor when the volume of the collected cellular component reaches a predetermined minimum level in said first fluid reservoir.

4,498,984

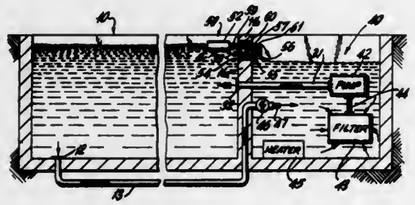
SWIMMING POOL APPARATUS

Andrew E. Colson, 22 Way Dr., Summit, N.J. 07901

Filed Jan. 30, 1980, Ser. No. 116,764

Int. Cl.³ C02F *1/00*

U.S. Cl. 210—122 **4 Claims**



1. In combination in swimming pool apparatus, a primary swimming pool chamber, a secondary water chamber, skimmer means for passing surface water from said primary swimming pool chamber to said secondary chamber, wherein said skimmer means comprises a first pivotably mounted plate, a second pivotably mounted plate, and further horizontally disposed plate means pivotably connected to said first and second plates, means responsive to the water level in said primary swimming pool chamber for controlling the position of said first plate, drain and conduit means about the lower portion of said primary pool chamber for supplying water from said primary pool chamber to said secondary chamber, and cascaded filter means and pump means submerged in said secondary chamber for returning water passing through said filter means to said primary swimming pool chamber.

4,498,985

GROWTH OF BIOMASS

Bernard Atkinson, Copthorne; Geoffrey M. Black, Sale; Anthony Pinches, Offerton, and Paul J. S. Lewis, Abbots Langley, all of England, assignors to The University of Manchester Institute of Science and Technology and Simon-Hartley Limited, both of Stockport, England

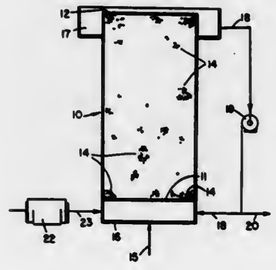
Continuation of Ser. No. 347,872, Feb. 11, 1982, Pat. No. 4,419,243, which is a continuation-in-part of Ser. No. 156,038, Jun. 3, 1980, abandoned, which is a division of Ser. No. 945,869, Sep. 26, 1978, abandoned. This application Jul. 13, 1983, Ser. No. 513,436

Claims priority, application United Kingdom, Oct. 20, 1977, 43613/77; Oct. 20, 1977, 43614/77; Oct. 20, 1977, 43615/77

The portion of the term of this patent subsequent to Dec. 6, 2000, has been disclaimed.

Int. Cl.³ C02F *3/10*

U.S. Cl. 210—151 **8 Claims**



1. Apparatus for promoting the growth of biomass from a supply of suitable liquid nutrient material, comprising: a reaction vessel adapted to contain the liquid nutrient; a biomass support medium contained within the vessel and formed as a plurality of movable bodies each having a substantially uniform reticular structure defining an internal voidage consisting of a multiplicity of interconnected pores such as to provide throughout the voidage of each body a protective environment which will permit biomass growth therewithin and thus support and sustain active biomass as a substantially integral mass retained by said reticular structure, the average pore size of said bodies lying in the range of 0.3 mm to 1 mm in diameter, said protective environment thereby permitting each body to fill with biomass over a period of time, there being an extensive area of access by way of a multiplicity of openings defined by said reticular structure at the external surface of each said body, to the whole of the voidage therein, the overall shape and reticular structure of each body being sufficiently plain as to enable the bodies to move relative to each other with a rubbing or knocking action without interlocking or packing together as a solid unit; a quantity of liquid nutrient material located within said reaction vessel; a quantity of biomass located within said reaction vessel; means for causing the liquid nutrient to flow through the vessel and thus contact and enter the bodies within the vessel; and means for causing relative movement of the bodies within the vessel sufficiently for restricting accumulation of biomass outwardly from the outer surface of each said body and thus preventing overfill of biomass onto the external surface of each said body.

4,498,986

VIBRATORY CONTAINER FOR FLOCCULATION OF THE WASTE WATER OBTAINED UPON VIBRATORY ABRASIVE FINISHING

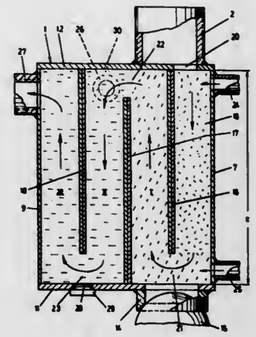
Karl Temme, Wuppertal; Klaus Beckschäfer, Kaarst, and Helmut Prüller, Haan, all of Fed. Rep. of Germany, assignors to Carl Kurt Walther GmbH & Co. KG, Wuppertal, Fed. Rep. of Germany

Filed Mar. 1, 1983, Ser. No. 471,107

Claims priority, application Fed. Rep. of Germany, Jun. 3, 1982, 3208113

Int. Cl.³ C02F *1/52*

U.S. Cl. 210—199 **15 Claims**



1. In a vibratory container for the flocculation of waste liquids, having a feed connection which communicates with a feed channel extending into the inside of the container, the feed channel communicating in a siphon-like manner with a waste liquid outlet of a vibrational treatment device, said container being arranged to vibrate with said treatment device, the container having a connection for the addition of a flocculating agent, and a flocculated waste liquid outlet, the improvement comprising

at least one partition wall subdividing the inside of the container into a plurality of communicating chambers arranged downstream of the feed channel communicating the feed channel with said flocculated water liquid outlet to assure flocculation and prevent back-mixing as said waste liquid flows from said feed channel to said flocculated waste liquid outlet,

a plurality of connection means for communicating with upstream regions of said chambers, including

a first of said connection means for introduction of at least one flocculation preparation chemical into at least a first corresponding one of said chambers, and

a furthest downstream of said connection means being for the addition of the flocculating agent into at least an other one of said chambers.

4,498,987

MAGNETIC SEPARATOR

Morimitsu Inaba, Kamakura, Japan, assignor to Inabac Corporation and AMT Co., Ltd., both of Tokyo, Japan

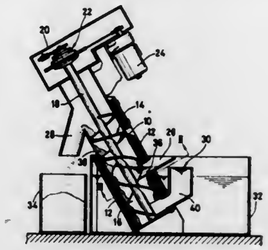
Filed Dec. 8, 1982, Ser. No. 447,758

Claims priority, application Japan, Dec. 16, 1981, 56-186400[U]

Int. Cl.³ B03C *1/10*

U.S. Cl. 210—222 **11 Claims**

1. A magnetic separator for at least separating magnetizable solid matter suspended in a fluid, which comprises a separating cylinder having a top end and a bottom end, a plurality of magnetic plates of a predetermined size arranged at an outer periphery of the cylinder and spaced apart from each other, said magnetic plates being arranged in a circle around said cylinder with each magnetic plate having an adjacent magnetic plate of opposite polarity located to one side of it and an adjacent magnetic plate of the same polarity located at its other side such that said magnetic plates are arranged in a north-north-south-south-north-north-south-south- . . . sequence to thereby generate a maximum magnetic flux to substantially the axial center of said cylinder means defining an inlet for a fluid suspension arranged at a middle part of the cylinder, means defining an outlet for a separated fluid arranged at the bottom end of the cylinder and means defining an outlet for the separated suspended matter arranged at the top end of the cylinder,



and a screw conveyor of a non-magnetic material within the cylinder and having a peripheral edge in engagement with an inner wall of the cylinder, said magnetic plates extending around said cylinder substantially along the entire longitudinal length of said cylinder from said bottom end near said fluid outlet to said fluid suspension inlet, and also from said inlet to said top end near said outlet for said separated suspended matter, whereby a strong magnetization of suspended matter is achieved.

4,498,988

SCRAPING MECHANISM

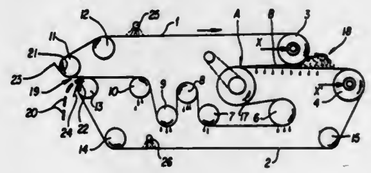
Kiyoshi Fujita, Kobe; Shirou Toyohisa, Daido; Osamu Katou, and Kenji Ishimaru, both of Kobe, all of Japan, assignors to Kabushiki Kaisha Kobe Seiko Sho, Kobe, Japan

Filed Nov. 24, 1982, Ser. No. 444,067

Claims priority, application Japan, Nov. 25, 1981, 56-189825

Int. Cl.³ B01D *33/06*

U.S. Cl. 210—397 **4 Claims**



1. A scraping mechanism for scraping off deposit material from a surface of a moving body, comprising:

a scraper having a bladed edge at a fore end portion thereof;

means connected to said scraper for pressing said scraper against the surface of said moving body; and

means operatively associated with said scraper for driving said scraper reciprocatingly on and along the surface of said moving body in parallel relation therewith, for detaching an entangling foreign material from said scraper and for restoring a normal scraping function to said scraper wherein said means for driving said scraper further comprises means for driving said scraper in a direction of travel of said moving body at a speed higher than said moving body and for then returning said scraper to an initial position.

4,498,989

FLUID FILTER ELEMENT AND SUPPORT

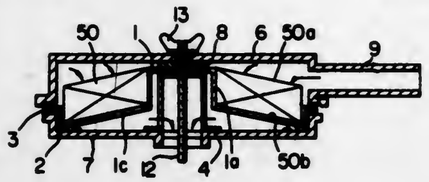
Susumu Miyakawa, Kariya; Toshiaki Fukuta; Hajime Akado, both of Anjo, and Yoshihiro Taki, Nagoya, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Feb. 19, 1982, Ser. No. 350,147

Claims priority, application Japan, Feb. 23, 1981, 56-25140; Feb. 23, 1981, 56-25141; Feb. 25, 1981, 56-27242; Oct. 28, 1981, 56-172429; Oct. 28, 1981, 56-172430; Oct. 28, 1981, 56-172431

Int. Cl.³ B01D *27/06*

U.S. Cl. 210—450 **10 Claims**



1. A fluid cleaner system comprising:

a casing and a cap coupled to each other for defining therein a filter chamber; and

a filter unit disposed in said filter chamber having a filter element and a support device,

said filter element having two-dimensional wave forms and being formed of a trapezoidal or a sectorial filter sheet by folding the same along a plurality of folding lines parallel to a base line of said trapezoidal or sectorial filter sheet,

wherein said support device supports said filter element thereon and holds the same in said filter chamber, said support device comprises:

an inner frame having an inner annular groove for receiving therein the innermost peripheral portion of said filter element;

an outer frame having an outer annular groove for receiving the outermost peripheral portion of said filter element, said outer frame also having a circular flange extending radially outwardly from said outer annular groove and said circular flange being interposed between outer circular peripheral portions of said casing and cap; and

a plurality of webs connecting said inner and outer frames with each other and supporting the lower fold edges of said filter element thereby to prevent distortion of said element on down draft of fluid therethrough.

4,498,990

FILTERING DEVICE

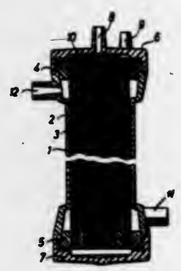
Stanley Shaldon, Montpellier, France; Kjell H. I. Christopherson, Staffanstorp, Sweden; Thore E. Falkvall, Viken, Sweden, and Ulf K. Mattisson, Sodra Sandby, Sweden, assignors to Gambro Lundia AB, Sweden

Filed Jul. 19, 1982, Ser. No. 399,970

Claims priority, application Sweden, Oct. 5, 1981, 8105850

Int. Cl.³ B01D *13/00*

U.S. Cl. 210—637 **28 Claims**



17. A filtering device for filtering blood fluids comprising an inlet for said blood fluid; filtration means for filtering said blood fluid to provide a filtered blood fluid and a filtrate, said filtration means comprising two chambers connected in series, and including membrane material comprising thin walled fibers in each of said chambers, wherein said filtration takes place, a first outlet for the filtrate, a second outlet for the filtered blood fluid, a pressure-sensitive valve between said inlet and said second outlet so that undesired pressure build-up beyond a predetermined pressure at said inlet results in at least some of said blood fluid passing directly from said inlet to said second outlet, and a casing comprising opposite first and second end walls, wherein said fibers are cast into said first and second end walls of said casing, said two opposite second end walls being covered by respective first and second outer covers bearing said inlet and said second outlet for said filtered blood fluid, said inlet and said second outlet being arranged in said first outer cover and being separated by a seal arranged between the adjoining first end wall and said first outer cover, said seal constituting a pressure-sensitive valve.

4,498,991

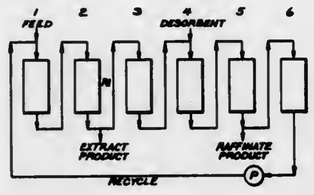
SERIAL FLOW CONTINUOUS SEPARATION PROCESS

Anil R. Oroskar, Brookfield, Ill., assignor to UOP Inc., Des Plaines, Ill.

Filed Jun. 18, 1984, Ser. No. 622,031

Int. Cl.³ B01D *15/08*

U.S. Cl. 210—659 **6 Claims**



1. A process for separating an extract component from a raffinate component contained in a feed mixture comprising the steps of:

(a) maintaining a unidirectional fluid flow system through a series of separating units in which said components have differential rates of travel due to selective retardation or acceleration of each of said components in each of said units, each of said units having a fluid inlet and a fluid outlet, said separating units being interconnected so as to achieve serial flow through said units in a single closed loop;

(b) mixing said feed mixture with the fluid emanating from one of said fluid outlets and passing the resultant first mixture into the next inlet downstream of said outlet in said series and mixing said displacement fluid with the fluid emanating from another of said fluid outlets and passing the resultant second mixture into the next inlet downstream of said other outlet in said series;

(c) establishing within said separating units a component concentration distribution, zones of which comprise, sequentially, progressing in the direction of fluid flow, extract and raffinate component mixture with the proportion of the raffinate component to extract component being greater than in the feed mixture, extract and raffinate component mixture with the proportion of extract component to raffinate component being greater than in the feed mixture, concentrated extract component, extract component diluted with displacement fluid, raffinate component diluted with displacement fluid, and concentrated raffinate component;

(d) withdrawing as an extract product stream a portion of at least one of the streams between an adjacent pair of separating units, and withdrawing as a raffinate product stream a portion of at least one other of the streams between a different adjacent pair of separating units, the selection of the streams from which said product streams are withdrawn being consistent with the desired composition of each of said product streams;

(e) periodically simultaneously advancing in an upstream direction with respect to fluid flow in said separating units, all of said inlets and outlets to effect the shifting of zones in a downstream direction with respect to said fluid flow, said shifting being effected prior to the progression through said units of said component concentration distribution to the extent that the composition of the inlet or outlet streams to or from any zone becomes inconsistent with the desired composition of that zone.

4,498,992

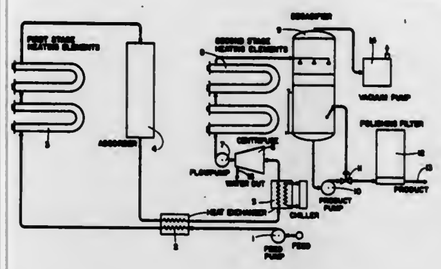
PROCESS FOR TREATING CONTAMINATED TRANSFORMER OIL

Luther W. Garrett, Jr., San Mateo, Calif., assignor to Petro-Williams Service Company, Tulsa, Okla.

Filed Feb. 9, 1984, Ser. No. 578,427

Int. Cl.³ B01D *15/00*

U.S. Cl. 210—664 **9 Claims**



1. A process for treating contaminated transformer oil which comprises the steps of heating the contaminated transformer oil in a first heater to a temperature in the range of 100° to 160° F.; passing the heated contaminated oil from the first heater through an adsorber containing an adsorbent capable of removing acidic compounds, other products of oxidation and colloidal contaminants from the contaminated oil; conducting the treated oil from the adsorber to a chiller where the temperature is reduced to about 50° to 70° F.; conducting the treated oil from the chiller to a centrifuge to remove free water; conducting the treated oil from the centrifuge to a second heater where the oil is heated to a temperature of about 100° to 160° F.; conducting the treated oil from the second heater to a degasifier wherein the oil is subjected to a high degree of vacuum; removing the treated oil from the degasifier and passing it through a polishing filter.

4,498,993

PROCESS FOR THE TREATMENT OF CLAY SLIMES

Carl F. Raba, Jr.; Robert L. Smith, and Francis Y. Huang, all of San Antonio, Tex., assignors to Monier Resources, Inc., San Antonio, Tex.

Division of Ser. No. 457,930, Jan. 14, 1983, Pat. No. 4,478,736.

This application Jul. 16, 1984, Ser. No. 631,460

Int. Cl.³ C02F *1/56*

U.S. Cl. 210—710 **10 Claims**

1. A method for dewatering clay slimes diluted to less than 3% solid content comprising the following steps:

a. Hydrating fly ash for at least 7 days;

b. Reacting the hydrated fly ash with a silane coupling agent to couple the silane to the ash;

c. Polymerizing the fly ash with an acrylamide monomer to form an acrylamide flocculant chemically bonded to said fly ash through said silane;

d. adding an effective amount of the polymerized fly ash to flocculate said clay slime;

e. Allowing the flocculated slime to settle; and

f. Recovering the supernatant water.

9. A method according to claim 1 in which the clay slime is the waste product of a phosphate benefication process.

10. A method according to claim 9 comprising the following steps:

a. Hydrating fly ash for 7–21 days;

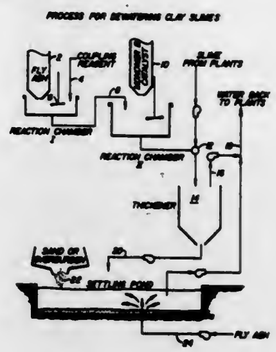
b. Charging the hydrated fly ash into a reactor containing 4 milliliters of water per gram of fly ash;

c. Maintaining a pH 6 by the addition of concentrated sulfuric acid;

d. Adding sufficient triacetoxyvinylsilane to produce a 0.075 to 0.05% by volume silane solution concentration;

e. Stirring the solution for 30 minutes;

f. Adding additional water;



g. Purging the contents of the reactor with nitrogen gas while adding 47.5 parts acrylamide monomer to 949.8 parts water and 0.144% by monomer weight of a stoichiometric amount of ammonium persulfate plus sodium sulfite;

h. Heating the mixture to 65° C. to polymerize the monomers and react with the fly ash;

i. Diluting the phosphate slime with deionized water to obtain a less than 3% solids concentration;

j. Charging the polymerized ash into a flow of diluted slime to flocculate slime particles;

k. Charging the mixture of slime and flocs into a mechanical thickeners;

l. Allowing the solids to consolidate and recovering the supernatant water;

m. Transporting the consolidated slimes to settling ponds; and

n. Adding sand to the settling pond to facilitate settlement of the slime.

4,498,994

HIGH TEMPERATURE STABLE DRILLING FLUIDS CONTAINING NON-AQUEOUS SOLVENTS

Israel J. Hellwell, Princeton, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Aug. 31, 1982, Ser. No. 413,575

Int. Cl.³ C09K *7/06*; E21B *43/00*

U.S. Cl. 252—8.5 M **19 Claims**

1. A solids free completion fluid for use in drilling a bore hole with a drill bit, wherein said drill bit is in the vicinity of an oil or gas producing formation, said completion fluid consisting essentially of

(i) a solvent, said solvent comprising at least about 90% by weight of N-methyl-2-pyrrolidone, the remainder of said solvent being essentially water;

(ii) a density increasing salt dissolved in said solvent in an

amount sufficient to increase the density of said fluid in order to balance the formation pressure; and

(iii) a viscosity increasing amount of polyvinylpyrrolidone polymers having at least 50 mole percent of vinylpyrrolidone repeating units.

4,498,995

LOST CIRCULATION DRILLING FLUID

Judith Gockel, 15511 Baldswelle, Tomball, Tex. 77375

Division of Ser. No. 291,261, Aug. 10, 1981, Pat. No. 4,460,052. This application Jul. 1, 1983, Ser. No. 510,413

Int. Cl.³ C09K *7/04;* **E21B** *33/138*

U.S. Cl. 252—8.5 LC **9 Claims**

1. A drilling fluid for sealing a lost circulation zone penetrated by a well bore comprising

a slurry of at least one particulate expanded aggregate selected from the group consisting of expanded clay, expanded slate or expanded clay shale in a material selected from the group consisting of drilling muds and cement slurries,

said expanded aggregate being present in said slurry in a selected amount sufficient to seal the openings or pores in said lost circulation zone.

4,498,996

USE IN AUGMENTING OR ENHANCING AROMA OF PERFUMED ARTICLE WITH ACYLOXY ALKANOLS AND ESTERS THEREOF

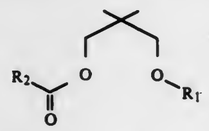
Philip T. Klemarczyk, Newington, Conn., assignor to International Flavors & Fragrances Inc., New York, N.Y.

Division of Ser. No. 396,487, Jul. 8, 1982, abandoned. This application Oct. 12, 1983, Ser. No. 541,266

Int. Cl.³ C11D *3/50;* **D06M** *13/20*

U.S. Cl. 252—8.6 **3 Claims**

1. A process for augmenting or enhancing the aroma of a perfumed article selected from the group consisting of solid or liquid anionic, cationic, nonionic or zwitterionic detergents and fabric softener compositions and dryer added fabric softener articles comprising the step of adding to said perfumed article an aroma augmenting or enhancing quantity of at least one compound defined according to the structure:



wherein R_1 is hydrogen or acetyl and R_2 is isopropyl.

4,498,997

METHOD AND COMPOSITION FOR ACIDIZING SUBTERRANEAN FORMATIONS

Michael L. Walker, Duncan, Okla., assignor to Halliburton Company, Duncan, Okla.

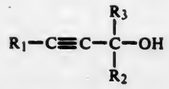
Filed Jun. 24, 1983, Ser. No. 507,388

Int. Cl.³ E21B *43/27*

U.S. Cl. 252—8.55 C **15 Claims**

1. A method of acidizing a subterranean formation penetrated by a ferrous metal well bore whereby corrosive effects of an acidic solution on ferrous metals in contact with said acidic solution is minimized which comprises:

contacting said formation with an aqueous acidic solution comprising hydrochloric acid, which contains a corrosion inhibitor composition consisting essentially of a corrosion-reducing effective amount of at least one acetylenic alcohol having the general formula:



wherein R_1, R_2 and R_3 are selected from the group consisting of hydrogen, alkyl, phenyl, substituted phenyl and hydroxyalkyl radicals present in an amount sufficient to comprise at least about 5 percent by volume of said inhibitor composition, a quaternary ammonium compound selected from the group consisting of the N-methyl, N-benzyl and chloromethyl naphthalene quaternaries of alkyl pyridines and quinoline, isoquinoline compounds, benzoquinoline compounds and mixtures thereof, an aromatic hydrocarbon compound which exhibits high oil-wetting characteristics present in an amount sufficient to provide a ratio by volume of acetylenic alcohol to aromatic hydrocarbon of at least about 0.05:1 and an antimony compound which is activated by the other constituents of said corrosion inhibitor composition to reduce the corrosive effect of said acidic solution on said ferrous metal, said antimony compound being at least one member selected from the group consisting of antimony trioxide, pentoxide, trichloride, sulfide, pentachloride, tartrate, and trifluoride, alkali metal salts of antimony tartrate, alkali metal salts of pyroantimonate, antimony adducts of ethylene glycol and solutions containing ethylene glycol, and the oxidized product of hydrogen peroxide and at least one member selected from the group consisting of trivalent antimony compounds and being present in an amount sufficient to provide an antimony concentration of from about 0.0007 to about 0.04 molar to said corrosive acid.

4,498,998

STABILIZATION OF HYDROCRACKED OILS AGAINST UV-LIGHT DEGRADATION WITH CERTAIN DIHYDROXY COMPONENTS

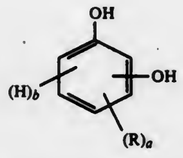
David A. Hutchison, Munster, Ind., assignor to Atlantic Richfield Company, Philadelphia, Pa.

Continuation of Ser. No. 210,427, Nov. 25, 1980, abandoned. This application May 6, 1982, Ser. No. 375,522

Int. Cl.³ C10M *1/20*

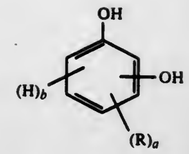
U.S. Cl. 252—52 R **13 Claims**

1. A composition of matter comprising a major amount by weight of hydrocracked lubricating oil having susceptibility to deterioration by sunlight and a minor amount by weight, sufficient to inhibit said composition from deterioration caused by sunlight, of at least one added dihydroxy component having a structure



wherein each R is independently selected from the group consisting of tertiary alkyl radicals containing up to about 10 carbon atoms, and a and b are integers such that a is equal to at least 2 and the sum of a plus b equals 4.

8. A method of inhibiting a hydrocracked lubricating oil from deterioration caused by sunlight comprising combining with said oil having susceptibility to deterioration by sunlight an inhibiting amount of at least one dihydroxy component having a structure



wherein each R is independently selected from the group consisting of tertiary alkyl radicals containing up to about 10 carbon atoms, and a and b are integers such that a is equal to at least 2 and the sum of a plus b equals 4.

4,498,999

PROCESS FOR THE HEATING AND/OR THERMAL CONDITIONING OF A BUILDING BY MEANS OF A HEAT PUMP OPERATED WITH A SPECIFIC MIXTURE OF WORKING FLUIDS

Claude Ramet, Paris, and Alexandre Rojey, Garches, both of France, assignors to Institut Francais du Petrole, Rueil-Malmaison, France

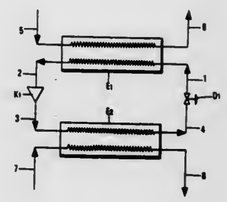
Continuation-in-part of Ser. No. 381,903, May 25, 1982,. This application Nov. 2, 1982, Ser. No. 438,424

Claims priority, application France, Oct. 19, 1981, 8119734

The portion of the term of this patent subsequent to Jan. 31, 2001, has been disclaimed.

Int. Cl.³ C09L *5/04*

U.S. Cl. 252—67 **7 Claims**



1. A composition consisting essentially of a non-azeotropic mixture of:

(a) a major component of monochlorodi-fluoromethane (R_{22}) with

(b) a minor component of the trifluoromethane (R_{23}).

4,499,000

POWER-TRANSMISSION METHOD USES SPIROCYCLIC KETALS

Karl-Heinz Hentschel; Rolf Dhein, both of Krefeld; Hans Winter, and Herbert Vojacek, both of Munich, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

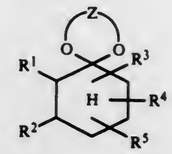
Continuation of Ser. No. 294,695, Aug. 20, 1981, abandoned. This application Feb. 18, 1983, Ser. No. 467,991

Claims priority, application Fed. Rep. of Germany, Sep. 6, 1980, 3033658

Int. Cl.³ C09K *5/00*

U.S. Cl. 252—73 **9 Claims**

1. A method of transmitting torque or tractional forces from a tractional driving element to a driven element through a traction fluid comprising using as said fluid a composition comprising a spirocyclic ketal of the formula (I)



in which

R^1 in the case where R^2 denotes hydrogen, represents a cyclohexyl radical optionally substituted by lower alkyl, lower alkoxy and/or cycloalkyl with 5 to 7 carbon atoms, or in which

R^1 and R^2 are linked through 4 methylene groups, which are optionally substituted by lower alkyl, lower alkoxy and-/or cycloalkyl with 5 to 7 carbon atoms and form a further acyclic ring;

R^3, R^4 and R^5 are identical or different and denote hydrogen, lower alkyl, lower alkoxy or cycloalkyl with 5 to 7 carbon atoms, and

Z denotes alkylene with 2 to 4 carbon atoms which is optionally substituted by lower alkyl and/or cycloalkyl with 5 to 7 carbon atoms.

4,499,001

CONTROLLED FADE EFFERVESCING CLEANSER

Anthony B. J. Eoga, Boonton, N.J., assignor to Warner-Lambert Company, Morris Plains, N.J.

Continuation of Ser. No. 251,030, Apr. 3, 1981, abandoned. This application Mar. 2, 1984, Ser. No. 585,654

Int. Cl.³ C11D *3/40, 7/10, 7/12, 7/18*

U.S. Cl. 252—99 **16 Claims**

1. An effervescent cleansing composition comprising:

(a) an oxidizing agent comprising a monopersulfate salt in an amount of from 35 to 60% by weight;

(b) a bleaching promoter comprising an alkali metal or alkaline earth metal chloride in an amount of 10% to 20% by weight;

(c) an effervescence promoting compound comprising a perborate salt, in an amount of from 0.5% to 20% by weight;

(d) sodium carbonate in an amount of from 20% to 40% by weight;

(e) sodium hydroxide in an amount of up to about 0.5% by weight;

(f) a colorant, comprising at least one food, drug and cosmetic grade, or drug and cosmetic grade dye or lake, in an amount of from about 0.15% to 0.5% by weight; and,

(g) a fade control agent comprising a compound selected from the group consisting of alkali metal bromides, alkali metal iodides and mixtures thereof, in an amount of from 0.04% to 0.3% by weight to control the time in which the colorant disappears.

4,499,002

SCALE INHIBITING COPOLYMER

William F. Masler, III, Hinckley, and Zahid Amjad, Avon Lake, both of Ohio, assignors to The B. F. Goodrich Company, Akron, Ohio

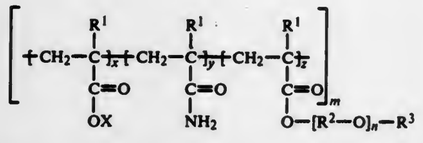
Filed Jun. 28, 1983, Ser. No. 508,636

Int. Cl.³ C02F *5/12;* **C08F** *220/06, 220/56*

U.S. Cl. 252—180 **6 Claims**

1. A composition for treating a predominantly aqueous stream to inhibit the deposition of precipitates selected from the group consisting of calcium phosphate, magnesium phosphate, zinc phosphate, calcium silicate, magnesium silicate, magnesium hydroxide, zinc hydroxide, iron oxide and mixtures thereof, said composition comprising an effective amount for

the purpose, of a water-soluble essentially non-crosslinked random copolymer consisting essentially of a copolymer of acrylic acid or methacrylic acid, acrylamide or methacrylamide, and an alkoxylated primary alcohol ester of (meth)acrylic acid, the copolymer having the structural formula



wherein

X represents H, or NH_4, or an alkali metal selected from the group consisting of sodium and potassium;

R^1 represents H, or methyl;

R^2 represents alkyl having from 2 to about 4 carbon atoms;

R^3 represents alkyl having from 1 to about 10 carbon atoms;

n is an integer in the range from 2 to about 6;

m is an integer in the range from about 3 to about 70; and,

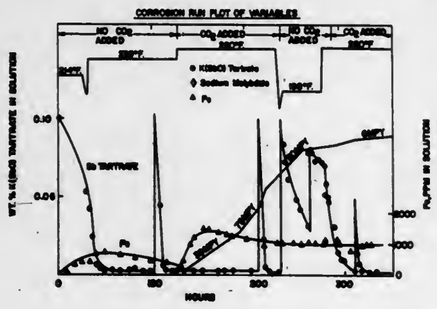
for each y (that is, y=1) x is an integer in the range from about 1 to about 8, and z is a number in the range from 1 to about 0.075; and x, y and z are present in relative heterogeneous order.

4,499,003

ANTIMONY-MOLYBDENUM SALT CORROSION INHIBITOR COMPOSITION

Z. Andrew Foroulis, Mendham, N.J., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Feb. 2, 1982, Ser. No. 344,986
Int. Cl.³ C23F *11/06, 11/18*
U.S. Cl. 252—192 **15 Claims**



1. A composition for preventing corrosion of metals in contact with alkaline liquid-acid gas scrubbing systems comprising an aqueous solution of soluble salts of antimony and molybdenum wherein the weight ratio of antimony salt to molybdenum salt ranges between about 0.05 to 1 and about 0.2 to 1.

8. A composition for use within an acid gas scrubbing system comprising an aqueous-alkaline solution containing an effective amount of corrosion inhibiting agent, wherein said agent comprises soluble salts of antimony and molybdenum, wherein the weight ratio of antimony salt to molydenum salt ranges between about 0.01 to 1 and about 5 to 1.

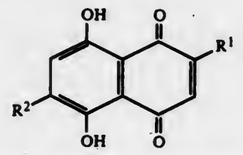
4,499,004

LIQUID CRYSTAL DIELECTRICS, NEW DYESTUFFS USEFUL THEREIN, PROCESSES FOR THEIR PREPARATION, AND ELECTROOPTICAL DISPLAY ELEMENTS BASED THEREON

Günther Haas, Neckargemünd, and Georg Weber, Erzhausen, both of Fed. Rep. of Germany, assignors to Merck Patent Gesellschaft mit beschrankter Haftung, Darmstadt, Fed. Rep. of Germany

Filed Jan. 28, 1983, Ser. No. 462,153
Claims priority, application Fed. Rep. of Germany, Jan. 28, 1982, 3202761
Int. Cl.³ G02F *1/13;* C09K *3/34*
U.S. Cl. 252—299.1 **11 Claims**

1. A liquid crystal dielectric comprising at least one liquid crystalline compound and at least one dyestuff of the formula



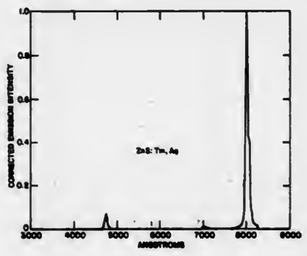
wherein R^1 and R^2 are identical or different and each is alkyl or alkoxy each of 3 to 8 C atoms or a group Z—Y—, or one of R^1 and R^2 can also be hydrogen, methyl, ethyl, methoxy or ethoxy; Z is R—Ph—, R—Ph—Ph—, R—Cy—, R—Cy—Cy—, R—Cy—Ph— or R—Ph—Cy; Ph is 1,4-phenylene; Cy is 1,4-cyclohexylene; Y is —CH_2—, —O—, —S—, —NH—, —CH_2CH_2—, —Ch_2—O—, —CH_2—S—, —CH_2—NH— or a direct bond; and R is hydrogen or alkyl or alkoxy, each of 1–8 C atoms.

4,499,005

INFRARED EMITTING PHOSPHOR

James R. McColl, Concord, and Thomas E. Peters, Chelmsford, both of Mass., assignors to GTE Laboratories Incorporated, Waltham, Mass.

Filed Apr. 30, 1984, Ser. No. 605,358
Int. Cl.³ C09K *11/06*
U.S. Cl. 252—301.6 S **3 Claims**



1. A luminescent composition comprising thulium and silver coactivated zinc sulfide having the approximate formula

$$ZnS:Tm_xAg_y$$

wherein

x is from about 100 to about 1000 atomic parts per million,

y is from about 10 to about 100 atomic parts per million.

4,499,006

CORROSION INHIBITORS

Frederick W. Valone, and Joseph Rutledge, both of Houston, Tex.

Filed Jan. 6, 1983, Ser. No. 501,674
Int. Cl.³ C23F *11/00*
U.S. Cl. 252—392 **18 Claims**

1. A corrosion inhibition solution comprising:

A. water, and

B. 10 ppm to 1,000 ppm of a composition comprising the reaction product of:

1. an amine mixture comprising:
a 0.8:1 to 1:0.8 mixture of a poly(oxyethylene)diamine of molecular weight from 500 to 700 and a poly(oxypropylene)triamine of molecular weight from 300 to 500, and

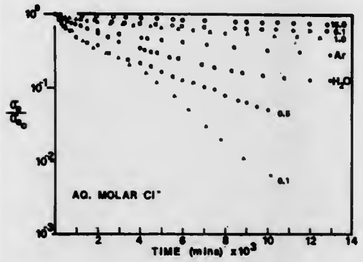
2. an organic monomer acid mixture comprising:
a 0.8:1 to 1:0.8 mixture of a petroleum wax oxidate and a fatty acid.

4,499,007

STABILIZATION OF CONDUCTIVE POLYMERS IN AQUEOUS ENVIRONMENTS

Anthony Guiseppi-Elie, Cambridge, and Gary E. Wnek, Natick, both of Mass., assignors to Massachusetts Institute of Technology, Cambrige, Mass.

Filed Dec. 13, 1982, Ser. No. 449,028
Int. Cl.³ H01B *1/06*
U.S. Cl. 252—500 **4 Claims**



1. A method of stabilizing iodine-doped, conductive polyacetylene in a deaerated aqueous solution comprising the step of introducing into the aqueous solution a source of chloride ions to produce a chloride ion concentration greater than 0.5 molar.

4,499,008

METHOD OF MAKING STABLE ELECTRICALLY CONDUCTING POLYMERS

Stephen T. Wellinghoff; Samson A. Jenekhe, both of Minneapolis, and Thomas J. Kedrowski, St. Paul, all of Minn., assignors to Honeywell Inc., Minneapolis, Minn.

Division of Ser. No. 420,757, Sep. 21, 1982, Pat. No. 4,452,725. This application Dec. 9, 1983, Ser. No. 559,990
Int. Cl.³ H01B *1/06*
U.S. Cl. 252—500 **16 Claims**

1. A method of making an electrically conducting polymer comprising the steps of:

preparing a first liquid solution comprising a Grignard reagent of a quantity of monomer selected from the group consisting of N-methyl-3',3 dibromocarbazole and N-ethyl-3',3 dibromocarbazole or a combination thereof;

preparing a second liquid solution of the remainder of the monomer;

polymerizing a mixture of said first and said second solution in the presence of a suitable catalyst in an atmosphere inert to the reactants and products for sufficient time to produce a high molecular weight polymer;

recovering said polymer; and

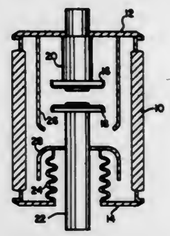
complexing said polymer with a compatible charge transfer acceptor dopant wherein said charge transfer acceptor is selected from the group consisting of I_2, Br_2, Cl_2, F_2, TCNQ, DDQ, $NO^+BF_4^-$, chloranil and protic acids selected from the group consisting of HI, HBr HCl, HF, H_2SO_4, $HClO_4$, and CCl_3COOH, or a combination thereof.

4,499,009

ELECTRODE COMPOSITION FOR VACUUM SWITCH

Takashi Yamanaka, Itami; Yasushi Takeya, Osaka; Mitsumasa Yorita, Itami; Toshiaki Horiuchi, Settsu; Kouichi Inagaki, Itami; Eizo Naya, Ibaraki; Michinosuke Demizu, Takarazuka, and Mitsuhiro Okumura, Sakai, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 20, 1982, Ser. No. 451,324
Claims priority, application Japan, Dec. 21, 1981, 56-208687
Int. Cl.³ H01B *1/02*
U.S. Cl. 252—512 **1 Claim**



1. An electrode composition for a vacuum switch which consists essentially of:

(a) not more than 20% by weight of at least one low melting point metal selected from the group consisting of bismuth (Bi), lead (Pb), indium (In), lithium (Li), tin (Sn) and alloys thereof;

(b) not more than 10% by weight of a metal capable of forming an alloy with said low melting point metal at a temperature not less than the melting point of said low melting point metal, and being alloyable with copper at a temperature not higher than the melting point of said alloy, selected from the group consisting of tellurium (Te), antimony (Sb), lanthanum (La), magnesium (Mg) and alloys thereof;

(c) less than 40% by weight of at least one refractory metal selected from the group consisting of chromium (Cr), iron (Fe), cobalt (Co), nickel (Ni), titanium (Ti), tungsten (W) and alloys thereof; and

(d) the balance being copper (Cu).

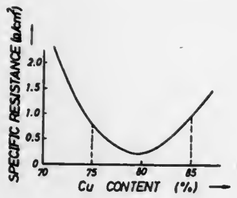
4,499,010

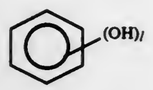
CONDUCTIVE PAINT

Katsumi Tanino, Takaoka; Satoshi Fujiki, Toyama, and Shinzi Okamoto, Ohwawano, all of Japan, assignors to Toyama Prefecture, Toyama and Hokuriku Electric Industry Co., Ltd., Kaminikawa, both of, Japan

Continuation-in-part of Ser. No. 300,879, Sep. 11, 1981, abandoned. This application Mar. 2, 1983, Ser. No. 471,924
Claims priority, application Japan, Sep. 19, 1980, 55-129115; Nov. 5, 1980, 55-154703; Jan. 29, 1981, 56-10843
Int. Cl.³ H01B *1/02*
U.S. Cl. 252—512 **11 Claims**

1. A conductive paint comprising an organic solvent, a binder composition comprising a thermosetting resin and a hydroquinone derivative obtained by reacting a hydroquinone represented by the formula:





wherein, l denotes an integer of 2 or 3, with one member selected from the group consisting of saturated fatty acids having 10 to 20 carbon atoms and unsaturated fatty acids having 10 to 20 carbon atoms in the presence of a catalytic amount of at least one member selected from the group consisting of copper salts of organic fatty acids and fine copper powder, and an electrically conductive metal powder.

4,499,011

RESISTANCE PASTE FOR A RESISTOR BODY

Alexander H. Boonstra; Cornelis A. H. A. Mutsaers, and Franciscus N. G. R. van der Kruijs, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed May 7, 1984, Ser. No. 607,905

Claims priority, application Netherlands, May 9, 1983, 8301631

Int. Cl.³ H01B *1/06*

U.S. Cl. 252—518 **5 Claims**

1. A resistance paste for a resistor body consisting of a mixture of a metal oxidic compound, a permanent binder and a temporary binder, characterized in that the metal oxidic compound satisfies the formula:

$$Pb_2Rh_xRu_{2-x}O_{7-y}$$

wherein $0.15 \leqq x \leqq 0.95$ and $0 \leqq y \leqq \frac{1}{2}$.

4,499,012

PERFUME DISPENSING MATERIAL

Geoffrey Farrell, Crewe, England, assignor to Burroughs Wellcome Co., Research Triangle Park, N.C.

Filed May 7, 1982, Ser. No. 376,168

Claims priority, application United Kingdom, May 8, 1981, 8114055; Sep. 28, 1981, 8129168

Int. Cl.³ C11B *9/00*

U.S. Cl. 252—522 A **4 Claims**

1. A perfume dispensing material which comprises granules having a granule size of over 1000 microns, of vermiculite impregnated with one or more perfume oils, at least 10% of the weight of the material being perfume oil.

4,499,013

ELECTRICAL TREE AND WATER TREE RESISTANT COMPOUNDS AND POLYMER COMPOSITIONS CONTAINING THE SAME

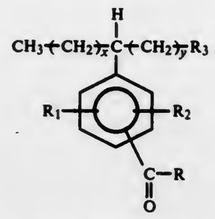
Anthony Barlow; Irwin S. Schlossman, and Robert E. Borgerding, all of Cincinnati, Ohio, assignors to National Distillers and Chemical Corporation, New York, N.Y.

Filed Aug. 17, 1983, Ser. No. 524,003

Int. Cl.³ H01B *3/18*

U.S. Cl. 252—567 **13 Claims**

1. A compound having the general structure:



wherein R is a hydrocarbon radical having from 1 to 18 carbon atoms selected from the group consisting of alkyl, aryl, substituted aryl, cycloalkyl and substituted cycloalkyl, R_1 and R_2 are independently selected from the group consisting of hydrogen and C_1–C_{18} alkyl, R_3 is selected from the group consisting of COOH, $COOR_4$ and CH_2OH, wherein R_4 is a hydrocarbon radical having from 1 to 18 carbon atoms and selected from the group consisting of alkyl, aryl, substituted aryl, cycloalkyl and substituted cycloalkyl, and x and y are integers such that the total of x+y is from about 5 to about 19.

4,499,014

METHOD FOR PURIFYING GAMMA-INTERFERON

Leonard F. Estis, North Brunswick, N.J., assignor to Interferon Sciences, Inc., New York, N.Y.

Filed Feb. 7, 1984, Ser. No. 577,908

Int. Cl.³ A61K *45/02*; C07G *7/00*

U.S. Cl. 260—112 R **13 Claims**

1. A method for purifying gamma-interferon comprising the steps of:

(a) preparing one or more antibodies to gamma-interferon;

(b) immobilizing the one or more antibodies on a solid support;

(c) contacting a first solution containing gamma-interferon with the one or more immobilized antibodies so as to form immobilized antibody-antigen complexes between the gamma-interferon and the one or more immobilized antibodies;

(d) separating the first solution from the immobilized antibody-antigen complexes;

(e) contacting the immobilized antibody-antigen complexes with a second solution having an acidic pH so as to disassociate the gamma-interferon from the one or more immobilized antibodies and into the second solution, the acidity of said second solution having the effect of partially or completely deactivating the diassociated gamma-interferon;

(f) separating the second solution from the one or more immobilized antibodies; and

(g) restoring some or all of the activity of the gamma-interferon in the second solution by adjusting the pH of that solution to between about 5.5 and 9.5 and then incubating the pH adjusted solution at a temperature of between about 2° C. and 8° C. for a period of at least 24 hours.

4,499,015

CHROMIUM COMPLEX AZO DYESTUFFS AND MIXTURES OF CHROMIUM COMPLEX AZO DYESTUFFS DERIVATED FROM 1-AMINO-2-HYDROXYNAPHTALENE-4-SULPHONIC ACIDS OR AMINOPHENOLS

Walter Scholl, Cologne, Fed. Rep. of Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

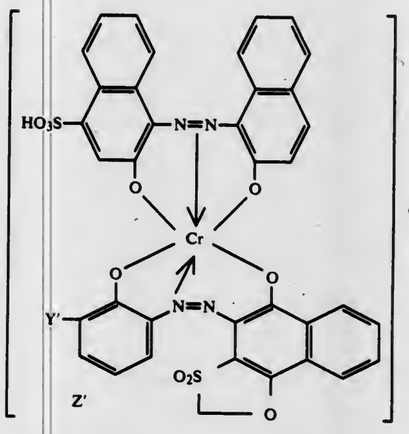
Filed Aug. 6, 1982, Ser. No. 405,969

Claims priority, application Fed. Rep. of Germany, Aug. 25, 1981, 3133569

Int. Cl.³ C09B *45/16*; D06P *1/10, 3/04, 3/14*

U.S. Cl. 534—697 **3 Claims**

1. Chromium complex dyestuff of the formula



wherein

Y' denotes H, Cl or NO_2,

Z' denotes H, NO_2 or $SO_2NW'_1W'_2$ or Cl and

W'_1 and W'_2 denwith the proviso that

Y' and Z' do not simultaneously denote NO_2.

4,499,016

2-OXO-1-[(ACYLAMINO)SULFONYL]AZETIDINES

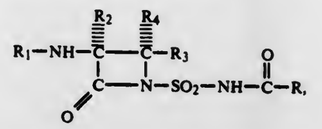
Hermann Breuer, Schoenhofen; Theodor Denzel, and Uwe D. Treuner, both of Regensburg, all of Fed. Rep. of Germany, assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Aug. 6, 1981, Ser. No. 290,648

Int. Cl.³ C07D *205/08, 417/12*; A61K *31/425, 31/395*

U.S. Cl. 260—239 A **7 Claims**

1. A compound having the formula



or a pharmaceutically acceptable salt thereof, wherein

R is alkyl, phenyl, substituted phenyl, phenylalkyl, (substituted phenyl)alkyl, alkoxy, phenyloxy, (substituted phenyl)oxy, phenylalkoxy, or (substituted phenyl)alkoxy;

R_1 is an acyl group derived from a carboxylic acid;

R_2 is hydrogen or methoxy;

R_3 and R_4 are the same or different and each is hydrogen or alkyl; wherein the term "substituted phenyl" refers to a phenyl group substituted with 1, 2 or 3 amino, halogen, hydroxyl, trifluoromethyl, alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms, or carboxyl groups.

4,499,017

BETA-LACTAMASE INHIBITING 6-(ALKOXYAMINO-METHYL) PENICILLANIC ACID 1,1-DIOXIDE AND DERIVATIVES

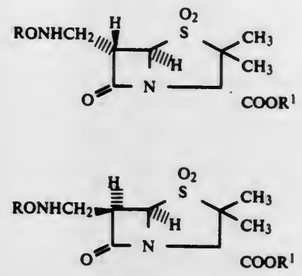
Donald K. Pirie, Uncasville; Robert A. Volkmann, Ledyard, and Edward F. Kleinman, Groton, all of Conn., assignors to Pfizer Inc., New York, N.Y.

Filed Jun. 6, 1983, Ser. No. 501,475

Int. Cl.³ C07D *499/00*; A61K *31/415*

U.S. Cl. 260—245.2 R **28 Claims**

1. A compound having the formula



or

wherein R is (C_1–C_4) alkyl or benzyl; and R^1 is hydrogen or a conventional ester forming radical which is hydrolyzable under physiological conditions selected from the group consisting of:

gamma-butyrolacton-4-yl,

$—CHR^2OCOR^3$, or

$—CHR^2OCOOR^3$,

wherein R^2 is hydrogen or methyl and R^3 is (C_1–C_6)alkyl; or a pharmaceutically acceptable cationic salt thereof when R^1 is hydrogen.

4,499,018

POLYPHTHALOCYANINE COMPOUNDS USEFUL AS DYESTUFFS

Jacky Doré, Basel, and Helmut Moser, Oberwil, both of Switzerland, assignors to Sandoz Ltd., Basel, Switzerland

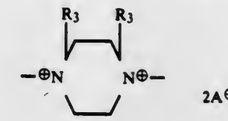
Continuation-in-part of Ser. No. 394,400, Jul. 2, 1982, abandoned. This application Oct. 15, 1982, Ser. No. 434,470

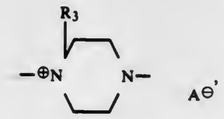
Claims priority, application Fed. Rep. of Germany, Jul. 4, 1981, 3126458; Jan. 9, 1982, 3200455

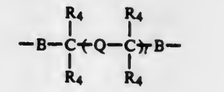
Int. Cl.³ C09B *47/30, 47/32*

U.S. Cl. 260—245.81 **18 Claims**

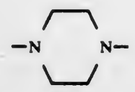
1. A cationic phthalocyanine dyestuff in which at least two phthalocyanine groups, which may be metallized or unmetallized, are joined by a group $—CH_2—R—CH_2—$ wherein R is a group of one of the formulae (a) to (d)



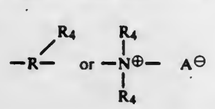




-continued



where each B independently is



R_3 is C_{1-10}alkyl, unsubstituted or substituted by one group selected from CN, OH, unsubstituted phenyl and halogen; or C_{2-10}alkenyl, unsubstituted or substituted by one group selected from CN, OH, unsubstituted phenyl and halogen;

R_4 is hydrogen, C_{1-10}alkyl unsubstituted or substituted by one group selected from CN, OH, unsubstituted phenyl and halogen; or C_{2-10}alkenyl unsubstituted or substituted by one group selected from CN, OH, unsubstituted phenyl and halogen;

Q is a direct bond or a bridging group; and $A^{\ominus}$ is a non-chromophoric anion, the phthalocyanine groups being attached to the methylene moieties of the group —CH_2—R—CH_2—.

4,499,019

N-(1-ALLYL-2-PYRROLIDYLMETHYL)-2,3-DIMETHOXY-5-SULFAMOYLBENZAMIDE AND DERIVATIVES THEREOF AND METHOD FOR TREATING HOT FLUSHES ASSOCIATED WITH NATURAL OR SURGICAL MENOPAUSE

Michel L. Thominet, and Jacques J. Perrot, both of Paris, France, assignors to Societe D'Etudes Scientifiques et Industrielles de l'Ile de France, Paris, France

Continuation of Ser. No. 265,017, May 19, 1981, abandoned, which is a continuation of Ser. No. 82,510, Oct. 9, 1979, abandoned, which is a continuation of Ser. No. 928,028, Jul. 25, 1978, abandoned, which is a continuation of Ser. No. 815,756, Jul. 14, 1977, abandoned. This application Oct. 13, 1983, Ser. No. 540,918

Claims priority, application France, Jul. 19, 1976, 76 22180

Int. Cl.³ A61K *31/40*

U.S. Cl. 514—428 **12 Claims**

1. A method for treating hot flushes associated with natural or surgical menopause comprising administering to a patient suffering from said hot flushes a therapeutically effective amount, sufficient to reduce or eliminate symptoms of said hot flushes of a compound selected from the group consisting of N-(1'-allyl-2'-pyrrolidylmethyl)-2,3-dimethoxy-5-sulfamoyl-benzamide and derivatives of said N-(1'-allyl-2'-pyrrolidylmethyl)-2,3-dimethoxy-5-sulfamoyl-benzamide.

4,499,020

MIXED ANHYDRIDES AND PROCESSES THEREOF

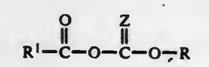
Iraj Lalezari, Scarsdale, N.Y., assignor to Montefiore Hospital and Medical Center, Inc., Bronx, N.Y.

Continuation of Ser. No. 285,252, Jul. 21, 1981, abandoned. This application Feb. 22, 1983, Ser. No. 468,050

Int. Cl.³ C07J *7/00*

U.S. Cl. 260—397.1 **3 Claims**

1. A mixed anhydride having the formula:



wherein Z is oxygen, R^1 is a residue of deoxycholic acid and R is ethyl.

4,499,021

17β(SUBSTITUTED THIO)-16-KETOANDROSTENE-17α,-CARBOXYLIC ACID DERIVATIVES

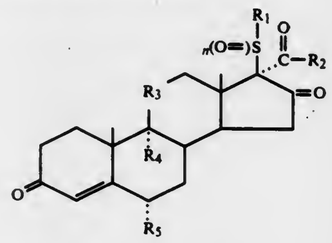
Ravi K. Varma, Belle Mead, N.J., assignor to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Apr. 12, 1984, Ser. No. 599,374

Int. Cl.³ C07J *7/00*

U.S. Cl. 260—397.1 **20 Claims**

1. A steroid having the formula



and the 1,2-dehydro derivative thereof

wherein

R_1 is alkyl, cycloalkyl, aryl, alkanoyloxyalkyl or arylcarbonyloxyalkyl;

R_2 is alkoxy, aryloxy, arylalkoxy, alkylthio, arylthio, or dialkylamino;

R_3 is carbonyl, β-hydroxymethylene or β-acetyloxymethylene;

R_4 is hydrogen or halogen;

R_5 is hydrogen, methyl, hydroxy, alkanoyl, alkanoyloxy, or halogen; and

n is 0, 1 or 2.

4,499,022

ORGANOMETALLIC TELOMERS, METHODS OF PREPARATION AND BIOCIDAL COMPOSITIONS OBTAINED

Alain Battais; Bernard J. L. Boutevin, and Yves J. D. Pietrasanta, all of Montpellier, France, assignors to Etat Francais, Paris Armees, France

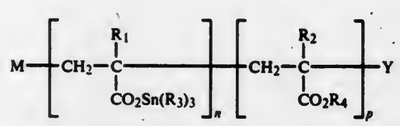
Filed Jun. 29, 1982, Ser. No. 393,413

Claims priority, application France, Jul. 3, 1981, 81 13080

Int. Cl.³ C07F *7/22*

U.S. Cl. 260—429.7 **4 Claims**

1. A biocidal organometallic telomer of the formula (I):



(I)

wherein,

n and p represent numbers between 1 and 100 wherein the ratio is n/(n+p) less than or equal to 0.75;

R_1 and R_2 are independently selected from the group consisting of hydrogen and methyl;

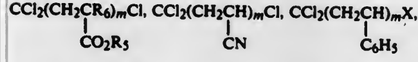
R_3 is selected from the group consisting of substituted and unsubstituted linear and branched chain alkyl having from 1 to 12 carbon atoms and substituted and unsubstituted phenyl;

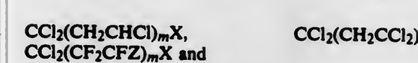
R_4 is selected from the group consisting of substituted and unsubstituted linear and branched chain alkyl having from 1 to 12 carbon atoms, substituted and unsubstituted phenyl and hydrogen;

M and Y are derived from a transfer agent, wherein:

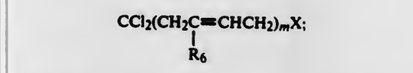
Y is selected from the group consisting of hydrogen, chlorine and bromine; and

M is an electroattractive organic group selected from the group consisting of CCl_3, SR_5, $PO(OR_5)_2$, $P(R_5)_2$, $CCl_2CO_2R_5$,





and



wherein,

m represents a whole number between 1 and 100,

R_5 is selected from the group consisting of hydrogen and alkyl having from 1 to 12 carbon atoms,

R_6 is selected from the group consisting of hydrogen and methyl,

Z is selected from the group consisting of chlorine and fluorine, and

X is selected from the group consisting of chlorine and hydrogen.

4,499,023

PROCESS FOR SEPARATING TECHNICALLY PURE 2,4-DIISOCYANATOTOLUENE OR ISOMER MIXTURES HAVING AN INCREASED CONTENT OF 2,4-DIISOCYANATOTOLUENE FROM ISOMER MIXTURES OF 2,4- AND 2,6-DIISOCYANATOTOLUENE

Alexander Mitrowsky, Dormagen; Adolf Wissner, Leverkusen, and Werner Hauser, Odenthal, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed May 12, 1983, Ser. No. 493,869

Claims priority, application Fed. Rep. of Germany, May 29, 1982, 3220439

Int. Cl.³ C07C *71/00*

U.S. Cl. 260—453 SP **5 Claims**

1. A process for separating pure 2,4-diisocyanatotoluene or an isomer mixture having an increased 2,4-diisocyanatotoluene content from an isomer mixture of 2,4- and 2,6-diisocyanatotoluene in a tube crystallizer comprising:

(a) cooling the isomer mixture of 2,4- and 2,6-diisocyanatotoluene to a temperature of from 4° to 9° C.,

(b) further cooling the isomer mixture of (a) to between −2° and −6° C. at a rate of 0.5° to 3° C. per hour,

(c) maintaining the mixture of (b) at a temperature of from −2° to −6° C. for at least 30 minutes,

(d) removing any liquid present in the mixture of (c), and

(e) melting any solid remaining in the tube crystallizer.

4,499,024

CONTINUOUS PROCESS FOR PREPARING BISFLUOROXYDIFLUOROMETHANE

Michael J. Fifolt, Grand Island, N.Y., assignor to Occidental Chemical Corporation, Niagara Falls, N.Y.

Filed Oct. 24, 1983, Ser. No. 545,021

Int. Cl.³ C07C *71/00*

U.S. Cl. 260—453 R **1 Claim**

1. A continuous process for preparing bisfluoroxydifluoromethane comprising the steps of:

(a) introducing a mixed gas stream containing carbon dioxide and fluorine into a continuous reactor at a temperature of from about 20° C. to about 30° C. and in a mole ratio of carbon dioxide to fluorine of about 0.40 to about 0.70, said reactor containing a catalytic amount of cesium fluoride,

(b) maintaining the temperature of the reactor in the range of from about 20° C. to about 30° C.,

(c) collecting the exit gases from the reactor, and

(d) recovering bisfluoroxydifluoromethane from the exit gases.

4,499,025

ELECTROCHEMICAL MAINTENANCE OF CATALYST ACTIVITY

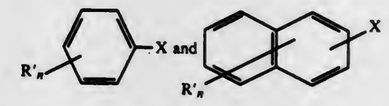
John B. Davison; Raymond J. Jasinski, both of Mission Viejo, and Pamela J. Peerce-Landers, Huntington Beach, all of Calif., assignors to Occidental Chemical Corporation, Niagara Falls, N.Y.

Filed Apr. 23, 1982, Ser. No. 371,378

Int. Cl.³ C07C *121/50*

U.S. Cl. 260—465 R **13 Claims**

1. In a process for the conversion of an aryl halide into an aryl cyanide which comprises reacting an aryl halide with a cyanide ion in the presence of a zero valent Group VIII metal catalyst, said aryl halide being selected from the group consisting of compounds having the general formula:



wherein X is a halogen radical selected from the group consisting of —Cl, —Br and —I; R' is a radical selected from the group consisting of halogen radicals, hydrocarbyl radicals and hydrocarbyl radicals wherein one or more of the hydrogen radicals present therein may be substituted with halogen radicals; and n is an integer of from 0 to 1, and

wherein said zero valent Group VIII metal catalyst is susceptible to reaction with said cyanide ion to yield a catalytically-inactive Group VIII metal compound, said zero valent Group VIII metal catalyst being represented by compounds having the general formula:

MLm

wherein M is a Group VIII metal, L is a ligand capable of coordinating with M selected from the group consisting of CO; ligands represented by the general formula R_3Y wherein R is independently selected from the group consisting of hydrogen and hydrocarbyl radicals and Y is selected from the group consisting of N, P, As and Sb; hydrocarbon residues; ethers; and ketones, m being an integer of from about 2 to about 6,

the improvement comprising electrochemically converting said catalytically-inactive Group VIII metal compound into said zero valent Group VIII metal catalyst.

4,499,026

NUCLEOPHILIC SUBSTITUTION PROCESS

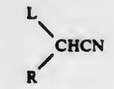
Barbara C. Stahly, and G. Patrick Stahly, both of Baton Rouge, La., assignors to Ethyl Corporation, Richmond, Va.

Continuation-in-part of Ser. No. 411,554, Aug. 25, 1982, abandoned. This application Dec. 23, 1982, Ser. No. 452,618

Int. Cl.³ C07C *121/50*

U.S. Cl. 260—465 R **19 Claims**

1. A process which comprises reacting a nitrobenzene which is devoid of halogen on the aromatic ring with an alpha-haloacetonitrile corresponding to the formula:



wherein L is halo and R is an alkyl group containing 1-10 carbons in an inert substantially anhydrous dipolar aprotic solvent and in the presence of a strong alkali metal compound

base so that the nitrile undergoes a nucleophilic substitution on an unsubstituted ring carbon of the nitrobenzene during which the alpha-halo substituent functions as a leaving group, thereby forming a 2-(nitrobenzene)acetonitrile.

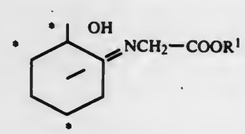
4,499,027

PROCESS FOR PREPARING OPTICALLY ACTIVE [(3-AMINO-3-CARBOXY)PROPYL-1]PHOSPHINIC ACID DERIVATIVES

Nobuto Minowa, Yokohama; Shunzo Fukatsu; Kunitaka Tachibana, both of Tokyo; Taro Niida, Yokohama, and Sadaaki Mase, Tokyo, all of Japan, assignors to Meiji Seika Kaisha, Ltd., Tokyo, Japan

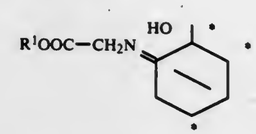
Filed May 18, 1984, Ser. No. 611,686
Claims priority, application Japan, May 27, 1983, 58-92448
Int. Cl.³ C07F *9/30*
U.S. Cl. 260—502.5 G **16 Claims**

1. A process for preparing optically active [(3-amino-3-carboxy)propyl-1]phosphinic acid derivatives, which comprises reacting a compound represented by the formula (I)-1:



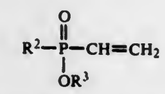
(I)-1

wherein R^1 represents a straight or branched chain alkyl group having 1 to 5 carbon atoms, an aryl group or an aralkyl group; and the absolute configurations of the three asymmetric carbon atoms indicated by * are each S-form or a compound represented by the formula (I)-2:



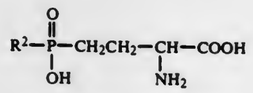
(I)-2

wherein R^1 have the same meaning as defined above; and the absolute configurations of the three asymmetric carbon atoms indicated by * are each R-form with a compound represented by the formula (II):



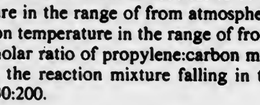
(II)

wherein R^2 and R^3 may be the same or different and each represent a straight or branched chain alkyl group having 1 to 5 carbon atoms, an aryl group or an aralkyl group, in the presence of a base, and subjecting the resulting compound to hydrolysis to form the optically active [L-(3-amino-3-carboxy)propyl-1]phosphinic acid derivatives represented by the formula (III)-1:



(III)-1

wherein R^2 have the same meaning as defined above; and the absolute configuration of the amino acid is L-form or [D-(3-amino-3-carboxy)propyl-1]phosphinic acid derivatives represented by the formula (III)-2:



(III)-2

wherein R^2 have the same meaning as defined above; and the absolute configuration of the amino acid is D-form.

4,499,028

PREPARATION OF ISETHIONIC ACID

Kermit D. Longley, Park Forest, Ill., assignor to Witco Chemical Corporation, New York, N.Y.

Filed Sep. 7, 1982, Ser. No. 415,119
Int. Cl.³ C07C *143/02, 143/16*
U.S. Cl. 260—513 R **7 Claims**

1. A method for preparation of isethionic acid comprising;
forming a reaction mixture consisting essentially of an alkali metal isethionate and a molar excess of hydrochloric acid, the hydrochloric acid being in the form of anhydrous gaseous hydrogen chloride or a concentrated aqueous solution, the alkali metal isethionate being in the form of a substantially saturated aqueous solution when the hydrochloric acid is anhydrous, and the alkali metal isethionate being in a substantially dry state when the hydrochloric acid is in the form of a concentrated aqueous solution, and reacting the alkali metal isethionate with the hydrochloric acid to form isethionic acid.

4,499,029

ISOBUTYRYL FLUORIDE MANUFACTURE

Carlo Scaccia, Worthington, and John R. Overley, Westerville, both of Ohio, assignors to Ashland Oil, Inc., Ashland, Ky.

Filed Jun. 15, 1983, Ser. No. 504,702
Int. Cl.³ C07C *51/58*
U.S. Cl. 260—544 A **5 Claims**

1. The process for preparing isobutyryl fluoride consisting essentially of passing a substantially anhydrous reaction mixture of propylene, carbon monoxide and hydrogen fluoride through at least two continuous flow reaction zones and adding incremental amounts of substantially anhydrous propylene and carbon monoxide to the reaction mixture between reaction zones said process being carried out with a residence time in the reaction zones of from 15 seconds to 10 minutes, at a reaction pressure in the range of from atmospheric to 2200 p.s.i.a. at a reaction temperature in the range of from 0° C. to 100° C. with the molar ratio of propylene:carbon monoxide:hydrogen fluoride in the reaction mixture falling in the range of from 1:5:5 to 1:30:200.

4,499,030

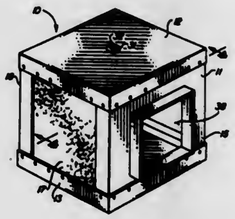
REVERSIBLE HOUSING FOR EVAPORATIVE COOLER

Biven Stewart, 5402 E. Pinchot, Phoenix, Ariz. 85018

Filed Jan. 16, 1984, Ser. No. 571,074
Int. Cl.³ B01F *3/04*
U.S. Cl. 261—3 **7 Claims**

1. An evaporative air temperature conditioner adapted for installation to draw and impel exterior air into a building comprising:
a housing having a generally horizontal positionable bottom pan-like member forming a sump, a similar generally horizontally positioned but inverted top pan-like member and upstanding side members,
the side, top and bottom members being connectable to form a space therewithin to enclose an air blower means,
at least one air admitting, air permeable, water impregnable pad mounted in one of said side members and closing an opening provided therefore,
another of said side members providing an opening for sealably receiving an air duct means which is connectable with the air blower means mountable in said housing,

each bottom and top member being provided with an aperture extending therethrough in a common location,
a water overflow pipe,
means for connecting said pipe to extend through said aperture in said bottom member with one end thereof positioned a predetermined distance above an inside surface of said bottom member, and the other end of said pipe being connectable to a drain pipe,
a water delivery means,
means extending through said aperture in said top member for connecting said water delivery means to an inside surface of said top member,



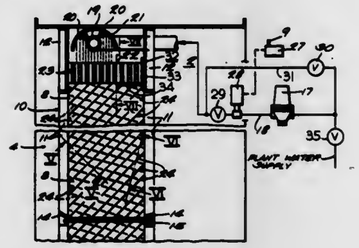
said water delivery means having one end positioned over the top of said pad and its other end connectable to a pump mounted in the sump formed by said bottom member,
said top and bottom members being interchangeable with each other such that when said top member is inverted to form the bottom of the housing it forms a sump and said overflow pipe is connectable with said aperture formed therein, and
said bottom member when inverted forms the top of said housing with said water delivery means connectable through its aperture to complete a water delivery system to the top of said pad.

4,499,031

EVAPORATIVE GAS TREATING SYSTEM

Robert W. Sexton, and Richard L. Smith, both of Louisville, Ky., assignors to Allis-Chalmers Corp., Milwaukee, Wis.

Filed Sep. 27, 1982, Ser. No. 423,536
Int. Cl.³ B01F *3/04*
U.S. Cl. 261—66 **8 Claims**



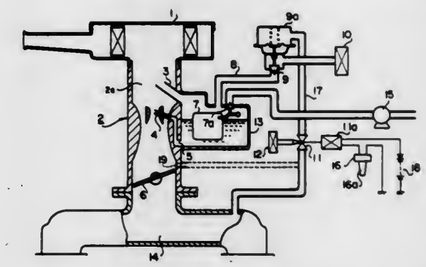
1. An evaporative gas treating system for conditioning a gas stream, comprising:
a housing forming a duct having upstream and downstream ends adapted to conduct the gas stream through the housing;
a vertical panel of flow-through evaporative media secured across the upstream end of the duct;
a blower mounted within the duct downstream from the evaporative panel adapted to draw the gas stream through the duct;
liquid dispersal means adapted to conduct an evaporative liquid into the panel which evaporates into the gas stream as it flows through the panel;
a liquid distribution pad overlying the upper edge of said panel beneath the liquid dispersal means for dispersal of liquid across the upper edge of said panel;
said liquid dispersal means spanning the length of said liquid distribution pad and being off-set from the center of said pad toward the upstream edge of the pad;
a drain plate member of a generally L-shaped cross-sectional configuration spanning the length of said liquid distribution pad, said member including a vertically extending plate portion encasing the downstream edge of the pad and a generally horizontal plate portion extending a preselected distance between the pad and the top of the panel adapted to conduct liquid in the pad toward the upstream side of the panel;
said liquid dispersal means including an inverted U-shaped channel spanning the width of the panel aligned above its upper edge, and a pipe extending coextensively beneath said channel having a plurality of orifices distributed across the arcuate upper half of the pipe adapted to direct sprays of liquid against the total interior face of the channel to effect a relatively uniform distribution of the liquid widthwise across the upper edge of the panel as the liquid falls from the channel;
liquid supply means connected with said liquid dispersal means adapted to conduct a metered flow of liquid to said dispersal means; and
sensor means mounted within the duct downstream from the blower for measuring a preselected condition in the gas stream proximate said sensor means, said sensor means being operatively connected with said liquid supply means to selectively increase and decrease the flow of liquid into the panel through the dispersal means to maintain said condition in the gas stream at a predetermined magnitude downstream from the panel.

4,499,032

SYSTEM FOR PREVENTING THE PERCOLATION OF FUEL IN A CARBURETOR

Kenji Shibano, Musashimurayama, Japan, assignor to Fuji Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 18, 1983, Ser. No. 485,846
Claims priority, application Japan, Apr. 20, 1982, 57-65998
Int. Cl.³ F02M *5/08*
U.S. Cl. 261—72 R **5 Claims**



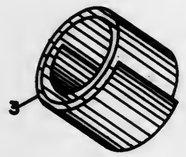
1. A system preventing the percolation of fuel in a carburetor for an engine having a float chamber, comprising:
a first passage communicating a space of said float chamber with the atmosphere;
means comprising a diaphragm valve with a vacuum chamber for closing said passage;
an inner vent pipe for communicating the space of the float chamber with an intake passage of said carburetor; and
means for sensing a high temperature which would cause the percolation of the fuel and for opening said diaphragm valve.

4,499,033

CLOSELY COILED PACKING ELEMENT, METHOD OF MANUFACTURE, AND PROCESS FOR PURIFYING GASES

Lowell E. Huffman, 10 Albe Dr., Newark, Del. 19702

Continuation-in-part of Ser. No. 309,602, Oct. 8, 1981, abandoned. This application Apr. 7, 1983, Ser. No. 482,838
Int. Cl.³ B01F 3/04
U.S. Cl. 261—94 7 Claims



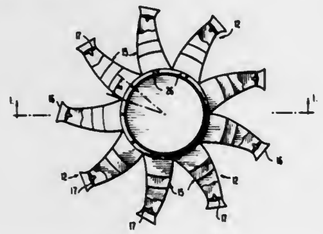
1. A closely coiled multilayer element for purifying compressed gasses of entrained solids and liquids, comprising a coiled cylinder around a central axis where each coiled multilayer element has more than one complete coil, each successive coil being sufficiently close to the previous coil to entrap solids and liquids between successive layers thereby preventing their re-entrainment into the compressed gasses wherein the closely coiled multilayer element retains its integrity when wet and when uncoiled has a solid surface with the following dimensions: Length from about 0.2 to about 1.0 inches, Width from about 0.02 to about 0.25 inches and Depth, about 0.001 to about 0.02 inches.

4,499,034

VORTEX-AUGMENTED COOLING TOWER-WINDMILL COMBINATION

John E. McAllister, Jr., Aiken, S.C., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Sep. 2, 1982, Ser. No. 414,193
Int. Cl.³ B01F 3/04
U.S. Cl. 261—109 11 Claims



1. A vertical cooling tower for cooling water and generating power from a flow of air through the tower, said tower being defined generally by a surface of revolution and having fixed omnidirectional air inlet means at the lower end for introducing atmospheric air into the tower in a vortical flow pattern regardless of wind direction, the upper end of the tower being open to discharge said introduced air upwardly in a vortex draft pattern, means to introduce water to be cooled in the interior of the tower and wind turbine means disposed in said air inlet means for generating power;

said fixed omnidirectional air inlet means comprising a plurality of passages, each passage having a first portion located adjacent to the wind turbine means and a second portion located adjacent to the outlet end;

each of said plurality of passages including additional air inlet means downstream of said wind turbine means to reduce boundary layer effects;

the cross-sectional area of each of said plurality of passages increasing progressively from said first portion of the passage adjacent to the wind turbine means to said second portion adjacent to the outlet end;

the configuration of each said passage adjacent the wind turbine means being circular for closely encircling a rotating element of the wind turbine means, said cross-sectional configuration progressively merging into a rectangular outline terminating at the intersection with a lower end of the surface of revolution defining said tower;

said additional air inlet means comprising an elongated horizontal opening defined on one side by a terminal downstream margin of a horizontal wall of each of said plurality of passages, the opposite side of the opening being defined by the upstream terminal margin of a succeeding horizontal wall of the passage means;

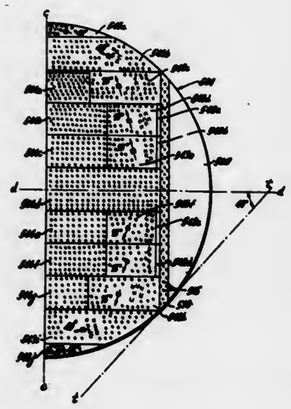
the cross-sectional configuration of each of said plurality of passages being rectangular from at least said additional air inlet means to the outlet end.

4,499,035

GAS-LIQUID CONTACTING TRAY WITH IMPROVED INLET BUBBLING MEANS

Robert D. Kirkpatrick, Tonawanda, and David W. Weller, Burt, both of N.Y., assignors to Union Carbide Corporation, Danbury, Conn.

Continuation of Ser. No. 778,797, Mar. 17, 1977, Pat. No. 4,275,021. This application Oct. 29, 1980, Ser. No. 201,770
The portion of the term of this patent subsequent to Jun. 23, 1998, has been disclaimed.
Int. Cl.³ B01F 3/04
U.S. Cl. 261—114 JP 11 Claims



1. In a gas-liquid contacting tray of the slotted sieve-type for use in a distillation column to effect intimate contact between rising vapor and liquid flowing across a gas-liquid contacting member of the tray having main flat top and bottom surfaces from a liquid inlet adjacent one edge of the contacting member along a liquid flow path on said main top surface including a diverging flow section adjacent said inlet to a liquid discharge adjacent an opposite edge of said contacting member, with a plurality of fixed sized openings distributed across the contacting member and extending therethrough with walls normal to said main flat top and bottom surfaces for gas flow, and a plurality of elevated portions formed from said member across said surfaces each with an upper surface raised from said main flat top surface having a front leading edge separated from said main flat top surface to form an elongated slot opening therewith of greater width than height, the raised upper surface being inclined to said main top surface and having a back edge integral with such surface and each elevated portion being spaced from adjacent elevated portions by said main flat top surface entirely surrounding such elevated portion, the improvement comprising:

(a) a first imperforate wall member contiguously associated and coextensive with an edge of said inlet surface transverse to the liquid flow path and extending substantially vertically upwardly from such edge to a substantially uniform height;

(b) an intermediate wall member with main flat top and bottom surface contigously associated and coextensive with the upper edge of said first wall member extending horizontally therefrom in the direction of said liquid discharge to a substantially uniform extent, with a plurality of fixed size openings uniformly distributed across said intermediate wall member and extending therethrough with walls normal to said main flat top and bottom surfaces for gas flow, to initiate bubbling in liquid flowing across said intermediate wall member from said inlet surface over said first imperforate wall member;

(c) a second imperforate wall member contiguously associated and coextensive at its upper edge with the downstream edge of said intermediate wall member and extending substantially vertically downwardly therefrom and contiguously associated and coextensive at its lower edge with said one edge of said contacting member, whereby liquid which has been flowed across said intermediate wall member and in which bubbling has been initiated is introduced to said gas-liquid contacting member for flow thereacross to said discharge, and

(d) a band portion of said contacting member adjacent to said liquid inlet and extending therefrom downstream for distance of from 20% to 50% of the length of the tray diametral streamline from said liquid inlet surface to the tray transverse center line and extending transversely outwardly from the tray diametral streamline for distance at least 25% of the transverse length of said liquid inlet surface, with angular orientation of slot openings in said contacting member first band portion with respect to and away from the tray diametral streamline such that the slot angle of individual slots is greater than the angle formed by the diametral streamline and a tangent line at the contacting member outer edge at the point of intersection with said liquid inlet surface.

4,499,036

MICROWAVE CURING OF LATEX-BASED COMPOSITIONS

J. Barry Hawkes, Jr., Watertown, Mass., assignor to W. R. Grace & Co., Cambridge, Mass.

Continuation of Ser. No. 419,376, Sep. 20, 1982,. This application Jul. 20, 1984, Ser. No. 632,682
Int. Cl.³ B29H 5/26
U.S. Cl. 264—26 27 Claims

1. A process of forming a cured latex-based foam composition comprising the steps of heating a fluid rubber latex containing a gelling agent, a curing agent and a blowing agent to effect gelling and foaming thereof and removal of a major proportion of the water initially contained therein and subjecting the resultant gelled and foamed composition to microwave radiation to effect curing thereof, said microwave radiation being modulated to provide substantially uniform and complete curing of said gelled and foamed composition.

4,499,037

METHOD FOR THE RECOVERY OF THERMOPLASTIC FROM PIPING FOR REPROCESSING

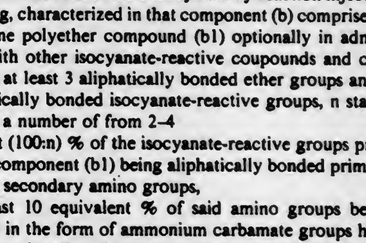
Ray A. Parker, Jr., Brownwood, Tex., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 281,755, Jul. 9, 1981, Pat. No. 4,408,976. This application Jun. 15, 1983, Ser. No. 504,542
Int. Cl.³ B29C 29/00
U.S. Cl. 264—37 3 Claims

1. A process for recovery of thermoplastic from thermoplastic piping having walls sufficiently thick to be self-supporting, comprising the steps of:

(a) cutting said piping into a continuous spiral ribbon,

(b) straightening said continuous spiral ribbon into a continuous ribbon of thermoplastic without substantial curvature, at least temporarily relieving the plastic memory of said thermoplastic ribbon, and



(c) cutting said straightening ribbon into pieces while said plastic ribbon is relieved of its plastic memory.

4,499,038

PROCESS FOR THE PRODUCTION OF MICROCELLULAR MOLDINGS FROM DIISOCYANATE AND COMPOUNDS CONTAINING GROUPS OBTAINED BY REACTING AMINO GROUPS WITH CARBON DIOXIDE

Walter Schäfer, Cologne; Hans-Joachim Meiners, Leverkusen; Klaus Seel, Cologne; Wolfgang Reichmann, Hilden; Kuno Wagner, Leverkusen, and Kurt Findeisen, Odenthal, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Nov. 7, 1983, Ser. No. 549,040
Claims priority, application Fed. Rep. of Germany, Nov. 20, 1982, 3242925
Int. Cl.³ C08G 18/14
U.S. Cl. 264—51 9 Claims

1. A process for the production of polyurea-based microcellular moldings comprising reacting

(a) at least one diisocyantate or polyisocyanate containing only aromatically bound isocyanate groups,

(b) at least one compound containing at least two isocyanate reactive groups, and

(c) optionally the auxiliaries and additives known in polyurethane chemistry, in closed molds, components (a)–(c) being processed as a one-shot system by reaction injection molding, characterized in that component (b) comprises at least one polyether compound (b1) optionally in admixture with other isocyanate-reactive coupounds and containing at least 3 aliphatically bonded ether groups and n aliphatically bonded isocyanate-reactive groups, n standing for a number of from 2–4

(i) at least (100:n) % of the isocyanate-reactive groups present in component (b1) being aliphatically bonded primary and/or secondary amino groups,

(ii) at least 10 equivalent % of said amino groups being present in the form of ammonium carbamate groups having a functionality of two in the isocyanate addition reaction, obtained by reacting aliphatically bonded, primary or secondary amino groups with carbon dioxide,

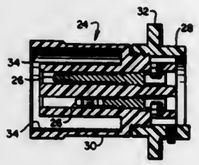
(iii) the unmodified compounds containing at least 3 ether groups having a molecular weight of from 200 to 10,000 and (iv) at least 0.2 equivalent % of all isocyanate-reactive groups of the total component (b) being ammonium carbamate groups.

4,499,039

METHOD FOR MAKING PLASTIC ARTICLE WITH FIBROUS REINFORCEMENT

Arthur H. Berg, Chase Rd., Fabius, N.Y. 13063

Filed Dec. 29, 1981, Ser. No. 335,543
Int. Cl.³ B29G 5/00
U.S. Cl. 264—137 15 Claims



1. In a method of manufacturing a molded plastic electrical connector component having an open mesh glass cloth reinforcement, comprising the steps of:

first providing an open, woven mesh glass cloth having a glass fiber content of from about 15% to about 50% by volume, and treating said cloth with an uncured thermosetting resin coating in an amount which ranges between about 20 and about 50% of the weight of the coated cloth;

then shaping the thermosetting resin-coated open mesh glass cloth by wrapping one or more layers of the cloth about a mandrel;

then over-wrapping the cloth under tension with a release film;

then curing the thermosetting resin coating to the insoluble and infusible state to form the reinforcement;

then placing the cured resin-coated open mesh glass reinforcement on or over a suitable cored section in a mold used to produce the connector component, said mold being suited to injection molding of a plastics material therein;

then injection molding an initially solid plastics material under conditions of elevated pressure and elevated temperature sufficient to render said plastics material molten and permitting the molten plastics material injected into the mold cavity to flow on, through and about the shaped open mesh glass cloth reinforcement substantially without deformation thereof to form the molded connector component having the reinforcement substantially imbedded therein, whereby the connector component is reinforced substantially uniformly over the area in which the reinforcement is imbedded; and

hardening the molded plastics material and removing the connector component from the mold.

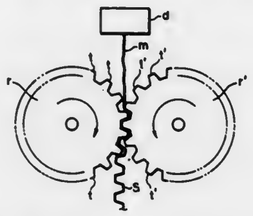
4,499,040

PRODUCTION OF STAMPED PLASTIC SHEET

Kenichi Maemoto, Osaka, and Katsushi Jiano, Ehime, both of Japan, assignors to Nissen Chemical Industries Co., Ltd., Ehime, Japan

Filed Apr. 19, 1982, Ser. No. 369,771
Claims priority, application Japan, Apr. 20, 1981, 56-60345; Oct. 30, 1981, 56-214867; Jan. 25, 1982, 57-10449
Int. Cl.³ B29C 17/02
U.S. Cl. 264—167 4 Claims

1. A method of preparing a stamped sheet by means of a pair of stamping rolls having intermeshing projections disposed in a liquid refrigerant comprising immersing a film-like sheet of molten plastic material having a uniform thickness in said liquid refrigerant to form a skin on the surface of the molten material, immediately passing the molten plastic material having a skin thereon between said stamping rolls, stamping the material to tension the material by engagement of the material with the crests only of the projections while maintaining the uniform thickness of said sheet and removing said sheet from



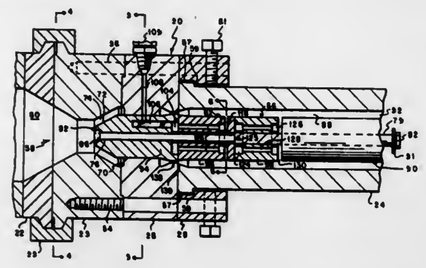
the refrigerant after the interior of the material has been solidified.

4,499,041

COEXTRUSION PROCESS FOR PRODUCING MULTIPLE LAYERED THERMOPLASTIC PIPE

Granville J. Hahn; Raleigh N. Rutledge, and Jackie D. Murley, all of Big Spring, Tex., assignors to Cosden Technology, Inc., Dallas, Tex.

Filed May 23, 1983, Ser. No. 497,312
Int. Cl.³ B29F 3/04
U.S. Cl. 264—173 5 Claims



1. A process for making multiple layered thermoplastic pipe, comprising:

(a) transporting a first portion of an annular stream of a first thermoplastic material through an annular main extrusion passageway having an annular restriction therein, the annular restriction reuniting the thermoplastic material after flow disruption thereof;

(b) transporting a second portion of the first thermoplastic material through a coextrusion passageway axially disposed within the annulus formed by the main extrusion passageway;

(c) balancing any difference in flow rates between the thermoplastic material in the main extrusion passageway and the thermoplastic material in the coextrusion passageway by restricting the flow of thermoplastic through the coextrusion passageway;

(d) applying an annular stream of a second thermoplastic material to the inner surface of the annular stream of the first portion of the first thermoplastic material flowing thereover, the stream of the second thermoplastic material applied downstream of the main extrusion passageway annular restriction; and

(e) applying the annular stream of the second portion of the first thermoplastic material to the inside surface of the annular stream of the second thermoplastic material flowing thereover, the annular stream of the second portion of the first thermoplastic material applied downstream of the application of the second thermoplastic material.

4,499,042

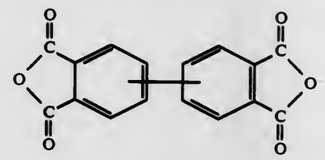
PRODUCTION OF HEAT-SHRINKABLE POLYIMIDE FILMS

Takashi Ishizuka; Yasuhiro Moriyama, and Masao Nakamura, all of Osaka, Japan, assignors to Nitto Electric Industrial Co., Ltd., Osaka, Japan

Continuation of Ser. No. 238,279, Feb. 25, 1981, abandoned. This application Apr. 4, 1983, Ser. No. 481,960
Claims priority, application Japan, Feb. 25, 1980, 55/23020
Int. Cl.³ B29D 7/02
U.S. Cl. 264—205 6 Claims

1. A process for producing a heat-shrinkable polyimide film which comprises forming a film by

flow molding a solution of organic solvent-soluble polyamide acid having an inherent viscosity of about 0.5 or more obtained by reacting a biphenyltetracarboxylic acid dianhydride represented by the general formula



with an aromatic diamine other than aromatic azo diamines in an organic polar solvent, drying said film until the volatile material content becomes about 10% by weight or less to produce a polyimide film wherein at least about 50% by weight of polyamide acid is converted into polyimide, and stretching thereafter said polyimide film in at least one direction to a stretching ratio of about 1.05 to about 5 to provide heat-shrinkability.

4,499,043

PROCESS FOR PRODUCING A CELLULOSE ESTER SUPPORT

Masao Yabe; Kyoichi Naruo, both of Shizuoka, and Kazuhiro Ono, Kanagawa, all of Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed May 6, 1982, Ser. No. 375,631
Claims priority, application Japan, May 6, 1981, 56-67831
Int. Cl.³ B29D 7/02
U.S. Cl. 264—207 5 Claims

1. A process for producing a cellulose ester support comprising the steps of:

providing a cellulose ester;

removing alkaline earth metal from the cellulose ester to the extent that the cellulose ester contains 30 ppm or less alkaline earth metal;

adding a solvent for the cellulose ester;

adding a plasticizer;

mixing the cellulose ester, solvent and plasticizer to form a mixture;

extruding the mixture to form the solution film;

allowing the solvent to evaporate;

delaminating the thus formed film; and

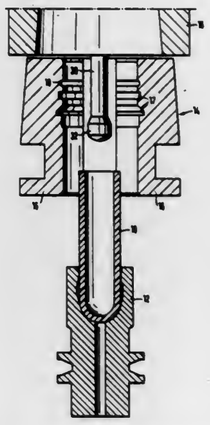
drying the delaminated film.

4,499,044

METHOD FOR MAKING A PARISON FOR BLOWMOLDING OF A HOLLOW ARTICLE

Norbert Höne; Claus Horwege, and Otto Rosenkranz, all of Hamburg, Fed. Rep. of Germany, assignors to Krupp Corpoplast Maschinenplast GmbH, Hamburg, Fed. Rep. of Germany

Filed Dec. 30, 1981, Ser. No. 335,884
Claims priority, application Fed. Rep. of Germany, Jan. 16, 1981, 3101284
Int. Cl.³ B29C 17/07
U.S. Cl. 264—521 3 Claims



1. In a method of making a parison for blow molding a hollow body of thermoplastic material, in particular a bottle, wherein the parison includes an upper finish portion, a neck portion adjacent the finish portion and a closed bottom portion opposite the finish portion, said method comprising the steps of: heating the finish portion and the neck portion of the parison to welding and forming temperature, enclosing the heated portion of the parison in a finish mold, inserting a forming mandrel into the parison to urge plastic heated material from the finish portion into a part of the finish mold and secure the finish portion to said mold, further axially stretching the parison portion enclosed in said mold by a stretching pin to substantially reduce the wall thickness in the remaining finish portion and neck portion and shaping the final profile of the finish portion by applying a pressure medium.

4,499,045

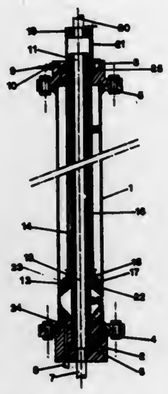
PROCESS FOR THE PRODUCTION OF TUBES OF A MOLECULARLY ORIENTED PLASTIC

Marc Obsomer, Brussels, Belgium, assignor to Solvay & Cie (Societe Anonyme), Brussels, Belgium

Filed Aug. 5, 1982, Ser. No. 405,708
Claims priority, application France, Aug. 6, 1981, 81 15427
Int. Cl.³ B29C 17/07
U.S. Cl. 264—532 4 Claims

1. A process for the production of a tube of a molecularly oriented plastic, wherein a section of a tube, heated to the temperature at which stretching induces a molecular orientation of the plastic, is placed in a mold and a portion of the section of the tube is clamped in a sleeve and the sleeve is caused to undergo a relative movement along the section of the tube while a fluid under pressure is introduced into the tube so as to cause radial expansion to an internal wall of the mold of portions of the tube at the outlet of the sleeve progressively along the section and the resulting oriented tube is finally cooled and removed from the mold, characterized in that the portions of the tube undergoing radial expansion slide over an annular surface which is located at the outlet of the sleeve and

extends up to the internal wall of the mold, said annular surface providing a counter-balancing support to the fluid under pressure, thereby enabling the molecular orientation of the plastic tube to be controlled.

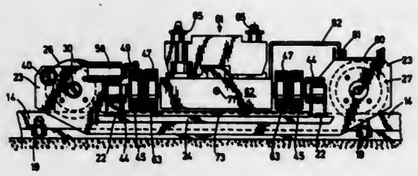


4,499,046

MACHINE FOR MONITORING NUCLEAR REACTOR EQUIPMENT AT ITS STORAGE STATION

Yves-Marie Castrec, Nanterre, and Jean-Pierre Launay, Marly Le Roi, both of France, assignors to Framatome & Cie., Courbevoie, France

Filed Nov. 16, 1981, Ser. No. 321,513
Claims priority, application France, Dec. 5, 1980, 80 25865
Int. Cl.³ G21C 17/00
U.S. Cl. 376—245 2 Claims



1. Machine for monitoring internal equipment of a nuclear reactor, when stored in the swimming pool of said reactor, by using monitoring apparatuses to be presented at predetermined stations in accordance with a regular lattice under a lower plate of said equipment, comprising

(a) a first longitudinal carriage (16), movable on rails (14) resting at the bottom of said swimming pool and disposed under a support (6, 7) for storing said equipment, with means (26,32,33) for displacement in predetermined steps and immobilization on said rails;

(b) a transverse beam (46) borne by said first carriage (16) and movable thereon in a direction perpendicular to that of the displacement direction of said first carriage (16);

(c) a second transverse carriage (61) equipped with monitoring apparatuses (65) borne by said beam (46) and movable thereon in the same direction as that of the displacement of said beam (46) on said first carriage (16);

(d) means (51, 57, 58) for displacement by fixed steps of said beam (46) on said first carriage (16); and

(e) means (71, 72, 73) for causing movement of said second carriage (61) on said beam (46) from the movement of said beam (46) on said first carriage (16), said means comprising a chain (71) forming a loop by each of its ends being fixed on each end of said second carriage (61), after reversal on two wheels (72) solid with the ends (48) of said beam, the portion of said loop opposite said second carriage (61) being made solid with a fixed point (73) connected to the chassis of said first carriage (16);

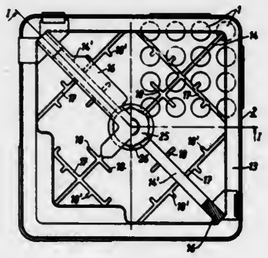
(f) the displacements of said first carriage (16) on said rails (14), said transverse beam (46) on said first carriage (16) and said second carriage (61) on said beam (46) all being carried out in substantially the same horizontal plane.

4,499,047

FUEL ASSEMBLY WITH A TOP PLATE ARRANGED ABOVE THE UPPER END SURFACES OF THE FUEL RODS

Bo Borrman, and Bengt Ode, both of Västerås, Sweden, assignors to AB Asea-Atom, Västerås, Sweden

Filed Oct. 30, 1981, Ser. No. 315,605
Claims priority, application Sweden, Dec. 19, 1980, 80089873
Int. Cl.³ G21C 9/00
U.S. Cl. 376—434 6 Claims



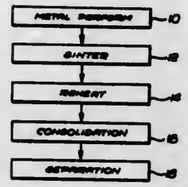
1. A fuel assembly for a boiling water reactor comprising:
a plurality of fuel rods having vertical center lines;
at least one bottom plate supporting said fuel rods;
a vertical fuel channel of rectangular cross-section;
partition means dividing said fuel channel into four sub-channels, each sub-channel enclosing a bundle of said fuel rods positioned by means of a plurality of spacer devices to constitute a sub-assembly of fuel rods, said spacer devices having a limited freedom of movement in an axially upward direction in relation to said fuel channel; and,
means for limited movement of said fuel rods in an axially upward direction, said movement limited means including a top plate positioned a vertical distance above said fuel rods at room temperature, said top plate comprising:
a central member arranged in detachable mechanical connection with said partition means,
a frame disposed with four sides adjacent to corresponding sides of said fuel channel,
four substantially horizontally directed diagonal bars rigidly connected to corresponding corner portions of said frame at one end and to said central member at the other end, and,
four substantially horizontally directed cross bars arranged to cross said diagonal bars, said diagonal bars having a mid-portion rigidly connected to a mid-portion of a corresponding cross bar and each of said cross bars having a plurality of horizontally directed first elongated projections each projecting laterally from said cross bar in a direction towards the vertical center line of a corresponding fuel rod,
said frame having a corner portion positioned vertically above a first group of fuel rods belonging to a said sub-assembly, a second group of fuel rods belonging to the same said sub-assembly being positioned vertically below free end portions of said first elongated projections, and said corner portion and each of said first elongated projections being contactable by corresponding fuel rods upon a sufficiently large vertically upwardly-directed movement of said corresponding fuel rods.

4,499,048

METHOD OF CONSOLIDATING A METALLIC BODY

Francis G. Hanejko, Irvine, Calif., assignor to Metal Alloys, Inc., Signal Hill, Calif.

Filed Feb. 23, 1983, Ser. No. 469,100
Int. Cl.³ B22F 3/00
U.S. Cl. 419—49 10 Claims



1. A method of consolidating a metallic body comprising the steps of:

(a) forming an article of manufacture from powdered metal;

(b) sintering said article of manufacture so as to increase the strength thereof;

(c) coating said article of manufacture with a sacrificial cermic coating;

(d) providing a bed of heated, generally spheroidal ceramic particles;

(e) compacting said coated article of manufacture in said heated bed of generally spheroidal ceramic particles under high pressure to thereby consolidate said coated article of manufacture into a dense, desired shape; and

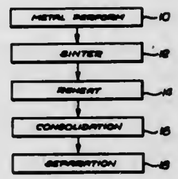
(f) removing said sacrificial ceramic coating such that the surface of said article of manufacture remains substantially free of process-related inperfections.

4,499,049

METHOD OF CONSOLIDATING A METALLIC OR CERAMIC BODY

Francis G. Hanejko, Irvine, Calif., assignor to Metal Alloys, Inc., Signal Hill, Calif.

Filed Feb. 23, 1983, Ser. No. 469,101
Int. Cl.³ B22F 3/00
U.S. Cl. 419—49 10 Claims



1. A method of consolidating a metallic or ceramic body comprising the steps of:

(a) forming an article of manufacture from powdered metal or ceramic materials;

(b) sintering said article of manufacture so as to increase the strength thereof;

(c) providing a bed of heated, generally spheroidal ceramic particles which have been coated with a thermally stable, generally non-reactive lubricant; and

(d) compacting said article of manufacture in said heated bed of generally spheroidal coated ceramic particles under high pressure to thereby consolidate said article of manufacture into a dense, desired shape.

4,499,050

ALUMINUM-MANGANESE-TIN ALLOYS WITH IMPROVED PITTING CORROSION RESISTANCE

Hua S. Tong, Morris Township, Morris County, N.J., assignor to Revere Copper and Brass Incorporated, New York, N.Y.

Filed Jun. 6, 1983, Ser. No. 501,265
Int. Cl.³ C22C 21/00
U.S. Cl. 420—528 12 Claims

1. An aluminum alloy composition consisting essentially of 0.2 to 2 weight percent manganese and 0.2 to 1.5 weight percent tin, with the balance being essentially aluminum.

4,499,051

PITTING RESISTANT ALUMINUM ALLOYS

Hua S. Tong, Morris Township, Morris County, N.J., assignor to Revere Copper and Brass Incorporated, New York, N.Y.

Filed Jun. 6, 1983, Ser. No. 501,266
Int. Cl.³ C22C 21/00
U.S. Cl. 420—540 12 Claims

1. An aluminum alloy composition consisting essentially of 0.2 to 2 weight percent manganese, 0.02 to 0.4 weight percent lead, and 0.02 to 0.2 weight percent bismuth, with the balance being essentially aluminum.

3. The composition according to claim 1 wherein said composition contains 0.03 to 0.5 weight percent zinc, and at least one of the elements selected from the group consisting of

(a) 0.05 to 0.5 weight percent titanium,

(b) 0.03 to 0.2 weight percent cobalt,

(c) 0.03 to 0.5 weight percent zirconium, and

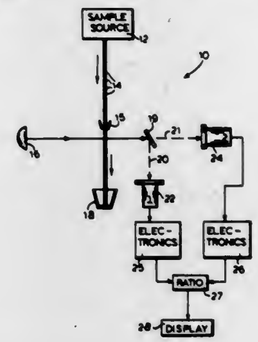
(d) 0.03 to 0.1 weight percent boron.

4,499,052

APPARATUS FOR DISTINGUISHING MULTIPLE SUBPOPULATIONS OF CELLS

Mack J. Fulwyler, Sunnyvale, Calif., assignor to Becton, Dickinson and Company, Paramus, N.J.

Filed Aug. 30, 1982, Ser. No. 412,648
Int. Cl.³ G01N 21/64, 33/50
U.S. Cl. 422—52 10 Claims



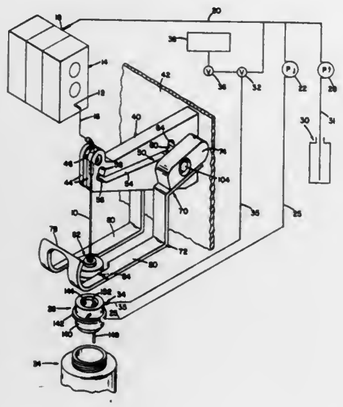
1. An apparatus for distinguishing multiple subpopulations of particles, each of which have been labeled with different fluorochromes in pre-determined ratios comprising: means for exciting the fluorochromes on each particle as it flows in a liquid path; means for detecting the quantity of fluorescence emitted by the different fluorochromes associated with each particle and determining the ratio of fluorescence quantities of any two fluorochromes associated with each particle; and means for classifying said particles into a plurality of subpopulations categories by associating said determined ratios with pre-determined ratios.

4,499,053

FLUID SAMPLING

Ronald L. Jones, Harvard, Mass., assignor to Instrumentation Laboratory Inc., Lexington, Mass.

Filed Jun. 10, 1982, Ser. No. 386,892
Int. Cl.³ G01N *1/14*
U.S. Cl. 422—68 **18 Claims**



1. Liquid sample analyzer apparatus having an analysis chamber adapted to receive sample material to be analyzed, sensor means coupled to said analysis chamber for providing an output signal related to a constituent of the sample material,

sampling apparatus comprising a hollow sample intake tube having an inlet port adapted to receive sample material to be analyzed and an outlet port coupled to said analysis chamber,

slider structure that receives said intake tube,

support structure including tube support structure and track structure in predetermined fixed relation to said tube support structure,

means mounting said intake tube on said tube support structure for movement between a reset position and at least two sample intake positions,

manually manipulable drive link structure having a first portion mounted on said track structure for movement along said track structure and a second portion spaced from said first portion, said slider structure being pivotably mounted on and carried by said second portion,

said first portion of said link structure being movable along said track structure to cause said second portion to produce guiding movement of said slider structure to move said intake tube between said reset position in which said inlet port is aligned with a waste receptacle, a first sample position in which said inlet port extends forward of said slider structure and is presented to an operator for insertion into a sample container, and a second sample position in which said inlet port is housed in said slider structure and presented to an operator for connection of a transfer device such as a capillary tube,

and a sampling apparatus control arrangement including

means for flowing sample material through said sample inlet port into said analysis chamber, and

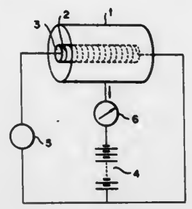
means for flowing cleaning fluid through said analysis chamber and said sampling apparatus in a flushing action.

4,499,054

CATION EMISSION TYPE HALOGENATED HYDROCARBON GAS DETECTING ELEMENT

Masaki Katsura, Yokosuka; Mituo Harata, Kawasaki; Osamu Takikawa, Kamakura, and Masayuki Shiratori, Kawasaki, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Aug. 24, 1982, Ser. No. 411,019
Claims priority, application Japan, Aug. 31, 1981, 56-135414
Int. Cl.³ G01N *27/62*
U.S. Cl. 422—98 **2 Claims**



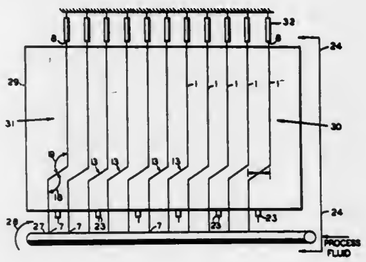
1. In a cation emission type halogenated hydrocarbon gas detecting element comprising a cation source, a heating means and an ion collector electrode, the improvement wherein said cation source consists essentially of Beta-Al_2O_3, wherein substantially all cation species present in said cation source occupy positions in the crystal lattice structure of said Beta-Al_2O_3.

4,499,055

FURNACE HAVING BENT/SINGLE-PASS TUBES

Arthur R. DiNicolantonio, Whippany, and Victor K. Wei, Florham Park, both of N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Sep. 14, 1981, Ser. No. 301,763
Int. Cl.³ C01D *1/32*
U.S. Cl. 422—197 **41 Claims**



1. A fired heater for heating process fluid comprising:

radiant section enclosure means for defining at least one radiant section of said heater,

at least one row of plural, single-pass radiant conduit means extending longitudinally within each of said radiant sections, each of said radiant conduit means having a rigid inlet connection to a common inlet manifold and a rigid outlet connection to receiving means to which process fluid is fed in use such that differential thermal growth of said conduit means is constrained during use of said heater, and

at least one row of burners arranged adjacent to said row of radiant conduit means to heat said radiant conduit means in use,

wherein at least one of said inlet and outlet connections in said row all lie along a common, vertical coil plane, and

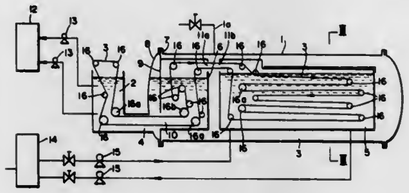
wherein said radiant conduit means in said row are at least partially skewed in substantially parallel planes out of said vertical coil plane such that during operation of said fired heater said skewed conduit means each absorb differential thermal expansions and contractions between adjacent conduit means by changing longitudinal configuration in substantially the same direction with respect to said row of burners.

4,499,056

CONTINUOUS STERILIZING APPARATUS USING HOT WATER

Motoharu Tokano, and Keiichi Kushima, both of Tokyo, Japan, assignors to Q. P. Corporation, Tokyo, Japan

Filed Oct. 26, 1983, Ser. No. 545,942
Claims priority, application Japan, Mar. 18, 1983, 58-44424
Int. Cl.³ A61L *1/00*
U.S. Cl. 422—299 **6 Claims**



1. A continuous sterilizing apparatus comprising:

a pressure tank;

a hot water storage vessel for holding therein hot water at a temperature capable of sterilizing an article to be sterilized, said hot water storage vessel being mounted within said pressure tank;

a heat insulating material provided on the outer periphery of said hot water storage vessel;

an outer frame assembly mounted independently of and along side walls of said hot water storage vessel in spaced relation from the latter so that said heat insulating material is accommodated within the spacing;

a cooling water storage vessel mounted within said pressure tank separately from said hot water storage tank;

a conveyor means for holding and conveying the article to be sterilized through the cooling water in said cooling water storage vessel and also through the hot water in said hot water storage tank;

a group of many sprockets serving as a guide for movement of said conveyor means, said group of many sprockets being disposed at appropriate intervals at least within said hot water storage vessel and said cooling water storage vessel;

rotating shafts serving as rotating centers of the sprockets of said sprocket group; and

bearings for rotatably supporting said rotating shafts, said bearings being attached to said outer frame assembly.

4,499,057

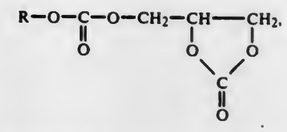
EXTRACTION OF METALS FROM AQUEOUS SOLUTIONS WITH CYCLIC ORGANIC CARBONATES

Michel Burgard, Strasbourg; Marc D. Piteau, Itteville; Alain J. Rollat, Strasbourg Neudorf, and Jean-Pierre G. Senet, La Chapelle La Reine, all of France, assignors to Societe Nationale des Poudres et Explosifs, Paris, France

Division of Ser. No. 139,155, Apr. 14, 1980, Pat. No. 4,423,235.
This application Sep. 22, 1982, Ser. No. 421,723
Claims priority, application France, Apr. 13, 1979, 79 09402
Int. Cl.³ C01G *43/00*
U.S. Cl. 423—8 **9 Claims**

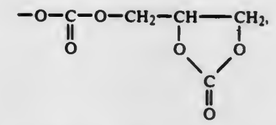
1. Process for the separation, by liquid-liquid extraction, of valuable metal species from an aqueous solution in which they are present, comprising:

(1) bringing the said aqueous solution into contact with an organic phase comprising a compound which is a carbonate having cyclic carbonate groups, of the general formula:

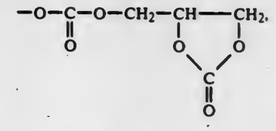


in which R is

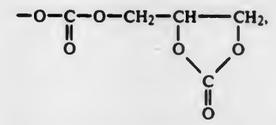
(a) a linear or branched alkyl group which contains from 1 to 20 carbon atoms and is substituted by one to three groups



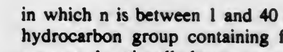
(b) an alicyclic group which contains 4 to 20 carbon atoms and is optionally substituted by one to three groups



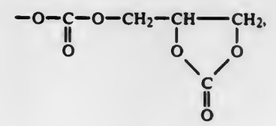
(c) a carboxylate group which contains from 2 to 20 carbon atoms and is optionally substituted by a group



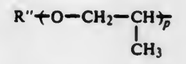
(d) a polyoxyethylene of the formula



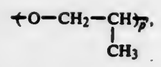
in which n is between 1 and 40 and in which R′ is a hydrocarbon group containing from 1 to 10 carbon atoms and optionally has one or two chains —O—CH_2—CH_2—$_{n'}$, in which n′ is between 1 and 40, which chains are terminated by a group



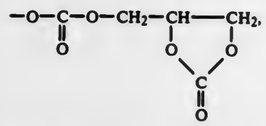
(e) a polyoxypropylene of the formula



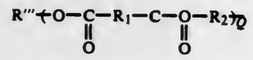
in which p is between 1 and 40 and in which R′ is a hydrocarbon group containing from 1 to 10 carbon atoms and optionally carries one or two chains



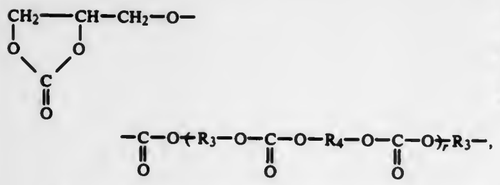
in which p' is between 1 and 40, which chains are terminated by a group



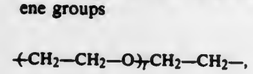
(f) an aryl group containing from 6 to 20 carbon atoms,
(g) a polyester of the formula



in which Q is between 1 and 20, in which R_1 and R_2 are identical or different and are a polymethylene chain having from 1 to 8 carbon atoms or a polyether chain having from 1 to 8 carbon atoms, and in which R' is a hydrocarbon group containing from 1 to 10 carbon atoms, or
(h) an aliphatic polycarbonate



in which r is between 1 and 20 and in which R_3 and R_4 are identical or different, or in some cases identical and in other cases different, and are polymethylene groups containing from 2 to 8 carbon atoms or polyoxyethylene groups



optionally in solution in an essentially water-immiscible organic solvent, so that the said valuable metal species are at least partially extracted into the organic phase;
(2) separating the charged organic phase containing the valuable metal species extracted from the aqueous solution in the form of a complex with said compound; and
(3) recovering the valuable metal species from the organic phase by bringing the latter into contact with an aqueous stripping medium.

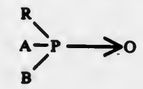
4,499,058

LIQUID/LIQUID EXTRACTION OF ACIDIC AQUEOUS STREAMS COMPRISING SULFATE/TITANIUM/IRON VALUES

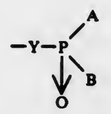
Richard Fitoussi; Alain Leveque, both of Paris, and Jean-Louis Sabot, Maisons-Laffitte, all of France, assignors to Rhone-Poulenc S.A., Courbevole, France

Filed Mar. 16, 1983, Ser. No. 475,739
Claims priority, application France, Mar. 19, 1982, 82 04684
Int. Cl.³ C01G *23/00*; B01D *11/04*; C01B *17/90*
U.S. Cl. 423—70 **20 Claims**

1. A process for the treatment of an acidic aqueous phase containing sulfate ion and particularly sulfuric acid values, titanium ion and particularly titanium (IV) values, and iron ion, particularly iron (II) values, comprising (i) extracting said aqueous phase with an initial organic phase which comprises at least one organic extractant having the general formula:



in which A and B, which may be the same or different, are the groups R_1 or OR_2, wherein R_1 and R_2 are straight or branched chain alkyl, alkenyl, alkynyl, alkoxyalkyl, aryl or alkylaryl radicals, or halogen substituted such radicals; and R is either R_1 or R_2 as above-defined, with R, R_1 and R_2 either being the same or different, or R is a group having the general formula:



in which Y is a straight or branched chain alkylene radical, and A and B are as defined above; and thence (ii) recovering a final aqueous phase comprising substantially all of said iron (II) values present in said initial aqueous phase and a final organic phase comprising substantially all of said sulfuric acid values and substantially all of said titanium values present in said initial aqueous phase.

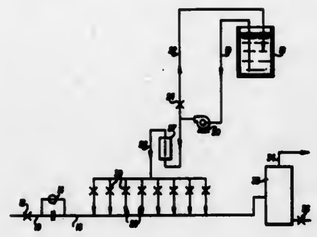
14. The process as defined by claim 1, wherein said initial aqueous phase further comprises aluminum, chromium, manganese or calcium values, or admixtures thereof, and said final aqueous phase comprises substantially all of such values.

4,499,059

IN-LINE INJECTION OF ALKALINE ABSORBANT TO REMOVE H_2S

Timothy A. Jones, Dallas, and Earl S. Snavely, Jr., Arlington, both of Tex., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Nov. 16, 1983, Ser. No. 552,240
Int. Cl.³ C01B *17/05*; B01D *53/34*
U.S. Cl. 423—226 **15 Claims**



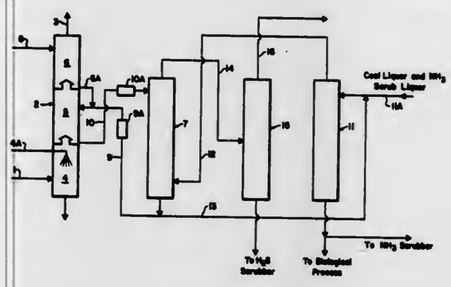
1. A method for removing hydrogen sulfide from a hydrogen sulfide-contaminated gas stream, comprising:
supplying a hydrogen sulfide-containing gas to a pipe at a velocity so that said gas has a Reynolds number of at least 150,000;
injecting an alkaline liquid into said pipe at a Weber number of at least about 16 to absorb hydrogen sulfide from said gas stream; and
separating said injected liquid from said gas stream.

4,499,060

PROCESS FOR REMOVING HYDROGEN SULFIDE FROM GASES, PARTICULARLY COAL DISTILLATION GASES

Horst Ritter, Essen, and Edmund-Theo Herpers, Bochum, both of Fed. Rep. of Germany, assignors to Dr. C. Otto & Comp. G.m.b.H., Bochum, Fed. Rep. of Germany

Filed Feb. 4, 1983, Ser. No. 463,678
Claims priority, application Fed. Rep. of Germany, Feb. 12, 1982, 3204907
Int. Cl.³ C01B *17/16, 31/20*
U.S. Cl. 423—232 **7 Claims**



1. A process for removing hydrogen sulfide from gases, particularly coal distillation gases, said process including the steps of:
washing said gases with ammoniacal liquor to remove hydrogen sulfide,
thereafter further washing said gases in a fine purification stage with an aqueous washing solution having an effective alkaline constituent selected from the group consisting of caustic soda and caustic potash, to further remove hydrogen sulfide,
stripping hydrogen sulfide from said washing solution with vapors including carbon dioxide,
producing said vapors by treating a subflow of said washing solution in an ammonia separator wherein sodium or potassium carbonate is also produced, and
feeding the stripped hydrogen sulfide to a deacidifier.

6. The process according to claim 1 wherein said step of further washing comprises scrubbing said gases in each of two consecutive fine scrubbing states, operating a second of said scrubbing stages with freshly-charged washing solution, and operating a first of said scrubbing stages with the recycled washing solution recovered from said step of stripping hydrogen sulfide.

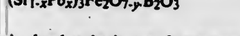
4,499,061

STRONTIUM FERRITE BORATE

Howard L. Glass, Orange, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Aug. 3, 1983, Ser. No. 519,796
Int. Cl.³ C01B *33/20*
U.S. Cl. 423—277 **1 Claim**

1. A compound of the formula



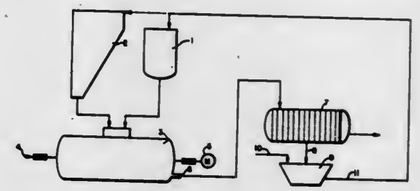
wherein lead substitutes for strontium in varying amounts, wherein said compound has a cubic crystal structure of lattice constant approximately 15.2 angstroms, wherein x can vary from zero to 0.087, and wherein y can vary from zero to two to account for the variation in oxygen content associated with the variable valence of iron.

4,499,062

HYDROTHERMAL DECOMPOSITION OF ALUMINUM SILICATES

Peter Christophliemk; Rudolf Novotny, both of Düsseldorf; Jürgen von Laufenberg, Haan, and Josef Sadlowsky, Düsseldorf, all of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf, Fed. Rep. of Germany

Filed May 27, 1983, Ser. No. 499,037
Claims priority, application Fed. Rep. of Germany, Feb. 3, 1983, 3303515
Int. Cl.³ C01B *33/32*
U.S. Cl. 423—332 **11 Claims**



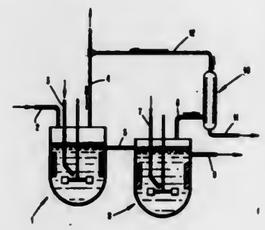
1. A process for the hydrothermal decomposition of aluminum silicates and alkali aluminum silicates with aqueous sodium hydroxide solution in the presence of soluble silicates comprising the steps of:
(a) forming a reaction mixture of
(i) an aqueous solution containing from about 20 to about 50% by weight of NaOH,
(ii) at least one silicate selected from the group consisting of an aluminum silicate and an alkali aluminum silicate, and
(iii) at least one hydrothermally decomposable silicate component
wherein the ratio by weight of SiO_2 to Al_2O_3 in the mixture is at least 30:1, and the ratio by weight of SiO_2 to Na_2O in the mixture is at least 1.5:1; and
(b) heating the reaction mixture at a temperature of from about 180° to about 250° C. under the saturated steam pressure corresponding to said temperature.

4,499,063

PREPARATION OF SILANE, SiH_4

Jean Groebois, L'Isle Adam; Serge Jacubert, Viroflay, and Jean-Michel Verdier, Paris, all of France, assignors to Rhone-Poulenc Specialities Chimiques, Courbevole, France

Filed Sep. 27, 1983, Ser. No. 536,240
Claims priority, application France, Sep. 30, 1982, 82 16434
Int. Cl.³ C01B *33/04*
U.S. Cl. 423—347 **14 Claims**



1. A process for the preparation of essentially pure silane, comprising (i) reacting chlorosilane with lithium hydride in a mixture of molten salts which comprises lithium chloride and potassium chloride, in a discrete first reaction zone, said mixture of molten salts being essentially eutectic in composition, the amount of chlorosilane being at least 5% less than that

amount stoichiometrically required for reaction with the lithium hydride, and the amount of lithium hydride comprising at most 20 mole % of said mixture of molten salts, (ii) recovering product silane from said discrete first reaction zone, (iii) transferring said mixture of molten salts comprising unreacted lithium hydride dissolved therein from said discrete first reaction zone to a discrete second reaction zone, (iv) reacting chlorosilane with said unreacted lithium hydride dissolved in said mixture of molten salts in said discrete second reaction zone, the amount of chlorosilane being at least 2% in excess of that amount stoichiometrically required for reaction with said unreacted lithium hydride, and (v) recovering product silane from said discrete second reaction zone.

4,499,064

ASSESSMENT OF NUTRITIONAL STATUS OF INDIVIDUALS

William Shive, Austin, Tex., assignor to Clayton Foundation for Research, Houston, Tex.

Continuation-in-part of Ser. No. 384,822, Jun. 3, 1982, abandoned. This application May 6, 1983, Ser. No. 492,308

Int. Cl.³ G01N *1/00, 33/48;* C12Q *1/00;* C12N *5/00*

U.S. Cl. 424—2 **20 Claims**

1. A cell culture medium effective for lymphocyte assay of nutritional and biochemical status of cells from human beings comprising,

a buffered, serum-free solution containing the following ingredients in a range of minimal amounts effective for a maximal dose response to amounts less than inhibitory and toxic concentrations thereof,

a carbohydrate selected from the group consisting of glucose and a compound biologically capable of producing glucose in the cells,

a biologically usable form of pantothenic acid,

choline or a biological usable form of a substance capable of producing choline in the cells,

inorganic ions comprising chloride, phosphate, calcium, magnesium, potassium, sodium, and iron in a biologically utilizable form,

deionized water, and

a mitogen in an amount effective to stimulate the lymphocytes being assayed,

said buffered, serum-free solution having a pH from about 6.8 to 7.6,

said cell culture medium characterized by being effective to determine nutritional and biochemical deficiencies, inadequacies, and imbalances of the lymphocytes when supplemented with a nutrient supplement selected from the group consisting of biological utilizable forms of amino acids and vitamins, the nutrient being tested for being omitted from or being present in limiting or inhibitory amounts in the nutrient supplement.

4,499,065

CHYMOPAPAIN ALLERGEN AND METHOD

Emanuel Calenoff, Burlingame; Ruth M. Jones, Redwood City; Yuh-Geng Tsay, San Jose, and Myron A. Beigler, Los Altos Hills, all of Calif., assignors to Axonica, Inc., Mt. View, Calif.

Filed Apr. 29, 1983, Ser. No. 489,898

Int. Cl.³ A61K *39/35, 49/00;* C12N *9/99, 9/50*

U.S. Cl. 424—9 **14 Claims**

1. A chymopapain derivative, the enzymatic activity thereof being less than 5% of the enzymatic activity of natural chymopapain, and the allergenic activity being at least 90% of the allergenic activity of the natural chymopapain.

4,499,066

PHARMACEUTICAL SUSTAINED-RELEASE COMPOSITIONS

Luigi Moro, Cairate; Grazia Maffione, Milan; Guido Neri, Milan, and Alessandro Rigamonti, Milan, all of Italy, assignors to Farmitalia Carlo Erba S.p.A., Milan, Italy

Filed Jul. 30, 1982, Ser. No. 403,475

Claims priority, application Italy, Aug. 5, 1981, 23374 A/81

Int. Cl.³ A61K *9/26, 9/32*

U.S. Cl. 424—19 **10 Claims**

1. A process for preparing a pharmaceutical sustained-release composition formulated as tablets, comprising:

coating particles of an excipient selected from the group consisting of starch, lactose, mannitol, saccarose, glucose, and sorbitol with a polymeric material selected from the group consisting of acrylate polymers and methacrylate polymers and copolymers to form coated granules of the excipient, said polymeric material being substantially insoluble or sparingly soluble in aqueous medium;

mixing an uncoated active ingredient with the coated granules of the excipient and

compressing the mixture to form tablets having a hardness in the range of from at least 5 kg to less than 20 kg.

4,499,067

ORAL COMPOSITIONS COMPRISING N^G-ACYL DERIVATIVES OF ARGININE

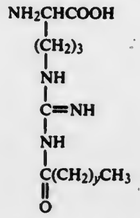
Steven B. Silbering, Plainsboro, and Tibor Sipos, Lebanon, both of N.J., assignors to Johnson & Johnson Products, Inc., New Brunswick, N.J.

Filed Aug. 26, 1982, Ser. No. 412,048

Int. Cl.³ C07C *129/12;* A61K *7/18, 7/22*

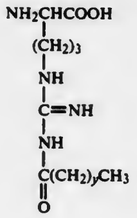
U.S. Cl. 424—52 **32 Claims**

1. N^G-acyl derivatives of arginine having the formula:



where y is an integer of from 0 to 28, and the pharmaceutically acceptable salts thereof.

12. A composition of matter for oral hygiene to inhibit acid production by microorganisms in the oral cavity comprising an effective amount, in a pharmaceutically acceptable carrier, of an N^G-acyl derivative of arginine having the formula;



wherein y is an integer of from 0 to 28, or a pharmaceutically acceptable salt thereof.

4,499,068

ORAL COMPOSITIONS COMPRISING N^G-ALKYL DERIVATIVES OF ARGININE

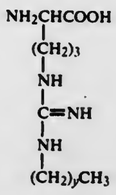
Steven B. Silbering, Plainsboro, and Tibor Sipos, Lebanon, both of N.J., assignors to Johnson & Johnson Products, Inc., New Brunswick, N.J.

Filed Aug. 26, 1982, Ser. No. 412,365

Int. Cl.³ C07C *129/12;* A61K *7/18, 7/22*

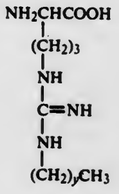
U.S. Cl. 424—52 **24 Claims**

1. N^G-alkyl derivatives of arginine having the formula:



where y is an integer of from 9 to 19, and the pharmaceutically acceptable salts thereof.

8. A composition of matter for oral hygiene to inhibit acid production in the oral cavity comprising an effective amount, in a pharmaceutically acceptable carrier, of an N^G-alkyl derivative of arginine having the formula;



wherein y is an integer of from 9 to 19, or a pharmaceutically acceptable salt thereof.

4,499,069

ANTIPERSPIRANT EMULSION

Thomas J. Krafton, South Hampton, N.H., assignor to The Gillette Company, Boston, Mass.

Filed Feb. 7, 1983, Ser. No. 464,663

Int. Cl.³ A61K *7/32, 7/38*

U.S. Cl. 424—66 **15 Claims**

1. A stable antiperspirant emulsion consisting essentially of:

(a) from about 5% to about 25% of an antiperspirant salt of aluminum or zirconium or combinations thereof,

(b) from about 15% to about 25% of a volatile cyclic silicone,

(c) from about 2% to about 10% of a low pH-stable emulsifier mixture which comprises polyethylene glycol (21) stearyl ether and a lipophilic co-emulsifier such that the HLB of the emulsifier mixture is more than 7.5 and less than 9.9, and

(d) from about 35% to about 78% of water, said percentages being by weight based on the total weight of the composition.

4,499,070

TENSIO-ACTIVE POLYPOD COMPOUNDS, PROCESS FOR PREPARING THEM AND COMPOSITIONS CONTAINING THEM

Henri Sebag, Paris, and Guy Vanlerberghe, Claye-Souilly, both of France, assignors to L'Oreal, Paris, France

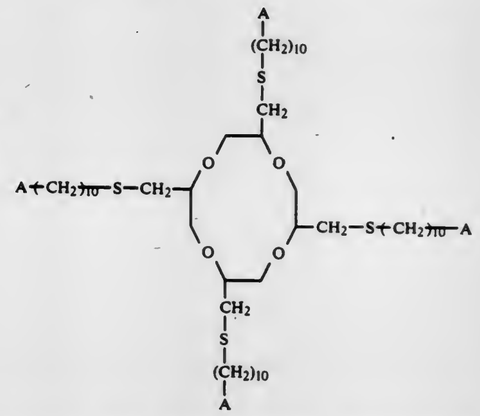
Division of Ser. No. 266,992, May 26, 1981, Pat. No. 4,362,714, which is a division of Ser. No. 56,204, Jul. 10, 1979, Pat. No. 4,290,956. This application Aug. 14, 1982, Ser. No. 418,074

Claims priority, application France, Jul. 13, 1978, 78 21081

Int. Cl.³ A61K *7/06*

U.S. Cl. 424—70 **4 Claims**

1. Dye composition for the hair, said composition comprising water or a hydroalcoholic medium, a cosmetically effective quantity of one or several compounds of the formula:



wherein A refers to a cationic, anionic, zwitterionic or non-ionic hydrophile block which comprises one or more groupings, identical or different, selected from the group consisting of amine, ammonium, ammonio alkyl carboxylate, ammonio alkyl sulfonate, carboxylic amide, ether, thioether, hydroxyl, carboxylic ester and carboxylic acid grouping, and a dye for hair.

4,499,071

SYNERGISTIC PRESERVATIVE COMPOSITIONS

Gayle E. Borovian, Dover, N.J., assignor to Lever Brothers Company, New York, N.Y.

Division of Ser. No. 378,372, May 14, 1982, Pat. No. 4,454,146. This application Feb. 2, 1984, Ser. No. 576,286

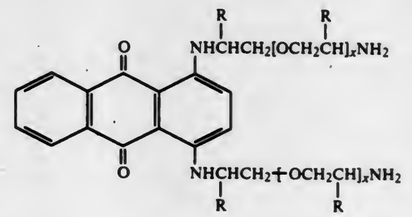
Int. Cl.³ A01N *33/02, 41/02, 43/80;* A61K *31/74*

U.S. Cl. 424—78 **35 Claims**

1. A preservative comprising:

(a) a first component selected from the group consisting of a mixture of 5-chloro-2-methyl-4-isothiazolin-3-one and 2-methyl-4-isothiazolin-3-one in a ratio of about 5:1 to 1:5, benzisothiazalone, and mixtures thereof; and

(b) a second component having the following formula:



I

wherein x is about 2 to 33 and R is H or CH_3 and mixtures thereof;

wherein the weight ratio of said second component to said first component is 1000:1 to 1:10, the combination acting to kill or inhibit the growth of bacteria.

4,499,072

PROCESS FOR TREATING DISEASES WITH ODC INHIBITORS

Sai P. Sunkara, and Nellikunja J. Prakash, both of Cincinnati, Ohio, assignors to Merrell Dow Pharmaceuticals Inc., Cincinnati, Ohio

Continuation-in-part of Ser. No. 445,349, Nov. 29, 1982, abandoned. This application Jan. 24, 1983, Ser. No. 460,224

Int. Cl.³ A61K *45/02, 31/85, 31/15*

U.S. Cl. 424—85 **15 Claims**

1. In the process of effecting polyamine depletion with ornithine decarboxylase inhibitors and with S-adenosylmethionine decarboxylase inhibitors useful in the treatment of rapidly proliferating tumor tissue disease states the improvement which comprises the use of an effective amount of interferon in conjunctive thereapy therewith.

4,499,073

INTRAVENOUSLY INJECTABLE IMMUNE SERUM GLOBULIN

Robert A. Tenold, Benicia, Calif., assignor to Cutter Laboratories, Inc., Berkeley, Calif.

Continuation of Ser. No. 295,916, Aug. 24, 1981, Pat. No. 4,396,608. This application Apr. 18, 1983, Ser. No. 485,683

The portion of the term of this patent subsequent to Aug. 2, 2000, has been disclaimed.

Int. Cl.³ A23J *1/06;* **A61K** *39/35, 37/04;* **C07G** *7/00*

U.S. Cl. 424—85 **7 Claims**

1. A pharmaceutical composition comprising a solution, in a pharmaceutically acceptable aqueous carrier, of an immune serum globulin that is substantially free from chemical modification, said solution having a physiologically acceptable tonicity and an ionic strength such that the solution at 5 percent protein concentration has a nephelometric reading less than 15 NTU and a pH which ranges from about 3.5 to 5.0 to maintain, without significant change during storage at room temperature for extended periods, the monomer content at greater than about 90% and the actual anticomplement activity of the immune serum globulin at a level greater than about 2 mg protein/C'H50 unit wherein one C'H50 unit is defined as the amount of protein capable of inactivating 50% of complement in an optionally titered complement and hemolysin system such that the composition is intravenously administrable and has a buffer capacity which causes very little disruption, if any, of the physiological pH when compared with the administration of an immune serum globulin at equivalent pH but essentially buffered.

4,499,074

METHOD FOR THE THERAPEUTIC UTILIZATION OF COENZYME A

Francis Kirsch, Paris, France, assignor to Sanofi, Paris, France

Filed Aug. 29, 1983, Ser. No. 527,361

Int. Cl.³ A61K *37/48*

U.S. Cl. 424—94 **6 Claims**

1. Method for the treatment of edema in a subject requiring such treatment, characterized in that an effective dose of Coenzyme A is administered parenterally to the said subject.

4,499,075

ANTIBIOTIC AGENTS FROM *S. COERULEORUBIDUS*, RUBIDUS

May D. Lee, Monsey; John H. Martin, New City; Donald B. Borders, Suffern, all of N.Y.; Raymond C. Yao, Carmel, Ind., and Raymond T. Testa, Cedar Grove, N.J., assignors to American Cyanamid Company, Stamford, Conn.

Filed Mar. 25, 1982, Ser. No. 362,002

Int. Cl.³ A61K *35/00;* **C12P** *1/06*

U.S. Cl. 424—118 **9 Claims**

1. The antibiotic LL-BO2964α wherein the substantially pure form:

(a) exhibits the following significant carbon-13 nuclear magnetic resonance absorptions (Abs) in parts per million in dimethyl sulfoxide-d_6 relative to the absorption of tetramethyl silane:

Peak No.	Abs	Peak No.	Abs	Peak No.	Abs
1	13.9	16	96.7	31	137.3
2	18.4	17	102.1	32	
3	27.3	18		33	138.9
4		19		34	139.6
5	29.3	20	112.9	35	140.4
6	30.5	21	113.4	36	150.3
7	33.9	22	116.2	37	152.9
8	48.5	23		38	156.9
9	49.5	24	119.3	39	157.3
10	50.4	25	119.9	40	162.7
11	55.0	26		41	166.4
12	69.9	27	127.6	42	170.1
13	71.4	28	128.6	43	171.0
14	73.0	29	129.0	44	
15	91.5	30	135.8	45	173.1

(b) has an optical rotation $[\alpha]_D^{25}$ of $-10°$ (C being 2.77%, water);

(c) has an elemental analysis (percent) of about: C, 50.89; H, 5.67; N, 14.44; S, 0.00;

(d) has a carbon-13 nuclear magnetic resonance spectrum in dimethyl sulfoxide-d_6 substantially as shown in FIG. 5;

(e) produces uracil, alanine, beta-alanine, glycine, m-tyrosine, 3-N-methylamino-2-aminobutyric acid and a hydantoin formed from alanine and tyrosine when hydrolyzed by acid; and

(f) has an infrared absorption spectrum in KBr substantially as shown in FIG. 1, an ultraviolet spectrum in water substantially as shown in FIG. 2, a proton nuclear magnetic resonance spectrum in dimethyl sulfoxide-d_6 substantially as shown in FIG. 3, and a proton nuclear magnetic resonance spectrum in dimethylsulfoxide-d_6 with added deutero-trifluoroacetic acid substantially as shown in FIG. 4.

4,499,076

ELEMENTAL DIETS FOR LIVER DISEASES

Hiroyuki Ohashi, Kawasaki; Ikuo Ohara, Yokohama, and Toru Takami, Yokosuka, all of Japan, assignors to Ajinomoto Company Incorporated, Tokyo, Japan

Filed Dec. 28, 1982, Ser. No. 453,832

Claims priority, application Japan, Jan. 22, 1982, 57-8599

Int. Cl.³ A61K *31/07, 31/12, 31/23, 31/40, 31/44, 31/59, 31/68, 31/70, 31/195, 31/355, 31/365, 31/415, 31/455, 31/685, 33/06, 33/14, 33/26, 33/34;* **A61N** *43/78*

U.S. Cl. 424—143 **9 Claims**

1. An elemental diet which comprises essential amino acids, carbohydrates, fats, vitamins and minerals together with alanine, arginine, glycine, histidine, proline and serine in such composition as shown below:

Amino Acid	Mole %
	Mole %
Isoleucine	13.25–16.19

-continued

Amino Acid	Mole %
	Mole %
Leucine	16.25–19.87
Valine	13.86–16.94
Lysine	5.36–6.55
Methionine	0.79–0.97
Phenylalanine	0.71–0.87
Threonine	3.68–4.50
Tryptophan	0.27–0.33
Alanine	11.04–13.50
Arginine	10.02–12.24
Glycine	5.76–7.04
Histidine	1.99–2.43
Proline	4.56–5.58
Serine	2.46–3.00
Total	100

4,499,077

ANTI-MICROBIAL COMPOSITIONS AND ASSOCIATED METHODS FOR PREPARING THE SAME AND FOR THE DISINFECTING OF VARIOUS OBJECTS

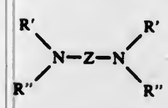
Richard F. Stockel, 475 Rolling Hills Rd., Bridgewater, N.J. 08807, and Murray Jelling, 21 Spring Hill Rd., Roslyn Heights, N.Y. 11577

Continuation of Ser. No. 231,257, Feb. 3, 1981, abandoned. This application Mar. 1, 1983, Ser. No. 471,011

Int. Cl.³ A61K *33/20, 31/14;* **A01N** *33/12, 59/00*

U.S. Cl. 424—149 **5 Claims**

1. An anti-microbial composition suitable for disinfecting lenses comprising in aqueous solution 0.001 to 0.05% by weight of an oxidizing compound which is stabilized chlorine dioxide and 0.001 to 0.05% by weight of a polymeric germicide selected from the group consisting of, (a) an anti-microbial polymeric quaternary ammonium compound made by condensing a mixture of two or more difunctional tertiary amines and a molar quantity of 1,4-dichloro-2-butene that is equal to the molar sum of the difunctional tertiary amines in the mixture, the difunctional tertiary amines being of the type



where Z consists of from one to three divalent aliphatic radicals of 2 to 10 carbon atoms which may contain 0 to 2 double bonds or 0 to 2 hydroxy substituents, wherein R′ and R″ are either the same or different and wherein they be (i) primary or secondary alkyls having 1 to 20 carbon atoms, where the sum of the carbon atoms in R′ and R″ is no greater than 36, (ii) hydroxy or dihydroxy derivatives of the aforesaid primary or secondary alkyls, (iii) benzyl, (iv) alkyl benzyl or (v) combined with N to form a heterocyclic group of either 5, 6, or 7 atoms, and (b) a polydiguanide which is polymeric hexamethylene diguanide.

4,499,078

METHODS FOR COUNTERACTING THE DELETERIOUS EFFECTS OF SODIUM CHLORIDE

Emanuel Revici, 1111 Park Ave., New York, N.Y. 10028

Filed Apr. 22, 1983, Ser. No. 487,899

Int. Cl.³ A61K *33/14*

U.S. Cl. 424—153 **3 Claims**

1. A method for counteracting the adverse effects of sodium chloride on the human body which comprises administering to said body a composition containing sodium chloride and a magnesium compound containing bivalent negative sulfur where said magnesium compound is present in an amount effective to counteract the adverse effects of said sodium chloride.

4,499,079

CARBOXY AND SUBSTITUTED CARBOXY ALKANOYL AND CYCLOALKANOYL PEPTIDES

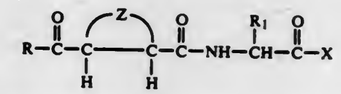
Eric M. Gordon, and Harold N. Weller, III, both of Pennington, N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Nov. 18, 1982, Ser. No. 442,681

Int. Cl.³ A61K *37/00, 31/40, 31/47, 31/44;* **C07C** *103/52;* **C07D** *209/18, 209/04, 217/00, 215/00, 215/20, 401/00;* **A01N** *43/40*

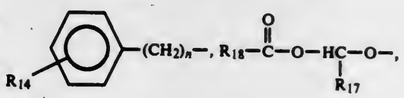
U.S. Cl. 514—2 **23 Claims**

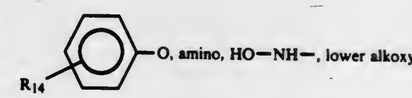
1. A compound of the formula



and a pharmaceutically acceptable salt thereof wherein:

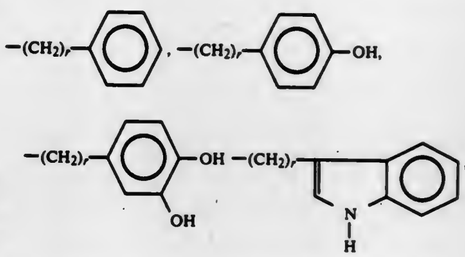
R is hydroxy, lower alkoxy, lower alkyl,



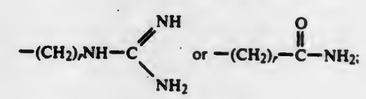


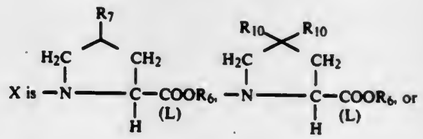
or MO—;

R_1 is hydrogen, lower alkyl, halo substituted lower alkyl,

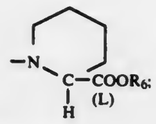


$-(CH_2)_n-NH_2$, $-(CH_2)_n-S-$lower alkyl,

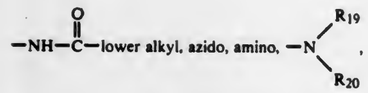


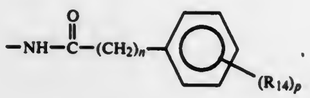


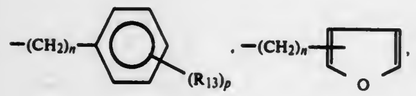
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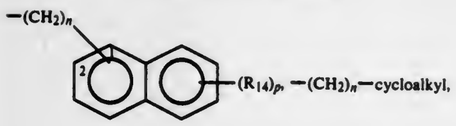
R_7 is hydrogen, lower alkyl, halogen, keto, hydroxy,



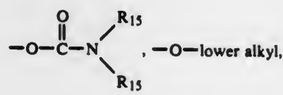




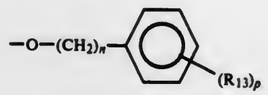
a 1- or 2-naphthyl of the formula



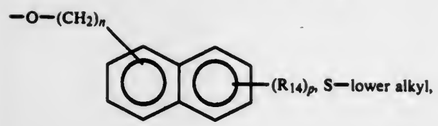
R_{14}, $-(CH_2)_n$—cycloalkyl,



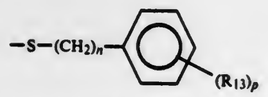
, —O—lower alkyl,



a 1- of 2-naphthyloxy of the formula

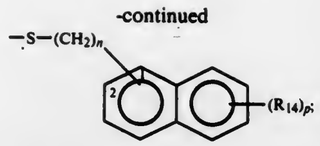


R_{14}, S—lower alkyl,

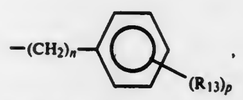


or a 1- or 2-napthtylthio of the formula

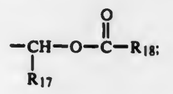
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R_{10} is halogen or —Y—R_{16};
R_{13} is hydrogen, lower alkyl of 1 to 4 carbons, lower alkoxy of 1 to 4 carbons, lower alkylthio of 1 to 4 carbons, chloro, bromo, fluoro, trifluoromethyl, hydroxy, phenyl, phenoxy, phenylthio, or phenylmethyl;
R_{14} is hydrogen, lower alkyl of 1 to 4 carbons, lower alkoxy of 1 to 4 carbons, lower alkylthio of 1 to 4 carbons, chloro, bromo, fluoro, trifluoromethyl, or hydroxy;
n is zero, one, two, three, or four;
p is one, two or three provided that p is more than one only if R_{13} or R_{14} is hydrogen, methyl, methoxy, chloro, or fluoro;
R_{15} is hydrogen or lower alkyl of 1 to 4 carbons;
Y is oxygen or sulfur;
R_{16} is lower alkyl of 1 to 4 carbons,



or the R_{16} groups join to complete an unsubstituted 5- or 6-membered ring or said ring in which one or more of the carbons has a lower alkyl of 1 to 4 carbons or a di(lower alkyl of 1 to 4 carbons) substituent;
r is an integer from 1 to 4;
R_{19} is lower alkyl, benzyl, or phenethyl;
R_{20} is hydrogen, lower alkyl, benzyl or phenethyl;
R_6 is hydrogen, lower alkyl, benzyl, benzhydryl, salt forming ion, or



R_{17} is hydrogen, lower alkyl, cycloalkyl, or phenyl;
R_{18} is hydrogen, lower alkyl, lower alkoxy or phenyl;
M is a salt forming ion; and
Z completes a cycloalkyl ring of 3 to 10 carbons, said cycloalkyl ring in which one of the carbon atoms is substituted by a lower alkyl of 1 to 4 carbons, lower alkoxy of 1 to 4 carbons, lower alkylthio of 1 to 4 carbons, halo, trifluoromethyl, or hydroxy group, a cycloalkenyl ring of 5 to 7 carbons, or a cycloalkadienyl ring of 6 or 7 carbons.

4,499,080

SYNTHETIC ST TOXIN, PROCESS FOR ITS PREPARATION AND ITS USE AS A VACCINATING AGENT

Anabela Duflot, Vanves; Hélène Gras, Hem; André Tartar, Vitry-en-Artois; Edith Duflot, Cachan, and Patrice Boquet, Creteil, all of France, assignors to Institut Pasteur, Paris, France

Filed Apr. 26, 1983, Ser. No. 488,712
Claims priority, application France, Apr. 26, 1982, 82 07179
Int. Cl.³ A61K *37/00*; C07C *103/52*
U.S. Cl. 514—12 **34 Claims**

1. A peptide (P) n free of intramolecular disulfide bridges and free of intramolecular disulfied bridges and capable of inducing in vivo antibodies against ST enterotoxins comprising 4n to 18n amino-acids, wherein - n is equal to 1 or 2, and when

n is equal to 1, the peptidic sequence P is contained in the following peptidic chain:

Asn—Thr—Phe—Tyr—Cys—Cys—Glu—Leu—Cys—
—Cys—A—Pro—Ala—Cys—Ala—Gly—
(C—ter)
Cys—T(I)
(N—ter)

in which A and T each represent Tyr or Asn; and A and T are not the same wherein all except one the thiol groups of the cysteyl residues present in the molecule are protected by a group which is stable under biological conditions, said one of said thiol groups being in the form of a free SH group or protected by a group which is unstable under biological conditions; and, when n is equal to 2, the peptidic sequence P-P is constituted by 2 peptidic sequences P, which are identical or different, each sequence comprising 4 to 18 amino-acids, contained in the peptidic chain of formula (I), the 2 peptidic sequences P being connected together

through a disulfide linkage established between the sulfur atom of the cysteyl residues of one of the 2 sequences and the sulfur atom of the cysteyl residues of the other sequence;

or through a linkage established between the carboxyl group of the 2 peptidic sequences P and the amino group of the other sequences; and wherein one of the thiol groups not engaged in a disulfide linkage, being in the form of a free SH group or protected by a group that is unstable under biological conditions and the other thiol group of the possible cysteyl residues being protected by protective groups which are stable under biological conditions.

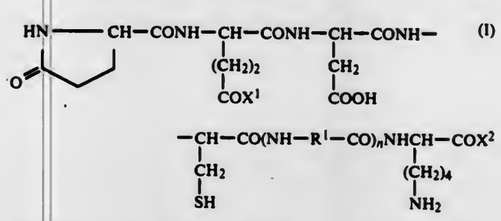
4,499,081

PEPTIDE COMPOUNDS

Ole D. Laerum, Bergen, Norway, assignor to Nyegaard & Co A/S, Oslo, Norway

Filed Nov. 28, 1983, Ser. No. 555,840
Claims priority, application United Kingdom, Nov. 26, 1982, 8233837
Int. Cl.³ A61K *37/00*; C07C *103/52*
U.S. Cl. 514—17 **7 Claims**

1. A compound of the formula:



(I)

(in which R^1 is the residue of glycine or D-alanine, and all other amino-acid residues are in the L-form, X^1 and X^2, which may be the same or different, are OH or NH_2 and n is 0 or 1) and their physiologically acceptable salts.

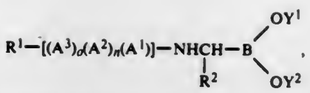
4,499,082

α-AMINOBORONIC ACID PEPTIDES

Ashokkumar B. Shenvi, and Charles A. Kettner, both of Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Dec. 5, 1983, Ser. No. 558,362
Int. Cl.³ A61K *37/00, 31/44*; C07C *103/52*
U.S. Cl. 514—2 **19 Claims**

1. A compound of the formula



or a physiologically acceptable salt thereof, wherein
A^1 is an amino acid of L-configuration selected from the group consisting of Ala, Pro, Gly, Glu, Leu, Lys, Phe, Ser, Val, Ile, Arg, Tyr, Thr, Asp, Asn or Gln;
A^2 and A^3 are, independently, amino acids of D or L-configuration selected from the group consisting of Ala, Arg, Asn, Asp, Cys, Gln, Glu, Gly, His, Ile, Leu, Lys, Met, Phe, Pro, Ser, Thr, Trp, Tyr or Val;
n is 1 and o is 0 or 1;
R^1 is —H or an N-terminal protecting group;
R^2 is an alkyl group of one to six carbons, optionally comprising an aromatic substituent, or one or more in-chain bivalent groups selected from the group consisting of —O—, —CO—, —S—, —NH—, —CONH—, —CH=CH— or —SO_2—; and
Y^1 and Y^2 are each —H, or taken together form a moiety derived from a dihydroxy compound having at least two hydroxy groups separated by at least two connecting atoms in a chain or ring, said chain or ring comprising carbon atoms, and optionally, a heteroatom or heteroatoms which can be N, S, or O; with the proviso that where is O, R^1 cannot be —H.

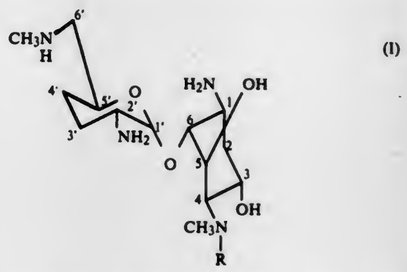
4,499,083

3-O-DEMETHYL DERIVATIVES OF THE ISTAMYCIN B SERIES OF COMPOUNDS

Hamao Umezawa; Yoshiro Okami, both of Tokyo, and Shinichi Kondo, Yokohama, all of Japan, assignors to Zaidan Hojin Biseibutsu Kagaku Kenkyu Kai, Tokyo, Japan

Filed Sep. 3, 1981, Ser. No. 298,844
Claims priority, application Japan, Sep. 11, 1980, 55-125334
Int. Cl.³ A61K *31/71*; C07H *15/22*
U.S. Cl. 514—36 **5 Claims**

1. A 3-O-demethyl derivative of a compound of the istamycin B series, having the formula



(I)

wherein R represents a hydrogen atom, a glycyl group or an N-formimidoylglycyl group, or an acid addition salt or salt-hydrate thereof.

4. The compound of claim 1 wherein R represents an N-formimidoylglycyl group, which is designated 3-O-demethyl-2''-N-formimidoylistamycin B, or an acid addition salt or salt-hydrate thereof.

5. A pharmaceutical composition comprising an antibacterially effective amount of 3-O-demethyl-2''-N-formimidoylstamycin B as defined in claim 4 or a pharmaceutically acceptable acid addition salt or salt-hydrate thereof, in combination with a pharmaceutically acceptable carrier.

4,499,084

ARA-A ANTIVIRAL COMPOSITION AND METHOD OF ADMINISTERING THE SAME

Glen J. Dixon, P.O. Box 1328, Stone Mountain, Ga. 30086

Filed Feb. 3, 1983, Ser. No. 463,467
Int. Cl.³ A61K *31/70*; C07H *19/16*
U.S. Cl. 514—46 **11 Claims**

5. An antiviral composition for treating herpes simplex virus disease in humans comprising a solvent carrier which will translocate throughout the body and penetrate cell walls and an antiviral agent which interferes with viral deoxynucleic acid synthesis causing inhibition of viral maturation, wherein the solvent carrier includes dimethyl sulfoxide and water and wherein the antiviral agent is purine analog of ara-A and is selected from the group consisting of acyclovir and ribavirin.

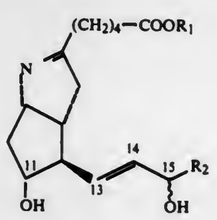
4,499,085

METHOD OF ANOXIA TREATMENT USING PROSTAGLANDIN ANALOGUES

Yoshinobu Masuda, Katano, Japan, assignor to Ono Pharmaceutical Co., Ltd., Osaka, Japan

Filed Apr. 29, 1983, Ser. No. 490,223
Claims priority, application Japan, Apr. 30, 1982, 57-74175; Oct. 20, 1982, 57-185022
Int. Cl.³ A61K *31/70, 31/40*
U.S. Cl. 514—58 **18 Claims**

1. A method for the prevention or treatment of anoxia of brain cells in a mammalian host which comprises administering to a host subject to, or suffering from said anoxia, an effective amount of a prostaglandin derivative selected from a PGI_1 derivative of the formula:

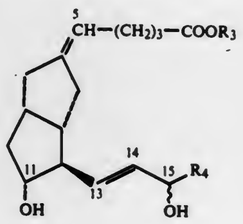


(I)

wherein

R_1 represents a hydrogen atom or a lower alkyl group and R_2 represents a 2-methylhexyl group, a 3-propylcyclopentyl group, a 3-butylcyclopentyl group or a 4-propylcyclohexyl group,

a PGI_2 derivative of the formula:

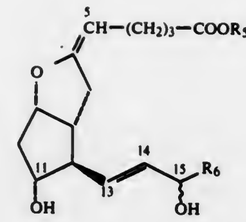


(II)

wherein

R^3 represents a hydrogen atom or a lower alkyl group and R_4 represents a 2-methylhexyl group, a cyclopentyl group, a 3-propylcyclopentyl group or a cyclohexyl group,

a PGI_2 derivative of the formula:

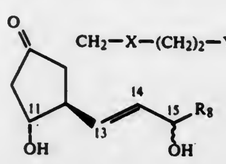


(III)

wherein

R_5 represents a lower alkyl group and R_6 represents a pentyl group, a 1-methylpentyl group, a 1-methyl-5-chloropentyl group, a 2-methyl-5-chloropentyl group, a 3-ethylcyclopentyl group, a 3-propylcyclopentyl group, a 3-butylcyclopentyl group, a 3-(2-chloroethyl)cyclopentyl group, a cyclohexyl group, a 4-ethylcyclohexyl group or a cyclohexylmethyl group, or

a PGE_1 derivative of the formula:



(IV)

wherein

X represents a methylene group or a carbonyl group, and (i) when X represents a methylene group, Y represents an ethylene group or a trans-vinylene group, R_7 represents a carboxyl group or a lower alkoxycarbonyl group and R_8 represents a 2-methylhexyl group or a 1-cyclohexylethyl group, and (ii) when X represents a carbonyl group, Y represents an ethylene group, R_7 represents a carboxyl group, a lower alkoxycarbonyl group, a glycoloyl group or a hydroxymethyl group and R_8 represents a 2-methylhexyl group, a cyclopentyl group, a 3-propylcyclopentyl group or a 3-butylcyclopentyl group,

the double bonds between C_{13}–C_{14} in formulae (I), (II), (III) and (IV) being trans, the configuration at C_5 in formulae II and III being E or Z or a mixture thereof, the hydroxy groups attached to the C_{11} position in formulae (I), (II), (III) and (IV) being in α-configuration and the hydroxy groups attached to the C_{15} position in formulae (I), (II), (III) and (IV) being in α- or β-configuration, or a mixture thereof, or a cyclodextrin clathrate of a derivative of formula (I), (II), (III) or (IV) or, when R_1 in formula (I) or R_3 in formula (II) represents a hydrogen atom, or when R_7 in formula (IV) represents a carboxy group, a non-toxic salt thereof.

4,499,086

MEDICATION FOR TREATMENT OF POISON OAK IRRITATION AND INFLAMMATION

Frederick G. Garren, Unit 16, 2525 NE. Stephens, Roseburg, Oreg. 97470

Filed Feb. 18, 1983, Ser. No. 467,828
Int. Cl.³ A61K *35/78*
U.S. Cl. 424—195.1 **2 Claims**

1. Process of alleviating and curing of poison oak irritation and affliction, respectively, of the skin or mucous membrances which comprises treating, at least once, said irritated or afflicted areas of the skin or mucous membranes with a therapeutic composition which comprises (a) a pharmaceutically acceptable carrier and (b) an extract from the leaves or buds or both of *Ceanothus thyrsiflorus* containing an effective amount of at least one therapeutically active ingredient which is effective in the alleviation of and speeding up of the curing of poison oak irritation or inflammation, respectively, of the skin or mucous membranes, said extract having been achieved using an extractant selected from the group consisting of water, ethyl ether, acetone, chloroform, methanol, ethanol, methyl ethyl ketone, ethyl acetate, ethyl formate, and a mixture of water and one of said extractants.

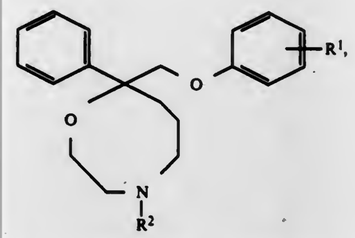
4,499,087

7-PHENYL-7-PHENOXYMETHYL-HEXAHYDRO-1,4-OXAZEPINES AND THEIR USE

Hans J. Treiber, Bruehl; Hans P. Hofmann, Limburgerhof; Horst Kreiskott, Wachenheim; Hans-Juergen Teschendorf, Dudenhofen, and Martin Traut, Heidelberg, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Nov. 21, 1983, Ser. No. 554,097
Claims priority, application Fed. Rep. of Germany, Nov. 20, 1982, 3242923
Int. Cl.³ C07D *267/10*; A61K *31/55*
U.S. Cl. 514—211 **4 Claims**

1. A 7-phenyl-7-phenoxymethyl-hexahydro-1,4-oxazepine of the formula I



I

where R^1 is hydrogen, chlorine or methoxy and R^2 is hydrogen or methyl, and its salts with physiologically tolerated acids.

4. The method of treating psychological disturbances in a patient suffering therefrom, which comprises administering an effective amount of a 7-phenyl-7-phenoxymethyl-hexahydro-1,4-oxazepine of the formula I according to claim 1.

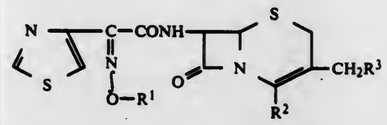
4,499,088

CEPHEM COMPOUNDS

Takao Takaya, Kawanishi; Hisashi Takasugi, Osaka, and Hideaki Yamanaka, Hirakata, all of Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

Filed Jan. 4, 1983, Ser. No. 455,573
Int. Cl.³ A61K *31/545*; C07D *501/56*
U.S. Cl. 514—202 **10 Claims**

1. A compound of the formula:



wherein

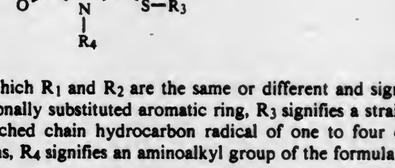
R^1 is carboxy (C_1–C_6) alkyl or esterified carboxy (C_1–C_6) alkyl,

R^2 is carboxy or an esterified carboxy group, and

R^3 is (C_1–C_6) alkanoylamino, (C_1–C_6) alkanesulfonyl, triazolylthio, tetrazolylthio having (C_1–C_6) alkyl, pyridazinylthio having (C_1–C_6) alkyl, thiadiazolylthio having (C_1–C_6) alkyl, triazolopyridazinylthio or tetrazolopyridazinylthio, and pharmaceutically acceptable salts thereof.

9. An antibacterial composition comprising an effective amount of a compound of claim 1 in association with a pharmaceutically acceptable substantially non-toxic carrier or excipient.

10. A compound of the formula:



wherein

R^1 is carboxy(C_1–C_6)alkyl or esterified carboxy(C_1–C_6)alkyl,

R^2 is carboxy or an esterified carboxy group, and

Y is halogen

or a salt thereof.

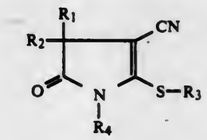
4,499,089

2-ALKYLTHIO-1-AMINOALKYL-2-PYRROLINE-3-CARBONITRILES, COMPOSITIONS AND USE

Hubert Barth, Emmendingen; Johannes Hartenstein, Stegen-Wittental; Gerhard Satzinger, Denzlingen; Edgar Fritschi, St. Peter; Volker Ganser, Freiburg; Horst-Dietmar Tauschel, Ettenheim, and Günter Wolf, Freiburg, all of Fed. Rep. of Germany, assignors to Warner-Lambert Company, Morris Plains, N.J.

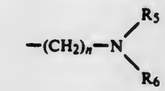
Filed May 10, 1984, Ser. No. 608,828
Claims priority, application Fed. Rep. of Germany, May 14, 1983, 3317653
Int. Cl.³ A61K *31/40, 31/54*; C07D *417/06, 207/277*
U.S. Cl. 514—222 **15 Claims**

1. A compound of the formula



(I)

in which R_1 and R_2 are the same or different and signify an optionally substituted aromatic ring, R_3 signifies a straight or branched chain hydrocarbon radical of one to four carbon atoms, R_4 signifies an aminoalkyl group of the formula



(II)

in which n is equal to two or three and R_5 and R_6 are the same or different and individually signify hydrogen, a straight or branched chain alkyl group of one to four carbon atoms or, together with the nitrogen atom to which they are attached, a ring with possibly further heteroatoms or a pharmaceutically acceptable acid-addition salt thereof.

14. A pharmaceutical composition for the prophylaxis and therapy of thrombotic states comprising an effective amount of a compound according to claim 1 together with a pharmaceutically acceptable carrier.

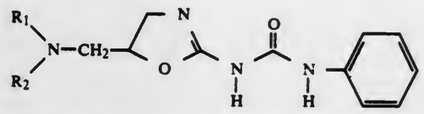
4,499,090

N-(5-AMINOMETHYL-2-OXAZOLIN-2-YL)-N'-PHENYLUREAS, COMPOSITIONS AND USE

Marie-Hélène Creuzet, Bordeaux; Claude Feniou, Pessac; Christian Jarry, Artigues Près Bordeaux; Gisèle Prat, Talence, and Henri Pontagnier, Pessac, all of France, assignors to Societe Cortial, S.A., Paris, France

Filed Oct. 5, 1983, Ser. No. 539,285
Claims priority, application France, Oct. 5, 1982, 82 16783; Aug. 4, 1983, 83 13013
Int. Cl.³ C07D *263/28, 295/14;* A61K *31/42, 31/535*
U.S. Cl. 514—210 **10 Claims**

1. A compound having the general formula:



wherein R_1 and R_2 independently represent an alkyl radical of C_1 to C_4, or a carbocyclic alkyl radical having less than 4 rings, or a carbocyclic radical having less than 4 rings; R_1 and R_2 can form, with the nitrogen atom to which they are attached, a 4 to 7 member heterocycle containing 1 or 2 nitrogen atoms and 1 or 0 oxygen atoms, said heterocycle can be substituted by R with R being an alkyl radical of C_1 to C_4, allyl, benzyl, pyridyl, phenyl substituted or not with one or more substituents such as halogen, trihalomethyl, alkyl of C_1 to C_4, hydroxy, or alkoxy having a C_1 to C_4 alkyl radical.

4. A pharmaceutical or veterinary composition characterized in that it comprises as active principle a product as in claim 1 in association with a pharmaceutical vehicle or a suitable excipient.

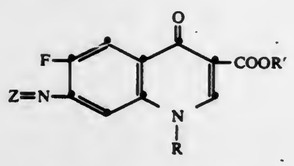
4,499,091

1-AMINO (OR SUBSTITUTED AMINO)-1,4-DIHYDRO-4-OXO-6-FLUORO-7-HETERYL-QUINOLINE-3-CARBOXYLIC ACIDS AND THEIR USE AS ANTIBACTERIAL AGENTS

Mark P. Wentland, North Greenbush, and Denis M. Bailey, East Greenbush, both of N.Y., assignors to Sterling Drug Inc., New York, N.Y.

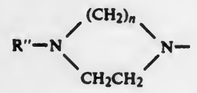
Continuation-in-part of Ser. No. 363,876, Mar. 31, 1982, abandoned. This application Feb. 14, 1983, Ser. No. 466,095
Int. Cl.³ A61K *31/47;* C07D *401/04, 413/04, 417/04*
U.S. Cl. 514—254 **33 Claims**

1. A compound of the formula

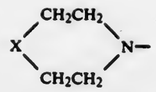


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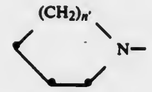
wherein R is amino, lower-alkylylamino, 2-propenylamino, N-formyl-lower-alkylamino or di-lower-alkylamino; R' is hydrogen or lower-alkyl; and Z=N— is a heterocyclic group selected from the group consisting of:



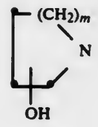
where n is 2-3, and R'' is hydrogen, lower-alkyl or acetyl;



where X is O or S;



where n' is 1-3; and



where m is 1-2;

a pharmaceutically acceptable acid-addition salt thereof; or an alkali metal or amine salt of a compound where R' is hydrogen.

30. A composition for combatting bacteria, which comprises an antibacterially effective amount of a compound according to claim 1 together with one or more pharmaceutically acceptable excipients.

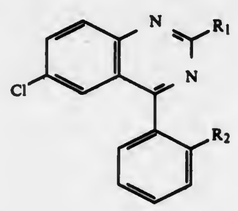
4,499,092

DERIVATIVES OF 4-PHENYL QUINAZOLINE ACTIVE ON THE CENTRAL NERVOUS SYSTEM

André Hallot, St. Gely du Fesc, and Kathleen Bizière, Clapiers, both of France, assignors to Sanofi, France

Filed Oct. 19, 1982, Ser. No. 435,230
Claims priority, application France, Oct. 21, 1981, 81 19767
Int. Cl.³ A61K *31/505;* C07D *239/84*
U.S. Cl. 514—254 **21 Claims**

1. A compound of 4-phenyl quinazoline of the formula:



(I)

in which

R_1 is selected from

(a) a group



in which

R_3 represents hydrogen or a group $—(CH_2)_nOH$ and R_4 represents a group $(CH_2)_nOH$ where n designates an integer equal to 2, 3 or 4;

(b) a group

where X is O or S;

where n' is 1-3; and

where m is 1-2;

a pharmaceutically acceptable acid-addition salt thereof; or an alkali metal or amine salt of a compound where R' is hydrogen.

30. A composition for combatting bacteria, which comprises an antibacterially effective amount of a compound according to claim 1 together with one or more pharmaceutically acceptable excipients.

4,499,092

DERIVATIVES OF 4-PHENYL QUINAZOLINE ACTIVE ON THE CENTRAL NERVOUS SYSTEM

André Hallot, St. Gely du Fesc, and Kathleen Bizière, Clapiers, both of France, assignors to Sanofi, France

Filed Oct. 19, 1982, Ser. No. 435,230
Claims priority, application France, Oct. 21, 1981, 81 19767
Int. Cl.³ A61K *31/505;* C07D *239/84*
U.S. Cl. 514—254 **21 Claims**

1. A compound of 4-phenyl quinazoline of the formula:

(I)

in which

R_1 is selected from

(a) a group

in which

R_3 represents hydrogen or a group $—(CH_2)_nOH$ and R_4 represents a group $(CH_2)_nOH$ where n designates an integer equal to 2, 3 or 4;

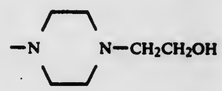
(b) a group



where

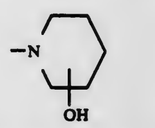
R_5 designates a group $—(CH_2)_m—OH$ (m being an integer which may vary from 0 to 2) situated in meta or para position;

(c) a group



where

R_2 represents an atom of halogen, or R_2 may be hydrogen in the case of R_1 being



the salts with pharmaceutically acceptable mineral or organic acids thereof.

11. A pharmaceutical composition comprising a pharmaceutically acceptable carrier and a tranquilizing, hypnotic or antiepileptic effective amount of at least one compound according to claim 1.

4,499,093

INTERFERON INDUCTION METHOD

Angel S. Galabov, and Margarita H. Mastikova, both of Sofia, Bulgaria, assignors to Deo "Pharmachim", Sofia, Bulgaria

Filed Jan. 17, 1983, Ser. No. 458,262
Claims priority, application Bulgaria, Jan. 19, 1982, 55032
Int. Cl.³ A61K *31/505*
U.S. Cl. 514—258 **2 Claims**

1. A method of treating viral infection responsive to interferon in an animal subject which comprises the step of administering to the animal subject an effective amount of dipyridamole sufficient to induce in vivo production of a pharmaceutically effective amount of the interferon.

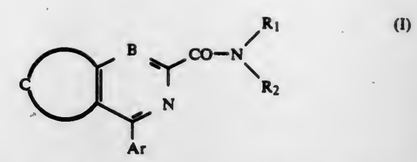
4,499,094

DERIVATIVES OF ARENE AND HETERO-ARENE CARBOXAMIDES AND THEIR USE AS MEDICAMENTS

Marie-Christine Dubroeucq, Enghien-les-Bains; Christian Renault, Taverny, and Gérard Le Fur, Plessis Robinson, all of France, assignors to Pharmuka Laboratoires, Gennevilliers, France

Filed Apr. 5, 1983, Ser. No. 482,082
Claims priority, application France, Apr. 27, 1982, 82 07217
Int. Cl.³ A61K *31/435;* C07D *495/04*
U.S. Cl. 514—301 **11 Claims**

1. A compound of the formula:



(I)

in which R_1 and R_2 independently represent a linear or branched alkyl containing 1 to 6 carbon atoms, cycloalkyl containing 3 to 7 carbon atoms, phenyl alkyl or cycloalkyl alkyl, the alkyl part of which contains 1 to 3 carbon atoms,

R_1 and R_2 further represent alkenyl or alkynyl containing 3 to 6 carbon atoms, with the proviso that the double or triple bond is not situated in position 1-2 in relation to the nitrogen atom,

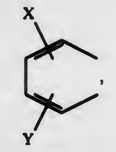
R_1 and R_2 may further represent a group of the formula $—R_3—Z—R_4$, in which R_3 represents linear or branched alkylene with 2 to 6 carbon atoms, with the proviso that at least 2 carbon atoms separate the nitrogen atom from group Z;

R_4 represents alkyl having from 1 to 4 carbon atoms and Z is oxygen or sulphur or $>N—R_5$,

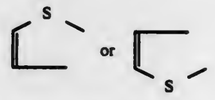
R_5 represents hydrogen or alkyl with 1 to 3 carbon atoms,

Ar represents phenyl, pyridyl or thienyl, or phenyl substituted with one or two substituents selected from halogen atoms, alkyl, alkoxy and alkylthio with 1 to 4 carbon atoms, trifluoromethyl and nitro,

A and B represent independently, N or CH—, C represents the linkage



or when A represents N and B represents CH, one of the following linkages:



X, Y represent independently, hydrogen, halogen, alkyl or alkoxy containing 1 to 3 carbon atoms, nitro or trifluoromethyl, and



represents a heterocyclic ring which is pyrrolidine, piperidine, morpholine or piperazine ring which may be substituted on the nitrogen by alkyl containing 1 to 3 carbon atoms.

11. A method of treating a warm blooded mammal for a pulmonary, renal, cardiovascular or circulatory disorder, for pathological states associated with immunological disorders, for states of aggressivity and in the application of benzodiazepines comprising administering an effective amount of the compound of claim 1.

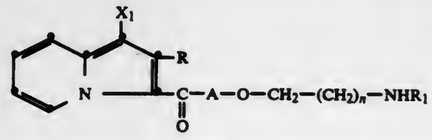
4,499,095

INDOLIZINE DERIVATIVES AND THEIR USE IN TREATING HEART AILMENTS

Gilbert Rosseels, Wemmel, and Peter Polster, Hamme-Mille, both of Belgium, assignors to Sanofi, Paris, France

Filed Jun. 7, 1983, Ser. No. 501,856
Claims priority, application France, Jun. 17, 1982, 82 10598
Int. Cl.³ A61K *31/44;* C07D *471/04*
U.S. Cl. 514—299 13 Claims

1. An indolizine derivative corresponding to the general formula:



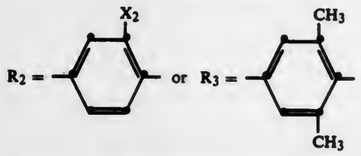
or a pharmaceutically acceptable acid addition salt thereof, wherein:

R respresents straight- or branched-chain alkyl having from 1 to 4 carbon atoms or phenyl,

R_1 represents straight- or branched-chain alkyl having from 1 to 6 carbon atoms,

X_1 represents hydrogen, chlorine, bromine, methyl or methoxy,

A represents a radical of the formula:



in which X_2 represents hydrogen, chlorine, bromine, methyl or methoxy n represents 1 or 2.

10. A pharmaceutical or veterinary composition containing, as essential active ingredient, an effective amount for inhibiting calcium translocation at the level of the cell membrane of at least one indolizine derivative as claimed in claim 1 or 2 in association with a pharmaceutical carrier or excipient therefor.

4,499,096

RAPID METHOD FOR INTERRUPTING THE NARCOTIC ADDICTION SYNDROME

Howard S. Lotsof, 330 Stanley Ave., Staten Island, N.Y. 10301

Filed Nov. 18, 1983, Ser. No. 553,138
Int. Cl.³ A61K *31/435, 31/475*
U.S. Cl. 514—214 11 Claims

1. The method of treating heroin addiction comprising administering internally to the addict a dosage of between 6 mg and 19 mg per kg weight of the addict of ibogaine or a therapeutically active compound thereof or a mixture thereof.

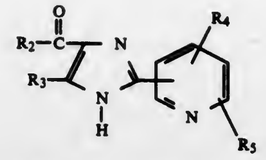
4,499,097

2-(PYRIDYL)IMIDAZOLYL KETONES

Andrew S. Tomcufcik, Old Tappan, N.J.; Walter E. Meyer, Suffern, and Nancy H. Eudy, Cornwall-on-Hudson, both of N.Y., assignors to American Cyanamid Company, Stamford, Conn.

Filed Mar. 10, 1983, Ser. No. 473,939
Int. Cl.³ C07D *401/04;* A61K *31/415*
U.S. Cl. 514—341 25 Claims

1. A compound selected from the group consisting of those of the formula:



wherein R_2 is alkyl(C_1–C_5), cycloalkyl(C_3–C_6) or phenyl, R_3 is alkyl(C_1–C_3), and R_4 and R_5 are each hydrogen, chloro or methyl with the proviso that R_4 and R_5 may not be dichloro or dimethyl; the oxime thereof; the methoxime thereof; the semicarbazone thereof; the pyridine-1-oxide thereof; the 1-alkylpyridinium halide thereof; the 1-(phenylalkyl)pyridinium halide thereof; the tautomer thereof; and the pharmacologically acceptable acid-addition salts thereof.

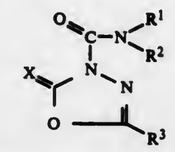
4,499,098

INSECTICIDAL N-CARBAMOYL-OXADIAZOLIDIN-5-ONES AND THIONES

Laroy H. Edwards, Napa, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Jul. 15, 1983, Ser. No. 514,073
Int. Cl.³ A01N *43/82;* C07D *273/02*
U.S. Cl. 514—364 19 Claims

1. A compound of the formula:



wherein X is oxygen or sulfur, R^1 and R^2 are independently lower alkyl having from 1 to 4 carbon atoms; and R^3 is lower cycloalkyl having from 3 to 6 carbon atoms substituted with methyl or ethyl, lower alkoxyalkyl having up to a total of 8 carbon atoms or lower alkylthioalkyl having up to a total of 8 carbon atoms.

8. A method for killing insects which comprises contacting said insects or their habitat with an insecticidally effective amount of the compound of the formula defined in claim 1.

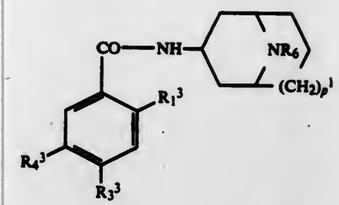
4,499,099

NORTROPANE AND GRANATANE TYPE COMPOUNDS USEFUL IN TREATING PSYCHOSIS

Eric A. Watts, Harlow, England, assignor to Beecham Group p.l.c., England

Filed Jun. 9, 1982, Ser. No. 386,723
Claims priority, application United Kingdom, Jun. 17, 1981, 8118603; Jun. 17, 1981, 8118604; Jun. 29, 1981, 8119997; Jun. 29, 1981, 8119998; Dec. 15, 1981, 8137821
Int. Cl.³ A61K *31/46;* C07D *451/02, 451/14*
U.S. Cl. 514—299 10 Claims

1. A compound of formula (VII) or a pharmaceutically acceptable salt and/or solvate and/or N-oxide thereof:



(VII)

wherein:

R_1^3 is C_{1-6} alkoxy;

R_3^3 is amino or C_{1-7} acylamino;

R_4^3 is C_{1-6} alkylthio;

p^1 is 0 or 1;

and R_6 is C_{1-7} alkyl or a group $-(CH_2)_sR_7$ where s is 0 to 2 and R_7 is a C_{3-8} cycloalkyl group, or a group $-(CH_2)_tR_8$ where t is 1 or 2 and R_8 is C_{2-5} alkenyl or a phenyl group optionally substituted by one or two substituents selected from C_{1-6} alkyl, C_{1-4} alkoxy, trifluoromethyl and halogen.

10. A method of treatment of pychosis in mammals, including humans, which comprises administering to the sufferer an effective amount of a compound according to claim 1 or a pharmaceutically acceptable salt thereof.

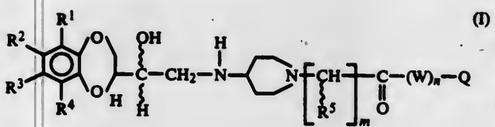
4,499,100

BENZODIOXANYL-HYDROXYETHYLENEAMINO-PIPERIDINYL ACETANILIDES, KETONES, ESTERS AND CARBAMATES WHICH EFFECT IMMUNITY AND CALCIUM ENTRY AND β-BLOCKADE

Arthur F. Kluge, Los Altos, and Robin D. Clark, Palo Alto, both of Calif., assignors to Syntex (U.S.A.) Inc., Palo Alto, Calif.

Filed May 18, 1983, Ser. No. 495,902
Int. Cl.³ A61K *31/445;* C07D *405/12*
U.S. Cl. 514—321 49 Claims

1. A compound of the formula:



(I)

or a pharmaceutically acceptable acid addition salt thereof, wherein:

R^1, R^2, R^3 and R^4 are each independently hydrogen, lower alkyl, lower alkoxy, trifluoromethyl, halo, lower alkylthio, lower alkyl sulfinyl or lower alkyl sulfonyl;

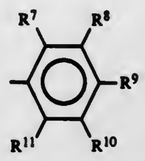
R^5 is hydrogen or lower alkyl;

m is 0 or 1;

W is alkylene, —CH=CH—, —O—, or —N(R^6)—, where R^6 is lower alkyl or hydrogen;

n is 0 or 1; and

Q is lower alkyl, cycloalkyl of 3–8 carbon atoms or optionally substituted phenyl of the formula



wherein each of R^7, R^8, R^9, R^{10} and R^{11} is independently chosen from hydrogen, lower alkyl, lower alkoxy, trifluoromethyl, halo, lower alkylthio, lower alkyl sulfinyl or lower alkyl sulfonyl, aminosulfonyl or hydroxyl or R^8 and R^9 together form a —OCH_2O— linkage.

40. A method for treating a cardiovascular disease in a mammal which method comprises administering to a subject in need of such treatment a therapeutically effective amount of the compound of claim 1.

4,499,101

PHARMACOLOGICALLY ACTIVE ISOXAZOLE AND TRIAZOLE COMPOUNDS

Graham J. Durant, and Charon R. Ganellin, both of Welwyn Garden City, England, assignors to Smith Kline & French Laboratories Limited, Welwyn Garden City, England

Division of Ser. No. 215,293, Dec. 11, 1980, Pat. No. 4,388,319, which is a division of Ser. No. 106,080, Dec. 20, 1979, Pat. No. 4,271,169, which is a division of Ser. No. 5,052, Jan. 22, 1979, Pat. No. 4,215,125, which is a division of Ser. No. 770,538, Feb. 22, 1979, Pat. No. 4,152,443, which is a division of Ser. No. 640,525, Dec. 15, 1975, Pat. No. 4,025,527, which is a continuation-in-part of Ser. No. 481,716, Jun. 21, 1974, abandoned. This application Feb. 4, 1983, Ser. No. 463,768
Claims priority, application United Kingdom, Jul. 13, 1973, 33428/73
Int. Cl.³ A61K *31/41, 31/42;* C07D *249/08, 261/08*
U.S. Cl. 514—374 11 Claims

1. A compound of the formula:

FORMULA I



wherein one of Het_1 and Het_2 is isoxazolyl or triazolyl and the other is imidazolyl, oxazolyl, isoxazolyl or triazolyl, said Het_1 and Het_2 being attached at a carbon atom and optionally substituted by lower alkyl, hydroxyl, halogen or amino; Z_1 and Z_2 are sulphur or a methylene group; B_1 is $(CH_2)_{n1}$ and B_2 is $(CH_2)_{n2}$; m_1 and m_2 are 0, 1 or 2 and n_1 and n_2 are 2 or 3, provided that the sum of m_1 and n_1 and the sum of m_2 and n_2 are from 2 to 4; and X is sulphur, oxygen or NY wherein Y is hydrogen, cyano, $CONH_2$ or SO_2R_1 wherein R_1 is lower alkyl or phenyl, provided that when X is NH, at least one of Z_1 or Z_2 is sulphur, and that when X is NH the sum of m_1 and n_1 is 3 or 4 if Het_1 is imidazolyl and the sum of m_2 and n_2 is 3 or 4 if Het_2 is imidazolyl, or a pharmaceutically acceptable acid addition salt thereof.

11. A method of inhibiting H-2 histamine receptors which comprises administering to an animal in an effective amount to inhibit said receptors a compound of claim 1.

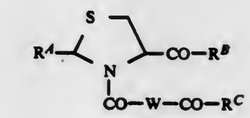
4,499,102

THIAZOLIDINE AND PYRROLIDINE COMPOUNDS AND PHARMACEUTICAL COMPOSITIONS CONTAINING THEM

Masayuki Oya, Ibaraki, and Tadashi Iso, Sakai, both of Japan, assignors to Santen Pharmaceutical Co., Ltd., Osaka, Japan

Continuation-in-part of Ser. No. 165,561, Jul. 3, 1980, abandoned. This application Dec. 10, 1981, Ser. No. 329,296
Claims priority, application Japan, Dec. 13, 1979, 54-161977; Canada, Dec. 12, 1980, 366732; European Pat. Off., Dec. 12, 1980, 80107869.2; Japan, Dec. 24, 1980, 55-183379
Int. Cl.³ A61K *31/40, 31/425;* C07D *207/16, 277/06*
U.S. Cl. 514—365 17 Claims

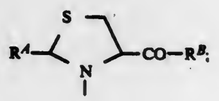
1. A compound of formula (I)



(I)

wherein

R^A is selected from the group consisting of
(a) phenyl and naphthyl;
(b) phenyl substituted by at least one substituent selected from the group consisting of lower alkyl, hydroxy, lower alkoxy, halogenolower alkoxy, acetoxy, halogen, nitro, cyano, carboxy, sulfamoyl and lower alkylsulfinyl;
R^B is hydroxy or lower alkoxy;
R^C is hydroxy, lower alkoxy or



W is selected from the group consisting of



(a)

$-(CH_2)_p-X-(CH_2)_q-$; and (b)

$-(CH_2)_p-Y-(CH_2)_r-Y-(CH_2)_t-$, (c)

wherein
m is 0 or 1;
n is from 1 to 12;
p, r and t are each 1, 2 or 3;
q is 2 or 3;
X is O, SO or SO_2; and
Y is O, S, SO or SO_2,
and salts thereof, said lower alkyl, lower alkanoyl and lower alkoxy having 1 to 6 carbon atoms.

14. A composition comprising an amount of the compound of claim 1 sufficient to reduce blood pressure and a pharmaceutically acceptable excipient.

16. A composition comprising an amount of the compound of claim 1 sufficient to prevent or relieve diabetes mellitus associated complications consisting of cataracts, neuropathy, nephropathy and retinopathy in a diabetic mammal, and a pharmaceutically acceptable excipient.

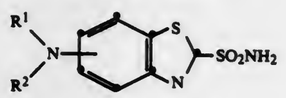
4,499,103

BENZOTHIAZOLE-2-SULFONAMIDE DERIVATIVES FOR THE TOPICAL TREATMENT OF ELEVATED INTRAOCULAR PRESSURE

S. Jane de Solms, Norristown, Pa., assignor to Merck & Co., Inc., Rahway, N.J.

Filed Mar. 17, 1983, Ser. No. 476,002
Int. Cl.[3] C07D *277/80*; A61K *31/425*
U.S. Cl. 514—365 16 Claims

1. A compound of structural formula:



or an ophthalmologically acceptable salt thereof, wherein: R^1 and R^2 are independently:
(1) hydrogen,
(2) C_{1-18}alkyl,
(3) C_{3-6}cycloalkyl,
(4) C_{3-6}cycloalkyl-C_{1-3}alkyl,
(5) aryl-C_{1-3}alkyl, wherein aryl is phenyl, naphthyl, pyridinyl, furanyl or thienyl, and is unsubstituted or substituted with one or more of chloro, bromo, fluoro, C_{1-3}alkyl or C_{1-3}alkoxy,
(6)



wherein R^3 is
(a) C_{1-18}alkyl,
(b) aryl, either unsubstituted or substituted with one or more of chloro, bromo, fluoro, C_{1-3}alkyl or C_{1-3}alkoxy,
(c) aryl-C_{1-3}alkyl wherein the aryl group is either unsubstituted or substituted with one or more of chloro, bromo, fluoro, C_{1-3}alkyl, or C_{1-3}alkoxy,
(d) -amino-C_{1-18}alkyl; or
(7) R^1 and R^2, if loweralkyl, are joined together directly or through a heteroatom selected from O or N, to form a heterocycle with the nitrogen to which they are attached selected from pyrrolidine, piperidine, morpholine and piperazine.

4,499,104

IMIDAZOLE COMPOUND, THE PROCESS FOR ITS PREPARATION, AND THERAPEUTICALLY ACTIVE COMPOSITIONS CONTAINING SAME

Juan Scalesciani, Buenos Aires, Argentina, assignor to Farmatis S.r.l., Milan, Italy

Filed May 31, 1977, Ser. No. 796,532
Claims priority, application France, May 13, 1976, 76 14381
Int. Cl.[3] A61K *31/415*
U.S. Cl. 514—396 3 Claims

1. A method of effecting antiinflamatory, analgesic and antipyretic activity which comprises administering to the host an effective amount of an active ingredient selected from 4-(p-chlorophenyl)-5-methylimidazole or a non-toxic pharmaceutically acceptable salt thereof and a pharmaceutically acceptable carrier.

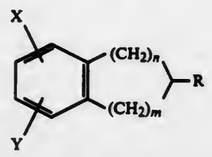
4,499,105

CARBOXYIMIDAMIDE DERIVATIVES

Harm J. Panneman, Oss, Netherlands, assignor to Akzo N.V., Arnhem, Netherlands

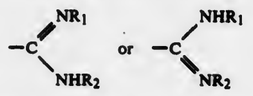
Continuation of Ser. No. 214,889, Dec. 9, 1980, abandoned. This application Dec. 28, 1982, Ser. No. 452,194
Claims priority, application Netherlands, Dec. 12, 1979, 7908922
Int. Cl.[3] A61K *31/22, 31/155*; C07C *123/00*
U.S. Cl. 514—631 6 Claims

1. Carboximidamide derivatives of the general formula:



I

in which n and m represent the value 1 or 2, X and Y hydrogen, alkyl (1–4 C), alkoxy (1–4 C), hydroxy, halogen, hydroxymethyl, trifluoromethyl, acyl (1–4 C), acyloxy (1–4 C) or the group NR_xR_y, in which R_x and R_y represent hydrogen, alkyl (1–4 C) or a sulphonyl group and R represents the group:



in which R_1 and R_2 represent hydrogen, alkyl (1–4 C), hydroxy, alkoxy (1–4 C), phenylalkoxy (7–10 C), acyloxy, amino or mono- or dialkyl (1–4 C)-amino, or a pharmaceutically acceptable salt thereof.

6. A pharmaceutical composition for use as a blood platelet aggregation inhibitor which comprises, as active ingredient, a blood platelet aggregation inhibiting amount of a compound as defined in claim 1, or a pharmaceutically acceptable salt thereof, in a pharmaceutically acceptable carrier.

4,499,106

LIPOLYTIC COMPOSITION AND METHOD OF TREATING OBESITY

Werner Traunecker, Münster-Sarmsheim; Wilhelm Frölke, Ingelheim am Rhein; Heinrich Kreuzer, Gau-Algesheim, and Hans P. Köllmer, Wackernheim, all of Fed. Rep. of Germany, assignors to Boehringer Ingelheim KG, Ingelheim am Rhein, Fed. Rep. of Germany

Filed May 20, 1983, Ser. No. 496,457
Claims priority, application Fed. Rep. of Germany, Jun. 1, 1983, 3220598
Int. Cl.[3] A61K *31/16*
U.S. Cl. 514—603 1 Claim

1. The method of combatting obesity in a warm-blooded animel in need thereof, which comprises orally administering to said animal an effective lipolytic amount of 1-(4-hydroxy-3-dimethylamino-sulfanamidophenyl)-1-hydroxy-2-(1-phenoxy-isopropylamino)ethane or a pharmaceutically acceptable acid addition salt thereof.

4,499,107

METHOD FOR TREATING INFECTED RENAL CALCULOSIS

Mario Bergamaschi, Monza, and Carlo Alfieri, Milan, both of Italy, assignors to Dr. L°. Zambeletti, S.p.A., Milan, Italy

Filed Oct. 19, 1982, Ser. No. 435,291
Claims priority, application Italy, Nov. 5, 1981, 24897 A/81
Int. Cl.[3] A61K *31/165*
U.S. Cl. 514—575 3 Claims

1. A method of treating infected renal calculosis which comprises orally administering to a patient a composition containing as the active ingredient from about 25 mg to about 500 mg of proprionic hydroxamic acid expressed as free acid, or an equivalent amount of a pharmaceutically acceptable salt thereof, in admixture with a pharmaceutically acceptable carrier.

4,499,108

STABLE PLEASANT-TASTING ALBUTEROL SULFATE PHARMACEUTICAL FORMULATIONS

Joel A. Sequeira, New York, N.Y., and Michael A. Zupon, Madison, N.J., assignors to Schering Corporation, Madison, N.J.

Filed Jun. 8, 1983, Ser. No. 502,427
Int. Cl.[3] A61K *31/135*
U.S. Cl. 514—653 6 Claims

1. A stable, pleasant-tasting pharmaceutical formulation comprising per ml of the formulation:
(a) 0.2 to 6.0 mg albuterol sulfate,
(b) sufficient buffer to control the pH of the formulation to 2 to 5,
(c) sufficient preservative to prevent microbial growth,
(d) 0.1 to 2.0 mg saccharin,
(e) sufficient viscosity imparting agent to cause the viscosity of the formulation to be higher than that of water at room temperature, and
(f) water q.s. for 1 ml.

4,499,109

PROCESS FOR THE PRODUCTION OF CHEESE CURD

Tage Christiansen, Nibe; Werner Imhof, Vadum; Poul F. Jensen, Aalborg; Jens B. Kjaer, Hjallerup; Bjarne Kristiansen, Nibe; Kjeld Kristensen, Vodskov, and Bent Pedersen, Hjallerup, all of Denmark, assignors to Orum Sogns Mejeri APS, Hjallerup, Denmark

Filed May 17, 1982, Ser. No. 379,092
Claims priority, application Sweden, May 15, 1981, 8103062
Int. Cl.[3] A23C *9/12, 19/00*
U.S. Cl. 426—36 11 Claims

1. A process for the production of cheese curd which comprises subjecting a liquid milk product to renneting by adding thereto and admixing therewith a coagulating agent, introducing the resulting mixture into the inlet end of a long coagulator tube while said mixture is at a coagulating temperature in the range of about 25°–50° C., passing said mixture under substantially adiabatic conditions through the coagulator tube, discharging said mixture as plug-shaped coagulated cheese curd from an outlet end of said tube, the renneting conditions being selected so that the renneting time remaining after said introduction of the mixture into said inlet end is at least three minutes, said mixture being fed intermittently into said inlet end during feeding periods alternating with intermediate stand still periods, the length of a feeding period being selected so that no substantial coagulation occurs in the mixture from its introduction into the coagulator tube to its first stand still period in said tube, the length of a stand still period being sufficient so that the mixture, upon being subjected to only one stand still period in said tube, forms a coagulum firm enough to be moved as a continuous plug toward said outlet end by said feeding of mixture into said inlet end during a successive feeding period, the speed of feeding mixture into said tube and the length of said tube being adjusted so that the residence time in said tube for the cheese curd discharged from said outlet end comprises at least one feeding period and one stand still period.

4,499,110

PHOSPHOROUS-NITROFEROUS SOLID FODDER COMPOSITION AND PROCESS FOR ITS PRODUCTION

Béla Tomkó, 27, Pásкomliget ut, 1156 Budapest; Géza Márai, 1/A, Nyisztor tér, 2100 Gödöllo, and Béla Karácsonyi, 18, Práter utca, 1082 Budapest, all of Hungary

Continuation of Ser. No. 435,127, Oct. 18, 1982, abandoned, which is a continuation of Ser. No. 137,506, Apr. 4, 1980, abandoned. This application Dec. 12, 1983, Ser. No. 560,270
Claims priority, application Hungary, Apr. 6, 1979, TO 1099
Int. Cl.[3] A23K *1/22*
U.S. Cl. 426—69 2 Claims

1. Process for the production of a phosphorous-nitrogen containing solid fodder composition, consisting essentially of: adding to one part by weight of the urea, 0.15–0.25 part by weight of diluted or conc. H_3PO_4 at a temperature above 132.7° C. to form a melt; dispersing in the melt 0.1–1.0 part by weight of a uniform dispersion of starch; extruding or granulating the melt hot or cold, and adding other fodder components to the melt, whereby release of phosphoric acid and urea in living organisms is controlled.

4,499,111

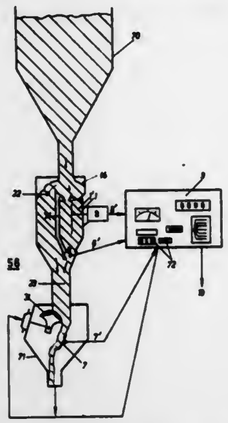
PROCESS FOR CONTINUOUSLY DETERMINING THE MOISTURE CONTENT OF SPOILABLE GRAIN PRODUCTS

Hans Oetiker, St. Gallen, and Emanuel Kummer, Gossau, both of Switzerland, assignors to Gebruder Buhler AG, Switzerland

Continuation-in-part of Ser. No. 355,596, Feb. 17, 1982,. This application Jun. 25, 1982, Ser. No. 392,137
Int. Cl.[3] G01N *5/02, 33/02*; G01R *27/26*
U.S. Cl. 426—231 15 Claims

1. A process for continuously determining the moisture content of a spoilable grain product moving along a processing line as a product stream and, at least in part, passing down-

wardly through a measuring section, said process comprising the steps of continuously diverting a portion of said product stream, reducing the flow rate of said portion relative to the remainder of said product stream so that said portion corresponds to a pourable average of said product stream, electrically measuring the moisture content of said pourable average



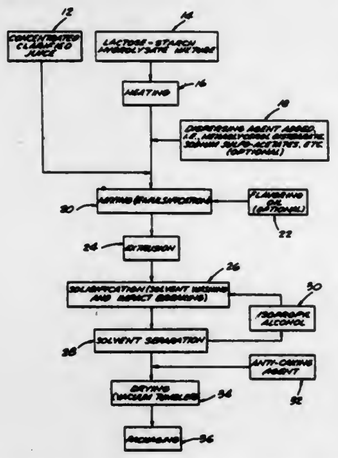
as it passes through the measuring section, passing said remainder of said product stream downwardly through a passageway forming a bypass section in parallel with said measuring section, and controlling the flow of product in said bypass section to maintain a constant product level therein, whereby a constant quantity of product accumulation in said measuring section is obtained.

4,499,112

PROCESS FOR FORMING SOLID JUICE COMPOSITION AND PRODUCT OF THE PROCESS

Dennis H. Miller, Rancho Cucamonga, and Jerry R. Mutka, Corona, both of Calif., assignors to Sunkist Growers, Inc., Sherman Oaks, Calif.

Filed Mar. 21, 1983, Ser. No. 477,234
Int. Cl.³ A23L 2/26, 2/10
U.S. Cl. 426—276 **27 Claims**



1. A process for preparing a relatively stable, non-hygroscopic solid composition having an amorphous quality, said composition being derived from an aqueous fruit juice, comprising the steps of:

clarifying and concentrating a selected aqueous juice to a minimum concentration of about 85° BRIX,

heating to about its boiling point an aqueous mixture of a sugar and a starch hydrolysate,

blending said aqueous mixture and said aqueous juice in relative amounts selected for forming a homogeneous melt,

extruding said melt into a solvent at a temperature effective to form solidified extruded material,

forming said extruded material into particles, and

drying said particles in combination with a selected anti-caking agent to produce a relatively stable and non-hygroscopic solid composition in particulate form.

4,499,113

PROCESS FOR PREPARING SNACK PRODUCTS WITH EXPANDED COATING

Keizo Mochizuki; Yukio Kuwada, both of Kanagawa, and Yoshihiko Mizoguchi, Tokyo, all of Japan, assignors to Meiji Seika Kaisha, Ltd., Tokyo, Japan

Filed Aug. 26, 1982, Ser. No. 411,785
Claims priority, application Japan, Aug. 26, 1981, 56-133647
Int. Cl.³ A23G 3/00
U.S. Cl. 426—291 **8 Claims**

1. A process for producing an edible snack product with an expanded coating, comprising the steps of:

providing a core material selected from the group consisting of nuts, beans, an expanded edible starchy material coated with an edible fatty confectionary material and a shaped fatty confectionary material;

providing a first flour mixture comprised of 60:40 to 30:70 parts by weight of a starchy flour capable of providing a small degree of expansion and good savor upon frying and a pregelatinized starchy flour capable of providing a high degree of expansion upon frying;

providing a first aqueous sugar solution having a refractive Brix value of between 30 and 40;

coating said core material with a first coating by alternately applying the first flour mixture and the first aqueous sugar solution to form a uniform coating on the core material;

providing a second flour mixture comprised of a starchy flour capable of providing a small degree of expansion and good savor upon frying and an equal or less amount of weight of a pregelatinized starchy flour capable of providing a high degree of expansion upon frying;

providing a second aqueous sugar solution having a refractive Brix value of between 50 and 60;

coating the first coating with a second coating which is less expandable than the first coating during frying by alternately applying the second flour mixture and the second aqueous sugar solution in order to form a uniform second coating;

controlling the thickness of the first coating and the second coating so that the weight ratio of the first coating to the second coating is in the range of from 50:50 to 60:40; and

frying the core material with the first and second coatings thereon.

4,499,114

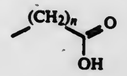
FLAVORING SOME TROPICAL FLAVORED FOODSTUFFS WITH MIXTURE OF C_4–C_{10} -N-ALKANOIC ACID AND ETHYL ESTER OF 2-HYDROXY-4-METHYL PENTANOIC ACID

Domenick Laccarelli, Jr., Neptune; Braja D. Mookherjee, Holmdel; Richard A. Wilson, Westfield; Michael J. Zampino, North Bergen, and David R. Bowen, Somerset, all of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Filed Jun. 13, 1984, Ser. No. 620,164
Int. Cl.³ A23L 1/235
U.S. Cl. 426—534 **8 Claims**

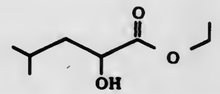
1. A process for augmenting or enhancing the aroma or taste of a tropical flavored foodstuff selected from the group consisting of guava flavored foodstuff, mango flavored foodstuff and papaya flavored foodstuff comprising the step of adding to said tropical flavored foodstuff from 0.5 parts per million up to about 500 parts per million based on the total foodstuff of a mixture of:

(a) at least one carboxylic acid defined according to the structure:



and

(b) the synthetically produced substantially pure ethyl ester of 2-hydroxy-4-methyl pentanoic acid having the structure



wherein the weight ratio of ethyl ester of 2-hydroxy-4-methyl pentanoic acid: carboxylic acid is from about 8:1 to about 2:1.

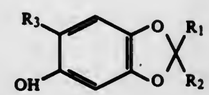
4,499,115

ANTIOXIDANT BENZODIOXOLE COMPOUND

Thi H. Minh, Kingsford; Edward R. Cole, Turramurra, and George Crank, Sdyney, all of Australia, assignors to Unisearch Limited, Kensington, Australia

Continuation of Ser. No. 222,986, Jan. 7, 1981, abandoned. This application Dec. 30, 1982, Ser. No. 454,883
Claims priority, application Australia, Jan. 7, 1980, PE1920
Int. Cl.³ A23D 5/04; C07D 317/06
U.S. Cl. 426—546 **9 Claims**

1. A method of retarding oxidation of foodstuffs containing edible oils or fats, comprising, mixing with a foodstuff an antioxidation effective amount of a benzodioxole compound having the structure



wherein

R_1 is a hydrogen atom or an alkyl group or an aryl group;

R_2 is an alkyl group or an aryl group;

or

R_1 and R_2 together form a cycloalkyl group; and

R_3 is a hydrogen atom or an hydroxyl group.

4,499,116

IMITATION CHEESE PRODUCTS CONTAINING MODIFIED STARCH AS PARTIAL CASEINATE REPLACEMENT AND METHOD OF PREPARATION

Gary A. Zwiercan, Kantsford, England; Norman L. Lacourse, Plainsboro, and Julianne M. Lenchin, Cranbury, both of N.J., assignors to National Starch and Chemical Corporation, Bridgewater, N.J.

Continuation-in-part of Ser. No. 455,389, Jan. 3, 1983, abandoned. This application Dec. 2, 1983, Ser. No. 556,479
Int. Cl.³ A23C 20/00
U.S. Cl. 426—582 **20 Claims**

1. An imitation cheese product containing at least one edible caseinate, wherein the improvement comprises the replacement of part of the caseinate, in an amount up to about 80% by weight, with an edible modified starch, the starch-caseinate cheese product being functionally equivalent to the caseinate cheese product; the starch being a pregelatinized converted starch having a water fluidity (WF) of about 5–90 and an amylose content of about 15% to below about 40% by weight; a derivative thereof prepared by treatment of the starch with up to about 10% propylene oxide, up to about 2% succinic anhydride, up to about 3% octenylsuccinic anhydride, a sufficient amount of acetic anhydride to provide a maximum of about 2.5% bound acetyl, or a sufficient amount of sodium or potassium orthophosphate, sodium or potassium tripolyphosphate, or mixture thereof to provide a maximum of about 0.4% bound phosphate; or a moderately crosslinked product thereof prepared by treatment of the starch with phosphorus oxychloride, epichlorohydrin, sodium trimetaphosphate, or adipic-acetic anhydride; or a derivatized moderately crosslinked starch; the converted starch being a fluidity starch prepared by acid- or enzyme-conversion of the starch or an oxidized starch prepared by treatment of the starch with up to about 2% active chlorine; the treatment percentages being by weight based on the starch.

4,499,117

METHOD OF PREPARING NATURAL BEVERAGES HAVING A LOW ALCOHOL LEVEL, USING ULTRAFILTRATION TECHNIQUES

Marc Bonneau, 42, rue Béliasen, F-69005 Lyon, France

PCT No. PCT/FR82/00005, § 371 Date Sep. 13, 1982, § 102(e) Date Sep. 13, 1982, PCT Pub. No. WO82/02405, PCT Pub. Date Jul. 22, 1982
PCT Filed Jan. 13, 1982, Ser. No. 420,251
Claims priority, application France, Jan. 13, 1981, 81 00915
Int. Cl.³ C12G 3/08, 1/00; B01D 13/00
U.S. Cl. 426—592 **5 Claims**

1. A process for the preparation of a natural beverage having a low alcohol level, which comprises the steps of:

(a) ultrafiltering a natural alcoholic liquid under low pressure through a semi-permeable ultrafilter whose molecular weight separation threshold is about 10,000 to form as a retentate R_1, containing a mixture of organic molecules of a molecular weight greater than or equal to 10,000, and an ultrafiltrate F_1, containing a mixture of organic molecules of a molecular weight less than 10,000;

(b) subjecting the ultrafiltrate F_1 formed during step (a), to reverse osmosis under high pressure through a semi-permeable membrane whose molecular weight separation threshold is about 250 to form as a retentate R_2, containing a mixture of organic molecules of a molecular weight between 10,000 and 250 and an ultrafiltrate F_2, containing a mixture of organic molecules of a molecular weight less than 250;

(c) evaporating by vacuum distillation under a low temperature the ultrafiltrate F_2 prepared during step (b) to yield a retentate R_3, which contains a mixture of molecules of molecular weight less than 250, and an evaporate F_3, which is alcohol; and

(d) forming the natural beverage of low alcohol content by mixing in suitable proportions corresponding to the levels

of the starting product in the elements supporting the organoleptic, biological and physical-chemical properties, the retentates R_1, R_2 and R_3, or the retentates R_1 and R_3 or the retentates R_2 and R_3.

4,499,118

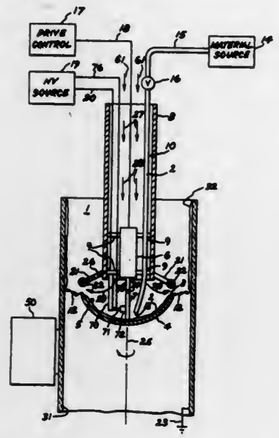
METHOD FOR COATING WITH AN ATOMIZABLE MATERIAL

Peter W. Dietz, Delanson, and Ralph T. Wood, Elnora, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Division of Ser. No. 345,508, Feb. 3, 1982, Pat. No. 4,440,350. This application Nov. 21, 1983, Ser. No. 553,657

Int. Cl.³ B05B 5/08, 13/06

U.S. Cl. 427—28 **14 Claims**



1. A method for applying a coating of atomizable material to the inside surface of a glass tube comprising:

(a) positioning a non-rotatable hollow tubular support means for inserting into said tube, said support means housing a drive means having a rotatable member affixed thereto adjacent to one end of said support means,;

(b) delivering said material to a surface of said member adapted to receive said material via a path through said support means,;

(c) concurrently rotating said member at a predetermined angular velocity in order to cause said material to be thrust from said surface of said member and translating said support means relative to said tube along the axis of said tube, whereby droplets of material are formed and at least a portion of said droplets impact said inside surface of said tube parallel to the axis thereof; and

(d) performing (b) and (c) concurrently.

4,499,119

METHOD OF MANUFACTURING SUPER-CONDUCTIVE TUNNEL JUNCTION DEVICES WITH PRECISE JUNCTION AREA CONTROL

Lawrence N. Smith, Lexington, Mass., assignor to Sperry Corporation, New York, N.Y.

Filed Jul. 6, 1983, Ser. No. 511,354

Int. Cl.³ H01L 39/24, 39/22

U.S. Cl. 427—63 **36 Claims**

1. A method of defining an area on a layer of an integrated circuit comprising the steps of

masking a first region of said layer with a said first narrow-line mask,

subtractively rendering ineffective unmasked regions of said layer,

removing said first mask,

applying a second narrow-line mask to said layer intersecting said first region at an angle with respect thereto, and

subtractively rendering ineffective unmasked and effective regions of said layer,

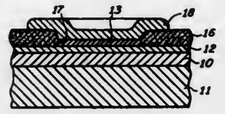
so as to define said area on said layer by the intersection of said first and second masks.

3. A method of defining the area of a superconductive tunnel junction comprising the steps of

forming a first layer of superconductive material on a substrate,

forming a barrier layer of barrier material on said first layer,

forming a second layer of superconductive material on said barrier layer,



masking a first region of said second layer with a first narrow-line mask,

converting unmasked regions of said second layer of superconductive material to an insulating material through the entire thickness thereof,

removing said first mask,

applying a second narrow-line mask to said second layer intersecting said first region at an angle with respect thereto, and

converting unmasked and unconverted regions of said second layer of superconductive material to an insulating material through the entire thickness thereof,

said first layer remaining substantially unconverted to insulating material during said conversion steps.

4,499,120

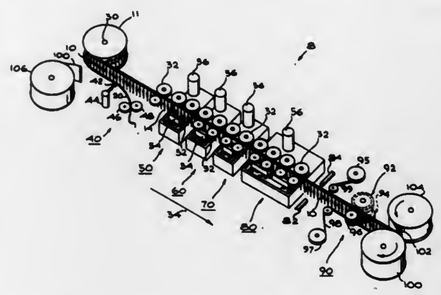
METHOD FOR SOLDER TINNING OF COMPONENT LEADS

George C. Marshall, Jr., Claremont, Calif., assignor to General Dynamics, Pomona Division, Pomona, Calif.

Division of Ser. No. 427,095, Sep. 29, 1982, Pat. No. 4,491,084. This application Oct. 6, 1983, Ser. No. 539,690

Int. Cl.³ B05D 5/12

U.S. Cl. 427—123 **15 Claims**



1. A method of solder tinning electronic component leads comprising the steps of:

providing a plurality of electronic components in sequence from a storage member, the two component leads of each component being secured to corresponding adjacent component leads by first and second retaining means as stored;

advancing said component leads through a sequence of processing stages whereby said leads are solder tinned;

removing said first retaining means from leads at a first processing stage which precedes the other processing stages in said sequence;

cleaning said component leads at a second processing stage;

applying flux to the cleaned component leads at a third processing stage; and

applying solder to the cleaned component leads at a fourth processing stage.

4,499,121

METHOD OF PREPARING A MAGNETIC RECORDING MEDIUM WITH A CALENDERING TREATMENT

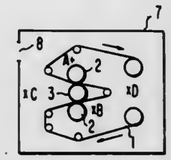
Nobutaka Yamaguchi; Masaaki Fujiyama; Sugihiko Tada; Eiichi Tadokoro; Katsumi Ryoke; Masahiro Utsumi, and Masami Suzuki, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed May 4, 1983, Ser. No. 491,485

Claims priority, application Japan, May 4, 1982, 57-75634

Int. Cl.³ H01F 10/02

U.S. Cl. 427—130 **6 Claims**



1. A method for producing a magnetic recording medium comprising the steps of:

(A) providing a ferromagnetic coating layer on a non-magnetic support base to provide a coated base;

(B) subjecting the coated base to an atmosphere having an RH of not less than 60% prior to step (C); and

(C) subjecting the coated base to calendaring treatment.

4,499,122

PROCESS FOR FINISHING SURFACES ACHIEVING IMPROVED MAGNETIC DISK PERFORMANCE

James Economy, San Jose, and Anagnostis E. Zachariades, Hillsborough, both of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 31, 1983, Ser. No. 528,318

Int. Cl.³ H01F 10/00

U.S. Cl. 427—130 **7 Claims**



1. A method for producing an improved magnetic recording disk comprising the steps of:

applying a curable liquid magnetic coating material to a substrate, said coating material containing magnetic particles and load bearing particles, at least some of said load bearing particles extending above the surface of said coating material,

placing said coated substrate between a pair of rollers, said rollers having an ultra-smooth surface finish, the hardness of the surfaces of said rollers exceeding the hardness of the surface of said coating material, said magnetic particles and said substrate,

rotating both said rollers at the same speed to cause the substrate to be moved at said same speed through the rollers without longitudinal deformation, and

applying through said rollers a force to said coated substrate which exceeds the elastic limit of said coating material, the application of said force pushing said protruding load bearing particles into said coating material and substrate to increase its durability;

the application of said force also improving the surface finish of said coating material and also permanently compressing said coating material to increase the concentration of said magnetic particles in said coating material.

4,499,123

PROCESS FOR COATING ALUMINUM WITH ZINC

Masamichi Suzuki, Mishima; Atsushi Sugihara, Shimizu; Tadaaki Sano, Fuji, and Toshihiro Suzuki, Numazu, all of Japan, assignors to Alcan International Limited, Montreal, Canada

Filed May 3, 1983, Ser. No. 491,022

Int. Cl.³ B05D 5/00

U.S. Cl. 427—282 **17 Claims**

1. A process for applying a coating of zinc to a surface of an aluminum article comprising, in combination, the steps of

(a) exposing the surface to an aqueous bath, containing an alkali metal hydroxide and a concentration of zinc oxide between about 50 and about 110 grams per liter, at a temperature between about 20° and about 40° C. for depositing metallic zinc on said surface; and

(b) exposing the surface, bearing the zinc deposited thereon in step (a), to an aqueous bath, containing an alkali metal hydroxide and a concentration of zinc oxide between about 30 and about 70 grams per liter, at a temperature between about 30° and about 60° C. for depositing further metallic zinc on said surface, the last-mentioned zinc oxide concentration and the last-mentioned temperature being mutually selected to provide a stronger deposition condition in this step (b) than in step (a).

4,499,124

PROCESS OF COATING CONSISTING OF A MIXTURE OF VINYL CHLORIDE POLYMER AND POLYURETHANE WITH TERTIARY AMINE AND/OR AMMONIUM GROUPS

Christian Pusineri, Serezin du Rhone, and Jean Goletto, Ecully, both of France, assignors to Hospal-Sodip, S.A., Meyzieu, France

Division of Ser. No. 566,331, Dec. 28, 1983, , which is a division of Ser. No. 489,707, Apr. 29, 1983, Pat. No. 4,333,072, which is a division of Ser. No. 417,323, Sep. 13, 1982, Pat. No. 4,394,462, which is a division of Ser. No. 103,894, Dec. 17, 1979, Pat. No. 4,408,026. This application Jun. 15, 1984, Ser. No. 621,221

Int. Cl.³ B05D 3/02

U.S. Cl. 427—385.5 **7 Claims**

1. Process for the preparation of organic polymer compositions, which can be used, in particular for producing tubes and catheters, having good compatibility with biological materials, characterized in that a support is coated with a solution of a composition that consists of a mixture of vinyl chloride polymer and of polyether-urethane with tertiary amine and/or ammonium groups with the proportion of the polyether-urethane being from 1 to 99 percent by weight, relative to the total mixture, and in that this coated solution is evaporated.

4,499,125

CONTINUOUSLY PRODUCED MELT REACTED MELAMINE-FORMALDEHYDE RESINS

Elmer P. Blasing; Ronald J. Keeling, and Jin-Young K. Roe, all of Cincinnati, Ohio, assignors to Formica Corporation, Wayne, N.J.

Division of Ser. No. 466,172, Feb. 14, 1983, Pat. No. 4,458,062. This application Jan. 13, 1984, Ser. No. 570,569
Int. Cl.³ B05D 3/02
U.S. Cl. 428—503 6 Claims

1. A continuous method for the one-shot preparation of a melamine-formaldehyde resin which comprises:

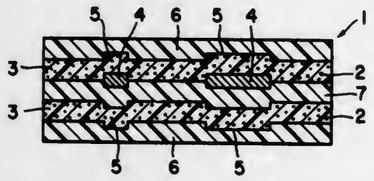
charging crystalline melamine and solid formaldehyde, in the absence of solvent, into a single pass reactor at a temperature ranging from about 120° C. to about 180° C. for from about 30 seconds to about 5 minutes, recovering the resultant resin as a molten liquid, coating said molten resin onto a reinforcing substrate while at approximately the temperature of reaction and cooling the resultant coated substrate.

4,499,126

PLASTIC RELIEF CARD HAVING METALLIC LUSTER

Norimoto Suzuki, Tokyo, and Shunji Inoue, Yokohama, both of Japan, assignors to Dai Nippon Insatsu Kabushiki Kaisha, Japan

Filed May 11, 1983, Ser. No. 493,518
Int. Cl.³ G09F 3/02; G03C 11/08
U.S. Cl. 428—13 13 Claims



1. A plastic card having metallic luster relief appearances comprising at least one metallic luster plastic sheet containing a metallic-luster pigment and having a relief pattern of surface concavities and convexities formed on the surface thereof and transparent plastic sheets respectively laminated onto the outer surfaces of the metallic-luster plastic sheet.

4,499,127

PICTURE-BACKING FOIL WITH DEPRESSIONS AND COLORING MATERIALS THEREIN

William A. Jones, P.O. Box 189, Everett, Wash. 98201

Filed Jul. 20, 1981, Ser. No. 284,939
Int. Cl.³ B44D 2/00
U.S. Cl. 428—14 14 Claims



1. A picture comprising,

a backing member,

a foil sheet, continuous, imperforate and impervious, and having regular and uniform surfaces one surface being secured to the backing member in position thereon with its other surface forming a front surface presented to view,

the backing member being semi-rigid, and thereby self-sustaining in shape, and the backing member and foil sheet together constituting a semi-rigid panel,

the backing member and foil sheet being pre-selected in size to determine the size of the picture to be made,

the foil sheet being capable of having depressions formed therein, and the backing member being capable of having depressions formed therein in response to depressions being formed in the front surface of the foil sheet, and both the foil sheet and backing member having depressions therein, resulting in corresponding depressions in the panel, and

substances in the depressions contrasting in appearance with the foil sheet,

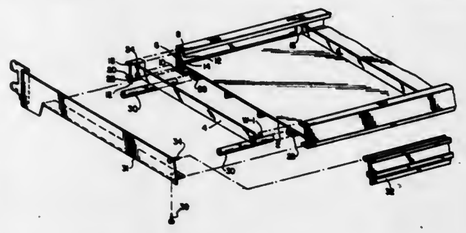
the depressions and thereby the respective substances therein being selectively and individually so dimensioned and proportioned and positioned relative to each other as to form a predetermined picture independently of and separate from that portion of the foil sheet that is devoid of depressions and substances and that constitutes a portion of said front surface.

4,499,128

ADJUSTABLE DIVIDER STRIP MOUNTING FOR PLASTIC TRAYS

Myron A. Strausheim, Richmond, Ind., assignor to American Desk Mfg. Co., Temple, Tex.

Filed Sep. 14, 1983, Ser. No. 532,224
Int. Cl.³ B32B 1/00
U.S. Cl. 428—35 4 Claims



1. A divider strip and mounting for a tray having front and rear sides, said tray having an elongate forwardly open substantially "C"-shape channel disposed along the rear side thereof, the "C"-shape of said channel being formed by generally oppositely facing arm portions, said mounting comprising a clip, said clip having an aperture therethrough, said clip slidingly engaging in the channel for lengthwise sliding movement therein and being normally blocked against forward disengagement therefrom by the arm portions of the channel and means for connecting an end portion of the divider strip through the clip aperture.

4,499,129

PARTIALLY RECOVERABLE CLOSURE

Thomas A. Kridl, Union City; Carney P. Claunch, Redwood City, and Ann O. Bjorstrom, Menlo Park, all of Calif., assignors to Raychem Corporation, Menlo Park, Calif.

Filed Oct. 14, 1983, Ser. No. 541,944
Int. Cl.³ F16L 0/00; H01R 4/00
U.S. Cl. 428—36 2 Claims

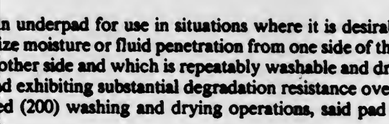
1. A wraparound closure having:

longitudinal edge regions which can be brought together to form a closure around a substrate;

a closure means for holding the edge regions in abutting position;

a flap extending from one edge region underneath the abutting area of the edge regions to provide a seal of the gap between the abutting edge regions; and

wherein a portion of the wraparound closure recovers to a decreased diameter to engage the substrate and wherein a portion of the wraparound closure does not significantly recover to engage the substrate,



the improvement comprising resilient support means engaging the flap to provide sufficient pressure on the flap to assure sealing of the flap across the gap between the abutting edge regions, the resilient support means for the flap being partially positioned within an open envelope with the envelope being attached to the closure in its place prior to recovery of the closure.

4,499,130

TEMPORARY STRIPPABLE PROTECTIVE LAMINATE

John M. Questel, Stow, and Ralph J. Madonia, Kent, both of Ohio, assignors to Carprotec, Inc., Kent, Ohio

Filed Mar. 1, 1982, Ser. No. 353,625
Int. Cl.³ B32B 7/06
U.S. Cl. 428—42 7 Claims

1. A temporary strippable protective covering for an applied material namely carpeting and decorative textile material used in vehicles, comprising:

(A) a sheet of stretchable plastic film having a substantially uniform thickness;

(B) a cross-linked acrylic, resin based, pressure sensitive adhesive on one surface of said film for releasable adherence of said film to the applied material; and

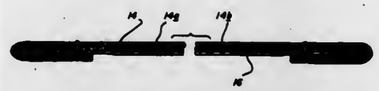
(C) said adhesive being such that it resists adhesive transfer to the applied material and has preferential adhesion failure to the applied material.

4,499,131

REUSABLE MOISTURE IMPERVIOUS UNDERPAD

Frank A. Knox, Urbana, Ill., assignor to Albert Shelton and Verna Shelton, both of Urbana, Ill.

Filed Mar. 17, 1983, Ser. No. 476,033
Int. Cl.³ B32B 3/04, 25/10
U.S. Cl. 428—68 2 Claims



1. An underpad for use in situations where it is desirable to minimize moisture or fluid penetration from one side of the pad to the other side and which is repeatably washable and dryable said pad exhibiting substantial degradation resistance over two hundred (200) washing and drying operations, said pad comprising:

at least two layers of material secured to each other to form the pad;

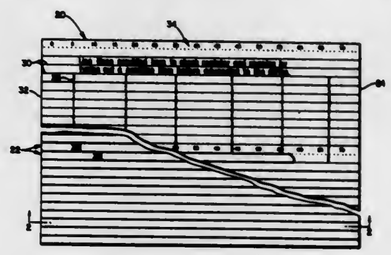
one layer comprising a facing fabric ply which includes two plies of cotton flannel and the other layer comprising a moisture-resistant neoprene-coated nylon ply which resists degradation after repeated institutional washings and dryings at temperatures on the order of 225° F., said facing ply and said moisture-resistant ply layer secured to each other about the periphery of the pad, and said facing layer overlying the edge of said moisture-resistant layer so as to form a hem about the periphery of said pad.

4,499,132

VISIBLE INDEXES

Alexander P. Jansson, 28 Old Farm Rd., Bellair, Charlottesville, Va. 22903

Continuation of Ser. No. 98,836, Nov. 30, 1979, abandoned, which is a continuation of Ser. No. 795,881, May 11, 1977, abandoned, which is a continuation of Ser. No. 505,078, Sep. 11, 1974, abandoned. This application Jan. 26, 1981, Ser. No. 228,358
Int. Cl.³ B32B 3/14, 3/16
U.S. Cl. 428—77 2 Claims



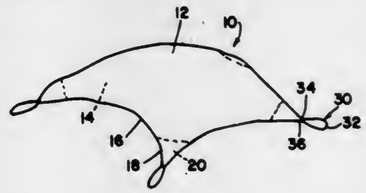
1. The combination of a plurality of separate and independent index strips, a backing sheet, and means for removably attaching said index strips in juxtaposed relationship to said backing sheet, said index strips being of multiple ply construction and comprising: a first ply composed of a fibrous, cellulosic mat impregnated with from 25 to 75 percent by weight of a partially cured, resin modified, cross-linked urea formaldehyde resin; a second ply made of paper; means bonding said second ply in face-to-face relationship with said first ply, thereby leaving exposed a surface of the second ply; a third ply made of paper; and means bonding said third ply in face-to-face relationship to said first ply on the opposite side thereof from the second ply to thereby promote the desirable physical characteristics of the index strip and the means removably attaching said index strips to said backing sheet comprising a releasable adhesive which, in the aforesaid combination, extends between and into contact with said index strips and said backing sheet and has an adhesive strength with respect to said strips and said backing sheet which is greater than its cohesive strength, the adhesive forming with said backing sheet and said index strips bonds which have greater strength than the adhesive and permit said strips to be detached from the backing sheet by merely mechanically rupturing the adhesive and without tearing or otherwise damaging the strips or removing backing sheet mterial with the strips.

4,499,133

MULTI-PURPOSE SHEET

Connie J. Prince, 250 Ohua #9C, Honolulu, Hi. 96815

Filed May 9, 1983, Ser. No. 492,680
Int. Cl.³ A45F 4/00; B32B 3/02
U.S. Cl. 428—81 9 Claims



1. A lightweight multi-purpose sheet comprising a large, flat

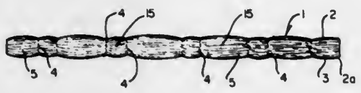
body having upper and lower sides and having peripheral edges, the peripheral edges forming at least one corner, a triangular piece mounted in the corner, the triangular piece having upper and lower surfaces and having first and second and third edges, the upper surface of the corner piece being juxtaposed to a lower surface portion of the multi-purpose sheet and first and second edges of the corner piece being connected to portions of the edges of the sheet which form the corner, a cord extending from the corner and having a remote loop portion spaced from the corner and having a base mounted in the corner for cooperating with the corner piece to hold the corner and the sheet anchored and to raise the corner for emptying material positioned in a pocket formed between the upper surface of the corner piece and the lower surface of the sheet, the pocket being positioned beneath a corner portion of a lower surface of the sheet, whereby the sheet may be anchored by positioning materials in the pocket and the pocket may be emptied by lifting the loop, which causes the materials to fall directly to the ground and away from the upper surface of the sheet.

4,499,134

ABRASION AND HIGH TEMPERATURE RESISTANT COMPOSITE AND METHOD OF MAKING THE SAME

Elliot F. Whitely, Milton Hills; Richard A. Devoe, and Gerald W. Gadbois, both of Rochester, all of N.H., assignors to Lydall, Inc., Manchester, Conn.

Filed Oct. 24, 1983, Ser. No. 544,863
Int. Cl.³ B32B *3/06*
U.S. Cl. 428—102 **22 Claims**



1. A composite having improved structural integrity and suitable for use in abrasive, high temperature environments, comprising:

(1) randomly laid and oriented heat resistant fibers interlocked together into the form of a shape sustaining paper having two lateral surfaces, said paper having a thickness of from about 0.01 to 0.50 inch.

(2) an abrasion-resistant, high temperature resistant, flexible, woven or non-woven scrim having a weight of from 0.5 to 10 oz./yd^2 disposed upon at least one of the lateral surfaces of the said paper; and

(3) a network of abrasion-resistant, high temperature-resistant threads stitched through said scrim and said paper in the form of stitching lines of a repeating enclosed pattern such that said scrim is mechanically locked to said paper by said threads;

whereby, the said network of threads and said scrim substantially retain the structural integrity of the said paper under abrasion conditions.

4,499,135

GASKETS

Barclay Mitchell, Amersham, and Kenneth Moore, Maidenhead, both of England, assignors to Payez International Limited, Berkshire, England

Filed Dec. 6, 1982, Ser. No. 446,871
Claims priority, application United Kingdom, Dec. 9, 1981, 81370114
Int. Cl.³ B32B *3/10*
U.S. Cl. 428—137 **6 Claims**

1. A gasket impregnated with a cured silicone resin manufactured from paper which is essentially free from amine containing material and which is bonded with a sulphur-free or sulphur donor free rubber binder.

4,499,136

ANTI-CORROSIVE COVERING SHEET

Yukio Nakamura, and Tsuneo Tanaka, both of Ichihara, Japan, assignors to Ube Industries Ltd., Ube, Japan

Filed Jun. 10, 1983, Ser. No. 503,221
Claims priority, application Japan, Jun. 18, 1982, 57-103741
Int. Cl.³ C23F *13/00*; D03D *49/24*
U.S. Cl. 428—206 **20 Claims**

1. An anti-corrosive covering sheet for wrapping aroung a metal pipe comprising a three layer laminate consisting essentially of an outer heat-shrinkagle plastic sheet, an intermediate adhesive layer and an outer anti-corrosive layer

said adhesive layer comprising a hot-melt adhesive material having a melting temperature of not lower than 50° C. and containing 30–80% by weight of an adhesive olefin copolymer; and

said anti-corrosive layer has a thickness in the range of 1–10 microns, and contains an anti-corrosive agent selected from the group consisting of organic anti-corrosive agents and inorganic anti-corrosive agents dispersed in the same hot-melt adhesive material which comprises said adhesive layer in an amount of 0.01–1 mg/cm^2.

4,499,137

SCUFF-RESISTANT LAMINATES

Robin D. O'Dell, Pasadena; Israel S. Ungar, and Herbert I. Scher, both of Randallstown, all of Md., assignors to Nevamar Corporation, Odenton, Md.

Filed Aug. 9, 1983, Ser. No. 521,762
Int. Cl.³ B32B *3/00, 7/14, 5/18, 9/06*
U.S. Cl. 428—211 **9 Claims**

1. A stain- and scuff-resistant decorative laminate comprising a backing layer and laminated thereto a thermoset laminating resin impregnated facing sheet, said facing sheet having thereon an ultra-thin facing layer comprising

(1) a solid, particulate lubricant in an amount sufficient such that, during use of the facing sheet to make decorative laminate, the particulate lubricant melts and blooms to the surface thereby providing a decorative laminate having simultaneously good clarity and improved scuff resistance, with the proviso that said solid lubricant is not an oxidized wax or a silicone resin, and

(2) sufficient binder material for said particles of lubricant to bind said particles to the surface of said facing sheet, said facing sheet being impregnated with a thermosetting resin compatible with said binder material, the particulate lubricant having melted and having bloomed to the surface during the laminating of said facing sheet to said backing layer.

4,499,138

MAGNETIC RECORDING MEDIUM

Nobuyuki Yamamoto, Shizuoka, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Division of Ser. No. 289,857, Aug. 4, 1981, Pat. No. 4,456,661.
This application Feb. 1, 1984, Ser. No. 575,738
Claims priority, application Japan, Aug. 15, 1980, 55-112415
Int. Cl.³ G11B *5/72*
U.S. Cl. 428—216 **7 Claims**

1. A magnetic recording tape comprising:

a base;

a thin magnetic metal layer formed on a first side of said base;

a thin metal film formed on a second side of said base wherein, said thin metal film is comprised of a metal selected from the group consisting of Mg, Ca, Sr, Ba, Cu, Zn, Cd, Sn and Pb; and

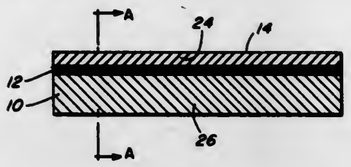
a layer of aliphatic acid formed on said thin metal film wherein said thin magnetic metal film chemically reacts with said aliphatic acid layer.

4,499,139

MICROSIZED FABRIC

Walter E. Schortmann, West Hartford, Conn., assignor to The Kendall Company, Boston, Mass.

Filed Mar. 2, 1984, Ser. No. 585,696
Int. Cl.³ B32B *7/00*
U.S. Cl. 428—245 **14 Claims**



1. A porous, breathable, liquid and bacterial barrier material comprising: a single ply fibrous web having a substantially froth-free face surface, a sized inner core and a substantially froth-free backing surface and, said sized inner core includes a froth size within said web disposed beneath said face surface; said backing surface being substantially free of said froth size, said froth size further including a plurality of micropores disposed throughout.

4,499,140

PRESSURE-SENSITIVE TRANSFER ELEMENTS AND METHOD

Albert E. Brown, Locust Valley, and Robert T. Emerson, Manhasset, both of N.Y., assignors to Leedall Products Incorporated, New York, N.Y.

Filed Mar. 5, 1984, Ser. No. 586,116
Int. Cl.³ B32B *5/18*
U.S. Cl. 428—308.4 **12 Claims**

1. Pressure-sensitive multiple use transfer element comprising a flexible foundation supporting a hot-melt-applied substantially nonfrangible coating containing a pressure-exudable fluid transfer ink, said coating comprising a cohesive solid binder material comprising a major amount by weight of at least one meltable hard wax and a minor amount by weight of at least one meltable synthetic resin which is adhesive and is compatible with said wax, and a fluid ink comprising at least one oleaginous vehicle which is substantially incompatible with said wax and substantially compatible with said meltable synthetic resin, and a dyestuff dissolved in said vehicle, said ink being uniformly dispersed throughout said coating in the form of ink droplets which are pressure-exudable from said coating to a copy sheet under the effects of imaging pressure, the surface of said binder material being sufficiently adhesive relative to the copy sheet to adhere thereto and transfer minor portions thereof with the exuded ink, under the effects of imaging pressure.

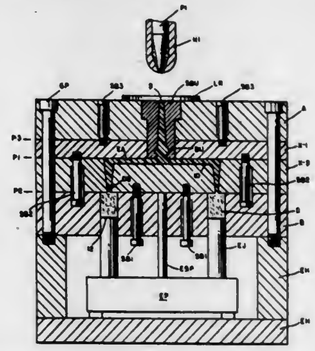
7. Process for producing a pressure-sensitive multiple use transfer element comprising the steps of producing a molten coating composition comprising a cohesive solid binder material containing a major amount by weight of at least one melted hard wax and a minor amount by weight of at least one melted synthetic resin which is adhesive and is compatible with said wax, a fluid ink comprising at least one oleaginous vehicle which is substantially incompatible with said wax and substantially compatible with said synthetic resin and a dyestuff dissolved in said vehicle, said ink being uniformly dispersed throughout said coating composition, applying said molten composition as a uniformly-thin layer to a flexible foundation, and cooling said layer to form a substantially nonfrangible cohesive layer of said binder material having said ink uniformly dispersed therethrough in the form of ink droplets which are pressure-exudable from said coating to a copy sheet under the effects of imaging pressure, the surface of said binder material being sufficiently adhesive relative to the copy sheet to adhere thereto and transfer minor portions thereof, with the exuded ink, under the effects of imaging pressure.

4,499,141

COMPOSITION FOR MAKING A PLASTIC CLOSURE FOR LIQUID PRODUCT CONTAINERS

Gary V. Paisley, Atlanta, Ga.; J. George Altschuler, Montreal, Canada, and Josef Remmler, Merklinger bei Ulm, Fed. Rep. of Germany, assignors to The Coca-Cola Company, Atlanta, Ga.

Division of Ser. No. 202,156, Sep. 2, 1980, Pat. No. 4,363,849.
This application Sep. 2, 1982, Ser. No. 414,048
Int. Cl.³ B29D *27/00*; B29F *1/04*
U.S. Cl. 428—318.8 **4 Claims**



1. A molded synthetic closure for liquid product containers having been molded to product a liquid impervious outer skin formed over a foamed core and having an external appearance resembling that of natural cork comprising a mixture of

a major amount of ethylene-vinyl acetate copolymer,

a minor amount of a hardness and strengthening additive selected from the group consisting of polyethylene and ethylenemethacrylic acid copolymer, and

a pigment for imparting the color of natural cork to the closure.

4,499,142

FACED MASONRY UNITS AND FACING COMPOSITION THEREFOR

Alan C. Kingston, Emigsville, Pa., assignor to Treswyth Industris, Inc., Emigsville, Pa.

Filed Mar. 31, 1983, Ser. No. 480,897
Int. Cl.³ B32B *13/12, 5/16, 27/36*
U.S. Cl. 428—331 **6 Claims**

1. A faced masonry unit of the type including a masonry block and a decorative durable facing on at least one surface thereof, the facing being of a composition comprising; a silane surface-treated sand filler in a range of about 60 to 90% of the total weight of the facing composition, an isophthalic neopentyl glycol polyester in a range of about 10 to 40% of the total weight of the facing composition, styrene and methyl methacrylate monomers together with a range of about 5 to 15% of the weight of the total facing composition, alumina trihydrate at least 2% by weight of the total facing composition, and dimethyl methyl phosphonate incorporated into the composition in an amount sufficient to impart permanent flame and smoke suppression to the facing.

4,499,143

MULTILAYER AUTOMATIVE PAINT SYSTEM

Sol Panush, Farmington Hills, Mich., assignor to Inmont Corporation, Clifton, N.J.

Filed Aug. 26, 1983, Ser. No. 526,724
Int. Cl.³ B32B 15/08, 27/00; B05D 1/36, 7/00
U.S. Cl. 428—336 4 Claims



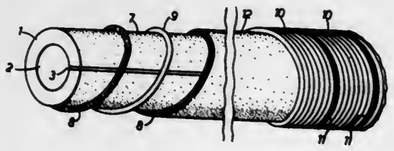
1. A substrate material coated with at least two layers of polymer including a base coat comprising a pigmented thermosetting or thermoplastic resin and a transparent topcoat on the base coat, wherein the transparent topcoat comprises a thermoplastic or thermosetting resin containing iron oxide encapsulated mica particles in a particle to resin weight ratio of about 0.0001 to about 0.32, the mica particles being about 5 microns to about 60 microns nominal longitudinal dimension and having a thickness of about 0.25 micron to about 1 micron, the iron oxide encapsulation representing about 10% to about 85% by weight of the total weight of the particle.

4,499,144

FLUID CONTAINING STRING WITH OPENING TO PASS FLUID FROM CORE

Jacob van Rijswijk, Berkel en Rodenrijs, Netherlands, assignor to Jacotra A. G., Switzerland

Continuation-in-part of Ser. No. 257,103, Apr. 24, 1981, abandoned. This application Jan. 13, 1983, Ser. No. 457,523
Claims priority, application United Kingdom, Apr. 28, 1980, 8013945
Int. Cl.³ D07B 1/02
U.S. Cl. 428—376 22 Claims



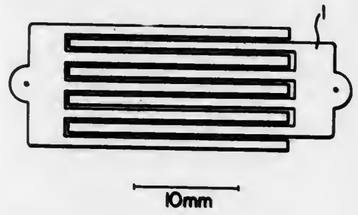
1. A string for sports rackets which comprises a core, the core being constituted by one or more synthetic polymeric monofilaments, the, or at least one of the monofilaments having a longitudinal bore, and, along the length of the bore, one or more openings for the passage of fluid from the bore, the core being covered by at least one wrapping of synthetic polymeric material.

4,499,145

METAL-CLAD LAMINATE AND PROCESS FOR PRODUCING THE SAME

Tomomi Yanagida; Mitsunori Ajiki, and Shigeru Suzuki, all of Fujieda, Japan, assignors to Sumitomo Bakelite Company Limited, Tokyo, Japan

Filed Mar. 29, 1983, Ser. No. 480,034
Claims priority, application Japan, Apr. 19, 1982, 57-64050; Apr. 19, 1982, 57-64051; Apr. 19, 1982, 57-64052; Apr. 19, 1982, 57-64053; Apr. 19, 1982, 57-64054; Apr. 19, 1982, 57-64055
Int. Cl.³ B32B 15/08, 27/06; C25D 5/56; C09J 5/02
U.S. Cl. 428—418 14 Claims



1. A metal-clad laminate comprising:
a base plate; and
a layer of metal foil on at least one side of said base plate;
said base plate including, in order, a first electrically insulating material layer composed of a cross-linked silane-modified polyethylene resin laminated to a layer of said metal foil, and a second electrically insulating material layer made of paper or cloth containing an epoxy resin, a silanol condensation catalyst or a mixture of said epoxy resin and said silanol condensation catalyst laminated to said first electrically insulating layer.

4,499,146

PROTECTING MATERIALS SUBJECT TO DEGRADATION BY ATMOSPHERIC AND POLLUTING AGENTS BY MEANS OF PERFLUOROPOLYETHERS

Franco Piacenti, Florence; Federigo Ciampelli, and Adolfo Pasetti, both of Milan, all of Italy, assignors to Montedison S.p.A., Milan and Consiglio Nazionale Delle Ricerche, Rome, both of, Italy

Continuation of Ser. No. 503,736, Jun. 13, 1983, abandoned, which is a continuation of Ser. No. 352,018, Feb. 24, 1982, abandoned. This application Nov. 28, 1983, Ser. No. 555,401
Claims priority, application Italy, Feb. 24, 1981, 19933 A/81
Int. Cl.³ B32B 27/00; C14C 9/00
U.S. Cl. 428—422 7 Claims

1. A process for protecting marble, stones, tiles and articles manufactured from such materials from the degrading action caused by atmospheric agents and pollutants, which comprises applying to the surfaces of said materials and manufactured articles a protective coating comprising, as essential protective agent, a fluid perfluoropolyether having at least one of the following general formulae:

$$A-O(CF-CF_2O)_p-(CF_2-O)_q-(CF-O)_r-B \quad (I)$$
$$\quad CF_3 \qquad\qquad\qquad\qquad CF_3$$

and

$$A-O-(C_2F_4-O)_m-(CF_2O)_n-B \quad (II)$$

wherein p, q and r are integers, q and r may be equal to zero, the sum p+q+r is an integer from 5 to 250, m and n are integers, n may be equal to zero, the sum m+n is an integer from 10 to 1000, A and B are perfluoroalkyl radicals containing 1 to 3 carbon atoms, said fluid perfluoropolyether being applied as

such or diluted with a solvent or mixture of solvents having a boiling temperature below 80° C.

4,499,147

SILICON CARBIDE SUBSTRATES AND A METHOD OF PRODUCING THE SAME

Ryo Enomoto, Ohgaki; Hidetoshi Yamauchi, Gifu, and Shoji Tanikawa, Ohgaki, all of Japan, assignors to Ibiden Co., Ltd., Japan

Filed Dec. 21, 1982, Ser. No. 451,940
Claims priority, application Japan, Dec. 28, 1981, 56-209991; Dec. 28, 1981, 56-209992; Mar. 29, 1982, 57-48958
Int. Cl.³ C03C 3/12
U.S. Cl. 428—428 16 Claims

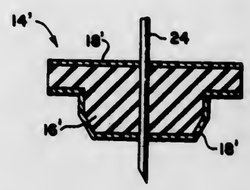
1. A silicon carbide substrate having excellent electrical insulation properties, comprising:
a silicon carbide sintered plate body; and
a eutectic oxide layer closely adhered to a surface of said sintered plate body and comprising at least 30% by weight of SiO_2 produced by oxidation of silicon carbide constituting said sintered plate body and Al_2O_3 and an oxide of at least one element selected from the group consisting of phosphorus, boron, germanium, arsenic, antimony, bismuth, vanadium, zinc, lead, cadmium, sodium, potassium, lithium, beryllium, calcium, magnesium, barium and strontium, said eutectic oxide layer having a molar ratio of Al_2O_3 to SiO_2 of 0.024–1.800, the thickness of said eutectic layer being in the range of 0.5–100 μm.

4,499,148

COMPOSITE MATERIALS OF SILICONE ELASTOMERS AND POLYOLEFIN FILMS, AND METHOD OF MAKING

Robert H. Goodale, Boulder, Colo., and James M. DuJack, Brunswick, N.Y., assignors to Canton Bio-Medical Products, Inc., Boulder, Colo. and Visilox Systems, Inc., Troy, N.Y.

Filed Jan. 10, 1983, Ser. No. 456,637
Int. Cl.³ B29C 19/02, 19/04, 19/06; B65C 9/25
U.S. Cl. 428—447 10 Claims



1. A method of chemically bonding elastomeric materials to chemically inert polyolefins, the method comprising:
exposing a chemically inert polyolefin surface to a corona discharge treatment,
applying to the corona discharge treated surface of the polyolefin a primer solution of ethyl silicate, ethyl ortho silicate and tetra butyl titanate in an organic solvent,
placing the treated and primed surface of polyolefin in contact with the surface of an uncured elastomeric compound of molecular weight above 61,000 with a minimum elongation modulus of fifty percent; and
applying heat to the composite material to cure the elastomeric compound while pressing the polyolefin elastomeric compound article firmly together, whereby upon curing of the elastomeric material the polyolefin will be firmly and securely bonded thereto.

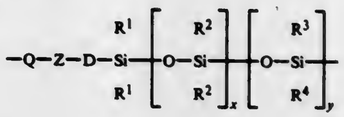
4,499,149

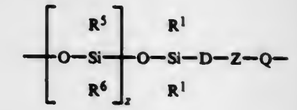
SILOXANE-CONTAINING POLYMERS

Abe Berger, Summit, N.J., assignor to M&T Chemicals Inc., Woodbridge, N.J.

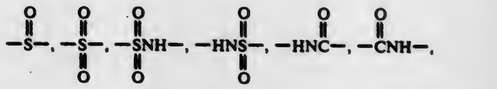
Division of Ser. No. 216,599, Dec. 14, 1980, Pat. No. 4,395,527, which is a continuation-in-part of Ser. No. 158,056, Jun. 9, 1980, abandoned, Ser. No. 174,400, Aug. 1, 1980, abandoned, Ser. No. 126,666, Mar. 3, 1980, abandoned, Ser. No. 205,120, Nov. 10, 1980, abandoned, and Ser. No. 51,699, Jun. 25, 1979, abandoned, said Ser. No. 158,056, is a continuation-in-part of Ser. No. 958,356, Nov. 6, 1978, abandoned, said Ser. No. 174,400, is a continuation-in-part of Ser. No. 907,155, May 17, 1978, abandoned, said Ser. No. 126,666, is a continuation-in-part of Ser. No. 11,901, Feb. 13, 1979, abandoned, which is a continuation-in-part of Ser. No. 906,877, May 17, 1980, Pat. No. 4,139,547, said Ser. No. 205,120, is a continuation of Ser. No. 16,412, Mar. 1, 1979, abandoned, which is a continuation-in-part of Ser. No. 907,155, May 17, 1978, abandoned, said Ser. No. 51,699, is a continuation-in-part of Ser. No. 907,155, May 17, 1978, abandoned. This application Feb. 15, 1983, Ser. No. 466,762
Int. Cl.³ B32B 9/04
U.S. Cl. 428—447 34 Claims

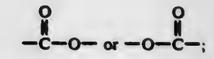
1. An article of manufacture comprising a substrate comprising a semiconductor device having disposed thereon a polyimide, poly(amide-imide) or poly(half-amide) composition comprising a polyimide, poly(amide-imide) or a poly(half-amide) containing a thermally stable siloxane unit of formula





where
Q is a substituted or unsubstituted aromatic group
Z is —O—, —S—,





D is unsubstituted or substituted hydrocarbylene;
R^1, R^2, R^3, R^4, R^5 and R^6 each independently is unsubstituted or substituted hydrocarbyl;
x, y and z each independently has a value from 0 to 100.

4,499,150

COLOR PLUS CLEAR COATING METHOD UTILIZING ADDITION INTERPOLYMERS CONTAINING ALKOXY SILANE AND/OR ACYLOXY SILANE GROUPS

Rostyslaw Dowbenko; Raymond S. Stewart, both of Gibsonia; Marvis E. Hartman, Pittsburgh; Barbara Gorman, Allison Park, and Stephen J. Thomas, Aspinwall, all of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Mar. 29, 1983, Ser. No. 480,152
Int. Cl.³ B05D 1/36, 3/02, 7/00; B32B 9/04
U.S. Cl. 428—447 37 Claims

1. A method of coating a substrate comprising the steps of:

(a) coating a substrate with one or more applications of a pigmented basecoating composition comprising an addition interpolymer having alkoxy silane groups and/or acyloxy silane groups, said addition interpolymer derived from the reaction of a mixture of monomers wherein the mixture of monomers consists essentially of:

(i) from about 50 percent to about 95 percent by weight of at least one ethylenically unsaturated silicon-free monomer, and

(ii) from about 5 percent to about 50 percent by weight of a copolymerizable ethylenically unsaturated silane monomer selected from the group consisting of an alkoxy silane monomer, an acyloxy silane monomer, and a mixture thereof, wherein the interpolymer has a peak molecular weight, as determined by gel permeation chromatography, of from about 2,000 to about 20,000 and a calculated glass transition temperature of at least about 25° C., to form a basecoat; and before a substantial amount of drying or curing of said basecoat has occurred

(b) coating the basecoat with one or more applications of a topcoating composition comprising a film-forming resin to form a clear topcoat;

wherein, after said steps (a) and (b), said basecoat and said topcoat dry or cure together.

16. The product produced by the method of claim 1.

4,499,151

COLOR PLUS CLEAR COATING METHOD UTILIZING ADDITION INTERPOLYMERS CONTAINING ALKOXY SILANE AND/OR ACYLOXY SILANE GROUPS

Rostyslaw Dowbenko; Raymond S. Stewart, both of Gibsonia; Marvis E. Hartman, Pittsburgh; Barbara Gorman, Allison Park, and Stephen J. Thomas, Aspinwall, all of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 480,152, Mar. 29, 1983, This application Sep. 6, 1983, Ser. No. 529,469

Int. Cl.³ B05D *1/36, 7/00, 3/02;* B32B *9/04*

U.S. Cl. 428—447 **31 Claims**

1. A method of coating a substrate comprising the steps of:

(a) coating a substrate with one or more applications of a pigmented basecoating composition comprising an addition interpolymer having alkoxy silane groups and/or acyloxy silane groups, said addition interpolymer derived from the reaction of a mixture of monomers wherein the mixture of monomers consists essentially of:

(i) from about 50 percent to about 95 percent by weight of at least one ethylenically unsaturated silicon-free monomer, and

(ii) from about 5 percent to about 50 percent by weight of a copolymerizable ethylenically unsaturated silane monomer selected from the group consisting of an alkoxy silane monomer, an acyloxy silane monomer, and a mixture thereof, to form a basecoat; and before a substantial amount of drying or curing of said basecoat has occurred

(b) coating the basecoat with one or more applications of a topcoating composition comprising a film-forming resin to form a clear topcoat;

wherein, after said steps (a) and (b), said basecoat and said topcoat dry or cure together.

14. The product produced by the method of claim 1.

4,499,152

METAL-CLAD LAMINATE CONSTRUCTION

Robert W. Green, and Delton A. Grey, Jr., both of Schenectady, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Continuation-in-part of Ser. No. 406,588, Aug. 9, 1982, abandoned. This application Nov. 7, 1983, Ser. No. 549,031

Int. Cl.³ B32B *9/04;* B05D *5/12*

U.S. Cl. 428—448 **15 Claims**



1. A metal-clad laminate comprising a substrate, an interacted coupling agent layer extending over and bonded to a major surface of said substrate, a layer of ultra-thin copper adjacent said layer of interacted coupling agent and a composite bonding layer interconnecting said copper layer and said interacted coupling agent layer, said composite bonding layer being substantially free of copper oxide and comprising regions of copper alloyed with a second metal and oxide of said second metal.

11. The method of making a copper-clad laminate comprising the steps of:

(a) maintaining a carrier sheet with the temperature of a major surface thereof in a preselected temperature range while forming a copper film on said major surface by vapor depositing copper directly thereon,

(b) depositing a layer of an oxide material over said copper film under conditions of temperature and pressure substantially precluding the formation of copper oxide, said oxide material comprising an oxide of a non-copper metal,

(c) coating said oxide material layer with a solution containing coupling agent,

(d) drying said coupling agent and

(e) laminating the resulting assembly to a major surface of a substrate at elevated temperature and pressure, said substrate major surface having binding sites available for said coupling agent.

4,499,153

SIZES

Wulf von Bonin, Leverkusen; Peter Mummenhoff, Cologne; Ulrich Beck, Bornheim, and Heinz Bäumgen, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Feb. 15, 1983, Ser. No. 466,708

Claims priority, application Fed. Rep. of Germany, Mar. 6, 1982, 3208139

Int. Cl.³ C08L *91/00;* D21D *3/00;* B32B *27/06*

U.S. Cl. 428—479.6 **18 Claims**

1. Paper-size formulations containing in an aqueous alkaline dispersion products which are obtainable by reacting α, β-unsaturated carboxylic acids having 3 to 10 atoms or their halides, esters or partial esters with lower alcohols having 1 to 6 C atoms, and in the case of dicarboxylic acids their anhydrides with amide-amines of higher carboxylic acids at temperatures above 120° C., said amide-amines being obtainable by reacting 2 mols of aromatic, aliphatic and cyclic carboxylic acids having 10–26 C atoms with 1 mol of diethylenetriamine, triethylenetetramine, tetraethylenepentamine or pentaethylenehexamine.

4,499,154

DIPPED RUBBER ARTICLE

Michael H. James, Flamstead; David M. Bratby; Roger Duck, both of London, all of England; Howard I. Podell, 28 Beachfront La., New Rochelle, N.Y. 10805; Albert Goldstein, Tinton Falls, N.J., and David C. Blackley, Chesham, England, assignors to Howard L. Podell, New Rochelle, N.Y.

Filed Nov. 30, 1982, Ser. No. 445,436

Claims priority, application United Kingdom, Sep. 3, 1982, 8225200

Int. Cl.³ A41D *19/00*

U.S. Cl. 428—494 **9 Claims**

1. A flexible rubber article which has a coating comprising a lubricating hydrogel polymer bonded thereto to provide a surface of said article said surface coming in contact with the user's skin, wherein a member of the group consisting of surfactant materials and long chain fatty amines has been applied to said surface so as to substantially improve the donning lubricity of said surface with respect to damp skin.

4,499,155

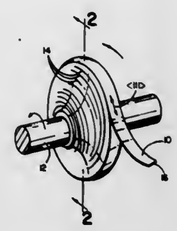
ARTICLE MADE FROM SHEET HAVING A CONTROLLED CRYSTALLOGRAPHIC ORIENTATION

Paul R. Holiday, deceased, late of Manchester, Conn.; by Suzanne N. Holiday, executrix, Point Pleasant Beach, and Bernard H. Kear, Whitehouse Station, both of N.J., assignors to United Technologies Corporation, Hartford, Conn.

Filed Jul. 25, 1983, Ser. No. 452,675

Int. Cl.³ C22F *1/10*

U.S. Cl. 428—586 **7 Claims**



1. A circular article comprised of a nickel superalloy formed of a wrought textured material made by the steps of

(a) thermal mechanically working a sheet of metal to provide it with a textured crystallographic structure, said textured structure characterized by a selected crystallographic axis predominating along the length of the sheet, compared to random crystallographic orientation;

(b) winding the length of the sheet around a mandrel to form an article thereabouts, the article comprised of multiple wound layers;

(c) bonding the wound sheet layers to one another to form a monolithic article having a circumferential orientation corresponding with the selected crystallographic orientation which predominated along the length of the sheet.

4,499,156

TITANIUM METAL-MATRIX COMPOSITES

Paul R. Smith, Englewood, and Francis H. Froes, Beavercreek, both of Ohio, assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Mar. 22, 1983, Ser. No. 477,793

Int. Cl.³ C22C *32/00;* C22F *1/18*

U.S. Cl. 428—614 **3 Claims**

1. A method for fabricating a titanium composite consisting of at least one filamentary material selected from the group consisting of silicon carbide, silicon carbide-coated boron, boron carbide-coated boron and silicon-coated silicon carbide, and a titanium alloy having the nominal composition Ti-4.5Al-5Mo-1.5Cr, which method comprises the steps of extensively mechanically working said alloy at about room temperature to obtain sheetstock in a desired thickness and having a grain size of less than 10 microns, fabricating a preform consisting of alternating layers of said sheetstock and at least one of said filamentary materials, and applying heat and pressure to consolidate said preform, wherein consolidation is carried out at a temperature about 10° to 100° C. below the beta-transus temperature of said alloy at a pressure in the approximate range of 10 to 100 MPa.

2. A titanium matrix composite structure consisting of at least one filamentary material selected from the group consisting of silicon carbide, silicon carbide-coated boron, boron carbide-coated boron, and silicon-coated silicon carbide embedded in a titanium alloy matrix having the nominal composition Ti-4.5Al-5Mo-1.5Cr, said composite having a reaction zone width at the filamentary material-matrix interface of less than about 0.5 μm.

4,499,157

SOLDERABLE PLATED PLASTIC COMPONENTS AND PROCESSES FOR MANUFACTURE AND SOLDERING

Richard R. Mulliner, and James S. Ajioka, both of Fullerton, Calif., assignors to Hughes Aircraft Company, El Segundo, Calif.

Filed May 31, 1983, Ser. No. 499,746

Int. Cl.³ B29D *3/02;* B32C *15/08*

U.S. Cl. 428—624 **6 Claims**

1. A metal plated plastic article for assembly with compatible articles including metallic articles, the assembly comprising soldering by a hot oil dip soldering process or a vapor phase soldering process, the metal plated plastic article comprising:

a substrate comprising polyethersulfone impregnated with a selected amount of glass fill with chopped fibers, the amount selected so that the coefficient of thermal expansion of the polyethersulfone with glass fill is compatible with that of the metallic article to which it is to be assembled;

the surface of the substrate being physically and chemically altered prior to plating so as to accept a metal plating with a peel strength capable of withstanding a total immersion of the metal plated plastic article in a medium having a temperature of at least 232° C. for at least 60 seconds without delamination of the plating; and

metal plating on the substrate comprising a first layer of metal chemically deposited on the substrate and a second layer of metal electrolytically deposited on the first layer.

4,499,158

WELDED STRUCTURAL MEMBER HAVING HIGH EROSION RESISTANCE

Tsutomu Onuma, and Fumio Hataya, both of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 240,557, Mar. 4, 1981, abandoned. This application Feb. 15, 1983, Ser. No. 466,481

Claims priority, application Japan, Mar. 5, 1980, 55-26697

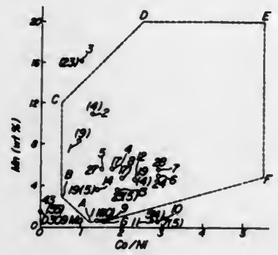
Int. Cl.³ B32B *15/00*

U.S. Cl. 428—682 **4 Claims**

1. A welded structural member adapted to be subjected to a flowing fluid, said welded structural member comprising a base member consisting mainly of iron and a coating layer formed by build-up welding on said base member, said coating layer having a higher erosion resistance than said base member, characterized in that said coating layer contains 0.1 to 0.4 wt% of C, 0.1 to 1 wt% of Si, 3.6 to 5.6 wt% of Mn, 1 to 5.5. wt% of Ni, 2 to 12 wt% of Co, 16 to 23 wt% of Cr and the balance Fe, and has a value of 6–18 in Ni equivalent given by the following equation:

$$\text{Ni equivalent} = 30 \times C(wt\%) + \tfrac{1}{2} \times Mn(wt\%) + Ni(wt\%) + \tfrac{1}{2} \times Co(wt\%),$$

a Co/Ni ratio of 1.4 to 2.9, and further has a mainly unstable austenite structure containing less than 5% of ferrite, a percent elongation at failure of greater than 10% at room temperature



and an erosion weight loss of less than 1.3 mg/cm^2 in an erosion test conducted for 2 hours stationary water by a magnetostriction vibration method at a frequency of 6.5 KHz and an amplitude of 120 μm.

4,499,159

X-RAY IMAGE CONVERTERS UTILIZING RARE EARTH OXYHALIDE PHOSPHORS

Marjorie J. Brines, South Euclid, and Jacob G. Rabatin, Montville, both of Ohio, assignors to General Electric Company, Schenectady, N.Y.

Filed Apr. 13, 1984, Ser. No. 600,066
Int. Cl.^{3} G01J *1/58*; C09K *11/475*
U.S. Cl. 428—691 **8 Claims**

1. An improved X-ray image converter having phosphor crystals supported on a base member, said phosphor crystals having the general formula:

$$M_{1-w-y-z}OX:Tm_wYb_yA_z$$

wherein
M is one or more of La and Gd,
X is one or more of Cl and Br,
w is from about 0.0001 to about 0.01 mole per mole of phosphor,
y is from zero to about 0.01 mole per mole of phosphor
z is from about 0.0001 to about 0.01 mole per mole of phosphor, and
A is one or more of Pr and Nd,
said phosphor exhibiting relatively uniform ultraviolet emission scintillation intensities when excited by relatively equal energy X-ray photons from a radiation source in the 40–120 KVp range and a lower quatum noise than said phosphor absent A.

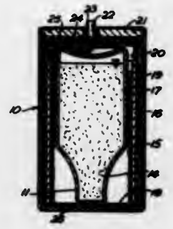
4,499,160

CATHODE AND ELECTROCHEMICAL CELL CONTAINING SAME

Matzliach Babai, 4, Bertonov St., Petah Tiqua, and Uzi Malshar, 4, Mordechai St., Ramat Hasharon, both of Israel

Continuation of Ser. No. 269,970, Jun. 3, 1981, abandoned. This application Jun. 20, 1983, Ser. No. 505,118
Claims priority, application Israel, Jun. 5, 1980, 60238
Int. Cl.^{3} H01M *4/36, 6/36, 4/58, 6/14*
U.S. Cl. 429—101 **16 Claims**

10. An electrical reserve cell comprising in combination a suitable inert housing, a cathode composed of porous carbon and a binder in combination with a transitional metal oxide, an oxidizable active anode, a suitable separator located between the said anode and the said cathode, an electrolyte solution contained in a hermetically sealed container which is shatterable when the cell is activated, resulting in a good contact of the electrolyte with said anode and said cathode, said electrolyte solution comprising an inorganic solvent and solute dissolved



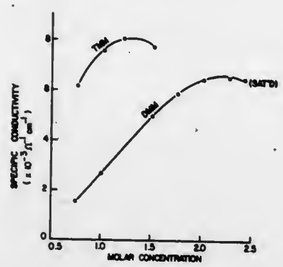
therein, said solvent serving also as cathode depolarizer, said cell being capable of rapid activation to maximum voltage.

4,499,161

ELECTROCHEMICAL CELL USING DIMETHOXYMETHANE AND/OR TRIMETHOXYMETHANE AS SOLVENT FOR ELECTROLYTE

Joseph S. Foos, Waltham, Mass., assignor to EIC Laboratories, Inc., Norwood, Mass.

Filed Apr. 25, 1983, Ser. No. 488,358
Int. Cl.^{3} H01M *6/14*
U.S. Cl. 429—196 **9 Claims**



1. A rechargeable electrochemical cell comprising a lithium-containing electrode and an electrolyte, said electrolyte consisting of
a lithium salt,
a solvent for said lithium salt consisting of a polymethoxy ether selected from dimethoxyethane and trimethoxymethane, and
an organic cosolvent comprising between 0 and 95% of said electrolyte, by volume,
said polymethoxy ether being present in said electrolyte in an amount sufficient to render the cycling efficiency of said electrolyte greater than said cycling efficiency of an electrolyte consisting of said lithium salt and said cosolvent.

4,499,162

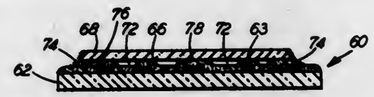
PHOTOMASK AND METHOD OF USING SAME

Edward L. Banks, Whitehall Township, Lehigh County; Thomas S. Ellington, IV, Upper Milford Township, Lehigh County, both of Pa., and Birol Kiyel, Hopewell Township, Mercer County, N.J., assignors to AT&T Technologies, Inc., New York, N.Y.

Filed Jun. 24, 1983, Ser. No. 507,371
Int. Cl.^{3} G03F *9/00*; G03C *5/06*
U.S. Cl. 430—5 **10 Claims**

1. A photomask comprising:

a light transmissive baseplate having a metallic pattern thereon;
a light transmissive coating covering the metallic patterned surface; and



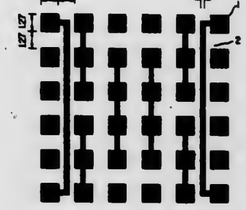
a light transmissive coverplate having opposed, substantially parallel surfaces positioned on the light transmissive coating with an index matching fluid interposed therebetween.

4,499,163

SOLDERING MASK FORMED FROM A PHOTOSENSITIVE RESIN COMPOSITION AND A PHOTOSENSITIVE ELEMENT

Toshiaki Ishimaru; Katsuhige Tsukada; Nobuyuki Hayashi; Shigeru Koibuchi, and Asao Isobe, all of Hitachi, Japan, assignors to Hitachi Chemical Company, Ltd., Tokyo, Japan

Continuation of Ser. No. 303,524, Sep. 18, 1981, abandoned. This application Jul. 11, 1983, Ser. No. 512,660
Claims priority, application Japan, Sep. 19, 1980, 55-131322; Oct. 1, 1980, 55-137930
Int. Cl.^{3} G03C *5/00, 1/78*
U.S. Cl. 430—5 **28 Claims**



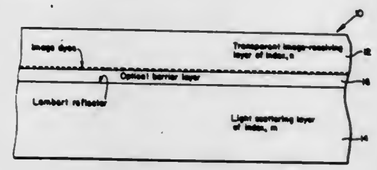
1. A photosensitive resin composition forming a soldering mask comprising:
(a) 20 to 75 parts by weight of at least one urethane diacrylate or urethane dimethacrylate compound which has acryloyl or methacryloyl groups in an amount of 1×10^{-3} to 4.3×10^{-3} equivalent/g. and which is obtained by reacting
(i) at least one diisocyanate compound selected from the group consisting of trimethylhexamethylene diisocyanate and isophorone diisocyanate,
(ii) a dihydric alcohol, and
(iii) an acrylic or methacrylic monoester of a dihydric alcohol,
(b) 20 to 75 parts by weight of a linear polymer having a glass transition temperature of about 40° to 150° C., and
(c) a sensitizer and/or a sensitizer system which generate free radicals owing to actinic light in an amount of 0.5 to 10% by weight based on the total amounts of components (a) and (b); said composition having been heated to 80° to 200° C. and exposed to actinic light after development by image-wise exposure and treatment with a developing solution.

4,499,164

IMAGE CARRYING MEDIA EMPLOYING AN OPTICAL BARRIER

William T. Plummer, Concord, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Continuation-in-part of Ser. No. 480,287, Mar. 30, 1983, abandoned, which is a continuation-in-part of Ser. No. 372,618, Apr. 28, 1982, abandoned. This application May 3, 1984, Ser. No. 606,580
Int. Cl.^{3} G03C *1/40, 5/54, 1/10, 7/00*
U.S. Cl. 430—14 **10 Claims**



1. An image carrying medium comprising:
a thin transparent layer for receiving image-forming components, said image-receiving layer having a given index of refraction;
a plurality of light-absorbing image forming components distributed imagewise of said image-receiving layer defining an image thereover and located at or nearly at one surface of said image-receiving layer so as not to be disposed at or nearly at the other surface of said image-receiving layer, said image being viewable through the other surface of said image-receiving layer;
a permanent, hardened, substantially chemically inert, clear optical barrier layer in contact with said one surface of said image-receiving layer, said optical barrier layer having an index of refraction which is no greater than that of said image-receiving layer; and
a light scattering pigment layer in direct contact with said optical barrier layer and having an index of refraction higher than that of said optical barrier layer,
said image-carrying medium being structured so that said image thereof is viewed through said other surface of said image-receiving layer against said light scattering pigment layer and wherein, for purposes of viewing, said image is illuminated by ambient light which first passes through said image-receiving layer and image and then is partially reflected from said light scattering pigment layer after which part of said reflected light is transmitted back through said optical barrier layer, said image, and said image-receiving layer to the viewer, said optical barrier layer operating to reduce the amount of light absorption which would otherwise occur within said image forming components absent said optical barrier layer whereby, when said image is viewed, its highlights are brightened and its tone reproduction improved compared with the appearance of said image absent said optical barrier layer.

4,499,165

AMORPHOUS COMPOSITIONS OF DYES AND BINDER-MIXTURES IN OPTICAL RECORDING ELEMENTS AND INFORMATION RECORDED ELEMENTS

Michel F. Molaire, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 9, 1983, Ser. No. 473,825
Int. Cl.^{3} G03C *1/00*; G01D *15/34*
U.S. Cl. 430—17 **14 Claims**

1. A recording element comprising a support having thereover a layer comprising an amorphous composition of a dye and a nonpolymeric binder-mixture at a high dye to binder-mixture ratio characterized in that the binder-mixture (a) is amorphous at high dye to binder ratios, (b) exhibits a single

thermal transition with no phase separation after annealing, (c) is solid at about 20° C., and (d) comprises at least two different compounds, each having at least two linking components joining one multivalent organic nucleus with at least two organic nuclei wherein at least one of (e) the multivalent organic nucleus and (f) the organic nuclei is a multicyclic aromatic nucleus.

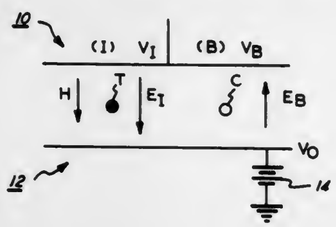
2. A recorded information element comprising a support having thereover a layer comprising an amorphous composition of a dye and a nonpolymeric binder-mixture at a high dye-binder ratio characterized in that the binder-mixture (a) is amorphous at high dye to binder ratios, (b) exhibits a single thermal transition with no phase separation after annealing, (c) is solid at about 20° C., and (d) comprises at least two different compounds each having at least two linking components joining one multivalent organic nucleus with at least two organic nuclei wherein at least one of (e) the multivalent organic nucleus and (f) the organic nuclei is a multicyclic aromatic nucleus.

4,499,166

METHOD OF DEVELOPING AN ELECTROSTATIC LATENT IMAGE USES MAGNETIC DEVELOPER

Yoshikazu Okamoto, Tokyo, Japan, assignor to Rank Xerox, Ltd., London, England

Filed Jun. 15, 1981, Ser. No. 273,283
Claims priority, application Japan, Jun. 16, 1980, 55-80314
Int. Cl.³ G03G *13/09*
U.S. Cl. 430—33 **4 Claims**



1. A method of electrophotographic printing, including the steps of:

recording electrically charged image and non-image regions on a photoconductive member;

moving a magnetic developer mixture support to transport at least a portion of a developer mixture into contact with the photoconductive member with the developer mixture comprising at least magnetically attractable toner particles and magnetically attractable carrier granules adhering triboelectrically to one another and being of substantially the same size and weight with the carrier granules being more strongly magnetically attractable than the toner particles; and

electrically biasing the developer mixture support so that the electrical force applied on the toner particles by the image region is greater than the magnetic force applied thereon and the electrical force applied on the carrier granules by the non-image region is less than the magnetic force applied thereon so that at least some of the toner particles are deposited on the image region forming a toner powder image thereon with the carrier granules remaining substantially on the developer mixture support.

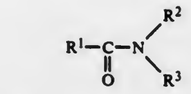
4,499,167

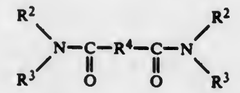
PHOTOCONDUCTIVE COMPOSITIONS COMPRISING AN ORGANIC PHOTOCONDUCTOR AND AN AMIDE COMPOUND AND ELECTRO-PHOTOGRAPHIC LIGHT-SENSITIVE MATERIALS USING THE COMPOSITIONS

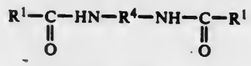
Kenji Sano; Syunichi Kondo, and Hideo Sato, all of Saitama, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Dec. 14, 1982, Ser. No. 449,729
Claims priority, application Japan, Dec. 14, 1981, 56-201306
Int. Cl.³ G03G *5/09*
U.S. Cl. 430—83 **8 Claims**

1. A photoconductive composition, comprising a mixture of: an organic photoconductor and an amide compound, wherein said amide compound is a compound selected from the group consisting of general formula I, II, and III;


I


II


III

wherein, R^1 represents an alkyl group, a substituted alkyl group, an alkoxy group, a substituted alkoxy group, a substituted or unsubstituted monocyclic or bicyclic condensed aryl group, a substituted or unsubstituted monocyclic or bicyclic condensed aryloxy group, or a monovalent group induced from a substituted or unsubstituted heterocyclic ring; said two R^1s in general formula III may be the same or different;

R^2 and R^3, which may be the same or different, each represents a hydrogen atom, an alkyl group, a substituted alkyl group, a substituted or unsubstituted monocyclic or bicyclic condensed aryl group, or a monovalent group induced from a substituted or unsubstituted heterocyclic ring; and

R^4 represents a methylene group, a polymethylene group, a branched alkanediyl group, or an arylene group;

said R^1 and R^2 or said R^2 and R^3 in general formula I, R^2 and R^3, or, R^2 or R^3 and R^4 in general formula II and R^1 and R^4 in general formula III may combine with each other.

4,499,168

FIXING METHOD

Yasuo Mitsuhashi, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation-in-part of Ser. No. 348,171, Feb. 12, 1982, abandoned, which is a continuation of Ser. No. 166,918, Jul. 9, 1980, abandoned. This application Apr. 27, 1984, Ser. No. 605,973
Claims priority, application Japan, Jul. 17, 1979, 54-90745; Aug. 10, 1979, 54-102489
Int. Cl.³ G03G *13/20*
U.S. Cl. 430—99 **23 Claims**

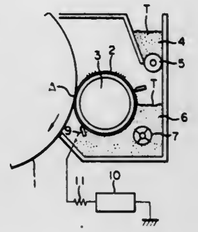
1. A fixing method which comprises fixing a developing powder by means of a fuser roller wherein said developing powder comprises one or more vinyl type copolymers exhibiting a peak value of molecular weight in each of the molecular weight regions of 5×10^3 to 8×10^4 and 10^5 to 2×10^6, respectively, in a chromatogram as measured by gel permeation chromatography, wherein the content of said vinyl copolymers is 30 to 99% by weight with respect to the total weight of the developer powder and further containing an ethylene type olefin homopolymer or ethylene type olefin copolymer having a melt viscosity of 10 to 10^6 cps at 140° C.

4,499,169

DEVELOPING METHOD

Satoshi Haneda; Masahiko Itaya, and Makoto Tomono, all of Hachioji, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Dec. 9, 1982, Ser. No. 448,180
Claims priority, application Japan, Dec. 22, 1981, 56-208691
Int. Cl.³ G03G *13/09*
U.S. Cl. 430—102 **9 Claims**



1. In a developing method in which an insulating magnetic toner contacts an electrostatic image carrier and an electrostatic image is developed on the carrier, and in which said developing method includes the step of impressing on the toner an alternating electric field that satisfies the following conditions, in combination with a magnetic bias operating to restrain the movement of the magnetic toner toward the image carrier:

condition-1: $V/d \geqq 0.1\ \nu$

condition-2: $V/d \leqq 1+\nu$

in which V represents the effective voltage impressed on the insulating magnetic toner, d represents the clearance in millimeters between the electrostatic image carrier and a developing sleeve, and ν represents the frequency in kilohertz of the alternating electric field.

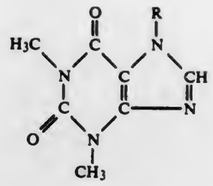
4,499,170

LITHOGRAPHIC PLATES AND PHOTORESISTS HAVING STABILIZED PHOTOSENSITIVE DIAZO RESIN WITH THEOPHYLLINE DERIVATIVE

Luigi Amariti, Bloomingdale, and Llandro C. Santos, Chicago, both of Ill., assignors to Richardson Graphics Company, Des Plaines, Ill.

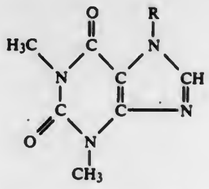
Filed Jun. 17, 1983, Ser. No. 505,231
Int. Cl.³ G03C *1/60, 1/74;* G03F *7/16*
U.S. Cl. 430—169 **17 Claims**

1. An article having a stabilized photosensitive diazonium composition coated thereonto, said stabilized diazonium composition comprising a coating from a composition consisting essentially of a solvent, a photosensitive diazonium resin and a stabilizing system, said stabilizing system including a purine derivative, said purine derivative being at a concentration that is effective in enhancing the stability of the photosensitive diazonium resin coated on the article and that is no greater than a concentration at which the purine derivative is dispersible within said composition, wherein said purine derivative is a theophylline derivative of the structural formula:



wherein R is hydrocarbon chain of from 1 to 5 carbon atoms and has one or more hydroxy substituents.

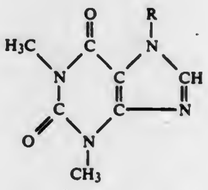
14. A presensitized plate including a plate base, a sub-base coating on-the plate base, and a diazonium composition overlying the sub-base coating, said diazonium composition being a stabilized diazonium composition comprising a coating laid down from a composition consisting essentially of a solvent, a photosensitive diazonium resin and a stabilizing system, said stabilizing system including a purine derivative, said purine derivative being at a concentration that is effective in enhancing the stability of the photosensitive diazonium resin coated on the plate and that is no greater than a concentration at which the purine derivative is dispersible within said composition, wherein said purine derivative is a theophylline derivative of the structural formula:



wherein R is hydrocarbon chain of from 1 to 5 carbon atoms and having one or more hydroxy substituents.

16. A method for stabilizing a diazonium component of a plate, comprising:

preparing a composition consisting essentially of a solvent, a photosensitive diazonium resin and a stabilizing system, said stabilizing system including a purine derivative, said purine derivative being at a concentration that is effective in enhancing the stability of the photosensitive diazonium resin coated on the plate and that is no greater than a concentration at which the purine derivative is dispersible within said composition, wherein said purine derivative is a theophylline derivative of the structural formula:



wherein R is hydrocarbon chain of from 1 to 5 carbon atoms and having one or more hydroxy substituents; and

coating said composition onto a plate base in order to lay down a thin layer of stabilized photosensitive diazonium resin.

4,499,171

POSITIVE TYPE PHOTOSENSITIVE RESIN COMPOSITION WITH AT LEAST TWO O-QUINONE DIAZIDES

Yoshihiro Hosaka; Yoichi Kamoshida, both of Yokohama; Yoshiyuki Harita, Kawasaki, and Kunihiro Harada, Machida, all of Japan, assignors to Japan Synthetic Rubber Co., Ltd., Tokyo, Japan

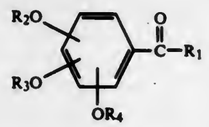
Filed Apr. 12, 1983, Ser. No. 484,312

Claims priority, application Japan, Apr. 20, 1982, 57-65759; Mar. 11, 1983, 58-40478

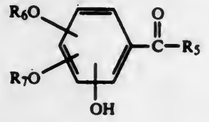
Int. Cl.³ G03C *1/60*; G03F *7/26*

U.S. Cl. 430—192 18 Claims

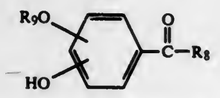
1. A positive type photosensitive resin composition comprising in admixture an alkali-soluble novolac resin and (A) a photosensitive compound represented by the formula (I):



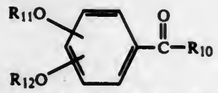
wherein R_1 represents an alkyl group, an aryl group or an aralkyl group, and R_2, R_3 and R_4, which are identical or different, represent 1,2-naphthoquinonediazide-4-sulfonyl groups, 1,2-naphthoquinonediazide-5-sulfonyl groups or 1,2-benzoquinonediazide-4-sulfonyl groups, and a photosensitive compound represented by the formula (II):



wherein R_5 represents an alkyl group, an aryl group or an aralkyl group, and R_6 and R_7, which are identical or different, represent 1,2-naphthoquinonediazide-4-sulfonyl groups, 1,2-naphthoquinonediazide-5-sulfonyl groups or 1,2-benzoquinonediazide-4-sulfonyl groups, or (B) a photosensitive compound represented by the formula (III):



wherein R_8 represents an alkyl group, an aryl group or an aralkyl group and R_9 represents a 1,2-naphthoquinonediazide-4-sulfonyl group, a 1,2-naphthoquinonediazide-5-sulfonyl group or a 1,2-benzoquinonediazide-4-sulfonyl group, and a photosensitive compound represented by the formula (IV):



wherein R_{10} represents an alkyl group, an aryl group or an aralkyl group, and R_{11} and R_{12} which are identical or different, represent 1,2-naphthoquinonediazide-4-sulfonyl groups, 1,2-naphthoquinonediazide-5-sulfonyl groups or 1,2-benzoquinonediazide-4-sulfonyl groups, the proportion of the component (A) with the compound (I) and the compound (II) in admixture, or the component (B) with the compound (III) and the compound (IV) in admixture, being 5 to 100 parts by weight per 100 parts by weight of the alkali-soluble novolac resin, the molar ratio of the compound represented by the formula (I) to the compound represented by the formula (II) in the compound (A) being 6:4 to 9:1 and the molar ratio of the compound represented by the formula (III) to the compound represented by the formula (IV) in the component (B) being 2:8 to 7:3, and wherein said compounds having the formulas (I) to (IV) are used in an amount sufficient to produce a resin composition having both excellent sensitivity and yield of residual film thickness.

4,499,172

HEAT-DEVELOPABLE COLOR LIGHT-SENSITIVE MATERIAL WITH ALKYL CARBOXYLIC ACID BASE PRECURSOR CONTAINING TRIPLE BOND

Hiroyuki Hirai, and Kozo Sato, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Mar. 30, 1984, Ser. No. 595,149

Claims priority, application Japan, Mar. 31, 1983, 58-55693

Int. Cl.³ G03C *1/40, 5/54, 1/06*

U.S. Cl. 430—203 14 Claims

12. A method of forming a color image comprising imagewise exposing a heat-developable color light-sensitive material comprising a support having thereon at least a light-sensitive silver halide, a binder, a dye releasing redox compound which is capable of reducing the light-sensitive silver halide and is capable of reacting with the light-sensitive silver halide by heating to release a hydrophilic dye and a salt of an alkylcarboxylic acid having a triple bond between the α-position carbon atom and the β-position carbon atom with an organic base and heating the exposed light-sensitive material under a condition substantially free from water to imagewise release a mobile dye.

14. A method of forming a color image as claimed in claim 12, wherein the mobile dye released is then transferred into a dye fixing layer.

4,499,173

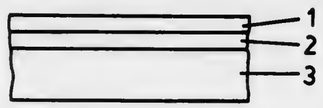
PHOTOGRAPHIC MATERIAL FOR USE IN PHOTOLITHOGRAPHY

Ivan T. Konstantinov; Borislav D. Medalkarov; Maria A. Sahatchieva, and Atanas T. Burov, all of Sofia, Bulgaria, assignors to Zlafop pri Ban, Sofia, Bulgaria

Continuation-in-part of Ser. No. 240,988, Mar. 5, 1981, abandoned. This application Jul. 5, 1983, Ser. No. 491,814

Int. Cl.³ G03C *1/50, 1/72, 1/94*; G03F *7/02*

U.S. Cl. 430—278 18 Claims



1. A photographic material for use in photolithography, which material is capable of yielding, on imagewise exposure to radiation, a latent positive image, which material comprises

(1) a carrier base;

(2) a thin homogenous or emulsion photosensitive layer consisting essentially of at least one inorganic photosensitive substance selected from sulphides, selenides and tellurides of phosphorus, arsenic, germanium and metals, and an organic compound disposed in or on said photosensitive layer, said organic compound being selected from dyestuffs having the capacity for dyeing tannined cotton, dyestuffs having the capacity for dyeing synthetic fibres, compounds capable of acting as accelerators, antioxidants or age resistors in the vulcanization of elastomers, and developing agents effective in the development of silver halide-based photographic materials; and

(3) a single elemental metal layer, which layer is in intimate contact with the photosensitive layer and constitutes the said carrier base or is a layer deposited on the said carrier base before formation of the photosensitive layer, the metal being unreactive with the said photosensitive substance in the photosensitive layer when the latter is exposed to radition;

and whereby the said photosensitive substance thus disposed in the photosensitive layer has a photoselective capacity such that when treated with an alkaline developer imagewise exposed portions thereof are dissolved to the exclusion of unexposed portions thereof.

4,499,174

HYDROPHILIC LAYERS ADJACENT A STRIPPING LAYER FOR DIFFUSION TRANSFER ASSEMBLAGES

John F. Bishop, Rochester, and Thomas O. Braun, Webster, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 497,472, May 23, 1983, abandoned. This application Mar. 26, 1984, Ser. No. 592,766

Int. Cl.³ G03C *1/40, 5/54, 11/12*

U.S. Cl. 430—215 34 Claims

1. In a photographic assemblage comprising:

(a) a photosensitive element comprising a support having thereon at least one photosensitive silver halide emulsion layer;

(b) an image-receiving layer; and

(c) a stripping layer located between said silver halide emulsion layer and said image-receiving layer so that said image-receiving layer may be separated, after processing, from the portion of said assemblage containing said silver halide emulsion layer;

the improvement wherein each side of said stripping layer has a hydrophilic layer immediately adjacent thereto, other than a photosensitive silver halide emulsion layer or an image-receiving layer, and only one of said hydrophilic layers contains particulate material substantially insensitive to light and in a volume percentage of from about 5 to about 75 percent of the hydrophilic material-particulate material mixture in that layer, so that upon separation, substantially all of said stripping layer will remain with the portion of said assemblage having said hydrophilic layer containing said particulate material.

4,499,175

PHOTOPOLYMERIZABLE MATERIALS FOR USE IN PRODUCING SCREEN PRINTING STENCILS

John R. Curtis, Salisbury, and John D. Renwick, Ramsgate, both of England, assignors to Sericol Group Limited, London, England

Filed Sep. 22, 1982, Ser. No. 421,270

Claims priority, application United Kingdom, Nov. 3, 1981, 8133096

Int. Cl.³ G03C *7/12, 1/70*; G03F *5/00*

U.S. Cl. 430—253 22 Claims

1. In a method for producing a stencil for screen printing by forming a layer of an aqueous photopolymerizable composition, drying the said layer, irradiating the dried layer with actinic light in image-wise manner to form an insolubilzed image in the said layer and developing the said insolubilized image by washing out unirradiated portions of the said layer, the said layer being formed directly on the printing screen or on a support sheet and then transferred to the printing screen before or after the said development, the improvement which consists in forming the said layer from an aqueous photopolymerizable composition in the form of a dispersion, in an aqueous solution of a colloid, of a solution of a prepolymer containing terminal ethylenic unsaturation joined to the residue of an aromatic polyester, epoxy or urethane prepolymer via ester, amide or urethane linkages, the said composition containing also a photoinitiator, whereby the insolubilized image may be developed by washing out unirradiated portions of the said layer with water.

21. A screen for screen printing coated with an aqueous photopolymerisable composition in the form of a dispersion, in an aqueous solution of a colloid, of a solution of a prepolymer containing terminal ethylenic unsaturation joined to the residue of an aromatic polyester, epoxy or urethane prepolymer via ester, amide or urethane linkages, the said composition containing also a photo-initiator, and dried.

4,499,176

PHOTOPOLYMERIZABLE COMPOSITION FOR PRODUCING SCREEN PRINTING STENCILS

John R. Curtis, Salisbury, and John D. Renwick, Ramsgate, both of England, assignors to Sericol Group Limited, London, England

Filed Sep. 22, 1982, Ser. No. 421,271

Claims priority, application United Kingdom, Nov. 3, 1981, 8133095

Int. Cl.³ G03C *7/12, 1/71*

U.S. Cl. 430—253 17 Claims

1. An aqueous photopolymerizable composition comprising 5 to 40% by weight of the composition of a monomer containing terminal ethylenic unsaturation, 0.5 to 8% by weight of the composition of a water-insoluble photoinitiator, 0.1 to 8% by weight of the composition of an organic compound containing a tertiary amino group as accelerator, and 4 to 7% by weight of a water-soluble colloid in a liquid medium comprising 1 to 40% by weight of the composition of water and 25 to 65% by weight of the composition of a water-miscible organic solvent or mixture thereof which dissolves the monomer the accelerator and the photo-initiator and does not cause precipitation of the colloid.

4,499,177

METHOD OF MANUFACTURING A SEMICONDUCTOR DEVICE

Franciscus A. Vollenbroek, and Elisabeth J. Spiertz, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jul. 27, 1983, Ser. No. 517,611

Claims priority, application Netherlands, Sep. 10, 1982, 8203521

Int. Cl.³ G03C *5/00*

U.S. Cl. 430—311 9 Claims

1. A method of manufacturing a semiconductor device comprising the steps of

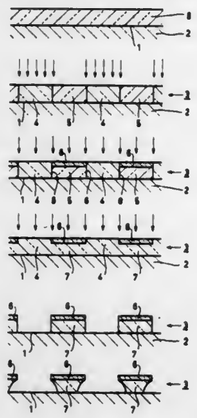
forming a photoresist lacquer layer on a substrate surface, said lacquer layer including a polymeric material and a sensitizer having a diazo group and a ketone group,

exposing said lacquer layer to patterning irradiation,

subjecting the entire area of said lacquer layer to an intermediate treatment, said intermediate treatment including a first irradiation of said lacquer layer to form a bond between said sensitizer and said polymeric material, and a second irradiation of said lacquer layer to convert at least

a part of said sensitizer into an acid in parts of said lacquer layer lying below the top layer, and

developing said lacquer layer in a lye solution,



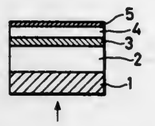
wherein said intermediate treatment causes differences in solubility in lye in the direction of thickness in unexposed parts of said lacquer layer.

4,499,178

OPTICAL INFORMATION RECORDING MATERIAL

Minoru Wada; Yonosuke Takahashi, and Eiichi Hasegawa, all of Saitama, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jun. 14, 1982, Ser. No. 388,336
Claims priority, application Japan, Jun. 12, 1981, 56-90378
Int. Cl.³ G03C *5/04*; G03F *7/00*
U.S. Cl. 430—495 **18 Claims**



1. An optical information recording material which comprises a substrate having thereon a heat mode recording layer made of a metal and a metal compound that increases the sensitivity of said recording layer and decreases the reflectivity of said recording layer, the metal compound being selected from the group consisting of CrS, Cr_2S, Cr_2S_3, MoS_2, MnS, FeS, FeS_2, CoS, Co_2S_3, NiS, Ni_2S, PdS, Cu_2S, Ag_2S, In_2S_3, InS, GeSx ($1 \leqq \times \leqq 2$), SnS, SnS_2, PbS, As_2S_3, Sb_2S_3, Bi_2S_3, MgF_2, CaF_2, RhF_3, MoO, InO, In_2O_3, GeO, PbO, SnO, and SnO_2, the metal being selected from the group consisting of Mg, Sc, Y, Ti, Zr, Hf, V, Nb, Ta, Cr, Mo, W, Mn, Re, Fe, Co, Ni, Ru, Rh, Pd, Ir, Pt, Cu, Ag, Au, Zn, Cd, Al, Ga, In, Si, Ge, Sn, As, Sb, Bi, Se, Te, mixtures thereof, and alloys thereof, a reflecting layer made of a metal wherein the metal used in said reflecting layer is a metal which can be used in said recording layer, and a heat insulating layer interposed between said recording layer and said reflecting layer.

4,499,179

SILVER HALIDE PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL

Hideo Ota, and Kiyotoshi Yamashita, both of Hachioji, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Feb. 22, 1983, Ser. No. 468,398
Claims priority, application Japan, Feb. 25, 1982, 57-30393
Int. Cl.³ G03C *1/78*
U.S. Cl. 430—523 **18 Claims**

1. A silver halide photographic light-sensitive element having on a support thereof, at least one silver halide light-sensitive emulsion layer, said at least one emulsion layer having thereon a protective layer composed of a binder containing a non-light-sensitive hydrophilic colloid, said protective layer comprising an outer layer and an inner layer between said outer layer and said at least one emulsion layer, said outer layer consisting essentially of oil particles in the form of water-insoluble liquid droplets finely dispersed in said binder at a volume of 0.1 to 0.4 based on the volume of the binder, said inner layer consisting essentially of fine solid particles selected from the group consisting of a copolymer of an ester of acrylic acid or of methacrylic acid, cellulose acetate propionate, polystyrene, silver halide, strontium sulfate, barium sulfate, calcium carbonate, SiO_2, ZnO, TiO_2, Al_2O_3, MgO, and BaO wherein the ratio of the thickness of the inner layer to the outer layer at least 1.5.

4,499,180

HEAT-DEVELOPABLE COLOR PHOTOGRAPHIC MATERIALS WITH BASE PRECURSOR

Hiroyuki Hirai, and Ken Kawata, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Feb. 27, 1984, Ser. No. 583,913
Claims priority, application Japan, Feb. 25, 1983, 58-31614
Int. Cl.³ G03C *5/54, 1/40, 1/06*
U.S. Cl. 430—559 **4 Claims**

1. A heat-developable color photographic material, comprising:

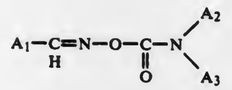
a support base having thereon:

a binder having dispersed therein;

a light-sensitive silver halide;

a dye releasing redox compound which reduces the light-sensitive silver halide and releases a hydrophilic dye by reacting with the light-sensitive silver halide by heating; and

a base precursor represented by the following general formula:



wherein A_1 represents a substituent selected from an alkyl group, a substituted alkyl group, a cycloalkyl group, an alkenyl group, and aralkyl group, an aryl group, a substitued aryl group, an acyl group and a heterocyclic group, A_2 and A_3 represent each a substituent selected from a hydrogen atom, an alkyl group, a substituted alkyl group, a cycloalkyl group, and an aralkyl group, and A_2 and A_3 may form a ring by linking together or



may form an imino group by a double bond.

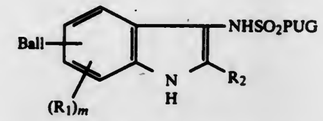
4,499,181

PHOTOGRAPHIC RECORDING MATERIAL WITH INDOLE REDOX RELEASER

Kazumasa Watanabe, Tokyo; Hidetaka Deguchi, Tama, and Shunji Suginaka, Tokyo, all of Japan, assignors to Konishiroku Photo Ind., Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 322,709, Nov. 18, 1981, abandoned.
This application Jun. 2, 1983, Ser. No. 500,406
Claims priority, application Japan, Nov. 18, 1980, 55-162940
Int. Cl.³ G03C *5/54, 1/40, 1/10, 1/42*
U.S. Cl. 430—558 **8 Claims**

1. A photographic recording material which comprises, on a support, a silver emulsion halide layer and a photographic layer comprising an indole compound represented by the general formula (I):



wherein PUG represents a photographically useful group, Ball represents an organic group which has enough molecular weight and/or disposition to render the compound non-diffusible during processing of said photographic recording material with an alkaline medium and wherein said Ball contains a nitrogen atom which is directly attached to the 5th or 6th position an the iodole ring of said indole compound, said Ball being a succinimide group or a phthalimide group, R_1 represents a halogen atom or a monovalent organic group, R_2 represents a hydrogen atom or a low molecular group attached, through a carbon atom, to the 2nd position of the indole ring and m represents an integer of zero to 3.

8. A photographic recording material according to claim 1, wherein said PUG is selected from a group consisting of silver-complex forming agents, silver halide-solving agent, hardeners, fogging agents, anti-foggants, developers, development inhibitors development accelerators, bleach restrainers, bleach accelerators, dyes and dye precursors.

4,499,182

IN SITU FILM HARDENING WITH PYRIDINIUM CHLOROCHROMATE AND ALDEHYDE PRECURSOR ALCOHOL

Reginald A. Booker, New Castle, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Oct. 11, 1983, Ser. No. 540,774
Int. Cl.³ G03C *1/30*
U.S. Cl. 430—621 **6 Claims**

1. A process of forming a hardened photographic film in which a gelatino-silver halide emulsion is coated on a support and subsequently dried characterized in that an aldehyde hardening agent is formed in situ by reacting an aldehyde precursor alcohol and pyridinium chlorochromate, both being initially present in one or more layers of the film.

4,499,183

DETECTING INTRACELLULAR ANTIGENS IN SWELLED AND FIXED CELLS WITH LABELED ANTIBODY

Daniel J. Sujansky, Manville, and Martha W. Rancourt, Piscataway, both of N.J., assignors to Ortho Diagnostic Systems Inc., Raritan, N.J.

Filed Dec. 21, 1982, Ser. No. 451,675
Int. Cl.³ G01N *33/54, 33/50*
U.S. Cl. 435—6 **24 Claims**

1. A method of detecting intracellular antigens selected from the group consisting of hormones, enzymes, DNA, RNA, immunoglobulins, drugs, and organelle associated antigens in whole cells comprising the steps of contacting the cells with a hypotonic solution whereby the cells swell in size but step; fixing the cells whereby the cell membranes are rigidized and water is removed; hydrating and reacting the cells under conditions permitting immunological reactions with specific for the antigen to be detected and having a detectable label; washing to remove antibodies which have not reacted with the antigen to be detected; and detecting the presence of said label whereby the absence or presence of the antigen to be detected may be determined.

12. A reagent test kit for determining the presence of intracellular TdT by detecting an antibody associated label comprising in separate containers:

(a) first antibody specific for TdT;

(b) FITC labeled second antibody specific for the first antibody; and

(c) swelling solution having a hypotonicity adjusted to swell the cells but not substantially lyse the cells prior to completion of the label detecting step of the test.

4,499,184

ANALYSIS FOR TOTAL CHOLESTEROL USING LECITHIN:CHOLESTEROL ACYL TRANSFERASE (LCAT)

Charles T. Goodhue, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jun. 1, 1982, Ser. No. 383,849
Int. Cl.³ C12Q *1/60, 1/48*
U.S. Cl. 435—11 **28 Claims**

1. A method for determining total cholesterol in an aqueous fluid containing cholesterol esters and free cholesterol comprising:

(a) contacting a sample of said fluid with sufficient amounts of lysolecithin and an enzyme exhibiting lecithin:cholesterol acyl transferase (LCAT) activity to convert substantially all the cholesterol esters in said sample to cholesterol,

(b) removing cholesterol from said sample other than by conversion to cholesterol esters, and

(c) measuring the amount of said removed cholesterol.

4,499,185

TEST FOR ESTERASE ACTIVITY IN A LIQUID SAMPLE

A. Christopher Skjold; Loanie R. Stover, and Robert W. Trimmer, all of Elkhart, Ind., assignors to Miles Laboratories, Inc., Elkhart, Ind.

Filed May 17, 1982, Ser. No. 378,895
Int. Cl.³ C12Q *1/44, 1/46, 1/42*
U.S. Cl. 435—19 **15 Claims**

1. A composition for determining the presence of esterase activity in a liquid test sample said composition comprising a chromogenic ester having the formula

R—O—R'

in which R is a moiety which produces a detectable response when the ester is cleaved through an esterase or esterase-like esterolytic reaction, and in which R' is an amino acid or peptide moiety having a nitrogen protective group, and

3-quinuclidinol.

4,499,186

DIAGNOSING AUTOIMMUNE RHEUMATOID ARTHRITIS BY MEASURING PROTEOLYTIC ACTIVITY OF α_2-MACROGLOBULIN

Marius C. Teodorescu, Westchester; Alexander M. Gaspar, Chicago; Gregory T. Spear, Forest Park; Doina Ganea, Elmhurst, and John L. Skosey, Chicago, all of Ill., assignors to University of Illinois, Board of Trustees, Urbana, Ill.

Filed Dec. 30, 1982, Ser. No. 454,788
Int. Cl.³ G01N *33/52, 33/68, 33/50*
U.S. Cl. 435—23 **21 Claims**

1. A method for diagnosing rheumatoid arthritis and related autoimmune diseases in a patient, comprising the steps of:
(a) collecting a sample of patient's blood in the presence of a stoichiometric excess of a calcium-ion blocking reagent, to provide a representative portion of α_2-macroglobulin in plasma;
(b) mixing the α_2-macroglobulin with a buffered hydrolyzable substrate;
(c) incubating the mixture; and
(d) determining the degree of hydrolysis of the substrate during incubation.

19. A diagnostic kit, for assay of esterolytic activity of chromogenic substrates in the presence of α_2-macroglobulin, as a determinant for rheumatoid arthritis in a subject patient, comprising:
(a) packaged sodium citrate solution, for receiving blood containing α_2-macroglobulin;
(b) separately packaged hydrolyzable chromogenic substrate, containing arginine at the point of enzymatic attack, for reaction with α_2-macroglobulin; and
(c) separately packaged cuvettes, containing buffer solution and adapted for incubation and use in analysis.

4,499,187

METHOD FOR EVALUATING MUTAGENICITY

Gary R. Blackburn, Washington Crossing, Pa.; Carl R. Mackerer, Pennington, N.J., and Ceinwen A. Schreiner, Newtown, Pa., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Jan. 30, 1984, Ser. No. 575,361
Int. Cl.³ C12Q *1/04, 1/29*
U.S. Cl. 435—34 **11 Claims**

1. A method for evaluating the potenial carcinogenic activity of a hydrocarbon mixture, which method comprises:
extracting the hydrocarbon mixture with a solvent effective for removing mutagenic compounds from said mixture;
subjecting an inoculum of a histidine deficient mutant strain of *Salmonella typhimurium* to incubation in the presence of a sample of said extract and, as metabolic activator, an optimal amount of induced liver homogenate; and
determining the revertant colonies so produced.

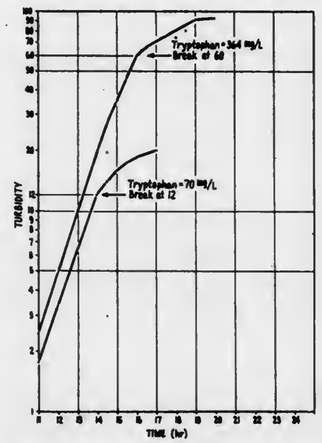
4,499,188

BACTERIAL PRODUCTION OF HETEROLOGOUS POLYPEPTIDES UNDER THE CONTROL OF A REPRESSIBLE PROMOTER-OPERATOR

Michael W. Konrad, Alameda, and David F. Mark, Hercules, both of Calif., assignors to Cetus Corporation, Emeryville, Calif.

Filed May 5, 1982, Ser. No. 375,098
Int. Cl.³ C12P *21/02, 21/00*; C12N *15/00*
U.S. Cl. 435—70 **10 Claims**

1. A process for bacterially producing a heterologous polypeptide comprising cultivating bacteria transformed to express said heterologous polypeptide under the control of a bacterial promoteroperator that
(i) normally controls the expression of the structural genes that encode the polypeptides of a biosynthetic pathway that produces a product that is used by the bacteria in growth,
(ii) is repressed by said product through activation of a repressor molecule by said product, and
(iii) provides efficient expression of the structural genes under its control when derepressed
in a volume of a culture medium containing an excess of essential nutrients and a predetermined amount of said product that



corresponds approximately to the amount of said product contained in the bacteria in said volume at a predetermined, elevated cellular density for a time sufficient to permit growth of the bacteria to the predetermined cellular density and expression of the heterologous polypeptide thereafter.

4,499,189

BACTERIA CARRYING PLASMID HAVING TEMPERATURE DEPENDENT PLASMID COPY NUMBER

Bernt E. Uhlin; Kurt Nordström, and Soeren Molin, all of Odense, Denmark, assignors to A/S Alfred Benzon, Copenhagen, Denmark

Division of Ser. No. 908,108, May 22, 1978,. This application Dec. 8, 1980, Ser. No. 214,424
Claims priority, application Fed. Rep. of Germany, Dec. 30, 1977, 2759053
Int. Cl.³ C12N *1/20, 15/00*
U.S. Cl. 435—253 **5 Claims**

1. A bacterium carrying a recombined DNA plasmid showing a controlled constant plasmid copy number when the bacterium is cultivated at one temperature, and showing, when the bacterium is grown at a different temperature, an altered plasmid copy number control allowing an at least 20 times higher or totally uncontrolled copy number.

4,499,190

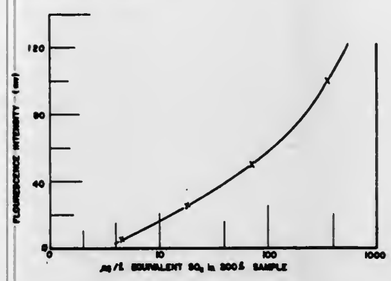
METHOD OF DETECTING SULFUR DIOXIDE

Leonard D. Spicer, Salt Lake City, Utah; Dennis W. Bennett, Clemson, S.C., and Jon F. Davis, Salt Lake City, Utah, assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Continuation of Ser. No. 273,174, Jun. 12, 1981, abandoned. This application May 9, 1983, Ser. No. 490,551
Int. Cl.³ C07F *7/10*; G01N *21/64, 21/77, 24/08*
U.S. Cl. 436—122 **12 Claims**

1. A method of analyzing the SO_2 content in a sample of gas comprising:
pumping a known volume of the gas through a known volume of $((CH_3)_3Si)_2NH$, to react any SO_2 in the gas with the $((CH_3)_3Si)_2NH$ to form the compounds $(CH_3)_3SiNSO$ and $[NH_4][(CH_3)_3SiOSO_2]$,

exciting at least one of the compounds so formed to induce fluorescence; and



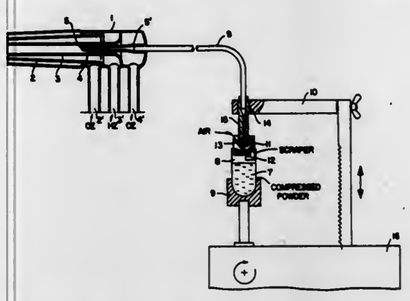
measuring said induced fluorescence of at least one of said compounds whereby said measured fluorescence is determinative of the SO_2 content in the sample of gas.

4,499,191

METHOD AND APPARATUS FOR THE DECOMPOSITION OF SPECIMENS OF SOLID ORGANIC SUBSTANCES

Rolf Brüning, Bruchköbel, and Jürgen Roth, Maintal, both of Fed. Rep. of Germany, assignors to Heraeus Quarzschmelze GmbH, Hanau, Fed. Rep. of Germany

Filed May 5, 1982, Ser. No. 375,201
Claims priority, application Fed. Rep. of Germany, May 13, 1981, 3118876
Int. Cl.³ G01N *31/12*
U.S. Cl. 436—160 **10 Claims**



1. A method for the decomposition of specimens of solid organic substances in an injector burner (1) consisting of a plurality of annularly interspaced concentric tube (2,3,4 and 5), wherein the substance to be incinerated is introduced into the center tube (5), said method comprising,
forming a powdered specimen (7) with a particle size of less than 75 microns from the solid organic substance,
placing the powdered specimen (7) into a specimen container (8), compressing the specimen (7) and
continuously abrading the specimen (7) to yield solid material in the form of fine dust from the surface of the specimen (7), the abraded material being continuously drawn into the burner (1) through a flexible tube (6) joining the specimen container (8) and the center tube (5) of the burner (1).

4,499,192

SILICON NITRIDE SINTERED PRODUCTS HAVING HIGH CORROSION RESISTANCE AND PROCESS FOR PRODUCTION THEREOF

Toru Shimamori; Yoshinori Hattori, and Yasushi Matsuo, all of Aichi, Japan, assignors to NGK Spark Plug Co., Ltd., Aichi, Japan

Filed Nov. 24, 1982, Ser. No. 444,119
Claims priority, application Japan, Nov. 30, 1981, 56-192451
Int. Cl.³ C04B *35/58*
U.S. Cl. 501—97 **1 Claim**

1. A silicon nitride sintered product having high corrosion resistance consisting essentially of from 75 to 97.9% by weight of silicon nitride, from 2 to 20% by weight of yttrium oxide and cerium oxide in a molar ratio of cerium oxide to yttrium oxide of from 0.4/1 to 4/1, and from 0.1 to 8% by weight of aluminum oxide.

4,499,193

PROCESS FOR PRODUCING BETA'-SILICON ALUMINUM OXYNITRIDE (B'-SIALON) USING DISCRETE PARTICLES

Frankie E. Phelps, Lower Burrell; Thomas L. Francis, Murrysville, and Alfred F. LaCamera, Level Green, all of Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.

Filed Dec. 16, 1982, Ser. No. 450,336
Int. Cl.³ C04B *35/56*
U.S. Cl. 501—98 **8 Claims**

1. A process for producing an essentially beta'-SiAlON refractory material, the process comprising providing initial reactants of SiO_2, Al_2O_3 and C in discrete particle form.

4,499,194

CARRIER FOR OLEFIN POLYMERIZATION CATALYSTS AND PROCESS FOR PRODUCING THE SAME

Masato Harada, Kisarazushi; Makoto Iijima, and Noriaki Saitoh, both of Ichiharashi, all of Japan, assignors to Chisso Corporation, Osaka, Japan

Filed Dec. 22, 1983, Ser. No. 564,307
Claims priority, application Japan, Jan. 20, 1983, 58-7849
Int. Cl.³ B01J *27/08, 35/08*
U.S. Cl. 502—8 **6 Claims**

1. A carrier for olefin polymerization catalysts obtained by:
reacting an anhydrous magnesium dihalide with at least one compound selected from the group consisting of alcohols and phenols in an inert organic solvent to obtain a complex compound;
suspending this complex compound with vigorous stirring in the presence of a nonionic surfactant in an inert organic solvent at a temperature of the melting point of the complex compound or higher; and
adding an organoaluminum compound or a silicon halide to the suspension to react it at 90°–150° C. with the suspension to thereby form spherical solids.

4,499,195

THERMALLY STABLE MIXED OXIDE GELS

Kenneth S. Wheelock, Baton Rouge, La., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Dec. 23, 1982, Ser. No. 452,839
Int. Cl.³ B01J *21/16*
U.S. Cl. 502—63 **7 Claims**

1. A process for the preparation of an oxide co-gel of high surface area suitable for use as a catalyst support or catalyst at elevated temperatures without significant loss of surface area which comprises
forming a co-gel consisting of a smectite and an oxide selected from titanium oxide, zirconium oxide, hafnium oxide, thorium oxide, uranium oxide, silicon oxide, and aluminum oxide.

4,499,196

ADSORBING DEACIDIFIER FOR OILY SUBSTANCES

Etsuji Yuki, 1454 Yano-cho, Akiku, Hiroshima-shi, Hiroshima-pref, Japan

Filed Apr. 7, 1983, Ser. No. 482,778
Claims priority, application Japan, May 4, 1982, 57-74987
Int. Cl.³ B01J 29/06, 20/14
U.S. Cl. 502—64 3 Claims

1. An adsorbing deacidifier for use in oily substances, comprising natural or synthetic zeolites in powder form and an aqueous solution of sodium hydroxide or potassium hydroxide adsorbed and fixed in said zeolites; wherein said adsorbing deacidifier has a ratio of water ranging from 10 to 40 weight percent.

3. An adsorbing deacidifier for use in oily substances, comprising natural or synthetic zeolites in powder form and an aqueous solution of sodium hydroxide or potassium hydroxide adsorbed and fixed in said zeolites; wherein said adsorbing deacidifier has water in a ratio of 10 to 40 weight percent in said deacidifier thus prepared; and wherein further is added diatomaceous earth at any desired ratio.

4,499,197

CO-GEL CATALYST MANUFACTURE

Mark A. Seese, Ellicott City, Md., and Robert L. Chiang, Anaheim, Calif., assignors to W. R. Grace & Co., New York, N.Y.

Filed Mar. 24, 1982, Ser. No. 361,426
Int. Cl.³ B01J 21/12, 29/08
U.S. Cl. 502—65 15 Claims

1. A method for preparing hydrogels which comprises:
(a) reacting sodium aluminate and sodium silicate solutions under conditions of intense mixing to obtain a partially gelled reaction mixture having a pH of from about 12 to 12.5;
(b) reacting the partially gelled reaction mixture with an acidic salt solution selected from the group consisting of aluminum and rare earth salts and mixtures thereof to obtain a cogelled reaction mixture having a pH of from about 9 to 10, said reaction being conducted under conditions of complete mixing;
(c) aging the gelled reaction mixture to develop a desired pore structure; and
(d) recovering the aged cogel.

8. A silica-alumina-rare earth oxide tergel which consists essentially of from about 10 to 90 parts by weight SiO_2, 10 to 90 parts by weight Al_2O_3, and 0.5 to 20 parts by weight RE_2O_3, said tergel being characterized by a surface area of about 100 to 400 m^2/g, and by about 30 to 60 percent of the surface area in pores having a diameter of about 40 to 100 Å as determined after steam treatment at 1350° F. for 8 hours.

11. A hydrocarbon conversion catalyst which comprises the tergel of claim 8.

13. The catalyst of claim 11 or 12 which contains a crystalline zeolite.

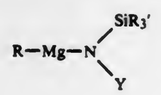
4,499,198

POLYMERIZATION CATALYSTS AND METHODS

Thomas J. Pullukat, Hoffman Estates; Raymond E. Hoff, Palatine, and Michael W. Lynch, Schaumburg, all of Ill., assignors to Chemplex Company, Rolling Meadows, Ill.

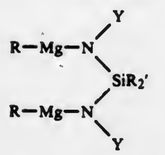
Filed Oct. 7, 1982, Ser. No. 433,369
Int. Cl.³ C08F 4/64
U.S. Cl. 502—104 24 Claims

13. The method of making an olefin polymerization and interpolymerization catalyst, comprising the step of reacting:
(a) one or more magnesium silylamide compounds represented by the formulas:



(I)

-continued



(II)

in which R is a straight or branched chain hydrocarbyl group comprising alkyl groups of about 1-18 carbon atoms and aryl groups of about 6 to 14 carbon atoms, and the R groups are the same or different, R′ is R or hydrogen, Y is R or —SiR'_3, all R′ are the same or different, all Y are the same or different, with
(b) at least one halide or alkoxide of a transition metal selected from Groups IIIB, IVB, VB and VIB of the fourth and fifth periods of the periodic table, and Groups VIIB and VIIIB of the fourth period, and
(c) one or more of a Lewis acid, hydrogen halide or $ZrCl_4$.

4,499,199

$TiCl_4$ TREATED WITH ORGANOMAGNESIUM/PROTONATING AGENT

Max P. McDaniel, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jul. 25, 1983, Ser. No. 517,110
Int. Cl.³ C08F 4/64
U.S. Cl. 502—104 32 Claims

1. A process comprising:
(a) reacting an organomagnesium compound with a treating compound selected from those of the formula R_3SnOH or of the formula RSH wherein R is a hydrocarbyl group having 1 to 20 carbon atoms to give a catalyst precursor;
(b) thereafter combining said precursor with a titanium tetrahalide in an amount sufficient to give at least one atom of Ti per atom of Sn or S; and
(c) recovering a catalyst.

4,499,200

COMPOUND CATALYST SYSTEM USABLE FOR THE POLYMERIZATION OR CURING OF UREA-FORMALDEHYDE POLYMERIC CONDENSATION SYSTEMS

John E. Carlson, Statesboro, Ga., assignor to Chem-Nuclear Systems, Inc., Columbia, S.C.

Division of Ser. No. 378,871, May 17, 1982, Pat. No. 4,429,075.
This application Nov. 14, 1983, Ser. No. 551,345
Int. Cl.³ B01J 31/26
U.S. Cl. 502—172 11 Claims

1. A catalyst system useful for promoting the polymerization or reaction of thermosetting resins comprising;
(a) phosphoric acid,
(b) trisodium phosphate,
(c) boric acid,
(d) glycerol, and
(e) water.

4,499,201

PROCESS FOR REMOVING ALUMINA OR SILICA SUBSTRATE FROM CARBONACEOUS PYROPOLYMERS

Richard W. Leyerle, Arlington Heights, Ill., assignor to UOP Inc., Des Plaines, Ill.

Filed May 19, 1983, Ser. No. 496,147
Int. Cl.³ B01J 21/18
U.S. Cl. 502—180 8 Claims

1. A process for the removal of alumina or silica from a composition of matter comprising a carbonaceous pyropolymer possessing recurring units containing at least carbon and hydrogen atoms composited on an alumina or silica substrate, which process comprises contacting said composition of matter at a temperature of from about 400° C. to about 1000° C. with the vapors of an organic chloride-containing compound reactable with the alumina or silica content of the substrate to form aluminum chloride or silicon chloride, removing the resultant aluminum or silicon chloride vapor, and recovering the remaining carbonaceous pyropolymer possessing recurring units containing at least carbon and hydrogen atoms.

4,499,202

HYDROCRACKING CATALYST

Beatriz Arias, Caracas; Humberto Kum, Los Teques, and Roberto Galiasso, San Antonio de los Altos, all of Venezuela, assignors to Intevep, S.A., Caracas, Venezuela

Filed Jun. 29, 1982, Ser. No. 393,500
Int. Cl.³ B01J 21/04, 21/06, 21/88, 27/18
U.S. Cl. 502—211 5 Claims

1. A hydrocracking catalyst in pellet form, having
a surface area of about 90 to about 250 square meters per gram, a pore volume of about 0.25 to about 0.55 cubic centimeters per gram, real density of about 3.00 to about 5.00 grams per cubic centimeter, and apparent density of about 1.50 to about 2.00 grams per cubic centimeter;
containing aluminum in an overall concentration of about 25 to about 35 weight percent;
containing iron in an overall concentration of about 5 to about 15 weight percent;
containing silicon in an overall concentration of about 1 to about 10 weight percent;
containing titanium in an overall concentration of about 0.63 to about 5 weight percent; and
containing a promoter which is a member of the group consisting of molybdenum and phosphorus or mixture thereof, said molybdenum, if present, being present in an overall concentration of about 1 to about 10 weight percent and said phosphorus, if present, being present in an amount of about 1 to about 8 weight percent;
the catalyst pellet surface concentration of said promoter being higher than the overall concentration of said promoter; the atomic ratio of molybdenum to aluminum at the pellet surface being in the range of about 0.03 to about 0.09 when molybdenum is present in the catalyst; and the atomic ratio of phosphorus to aluminum at the pellet surface being in the range of about 0.10 to about 0.60 when phosphorus is present in the catalyst.

4,499,203

SUPPORTED CATALYST OF INCREASED RESISTANCE TO POISONS, USEFUL FOR HYDROTREATING METAL-CONTAINING OIL FRACTIONS

Hervé Toulhoat, Le Pecq; Yves Jacquin, Sevre, and Thierry Dupin, Garges les Gonesses, all of France, assignors to Societe Francaise des Produits pour Catalyse Pro-Catalyse, Rueil-Malmaison, France

Filed Jun. 17, 1983, Ser. No. 505,557
Claims priority, application France, Jun. 17, 1982, 82 10757
Int. Cl.³ B01J 21/04, 23/22, 23/74, 35/02
U.S. Cl. 502—247 20 Claims

1. A catalyst comprising a carrier and at least one catalytic metal or compound of a catalytic metal, said metal or at least one of the metals being vanadium, molybdenum, tungsten, nickel, cobalt or iron, wherein said catalyst consists of a plurality of juxtaposed agglomerates each formed of a plurality of acicular platelets, the platelets of each agglomerate being oriented generally radially with respect to one another and with respect to the center of the agglomerate; wherein said catalyst contains a major proportion of wedge-shaped mesopores, and has an improved resistance to pore mouth plugging compared with bimodal or monomodal porous catalysts.

4,499,204

LEACHED CATALYST FOR AMMONIA SYNTHESIS

Thomas H. Vanderspurt, Stockton; Michael A. Richard, Fanwood, and Angelo A. Montagna, Summit, all of N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Jan. 3, 1984, Ser. No. 567,659
Int. Cl.³ B01J 25/00
U.S. Cl. 502—301 14 Claims

1. An improved catalyst formed by leaching a pre-reduced catalyst containing iron and one or more promoters selected from the group consisting of an alkali metal oxide, an alkaline earth metal oxide and aluminum oxide in an aqueous medium with an alkali metal cyanide under oxidative conditions.

4,499,205

HIGH ACTIVITY CATALYST FOR REFORMING OF METHANOL AND PROCESS OF PREPARING SAME

Koji Masuda, Yokosuka, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

Filed Apr. 6, 1983, Ser. No. 482,533
Claims priority, application Japan, Apr. 12, 1982, 57-60512
Int. Cl.³ B01J 23/10, 23/40
U.S. Cl. 502—303 11 Claims

1. A process of preparing a catalyst for reforming a methanol to hydrogen and carbon monoxide, the process comprising the steps of:
(a) depositing at least one metal oxide which is an oxide of a metal selected from the group consisting of Ce, La, Pr, Nd and Y on a carrier which comprises active alumina over at least substantially the entire surface thereof;
(b) impregnating the carrier treated at step (a) with an aqueous solution comprising ammonium thiosulfate and at least one thermally decomposable compound of a catalytic metal of the platinum group;
(c) after step (b), drying the carrier so as to reduce moisture content therein to a predetermined level;
(d) baking the carrier impregnated with said solution in a steam atmosphere at a temperature between about 500° C. and about 600° C. to decompose said thermally decomposable compound adhering to the carrier to thereby deposit at least one catalytic metal of the platinum group on the carrier; and
(e) subjecting the carrier treated at step (d) to a reduction treatment which comprises immersing the carrier in a solution of a reducing agent, such that said catalytic metal deposited on the carrier is rendered substantially completely reduced.

4,499,206

Patent Not Issued For This Number

4,499,207

Patent Not Issued For This Number

4,499,208

ACTIVATED CARBON ADSORBENT WITH INCREASED HEAT CAPACITY AND THE PRODUCTION THEREOF

Andrija Fuderer, Antwerpen, Belgium, assignor to Union Carbide Corporation, Danbury, Conn.

Filed May 13, 1983, Ser. No. 494,547
Int. Cl.³ B01J 20/08, 20/20, 31/08; B01D 53/04
U.S. Cl. 502—415 17 Claims

9. An improved pelletized activated carbon adsorbent comprising:

(1) activated carbon; (2) dense alumina in the form of corundum having a volume-based higher heat capacity than said activated carbon; and (3) a binder present in an amount within the range of from about 0.5 to about 4.0% by weight of said binder based on the total weight of said activated carbon—dense alumina in the form of corundum—binder, said adsorbent being prepared by the process comprising mixing partially activated carbon powder with said dense alumina in a particle size range suitable for mixing therewith prior to pelletization, said dense alumina in the form of corundum comprising from about 1% to about 25% by volume of the total volume of the mixture of activated carbon powder and said dense phase alumina in the form of corundum.

14. The activated carbon adsorbent formulation of claim 9 in which said pellets comprising activated carbon, dense alumina and binder are activated by reaction with steam at elevated temperature.

16. The activated carbon adsorbent formulation of claim 9 and including activated carbon pellets, prepared without the incorporation of said dense alumina in the form of corundum therein, mixed therewith, the activated carbon pellets containing said dense alumina in the form of corundum comprising from about 30 to about 60% of the total heat capacity of said activated carbon pellets.

4,499,209

PROCESS FOR THE PREPARATION OF A FISCHER-TROPSCH CATALYST AND PREPARATION OF HYDROCARBONS FROM SYNGAS

Arend Hoek; Martin F. M. Post; Johannes K. Minderhoud, and Peter W. Lednor, all of Amsterdam, Netherlands, assignors to Shell Oil Company, Houston, Tex.

Filed Oct. 28, 1983, Ser. No. 546,670
Claims priority, application Netherlands, Nov. 22, 1982, 8204525
Int. Cl.³ C07C 1/04
U.S. Cl. 518—707 13 Claims

1. A process for the preparation of hydrocarbons by catalytic reaction of carbon monoxide with hydrogen, characterized in that a H_2 and CO-containing feed is contacted at a temperature of 125°–350° C. and a pressure of 5–150 bar with a catalyst which contains 5–40 pbw cobalt and 2–150 pbw zirconium or titanium per 100 pbw silica and has been prepared by impregnating a silica carrier once or several times with a solution of a zirconium or titanium compound, calcining the composition thus obtained, impregnating the calcined composition once or several times with a solution of a cobalt compound and calcining and reducing the compositions thus obtained.

4,499,210

PROCESS AND COMPOSITION FOR PRODUCING OPEN-CELL CROSS LINKED POLYOLEFIN FOAM

Akitaka Senuma, and Takao Aizawa, both of Yokohama, Japan, assignors to Union Carbide Corporation, Danbury, Conn.

Division of Ser. No. 433,869, Oct. 13, 1982, Pat. No. 4,424,181. This application Dec. 15, 1983, Ser. No. 561,658
Int. Cl.³ C08J 9/06
U.S. Cl. 521—91 1 Claim

1. A composition suitable for open-cell polyolefin foam which comprises 100 parts by weight of olefin resin, 1 to 20 parts by weight of blowing agent, 0.3 to 10 parts by weight or organic peroxide crosslinking agent, 0.1 to 10 parts by weight of trifunctional monomer, and 1 to 5 parts by weight of silicone oil or a derivative thereof, said organic peroxide having a 10-minute half-value temperature (T_p) of 110° C. to 170° C. and said blowing agent having a decomposition temperature (T_f) of 100° C. to 160° C., T_p and T_f satisfying the following equation:

$$-10° C. \leq T_p - T_f \leq 50° C.$$

4,499,211

OPEN-CELL/MICROPOROUS MOLDED ARTICLE

Axel Walch, Frankfurt; Walter Seifried; Wolfgang Michel, Wiesbaden; Jürgen Kuhls, Burghaussen, and Jürgen Wildhardt, Huenstetten, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Jul. 27, 1982, Ser. No. 402,266
Claims priority, application Fed. Rep. of Germany, Jul. 28, 1981, 3129745
Int. Cl.³ C08F 9/28
U.S. Cl. 521—145 5 Claims



1. A microporous molded article having an open-cell structure and comprising a thermoplastic material which possesses an inherent latent structural convertibility and includes effective pores of a diameter in the range from about 0.002 to 10 μm, said thermoplastic material comprising at least about 70 percent by weight of a terpolymer which is composed of from about 20 to 80 percent by weight, relative to the total weight of the terpolymer, of copolymerized fluorinated olefin selected from the group consisting of ethylene and propylene, up to about 40 percent by weight, relative to the total weight of the terpolymer, of copolymerized olefin selected from the group consisting of ethylene and propylene, and from about 80 to 20 percent by weight, relative to the total weight of the copolymer, of copolymerized vinyl acetate, with at least 5 percent of the total proportion of acetate groups contained in the copolymer being converted by saponification into OH groups after copolymerization of the specified comonomers to form the terpolymer.

4,499,212

THERMOSETTING ACRYLIC LATEXES

Phillip C. Martino, Brunswick, Ohio, assignor to SCM Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 416,911, Sep. 13, 1982, abandoned. This application Jan. 30, 1984, Ser. No. 575,224
Int. Cl.³ C08L 0/00
U.S. Cl. 523—201 9 Claims

1. In a process for polymerizing ethylenically unsaturated monomers in water to produce self-curing emulsion polymerized polymer particles, the improvement comprising:

polymerizing ethylenically unsaturated monomers in a two-step process by first copolymerizing first stage monomers and then copolymerizing second stage monomers wherein first stage monomers comprise by weight between 30% and 70% of the total monomers, the total monomers comprising by weight (a) between 1% and 20% alkylated alkylol acrylamide, (b) between 1% and 20% functional monomer containing reactive functional groups and selected from carboxyl monomer, hydroxyl monomer, amine monomer, or amide monomer, and (c) other ethylenic monomer, wherein said first stage monomers are said functional monomer (b) and/or said other ethylenic monomer (c), and said second stage monomers comprise alkylated acrylamide monomer (a) and functional monomer (b) and other ethylenic monomer (c), wherein second stage monomers contain 3% to 15% of said alkylated alkylol acrylamide monomer (a) and is a second stage monomer copolymerized in the second step to preferentially orientate alkylol acrylamide groups of said alkylated alkylol acrylamide monomer on the surface portion of the latex polymer particles, and reacting said second stage monomers at temperatures above about 70° C. to react a minor amount of said alkylated alkylol acrylamide monomer with a minor amount of said functional monomer to provide high molecular weight polymer particles containing surface crosslinked polymer chains to provide a sprayable latex adapted to be heat cured and self cross-linking by cross-linking said alkylated alkylol acrylamide groups with said functional groups.

4,499,213

COAGULATION

Kyosaku Sato, Sarnia, Canada, assignor to Polysar Limited, Sarnia, Canada

Filed Sep. 12, 1983, Ser. No. 531,507
Claims priority, application Canada, Oct. 18, 1982, 413647
Int. Cl.³ C08F 6/00; C08G 0/00; C08J 3/00
U.S. Cl. 523—335 11 Claims

1. An improved process for the coagulation from the latex of a carboxylated styrene-butadiene polymer wherein the latex is added to an agitated aqueous coagulation mixture of sodium chloride and sulphuric acid maintained at a pH of from about 2 to about 4.5 and at a temperature of from about 50° to about 80° C., the improvement being the latex is adjusted to a pH value of from about 6.5 to about 7.5 by the addition of an aqueous solution of an alkali metal hydroxide and an aqueous emulsifier mixture is added to the latex prior to coagulation or simultaneously fed with the latex to the coagulation mixture, the emulsifier mixture being the alkali metal salts of and containing from about 3 to about 6 parts by weight per 100 parts by weight of polymer in the latex of one or more C_{12} to C_{18} fatty acids and from about 1.5 to about 3.5 parts by weight or rosin acid per 100 parts by weight of polymer in the latex, the pH of the emulsifier mixture being adjusted to a value of from about 10 to about 12 by the addition of an aqueous solution of an alkali metal hydroxide.

4,499,214

METHOD OF RAPIDLY DISSOLVING POLYMERS IN WATER

Edwin T. Sortwell, Wheaton, Ill., assignor to Diachem Industries, Inc., Batavia, Ill.

Filed May 3, 1983, Ser. No. 491,070
Int. Cl.³ C08F 6/24; C08J 3/04, 3/08
U.S. Cl. 523—336 22 Claims

1. A method of rapidly dissolving a water-soluble polymer or gum in water which comprises the steps of:

(a) preparing finely-divided particles of said polymer or gum by comminuting said polymer or gum under substantially non-molecularly destructive conditions;

(b) dispersing said particles in a substantially water-free liquid carrier in which said polymer or gum is substantially insoluble to form a suspension; and,

(c) adding said suspension to water with sufficient mixing to disperse and rapidly dissolve said particles in said water.

4,499,215

MODIFIED ASPHALT-EPOXY RESIN COMPOSITION

Sadashige Okada, 55, Kamiwakicho-2-chome, Nakagawa-ku, Nagoya, Japan

Filed Jul. 28, 1983, Ser. No. 518,070
Claims priority, application Japan, Jun. 3, 1983, 58-98009
Int. Cl.³ C08L 63/00, 95/00
U.S. Cl. 523—450 7 Claims

1. A modified asphalt/epoxy resin composition which comprises an epoxy resin and a modified asphalt; the modified asphalt being obtainted by condensing, in the presence of an arylsulfonic acid as catalyst, 100 parts by weight of an asphalt with 25 to 45 parts by weight of a non-thermoreactive phenol resin having an average molecular weight of 900–1400 and obtained by condensing a member selected from the group consisting of an alkylphenol having 4 to 8 carbon atoms in the alkyl moiety and phenylphenol with an aldehyde selected from the group consisting of formaldehyde and acetaldehyde;

wherein the ratio of the epoxy resin and the modified asphalt is 30 to 100 parts by weight of the epoxy resin based on 10 parts by weight of the non-thermoreactive phenol resin in the modified asphalt.

5. A process for producing a modified asphalt-epoxy resin composition which comprises mixing an epoxy resin and a modified asphalt; the modified asphalt being obtained by condensing, in the presence of an arylsulfonic acid as catalyst and at a temperature of 160° to 200° C. until evolution of water ceases, 100 parts by weight of an asphalt with 25 to 45 parts by weight of non-thermoreactive phenol resin having an average molecular weight of 900–1400 and obtained by condensing a member selected from the group consisting of an alkylphenol having 4 to 8 carbon atoms in the alkyl moiety and phenylphenol with an aldehyde selected from the group consisting of formaldehyde and actaldehyde;

wherein the ratio of the epoxy resin and the modified asphalt is 30 to 100 parts by weight of the epoxy resin based on 10 parts by weight of the non-thermoreactive phenol resin in the modified asphalt.

4,499,216

METHOD AND RESIN SOLUTION FOR SPLICING CARBONIZED POLYACRYLONITRILE MATERIAL

Raymond G. Spain, Huntington Beach, and James E. Massie, Westminster, both of Calif., assignors to Hitco, Newport Beach, Calif.

Filed Jul. 5, 1983, Ser. No. 510,673
Int. Cl.³ C08K 5/02; C08L 63/10
U.S. Cl. 523—437 4 Claims

1. A solution for splicing together lengths of carbonized polyacrylonitrile material consisting of an acrylic polymer, an epoxy resin and a solvent, the acrylic polymer consisting of a solid acrylic polymer having a first molecular weight and a liquid acrylic polymer having a second molecular weight substantially less than the first molecular weight, the solution forming a relatively strong and flexible adhesive bond upon curing by heating.

4,499,217

THERMO-SETTING RESINOUS LIQUID COMPOSITIONS

Masaru Yoshimura, and Sumio Saitoh, both of Yokohama, Japan, assignors to Catalysts & Chemicals Industries, Co. Ltd., Tokyo, Japan

Filed Jan. 29, 1982, Ser. No. 343,920
Claims priority, application Japan, Feb. 2, 1981, 56-14165
Int. Cl.³ C08L 33/00, 63/00, 75/04, 83/00
U.S. Cl. 523—456 2 Claims

1. An essentially water-free liquid composition comprising a composite formed from (a) an esantially water-free dispersion of silica colloid in alcohol, said silica having particle diameter of between about 10 and 50 mμ, and (b) a thermo-setting resin selected from the group consisting of acrylic, acryl-melamine,

acryl-epoxy, acryl-urethane, melamine-alkyd, epoxy, epoxy-phenolic, phenolic and silicone resins.

4,499,218

VULCANIZABLE RUBBER COMPOUND

Genrikh D. Lyakhevich, ulitsa Matusevicha, 3, kv. 146, Minsk; Vasily G. Suzansky, ulitsa Gorkogo, 28, kv. 33, and Vulf P. Kovalerchik, ulitsa Oktyabrskaya, 197, kv. 78, both of Bobruisk, all of U.S.S.R.

Filed Jun. 4, 1981, Ser. No. 270,386
Int. Cl.³ C08L 7/00, 9/00, 9/02; C08J 11/04
U.S. Cl. 524—79 11 Claims

1. Vulcanizable rubber stock based on diene rubber, comprising: oxidized oligomer prepared by thermally decomposing rubber comprising an addition polymer of one or more ethylenically unsaturated monomers by heating said rubber at a temperature above the decomposition temperature thereof for a sufficient time and oxidizing the decomposed rubber, said oxidized oligomer being contained in said rubber stock in an amount of 5–68 parts by weight per 100 parts by weight of diene rubber.

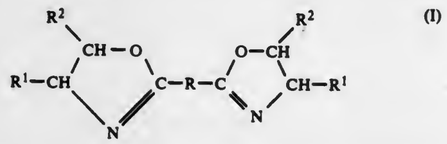
4,499,219

STABILIZED THERMOPLASTIC POLYESTER MOULDING COMPOSITION

Lothar Buxbaum, Villach/Sankt Georgen, Austria; Franz Breitenfellner, Bensheim, and Thomas Kainmüller, Lindenfels, both of Fed. Rep. of Germany, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

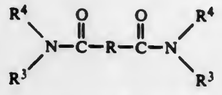
Continuation-in-part of Ser. No. 412,742, Aug. 30, 1982, abandoned. This application Nov. 21, 1983, Ser. No. 554,011
Claims priority, application Switzerland, Sep. 9, 1981, 5822/81
Int. Cl.³ C08K 5/15, 3/34
U.S. Cl. 524—94 15 Claims

1. A moulding composition, based on a thermoplastic polyester, which comprises effective amounts of (a) as a first stabiliser, a polyepoxide compound, having on average more than one epoxide group per molecule, and (b) at least one second stabiliser selected from the group consisting of the bisoxazolines of the formula I



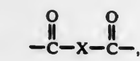
(I)

and the dicarboxylic acid imides and amides of the formula II



(II)

in which R is alkylene, cycloalkylene, unsubstituted arylene or arylene substituted by halogen, R^1 and R^2 independently of one another are a hydrogen atom, aryl, cycloalkyl or alkyl, R^3 is alkyl, cycloalkyl, or aryl or aralkyl which are unsubstituted or substituted by alkyl or halogen, and R^4 is acyl, or R^3 and R^4 together are a radical of the formula $—C_nH_{2n}CO—$, in which n is a number from 3 to 11, or R^3 and R^4 together are a radical of the formula



in which X is ethylene or ethenylene which are unsubstituted or substituted by alkyl, or is a carbocyclic radical which is unsubstituted or substituted by alkyl or halogen and to which both the carbonyl groups are bonded in the ortho-position.

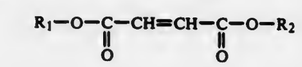
4,499,220

COPOLYMER LIGHT STABILIZERS HAVING AT LEAST ONE 2,2,6,6-TETRAALKYL PIPERIDYL GROUP AND SYNTHETIC RESIN COMPOSITIONS CONTAINING THE SAME

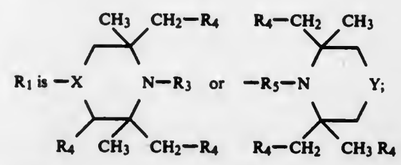
Motonobu Minagawa, Kosigaya City; Naohiro Kubota, Ageo City, and Toshihiro Shibata, Omiya City, all of Japan, assignors to Adeka Argus Chemical Co., Ltd., Urawa, Japan

Filed May 20, 1982, Ser. No. 379,847
Claims priority, application Japan, Jul. 3, 1981, 56-104069
Int. Cl.³ C08K 5/15, 5/45; C08F 8/00, 222/22
U.S. Cl. 524—102 32 Claims

1. Copolymer light stabilizers having at least one 2,2,6,6-tetraalkyl piperidyl group in the molecule and a molecular weight within the range from about 1000 to about 20,000 of a maleic or fumaric acid ester having the formula:

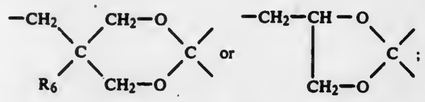


wherein:

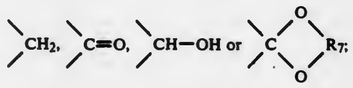


R_1 is —X N—R_3 or —R_5—N Y;

R_2 is alkyl having from one to about eighteen carbon atoms or R_1;
X is



R_6 is lower alkyl or hydroxyalkyl having from one to about four carbon atoms;
R_3 is hydrogen, alkaryl having from seven to ten carbon atoms; or alkyl, hydroxyalkyl or epoxyalkyl having from one to about eighteen carbon atoms;
R_4 is hydrogen or methyl;
R_5 is alkylene having from two to about four carbon atoms;
Y is



and
R_7 is alkylene having from two to about eighteen carbon atoms
with at least one monomer selected from the group consisting of aliphatic carboxylic acid vinyl esters having from two to about eight carbon atoms; alkyl vinyl ethers having from one to about eighteen carbon atoms; triallyl isocyanurate; pinene; and tricyclo(5.2.1.$0^{2,6}$)-decene-3.

4,499,221

POLYURETHANE COMPOSITION IMPROVED IN DYEING PROPERTY

Minoru Saitoh; Yoshikazu Arimatsu; Katsuya Tani, and Hideyuki Mitamura, all of Shiga, Japan, assignors to Toyo Boseki Kabushiki Kaisha, Japan

Filed May 31, 1984, Ser. No. 615,647
Claims priority, application Japan, May 31, 1983, 58-97546; Jun. 1, 1983, 58-98686
Int. Cl.³ C08L 75/00
U.S. Cl. 524—109 12 Claims

1. A polyurethane composition which comprises (A) a polyurethane and (B) a tertiary nitrogen atom-containing polymer incorporated therein in an amount sufficient to stabilize the polyurethane (A), said polymer (B) being the reaction product between (C) a tertiary nitrogen atom-containing diol and an excessive amount of (D) an organic diisocyanate, the terminal isocyanate group in said reaction product being blocked with a monoamine and/or a dialkylhydrazine.

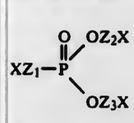
4,499,222

PHOSPHORUS-CONTAINING FLAME PROOFING COMPOSITIONS FOR SYNTHETIC MATERIALS

Michel Bernard, Levallois; Daniel Baldé, Paris; Elie Ghenassia, Chocques, and Francois Laumain, Levallois, all of France, assignors to Produits Chimiques Ugine Kuhlmann, France

Filed Aug. 15, 1983, Ser. No. 523,640
Claims priority, application France, Aug. 24, 1982, 82 14518
Int. Cl.³ C08K 5/53
U.S. Cl. 524—123 8 Claims

1. Phosphorus-containing mixtures for conferring improved flame retardance to combustible materials, which mixtures have low crystallization temperatures, the mixtures principally containing a plurality of phosphonates having the formula



wherein X is chloro or bromo; Z_1, Z_2, and Z_3 are —CH_2—CH_2— or —CH_2—CHR—; and R is CH_3 or CH_2Cl, the overall mole ratio of the $—Z_nX$ groups of the —CH_2—CH_2—X type to the total $—Z_nX$ groups being from 0.02 to 0.90, n being 1, 2, or 3.

4,499,223

HYDROLYZABLE POLYESTER RESINS AND COATING COMPOSITIONS CONTAINING THE SAME

Naoki Yamamori, Osaka; Junji Yokoi, and Motoyoshi Yoshikawa, both of Nara, all of Japan, assignors to Nippon Paint Co., Ltd., Osaka, Japan

Continuation-in-part of Ser. No. 426,155, Sep. 28, 1982,. This application Apr. 23, 1984, Ser. No. 602,722
Int. Cl.³ C08G 63/02
U.S. Cl. 524—176 4 Claims

1. Hydrolyzable polyester resin for an antifouling paint use having at least one metal-ester bondings, the metal being at least one member selected from the Groups Ib, IVa and VIII of the Periodic Table.

4,499,224

UPGRADING SILICONE RESIN COATING COMPOSITIONS

Blair T. Anthony, Schenectady, and Donald G. LeGrand, Burnt Hills, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Jan. 20, 1984, Ser. No. 572,482
Int. Cl.³ C08K 3/36
U.S. Cl. 524—261 9 Claims

1. A method of improving silicone resin coating compositions comprising filtering said silicon resin coating compositions through a filter having a size of 5 microns or less.

6. A silicone resin coating composition obtained by the method comprising filtering a silicone resin coating composition through a filter having a size in the range of 5 to 0.1 microns, said silicone resin coating composition being comprised of from about 10–50 weight percent solids dispersed in a water/alcohol dispersion medium, said solids comprising from about 10–70 weight percent colloidal silica and about 30–90 weight percent of a partial condensate obtained from a trifunctional silane having the formula $R'Si(OR)_3$, wherein R' is selected from the group consisting of alkyl radicals having 1–3 carbon atoms and aryl radicals having from 6–13 carbon atoms and R is selected from a group consisting of alkyl radicals having from 1–13 carbon atoms and aryl radicals having from 6–20 carbon atoms, at least 70% of which is $CH_3Si(OR)_3$.

4,499,225

COATING COMPOSITION

Akira Kubo, Sakura; Akihiko Ishii, Chiba; Ken Nishizaki, Narashino, and Tomoharu Saito, Sakura, all of Japan, assignors to Shinto Paint Co., Ltd., Amagasaki, Japan

Filed Jul. 6, 1983, Ser. No. 511,294
Claims priority, application Japan, Jul. 8, 1982, 57-118915
Int. Cl.³ C08L 91/06
U.S. Cl. 524—276 8 Claims

1. A coating composition consisting essentially of a film-forming component dispersed in water, said film-forming component comprising 60 to 99 wt.% of a powder containing as a main component one or more resins selected from the group consisting of polyethylene, polypropylene and their derivatives and 1 to 40 wt.% of a low molecular weight oxidized polyethylene and/or its derivative.

4,499,226

HIGH CLARITY COLORLESS POLYESTERS

Fred L. Massey, Uniontown, and Douglas D. Callander, Akron, both of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Continuation of Ser. No. 245,838, Mar. 20, 1981,. This application Dec. 30, 1982, Ser. No. 454,753
Int. Cl.³ C08K 3/32, 5/05, 5/11
U.S. Cl. 524—382 19 Claims

1. A polyester, comprising:
a polyester resin, said polyester resin made solely by adding a dicarboxylic acid to a glycol compound in a molar ratio of said alcohol to said acid of from 1.7:1 to 1.05:1, said dicarboxylic acid selected from the group consisting of alkyl dicarboxylic acids having a total of from 2 to 16 carbon atoms, aryl or alkyl substituted aryl dicarboxylic acids containing a total of from 8 to 16 carbon atoms, and combinations thereof, and wherein said glycol is selected from the group consisting of glycols having from 2 to 12 carbon atoms, glycol ethers having from 4 to 12 carbon atoms, and combinations thereof,
forming a mixture by adding a phosphorus compound, a cobalt compound as well as said alcohol and said acid to a solvent consisting of a preformed molecular weight linear condensation polyester of a glycol and a dicarboxylic acid, said polyester having an average degree of polymerization of from 1.4 to 10, heating and reacting the mixture at a temperature from above the melting temperature of a low molecular weight linear polyester to 300° C. at a pressure of from about 20 to about 1000 pounds per square inch gauge pressure until a linear condensation polyester resin of said glycol and acid having an average degree of polymerization of from 1.4 to 10 is formed, adding a condensation antimony polymerization catalyst and then heating and reacting the mixture at a temperature of from about 260° C. to about 290° C. at a pressure of about ten millimeter of mercury or less until a linear polyester is formed,

said polyester consisting essentially of said antimony compound, said phosphorus compound, and said cobalt compound, the amount of said antimony compound, based upon the amount of elemental antimony therein, ranging from about 70 to about 250 parts by weight per one million parts by weight of said polyester,

the amount of said phosphorus compound, based upon the amount of elemental phosphorus therein, ranging from about 5 to about 60 parts by weight per million parts by weight of said polyester, the amount of said cobalt compound based upon the amount of elemental cobalt therein ranging from about 5 to about 50 parts by weight per million parts by weight of said polyester, the amount of said elemental phosphorus in said phosphorus compound ranging from about 0.35 to about 2.5 parts by weight for each part by weight of elemental cobalt in said cobalt compound, said polyester resin yielding a high clarity, low haze, neutral hue article having a haze value of less than 3.0.

4,499,227
THERMOPLASTIC RESIN COMPOSITION HAVING HIGH IMPACT STRENGTH

Fay W. Bailey, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Dec. 2, 1983, Ser. No. 557,514
Int. Cl.³ C08K 3/34, 5/09, 5/01, 9/04
U.S. Cl. 524—399 22 Claims

1. A thermoplastic composition consisting essentially of a mixture of:

(a) 100 parts by weight of at least one thermoplastic resin selected from the group consisting of polyethylene, polypropylene, polybutylene, polystyrene, vinyl acetate-ethylene copolymers, butadiene-styrene copolymers, and homo- and copolymers of acrylic acid; and

(b) 5–60 parts by weight of particulate mica filler premixed in the absence of a thermoplastic resin with 0.1–2 parts by weight of at least one ingredient selected from the group of

(i) polybutylenes having a melting point below about 100° F.;

(ii) fatty acid metal salts of the formula:

$(RCOO)_nM$

wherein R is an alkyl or alkenyl radical having from 9 to 25 carbon atoms, M is a Group IA, IIA, or IIB metal; and n is the valence of M; and

(iii) mineral oils.

7. A composition according to claim 1 wherein said fatty acid metal salt is zinc stearate.

4,499,228
RUBBER COMPOSITIONS HAVING IMPROVED CRACK GROWTH RESISTANCE

Masaki Ogawa; Yasushi Hirata, both of Sayama, and Akira Tsuchikura, Tokyo, all of Japan, assignors to Bridgestone Tire Company Limited, Tokyo, Japan

Filed Jun. 23, 1983, Ser. No. 507,303
Claims priority, application Japan, Jun. 29, 1982, 57-110742
Int. Cl.³ C08K 3/10; C08L 9/00, 47/00
U.S. Cl. 524—413 4 Claims

1. A rubber composition having an improved crack growth resistance, characterized by containing 1 to 40% by weight of a granular body having an average particle diameter of 5 to 500 μm, which contains 2 to 40% by weight of micro short fibers having an average diameter of not more than 1 μm, an average length of 1 to 30 μm and an aspect ratio of not less than 8 and orientated in uniaxial or biaxial direction, and being random in the orientation axis of the micro short fiber between these granular bodies.

4,499,229
ONE PACKAGE, STABLE, MOISTURE CURABLE, ALKOXY-TERMINATED ORGANOPOLYSILOXANE COMPOSITIONS

Thomas P. Lockhart, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Apr. 1, 1983, Ser. No. 481,527
Int. Cl.³ C08K 3/34; C08G 77/04, 77/26
U.S. Cl. 524—450 7 Claims

1. A one-package, substantially anhydrous, room temperature vulcanizable organopolysiloxane composition stable under ambient conditions in the substantial absence of moisture over an extended period of time and convertible to a substantially acid-free, tack-free elastomer comprising by weight,

(A) an organopolysiloxane wherein the silicon atom at each polymer chain end is terminated with at least one alkoxy radical,

(B) an effective amount of condensation catalyst,

(C) from 0 to 0.1 part, per part of the alkoxy terminated organopolysiloxane of (A) of a cross-linking polyalkoxysilane of the formula,

$$(R^1O)_{4-b}\overset{(R^2)_b}{\overset{|}{Si}}$$

(D) 0.001 to 0.1 part, per part of the alkoxy terminated organopolysiloxane of a diorganosulfoxide curing accelerator having the formula,

$$R^3-\overset{O}{\overset{\|}{S}}-R^4$$

(E) a stabilizing amount of a scavenger for hydroxy-containing material in the organopolysiloxane RTV composition, selected from

(i) an organic material having at least one alcohol reactive functional groups which is suitable as a scavenger for hydroxy radicals and which has a molecular weight in the range of from about 40 to about 1,000 and consists essentially of a mixture of chemically combined atoms selected from C, H, N, O, P, S, Cl, F, Br and I,

(ii) a silicon containing scavenger having a molecular weight in the range of about 47 to about 5,000 and at least one chemically combined unit of the formula,

$\equiv Si-(X)_c$, and

(iii) a zeolite

where R^1 is a $C_{(1-8)}$ aliphatic organic radical selected from alkyl radicals, alkylether radicals, alkylester radicals, alkylketone radicals and alkylcyano or a $C_{(7-13)}$ aralkyl radical, R^2 is a $C_{(1-13)}$ monovalent organic radical selected from R radicals, R^3 and R^4 are the same or different $C_{(1-13)}$ monovalent hydrocarbon radical or substituted monovalent hydrocarbon radical, X is a hydrolyzable leaving group selected from amido, amino, carbamato, enoxy, imidato, isocyanato, oximato, thioisocyanato and ureido radicals, b is a whole number equal to 0 or 1, c is an integer equal to 0 to 4 inclusive and the remaining valences of Si other than those satisfied by X can be satisfied by atoms selected from Si, C, O, N, P, S, transition elements IIIa, IVa, Va, VIa, VIIa and VIII and mixtures thereof.

4,499,230
ONE PACKAGE, STABLE, MOISTURE CURABLE, ALKOXY-TERMINATED ORGANOPOLYSILOXANE COMPOSITIONS CONTAINING A ZEOLITE

Thomas P. Lockhart, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Apr. 1, 1983, Ser. No. 481,529
Int. Cl.³ C08K 3/34; C08G 77/04, 77/06, 77/20
U.S. Cl. 524—450 8 Claims

1. A one-package, substantially anhydrous, room temperature vulcanizable organopolysiloxane composition stable under ambient conditions in the substantial absence of moisture over an extended period of time and convertible to a substantially acid-free, tack-free elastomer comprising,

(A) an organopolysiloxane wherein the silicon atom at each polymer chain end is terminated with at least one alkoxy radical,

(B) an effective amount of condensation catalyst

(C) from 0 to 0.1 part, per part of the alkoxy terminated organopolysiloxane of (A) of a cross-linking polyalkoxysilane

(D) 0 to 0.1 part, per part of the alkoxy terminated organopolysiloxane of an amine accelerator and

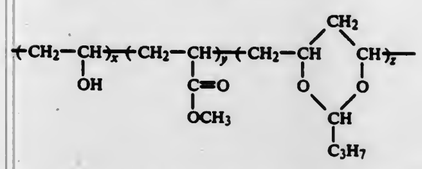
(E) a stabilizing amount of a zeolite.

4,499,231
PELLICLE COMPOSITIONS AND PELLICLES THEREOF FOR PROJECTION PRINTING

Irl E. Ward, Easton, and Philip M. Papoojian, Bethlehem, both of Pa., assignors to J. T. Baker Chemical Company, Phillipsburg, N.J.

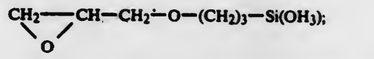
Filed Mar. 22, 1983, Ser. No. 477,754
Int. Cl.³ C08L 83/00
U.S. Cl. 524—506 21 Claims

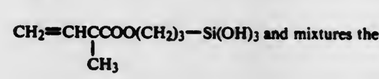
1. A transparent pellicle film for use in projection printing comprising a film formed from a mixture consisting essentially of a polyvinyl butryal resin of the formula



wherein x is ≦0.12, y is ≦0.02 and z is ≧0.88, with a dispersion of colloidal silica in lower aliphatic alcohol-water solution of the partial condensate of silanol, the major portion of the partial condensate obtained by the condensation of $CH_3Si(OH)_3$ and a minor portion being obtained from condensation with a member selected from the group consisting of $C_2H_5Si(OH)_3$; $C_3H_7Si(OH)_3$;

$C_2H_5Si(OH)_3$; $C_3H_7Si(OH)_3$;





4,499,232
WATER SOLUBLE, CROSSLINKABLE POLYMER COMPOSITIONS, THEIR PREPARATION AND USE

Friedrich Engelhardt, Frankfurt; Steffen Plesch, Oberursel; Juliane Balzar, Frankfurt, all of Fed. Rep. of Germany, and Jeffery C. Dawson, Katy, Tex., assignors to Cassella Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany and Dresser Industries, Inc., Dallas, Tex.

Division of Ser. No. 399,682, Jul. 19, 1982, , which is a continuation of Ser. No. 216,672, Dec. 15, 1980, abandoned. This application Sep. 24, 1982, Ser. No. 423,026
Int. Cl.³ C08L 33/26, 39/06
U.S. Cl. 524—548 20 Claims

1. In a highly viscous aqueous acid composition comprising an aqueous solution containing 70 to 99.8% by weight of an acid and 0.2 to 30% by weight of a crosslinked polymer composition, wherein the improvement comprises said polymer containing crosslink bridges of the formula $—NR^x—CH=N—CO—$ wherein R^x represents hydrogen, alkyl having 1 to 4 carbon atoms or $—CH_2OH$.

4,499,233
WATER DISPERSIBLE, MODIFIED POLYURETHANE AND A THICKENED AQUEOUS COMPOSITION CONTAINING IT

Marvin T. Tetenbaum, Wexford, Pa., and Burton C. Crowley, Toms River, N.J., assignors to NL Industries, Inc., New York, N.Y.

Filed May 3, 1983, Ser. No. 491,039
Int. Cl.³ C08G 18/50, 18/32, 18/34
U.S. Cl. 524—591 30 Claims

1. A water dispersible modified polyurethane which is the product of a reaction conducted under substantially anhydrous conditions of:

(a) polyisocyanate;

(b) polyether polyol in an amount ranging from about 0.10 to about 10.00 moles per mole of polyisocyanate;

(c) modifying agent in an amount ranging from about 0.015 to about 3.400 moles per mole of polyisocyanate, said modifying agent having the formula

$X_x—R—Y_y$

wherein R represents a group containing from 0 to 10 carbon atoms, X is a group containing at least one active hydrogen moiety selected from the group consisting of primary amino, secondary amino, carboxyl and mixtures thereof, Y is a group containing at least one active hydrogen moiety selected from the group consisting of primary amino, secondary amino, carboxyl, hydroxyl, mercapto and mixtures thereof, the sum of (x+y) is an integer greater than 1 and x is at least 1 wherein the modifying agent is composed of less than about 20 mole % of compounds wherein the sum of (x+y) is at least 3 and wherein the polyisocyanate, the polyether polyol and the modifying agent are used to form the polymer chain; and

(d) capping agent which is reactive with the reaction product of the polyisocyanate, the polyether polyol and the modifying agent and which is present in an amount sufficient to cap the reaction product of the polyisocyanate, polyether polyol and the modifying agent.

20. A thickened aqueous composition comprising:

(a) water; and

(b) from about 0.005 to about 10.00% by weight of a water dispersible, modified polyurethane which is the product of a reaction conducted under substantially anhydrous conditions of:

(i) polyisocyanate;

(ii) polyether polyol in an amount ranging from about 0.10 to about 10.00 moles per mole of polyisocyanate;

(iii) modifying agent in an amount ranging from about 0.015 to about 3.400 moles per mole of polyisocyanate, said modifying agent having the formula

$X_x—R—Y_y$

wherein R represents a group containing from 0 to 10 carbon atoms, X is a group containing at least one active hydrogen moiety selected from the group consisting of primary amino, secondary amino, carboxyl and mixtures thereof, Y is a group containing at least one active hydrogen moiety selected from the group consisting of primary amino, secondary amino, carboxyl, hydroxyl, mercapto and mixtures thereof, the sum of (x+y) is an integer greater than 1 and x is at least 1 wherein the modifying agent is composed of less than about 20 mole % of compounds wherein the sum of (x+y) is at least 3 and wherein the polyisocyanate, the polyether polyol and the modifying agent are used to form the polymer chain; and

(iv) capping agent which is reactive with the reaction product of the polyisocyanate, the polyether polyol and the modifying agent and which is present in an amount sufficient to cap the reaction product of the polyisocyanate, the polyether polyol and the modifying agent.

4,499,234

NON-CORROSIVE SILICONE RTV COMPOSITIONS

Sandra L. Pratt, Clifton Park; Gary M. Lucas, Scotia, both of N.Y., and Michio Zembayashi, Ohta, Japan, assignors to General Electric Company, Waterford, N.Y.

Filed Oct. 14, 1983, Ser. No. 542,222

Int. Cl.³ C08K *3/10*

U.S. Cl. 524—783 **36 Claims**

1. A stable, one package, substantially anhydrous and substantially acid-free, room temperature vulcanizable organopolysiloxane composition stable under ambient conditions in the substantial absence of moisture over an extended period of time and convertible to a tack free elastomer comprising:

(a) a polydiorganosiloxane base polymer,

(b) an effective amount of condensation catalyst, and

(c) a stabilizing amount of scavenger for hydroxy functional groups having the formula

$$(R^4)_{3-y}(R^3)_ySi—N\begin{array}{c}\diagup\\ \\ \diagdown\end{array}\begin{array}{c}Si(R^1)_x(R^2)_{2-x}\\ \\ R\end{array}$$

where R is a substituted or unsubstituted organo group having at least two carbon atoms; R^1 is a hydrolyzable leaving group selected from the group consisting of alkoxy, amido, amino, carbamato, enoxy, imidato, isocyanato, oximato, thioisocyanato, and ureido; R^2 and R^3 are independently selected C_{1-13} monovalent substituted or unsubstituted hydrocarbon radicals; R^4 is a hydrolyzable leaving group selected from the group consisting of alkoxy, amido, amino, carbamato, enoxy, imidato, isocyanato, oximato, thioisocyanato and ureido; x is equal to 1 or 2 and y is equal to 0 to 3 inclusive.

19. The composition of claim 1 further comprising a filler selected from the group consisting of titantium dioxide, zirconium silicate, silica aerogel, iron oxide, diatomaceous earth, fumed silica, carbon black, precipitated silica, glass fibers, polyvinylchloride, ground quartz and calcium carbonate.

4,499,235

POLYESTER IN-MOULD COATING POWDER

Andreas N. J. Verwer, Beek, and Johannes T. M. Evers, Maarn, both of Netherlands, assignors to DSM Resins B.V., Zwolle, Netherlands

Filed Sep. 21, 1983, Ser. No. 534,244

Claims priority, application Netherlands, Oct. 8, 1982, 8203904

Int. Cl.³ C08G *63/76*; C08L *67/00*

U.S. Cl. 525—38 **16 Claims**

1. In a powdered coating agent, suitable for application in the in-mould coating techinque, composed of a bonding agent comprising an unsaturated polyester resin, a curing catalyst and other additives, the improvement consisting essentially of a bonding agent composed of at least 85% by weight of a crystalline polyester, said crystalline polyester composed of at least 80% by weight of (i) a symmetric unsaturated dicarboxylic acid, a symmetric saturated dicarboxylic acid and an aromatic dicarboxylic acid and (ii) a symmetric aliphatic diol, said bonding agent having a melting point of at least 40° C., a degree of unsaturation of between 1 and 5 moles unsaturation per 1000 grams of said polyester and a viscosity in the melt at 120° C. of at least 1 dPa.s.

4,499,236

FINELY DIVIDED POLYVINYL ACETALS, A PROCESS FOR THEIR PREPARATION, AND THEIR USE IN BAKED COATINGS

Hans D. Hermann, Bad Soden am Taunus, and Ulrich M. Hutten, Kelkheim, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Dec. 16, 1983, Ser. No. 562,218

Claims priority, application Fed. Rep. of Germany, Dec. 16, 1982, 3246605

Int. Cl.³ C08F *8/28*

U.S. Cl. 525—58 **20 Claims**

1. A process for preparing a finely divided polyvinyl acetal having an average particle size between 0.5 and 10 μm in an aqueous suspension or, if desired in powder form, by dewatering the suspension, by reacting an aqueous solution of polyvinyl alcohol, in the presence of an acidic catalyst and in the absence or presence of emulsifier, with at least one aliphatic aldehyde having at least 3 carbon atoms, which comprises acetalizing in the presence of 0.1 to 10% by weight, based on the polyvinyl alcohol used, of a completely or partially hydrolyzed graft copolymer of vinyl ester on polyethylene oxide or polyethylene oxide derivative.

4,499,237

POLYCARBONATE-POLYOLEFIN MOULDING COMPOSITIONS

Peter Tacke, Krefeld; Helmut Korber, Odenthal; Josef Merten, Korschenbroich, and Dieter Neuray, Krefeld, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Aug. 22, 1980, Ser. No. 180,334

Claims priority, application Fed. Rep. of Germany, Aug. 27, 1979, 2934538

Int. Cl.³ C08L *69/00*

U.S. Cl. 525—67 **7 Claims**

1. A mixture comprising

(1) from 70 to 99% by weight of a predominately aromatic polycarbonate and

(2) from 30 to 1% by weight of a polyolefin graft polymer of

(a) 70 to 95% by weight of polyethylene as grafting base and

(b) 5 to 30% by weight of at least one graft-polymerizable vinyl compound, the percentages set forth (1) and (2) being based on the sum of components (1) and (2), and the percentages set forth in (2a) and (2b) being based on the total of components (2a) and (2b), the polyolefin graft polymer having been obtained by contacting a melt of the graft base (2a) with oxygen or an oxygen-containing gas for up to 10 minutes with intensive mixing under a pressure of from 1 to 150 bars and at a temperature of from 80° to 300° C., adding the graft-polymerizable vinyl compound (2b) to be grafted immediately afterwards with intensive mixing in the absence of oxygen or an oxygen-containing gas and removing residual monomers after graft polymerization.

4,499,238

THERMOPLASTIC RESIN PRODUCTS HAVING PEARL-LIKE LUSTER

Nobutoshi Iwata, Tokyo; Kiyoshi Fukushima, Kanagawa; Shinji Fujino; Takeshiro Yamada, both of Tokyo; Hideyuki Hao, Hyougo; Shigeo Tanaka, and Tatsuyuki Mitsuno, both of Chiba, all of Japan, assignors to Nippon Steel Chemical Co., Ltd., Tokyo and Sumitomo Chemical Company, Limited, Osaka, both of, Japan

PCT No. PCT/JP82/00186, § 371 Date Jan. 24, 1983, § 102(e) Date Jan. 24, 1983, PCT Pub. No. WO82/04058, PCT Pub. Date Nov. 25, 1982

PCT Filed May 21, 1982, Ser. No. 464,500

Claims priority, application Japan, May 23, 1981, 56-77377

Int. Cl.³ C08L *23/12, 53/02*

U.S. Cl. 525—98 **6 Claims**

1. A resin composition for manufacturing thermoplastic resin products having a pearl-like luster and consisting essentially of: 25 to 95 wt% of a styrene-butadiene block copolymer having a butadiene content of 10 to 35 wt% and having a block form expressed by a general formula {(S-B)n}xY (where S represents styrene or a polymer block consisting essentially of styrene; B, butadiene or a polymer block consisting essentially of butadiene; n, an integer ranging between 1 to 5; Y, the residue of a polyfunctional coupling agent used in the form of a radial copolymer; and x, an integer of at least more than 3, representing the number of the functional groups of said polyfunctional coupling agent); and 5 to 75 wt% of crystalline polypropylene.

4,499,239

RESIN COMPOSITION FOR POWDER COATING

Yoichi Murakami, Osaka; Akio Shoji, Kishiwada; Shoichiro Takezawa, Sakai; Noboru Ishikawa, Izumi-ohtsu, and Toshiaki Morita, Sakai, all of Japan, assignors to Dainippon Ink and Chemicals, Inc., Tokyo, Japan

Filed Mar. 26, 1981, Ser. No. 247,768

Claims priority, application Japan, Mar. 31, 1980, 55-40471

Int. Cl.³ C08F *8/00*

U.S. Cl. 525—111 **15 Claims**

1. A resin composition for powder coating, said composition consisting essentially of

(A) 60 to 97% by weight of a polyester resin having an acid value of 20 to 200 mgKOH/g and a softening point of 80° to 150° C., and

(B) 3 to 40% by weight of a glycidyl-containing acrylic polymer which is compatible with and reactive with the polyester resin (A).

4,499,240

LOW DENSITY, POLYBUTADIENE BASED, WET FILAMENT WINDING RESIN

Robert H. Valentine, Sandy, Utah, assignor to Hercules Incorporated, Wilmington, Del.

Filed Nov. 23, 1983, Ser. No. 554,665

Int. Cl.³ C08F *8/00*

U.S. Cl. 525—193 **6 Claims**

1. A wet filament winding resin having a viscosity which is between about 1,000 and 5,000 centipoise at a temperature in a range between about 20° and 60° C., a density below about 1.05 grams/cubic centimeter at 25° C. after cure and a pot life which is up to about four months or more at 25° C. where pot life is defined as the time for a winding resin to reach a viscosity of 5,000 centipoise at the winding temperature, said wet filament winding resin being an intimate admixture of components consisting essentially of:

(a) a crosslinkable polymer component in an amount at least about 30% by weight of said resin, said polymer component consisting essentially of unsaturated polybutadiene polymers essentially free of crosslinkable functionality other than the unsaturation thereof, 100 parts by weight of said unsaturated polybutadiene polymers being a first polybutadiene having a number average molecular weight between about 10,000 and 40,000 and a 1,2 vinyl content between 50 and 95% based on total unsaturation present in said first polybutadiene and between about 5 and 100 parts by weight of a second polybutadiene having a number average molecular weight lower than said first polybutadiene and between about 1000 and 2500 and a 1,2 vinyl content between about 1 and 95% based on total unsaturation present in said second polybutadiene;

(b) between about 5 and 150 parts by weight per 100 parts by weight of said first polybutadiene of an unsaturated monomer component that has a lower viscosity than said crosslinkable polymer component, said unsaturated monomer component comprising a monomer having a carbon carbon double bond; and

(c) between about 1 and 10 parts by weight per 100 parts by weight of said first polybutadiene of an initiator component comprising a peroxide-free radical initiator having a 10 hour half life at a temperature greater than 55° C.

4,499,241

COMPOSITION FOR COLD DRAWN FILM

Isao Yoshimura, Fujisawa; Hideo Hata, and Takashi Kaneko, both of Yokohama, all of Japan, assignors to Asahi-Dow Limited, Tokyo, Japan

Division of Ser. No. 949,253, Oct. 6, 1978, Pat. No. 4,277,578. This application Dec. 5, 1980, Ser. No. 213,461

Claims priority, application Japan, Oct. 11, 1977, 52-120917; Nov. 22, 1977, 52-139431; May 30, 1978, 53-63870; May 30, 1978, 53-63872

Int. Cl.³ C08L *23/20, 23/04, 23/06, 23/16*

U.S. Cl. 525—211 **24 Claims**

1. A composition comprising a homogeneous blend of components, namely the combination (A)+(B)+(C); wherein

(A) is at least one selected from the group consisting of low-density polyethylene and copolymers of ethylene with vinyl ester monomers, unsaturated aliphatic monocarboxylic acids and alkyl esters of said acids which are all copolymerizable with ethylene,

(B) is a thermoplastic elastomer having a density of not more than 0.91 g/cm³ melt index from 0.1 to 10 and made of an ethylene-α-olefin copolymer, and

(C) is crystalline polybutene-1, wherein the components of the composition are in amounts such as to satisfy $0.05 \leqq B/(A+B) \leqq 0.90$ and $0.05 \leqq C/(A+B) \leqq 2.0$ in terms of weight ratios.

4,499,242

THERMOPLASTIC PROPYLENE BLOCK COPOLYMER CONTAINING 1-ALKENE-PROPYLENE-DIENE COPOLYMER BLOCK

Jacobus A. Loontjens, Meerssen, Netherlands, assignor to Stamicarbon B.V., Geleen, Netherlands

Filed Jan. 7, 1983, Ser. No. 456,433

Claims priority, application Netherlands, Jan. 8, 1982, 8200049

Int. Cl.³ C08F *293/00, 297/08*

U.S. Cl. 525—289 **11 Claims**

1. Thermoplastic propylene block copolymer comprising at least one substantially crystalline polypropylene block, at least one 1-alkene-propylene copolymer block, in at least one of which 1-alkene-propylene-blocks diene units are present which possess the bicyclo[2.2.1.]heptene skeleton.

4,499,243

METHOD OF TREATING DIENE RUBBER WITH AMINO- AND HYDROXY ARYL COMPOUNDS

Charles P. Rader, Akron, Ohio, assignor to Monsanto Company, St. Louis, Mo.

Filed Nov. 7, 1983, Ser. No. 549,032

Int. Cl.³ C08C *19/20, 19/22*

U.S. Cl. 525—333.1 **2 Claims**

1. A method for improving properties of diene rubber com-

prising masticating the rubber, in the presence of from 0.2 to 5 parts of catechol and from 0.1 to 0.5 parts of sulfur by weight per 100 parts diene rubber by weight at a temperature of from 160° to 210° C., for from 1 to 10 minutes.

4,499,244

PROCESS FOR CURING A CHLORINATED POLYOLEFIN IN THE PRESENCE OF ALIPHATIC POLYHYDROXY ALCOHOL

Wolfgang Housberg, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 353,361, Mar. 1, 1982, abandoned. This application Aug. 29, 1983, Ser. No. 527,562
Int. Cl.³ C08C 19/00
U.S. Cl. 525—384 8 Claims

1. A process for curing a chlorinated polyolefin elastomer selected from the group consisting of chlorinated polyethylene having 20–50% chlorine by weight and chlorosulfonated polyethylene having 20–50% chlorine by weight and 0.2–1.5% sulfur by weight, by compounding a mixture of said elastomer, a basic metal oxide or hydroxide acid acceptor, an organic peroxide curing agent, and about 0.2–10 parts per 100 parts elastomer of at least one aliphatic polyhydroxy alcohol with the proviso that when the elastomer is chlorinated polyethylene about 0.01–0.1 moles of acid acceptor per 100 parts chlorinated polyethylene is added to the mixture and when the elastomer is chlorosulfonated polyethylene about 0.025–0.25 moles of acid acceptor per 100 parts chlorosulfonated polyethylene is added to the mixture, and said polyhydroxy alcohol has at least two hydroxyl groups in which the hydroxyl groups are in the 1,2 or 1,3 positions relative to each other and said polyhydroxy alcohol has a molecular weight of less than about 300 and heating the mixture to a temperature above the decomposition temperature of the peroxide and below the decomposition temperature of the elastomer until the elastomer is cured.

4,499,245

CURABLE RESIN COMPOSITION

Nobuyuki Ikeguchi, and Hidenori Kimbara, both of Tokyo, Japan, assignors to Mitsubishi Gas Chemical Company, Inc., Tokyo, Japan

Division of Ser. No. 228,968, Jan. 27, 1981, Pat. No. 4,410,666. This application Jul. 15, 1983, Ser. No. 514,043
Claims priority, application Japan, Jan. 29, 1980, 55-9163
Int. Cl.³ C08F 283/00
U.S. Cl. 525—417 3 Claims

1. A curable resin composition comprising:

(a) at least one cyanate ester compound selected from the group consisting of:

(1) a polyfunctional aromatic cyanate ester monomer having the formula:

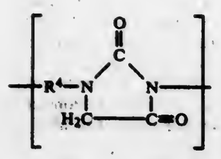
$$R—O—C{\equiv}N)_m$$

where m is 2 to 5 and R is an aromatic organic group, the cyanate groups being bonded to an aromatic ring of said aromatic organic group,

(2) a prepolymer of one or more of said cyanate ester monomer, said prepolymer containing a sym-triazine ring and having an average molecular weight in the range of about 400 to 6,000, and

(3) a coprepolymer of said cyanate ester monomer and an amine;

(b) a polyhydantoin resin having a hydantoin ring in the main chain and having the following repeated units:



(c) at least one compound selected from the group consisting of:

(1) a polyfunctional maleimide,

(2) a homoprepolymer of one or more of said maleimide, and

(3) a coprepolymer of said maleimide and an amine,

said composition including a mixture of components the (a), the (b), and the (c), a preliminary reaction product of components the (a), the (b), and the (c), a combination of said mixture and said preliminary reaction product, a composition of the (a) an a preliminary reaction product of the (b) and the (c), a combination of the (b), and a preliminary reaction product of the (a) and the (c), or a combination of the (c) and a preliminary reaction product of the (a) and the (b).

4,499,246

EPOXY RESINS CONTAINING AS A LATENT CATALYST/ACCELERATOR HALOGENOBISPHENATES OF TERTIARY AMINES

Gérard Tesson, and Christian Joseph, both of Chateaurenault, France, assignors to Societe Anonyme Dite "Manufacture de Produits Chimiques Protex", Paris, France

Filed Feb. 13, 1984, Ser. No. 579,849
Claims priority, application France, Feb. 11, 1983, 83 02872
Int. Cl.³ C08G 59/68
U.S. Cl. 525—486 12 Claims

1. A latent catalyst or accelerator for an epoxy system which consists of a water insoluble halogenobisphenate of a catalytically active tertiary amine.

4,499,247

HIGH-RIGIDITY, HIGH-MELT-VISCOELASTICITY POLYPROPYLENE AND PROCESS FOR PRODUCING THE SAME

Hiromasa Chiba; Kenjiro Obama; Shunji Kawanoe; Takahiro Oka, and Akihiro Satoh, all of Ichiharashi, Japan, assignors to Chisso Corporation, Osaka, Japan

Filed Jun. 7, 1983, Ser. No. 501,893
Claims priority, application Japan, Jun. 15, 1982, 57-102907
Int. Cl.³ C08F 4/64, 10/06
U.S. Cl. 526—142 6 Claims

1. A process for producing a high-rigidity and high-melt-viscoelasticity polypropylene for sheets to be post-processed and for blow molding, obtained by subjecting propylene to a multi-stage polymerization in the presence of a catalyst prepared by reacting an organoaluminum compound (I) or a reaction product of an organoaluminum compound (I) with an electron donor (A), with $TiCl_4$ (C); reacting the resulting solid product (II) with an electron donor (A) and an electron acceptor (B); and combining the resulting solid product (III) with an organoaluminum compound (IV) and an aromatic carboxylic acid ester (V), so as to give a molar ratio (V/VIII) of the aromatic carboxylic acid ester to the solid product (III) of 0.1 to 10.0;

in this polymerization, adjusting the amount of propylene polymerized at the first stage so as to constitute 35 to 65% by weight based on the total amount polymerized and that at the second stage et seq so as to constitute 65 to 35% by weight based thereon; and

when the intrinsic viscosity of the polymer portion having a higher molecular weight is named $[\eta]_H$ and that having a lower molecular weight is named $[\eta]_L$, between the polymer portion formed at the first stage and that formed at the second stage et seq,

adjusting the intrinsic viscosity values of the respective polymer portions so as to satisfy a relationship

$$3.0 \leq [\eta]_H - [\eta]_L \leq 6.5 \quad (1).$$

4,499,248

POLY-DIISOPROPENYL BENZENE SYNTHESIS

George Jalics, Akron, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed May 12, 1983, Ser. No. 493,892
Int. Cl.³ C08F 4/48
U.S. Cl. 526—173 37 Claims

1. A process for the synthesis of polymers with a low degree of intermolecular crosslinking containing from about 1 weight percent to 100 weight percent diisopropenyl benzene and from 0 to about 99 weight percent of at least one other monomer comprising: polymerizing from about 1 to 100 weight percent diisopropenyl benzene and from 0 to about 99 weight percent of at least one other monomer in a reaction mixture utilizing an organic solvent containing at least 5 weight percent of at least one ether at a temperature of −40° C. or colder utilizing an alkyl lithium initiator in the presence of at least 0.01 weight percent based upon the total reaction mixture of at least one alpha olefin containing from 2 to 12 carbon atoms; wherein the polymers produced have a gel content of less than 1 percent by weight.

4,499,249

PROCESS FOR PREPARING TETRAFLUOROETHYLENE/FLUORO(ALKYL VINYL ETHER) COPOLYMER

Shinichi Nakagawa, Nara; Tsuneo Nakagawa, Osaka; Sadaatsu Yamaguchi, Osaka; Kiyohiko Ihara, Osaka; Toshihiko Amano, Osaka; Mitsugu Omori, Osaka, and Kohzoh Asano, Osaka, all of Japan, assignors to Daikin Kogyo Co., Ltd., Osaka, Japan

Filed Apr. 28, 1983, Ser. No. 489,289
Claims priority, application Japan, Apr. 30, 1982, 57-73671
Int. Cl.³ C08F 214/26
U.S. Cl. 526—206 10 Claims

1. A process for preparing a tetrafluoroethylene/fluoro(alkyl vinyl ether) copolymer, comprising:

polymerizing tetrafluoroethylene and fluoro(alkyl vinyl ether) selected from the group consisting of perfluoro(methyl vinyl ether), perfluoro(ethyl vinyl ether), perfluoro(propyl vinyl ether),

$$CF_2{=}CF{-}O{-}CF_2CF(CF_3){-}O{-}CF_2CF_3,$$

$$CF_2{=}CF{-}O{-}CF_2CF(CF_3){-}O{-}(CF_2)_2CF_3,$$

$$CF_2{=}CF{-}O{-}CF_2CF(CF_3){-}O{-}(CF_2)_3CF_3,$$

$$CF_2{=}CF{-}(O{-}CF_2CF(CF_3))_2{-}O{-}CF_2CF_3,$$

$$CF_2{=}CF{-}(O{-}CF_2CF(CF_3))_2{-}O{-}(CF_2)_2CF_3, \text{ and}$$

$$CF_2{=}CF{-}(O{-}CF_2CF(CF_3))_2{-}O{-}(CF_2)_3CF_3,$$

in an aqueous suspension system which comprises a mixed medium of water and a fluorohydrocarbon or a chlorofluorohydrocarbon in a volume ratio of from 1:1 to 10:1 at a temperature of from 0° to 25° C. in the presence of a polymerization initiator of the formula:

$$[Cl(CF_2)_n{-}COO]_2$$

wherein n is an integer of 1 to 10.

4,499,250

PROCESS FOR THE POLYMERIZATION OF ETHYLENICALLY UNSATURATED MONOMERS

Claes O. A. Lundin, Saltsjö-Boo, and Berit I. Simonsson, Solna, both of Sweden, assignors to KemoGard AB, Stockholm, Sweden

Continuation of Ser. No. 228,950, Jan. 27, 1981, abandoned. This application Jul. 27, 1982, Ser. No. 402,276
Claims priority, application Sweden, Jan. 28, 1980, 8000669
Int. Cl.³ C08F 4/32
U.S. Cl. 526—209 4 Claims

1. A method in the polymerization of vinyl chloride monomers or vinyl chloride and up to 20% by weight, based on the vinyl chloride of copolymerizable monomers in aqueous systems wherein a solid, monomersoluble free-radical forming compound is used as initiator, said initiator being added to the polymerization system in the form of an aqueous dispersion, characterized in that the initiator dispersion contains as the essential emulsifier an ethoxylated nonionic emulsifier with a HLB-value above 15, which emulsifier is an ethoxylated fatty alcohol or an ethoxylated fatty acid.

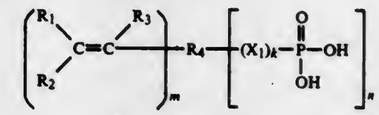
4,499,251

ADHESIVE COMPOSITIONS

Ikuo Omura; Junichi Yamauchi, both of Kurashiki; Yoshinori Nagase, Takatsuki, and Fumiko Uemura, Kurashiki, all of Japan, assignors to Kuraray Co., Ltd., Kurashiki, Japan

Filed Jan. 13, 1984, Ser. No. 570,292
Int. Cl.³ C09K 3/00; A61K 6/08; C09J 3/14; C08F 30/02
U.S. Cl. 526—278 5 Claims

1. A method for restoring a carious tooth which comprises coating an adhesive composition which comprises 1 part by weight of (a) a compound of the general formula:



wherein

R_1 represents H, a hydrocarbon group of 1–6 carbon atoms optionally containing halogen, COOR', wherein R' represents a hydrocarbon group of 1–20 carbon atoms optionally containing halogen or halogen;

R_2 is as defined for R_1;

R_3 represents H, a hydrocarbon group of 1–6 carbon atoms optionally containing halogen, halogen or CN;

R_4 represents $(COX_2)_{m1}(CO)_{m2}(ZCO)_{m3}(Z)_{m4}Ra$ wherein Ra represents an organic residue of 6–60 carbon atoms and a valency of m+n; m1, m2, m3 and m4 each represents an integer of 0–4 and satisfies $m1+m2+m3+m4 \leq m$; X_2 represents O, S or NRb, wherein Rb represents H or alkyl of 1–4 carbon atoms and Z represents O or S;

X_1 is as defined for X_2;

m is an integer of 1–4;

n is an integer of 2–6; and

k is 0 or 1,

0–199 parts by weight of (b) a vinyl monomer copolymerizable with the aforesaid compound, and 0.01–20 parts by weight per 100 parts by weight of the aforesaid polymerizable monomers [(a)+(b)] of (c) a curing agent on the

surface of a tooth cavity and thereafter filling the tooth cavity with a dental filling material which comprises a polymerizable monomer, a filler and a polymerization curing agent.

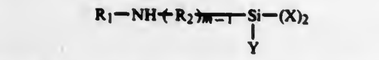
4,499,252

PROCESS FOR PRODUCING POLYIMIDE PRECURSOR

Kazumasa Igarashi; Katsuhiko Yamaguchi, and Munekazu Tanaka, all of Osaka, Japan, assignors to Nitto Electric Industrial Co., Ltd., Osaka, Japan

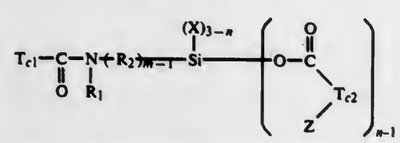
Filed Mar. 28, 1984, Ser. No. 594,063
Int. Cl.³ C08G 73/10
U.S. Cl. 528—38 **12 Claims**

1. A process for producing a polyimide precursor by polymerizing an organic tetracarboxylic acid component and a diamine, which comprises reacting a portion of an organic tetracarboxylic acid component with an aminosilane compound represented by the formula (1)



(1)

wherein R_1 is a monovalent organic group containing an aromatic ring, R_2 is a divalent organic group containing a carbon atom which directly bonds to a silicone atom, m is an integer of 1 or 2, X is a hydrolyzable group selected from the group consisting of alkoxy, acetoxy, phenoxy and halogen, and Y is a group selected from the group consisting of alkyl, alkoxy, acetoxy, phenoxy, silyl, siloxy, disilanyl, organosilyl, organosiloxy, organohalosilyl and organohalosiloxy, through a secondary amino group (>NH) and at least one hydrolyzable group (X) in the above formula (1) to prepare a silane-modified polycarboxylic acid component represented by the formula (2)



(2)

wherein T_{c1} is a monovalent residue of the organic tetracarboxylic acid component, T_{c2} is a divalent residue of the organic tetracarboxylic acid component, Z is an acid radical which may contain X bonded to carbonyl carbon, R_1, R_2, m, X and Y are the same as defined above, and n is an integer of 2 or 3 when Y is alkoxy, acetoxy or phenoxy and is 2 when Y is a group other than alkoxy, acetoxy and phenoxy, and then polymerizing the resulting silane-modified polycarboxylic acid component with the residual organic tetracarboxylic acid component and a diamine.

4,499,253

PROCESS FOR THE PREPARATION OF POLYISOCYANATES CONTAINING ISOCYANURATE GROUPS AND THEIR USE FOR THE PREPARATION OF ISOCYANATE-POLYADDITION PRODUCTS

Dimitrios Kerimis, Cologne; Hanns P. Müller, Odenthal, and Kuno Wagner, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jul. 18, 1983, Ser. No. 514,765
Claims priority, application Fed. Rep. of Germany, Jul. 23, 1982, 3227489
Int. Cl.³ C08G 18/18
U.S. Cl. 528—45 **12 Claims**

1. A process for the preparation of polyisocyanates containing isocyanurate groups which comprises

(a) trimerizing a portion of the isocyanate groups of an organic polyisocyanate in the presence of a catalytic amount of a quaternary ammonium salt which is the reaction product of a tertiary amine and an alkylating ester of an acid of phosphorus and

(b) terminating the trimerization reaction by the addition of a catalyst poison.

4,499,254

REACTION INJECTION MOLDED ELASTOMERS CONTAINING HIGH MOLECULAR WEIGHT ORGANIC ACIDS

Richard J. G. Dominguez; Edward E. McEntire, and Carter G. Naylor, all of Austin, Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Feb. 13, 1984, Ser. No. 579,235
Int. Cl.³ C08G 18/32, 18/34, 18/50
U.S. Cl. 528—49 **12 Claims**

1. A reaction injection molded elastomer comprising the reaction product of ingredients comprising primary or secondary amine terminated polyethers of greater than 2,500 molecular weight having greater than 50% of their active hydrogens in the form of amine hydrogens, a chain extender, an aromatic polyisocyanate and a carboxylic acid in an amount effective to provide improved green strength, represented by the structure:

$$R(CO_2H)_n$$

where n=1-3 and where R contains 10-n carbon atoms or more and R may be alkyl (cyclic, linear or branched), alkaryl, aralkyl or aryl saturated or unsaturated, and also contain functional groups hydroxyl, chloro, bromo, ester, ether, nitro or amide.

4,499,255

PREPARATION OF EPOXY RESINS

Chun S. Wang, Lake Jackson; Ha Q. Pham, Richwood, and James L. Bertram, Lake Jackson, all of Tex., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 515,324, Jul. 19, 1983, abandoned, which is a continuation-in-part of Ser. No. 417,015, Sep. 13, 1982, abandoned. This application Aug. 16, 1983, Ser. No. 523,910
Int. Cl.³ C08G 59/06, 59/10
U.S. Cl. 528—95 **12 Claims**

1. In a method for preparing glycidyl derivatives of compounds having at least one aromatic hydroxyl group or aromatic amine group per molecule by reacting at least one compound having at least one aromatic hydroxyl group or aromatic amine group per molecule with an excess of at least one epihalohydrin in the presence of an alkali metal hydroxide and subsequently recovering the glycidyl derivative product; the improvement which comprises

(1) conducting the reaction in the presence of an organic solvent which codistills with water and said epihalohydrin at a boiling point below the boiling point of the lowest boiling compound among the components in the reaction mixture;

(2) conducting the reaction under a reduced pressure sufficient to provide a distillate with a boiling point of from about 45° C. to about 80° C.;

(3) employing said alkali metal hydroxide as an aqueous solution and adding said aqueous alkali metal hydroxide in a continuous or intermittent manner over a period of from about 0.5 to about 10 hours;

(4) continuously removing water by means of codistillation at a rate such that the water content in the reaction mixture is less than about 6 percent by weight;

(5) separating the water from the codistillate and returning the solvent and epihalohydrin to the reaction mixture.

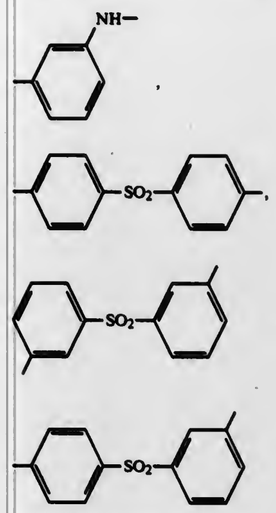
4,499,256

ANISOTROPIC POLYESTERAMIDE POLYMERS HAVING IMPROVED RETENTION OF PHYSICAL PROPERTIES AT ELEVATED TEMPERATURES AND METHODS OF MANUFACTURE THEREOF

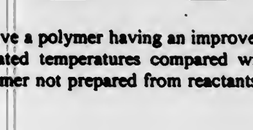
David J. Blundell, Welwyn Garden City; Brian P. Griffin, St. Albans, and William A. MacDonald, Ware, all of England, assignors to Imperial Chemical Industries PLC, London, England

Filed Nov. 3, 1982, Ser. No. 438,730
Claims priority, application United Kingdom, Nov. 16, 1981, 8134511; Nov. 16, 1981, 8134512
Int. Cl.³ C08G 69/44
U.S. Cl. 528—172 **11 Claims**

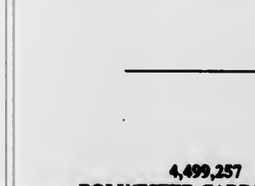
1. An anisotropic-melt-forming polyesteramide having improved stiffness retention at elevated temperatures prepared by reacting together reactants selected from (a) dihydric phenols, aromatic dicarboxylic acids, hydroxyaromatic acids, aromatic diamines, aminophenols and aminoaromatic acids and their polyesteramide forming derivatives wherein at least 40 mole % of the reactants (A) have their chain extending bonds in either coaxial or parallel and oppositely directed relationship and sufficient of non-linear reactants (B) selected from reactants containing at least one radical of formula



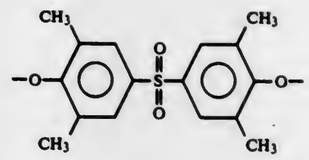
and



and

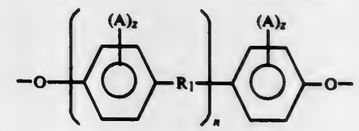


to give a polymer having an improved retention of stiffness at elevated temperatures compared with an otherwise similar polymer not prepared from reactants including said reactants (B).



(I)

and from 0 weight percent to about 80 weight percent of repeating units (II) having the formula

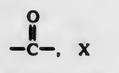


(II)

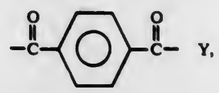
wherein A is selected from alkyl groups of 1 to 4 carbon atoms, chlorine or bromine, each z, independently, has a value of from 0 to 4 inclusive, n has a value of 0 or 1, and R_1 is a divalent saturated or unsaturated aliphatic hydrocarbon radical, or a cycloalkylidene or cycloalkylene radical having up to and including 9 carbon atoms, O, CO, SO_2, S or a direct bond, with the proviso that when R_1 is SO_2, then repeating unit (II) is not the same as repeating unit (I);

the repeating units (I) and the repeating units (II) are connected by interbonding units,

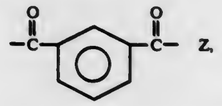
X units of the formula:



and one or more of Y units of the formula:



and Z units of the formula:



wherein the mole ratio of X units to the combination of one or more Y and Z units is about 0.25 to 9.

4,499,257

POLY(ESTER-CARBONATES)

Louis M. Maresca, Belle Mead, N.J., assignor to Union Carbide Corporation, Danbury, Conn.

Filed Apr. 18, 1983, Ser. No. 485,946
Int. Cl.³ C08G 63/64
U.S. Cl. 528—173 **4 Claims**

1. A poly(ester-carbonate) resin consisting essentially of from about 20 weight percent to 100 weight percent of repeating units (I) having the formula

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4,499,258

POLYAROMATIC ETHER-SULFONE-KEYTONES WITH FLUORO-SUBSTITUTED-P-CYCLOPHANE UNITS AS CROSS-LINKING SITES

Carl S. Marvel, Tucson, Ariz., and See Lin, Taipei, Taiwan, assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Division of Ser. No. 552,552, Nov. 16, 1983, Pat. No. 4,476,062. This application May 30, 1984, Ser. No. 615,507
Int. Cl.³ C08G 75/20
U.S. Cl. 528—173 **4 Claims**

1. A process for synthesizing a polyaromatic ether-sulfone-ketone containing fluoro-substituted-p-cyclophane units along the polymer chain which comprises the steps of (A) forming a reaction mixture of (1) isophthaloyl chloride and/or terephthaloyl chloride, (2) 2,2'-diphenoxy dyphenyl sulfone, (3) di-

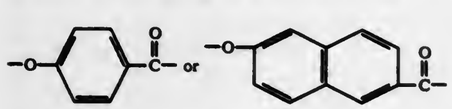
phenyl ether, and (4) 1,1, 2,2, 9,9, 10,10-octafluoro [2,2]-p-cyclophane; (B) polymerizing said reaction mixture within a nitrogen atomsphere with stirring for a period of about 12 hours at 0° C. and then a period about 12 hours at room temperature; and (C) separating the resulting polymer.

4,499,259
OPTICALLY ANISOTROPIC MELT FORMING COPOLYESTERS

Robert S. Irwin, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Dec. 16, 1983, Ser. No. 562,114
Int. Cl.³ C08G 63/60
U.S. Cl. 528—190 5 Claims

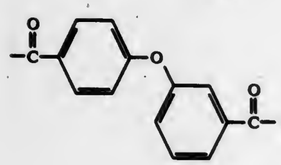
1. Fiber-forming, melt spinnable copolyesters consisting essentially of Units having the structural formulas:



I

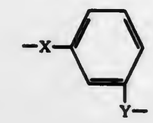


II



III

and 0 to 10 mol % of



IV

where X and Y are the same and are selected from —O— or



said Units being present in the proportions of from about 10 to 60 mol % of Unit I, from about 15 to 45 mol % of Unit II, and from about 15 to 45 mol % of Unit III.

4,499,260
PHTHALOCYANINE POLYMERS

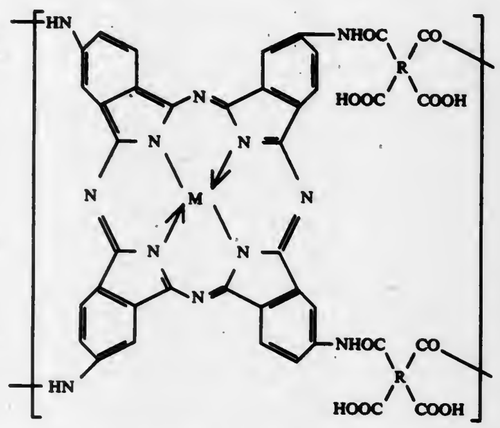
Bappalige N. Achar, Karnataka, India; George M. Fohlen, Millbrae, and John A. Parker, Los Altos, both of Calif., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Nov. 10, 1982, Ser. No. 440,656
Int. Cl.³ C08G 73/10, 73/20
U.S. Cl. 528—229 40 Claims

1. A method of forming polymers of a metal 4,4',4'',4''' tetraamino phthalocyanine which comprises reacting the metal 4,4',4'',4''' tetraamino phthalocyanine in liquid phase at about 20° C. to about 50° C. with a tetracarboxylic dianhydride of the formula



wherein R is an organic group selected from the group consisting of aromatic and alicyclic groups to produce an amic acid polymer having a



recurring unit wherein M is the metal and R is the organic group of the dianhydride.

4,499,261
PROCESS FOR THE CONTINUOUS PRODUCTION OF POLYBUTYLENE TEREPHTHALATE OF HIGH MOLECULAR WEIGHT

Helmut Heinze, Frankfurt am Main; Fritz Wilhelm, Karben; Klaus Mackensen, and Ferdinand Finkeldei, both of Frankfurt am Main, all of Fed. Rep. of Germany, assignors to Davy McKee AG, Fed. Rep. of Germany

Filed Feb. 22, 1984, Ser. No. 582,289
Int. Cl.³ C08G 63/34
U.S. Cl. 528—279 7 Claims

1. In a continuous process for producing polybutylene terephthalate of high molecular weight in a plurality of stages, during which the temperature is progressively increased from 160° C. to 260° C. by transesterifying dimethyl terephthalate with an excess of butanediol-1,4 in the presence of a titanium catalyst at superatmospheric pressure, then precondensing and polycondensing at subatmospheric pressure the terephthalic acid ester thus produced, the improvement which comprises

(a) condensing the vapors volatilized during said precondensation and polycondensation steps, which vapors contain a major proportion of butanediol-1,4, by contacting said vapors with fresh butanediol-1,4 and

(b) recycling the condensed volatilized and fresh butanediol-1,4 to the transesterification stage for reaction with dimethyl terephthalate.

4,499,262
PROCESS FOR THE PREPARATION OF SULFO-MODIFIED POLYESTERS

David R. Fagerburg, and Finley E. McFarlane, both of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 9, 1984, Ser. No. 588,168
Int. Cl.³ C08G 63/04, 63/34
U.S. Cl. 528—279 14 Claims

1. A process for the preparation of a sulfo-modified polyester comprising

(a) reacting under polyester forming conditions (1) a 100 mole % dicarboxylic acid component comprising at least about 85 mole % terephthalic acid or an ester-forming derivative thereof and about 0.1 to about 5.0 mole % of a difunctional sulfo-monomer containing at least one metal sulfonate group attached to an aromatic nucleus, the functional groups being hydroxyalkoxy, carboxy or amine, and (2) a 100 mole % glycol component comprising at least about 85 mole % ethylene glycol, the reaction being conducted in the presence of a catalyst system comprising a titanium compound and an organic salt of an alkali metal, the titanium being present in the amount of at least about 10 to about 60 ppm based on the acid component of the polyester and the organic salt being present in the amount, based on a sulfo-monomer content of 0.5 mole % or less, of at least 0.025 mole per mole of polymer with the amount of organic salt increasing proportionately from 0.025 mole to at least 0.250 mole per mole of polymer as the sulfo-monomer content increases from 0.5 mole % to 5.0 mole %, said sulfo-monomer content being based on a 100 mole % acid fraction,

(b) polycondensing the reaction product of step (a) in the presence of about 13 to about 240 ppm, based on the acid component of the polyester, of a phosphate ester to obtain a polymer having an inherent viscosity of about 0.3 to about 0.9 and characterized by an improved critical planar stretch ratio relative to a given inherent viscosity and an improved rate of acetaldehyde generation relative to a given planar stretch ratio.

9. A polyester material prepared according to the process of claim 1.

4,499,263
VAPOR RECOVERY FROM PARTICLES CONTAINING SAME

Kathleen A. Messura, Aiken, S.C., and Charles A. Ayres, Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, OK 74004

Filed May 17, 1983, Ser. No. 495,541
Int. Cl.³ C08F 6/00; C08G 00/00; C08J 3/00
U.S. Cl. 528—483 9 Claims

1. A process comprising

(a) introducing polymer particles containing a first amount of diluent or solvent into a first zone;

(b) introducing a first mixture of inert gas and diluent or solvent vapor at a first temperature into the first zone to evaporate a first portion of the diluent or solvent from the polymer particles;

(c) withdrawing from the first zone a second mixture of inert gas and diluent or solvent vapor;

(d) recycling a portion of the second mixture to the first zone;

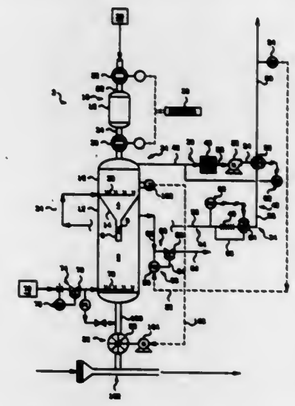
(e) withdrawing polymer particles containing a second amount of diluent or solvent from the first zone;

(f) introducing the polymer particles containing the second amount of solvent into a second zone;

(g) introducing inert gas into the second zone to separate a second portion of the diluent or solvent from the polymer particles and form a third mixture of inert gas and diluent or solvent vapor;

(h) withdrawing a first portion of the third mixture from the second zone and forming the first mixture therewith;

(i) withdrawing polymer particles containing a third amount of diluent or solvent from the second zone wherein the



polymer particles and gases flow countercurrently through the first zone and the second zone.

4,499,264
PREPARATION OF AMINO POLYOLS

Kenneth G. McDaniel, Round Rock, Tex., assignor to Texaco Inc., White Plains, N.Y.

Filed Jun. 27, 1983, Ser. No. 507,815
Int. Cl.³ C08G 59/64
U.S. Cl. 536—50 17 Claims

1. In a process for preparing a modified amino polyol which comprises:

(a) mixing an amino polyol initiator with an alkylene oxide selected from the group consisting of ethylene oxide, propylene oxide, 1,2-butylene oxide, styrene oxide, glycidol and mixtures thereof;

(b) reacting and digesting the initiator with the alkylene oxide at a temperature of 30° C. to 180° C. to form a crude polyol mixture comprising an alkoxylated amino polyol with hydroxyl number of 300 to 900 and residual alkylene oxide;

wherein the improvement comprises:

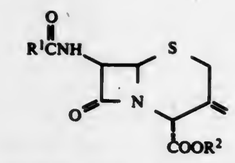
(c) reacting the residual alkylene oxide with a second amine in situ at a temperature of 30° C. to 180° C. to form an alkanol amine.

4,499,265
PROCESS FOR PREPARING 3-EXO-METHYLENECEPHAM DERIVATIVES

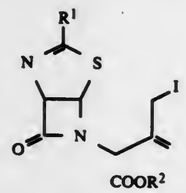
Sigeru Torii; Hideo Tanaka; Junzo Nokami; Takashi Shirol, all of Okayama; Norio Saito, Tokushima, and Michio Sasaoka, Okayama, all of Japan, assignors to Otsuka Kagaku Yakuhin Kabushiki Kaisha, Kaisha, Japan

Filed Aug. 9, 1982, Ser. No. 406,568
Claims priority, application Japan, Aug. 20, 1981, 56-131039
Int. Cl.³ C07D 502/02
U.S. Cl. 544—16 18 Claims

1. A process for preparing a 3-exo-methylenecepham derivative represented by the formula



wherein R^1 represents benzyl, p-chloro-benzyl, phenoxymethyl, p-chlorophenoxymethyl or p-methoxy-phenoxymethyl, and R^2 represents a carboxy-protecting group, the process comprising the step of mixing a compound represented by the formula



wherein R^1 and R^2 are as defined above with a mixture of an organic solvent and an acid aqueous solution, thereby effecting a cyclization reaction.

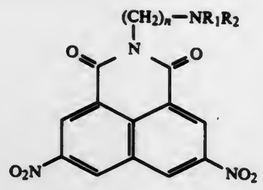
4,499,266

3,6-DINITRO-1,8-NAPHTHALIMIDES

Chia C. Cheng, Leawood, and Robert K. Zee-Cheng, Shawnee, both of Kans., assignors to Warner-Lambert Company, Ann Arbor, Mich.

Filed Apr. 1, 1983, Ser. No. 481,122
Int. Cl.³ C07D *221/14, 413/06*
U.S. Cl. 544—126 **3 Claims**

1. 3,6-Dinitro-1,8-naphthalimide compounds having in free base from the structure formula I:



I

and the pharmaceutically acceptable salts thereof, where n is 2 or 3, and R_1 and R_2 are H, lower alkyl, lower hydroxyalkyl, pyrrolidinyl, morpholino, or piperidinyl.

4,499,267

ADDITIVE FOR OTTO CYCLE ENGINES AND FUEL MIXTURE SO OBTAINED

Mario Scifoni, Via della Divina Provvidenza 26, 00166 Roma, Italy

Filed Oct. 21, 1983, Ser. No. 544,170
Claims priority, application Italy, Aug. 17, 1983, 48858 A/83
Int. Cl.³ C10L *1/32*
U.S. Cl. 44—51 **19 Claims**

1. Fuel additive for Otto cycle engines consisting essentially of a mixture of water, low molecular weight alcohols and liquid extracted from prickly pear leaves, said liquid being present in an amount and in concentrations sufficient to provide a passive protective film on the parts of said engine whereby said parts are smooth, slippery and bright and free of oxidation.

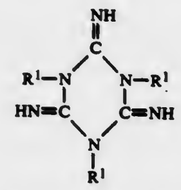
4,499,268

PROCESS FOR THE PREPARATION OF ISOMELAMINES

Friedrich Lohse, Oberwil, and Helmut Zondler, Bottmingen, both of Switzerland, assignors to Ciba Geigy Corporation, Ardsley, N.Y.

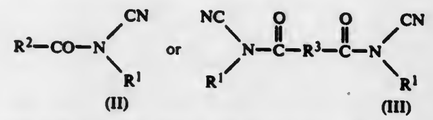
Filed Feb. 15, 1983, Ser. No. 466,454
Claims priority, application Switzerland, Feb. 23, 1982, 1105/82
Int. Cl.³ C07D *251/70*
U.S. Cl. 544—196 **7 Claims**

1. A process for the preparation of an isomelamine of the formula I



(I)

in which each R^1 is alkyl having 1 to 8C atoms, aralkyl having not more than 12C atoms, allyl or methallyl, which comprises reacting an N-cyano-N-(ar)alkyl- or N-cyano-N-(meth)allyl-carboxylic acid amide of the formula II or III



(II) (III)

in which each R^1 is as defined under formula I, R^2 is a hydrogen atom, alkyl having 1 to 16C atoms, cycloalkyl having 5 to 8C atoms or aryl having 6 to 10 ring C atoms and R^3 is a direct bond or alkylene having 1 to 12C atoms, with

(a) an aqueous sodium hydroxide, potassium hydroxide or ammonia solution or

(b) a primary aliphatic or cycloaliphatic amine in a solvent, or with

(c) a primary aliphatic alcohol in the presence of a catalytic amount of a basic compound,

in each case in a temperature range from −20° C. to 200° C., at least 3 hydroxyl or amino group equivalents being used per 3 carboxylic acid amide group equivalents.

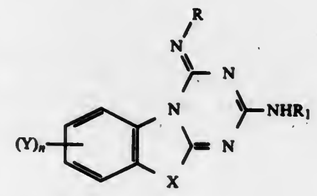
4,499,269

FUSED 1,3,5-TRIAZINES

Colin Bennion, Loughborough, and David Robinson, Shepshed, both of England, assignors to Fisons plc, Ipswich, England

Filed Apr. 20, 1983, Ser. No. 486,795
Claims priority, application United Kingdom, Apr. 30, 1982, 8212654
Int. Cl.³ C07D *513/04, 498/04, 487/04*
U.S. Cl. 544—198 **34 Claims**

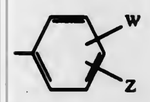
1. A compound of formula I,



I

in which

X is O, S or N—R_7,
each Y, which may be the same or different, is H, OH, alkyl C1–C8, alkoxy C1–C8 or halogen,
n is an integer from 1 to 4 inclusive,
R and R_1, which may be the same or different, are each H; alkanoyl C2–C8 or a group R_4 in which R_4 is alkyl C1–C8 optionally substituted by phenyl; or is cycloalkyl C5 or C6; or is a group of formula XVI,



XVI

in which
W and Z, which may be the same or different, are each H, OH, alkoxy C1–C8, phenyl-alkoxy C7 to C10, alkyl C1–C8, halogen, —NR_2R_3, —$COOR_2$, NO_2, alkanoyloxy C2–C8, or —$OCH_2CH_2NR_2R_3$, and
R_2, R_3 and R_7, which may be the same or different, are each H or alkyl C1–C8,
provided that when X is N—R_7 and R is H, then R_1 is not (a) H when any Y groups are H, alkyl C1–C8, alkoxy C1–C8 or halogen, or (b) unsubstituted phenyl when all Y groups are H,
and pharmaceutically acceptable salts thereof.

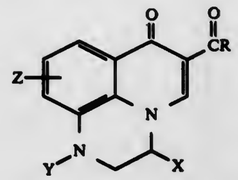
4,499,270

SUBSTITUTED PYRIDOQUINOXALINE-6-CARBOXYLIC ACIDS AND DERIVATIVES THEREOF

John F. Gerster, Woodbury, Minn., assignor to Riker Laboratories, Inc., St. Paul, Minn.

Division of Ser. No. 254,973, Apr. 16, 1981, Pat. No. 4,348,521. This application Feb. 22, 1982, Ser. No. 351,135
Int. Cl.³ C07D *471/04*; A61K *31/495*
U.S. Cl. 544—344 **8 Claims**

1. A compound of the formula



wherein X is hydrogen or methyl; Y is hydrogen, methyl, ethyl or phenyl ; Z is hydrogen, halogen, lower alkyl or lower alkoxy; and R is OH, a lower alkyl ester residue, a lower alkyl amide residue, or OM wherein M is a pharmaceutically-accepted cation.

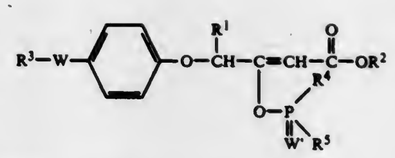
4,499,271

3-PHOSPHINYLOXY-4-(SUBSTITUTED PHENOXY)ALKENOIC ACID ESTERS

Gustave K. Kohn, Palo Alto, and Joe T. Bamberg, Redwood City, both of Calif., assignors to Zoecon Corporation, Palo Alto, Calif.

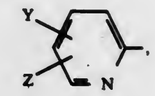
Filed Aug. 20, 1982, Ser. No. 410,173
Int. Cl.³ C07F *9/58*
U.S. Cl. 546—22 **7 Claims**

1. A compound of the following formula (A):



(A)

wherein,
R^1 is hydrogen or lower alkyl;
R^2 is lower alkyl, lower alkenyl or lower alkynyl;
W is oxygen, sulfur or amino;
W' is oxygen;
R^3 is the group



in which,
each of Y and Z is independently hydrogen, lower alkyl, lower haloalkyl, bromo, chloro or fluoro;
R^4 is —OR^6, —SR^6 or —NHR^6;
R^5 is lower alkyl; lower haloalkyl; lower cycloalkyl; phenyl; phenyl substituted with lower alkyl, lower haloalkyl or halogen; benzyl; benzyl substituted with lower alkyl, lower haloalkyl or halogen; —OR^7; —SR^7; or —NHR^7;
R^6 is lower alkyl; lower haloalkyl; phenyl; phenyl substituted with lower alkyl, lower haloalkyl or halogen; benzyl; or benzyl substituted with lower alkyl, lower haloalkyl or halogen; and
R^7 is independently selected from the values of R^6.

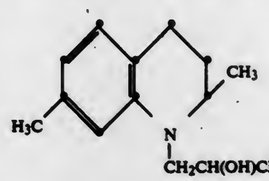
4,499,272

NH_4^+ OR GROUP IA METAL 2,7-DIMETHYL-1,2,3-TETRAHYDRO-β-HYDROXY-1-QUINOLINEPROPANESULFONATES

John A. Hyatt, and Clarence A. Costes, Jr., both of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 20, 1982, Ser. No. 409,798
Int. Cl.³ C07C *143/58*; C07D *215/36, 265/28*; C09B *29/44*
U.S. Cl. 546—172 **1 Claim**

1. The process for preparing a compound of the formula



wherein M is NH_4^+ or a group IA metal, comprising reacting at between 100° C. and 180° C., in ethylene glycol, a sulfonate of the formula X—$CH_2CH(OH)CH_2SO_3M$ wherein X is halogen, with 2,7-dimethyl-1,2,3,4-tetrahydroquinoline.

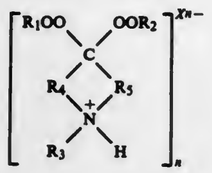
4,499,273

SALTS OF AMINIC ORGANIC PEROXIDES

Alberto Fontana, 47, C. so Lodi; Renzo Fontanelli, 19, Via Maiocchi; Egeo Sacrini, 9, Via Campiglio, and Osvaldo Cicchetti, 57, Via Sagri, all of Milano, Italy

Filed Dec. 21, 1982, Ser. No. 451,982
Claims priority, application Italy, Dec. 23, 1981, 25822 A/81
Int. Cl.³ C07D 211/44
U.S. Cl. 546—188 10 Claims

1. An organic peroxide having two peroxy functional groups, containing in the molecule thereof an atom of salified aminic nitrogen, and having the formula:



wherein:

R_1 and R_2 are each an alkyl radical selected from the group consisting of t.butyl, t.amyl, t.octyl and cumyl;

R_3 is hydrogen, an alkyl radical having 1 to 8 C, a cycloalkyl having 5–6 carbon atoms in the ring, or an aryl radical selected from the group consisting of the phenyl and benzyl radicals;

R_4 is the methylene, ethylene or trimethylene radical, at least mono-substituted by methyl or phenyl;

R_5 is the methylene or ethylene radical at least mono-substituted by methyl or phenyl;

X is an anion of an inorganic or organic acid in which one or more acid hydrogens are substituted by the aminic cation; and

n is 1, 2 or 3 and represents the number of hydrogen atoms which are salified.

4,499,274

PROCESS FOR PREPARATION OF SUBSTITUTED FORMAMIDINE AND SUBSTITUTED N-IMINOMETHYL PIPERIDINE

Georg Feth, Schaffhausen, Switzerland, and John E. Mills, Hatfield, Pa., assignors to McNeilab, Inc., Fort Washington, Pa.

Filed Mar. 17, 1983, Ser. No. 476,443
Int. Cl.³ C07D 211/14; C07C 123/00
U.S. Cl. 546—229 16 Claims

1. A process for preparing N,N-dimethyl-N'-octylformamidine which comprises the following steps:

(1) reacting dimethylformamide with dimethyl sulfate to form a dimethylformamide/dimethyl sulfate complex;

(2) reacting said complex with n-octylamine in the presence of added dimethylamine; and

(3) thereafter treating the reaction mixture with aqueous base to obtain N,N-dimethyl-N'-octylformamidine.

14. A process for preparing 4-(diphenylmethyl)-1-[(octylimino)methyl]piperidine which comprises the following steps:

(1) reacting dimethylformamide with dimethyl sulfate to form a complex;

(2) reacting the resultant dimethylformamide/dimethyl sulfate complex with n-octylamine in the presence of added dimethylamine;

(3) thereafter treating the reaction mixture with aqueous base to form N,N-dimethyl-N'-octyl-formamidine; and

(4) reacting said formamidine with 4-(diphenyl-methyl)-piperidine to obtain 4-(diphenylmethyl)-1-[(octylimino)-methyl]piperidine.

4,499,275

PHENOXYPICOLINIC ALDEHYDES

Kiyomi Ozawa, and Shigeru Ishii, both of Funabashi, Japan, assignors to Nissan Chemical Industries, Ltd., Tokyo, Japan

Division of Ser. No. 315,228, Oct. 26, 1981, Pat. No. 4,393,213.
This application Mar. 14, 1983, Ser. No. 475,325
Claims priority, application Japan, Jan. 14, 1981, 56-3224; Jul. 6, 1981, 56-105294
Int. Cl.³ C07D 213/48
U.S. Cl. 546—298 1 Claim

1. 5-Fluoro-6-phenoxypicolinic aldehyde.

4,499,276

REDUCTION OF TRICHLOROMETHYLPYRIDINES TO DICHLOROMETHYLPYRIDINES

Sudarshan K. Malhotra, Walnut Creek, and Jon A. Orvik, Danville, both of Calif., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 256,863, Apr. 24, 1981, abandoned. This application Mar. 14, 1983, Ser. No. 475,017
Int. Cl.³ C07D 213/26
U.S. Cl. 546—346 7 Claims

1. A process for reducing the trichloromethyl group in a (trichloromethyl)pyridine compound to a dichloromethyl group which comprises treating said compound with a strong base and a reductant source material selected from the group consisting of chloroform, dialkylsulfoxides, arylalkylsulfones, dialkylsulfones and ketones wherein each alkyl group is of from one to four carbon atoms and the term aryl represents phenyl or tolyl, said sulfoxides, sulfones and ketones must have a hydrogen atom on the carbon atom which is alpha to the —C═O, —SO, or —SO_2 group, said ketones must also have a base abstractable hydrogen, said treatment being carried out in the presence of a polar, non-hydroxylic solvent providing sufficient solubility for the reactants and/or a quaternary ammonium phase transfer catalyst at a temperature of from about −20° C. to about 160° C. for a time sufficient to convert to the corresponding (dichloromethyl)pyridine compound.

4,499,277

REDUCTION OF TRICHLOROMETHYLPYRIDINES TO DICHLOROMETHYLPYRIDINES

Sudarshan K. Malhotra, Walnut Creek, and Jon A. Orvik, Danville, both of Calif., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 256,863, Apr. 24, 1981, abandoned. This application Mar. 14, 1983, Ser. No. 475,020
Int. Cl.³ C07D 213/26
U.S. Cl. 546—346 8 Claims

1. A process for reducing the trichloromethyl group in a (trichloromethyl)pyridine compound to a dichloromethyl group which comprises treating said compound with a strong base and a reductant source material selected from the group consisting of dialkylphosphites and trialkyl phosphites wherein each alkyl group is of from one to four carbon atoms, said treatment being carried out in the presence of a polar, non-hydroxylic solvent providing sufficient solubility for the reactants and/or a quaternary ammonium phase transfer catalyst at a temperature of from about −20° C. to about 160° C. for a time sufficient to convert to the corresponding (dichloromethyl)pyridine compound.

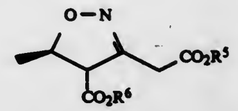
4,499,278

TRANS-3-CARBOXYMETHYLENE-4-CARBOXY-5-METHYL-DELTA2-ISOXAZOLINE AS INTERMEDIATE

David G. Melillo, Scotch Plains, and Kenneth M. Ryan, Clark, both of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation of Ser. No. 219,630, Dec. 24, 1980, abandoned, which is a division of Ser. No. 112,057, Jan. 14, 1980, Pat. No. 4,269,772. This application Nov. 22, 1982, Ser. No. 443,701
Int. Cl.³ C07D 487/04; A61K 31/40
U.S. Cl. 548—240 2 Claims

1. The compound having the structure:



wherein R^5 and R^6 are removable protecting groups.

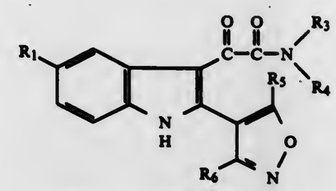
4,499,279

ISOXAZOLYL INDOLAMINES

Leonard J. Brand, Randolph, and Jeffrey Nadelson, Denville, both of N.J., assignors to Sandoz, Inc., E. Hanover, N.J.

Division of Ser. No. 351,185, Feb. 22, 1982, Pat. No. 4,419,353, which is a division of Ser. No. 245,188, Mar. 18, 1981, Pat. No. 4,336,379, which is a continuation-in-part of Ser. No. 196,785, Oct. 14, 1980, abandoned, which is a continuation-in-part of Ser. No. 138,872, Apr. 10, 1980, abandoned. This application Aug. 22, 1983, Ser. No. 524,996
Int. Cl.³ C07D 261/06, 209/10
U.S. Cl. 548—247 8 Claims

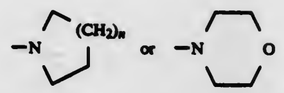
1. A compound of the formula



wherein R_1 represents hydrogen, fluoro, chloro, lower alkyl having 1 to 4 carbon atoms, or lower alkoxy having 1 to 4 carbon atoms,

R_3 and R_4 each independently represent lower alkyl having 1 to 4 carbon atoms, or

R_3 and R_4 together with N represent



wherein n is 1, 2 or 3, and

R_5 and R_6 each independently represent hydrogen or lower alkyl having 1 to 4 carbon atoms.

4,499,280

TRIAZOLES, AND THEIR USE AGAINST INSECT PESTS

Fritz Reisser, Therwil, Switzerland, assignor to Sandoz Ltd., Basel, Switzerland

Filed Jul. 15, 1982, Ser. No. 398,670
Claims priority, application United Kingdom, Jul. 17, 1981, 8122064
Int. Cl.³ A01N 43/64; C07D 249/06
U.S. Cl. 548—255 1 Claim

1. The compound 1-(3,5-Di-trifluoromethylphenyl)1,2,3-triazole.

4,499,281

SUBSTITUTED TRIAZOLYLMETHYL-OXIRANES AND THEIR USE AS INTERMEDIATES FOR FUNGICIDES

Graham Holmwood, and Erik Regel, both of Wuppertal, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Feb. 26, 1982, Ser. No. 352,689
Claims priority, application Fed. Rep. of Germany, Mar. 21, 1981, 3111238
Int. Cl.³ A01N 43/64; C07D 249/08, 405/06
U.S. Cl. 548—262 6 Claims

1. A substituted triazolylmethyl-oxirane of the formula

in which

R represents alkyl with 1 to 4 carbon atoms which optionally carries one or more substituents selected from halogen, alkoxy with 1 to 4 carbon atoms, alkylthio with 1 to 4 carbon atoms, halogenoalkoxy with 1 or 2 carbon atoms and 1 to 5 identical or different halogen atoms, halogenoalkylthio with 1 or 2 carbon atoms and 1 to 5 identical or different halogen atoms, cyano, alkoxycarbonyl with 1 to 4 carbon atoms in the alkoxy part, phenyl (which optionally carries one or more substituents selected from halogen, alkyl with 1 to 4 carbon atoms, halogenoalkyl with 1 or 2 carbon atoms and 1 to 5 identical or different halogen atoms, halogenoalkoxy with 1 or 2 carbon atoms and 1 to 5 identical or different halogen atoms and halogenoalkylthio with 1 or 2 carbon atoms and 1 to 5 identical or different halogen atoms), phenoxy (which optionally carries one or more substituents selected from halogen, alkyl with 1 to 4 carbon atoms, halogenoalkyl with 1 or 2 carbon atoms and 1 to 5 identical or different halogen atoms, halogenoalkoxy with 1 or 2 carbon atoms and 1 to 5 identical or different halogen atoms and halogenoalkylthio with 1 or 2 carbon atoms and 1 to 5 identical or different halogen atoms) and benzyloxy (which optionally carries one or more substituents on the phenyl part selected from halogen, alkyl with 1 to 4 carbon atoms, halogenoalkyl with 1 or 2 carbon atoms and 1 to 5 identical or different halogen atoms, halogenoalkoxy with 1 or 2 carbon atoms and 1 to 5 identical or different halogen atoms and halogenoalkylthio with 1 or 2 carbon atoms and 1 to 5 identical or different halogen atoms), or

R represents cycloalkyl with 3 to 7 carbon atoms which is optionally substituted by alkyl with 1 to 4 carbon atoms.

4,499,282

QUATERNARY AMMONIUM COMPOUNDS

Drahomir Dvorsky, and Karel Cerovsky, both of Dvur Kralove nad Labem, Czechoslovakia, assignors to Vyzkumny ustav zuslechtovaci, Dvur Kralove nad Labem, Czechoslovakia

Division of Ser. No. 354,494, Mar. 3, 1982, abandoned. This application Jul. 21, 1983, Ser. No. 516,147

Claims priority, application Czechoslovakia, Mar. 4, 1981, 1537-81; Mar. 20, 1981, 2050-81

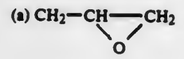
Int. Cl.³ C07D *405/06, 405/14, 233/60*

U.S. Cl. 548—336 **1 Claim**

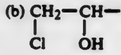
1. Quarternary ammonium compound of the formula

$$[Y-M-Y]^{k+}\ \frac{k}{n}\ X^{n-}$$

wherein k is an integer of 1-2,
n is an integer of 1-3,
X is an anion of a strong acid, and
Y is selected from the group consisting of

(a) 

and

(b) 

said group being bound to the nitrogen atoms of an imidazole ring M, the individual atoms of the imidazole having bound thereto at least one substituent selected from the group consisting of hydrogen, and alkyl groups having from 1-4 carbon atoms.

4,499,283

PROCESS FOR PREPARING 1-SUBSTITUTED-6-N-PROPYL-8-METHYLIMIDAZO[1,5-d]-AS-TRIAZIN-4-(3H)-ONES

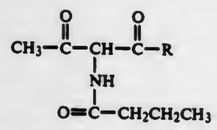
Sivaraman Raghu, Norwalk, and Steven L. Peake, New Canaan, both of Conn., assignors to American Cyanamid Company, Stamford, Conn.

Filed Jun. 28, 1982, Ser. No. 393,003

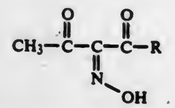
Int. Cl.³ C07D *233/66*

U.S. Cl. 548—343 **2 Claims**

1. The process of preparing 3-butyrylamino-2,4-alkanediones of the formula:

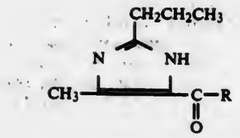


wherein R is methyl, ethyl or n-propyl which comprises hydrogenating a 3-oximino-2,4-alkanedione of the formula:

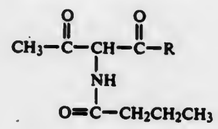


wherein R is an hereinabove defined with palladium on charcoal as catalyst in butyric anhydride as solvent at a temperature of 25°-100° C. for a period of time of 8-24 hours.

2. The process of preparing 5-imidazolyl ketones of the formula:



wherein R is methyl, ethyl or n-propyl which comprises condensing a 3-butyrylamino-2,4-alkanedione of the formula:



wherein R is as hereinabove defined with an ammoniating agent of the formula: $[NH_4\oplus]_n[X^{n}\ominus]$ wherein X is an anion and n is an integer from 1 to 4 in an inert organic solvent at a temperature of 100°-150° C. for a period of time of 8-24 hours.

4,499,284

1,5-DIAZABICYCLO [3.3.0.]OCTADIENEDIONES

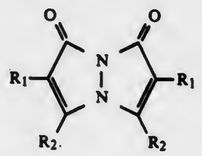
Edward M. Kosower, Tel-Aviv, Israel; Barak Pazhenchevsky, Lawrence, Kans., and Eli Hershkowitz, Doar Na Hanegev, Israel, assignors to Tel Aviv University, Tel Aviv, Israel

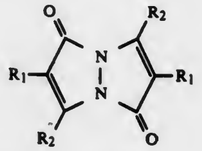
Continuation of Ser. No. 068,544, Aug. 27, 1979, abandoned, which is a continuation-in-part of Ser. No. 938,918, Sep. 5, 1978, abandoned. This application Jun. 21, 1982, Ser. No. 390,769

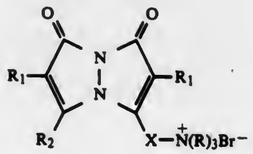
Int. Cl.³ C07D *231/54*

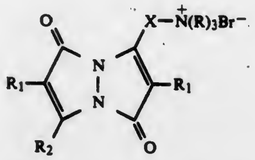
U.S. Cl. 548—359 **13 Claims**

1. A 1,5-diazabicyclo[3.3.0]octadienedione having a formula selected from the group consisting of:

(I) 

(II) 

(III) 

(IV) 

wherein R is independently branched or straight chain C_1-C_4 alkyl; R_1 is independently branched or straight chain C_1-C_4 alkyl, phenyl or halo; R_2 is independently branched or straight chain C_1-C_{17} alkyl wherein at least one R_2 group has a bromo substituent on the carbon atom adjacent to the ring; and X is branched or straight chain C_1-C_{17} alkylidene wherein the ring carbon and the quarternary nitrogen are attached to the same carbon atom.

4,499,285

SOLVENT FREE PREPARATION OF DIARYLTHIOETHERS

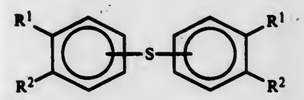
Thomas L. Evans, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Nov. 1, 1982, Ser. No. 437,937

Int. Cl.³ C07D *209/48, 307/89*

U.S. Cl. 548—461 **14 Claims**

1. A method for making diarylthioethers of the formula



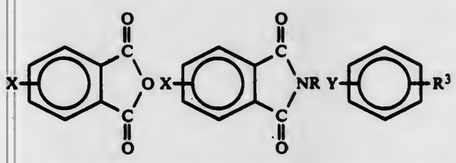
which comprises:

(a) heating a mixture of an anhydrous sulfide compound selected from the group consisting of alkali-metal sulfides of the formula

and alkali metal hydrogen sulfides of the formula

MHS

and a member selected from a group consisting of molten substituted aromatic compounds of the formulas

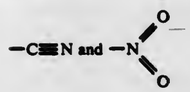


in the presence of a catalytic quantity of phase transfer catalyst selected from a group consisting of phosphonium salts of the formula

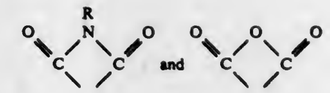
$P(R^4)_4+Q^-$

and ammonium salts of the formula $N(R^5)_4+Q^-$ and 18-crown-6 to a temperature within the range 140° C. to 240° C. in a nitrogen atmosphere in the absence of a solvent medium for a period ranging from 5 to 18 hours; and

(b) recovering the diarylthioether product from said mixture, where R^1 is a member selected from the group consisting of monovalent radicals of the formulas

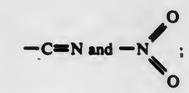


and R^2 is a hydrogen atom or R^1 and R^2 together define a divalent radical of a formula selected from the group consisting of



which form a cyclic structure with the phenyl group, where R is a monovalent radical selected from the group consisting of C_{1-8} alkyl radicals and C_{6-20} aromatic radicals;

R^3 is a member of a group of monovalent radicals of the formulas



R^4 is a monovalent radical selected from the group consisting of C_{1-16} alkyl radicals and C_{6-13} aromatic radicals;

R^5 is a monovalent radical selected from the group C_{1-16} alkyl radicals;

X is a monovalent radical selected from the group consisting of chloro, fluoro, bromo, iodo and nitro;

Y is a monovalent radical selected from the group consisting of fluoro, bromo, iodo, and chloro;

Q is a halogen ion selected from the group consisting of bromide and chloride; and

M is an alkali metal selected from the group sodium, lithium and potassium.

4,499,286

DERIVATIVES OF THIENYLACETIC ACID AMIDES AND THEIR PHARMACEUTICALLY ACCEPTABLE ACID SALTS AND A PROCESS FOR THE PREPARATION THEREOF

Dieter Binder, Vienna, Austria, assignor to Leavosan-Gesellschaft m.b.H. & Co. KG, Linz, Austria

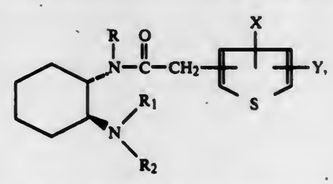
Filed Nov. 22, 1983, Ser. No. 554,416

Claims priority, application Austria, Nov. 26, 1982, 4308/82

Int. Cl.³ C07C *103/82;* A61K *31/38*

U.S. Cl. 548—527 **4 Claims**

1. A thienylacetic acid amide of the general formula

(I) 

in which the two nitrogens on the cyclohexane ring are transconnected, the basic acetic acid amide radical is in position 2 or 3 of the thiophene nucleus, R is C_1-C_3 alkyl, R_1 and R_2 are independently C_1-C_3-alkyl or represent together with the nitrogen atom to which they are attached a pyrrolidine or piperidine ring and X and Y are independently hydrogen, chlorine or bromine in position 2 to 5 of the thiophene nucleus in dependence on the position of the basic acetic acid amide group, and their pharmaceutically acceptable acid addition salts.

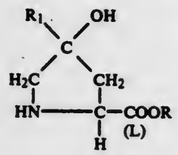
4,499,287

CERTAIN-4-HYDROXY-PROLINE DERIVATIVES

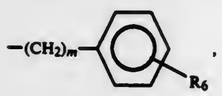
John Krapcho, Somerset, N.J., assignor to E. R. Squibb & Sons, Inc., Princeton, N.J.

Division of Ser. No. 230,206, Feb. 2, 1981, Pat. No. 4,356,182, which is a division of Ser. No. 86,905, Oct. 22, 1979, Pat. No. 4,291,040. This application Jul. 29, 1982, Ser. No. 403,194
Int. Cl.³ C07D *207/16, 401/04*
U.S. Cl. 548—532 3 Claims

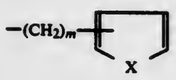
1. A compound of the formula



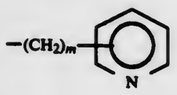
wherein
R is hydrogen or lower alkyl;
R_1 is lower alkyl, lower alkenyl, lower alkynyl,



$-(CH_2)_m$-cycloalkyl
wherein said cycloalkyl ring is of 3 to 7 carbons, α-naphthyl, β-naphthyl,



wherein said $-(CH_2)_m$-bridge is attached to an available carbon atom, or



wherein said $-(CH_2)_m$-bridge is attached to an available carbon atom;
R_6 is hydrogen, lower alkyl of 1 to 4 carbons, lower alkoxy of 1 to 4 carbons, lower alkylthio of 1 to 4 carbons, chloro, fluoro, bromo, trifluoromethyl or hydroxy;
m is zero, one, two or three; and
X is O or S.

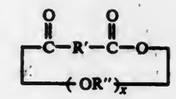
4,499,288

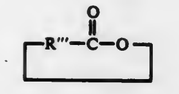
PROCESS FOR THE PRODUCTION OF MACROCYCLIC ESTERS AND LACTONES UTILIZING DOUBLE METAL SALT CATALYSTS

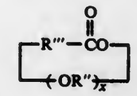
Eugene G. Harris, West Chester, Ohio, assignor to National Distillers and Chemical Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 285,727, Jul. 22, 1981, Pat. No. 4,393,223, which is a continuation-in-part of Ser. No. 073,755, Sep. 10, 1979, abandoned. This application Jun. 6, 1983, Ser. No. 501,721
Int. Cl.³ C07D *313/00, 313/18, 321/04, 321/08, 321/12, 321/00, 323/00*
U.S. Cl. 549—266 20 Claims

1. A process for the production of macrocyclic compounds having 8 to 20 carbon atoms in the ring and selected from the group consisting of







where R′ is a bivalent aliphatic hydrocarbon radical having 1 to 16 carbon atoms, R″ is a saturated bivalent aliphatic hydrocarbon radical having from 2 to 12 carbon atoms, R‴ is a bivalent aliphatic hydrocarbon radical having from 6 to 18 carbon atoms and x is an integer from 1 to 4, by thermal depolymerization of the corresponding linear polyester which comprises heating the polyester at a temperature from 200° C. to 400° C. and pressure less than 50 mm Hg in the presence of 0.01 percent to 20 percent by weight, based on the polyester, of a double metal salt of the formula

$$AlM_a(OC_mH_{2m}R_1)_b(OOCR_2)_c$$

where M is lithium, sodium or potassium, R_1 is hydrogen or an alkoxy or polyalkoxy radical having from 1 to 16 carbon atoms, R_2 is a $C_{2\text{-}22}$ alkyl, phenyl or substituted-phenyl having 7 to 20 carbon atoms, m is an integer from 1 to 22, a is an integer from 1 to 3, b and c are integers from 0 to 6 and b+c=a+3.

4,499,289

OCTAHYDRONAPTHALENES

John S. Baran, Winnetka, and Chi-Dean Liang, Glenview, both of Ill., assignors to G. D. Searle & Co., Skokie, Ill.

Continuation-in-part of Ser. No. 446,546, Dec. 12, 1982, abandoned. This application Nov. 7, 1983, Ser. No. 549,534
Int. Cl.³ C07D *309/30*
U.S. Cl. 549—292 1 Claim

1. Tetrahydro-4-hydroxy-6-[2-(1,2,3,4,6,7,8,8a-octahydro-1-naphthalene)ethyl]-2H-pyran-2-one.

4,499,290

CAGED COMPOUNDS AND THEIR SYNTHESIS

Lawrence H. Shepherd, Jr., Baton Rouge, La., assignor to Ethyl Corporation, Richmond, Va.

Filed Oct. 24, 1983, Ser. No. 544,517
Int. Cl.³ C07D *313/20*
U.S. Cl. 549—354 2 Claims

1. 10-oxatetracyclo[4.2.1.$2^{3,8}$.$0^{2,5}$]undecane or its lower alkyl-substituted congeners.

4,499,291

PROCESS FOR SIMULTANEOUS HYDROGENATION OF 2-BUTYNE-1,4-DIOL AND FURAN

Richard E. Ernst, Kennett Square, Pa., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jul. 27, 1983, Ser. No. 517,589
Int. Cl.³ C07D *307/08*
U.S. Cl. 549—429 4 Claims

1. A process for the simultaneous hydrogenation of 2-butyne-1,4-diol to 1,4-butanediol and furan to tetrahydrofuran, the process comprising
(a) simultaneously bringing furan and an aqueous solution of 2-butyne-1,4-diol into contact, in a reaction zone, with

(1) a hydrogenation catalyst, and
(2) hydrogen under pressure, while maintaining the reaction mass at a temperature of 60°–150° C., and
(b) withdrawing from the reaction zone a solution of tetrahydrofuran, 1,4-butanediol and water.

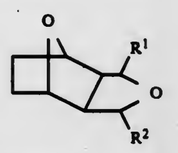
4,499,292

7-OXABICYCLOHEPTANE PROSTAGLANDIN INTERMEDIATES AND METHOD FOR PREPARING SAME

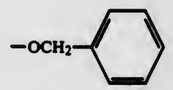
Peter W. Sprague, Pennington, and James E. Heikes, East Windsor, both of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed May 13, 1983, Ser. No. 494,233
Int. Cl.³ C07D *307/88*
U.S. Cl. 549—459 15 Claims

1. A compound having the structure

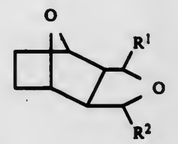


wherein one of R^1 and R^2 is

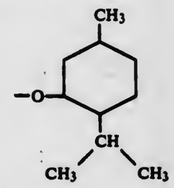


and the other is hydrogen.

8. An optically active cis endo or cis exo isomer having the structure



wherein one of R^1 and R^2 is



and the other is hydrogen.

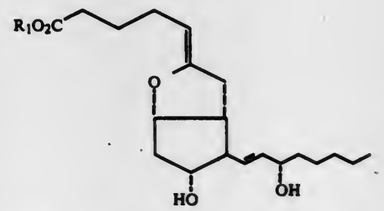
4,499,293

PGI_2 SALTS

Roy A. Johnson, Kalamazoo; Frank H. Lincoln, Portage, and John E. Pike, Kalamazoo, all of Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

Continuation-in-part of Ser. No. 725,550, Sep. 22, 1976, abandoned, which is a continuation-in-part of Ser. No. 716,770, Aug. 23, 1976, abandoned. This application Jul. 28, 1977, Ser. No. 819,940
The portion of the term of this patent subsequent to Jul. 6, 1999, has been disclaimed.
Int. Cl.³ C07D *307/935*
U.S. Cl. 549—465 1 Claim

1. A compound of the formula



wherein R_1 is a pharmacologically acceptable cation.

4,499,294

PROCESS FOR PRODUCTION OF METHYL 2-TETRADECYLGYCIDATE

Cynthia A. Maryanoff, New Hope, Pa., assignor to McNeilab, Inc., Fort Washington, Pa.

Filed Jan. 21, 1983, Ser. No. 459,750
Int. Cl.³ C07D *301/02*
U.S. Cl. 549—519 5 Claims

1. A process for producing methyl 2-tetradecylglycidate by reacting methyl α-chloropalmitate with lithium methoxide in the presence of formaldehyde in a dipolar aprotic solvent in which all the above reactants are soluble.

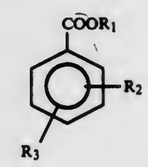
4,499,295

PROTEASE INHIBITORS

Richard A. Mueller, Glencoe, and Richard A. Partis, Evanston, both of Ill., assignors to G. D. Searle & Co., Skokie, Ill.

Filed May 9, 1983, Ser. No. 492,842
Int. Cl.³ C07C *69/76*
U.S. Cl. 560—53 16 Claims

1. A method of preventing or reducing the degradation of natural tissues in mammals by proteases which comprises administering an effective amount of the compound of the formula:

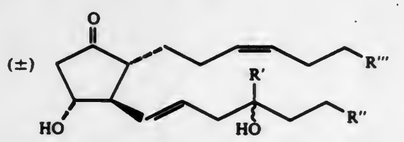


wherein R_1 is:
(a) hydrogen; or
(b) alkyl of 1 to 6 carbon atoms, inclusive;
wherein R_2 is:
(a) hydroxy; or
(b) alkoxy of 1 to 6 carbon atoms, inclusive;
wherein R_3 is:
(a) —C(O)R_4;
(b) —CH(OH)R_4;

(c) $-CH_2R_4$; or
(d) $-CH{=}CHR_4$;
wherein R_4 is alkyl of 13 to 25 carbon atoms inclusive or the pharmacologically acceptable addition salts thereof.

4,499,296
OMEGA CYCLOALKYL PROSTAGLANDINS
Paul W. Collins, Deerfield, and Alan F. Gasiecki, Vernon Hills, both of Ill., assignors to G. D. Searle & Co., Skokie, Ill.
Filed Nov. 14, 1983, Ser. No. 551,238
Int. Cl.³ C07C *177/00*; A61K *31/557*
U.S. Cl. 560—118 **6 Claims**

1. A Compound of the formula

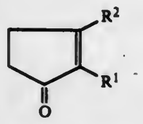


wherein R''' represents hydroxymethyl, hydroxyacetyl, or $-CO_2R''''$
wherein R'''' represents hydrogen or lower alkyl containing 1–6 carbon atoms;
R' represents lower alkyl containing 1 to 6 carbon atoms, vinyl or ethynyl;
R'' represents cycloalkyl containing 3 to 5 carbon atoms; and the wavy line represents optional R,S stereochemistry

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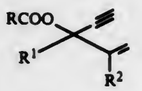
4,499,297
PROCESS FOR THE PREPARATION OF ALKYLATED CYCLOPENTENONES
Valentin Rautenstrauch, Bernex, Switzerland, assignor to Firmenich, SA, Geneva, Switzerland
Filed Nov. 16, 1983, Ser. No. 552,462
Claims priority, application Switzerland, Dec. 6, 1982, 7075/82
Int. Cl.³ C07C *45/48, 69/145*
U.S. Cl. 560—231 **12 Claims**

1. A process for the preparation of a cyclopentenone having formula



(I)

wherein each of symbols R^1 and R^2, when taken separately, represents an alkyl radical of C_1 to C_6, or a hydrogen atom, or, when taken together, they represent a polymethylene, or one of them designates a hydrogen atom and the other an alkyl radical of C_1 to C_6,
which consists in the catalytic cyclization of an ester having formula



(II)

wherein R^1 and R^2 are defined as above and R stands for a C_1 to C_6 alkyl radical or a phenyl group,
in the presence of a metallo-organic compound of formula

$$MeX_2(R^3CN)_2 \quad \text{(III)}$$

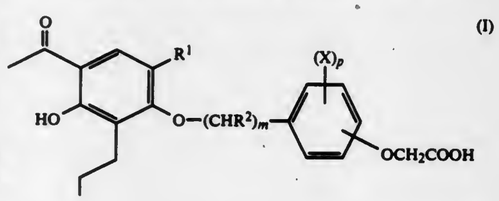
wherein Me represents palladium or platinum, R^3 represents a C_1 to C_3 alkyl radical or a phenyl group and X defines a halogen atom, at a temperature of between about 50° and 100° C., and in isolating the desired cyclopentenone from the reaction mixture.

4,499,298
PROCESS FOR THE PRODUCTION OF ESTERS
John A. Scheben, Erlanger, Ky., and James A. Hinsenkamp, Cincinnati, Ohio, assignors to National Distillers and Chemical Corporation, New York, N.Y.
Continuation of Ser. No. 801,283, May 27, 1977, abandoned. This application Dec. 20, 1979, Ser. No. 105,444
Int. Cl.³ C07C *67/00, 69/007, 69/157, 67/055*
U.S. Cl. 560—241 **8 Claims**

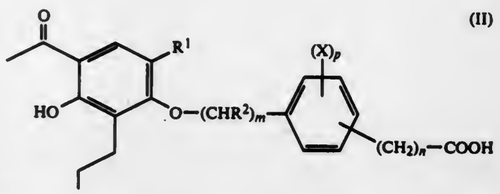
1. A process for the preparation of benzyl esters which comprises reacting toluene with a carboxylic acid and oxygen in the liquid phase in the presence of a catalytically effective amount of a supported catalyst consisting essentially of palladium metal, gold metal and a metal of Group VA of the Periodic Table of Elements.

4,499,299
PHARMACEUTICALLY ACTIVE PHENYLCARBOXYLIC ACID DERIVATIVES
Peter R. Bernstein, and Alvin K. Willard, both of Wilmington, Del., assignors to ICI Americas Inc., Wilmington, Del.
Filed Dec. 6, 1982, Ser. No. 447,467
Claims priority, application United Kingdom, Dec. 30, 1981, 8139027
Int. Cl.³ C07C *65/40*
U.S. Cl. 514—570 **14 Claims**

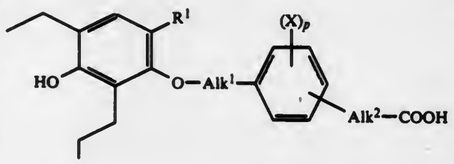
1. A compound of the following formula (I); (II) or (III):



(I)



(II)



(III)

wherein
R^1 is hydrogen or iodine;
R^2 is hydrogen, lower alkyl, phenyl or phenyl substituted with one to three halogen, alkyl or alkoxy groups;
X is independently halogen, nitro, hydroxy, lower alkyl or lower alkoxy;
Alk^1 is methylene;
Alk^2 is alkenyl of 2 or 3 carbon atoms;
m is 1;
n is 0 or 1; and

p is 0, 1 or 2
or a pharmaceutically acceptable base-addition salt thereof.

4,499,300
4-VINYLBENZENEACETIC ACID
Thomas P. Malloy, Lake Zurich, and Dusan J. Engel, Des Plaines, both of Ill., assignors to UOP Inc., Des Plaines, Ill.
Filed Dec. 27, 1983, Ser. No. 566,007
Int. Cl.³ C07C *63/64*
U.S. Cl. 562—495 **8 Claims**

1. A method of preparing 4-vinylbenzeneacetic acid comprising oxidizing 1,4-diethylbenzene in the presence of cobalt (II) compounds selected from the group consisting of cobalt phthalocyanine, cobalt salts of carboxylic acids, and cobalt salts of sulfonic acids, converting the resulting 4-ethylacetophenone to 4-ethylbenzeneacetic acid using sulfur and morpholine followed by base, photochlorinating the 4-ethylbenzeneacetic acid to 4-(1'-chloroethyl)benzeneacetic acid, dehydrochlorinating said 4-(1'chloroethyl)benzeneacetic acid with a base, and recovering the 4-vinylbenzeneacetic acid formed thereby.

4,499,301
PROCESS FOR THE PREPARATION OF UNSATURATED ALDEHYDES AND CARBOXYLIC ACIDS
Jawad H. Murib, Cincinnati, Ohio, assignor to National Distillers and Chemical Corporation, New York, N.Y.
Continuation of Ser. No. 31,819, Apr. 20, 1979, abandoned. This application May 14, 1982, Ser. No. 378,294
Int. Cl.³ C07C *45/35, 47/22, 51/25, 57/05*
U.S. Cl. 562—546 **8 Claims**

1. A vapor phase process for the preparation of unsaturated aldehydes, carboxylic acids and mixtures thereof which comprises contacting a gaseous mixture of an open-chain olefin of from 3 to 8 carbon atoms, water and oxygen at an elevated temperature up to about 250° C. with a solid catalyst consisting essentially of a catalytically effective amount of noble metal selected from the group consisting of palladium, gold, silver, copper and mixtures thereof promoted by a solid acid consisting of a mixture of molybdenum trioxide and titanium dioxide wherein the atomic ratio of Mo/(Ti+Mo) is between about 0.4 and 0.8.

4,499,302
PROCESS FOR THE PRODUCTION OF METHACRYLIC ACID
Luciano Moreschini, Pordenone; Leonardo Dalloro, Bollate; Enrico Cavaterra, Milan; Guido Petrini, Milan, and Romano Covini, Milan, all of Italy, assignors to Montedison S.p.A., Milan, Italy
Filed Feb. 11, 1980, Ser. No. 120,397
Int. Cl.³ C07C *51/377, 57/05*
U.S. Cl. 562—599 **1 Claim**

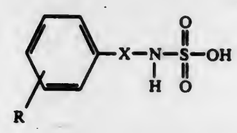
1. Process for the production of methacrylic acid by an oxidative dehydrogenation, at between 340° and 440° C., of the corresponding saturated acid with oxygen in the gaseous phase, the process being characterized in that the catalyst consists of a compound of the empirical formula:

$$FeP_xMe_yMe'_tO_z$$

wherein Me represents at least one alkali or alkaline earth element, Me' represents zirconium, x is between 0.2 and 15, y is between 0.01 and 2, t is between 0.01 and 5 and z is such as to satisfy the valencies of the other elements.

4,499,303
ANTIHYPERLIPIDEMIC N-BENZOYLSULFAMATES, N-BENZYLSULFAMATES AND BENZYLSULFONAMIDES
Steven D. Wyrick, Durham; Iris H. Hall, and Agnes Dubey, both of Chapel Hill, all of N.C., assignors to Research Corporation, New York, N.Y.
Filed Sep. 27, 1983, Ser. No. 536,218
Int. Cl.³ C07C *143/74, 143/78*
U.S. Cl. 514—605 **16 Claims**

1. A compound selected from the group consisting of those of the formula:

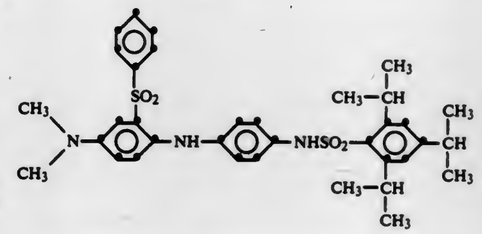


(I)

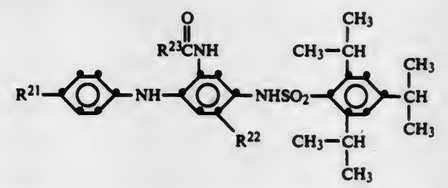
wherein X is selected from the group consisting of C=O and CH_2 and R is selected from the group consisting of hydrogen, halogen, lower alkyl, lower alkoxy and lower acyl and the pharmacologically acceptable salts thereof.

4,499,304
COLOR-FORMING SULFONAMIDODIPHENYLAMINES AND CORRESPONDING SULFONIMIDE DYES
Rolf S. Gabrielsen, Webster; Patricia A. Graham, Williamson; James E. Klijanowicz, Pittsford, and Max H. Stern, Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
Continuation-in-part of Ser. No. 280,627, Jul. 6, 1981, abandoned. This application Jun. 8, 1982, Ser. No. 386,457
Int. Cl.³ C07C *143/79*; C09B *49/04*
U.S. Cl. 564—92 **6 Claims**

1. A color-forming sulfonamidodiphenylamine which is represented by the formula:



2. A color-forming para-sulfonamidodiphenylamine represented by the formula:



wherein:
R^{21} is alkoxy containing 1 to 20 carbon atoms or



R^{22} is hydrogen or

R^{23} is alkyl containing 1 to 20 carbon atoms, aryl containing 6 to 12 carbon atoms, alkoxy containing 1 to 4 carbon atoms, aryloxy containing 6 to 12 carbon atoms or NH—R^{27};

R^{24} is hydrogen or alkyl containing 1 to 20 carbon atoms;

R^{25} is hydrogen, alkyl containing 1 to 20 carbon atoms, or aryl containing 6 to 15 carbon atoms;

R^{26} is alkyl containing 1 to 20 carbon atoms, cycloalkyl containing 5 to 20 carbon atoms, or aryl containing 6 to 12 carbon atoms, alkoxy containing 1 to 4 carbon atoms, aryloxy containing 6 to 12 carbon atoms or NH—R^{28};

R^{27} is alkyl containing 1 to 20 carbon atoms, aryl containing 6 to 12 carbon atoms, alkoxy containing 1 to 4 carbon atoms, or aryloxy containing 6 to 12 carbon atoms; and

R^{28} is alkyl containing 1 to 20 carbon atoms, aryl containing 6 to 12 carbon atoms, alkoxy containing 1 to 4 carbon atoms, or aryloxy containing 6 to 12 carbon atoms.

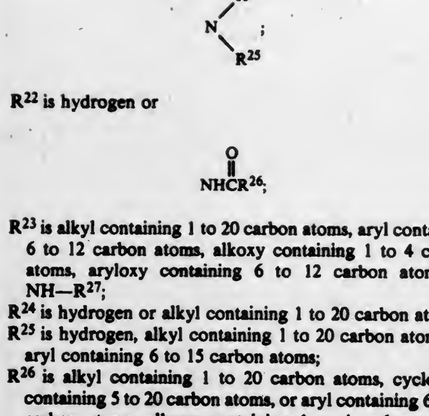
4,499,305

PROCESS FOR PREPARATION OF CYCLOHEXYL HYDROPEROXIDE DECOMPOSITION CATALYSTS

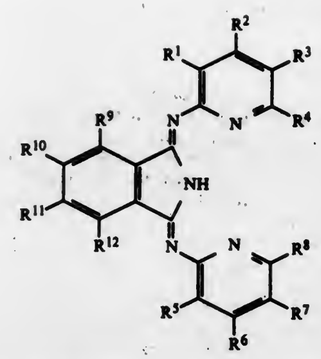
Joshua Hermolin, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Apr. 11, 1983, Ser. No. 483,664
Int. Cl.³ C07C 45/53
U.S. Cl. 568—342 18 Claims

1. In a process for producing a mixture containing cyclohexanol and cyclohexanone, wherein cyclohexyl hydroperoxide is decomposed in a reaction mixture comprising cyclohexane and a catalytic amount of a catalyst composition consisting essentially of at least one transition metal complex having the structural formula



the improvement comprising forming a catalyst composition feedstock prior to introducing the catalyst composition to the reaction mixture, wherein said feedstock is a stable dispersion formed by mixing a 1,3-bis(2-pyridylimino)isoindoline ligand having the structural formula



with a metal salt of formula MX_2 or MX_3 in a catalyst dispersing liquid selected from the group consisting of

(a) cyclohexanol;

(b) cyclohexanone;

(c) a mixture of cyclohexanol, cyclohexanone, and from 0–50% cyclohexane; and

(d) a plant process mixture (SDKA) obtained by steam distillation of cyclohexyl hydroperoxide decomposition reactor product, said mixture consisting essentially of cyclohexanone, cyclohexanol, water, dicylohexyl peroxide, dicyclohexyl ether, and cyclohexyl hydroperoxide; wherein

the primary ligand is the entity in brackets;

M is Co, Mn or Fe;

R^1, R^2, R^3, R^5, R^6 and, R^7 are independently hydrogen, lower alkyl, lower alkoxy, lower alkoxyalkyl, phenyl, benzyl, or phenethyl, or any two adjacent members of R^1 through R^3 and R^6 through R^7 can jointly be four CH entities of a benzene ring fused to the pyridine ring;

R^4 and R^8 are hydrogen or methyl;

R^9, R^{10}, R^{11} and R^{12} are independently hydrogen, lower alkyl, lower alkoxy, lower alkoxyalkyl or any two adjacent members or R^9 through R^{12} can jointly be four CH entities of a benzene ring fused to the benzene ring of the isoindoline moiety;

X is an ancillary anionic ligand;

n is 1 or 2; and

p is 0, 1 or 2, provided that n=p is 2 or 3; with the proviso that when there are two primary ligand, the values of R^1 through R^{12} can be different for each ligand and when there are two ancillary anionic ligands, the value of X can be different.

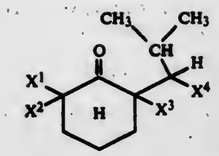
4,499,306

2,2-DIHALO-6-HALO-6-(1-HALOISOBUTYL)CYCLOHEXANONE

Naoshi Imaki, Atsugi, and Takemi Nakanome, Sagamihara, both of Japan, assignors to Mitsubishi Chemical Industries Ltd., Tokyo, Japan

Filed Mar. 16, 1983, Ser. No. 475,946
Claims priority, application Japan, Apr. 7, 1982, 57-57546
Int. Cl.³ C07C 45/63
U.S. Cl. 568—348 5 Claims

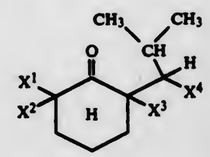
1. A 2,2-dihalo-6-halo-6-(1-haloisobutyl)cyclohexanone represented by the formula



(I)

where each of X^1, X^2, X^3 and X^4 is a halogen atom.

3. A process for preparing a 2,2-dihalo-6-halo-6-(1-haloisobutyl)cyclohexanone represented by the formula:



(I)

wherein each of X^1, X^2, X^3 and X^4 is a halogen, which comprises: reacting 2-isobutylidene cyclohexanone with from 3 to 6 moles of a halogen per mole of 2-isobutylidene cyclohexanone in the presence of a catalyst selected from the group consisting of a teritary amine, an organic phosphine and an organic phosphine oxide.

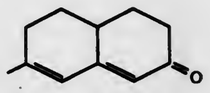
4,499,307

PROCESS FOR PREPARING 4,4A,5,6-TETRAHYDRO-7-METHYL-2-(3H)-NAPHTHALENONE, INTERMEDIATES USED IN SAID PROCESS AND NOVEL CRYSTALLINE FORM OF SAME

Alan O. Pittet, Atlantic Highlands; Ranya Muralidhara, Fair Haven, and Myrna L. Hagedorn, Edison, all of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Division of Ser. No. 482,902, Apr. 7, 1983, abandoned, which is a division of Ser. No. 368,640, Apr. 15, 1982, , which is a continuation-in-part of Ser. No. 354,111, Mar. 2, 1982, abandoned. This application Feb. 23, 1984, Ser. No. 582,755
Int. Cl.³ C07C 45/41
U.S. Cl. 568—355 4 Claims

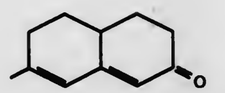
1. A process for preparing 4,4A,5,6-tetrahydro-7-methyl-2-(3H)-naphthalenone having the structure:



comprising the steps of:

(i) reacting about 2 moles of formaldehyde with about 3 moles of an acetoacetic ester to form a polycarboxylic acid ester in the presence of base at a reaction temperature in the range of from 95° C. up to 110° C. and for a reaction time of from 1 hour up to 4 hours; and then

(ii) decarboxylating the resulting polycarboxylic acid ester to form the compound defined according to the structure:



by means of the acetification of the reaction mass using a protonic acid for a reaction time of about 5 hours at a temperature between 85° C. and 105° C., the equivalent ratio of polycarboxylic acid ester:protonic acid being about 1:1.

4,499,308

CATALYTIC REACTION OF ACROLEIN AND METHACROLEIN WITH ALCOHOLS AND GLYCOLS

Christos Paparizos, Willowick; Robert S. Shout, Bedford, and Wilfrid G. Shaw, Lyndhurst, all of Ohio, assignors to The Standard Oil Company, Cleveland, Ohio

Filed Dec. 5, 1983, Ser. No. 557,777
Int. Cl.³ C07C 45/64
U.S. Cl. 568—465 9 Claims

1. A method comprising reacting acrolein or methacrolein with a C_1 to C_{12} mono- or a C_1 to C_5 dihydroxyalkane to produce a 3-alkoxypropionaldehyde or a 3-(hydroxyalkoxy)-propionaldehyde in the case of acrolein; or to produce a 3-alkoxy-2-methylpropionaldehyde or a 3-(hydroxyalkoxy)-2-methylpropionaldehyde in the case of methacrolein, by contacting a mixture of the recited reactants with a particulate solid metallic catalyst comprising an alloy of palladium and cadmium in the temperature range from zero to 100° C.

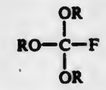
4,499,309

DERIVATIVES OF ENERGETIC ORTHOFORMATES

Michael E. Sitzmann, Adelphi, and William H. Gilligan, Fort Washington, both of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Feb. 18, 1983, Ser. No. 467,715
Int. Cl.³ C07C 43/32
U.S. Cl. 568—590 6 Claims

1. A fluoroorthoformate of the formula



wherein R is selected from the group consisting of

$-CH_2CF(NO_2)_2$,

$-CH_2CF_2(NO_2)$, and

$-CH_2CF_3$.

4,499,310

5-METHYL-1-(TRIFLUOROMETHYL)-2-NAPHTHALENOL, PROCESS FOR ITS PREPARATION AND ETHERS THEREOF

Kazimir Sestanj, St. Laurent; Steven Fung, Montreal; Nedumparambil A. Abraham, Ormeaux, and Francesco Bellini, Mount Royal, all of Canada, assignors to Ayerst, McKenna & Harrison, Inc., Montreal, Canada

Division of Ser. No. 321,302, Nov. 13, 1981, Pat. No. 4,408,077. This application Jan. 22, 1983, Ser. No. 506,740
Int. Cl.³ C07C 39/14, 37/06, 43/20
U.S. Cl. 568—634 3 Claims

1. A process for preparing 5-methyl-1-(trifluoromethyl)-2-naphthalenol, which comprises:

aromatizing 3,4-dihydro-1-hydroxy-5-methyl-1-(trifluoromethyl)-2(1H)-naphthalenone with a dehydrating agent of the type capable of acylating tertiary alkanols and is one of thionyl bromide, thionyl chloride, phosphorus oxychloride, acetyl chloride, mesyl chloride or acetyl chloride in the presence of an organic proton acceptor, or trifluoroacetic anhydride or acetic anhydride.

2. 5-Methyl-1-(trifluoromethyl)-2-naphthalenol and its corresponding lower alkyl ethers.

4,499,311

WATER SOLUBLE RESOLS AND METHOD FOR PRODUCING THEM

Clifford L. Spiro, Schenectady, and Edward J. Lamby, Scotia, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Dec. 2, 1982, Ser. No. 446,134
Int. Cl.³ C07C 41/01
U.S. Cl. 568—660 10 Claims

1. A method for producing water soluble resols useful for recovering crude oil, comprising reacting the effluent stream of a process for producing bisphenol - A with an aldehyde in the presence of a compound for releasing hydroxide ions in water at a temperature not to exceed 100° C.

4,499,312

COMPLEX FORMED TO SEPARATE 3,5-XYLENOL OR 3,4-XYLENOL FROM OTHER POLYMETHYLATED PHENOLIC COMPOUNDS

Gerd Lestos, Pittsburgh, Pa., assignor to Koppers Company, Inc., Pittsburgh, Pa.

Continuation of Ser. No. 431,651, Sep. 30, 1984, Pat. No. 4,447,658. This application Feb. 21, 1984, Ser. No. 582,082
Int. Cl.³ C07C 39/06
U.S. Cl. 568—780 2 Claims

1. A complex consisting essentially of 3,5-xylenol and calcium bromide.

4,499,313

PROCESS FOR HYDRATION OF OLEFINS

Yoshiharu Okumura, Tokyo; Setsuo Kamiyama; Toshihiro Hosokawa, and Katsumi Kaneko, all of Saitama, all of Japan, assignors to Toa Nenryo Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 30, 1984, Ser. No. 605,574
Claims priority, application Japan, May 31, 1983, 58-94893
Int. Cl.³ C07C 29/04, 31/10, 31/12, 31/135
U.S. Cl. 568—897 14 Claims

1. An improved process for producing an alcohol by hydrating an olefin, wherein the improvement comprises hydrating an olefin in the presence of hydrogen-type mordenite or hydrogen-type zeolite Y as a catalyst each having a silica/alumina molar ratio of 20 to 500.

4,499,314

METHANOL CONVERSION TO HYDROCARBONS WITH ZEOLITES AND COCATALYSTS

Duncan Seddon; Thomas Mole, and Judy A. Whiteside, all of Victoria, Australia, assignors to Imperial Chemical Industries PLC, London, England

Continuation of Ser. No. 367,237, Mar. 31, 1982, abandoned. This application Apr. 30, 1984, Ser. No. 605,166
Int. Cl.³ C07C 1/30
U.S. Cl. 585—408 14 Claims

1. A process for producing hydrocarbons comprising feeding, under conversion conditions, a charge comprising methanol to a catalyst comprising a crystalline zeolite which has an aluminium content in the range of 0 to 4% w/w, and which is hydrothermally stable in the temperature range of from 250° C. to 500° C. and is capable of converting methanol to hydrocarbons, to form a mixture comprising light olefins, lower alkanes and monocyclic aromatic hydrocarbons and recovering said hydrocarbons; characterized in that the charge consists essentially of water, methanol, in a weight/weight ratio in the range of from 1:5 to 5:1, and a promoter comprising one or more compounds selected from the group consisting of aromatic hydrocarbons wherein the zeolite has a channel size such as to permit sorption and diffusion of the promoter; and wherein the weight/weight ratio of promoter to methanol is in the range of from 0.0001:1 to 1:1, and further characterized in that the charge is substantially free of dimethyl ether.

4,499,315

CONVERSION OF CERTAIN HYDROCARBONS USING SILICOALUMINOPHOSPHATE CATALYSTS

Daniel C. Garska, St. Albans, W. Va., and Brent M. Lok, New City, N.Y., assignors to Union Carbide Corporation, Danbury, Conn.

Filed Nov. 15, 1983, Ser. No. 551,887
Int. Cl.³ C07C 3/00
U.S. Cl. 585—415 15 Claims

1. A low severity process for the preparation of a benzene-toluene-xylenes enriched stream containing minimal monoolefin and diolefin content, from a feed stream comprising a by-product effluent of a process for the pyrolitic cracking of hydrocarbons to produce light olefins or diolefins, said by-product effluent stream containing olefins and diolefins, said process comprising contacting said by-product effluent stream, under low severity conditions including a temperature within the range of about 300°–700° C., a pressure within the range of about 0 to 100 atmospheres, and a weight hourly space velocity within the range of about 0.1 to about 20, with a catalyst comprising a silicoaluminophosphate molecular sieve.

4,499,316

CONVERSION OF EFFLUENT HYDROCARBONS STREAMS USING ALUMINOPHOSPHATE CATALYSTS

Daniel C. Garska, Saint Albans, and Cyril B. Tellis, Charleston, both of W. Va., assignors to Union Carbide Corporation, Danbury, Conn.

Filed Apr. 4, 1984, Ser. No. 596,598
Int. Cl.³ C07C 3/10, 3/20
U.S. Cl. 585—415 14 Claims

1. A low severity process for the preparation of a benzene-toluene-xylenes enriched stream containing minimal monoolefin and diolefin content, from a feed stream comprising a by-product effluent of a process for the pyrolitic cracking of hydrocarbons to produce light olefins or diolefins, said by-product effluent stream containing olefins and diolefins, said process comprising contacting said by-product effluent stream, under low severity conditions including a temperature within the range of about 300°–700° C., a pressure within the range of about 0 to 100 atmospheres, and a weight hourly space velocity within the range of about 0.1 to about 20, with a catalyst comprising at least one aluminophosphate molecular sieve.

4,499,317

MODIFIED ZEOLITE CATALYST COMPOSITION AND PROCESS FOR ALKYLATING TOLUENE WITH METHANOL TO FORM STYRENE

Huei-Cheng Liu, Oakland, and Ralph J. Spohn, Woodcliff Lake, both of N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

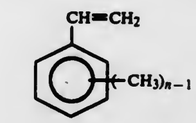
Division of Ser. No. 487,585, Apr. 22, 1983,. This application Jul. 2, 1984, Ser. No. 627,339
Int. Cl.³ C07C 1/20
U.S. Cl. 585—438 21 Claims

1. A process for alkylating toluene or toluene derivative with at least one alkylating agent which comprises reacting said alkylating agent with at least one compound represented by the structural formula:



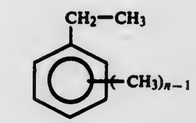
(I)

wherein n is a number which can vary from 1 to 6, said reaction being conducted in the presence of a catalyst composition comprising a crystalline aluminosilicate zeolite of the faujasite structure with a SiO_2:Al_2O_3 mole ratio of from about 2 to about 8 and having present therein (1) at least one alkali metal selected from the group consisting of Cs, K, and Rb; (2) at least one metal selected from the Group of M metals consisting of Mn, Fe, Cu, and Zn; and (3) at least one member selected from the group consisting of boron and phosphorus in a manner and under conditions sufficient to form a product comprising at least one compound represented by the structural formulae:



(II)

and



(III)

wherein n is a number which corresponds in value to that employed for n in structural formula I.

4,499,318

MODIFIED ZEOLITE CATALYST COMPOSITION AND PROCESS FOR ALKYLATING TOLUENE WITH METHANOL TO FORM STYRENE

Huei-Cheng Liu, Oakland, N.J., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

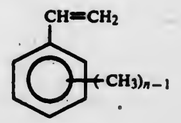
Division of Ser. No. 487,586, Apr. 22, 1983,. This application Jul. 2, 1984, Ser. No. 627,340
Int. Cl.³ C07C 1/20
U.S. Cl. 585—438 21 Claims

1. A process for alkylating toluene or toluene derivative with at least one alkylating agent which comprises reacting said alkylating agent with at least one compound represented by the structural formula:



(I)

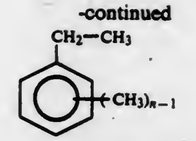
wherein n is a number which can vary from 1 to 6, said reaction being conducted in the presence of a catalyst composition comprising a crystalline aluminosilicate zeolite of the faujasite structure with a SiO_2:Al_2O_3 mole ratio of from about 2 to about 8 and having present therein (1) at least one alkali metal selected from the group consisting of Cs, K, and Rb; (2) at least one metal selected from the Group of M metals consisting of Li, Ce, Cr, and Ag; and (3) at least one member selected from the group consisting of boron and phosphorus in a manner and under conditions sufficient to form a product comprising at least one compound represented by the structural formulae:



(II)

and

-continued



(III)

wherein n is a number which corresponds in value to that employed for n in structural formula I.

4,499,319

PROTON-CATALYSED REACTIONS IN WHICH WATER IS NOT A STOICHIOMETRIC REACTANT CATALYSED BY METAL CATION-EXCHANGED LAYERED CLAYS

James A. Ballantine, West Cross; John H. Purnell, Bishopston, both of Wales, and John M. Thomas, Cambridge, England, assignors to The British Petroleum Company p.l.c., London, England

Continuation-in-part of Ser. No. 218,551, Dec. 22, 1980, abandoned. This application Sep. 9, 1982, Ser. No. 416,387
Claims priority, application United Kingdom, Dec. 22, 1979, 7944315; May 17, 1980, 8016384; Jul. 5, 1980, 8022101; Aug. 9, 1980, 8026028
Int. Cl.³ C07C 2/68
U.S. Cl. 585—467 15 Claims

1. In a process for the production of an alkyl aromatic compound by reacting at elevated temperature an alkylatable aromatic hydrocarbon with an alkylating agent selected from olefins and alcohols having at least two carbon atoms, the improvement which comprises using as an essential catalyst component a cation exchanged dioctahedral layered clay selected from montmorillonites, beidellites, vermiculites and nontronite, in which clay the exchangeable cation is a metal cation.

4,499,320

ALKYLATION PROCESS EMPLOYING MAGNESIUM SILICATE COMPOSITIONS

Juan M. Garcés, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 327,870, Dec. 7, 1981,. This application Apr. 11, 1983, Ser. No. 484,112
Int. Cl.³ C07C 2/68
U.S. Cl. 585—467 27 Claims

1. A process for alkylating an aromatic hydrocarbon comprising contacting an alkylating agent with an aromatic hydrocarbon under reactive conditions in the presence of a catalytic amount of a porous crystalline magnesium silicate.

4,499,321

METHOD FOR SELECTIVE DEALKYLATION OF 1,4-DIALKYLBENZENE

Hiroshi Sato; Norio Ishii, and Shyuzo Nakamura, all of Osaka, Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed May 21, 1984, Ser. No. 612,219
Claims priority, application Japan, May 20, 1983, 58-89570
Int. Cl.³ C07C 4/12
U.S. Cl. 585—486 7 Claims

1. A method for selective dealkylation of 1,4-dialkylbenzenes comprising selectively dealkylating a 1,4-dialkylbenzene in a dialkylbenzene mixture using as a catalyst crystalline zeolite having a silica/alumina ratio of at least 12 and a constrained index of 1 to 12 which is modified with an oxide of a metal or metalloid, said crystalline zeolite being one ion-exchanged with a lithium ion.

4,499,322
METHANE CONVERSION
C. Andrew Jones, Newtown Square, and John A. Sofranko, West Chester, both of Pa., assignors to Atlantic Richfield Company, Los Angeles, Calif.
Filed Aug. 12, 1983, Ser. No. 522,937
Int. Cl.³ C07C 2/00
U.S. Cl. 585—500 26 Claims

1. In an improved method for converting methane to higher hydrocarbon products which comprises contacting a gas comprising methane at synthesizing conditions with at least one reducible oxide of at least one metal which oxides when contacted with methane at synthesizing conditions are reduced and produce higher hydrocarbon products and water, the improvement which comprises conducting the contacting in the presence of a promoting amount of at least one promoter selected from the group consisting of alkali metals and compounds thereof.

4,499,323
METHANE CONVERSION
Anne M. Gaffney, West Chester, Pa., assignor to Atlantic Richfield Company, Los Angeles, Calif.
Filed Apr. 16, 1984, Ser. No. 600,665
Int. Cl.³ C07C 2/00
U.S. Cl. 585—500 31 Claims

29. A method for converting methane to higher hydrocarbon products which comprises contacting at a temperature within the range of about 500° to 1000° C. a gas comprising methane and a solid comprising a reducible oxide of Pr and at least one member of the group consisting of alkali metals and compounds thereof.

4,499,324
METHANE CONVERSION
Anne M. Gaffney, West Chester, Pa., assignor to Atlantic Richfield Company, Los Angeles, Calif.
Filed Apr. 16, 1984, Ser. No. 600,917
Int. Cl.³ C07C 2/00
U.S. Cl. 585—500 32 Claims

29. A method for converting methane to higher hydrocarbon products which comprises contacting at a temperature within the range of about 500° to 1000° C. a gas comprising methane and a solid comprising a reducible oxide of Ce and at least one member of the group consisting of alkali metals and compounds thereof.

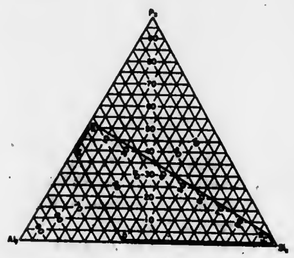
4,499,325
ALKENE CONVERSION USING AMS-1B CRYSTALLINE BOROSILICATE
Marvin R. Klotz, Batavia, and Edwin F. Peters, Winfield, both of Ill., assignors to Standard Oil Company (Indiana), Chicago, Ill.
Filed Sep. 24, 1982, Ser. No. 422,743
Int. Cl.³ C07C 3/20, 5/30
U.S. Cl. 585—671 12 Claims

1. A process to convert a substantially linear alkene to isomerized products comprising contacting such alkene under conversion conditions with an AMS-1B crystalline borosilicate-based catalyst composition.

4,499,326
SELECTIVE LOW-TEMPERATURE ISOMERIZATION OF NORMAL BUTENES USING AMS-1B CRYSTALLINE BOROSILICATE MOLECULAR SIEVE
John L. Melquist, Naperville, Ill., assignor to Standard Oil Company (Indiana), Chicago, Ill.
Filed Sep. 24, 1982, Ser. No. 422,822
Int. Cl.³ C07C 3/20, 5/30
U.S. Cl. 585—671 16 Claims

1. A process to convert a normal alkene to isomerized hydrocarbons comprising contacting such alkene under conversion conditions comprising a pressure of about 0.1 to about 100 atmospheres, a hydrogen/hydrocarbon molar ratio of 0 to about 10 and a weight hourly space velocity of about 1 to about 40 hr^{-1} with a hydrogen form AMS-1B crystalline borosilicate-based catalyst composition at a conversion temperature below 250° C.

4,499,327
PRODUCTION OF LIGHT OLEFINS
Steven W. Kaiser, South Charleston, W. Va., assignor to Union Carbide Corporation, Danbury, Conn.
Filed Oct. 4, 1982, Ser. No. 426,213
Int. Cl.³ C07C 1/00; B01J 27/14
U.S. Cl. 585—640 58 Claims



1. The process of making light olefins containing 2 to 4 carbon atoms which comprises contacting a feedstock comprising one or more of methanol, ethanol, dimethyl ether, diethyl ether and mixtures thereof with a silicoaluminophosphate molecular sieve wherein the silicoaluminophosphate molecular sieve comprises a microporous crystalline silicoaluminophosphate whose unit empirical formula in the as-synthesized and anhydrous form is

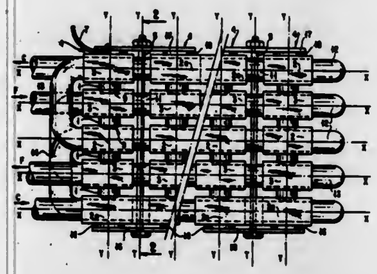
$$mR:(Si_xAl_yP_z)O_2$$

wherein "R" represents at least one organic templating agent present in the intracrystalline pore system; "m" has a value of from 0.02 to 0.3; "m" represents the moles of "R" present per mole of $(Si_xAl_yP_z)O_2$; "x", "y" and "z" represent the mole fractions of silicon, aluminum and phosphorus respectively, present as tetrahedral units, said mole fractions being such that they are within the pentagonal compositional area defined by points A, B, C, D and E of the ternary diagram which is FIG. 1 of the drawings.

4,499,328
OLEFIN METATHESIS AND CATALYST
Simon G. Kukes, and Robert L. Banks, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.
Filed Oct. 5, 1983, Ser. No. 539,213
Int. Cl.³ C07C 3/62
U.S. Cl. 585—646 9 Claims

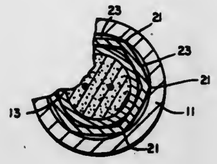
1. A process for disproportionating olefins comprising contacting at least one feed olefin having at least 3 carbon atoms per molecule under suitable reaction conditions which convert the feed olefin into other olefins having different numbers of carbon atoms with a catalytically effective amount of a catalyst composition comprising silica and tungsten oxide promoted with an effective promoting amount of silver.

4,499,329
THERMOELECTRIC INSTALLATION
Michel Benicourt, Versailles; Jean Buffet, Paris, and Jean-Francois Huard, Pont-a-Mousson, all of France, assignors to Air Industrie, Courbevoie, France
Filed Jul. 21, 1983, Ser. No. 515,972
Claims priority, application France, Mar. 17, 1983, 83 04541
Int. Cl.³ H01L 35/28
U.S. Cl. 136—208 10 Claims



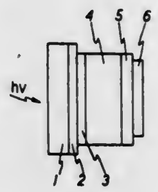
1. A thermoelectric installation comprising thermoelements mounted between heat exchangers (2–3, 102–103) provided with a hot-fluid (C) or cold-fluid (F) circulation duct (10) and alternating with the thermoelements to form stacks or columns (4) placed side by side so as to form an assembly or mounting rack in which the thermoelements are placed in parallel planes and the exchangers facing each other in the form of rows, demarcating two fluid circulation ducts, one for the hot fluid and the other for the cold fluid, the constituent elements of each column being held together by tightening means (5), characterized in that, since the hot or cold-fluid circulation ducts (10) of the exchangers are located outside the tightening axis (YY) of the stacks, the exchangers (2–3, 102–103) adjacent to one row can turn in relation to one another about the axis (XX) of their circulation duct (10), the thermoelements and the exchangers being in contact along the tightening axis (YY) of the stacks, their contacts on at least one of their surfaces having a profile that permits a rotation in relation to the axis of the circulation ducts.

4,499,330
ANTI-VIBRATION SUPPORT FOR THERMOCOUPLE TIP
Robert A. Pastell, Andover, Mass., assignor to General Electric Company, Schenectady, N.Y.
Filed Dec. 23, 1983, Ser. No. 564,668
Int. Cl.³ H01L 35/02
U.S. Cl. 136—230 4 Claims



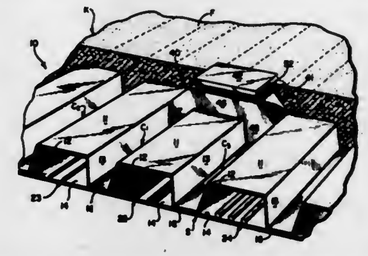
1. A temperature sensing probe assembly comprising:
a. a temperature sensing probe positioned in a protective housing, the tip portion of said probe extending beyond said housing,
b. anti-vibration support means for the tip portion of said probe comprising at least one multi-sided sleeve positioned between the interior of said housing and the exterior of the probe whereby the sides are deformed in the assembly to make multi-point but discontinuous contact with the interior of the housing.

4,499,331
AMORPHOUS SEMICONDUCTOR AND AMORPHOUS SILICON PHOTOVOLTAIC DEVICE
Yoshihiro Hamakawa, Kawanishi, and Yoshihisa Tawada, Kobe, both of Japan, assignors to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha, Japan
Continuation of Ser. No. 399,312, Jul. 19, 1982, Pat. No. 4,450,316. This application Nov. 17, 1983, Ser. No. 552,951
Claims priority, application Japan, Jul. 17, 1981, 56-112571; Jul. 17, 1981, 56-112572
Int. Cl.³ H01L 31/04
U.S. Cl. 136—258 5 Claims



4. In an amorphous silicon derivative PIN junction photovoltaic device, the improvement wherein at least one of the P-type and N-type amorphous silicon semiconductors is an amorphous semiconductor having the general formula: $a\text{-}Si_{(1-x-y)}C_xN_y$ and an electric conductivity of not less than $10-8(\Omega\cdot cm)^{-1}$.

4,499,332
PRESET BLOCK ASSEMBLY FOR UNDERFLOOR ELECTRICAL DISTRIBUTION SYSTEM
Yale R. Shea, Hales Corners, and Kevin C. Znege, West Milwaukee, both of Wis., assignors to INRYCO, Inc., Milwaukee, Wis.
Filed Sep. 28, 1982, Ser. No. 425,339
Int. Cl.³ H02G 3/12
U.S. Cl. 174—48 18 Claims



1. A preset block assembly for providing access to the conductors of an underfloor electrical distribution system, said distribution system including at least one raceway panel adapted to be supported on a subfloor and having a plurality of elongated laterally spaced cells, each of said cells being adapted to enclose one or more of the electrical conductors of said distribution system and including a top wall spaced above said subfloor and laterally spaced side walls extending between said top wall and said subfloor, and said cells being laterally spaced from each other so as to define valleys therebetween, said block assembly comprising a housing having a terminal portion adapted to overlie the top wall of one of said cells and an opening in said top wall, said terminal portion also having a top wall and an opening in said top wall providing access to the interior thereof, said housing also having at least one depend-

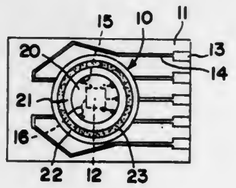
ing portion connected to one side of said terminal portion and adapted to extend into the valley between said one cell and a cell adjacent thereto, said depending portion including longitudinally spaced end wall portions and a laterally spaced, outer side wall adapted to engage the adjacent side wall of said adjacent cell, said side wall of said adjacent cell having an opening therein providing access to the electrical conductors therein, said laterally spaced outer side wall of said depending portion having an opening therein adapted to register with the opening in the side wall of said adjacent cell when said depending portion of said block assembly is seated in said valley, and combined locking and grommeting means carried by one of said side walls of said depending portion and adjacent cell, whereby said block assembly provides access to and permits connections to be made with the electrical conductors at least in said one cell and said adjacent cell through the access opening in said terminal portion and said combined locking and grommeting means serves to secure said housing at least to said adjacent cell and to prevent damage to the electrical conductors extending through the opening in the side wall of said adjacent cell.

4,499,333

ELECTRONIC COMPONENT CAP AND SEAL

Aik T. Chee, and Wee S. Kiat, both of Singapore, Singapore, assignors to Printed Circuits International, Inc., Sunnyvale, Calif.

Filed Mar. 28, 1983, Ser. No. 479,381
Int. Cl.[3] H05K 5/06
U.S. Cl. 174—52 FP **19 Claims**



1. A cover for an electronic component mounted on a substrate comprising an upstanding continuous boundary wall, an imperforate cap portion spaced interiorly of said wall and forming with said wall a continuous open-top channel, said cap portion adapted to encompass said electronic component, and means for spacing said wall and said cap portion without blocking all of said channel.

4,499,334

HEAT RESISTANT SHEATHED INSULATED ELECTRICAL CONDUCTORS

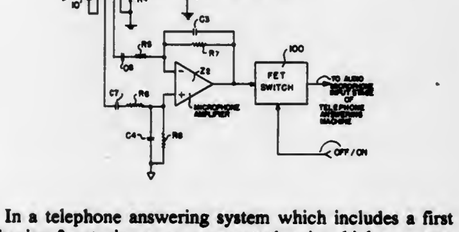
Francis L. Merritt, Redondo Beach, and Adriano C. Ducati, Corona del Mar, both of Calif., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Dec. 22, 1983, Ser. No. 564,547
Int. Cl.[3] H01B 7/00
U.S. Cl. 174—111 **3 Claims**

1. An electrical lead arrangement for a heater, said lead arrangement comprising:

lead conductors principally of tungsten wire wrapped with smaller diameter tungsten support wire, with the lead conductors extending from within said heater to within a transition connector, and with each lead conductor insulated individually with alumina beads for at least part of the lead arrangement between but not within the heater and the transition connector; the lead conductors being connected within the transition connector to other lead wires which extend therefrom, and within the heater to a heater wire;

support means parallel to the insulated lead conductors, said support means comprising a solid attaching wire of a material selected from the group consisting of tungsten and molybdenum, with a diameter greater than the inner diameter but smaller than the outer diameter of the alumina beads;



and an outer sheath of heat-resistant metal around the insulated conductors and the attaching wire, wherein between the heater and the transition connector the lead arrangement has an overall diameter of less than one fourth inch with some flexibility, while being protected from mechanical or heat damage;

wherein said attaching wire has one end which is outside of said sheath and attached to said heater, and another end which is outside of said sheath and attached to the transition connector.

4,499,335

ANNOUNCEMENT RECORDING AND MESSAGE PLAYBACK SYSTEM FOR A TELEPHONE ANSWERING MACHINE

Stephen V. Lyle, San Pedro, Calif., assignor to T.A.D. Avanti, Inc., Compton, Calif.

Filed Jan. 14, 1983, Ser. No. 457,898
Int. Cl.[3] H04M 1/21, 1/64
U.S. Cl. 179—6.03 **7 Claims**

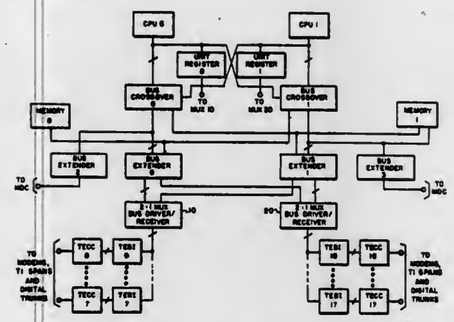
1. In a telephone answering system which includes a first mechanism for storing announcements therein which are transmitted over the telephone line in response to a ring signal received over the telephone line, and a second mechanism for storing dictation information and messages received over the telephone line from calling parties, a system for introducing announcement audio signals to the first mechanism to be stored therein and for introducing dictation audio signals to the second mechanism to be stored therein and for receiving message audio signals from the second mechanism to reproduce such signals, said system including: a transducer capable of transforming audio signals into sound and sound into audio signals; first circuit means for receiving audio signals from the first mechanism; second circuit means for introducing audio signals to the first and second mechanisms; and switching means having a first condition for effectively connecting the first circuit means to the transducer and having a second condition for connecting the transducer to the second circuit means.

4,499,336

COMMON CHANNEL INTEROFFICE SIGNALING SYSTEM

Agop K. Krikor, Glendale, and Sergio E. Puccini, Scottsdale, both of Ariz., assignors to GTE Automatic Electric Inc., Northlake, Ill.

Filed Oct. 29, 1982, Ser. No. 437,646
Int. Cl.[3] H04M 7/06; H04Q 3/54
U.S. Cl. 179—18 ES **7 Claims**



1. In a telephone switching office having a switching network and a processor complex, a CCIS system comprising:

first and second pluralities of terminal equipment for transferring CCIS data to said CCIS system from remotely located switching offices and from said CCIS system to said remotely located switching offices;

first and second CPUs including an active and a ready standby CPU, each said CPU being connected to said processor complex;

first and second CPU buses connected respectively to said first and second CPUs;

first and second bus crossovers, each bus crossover connected to said first and to said second CPUs via said respective CPU buses and said crossovers operated to connect said first CPU to said second CPU bus and said second CPU to said first CPU bus;

first and second bus extenders, each bus extender connected to said first and to said second bus crossovers, said bus extenders operated to connect said first and said second plurality of terminal equipment to said active CPU;

first and second multiplexer means connected to said first and second bus extenders, said first multiplexer means operated to connect said first plurality of terminal equipment to said active CPU, said second multiplexer means operated to connect said second plurality of terminal equipment to said active CPU;

first and second pluralities of buffer interface means corresponding to said first and second pluralities of terminal equipment, said first plurality of buffer interface means connected to said first multiplexer means, said second plurality of buffer interface means connected to said second multiplexer means, each buffer interface means operated to store and to forward said CCIS data between said active CPU and said terminal equipment;

first and second pluralities of control circuits corresponding to said first and second pluralities of terminal equipment and buffer interface means, each control circuit connected between one particular buffer interface means and one particular terminal equipment and each control circuit operated to control said CCIS data transfer between said one particular buffer interface means and said one particular terminal equipment;

each said buffer interface means is cyclically operated to transmit said CCIS data, received from said connected control circuit, to said active CPU via said corresponding CPU bus; and

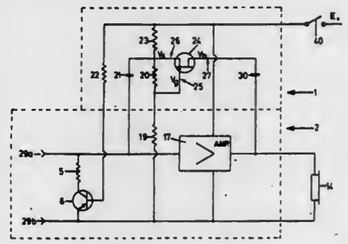
each said buffer interface means is cyclically operated to transmit said CCIS data, received from said active CPU, to said one particular terminal equipment via said connected control circuit.

4,499,337

COUPLER FOR MICROTELEPHONE SET

Jorgen F. Elbaek, Copenhagen, Denmark, assignor to Danavox A/S, Copenhagen, Denmark

Filed Aug. 3, 1982, Ser. No. 404,699
Claims priority, application Denmark, Aug. 11, 1981, 3554/81
Int. Cl.[3] H04M 1/00, 19/04
U.S. Cl. 179—27 D **2 Claims**



1. An electronic coupler for microtelephone sets (32*a*, 32*b*, . . . 32*n*) for coupling an operator's telephone cartridge (14) to a telephone connection (36) through an operating position (34*a*, 34*b*, . . . 34*n*) in a telephone operator's switchboard with an automatic call distributor (35), wherein an incoming call is signalled by coupling through an electric signal to an operator's telephone cartridge (14) where the signal is converted to an acoustic signal, said electronic coupler (1) including a field-effect transistor of the depletion mode type (24) having its conductor section coupled in parallel across an amplifier (17) and its gate (25) operatively coupled to a power supply terminal of the amplifier so that when power is applied to the power supply terminal of the amplifier, said transistor presents a high impedance against incoming A.C. signals in the audio frequency range presented to said amplifier and said transistor so that said signals are connected to a microtelephone set (32*a*, 32*b*, . . . 32*n*) via the amplifier (17), and so that the conductor section of the transistor has low impedance against incoming A.C. signals when no power is being applied to the amplifier so that said signals by-pass the amplifier and pass through the conductor section of the transistor and are connected directly to the telephone cartridge (14) of the microtelephone set (32*a*, 32*b*, . . . 32*n*).

4,499,338

KEY TELEPHONE SYSTEM SIGNALLING AND CONTROL ARRANGEMENT

David L. Wetzel, Charlottesville, Va., assignor to Northern Telecom, Ltd., Montreal, Canada

Filed Apr. 21, 1983, Ser. No. 487,295
Int. Cl.[3] H04M 1/72, 1/68
U.S. Cl. 179—99 E **3 Claims**

1. In a key telephone system having a plurality of station sets for selective connection to a plurality of telephone lines;

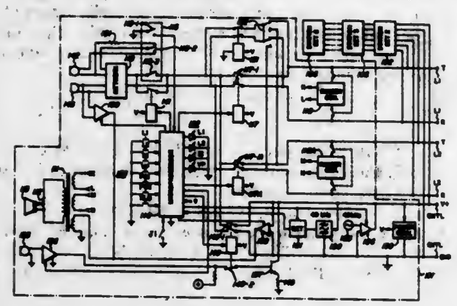
a control unit having a common control line connected to each of said station sets;

means for periodically transmitting a framing signal on said common control line from said unit;

means at one of said station sets when connected to one of

the telephone lines, for transmitting in a preselected time slot following said framing signal, a signal requesting a hold state on said one telephone line;

means at said common control unit responsive to said signal requesting a hold state, for connecting a hold network to



said one line, and for concurrently transmitting a hold status signal in said preselected time slot; and

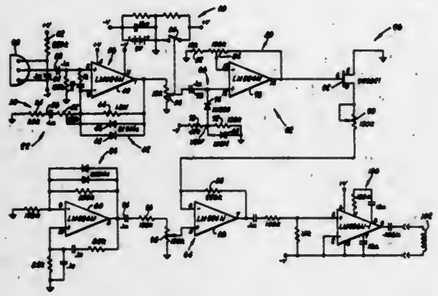
means responsive to said signal in said preselected time slot from either said one set or said unit for indicating at said station sets a hold status on said one telephone line.

4,499,339

AMPLITUDE MODULATION APPARATUS AND METHOD

Gordon L. Richard, Minco, Okla., assignor to Baptist Medical Center of Oklahoma, Inc., Oklahoma City, Okla.

Filed Nov. 24, 1982, Ser. No. 444,460
Int. Cl.³ H04R 25/00
U.S. Cl. 179—107 FD **19 Claims**



1. An apparatus for aiding a person to detect an acoustical signal, which person is responsive to a range of electrical stimulus signal magnitudes defined by a lower stimulus detection limit and an upper stimulus tolerance limit, said apparatus comprising:

transducer means for detecting the acoustical signal and for converting the detected acoustical signal into an electrical signal;

carrier signal generating means for generating a carrier signal having a quiescent peak magnitude; and

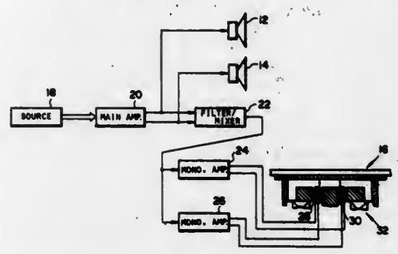
modulation means for modulating said carrier signal in response to said electrical signal so that the peak amplitude of the modulated carrier signal is variable between a minimum peak magnitude which is substantially equal to said quiescent peak magnitude and a maximum peak magnitude which is within the range of perceivable signal magnitudes defined by the lower stimulus detection limit and the upper stimulus tolerance limit.

4,499,340

SPEAKER FOR AUTOMOTIVE AUDIO SYSTEM WITH VEHICLE PANEL UTILIZED AS SOUND AMPLIFYING MEDIUM

Junichi Kasai; Takayuki Yanagishima, both of Yokosuka; Akio Ajimine, Tokyo; Yoshiaki Murakami, Tokyo; Akimitsu Shino, Tokyo, and Tatsuya Watanabe, Tokyo, all of Japan, assignors to Nissan Motor Company, Limited, Yokohama and Clarion Co., Ltd., Tokyo, both of, Japan

Filed May 3, 1983, Ser. No. 491,293
Claims priority, application Japan, May 11, 1982, 57-78635
Int. Cl.³ H04R 9/02, 9/06
U.S. Cl. 179—115.5 DV **8 Claims**



1. An automotive audio system comprising;

means for producing an audio signal;

means for amplifying a given specific frequency range of the audio signal, said amplifying means including a plurality of amplifiers adapted to amplify the specific frequency range of audio signals;

a speaker system including a speaker for reproducing said specific frequency range of the audio signal;

a driver unit associated with said speaker for driving a sound-amplifying medium in said speaker to reproduce said specific frequency range of the audio signal; and

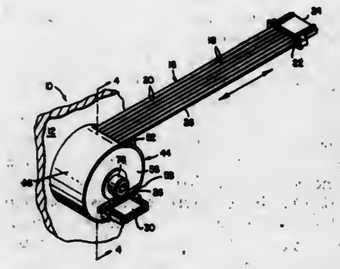
a plurality of magnetic coils incorporated in said driver unit, each of said magnetic coils being connected to a corresponding different one of the amplifiers of said amplifying means to be energized by said specific frequency range of the audio signal in unison.

4,499,341

EXTENSIBLE ELECTRICAL CABLE ASSEMBLY

James F. Boyd, Greensboro, N.C., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Sep. 22, 1982, Ser. No. 421,704
Int. Cl.³ H02G 11/02; B65H 75/48
U.S. Cl. 191—12.4 **13 Claims**



1. An extensible electrical cable assembly of the type comprising a cable having at least one insulated electrical conductor therein, and a support means, the cable being wrapped in a coil around a portion of the support means, the cable having a first end with a first connecting means thereon, an intermediate portion and a second end with a second connecting means thereon, the first end being at the outer end of the coil and the second end being at the inner end of the coil, the cable being extensible upon movement of the first end of the cable away from the support means accompanied by the withdrawal of the intermediate portion of the cable from the coil, the assembly being characterized in that:

the cable is a flat ribbon-like cable comprising at least one conductor insulated by flat ribbon-like insulating material, the cable having a major cross-sectional axis and a minor cross-sectional axis, the cable being coiled with the minor axis of the cable extending radially with respect to the coil and with the major axis extending parallel to the axis of the coil,

the support means is comprised of a static cylinder having a width at least equal to the length of the major cross-sectional axis of the cable, said cylinder being said portion of said support means around which the cable is wrapped, confining means to prevent lateral movement of the cable on the cylinder and retaining means to prevent the uncoiling of the cable,

the coil having a plurality of layers around the cylinder, the outermost layer having the first cable end and first connector, said first cable end being prevented from uncoiling by the retaining means and the innermost layer of the coil extending in a spiral toward the cylinder, and having a lateral fold in the cable so that the second cable end and second connector extend essentially at a right angle to the coil and extend beyond the confining means,

the cable being in a resiliently lightly stressed condition as a result of its being coiled, the cable being capable of being further resiliently stressed whereby,

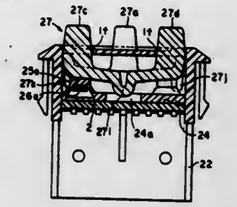
upon movement of the first end of the cable away from the retaining means the intermediate portion of the cable is withdrawn from the coil, the number of layers in the coil is reduced and the remaining layers are drawn closer toward the cylinder accompanied by a reduction in the diameters of the layers, the remaining layers being further resiliently stressed so that they store energy, the energy being released and causing the cable to be retracted onto the cylinder as the first end of the cable and the cylinder are moved closer together.

4,499,342

MULTI-POSITION ELECTRIC SWITCH

Kiyoshi Nakayama, Shizuoka, Japan, assignor to Murakami Kaimeido Co., Ltd., Shizuoka, Japan

Filed Mar. 3, 1983, Ser. No. 471,477
Claims priority, application Japan, Mar. 4, 1982, 57-29607[U]; May 14, 1982, 57-69369[U]
Int. Cl.³ H01H 9/26
U.S. Cl. 200—5 E **4 Claims**



3. A multi-position electrical switch comprising

a housing,

an insulating base plate disposed within said housing,

a plurality of fixed contact components disposed around a specific center on said insulating base plate, each of said fixed contact components consisting of a pair of printed circuit electrodes,

an insulating sheet laid on top of said insulating base plate, said insulating sheet being provided in positions corresponding to the positions of said fixed contact components with cup-shaped elastic portions opening toward said fixed contact components, said elastic portions being respectively provided inside their top with movable contacts, said movable contacts and said fixed contact components forming switch elements, and

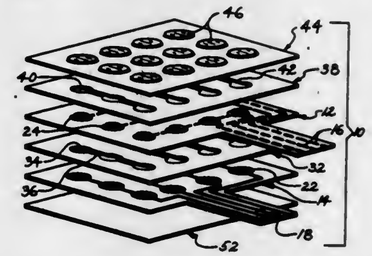
an inclinable operation button having pressing surfaces for closing switch elements when said operation button is inclined, said operation button contacting the respective inner wall of said housing when inclined, said operation button being provided with a plurality of push buttons to effect the inclination thereof, and with a projection at the bottom center thereof, said insulating sheet being provided with a center opening corresponding to said projection, whereby said projection contacts said base plate and prevents closing of any of said switch elements in the event a plurality of push buttons is pressed at the same time.

4,499,343

MONOLITHIC FLAT TACTILE KEYBOARD

Jean-Jacques Prieux, Chateau Goutier; Roger Meleard, Beynes; Michel Ploger, Laval, and Jean-Jacques Lasvaladas, Chateau Goutier, all of France, assignors to Rogers Corporation, Rogers, Conn.

Filed Mar. 10, 1983, Ser. No. 474,020
Claims priority, application France, Mar. 11, 1982, 82 04095
Int. Cl.³ H01H 13/70
U.S. Cl. 200—5 A **8 Claims**



1. A keyboard assembly comprising:

means defining an array of switches, said switch array defining means including a plurality of spacially displaced convex hollow switch actuators extending upwardly from a first planar side thereof, said actuators being integral with a flexible plastic circuit bearing substrate and each having a top surface, said actuators each supporting a movable switch contact on the side thereof which faces generally oppositely to said first side, at least a portion of said actuators rapidly changing in shape upon application of force to the top surface thereof to provide tactile feedback indicative of the motion of the movable switch contact;

a front face sheet, said face sheet being comprised of a flexible plastic material and having formed therein integral convex key locators, said key locators comprising spaced hollow protrusions which have a circular cross-section, said key locators extending upwardly away from said switch array first side and being in registration with said switch actuators, the top outwardly faceing surfaces of each of said key locators bearing indicia commensurate with the function of the switch of the switch array which is in registration therewith;

said movable switch contacts projecting into and being received by said spaced hollow protrusions; and

first spacer means, said spacer means being comprised of a plastic material and being positioned between and laminated to said switch array means first side and said front face sheet, said spacer means being provided with apertures which are in alignment with said registered switch

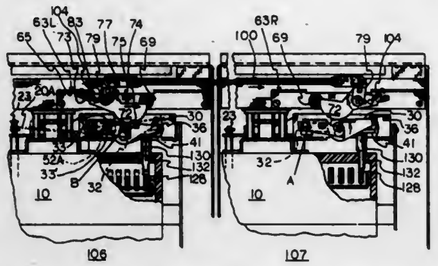
actuators and key locators whereby the application of force to said key locators will cause deflection thereof in the direction of the associated switch actuator to thereby transfer the force to the switch actuator.

4,499,344

INTERLOCK ARRANGEMENT FOR CIRCUIT BREAKER COMPARTMENTS

Roger N. Castonguay, Terryville, and David B. Powell, Burlington, both of Conn., assignors to General Electric Company, New York, N.Y.

Filed Apr. 11, 1983, Ser. No. 483,995
Int. Cl.³ H01H 9/20
U.S. Cl. 200—50 C 14 Claims



1. A circuit breaker compartment interlock assembly comprising:

first circuit breaker interlock means mounted on a first circuit breaker within a first circuit breaker compartment and associated with a first contact push rod extending from said first breaker to sense whether first contacts within said first breaker are open or closed and with a first breaker trip rod; and

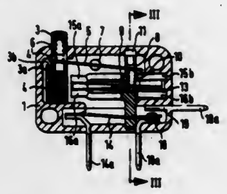
first compartment interlock means mounted in said first compartment and connected with said first breaker interlock means and with a second compartment interlock means mounted in a second circuit breaker compartment containing a second circuit breaker having second breaker contacts for causing said first breaker interlock means to actuate said first trip rod to trip said first breaker when an attempt is made to close said first breaker while said second breaker is already closed.

4,499,345

MAGNETIC SNAP SWITCH

Bernhard Dietrich, Eichenau, Fed. Rep. of Germany, assignor to SDS-Elektro G.m.b.H., Deisenhofen, Fed. Rep. of Germany

Filed Nov. 19, 1982, Ser. No. 442,875
Claims priority, application Fed. Rep. of Germany, Nov. 20, 1981, 3146068
Int. Cl.³ H01H 5/02
U.S. Cl. 200—67 F 12 Claims



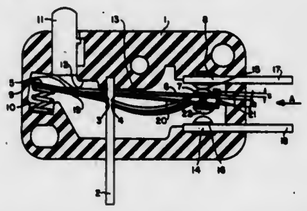
1. A magnetic snap switch comprising a housing having mounted therein a plunger, a return spring for biasing said plunger, a rocker mounted to pivot about an axis perpendicular to the direction of movement of said plunger and having one end coupled to said plunger, and a magnetic jump mechanism actuated by the movement of the other end of said rocker and coupled to a movable contact arm, a first spring force accumulator arranged at said one end of said rocker effective to move said jump mechanism, a second spring force accumulator arranged at the other end of said rocker effective to return said jump mechanism, said jump mechanism comprising a magnetic member fixed to said housing and having a pair of opposed surfaces, and a magnetic anchor coupled to said contact arm located between said opposed surfaces, said anchor being pivotally mounted about an axis parallel to the axis of said rocker to tilt alternately into abutting rest positions with a respective one of said surfaces, and closing a magnetic circuit therewith in each of its abutting positions, said anchor being coupled to said rocker and actuated in cooperation with said spring force accumulators to jump from one surface to the other on movement of said rocker sufficient to create an air gap between said anchor and the existing abutting surface.

4,499,346

SNAP ACTION MINIATURE SWITCH

Albert Portmann, Murten, Switzerland, assignor to Sodeco-Saia, AG, Murten, Switzerland

Filed Jul. 19, 1983, Ser. No. 515,371
Claims priority, application Switzerland, Jul. 28, 1982, 4573/82
Int. Cl.³ H01H 5/28
U.S. Cl. 200—67 D 4 Claims



1. A snap action switch comprising, in combination,

a toggle mechanism composed of two identical toggle springs, resilient means disposed below said two toggle springs,

a support adapted to receive knife-edged bearings,

knife-edged bearings, formed on said toggle springs, for elastically clamping said toggle springs onto said support in spaced apart position,

an arm, connected to each of said toggle springs, including a movable contact near one end and having an opposite free end,

each said arm being actionable at its free end,

a lost motion buffer including a part connected to at least one arm limiting near the movable contacts the relative displacement between said arms,

two stationary contacts respectively positioned above and below said movable contacts, each of said stationary contacts forming part of a switch to be closed upon interengagement of a movable contact with a stationary contact, said switch having three consecutive states,

a plunger movable in opposite directions substantially parallel to the direction of movement of said arms, whereby the plunger, when actuated to move in one direction against the force of said resilient means, actuates the free ends of said arms so as to cause said arms to move in the same direction as that of said plunger thereby establishing contact between one of the movable contacts of said arms and one of the stationary contacts, and

said switch being in the first state of said three consecutive states prior to said plunger being actuated so that one of said stationary contacts is interengaged with one of said movable contacts,

said switch being in the second state of said three consecutive states after said plunger is actuated so that both of said stationary contacts are free from contact with said movable contacts, and

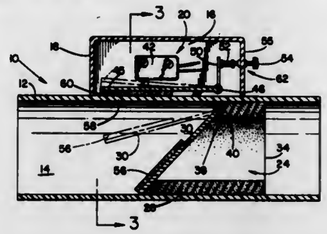
said switch being in a third state following said second state wherein the other of said stationary contacts is interengaged with the other of said movable contacts.

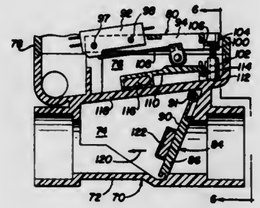
4,499,347

FLUID-FLOW-CONTROL-SWITCH VALVE

Gary H. Richards, 3204 Palm Ave., Manhattan Beach, Calif. 90266

Continuation-in-part of Ser. No. 342,382, Jan. 25, 1982, abandoned. This application Oct. 18, 1983, Ser. No. 543,079
Int. Cl.³ H01H 35/40
U.S. Cl. 200—81.9 M 5 Claims





1. A fluid-flow-control-valve device, comprising:

a housing defining an elongated flow passage, and an integrally, formed sealed switch compartment;

a one-way-valve means positioned in said flow passage to allow fluid to flow in one direction through said flow passage, wherein said vlave comprises:

a valve seat mounted in said flow passage and having inlet and outlet openings;

a flap-valve member hingedly attached adjacent said valve seat and positioned over said outlet opening thereof, so as to allow fluid flow in one direction;

a first magnetic member affixed to said flap valve;

switch means located within said switch compartment;

a flap member hingedly mounted in said switch compartment and positioned therein to seat against the outside wall of the conduit portion defining a switch-compartment base, and adapted to pivot upwardly in a substantially parallel relationship within said fluid passage;

a second magnetic member forming at least part of said flap member and positioned thereon to be aligned with said first magnetic member of said flap valve, whereby said flap member is caused to move in engagement with said switch means when said first magnetic member is positioned adjacent said second magnetic member; and

response-adjusting means adapted to control the responsive movement of said flap member and said switch means;

wherein said response-adjusting means comprises:

a shoulder plate affixed to said flap member;

a set screw adjustably mounted to said housing of said sealed compartment; and

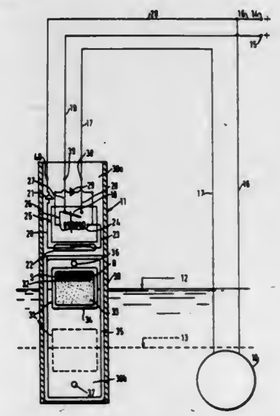
a spring interposed between said shoulder plate and said set screw, whereby adjustable force is applied to said flap member, in order to allow said flap valve to move to a predetermined open position before said flap member engages said switch.

4,499,348

MAGNETIC FLOAT CONTROLLED ELECTRIC SWITCH

Jan E. Gismervik, Knappenveien 62 A, N-5064 Straumsgrend, and Gunnar Sveinsbo, Gravdalsveien 10, N-5034 Ytre Laksevig, both of Norway

PCT No. PCT/NO81/00041, § 371 Date Jun. 22, 1982, § 102(e) Date Jun. 22, 1982, PCT Pub. No. WO82/01786, PCT Pub. Date May 27, 1982
PCT Filed Nov. 12, 1981, Ser. No. 395,063
Claims priority, application Norway, Nov. 13, 1980, 803415
Int. Cl.³ H01H 35/18
U.S. Cl. 200—84 C 5 Claims



1. An electrical switch device which comprises,

a permanent magnet having a field of force,

float means supporting the permanent magnet,

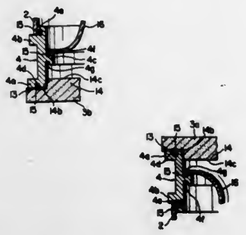
a reed contact switch having a longitudinal axis, openable and closeable by the field of force of said permanent magnet, and being positioned with it's longitudinal axis extending substantially parallel to the North-South direction of said magnet,

outer actuating means moving said magnet towards and away from said reed contact switch in an accurately controlled rectilinear path of movement wherein the outer actuating means is the buoyancy of said float means and a relay disposed near said reed contact switch and coupled in series therewith, said relay having a coil with an electromagnetic field of force weaker than the field of force of said magnet and which is too weak to alone keep the reed contact switch engaged but which provides an additional field of force in keeping said reed contact switch engaged so that said magnet can be moved a predetermined distance by said actuating means.

4,499,349
VACUUM INTERRUPTER

Shizuo Sakuma, Kawasaki; Junichi Warabi; Masayuki Kano, both of Shizuoka, and Yutaka Kashimoto, Numazu, all of Japan, assignors to Kabushiki Kaisha Meidensha, Tokyo, Japan

Filed Nov. 15, 1982, Ser. No. 441,735
Claims priority, application Japan, Nov. 20, 1981, 56-186709; Dec. 18, 1981, 56-204762
Int. Cl.³ H01H 33/66
U.S. Cl. 200—144 B 6 Claims



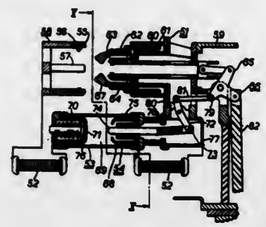
1. A vacuum interrupter which comprises:
(a) a hollow metallic cylinder;
(b) two insulating end plates which are made of inorganic insulating material attached to opposite ends of the metallic cylinder;
(c) a stationary lead rod and a movable lead rod which respectively extend into the metallic cylinder through the end plates and having inner ends which respectively support separable electrical contacts;
(d) a bellows between the movable lead rod and one of the end plates, one end of the bellows connecting to the movable lead rod and another end of the bellows connecting to the one end plate;
(e) at least a first auxiliary sealing member connected by means of brazing to an end of the metallic cylinder and to an end plate;
(f) grooves for accommodating solid brazing material, each of which is provided in at least one of a pair of opposing surfaces of members of the interrupter to be brazed and is closed from a vacuum chamber of the interrupter by the remaining members to be brazed opposing the groove; and
wherein the vacuum chamber is defined by the metallic cylinder, the first auxiliary sealing member, the end plates, the stationary and movable lead rods and the bellows.

4,499,350
CIRCUIT BREAKER WITH OVERVOLTAGE SUPPRESSION

Yoshiharu Hidaka, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Mar. 15, 1983, Ser. No. 475,508
Claims priority, application Japan, May 27, 1982, 57-90075
Int. Cl.³ H01H 33/16
U.S. Cl. 200—144 AP 2 Claims

1. A circuit breaker comprising:
at least one main circuit-breaker portion;
at least one overvoltage suppression portion connected in parallel with said at least one main circuit-breaker portion, said overvoltage suppression portion comprising a resistor adapted to suppress a switching overvoltage of the main circuit-breaker portion, and a resistance switching portion connected in series with said resistor and adapted for switching a current that flows to the resistor;
a tubular tank defining a center line and filled with an insulating gas, said tank housing said circuit-breaker portion and said overvoltage suppression portion;
an insulator support mounted in said tank for supporting said circuit-breaker portion and said overvoltage suppression portion, said insulator support defining a center line which intersects the centerline of said tank;
said overvoltage suppression portion mounted below said main circuit-breaker portion with said resistance switching portion mounted directly below said main circuit-breaker portion and said resistor mounted adjacent to and between said resistance switching portion and said main circuit-breaker portion such that the resistor of the resistance switching portion is arranged within a circle that contains the main circuit-breaker portion and the resistance switching portion:

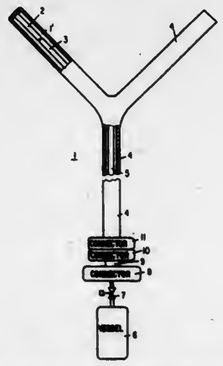


operating means for operating in association the main circuit-breaker portion and the resistance switching portion, said operating means attached to the tubular tank;
a first lever connected between the main circuit-breaker portion and the operating means for effecting the operation of switching of the main circuit-breaker portion, said first lever having an eccentric part that extends therefrom;
a second lever connected to the resistance switching portion for effecting the operation of switching the resistance switching portion, said second lever having an eccentric part that extends therefrom; and
a connecting bar connected between the eccentric parts of the first lever and the second lever.

4,499,351
HIGH-VOLTAGE SWITCH AND ITS USE

Georg Köppl, Birr, Switzerland, assignor to BBC Brown, Boveri & Company, Limited, Baden, Switzerland

Filed Jan. 24, 1983, Ser. No. 460,360
Claims priority, application Switzerland, Jan. 28, 1982, 518/82
Int. Cl.³ H01H 33/91
U.S. Cl. 200—148 R 5 Claims

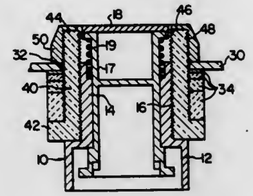


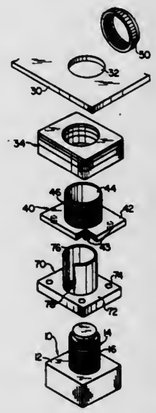
1. A high-voltage switch controlling a circuit breaker comprising at least one movable contact, a switch-on device, a switch-off device and at least one isolating screw, a rotary engagement disc provided with at least one recess and rotatably mounted in a housing, said at least one isolating screw fastened to said housing so as to be releasably connected to said at least one recess of the rotary engagement disc wherein upon disengagement of the at least one isolating screw from the rotary engagement disc, a piston rod connected to said at least one movable contact is released and said circuit breaker is opened.

4,499,352
ADAPTER FOR MOUNTING SWITCH ONTO PANEL

Teizo Fujita, Ibaraki, and Haruo Kimura, Takatsuki, both of Japan, assignors to Izumi Denki Corporation, Osaka, Japan

Filed Oct. 26, 1982, Ser. No. 436,888
Claims priority, application Japan, Dec. 2, 1981, 56-179970[U]; Dec. 2, 1981, 56-179971[U]; Dec. 2, 1981, 56-179972[U]; Apr. 30, 1982, 57-64665[U]
Int. Cl.³ H01H 13/04
U.S. Cl. 200—296 2 Claims



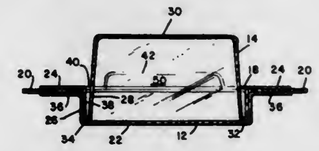


1. Adapter apparatus for mounting a switch through a hole in a panel, the switch being of the type comprising a contact section and an actuating section, the actuating section comprising a first hollow cylindrical portion within which an actuator is axially movable, the first hollow cylindrical portion being sized to extend through a first hole from one side of a panel into engagement on the other side of a panel with means for securing the switch to the panel, said apparatus being configured for mounting such a switch in a second, larger hole in a panel, said apparatus comprising:
a second hollow cylindrical portion sized to extend through such a second, larger hole;
a third hollow cylindrical portion sized to extend into the interior of said second cylindrical portion;
means on the inside surface of said third cylindrical portion for engaging said first cylindrical portion whereby such a switch is secured to said third cylindrical portion on one side of the panel and the actuator is accessible within said third cylindrical portion from the other side of the panel when said second cylindrical portion is extended through such a second, larger hole in a panel;
means for securing together said second and third cylindrical portions, said means for securing comprising a first radially outwardly extending flange on said third cylindrical portion, said first flange being sized to abut such a switch on one side of said first flange on the one side of such a panel;
a second radially outwardly extending flange on said second cylindrical portion, said second flange being sized to abut the other side of said first flange; and
protrusion means on one of said flanges for extending into and engaging with recess means on the other of said flanges;
means for securing such a switch in such a second, larger hole in a panel; and
means on the outside surface of said second cylindrical portion for engaging said means for securing on the other side of the panel to mount such a switch in a second, larger hole in a panel.

4,499,353
BLISTER PACKAGE

Thomas A. Shields, Bourne, Mass., assignor to USM Corporation, Farmington, Conn.

Filed Mar. 3, 1983, Ser. No. 470,067
Int. Cl.³ B65D 73/00
U.S. Cl. 206—470 2 Claims

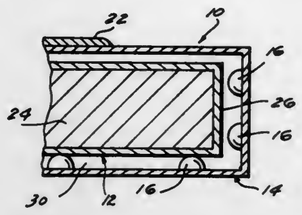


1. A reusable container that is adapted to be received in an opening in a display panel comprising:
a. unitary top and bottom portions formed from a common piece of resilient transparent material, said top and bottom portions being secured together at one end by an integral hinge;
b. said bottom portion having a circumferential flange with a circumferentially disposed folded area extending out of the plane of the flange which has a return fold forming an inverted U-shaped shoulder between said folded area and said return fold, said return fold being slightly spaced from said folded area and forming a continuous uninterrupted surface merging into an enlarged article carrying section disposed out of the plane of said flange opposite said inverted U-shaped shoulder, said article carrying section being the same geometric configuration as said folded area;
c. said top portion having a flange and a recessed area formed out of the plane the flange and being substantially the same circumference as said circumferentially disposed folded area and adapted to be received about said folded area to frictionally interfit said recessed area to said folded area;
d. said top and bottom portions opposite the end of said hinge having locking means comprising a protruding embossment on the flange of one of said portions adapted to lock into a recessed embossment on the flange of the other of said portions;
e. said top and bottom portion flanges having offset protruding tabs that can be grasped to facilitate separation of the top and bottom portion to permit access to the interior of the container; and
f. said U-shaped shoulder being adapted to be positioned through an opening in a display panel with the flanges of the top and bottom portions abutting opposite surfaces of the panel.

4,499,354
SUSCEPTOR FOR RADIANT ABSORPTION HEATER SYSTEM

Lawrence B. Hill, Short Hills, N.J.; Dennis Garbis, Dix Hills, N.Y.; Robert C. Heller, Stonybrook, N.Y., and Amedeo J. Granata, Flushing, N.Y., assignors to General Instrument Corp., Clifton, N.J.

Filed Oct. 6, 1982, Ser. No. 433,158
Int. Cl.³ H05B 6/10
U.S. Cl. 219—10.49 R 17 Claims

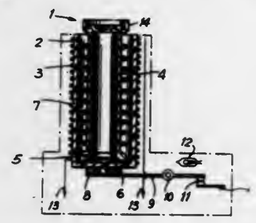


1. A susceptor for use in a chemical vapor deposition in a radiant absorption heating system comprising:
(A) a heater for absorbing radiant energy and redirecting heat therefrom; and
(B) a sheath of high purity quartz completely surrounding said heater for supporting on its outer surface substrates to receive vapor deposition.

4,499,355
HEATED PERSONAL CARE APPLIANCES

Henry J. Walter, Dunedin, Fla., assignor to Clairol Incorporated, New York, N.Y.

Continuation of Ser. No. 429,574, Sep. 30, 1982, abandoned, which is a continuation of Ser. No. 247,466, Mar. 25, 1981, abandoned. This application Mar. 16, 1984, Ser. No. 589,857
Int. Cl.³ H05B 6/10
U.S. Cl. 219—10.49 R 1 Claim

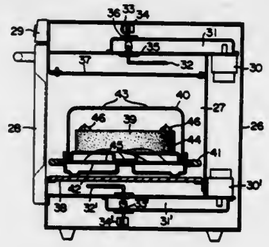


1. An apparatus for inductively heating hair curlers comprising in combination at least one hair curler and an associated inductive heating unit for receiving and heating same prior to engagement with a tress of hair, said hair curler further comprising:
an electrically non-conductive hollow outer member heatable by conduction;
a hollow core member within said outer member heatable by induction to a predetermined temperature;
means interposed between said core member and said outer member for conducting heat therebetween with a time delay between said core member reaching said predetermined temperature and said outer member reaching a final temperature, said delay being a predetermined duration to facilitate handling;
an alloy member having a predetermined Curie point, said alloy member being in thermal contact with said core member for being heated thereby, said alloy member being within said hair curler so as to be insulated from possible electrical contact with said inductive heating unit;
and said inductive heating unit further comprising:
coil means for substantially surrounding said curler during the inductive heating thereof;
circuit means for passing oscillating current through said coil means;
a movable magnetic switch member mounted so as to be in operative magnetic association with said alloy member when said curler is received by said inductive heating unit, said magnetic switch member and said alloy member being magnetically attracted while the temperature of said alloy member is under said Curie point;
switch means operatively connected to said magnetic switch member and to said circuit means for closing said circuit when said alloy member magnetically attracts said magnetic switch member and for opening same otherwise.

4,499,356
MICROWAVE HEATER HAVING A DEVICE FOR THAWING FROZEN CAKES

Toyotsugu Hatagawa, Yamatokoriyama, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Apr. 4, 1983, Ser. No. 481,878
Claims priority, application Japan, Apr. 7, 1982, 57-58851
Int. Cl.³ H05B 6/80
U.S. Cl. 219—10.55 E 2 Claims

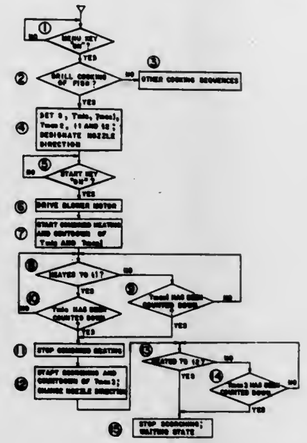


1. A microwave heater comprising:
a heating chamber for accommodating an object to be heated;
a microwave generator for supplying microwave energy into said heating chamber;
an object supporting tray made of an electrically insulating material with low dielectric loss and having a substantially annular protruding portion for supporting said object;
a metallic microwave control plate having a plurality of apertures, said microwave control plate being securely attached to the bottom of said object supporting tray, the protruding portion of said object supporting tray and said microwave control plate providing therebetween a layer of air for preventing heat conduction from said microwave control plate to said object; and
a cup-shaped metallic container having at the top portion thereof a plurality of apertures disposed symmetrically with respect to the center of said top portion and covering said object supported on said object supporting tray, said object supporting tray maintaining a substantially constant spatial relationship among said heating chamber, said cup-shaped metallic container, said object and said microwave control plate.

4,499,357
ELECTRONICALLY CONTROLLED COOKING APPARATUS

Toshitada Kojima, Ohtsu, Japan, assignor to Sanyo Electric Co., Ltd., Moriguchi, Japan

Filed Jun. 13, 1983, Ser. No. 503,505
Claims priority, application Japan, Jun. 16, 1982, 57-104508
Int. Cl.³ H05B 6/68
U.S. Cl. 219—10.55 B 3 Claims



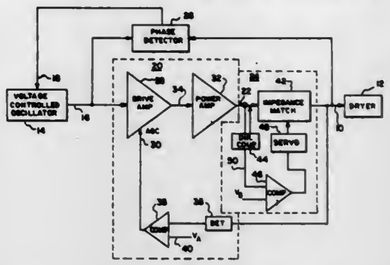
1. In an electronically controlled cooking apparatus comprising at least a first heating source for heating an article to be heated, an infrared sensor for detecting the temperature of said article to be heated, and a control means for controlling said first heating source, said control means including first memory means for storing a predetermined heating temperature, means for activating said first heating source, and means responsive to said infrared sensor to deactivate said first heating source when said infrared sensor detects the attainment of said predetermined temperature, the improvement comprising:
second memory means in said control means for storing a predetermined minimum heating time period said minimum heating time period being the minimum heating time necessary to heat said article determined in accordance with the nature of said article to be heated;
means for measuring the elapsed time period from the time of activating said first heating source; and
means in said control means responsive to said minimum heating time period stored in said second memory means and to said elapsed time measuring means to continue activation of said first heating source when said infrared sensor detects attainment of said predetermined temperature unless said predetermined minimum heating time period has elapsed.

4,499,358
DRIVING CIRCUIT FOR RADIO FREQUENCY DRYER

Burton W. Scott, Plano, Tex., assignor to The Mead Corporation, Dayton, Ohio

Filed Mar. 27, 1984, Ser. No. 593,988
Int. Cl.³ H05B 6/08
U.S. Cl. 219—10.77 9 Claims

1. A driving circuit for supplying a radio frequency electrical signal to the applicator section of a radio frequency dryer of the type which applies a fluctuating electromagnetic field to a printed sheet or web to induce evaporation of ink therefrom, comprising:
voltage controlled oscillator means for providing an oscillator output signal which is substantially uniform in amplitude and which is related in frequency to the control voltage supplied to a frequency control input of said voltage controlled oscillator means,
amplifier means for receiving said oscillator output signal and for providing a radio frequency drive signal,
means for supplying said radio frequency drive signal to said applicator section of said dryer as said radio frequency electrical signal to produce said fluctuating electromagnetic field, and
phase detector means, including means responsive to said

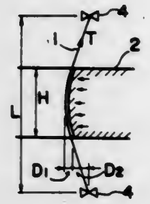


radio frequency electrical signal supplied to said applicator section and to said oscillator output signal, for providing a frequency control signal to the frequency control input of said voltage controlled oscillator means, said frequency control signal being directly related to the phase difference between said radio frequency electrical signal supplied to said applicator section and said oscillator output signal, whereby the voltage controlled oscillator means drives said applicator section at substantially the resonant frequency of said section.

4,499,359
SHAPE COMPENSATING METHOD FOR WIRE-OUT ELECTRIC DISCHARGE MACHINING

Haruki Obara, Sagamihara, Japan, assignor to Fanuc Ltd, Minamitsuru, Japan

PCT No. PCT/JP81/00403, § 371 Date Aug. 26, 1982, § 102(e) Date Aug. 26, 1982, PCT Pub. No. WO82/02354, PCT Pub. Date Jul. 22, 1982
PCT Filed Dec. 23, 1981, Ser. No. 414,361
Claims priority, application Japan, Dec. 30, 1980, 55-186743
Int. Cl.³ B23P 1/08
U.S. Cl. 219—69 W 1 Claim



1. A shape compensating method for correcting a machining error causing deviation from original coordinates of a wire electrode during straight or curved wire-cut, electro-discharge machining of a workpiece caused by an electrically discharged, wire electrode, comprising the steps of:
(a) subjecting the workpiece to trial straight machining at a trial feed speed F_0 by placing the wire electrode at a first position which is a predetermined gap away from the workpiece and applying voltage therebetween to cause a spark discharge across the gap;
(b) stopping trial straight machining by stopping the discharge at a second position relative to the workpiece,

wherein stopping the electric discharge draws the wire electrode into contact with the workpiece at a third position;

(c) retracting the wire electrode away from the third position in the direction of the machined path and determining a retraction distance D_0' from the discharge stopping position to the position where the wire elctrode and the workpiece leave contact;

(d) determining a flexure value D_0 at the trail feed speed F_0 during straight machining by the following formula:

$$D_0 = g + D_0',$$

wherein g is the gap of the electric discharge as determined by the formula:
$g=(2\epsilon_0-\phi)/2$, and wherein
$2\epsilon_0$ is the width of the machined groove,
ϕ is the diameter of the wire,
and both $2\epsilon_0$ and ϕ are premeasured values;

(e) determining the first flexure value D_T in a machining tangential direction which is the direction opposite the direction of machining and a second flexure value D_R in a radial direction which is the direction inwardly of a curve being machined by the following equations:

$$D_T = \frac{F}{F_0} \cdot D_0$$

$$D_R = \frac{4}{3\pi} \cdot \frac{F}{F_0} \cdot \frac{\epsilon_0}{R} \cdot D_0$$

wherein F is the prevailing feed speed and R is the machining radius, and wherein R is infinite for straight machining; and

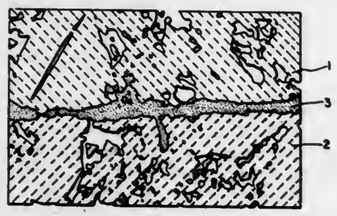
(f) correcting the machining path by using means for correcting the original coordinates of the wire electrode based on the tangential flexure value D_T and the radial flexure value D_R obtained from steps (a)–(e).

4,499,360

METHOD OF BRAZING SILICON CARBIDE PARTS USING SI-CO SOLDER

Reinhard Röttenbacher, Meersburg, Fed. Rep. of Germany, assignor to Dornier System GmbH, Friedrichshafen, Fed. Rep. of Germany

Filed Jul. 12, 1983, Ser. No. 513,020
Claims priority, application Fed. Rep. of Germany, Aug. 14, 1982, 323032
Int. Cl.³ B23K 1/02
U.S. Cl. 219—85 H **8 Claims**



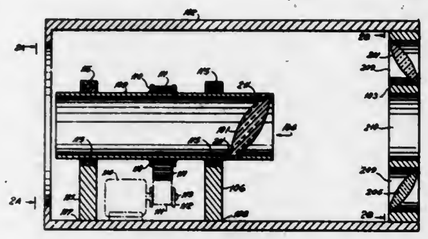
1. A process for the high-temperature reaction brazing of parts made of silicon carbide materials employing a solder consisting essentially of 20–45% cobalt and 80–55% silicon, by weight, which comprises depositing said solder on at least one of said parts, compressing said parts together, and heating.

4,499,361

LASER BEAM INTERRUPTER AND DIVIDER

Reiner G. Brinker, Mechanicsville, Va., assignor to Philip Morris Incorporated, New York, N.Y.

Filed May 2, 1983, Ser. No. 490,566
Int. Cl.³ B23K 27/00
U.S. Cl. 219—121 LK **8 Claims**



1. Optical apparatus for converting a single continuous incident laser beam into a plurality of pulsed laser beams, comprising:

a rotatable first optical refracting means, said laser beam being incident thereon, said first optical refracting means intersecting the axis of said incident beam and refracting said beam with respect to said incident beam axis,

means for rotating said first optical refracting means about said incident beam axis such that rotation of said first optical refracting means causes said refracted laser beam to sweep through a locus of points,

and a plurality of fixed second optical refracting means arrayed within a holder of nontransmissive material and spaced apart by portions of said holder;

the configuration of said array, its distance from and orientation with respect to said rotatable first optical refracting means and the spacing between each of said second optical refracting means being selected such that said refracted beam impinges alternately on sequential ones of said plurality of fixed second optical refracting means and of said separating portions of said holder;

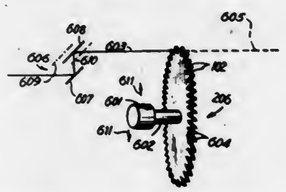
the transmission of said refracted beam being substantially interrupted by said nontransmissive material of said holder when said beam impinges thereon and said beam being further refracted by each of said fixed second optical refracting means when said beam impinges thereon, such that a plurality of pulsed laser beams emerges from said optical apparatus.

4,499,362

ROTARY BEAM CHOPPER WITH CONTINUOUSLY VARIABLE DUTY CYCLE

Peter Martin, Richmond, Va., assignor to Philip Morris Incorporated, New York, N.Y.

Filed Jun. 29, 1983, Ser. No. 509,160
Int. Cl.³ B23K 27/00
U.S. Cl. 219—121 LA **12 Claims**



1. Apparatus for converting a continuous incident laser beam into a pulsed laser beam wherein the duty cycle is substantially continuously variable between a minimum value and a maximum value, comprising:

a disc of nontransmissive material, said disc being rotatable about its axis and having a plurality of apertures disposed within an annular zone thereon, the ratio of the width of said apertures to the width of the adjacent nontransmissive portions of said disc between said apertures varying substantially continuously with the disc radius from a minimum ratio to a maximum ratio, said continuous beam being incident on said disc within said annular zone;

means for rotating said disc such that said continuous incident beam impinges alternately on sequential ones of said apertures, to be transmitted by said apertures, and on said nontransmissive disc portions, to create a first pulsed beam; and

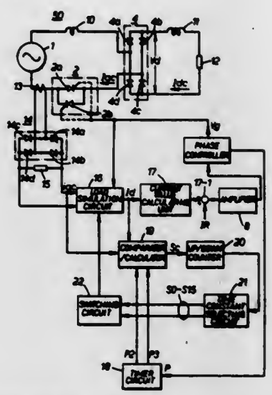
means for translating said disc and said incident beam relative to one another to permit variation of the point of incidence of said continuous beam radially of the disc within said annular zone, to vary the duty cycle of the first pulsed beam.

4,499,363

DC POWER SOURCE

Takatomo Izume, Urawa, and Chihiro Okado, Fuchu, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Jul. 13, 1982, Ser. No. 397,779
Claims priority, application Japan, Jul. 30, 1981, 56-119748; Nov. 18, 1981, 56-184685
Int. Cl.³ B23K 11/24
U.S. Cl. 219—130.21 **18 Claims**



1. A DC power source apparatus, comprising:

current regulator means including electronic contactor means;

transformer means including a primary winding and a secondary winding, said primary winding being connected in series with said current regulator means to form a series circuit, said series circuit being adapted to receive power from an AC power source;

rectifier means connected to said secondary winding of said transformer means, output terminals of said rectifier means being adapted to supply DC current to a DC load including inductance;

simulation means including means connected to detect an AC current flowing through said series circuit for simulating said DC current flowing through said DC load based on said detected AC current and a simulated time constant of said DC load to produce a simulated signal; and

control means connected to receive said simulated signal for comparing said simulated signal with a predetermined current reference to produce a phase control signal based on a comparison result;

said current regulator means further including means connected to receive said phase control signal for controlling said electronic contactor means such that said DC current becomes equal to a predetermined value corresponding to said predetermined current reference and;

means connected to receive said detected AC current for rectifying said detected AC current to produce a rectified signal, and

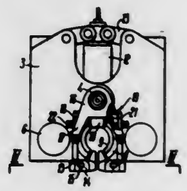
load simulation means connected to receive said rectified signal for simulating said DC current based on said rectified signal and said simulated time constant to produce said simulated signal, said simulated signal being determined such that during a first period when at least one of said electronic contactor means is in the ON state said simulated signal is determined based on a waveform of said rectified signal, and during a second period when all of said electronic contactor means are in the OFF state said simulated signal is determined to have such a waveform that said rectified signal, at a time immediately before said electronic contactor means is turned off, attenuates in accordance with said simulated time constant.

4,499,364

RESISTANCE WELDING APPARATUS FOR JOINING PIPES END TO END

Alexandr M. Starostin, ulitsa Lenina, 19, kv. 62; Alexei M. Malakhov, ulitsa Pushkina, 95, kv. 5; Tamara A. Chertilina, ulitsa Pushkina, 130, kv. 31; Vladislav I. Ponomar, ulitsa Kirova, 2, kv. 42; Nikolai I. Postolaty, ulitsa K. Marxa, 68-a, kv. 45, all of Kakhovka, Khersonskaya oblast; Sergei I. Kuchuk-Yatsenko, ulitsa Filatova, 1/22, kv. 47, Kiev; Filipp I. Peretrukhin, ulitsa Lenina, 20, kv. 3; Anatoly D. Gluschenko, ulitsa Kirova, 19, kv. 18, both of Kakhovka, Khersonskaya oblast; Sergei A. Soledovnikov, ulitsa Solomenskaya, 41, kv. 50, Kiev; Jury G. Shvets, Lesnoi gorodok, ulitsa P. Morozova, 11, and Orest M. Serafin, ulitsa Dirizhablenaya, 28, korpus 1, kv. 45, both of Moskovskaya oblast, all of U.S.S.R.

PCT No. PCT/SU81/00021, § 371 Date Nov. 2, 1982, § 102(e) Date Nov. 2, 1982, PCT Pub. No. WO82/03034, PCT Pub. Date Sep. 16, 1982
PCT Filed Mar. 2, 1981, Ser. No. 440,221
Int. Cl.³ B23K 11/02
U.S. Cl. 219—161 **6 Claims**

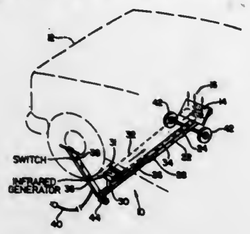


1. A resistance welding apparatus for joining pipes end to end, comprising at least two pipe gripping means each including a pair of articulated side members, said side members being axially aligned for mutual axial movement, each side member being provided with a gripping jaw, welding transformers electrically connected to the gripping jaws and swinging jaws pivoted to the side members for abutment against the pipe surface in their operating position, each pipe gripping means having at least one bracket (16) on which there is pivotally mounted at least one double-arm lever (18) for each side member (3) and similar arms of the levers (18) pivotally mounted on one and the same bracket (16) are interconnected by an exension spring (19), each side member (3) having a related swinging jaw (14) and stop means (21) for limiting the movement of each said lever (18) relative the corresponding side member (3) in the direction of the action of the extension spring (19), the other arm of each lever (18) being operatively connected to the corresponding swinging jaw (14).

4,499,365
PORTABLE HEATER FOR RADIANTLY HEATING THE UNDERBODY OF A MOTOR VEHICLE

Abe Puzins, 610 SW. Alder, Suite 1103, Portland, Oreg. 97205

Filed Jan. 27, 1984, Ser. No. 574,365
Int. Cl.³ H05B 3/00; F02N 17/02
U.S. Cl. 219—205 3 Claims

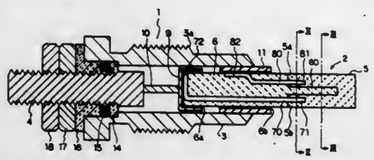


1. Apparatus for heating the underbody of a vehicle comprising:
(a) an elongate support member having at least one wheel mounted at a first end thereof and a support block mounted at a second end thereof, said wheel and said support block maintaining said support member above the floor and substantially parallel thereto;
(b) radiant energy generating means mounted on said support member and oriented to project a beam of radiant energy substantially parallel to and substantially along the longitudinal axis of said support member; and
(c) radiant energy reflecting means mounted on said support member downstream of said radiant energy generating means for reflecting said beam of radiant energy from the generating generally upwardly means to a predetermined location on the underbody of the vehicle.

4,499,366
CERAMIC HEATER DEVICE

Hitoshi Yoshida, Kariya; Morihiro Atsumi, Okazaki; Nobuei Ito, Aichi, and Kinya Atsumi, Toyohashi, all of Japan, assignors to Nippondenso Co., Ltd., Kariya and Nippon Soken, Inc., Nishio, both of, Japan

Filed Nov. 21, 1983, Ser. No. 554,107
Claims priority, application Japan, Nov. 25, 1982, 57-206373; Feb. 8, 1983, 58-19947; Mar. 17, 1983, 58-45542
Int. Cl.³ F23Q 7/22
U.S. Cl. 219—270 5 Claims

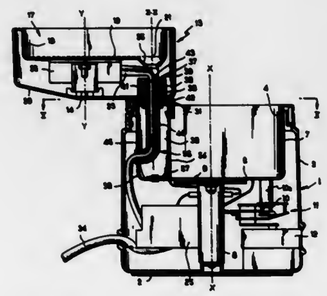


1. A ceramic heater device comprising:
a metal housing;
a central electrode electrically insulated from and attached to said metal housing, one end of said central electrode being positioned within said metal housing;
a sintered ceramic insulator, one end of which is inserted into said metal housing and attached to said metal housing, the other end of said sintered ceramic insulator being extending outwardly from said metal housing;
a sintered ceramic U-shaped heater body fixed to said other end of said sintered ceramic insulator so that said heater body is electrically insulated from said metal housing by means of said ceramic insulator, said U-shaped ceramic heater body comprising:
a forward end; and
a pair of leg portions extending from said forward end towards said metal housing, the specific resistance value of said forward end being more than twice as great as that of said leg portions; and
a pair of metal lead wires embedded in said insulator and said heater body, one end of each said metal lead wire being electrically connected to respective ones of said leg portions of said U-shaped heater body at one end of said U-shaped heater body and an opposite end of each said metal lead wire being exposed to an outer surface of said ceramic insulator, and one of said exposed ends being electrically connected to said metal housing while the other said exposed end being electrically connected to said one end of said central electrode.

4,499,367
DEVICE AND METHOD FOR WAX DEPILATION

Pierre Schwob, Lyons, France, assignor to SEB S.A., Selongey, France

Filed Jun. 7, 1983, Ser. No. 501,903
Claims priority, application France, Jun. 16, 1982, 82 10478
Int. Cl.³ F27B 14/00
U.S. Cl. 219—421 10 Claims



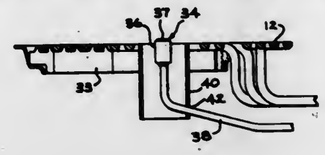
1. A device for wax depilation, comprising a housing having an inner space for receiving a wax drawing vessel carried by said housing, first heating means adjacent the wax drawing vessel, a wax filtering vessel, second heating means adjacent the wax filtering vessel, and a spout communicating with an aperture in a bottom of the wax filtering vessel, and providing a spillway from the wax filtering vessel to the wax drawing vessel, wherein the wax filtering vessel is raised with respect to the wax drawing vessel and is movably mounted with respect to the housing between an operational position in which said wax filtering vessel overhangs the housing and is off-set with respect to the wax drawing vessel, and a folded away position in which the wax filtering vessel is brought back above the wax drawing vessel.

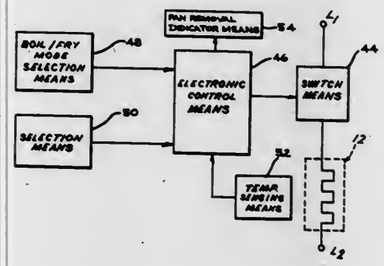
4,499,368
UTENSIL REMOVAL DETECTION SYSTEM FOR COOKING APPLIANCE

Thomas R. Payne, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.

Filed Mar. 5, 1984, Ser. No. 586,053
Int. Cl.³ H05B 1/02
U.S. Cl. 219—452 8 Claims

1. A utensil removal detection arrangement for a cooking appliance having at least one surface heating unit for heating a utensil placed thereon, said detection arrangement comprising:
temperature sensing means for sensing the temperature of a utensil placed on the surface unit;
means for detecting a sensed utensil temperature greater than a predetermined reference temperature, said reference temperature being greater than the maximum temperature sensed when no utensil is present on said surface unit;
clock means responsive to said temperature sensing means operative to measure the duration of time intervals during which the sensed utensil temperature is less than said predetermined reference temperature;
means responsive to said clock means for detecting a time



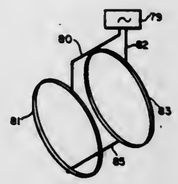


interval of duration greater than a predetermined reference duration, said reference duration being sufficient to allow the sensed temperature to reach said reference temperature when a utensil is present on said surface unit; and
means operative to de-energize the surface unit upon detection of the occurrence of such a time interval, which occurrence signifies no utensil on said surface unit.

4,499,369
HEATING ELEMENT ARRANGEMENT FOR A VACUUM FURNACE

Thomson B. Gibb, Southampton, Pa., assignor to Vacuum Furnace System Corporation, Souderton, Pa.

Filed May 20, 1983, Ser. No. 496,635
Int. Cl.³ H05B 3/10
U.S. Cl. 219—552 2 Claims

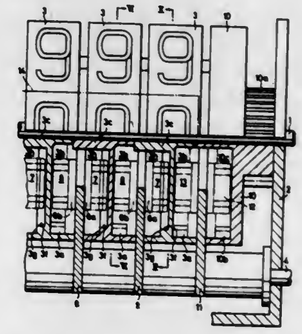


1. A heating means for use in a hot zone chamber of a vacuum furnace comprising in combination: at least first and second heating elements formed of material that generates heat in response to electrical current passing therethrough and formed in a closed plane so that when said elements are generating heat there are no cold spots; at least first and second terminal means respectively secured to said first and second heating elements; electrical current path means connecting said first and second heating elements at respective locations thereof which respectively lie substantially opposite said first and second terminals so that there is a serial ohmic connection between said first and second terminals, which serial ohmic connection is bifurcated through said first and second heating elements; and electrical current supply means to supply electrical current to said first and second terminals so that electrical current, because of said series connection, passes through said first terminal, becomes divided as it passes through the bifurcated path defined by said first heating element to said electrical current path means, passes through said electrical current path means to be divided along the bifurcated path defined by said second heating element to said second terminal to be returned to said electrical current supply means, whereby said first and second heating elements present a high impedance and become heated completely without leaving a cold spot.

4,499,370
ZERO-RESET TYPE COUNTER

Toshio Nishiuchi, Kashiwa, Japan, assignor to Dai-Ichi Seiko Co., Ltd., Kawaguchi, Japan

Filed Nov. 23, 1983, Ser. No. 554,710
Claims priority, application Japan, Jul. 29, 1983, 58-137854
Int. Cl.³ G06C 15/42
U.S. Cl. 235—144 HC 4 Claims

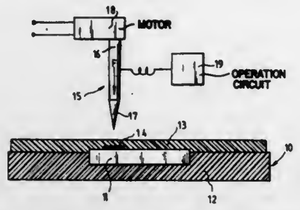


1. A zero-reset type counter comprising a frame; a supporting shaft mounted on said frame; a plurality of digit wheels rotatably mounted on said supporting shaft, each of said digit wheels having a first annular recess formed with an internal gear on its inner perpheral face on one side thereof and having a second annular recess formed respectively with an eccentric cam on its center portion and order shift teeth on its inner peripheral face on another side thereof; a rotary shaft rotatably mounted on said frame adjacent to said plurality of digit wheels; a plurality of zero reset levers secured on said rotary shaft and interposing respectively between a pair of said digit wheels adjacent each other and engageable to said eccentric cam; a pinion rotatably mounted on said each zero reset lever and engageable with said internal gear; and an order shift pinion so mounted on said each zero reset lever as to be able to rotate integrally with said pinion and engageable with said order shift teeth, the digit wheel of higher order being turned by one numeral through said order shift teeth and order shift pinion when said pinion is meshed with said internal gear and the digit wheel of lower order adjacent to said digit wheel of higher order is fully rotated at counting, and said each zero reset lever being turned in order to simultaneously let said pinion disengage from said each internal gear and said each order shift pinion from said each order shift teeth and to simultaneously and forcibly rotate said each digit wheel to the zero indicating position through said each eccentric cam at zero resetting.

4,499,371
ELECTRICAL CONNECTION SYSTEM

René Rose, Voisins-le-Bretonneux, France, assignor to Floaic S.A., Montrouge Cedex, France

Continuation of Ser. No. 210,196, Nov. 25, 1980, abandoned. This application Sep. 30, 1982, Ser. No. 429,766
Claims priority, application France, Nov. 27, 1979, 79 29115
Int. Cl.³ G07F 3/02
U.S. Cl. 235—492 19 Claims



1. A system for establishing an electrical connection between a portable memory card carrying an electronic circuit covered externally with a protective layer and electrical apparatus for reading said card, wherein:

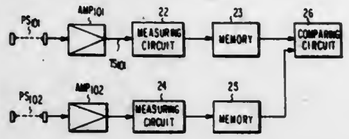
said card includes at least a pair of discrete coplanar terminals disposed therein and connected to said electronic circuit, and a protective layer disposed over at least each of said card terminals formed from a perforable plastic material; and

said electrical apparatus includes at least one pair of electrically conductive probes having tips disposed in the same plane, means for axially urging said probe tips through said protective layer and into contact with said card terminals and a source of electrical current for said probe tips, whereby said probe tips simultaneously contact said terminals to establish an electrical connection between said electrical apparatus and said electronic circuit.

4,499,372
MAIL-ARTICLE TRACING APPARATUS

Kazumi Nakano, Tokyo, Japan, assignor to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Sep. 24, 1981, Ser. No. 305,245
Claims priority, application Japan, Sep. 29, 1980, 55-135441; Jul. 29, 1981, 56-118833
Int. Cl.³ G01V 9/04
U.S. Cl. 250—223 R 9 Claims



1. A mail-article tracing apparatus comprising:

first and second mail detectors provided at an entrance and an exit of a transport path, respectively, for detecting mail-articles transported on the transport path, the distance between said first and second mail detectors corresponding to the length of plural mail-articles;

first and second measuring means for measuring intervals between two adjacent transported mail-articles at the entrance and exit of the transport path, respectively, in response to the outputs of said first and second mail detectors, said first and second measuring means delivering data expressing said intervals;

first and second memory means for storing said data expressing the intervals measured by said first and second measuring means, respectively;

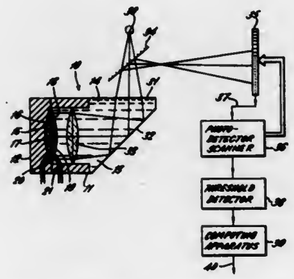
means for comparing the data delivered from said first and second memory means; and

abnormality detecting means for detecting an abnorality in mail-article transportation on the transport path when the data delivered from said first and second memory means are substantially different.

4,499,373
DIFFERENTIAL PRESSURE SENSING APPARATUS

James S. Johnston, Bognor Regis, England, assignor to Rosemount Engineering Company Limited, England

Filed Jun. 1, 1982, Ser. No. 383,574
Claims priority, application United Kingdom, Jun. 9, 1981, 8117700
Int. Cl.³ G01D 5/34
U.S. Cl. 250—231 P 11 Claims



1. Differential pressure sensing apparatus comprising a transducer body, a diaphragm mounted in the body, means for applying across the diaphragm a differential pressure to be measured, whereby the diaphragm is strained in response thereto so as to have a curvature representative of said pressure difference,

monochromatic light source means arranged to direct monochromatic light at the diaphragm and to set up interference fringes in which successive spacings between adjacent fringes vary in a manner representative of said curvature of the diaphragm,

means for monitoring said fringes to provide signals indicative of variations in the spacing between adjacent fringes or adjacent groups of fringes, and automatic computing means arranged to receive said signals and to calculate therefrom said curvature of the diaphragm and thence the pressure difference across the diaphragm.

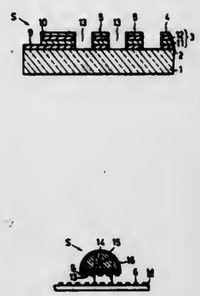
4,499,374
PHOTOELECTRICAL ENCODER EMPLOYING AN OPTICAL GRATING

Yoshihiko Kabaya, Kanagawa, Japan, assignor to Mitutoyo Mfg. Co., Ltd., Tokyo, Japan

Filed May 21, 1982, Ser. No. 380,818
Claims priority, application Japan, Jun. 1, 1981, 56-84084; Jun. 1, 1981, 56-84082; Jun. 1, 1981, 56-84083
Int. Cl.³ G01B 11/00; G08C 9/06
U.S. Cl. 250—237 G 10 Claims

1. A photoelectrical encoder employing optical gratings wherein a physical quantity is detected from brightness obtained by moving a first and a second scale each provided thereon with an optical grating relative to each other, characterized in that said first scale is constructed such that narrow belt-shaped reflecting portions and unreflecting portions are alternately arranged on a base member, said second scale is constructed such that, on a light transmitting base member, a first signal lead-out material layer made of a light shielding conductive material, a PN semiconductor layer for converting light into electricity and a second signal lead-out material layer made of a light transmitting conductive material are laminated

in the described order to form a narrow belt-shaped light receiving portion and a plurality of narrow belt-shaped light receiving portions thus formed are arranged at regular pitches, as against the light from said light transmitting base member, said light receiving portions function as light shielding slits and intervals between the light receiving portions are formed into light transmitting slits, a light source is fixed to the light transmitting base member on the side opposite said light receiving

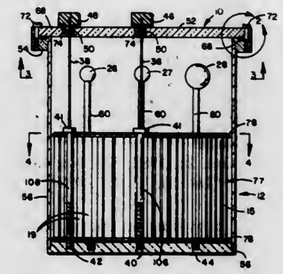


portions and a reflector is fixed to the light transmitting base member for reflecting the light from said light source and radiating the light through the light transmitting base member to the side opposite the light source, said first and second scales are disposed in such a manner that said light reflecting portions and said light receiving portions face each other, and the light from said light source is adapted to be transmitted through said light transmitting slits of said second scale and radiated onto reflecting portions of said first scale.

4,499,375
NUCLEAR IMAGING PHANTOM

Ronald J. Jaszczak, 2307 Honeysuckle Rd., Chapel Hill, N.C. 27514

Filed May 10, 1982, Ser. No. 376,775
Int. Cl.³ G01D 18/00; G12B 13/00
U.S. Cl. 250—252.1 6 Claims

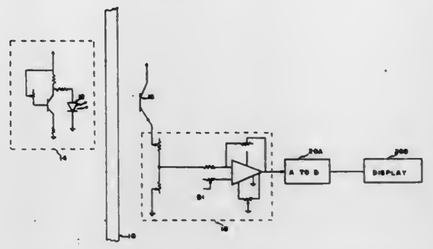


1. A nuclear imaging phantom comprising a case encompassing a cavity and having at least one access opening therein to said cavity and having internally located stabilizing means remote from said access opening, and at least one straight, rigid, capillary tube is removeably insertable into said opening externally from said case to extend into said cavity to said stabilizing means.

4,499,376
HYDRAULIC OIL COUNTING DEVICE AND WATER SEPARATOR

Paul T. Frost, 7746 Valle Vista Dr., Cucamonga, Calif. 91730, and Robert T. Thomas, Whittier, Calif., assignors to Paul T. Frost, Cucamonga, Calif.

Continuation of Ser. No. 246,205, Mar. 23, 1981,. This application Sep. 14, 1983, Ser. No. 532,294
Int. Cl.³ G01J 1/00
U.S. Cl. 250—341 3 Claims



1. Apparatus for measuring particulate contamination in a liquid as a function of infrared opacity comprising:

infrared radiation source means providing non-monochromatic, relatively wide bandwidth infrared radiation comprising light emitting diode means;

conduit means containing a representative amount of the liquid, the conduit means having a portion thereof optically connected to the infrared light source means such that the infrared light therefrom passes through a first section of the portion into the liquid and out of the portion through a second section, said first and second sections being substantially transparent to the infrared light;

infrared sensing means sensitive to the relatively wide bandwidth infrared radiation from the infrared radiation source optically connected to the second section providing an electric analog signal as a function of the amount of infrared radiation received by the sensing means; and,

output means comprising linear amplifier means calibrated for at least one signal level from the sensing means for a known infrared radiation level, analog-to-digital converter means connected to the output of the amplifier, and output meter means connected to the analog-to-digital converter such that a digitally displayed indication of the amount of infrared radiation received by the sensing means is provided, thereby supplying an indication of the infrared opacity of the liquid.

4,499,377
DETECTION AND CONTROL SYSTEM BASED ON AMBIENT AIR QUALITY

Gustave S. Presser, Quebec, Canada, assignor to Acme Engineering Products Ltd., Montreal, Canada

Filed Sep. 29, 1982, Ser. No. 426,980
Int. Cl.³ G01N 21/00
U.S. Cl. 250—343 9 Claims

1. Ambient air quality detection and control system for a plurality of sampling positions, comprising

a sampling head located in each of the sampling positions,

a pump for each sampling head, for pumping a sample of gas from each sampling head,

a calibration pump having a filter means to provide clean gas,

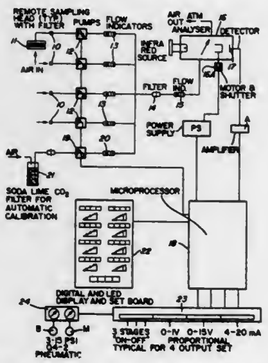
a selector means for selecting operation time of each pump individually and time lapse between sequences,

an analyser for analysing samples of gas from each sampling head and the calibration pump, the analyser producing an analysis signal representing quantity of contaminant gas present in each sample,

a flowline system with flow lines from each sampling head and the calibration pump, combining in a sample line to the analyser, the flow line system having no selector valves therein,

means for setting a plurality of first predetermined set points representing levels of the contaminant gas which may occur in each sample,

means for producing a plurality of on/off signals representing when the contaminant gas in each sample reaches the first set points,



means for setting a second predetermined set point representing a level of the contaminant gas which may occur in each sample and a predetermined proportional range from the second set point for each sample, and

means for producing an analog signal indicating a deviation from the second set point in the proportional range for each sample representing the contaminant gas in each sample, the analog signal for each sample being in a plurality of output ranges of different magnitudes.

4,499,378

INFRARED RADIATION GAS ANALYZER

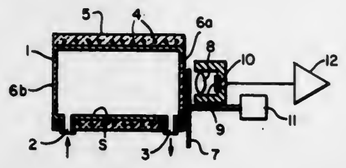
Kimio Miyatake; Kozo Ishida; Hiroyuki Ebi, and Takeshi Shimada, all of Kyoto, Japan, assignors to Horiba, Ltd., Kyoto, Japan

Filed Mar. 8, 1983, Ser. No. 473,344

Claims priority, application Japan, Mar. 9, 1982, 57-33704[U]; Mar. 9, 1982, 57-33705[U]

Int. Cl.³ G01J *1/00*

U.S. Cl. 250—343 **8 Claims**



1. An infrared radiation gas analyzer for determining the concentration of an ingredient in a sample gas, comprising:

a sample gas containing means for containing a sample gas at a temperature at which the ingredient the concentration of which is to be determined will emit infrared radiation in a range characteristic of the ingredient and means for allowing said infrared radiation to escape from said containing means;

an optical chopper outside said containing means for interrupting the radiation escaping from said containing means;

a filter in the path of the radiation escaping from said containing means, said filter transmitting only radiation in said range;

an infrared radiation detector positioned for receiving the radiation passed by said filter and emitting a signal representative of the radiation received by the detector and which is representative of the concentration of the ingredient the concentration of which is to be determined in the sample gas.

4,499,379

INFRARED RADIATION GAS ANALYZER

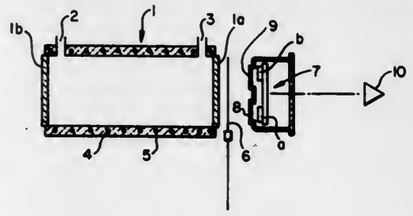
Kimio Miyatake, and Katsuhiko Tomita, both of Kyoto, Japan, assignors to Horiba, Ltd., Kyoto, Japan

Filed Mar. 8, 1983, Ser. No. 473,345

Claims priority, application Japan, Mar. 9, 1982, 57-33702[U]

Int. Cl.³ G01J *1/00*

U.S. Cl. 250—343 **3 Claims**



1. An infrared radiation gas analyzer for determining the concentration of an ingredient in a sample gas, comprising:

a sample gas containing means for containing a sample gas at a temperature at which the ingredient the concentration of which is to be determined will emit infrared radiaton in a range characteristic of the ingredient and means for allowing said infrared radiation to escape from said containing means;

an optical chopper outside said containing means for interrupting the radiation escaping from said containing means;

a pair of filters in the path of the radiation escaping from said containing means and spaced transversely of said path, one of said filters transmitting only radiation in said range and the other of said filters transmitting only radiation in a range near to said firstmentioned range;

infrared radiation detectors positioned for receiving the radiation passed by said respective filters and connected to each other for emitting a signal representative of the difference between the radiation received by the respective detectors and which is representative of the concentration of the ingredient the concentration of which is to be determined in the sample gas.

4,499,380

APPARATUS AND METHOD FOR DETERMINING THE HYDROGEN CONTENT OF A SUBSTANCE

Mohamed A. Aggour, Houston, Tex., and Sanjoy Banerjee, Santa Barbara, Calif., assignors to ESSO Resources Canada, Ltd., Calgary, Canada

Filed Oct. 21, 1982, Ser. No. 435,817

Int. Cl.³ G01T *3/00*

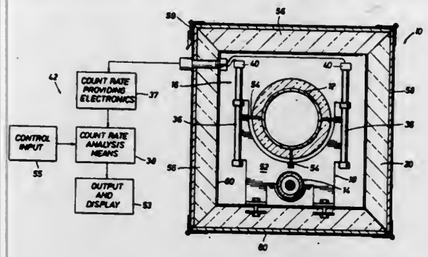
U.S. Cl. 250—390 **30 Claims**

1. Apparatus for providing an output corresponding to the amount of hydrogenous material within an enclosure, comprising:

a fast neutron source, said fast neutron source being positioned proximate said enclosure and being incapable of achieving criticality;

moderating material positioned intermediate said enclosure and said fast neutron source, said moderating material having a neutron moderating ability at least equivalent to that of a 1 cm thickness of water; and

a neutron detection system including at least one neutron detector positioned proximate said enclosure, said neutron detection system being adapted to provide an output



signal representing the rate of detection of neutrons scattered from said hydrogenous material.

4,499,381

MEANS FOR CONVERTING X-RAYS INTO RADIATION WHICH DARKENS X-RAY FILMS

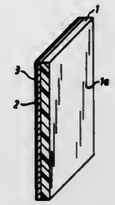
Walter Baner, Munich, Fed. Rep. of Germany, assignor to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Division of Ser. No. 199,377, Oct. 21, 1980, Pat. No. 4,399,363. This application Feb. 4, 1983, Ser. No. 463,812

Claims priority, application Fed. Rep. of Germany, Oct. 30, 1979, 2943854

Int. Cl.³ G01J *1/58*

U.S. Cl. 250—483.1 **16 Claims**



1. A flexible laminate to be removably positioned in a holding arrangement for x-ray film during exposure of the latter, said laminate comprising:

(a) a flexible plate;

(b) a flexible fluorescent layer at one side of said plate for intensifying x-rays to which the film is exposed; and

(c) a flexible ferromagnetic layer at the other side of said plate for cooperating with a magnetic element of the holding arrangement so as to urge said fluorescent layer towards the film.

4,499,382

INFRARED SOURCE ELEMENT

Kent D. Vincent, Cupertino, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Oct. 18, 1982, Ser. No. 434,817

Int. Cl.³ G21G *4/00*

U.S. Cl. 250—493.1 **3 Claims**

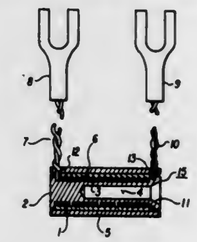
1. An infrared source comprising as source element having:

an elongated rod composed substantially of refractory ceramic material, said elongated rod having an outer diameter OD and a plurality of circumferential grooves of depth d in the outer diameter;

a radiation cavity in the elongated rod oriented axially with respect to the elongated rod and opening on an end of the elongated rod;

a heater wire with cross sectional diameter w less than or equal to depth d of the circumferential grooves for substantially uniformly heating a length L of the elongated rod, said heater wire wound around the outside of the elongated rod in the plurality of circumferential grooves and positioned to maintain the bottom of the radiation cavity within the substantially uniformly heated length L of the elongated rod, with adjacent coils of said heater wire separated by the plurality of circumferential grooves;

an electrically non-conductive outer sheath of inner diameter ID substantially equal to the outer diameter OD of the



elongated rod, said outer sheath precisely and concentrically covering the elongated rod; and

sintered ceramic cement interposed between the elongated rod and the outer sheath encapsulating substantially all of the heater wire wound around the outside of the elongated rod in the plurality of circumferential grooves so that said outer sheath and said ceramic cement together encapsulate the heater wire to retard evaporation of said heater wire.

4,499,383

EDGE DETECTION APPARATUS

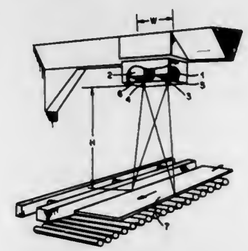
Peter W. Loose, Chelmsford, England, assignor to European Electronic Systems Ltd., England

Continuation-in-part of Ser. No. 210,337, Nov. 25, 1982, Pat. No. 4,490,617. This application Apr. 15, 1982, Ser. No. 368,511

Claims priority, application United Kingdom, Nov. 26, 1979, 7940810; Mar. 19, 1980, 8009285; Mar. 25, 1980, 8010048

Int. Cl.³ G01N *21/86*

U.S. Cl. 250—561 **35 Claims**



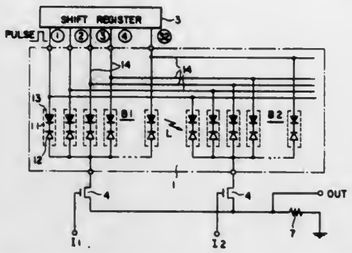
1. A method of determining the precise location of an edge of a strip, comprising scanning the strip at least in the region of the edge with individual elements of a radiation responsive sensor, each said element generating a signal value associated therewith for each scan, said signal values for all the elements forming a composite signal having discrete values representative of radiation received from the scanned region at respective locations corresponding to the individual elements of the sensor, analysing said composite signal by defining a curve which when said values are plotted against said locations on a distance scale passes through said values to represent a radiation profile of the scanned region as received by the sensor, finding the point of maximum slope on said curve, and taking the corresponding position on the distance scale as representing

the precise location of said edge to an accuracy exceeding the element pitch.

4,499,384
IMAGE SENSING DEVICE

Hideo Segawa, Tokyo; Koji Mori, Yokohama; Masanori Itagaki; Kohichi Sakurai, both of Kawasaki, and Tatsumi Ishiwata, Zushi, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Jun. 3, 1981, Ser. No. 269,863
Claims priority, application Japan, Jun. 11, 1980, 55-77855
Int. Cl.³ H01J 40/14
U.S. Cl. 250—578 17 Claims

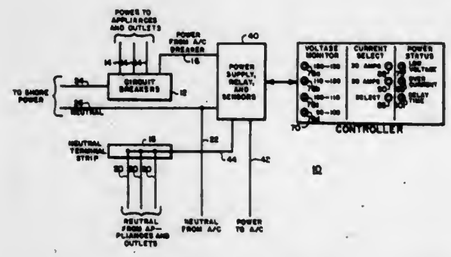


1. An image sensing device for converting light signals into electrical signals, comprising:
a substrate;
a plurality of photo-receiving elements formed on said substrate in a single array and each including a photodiode and a blocking diode which are connected in series and opposite in polarity, said plurality of photo-receiving elements being divided into a certain number of blocks each of which includes a predetermined number of said photo-receiving elements which are commonly connected to a junction on one side;
a plurality of switching means each connected between the common junction of each of said blocks and an output terminal of said image sensing device;
pulse outputting means including output terminals for outputting pulse signals; and
a plurality of leads each connecting one of said output terminals of said pulse outputting means to a side opposite to said one side of the corresponding photo-receiving element of each of said blocks.

4,499,385
RECREATIONAL VEHICLE POWER CONTROL SYSTEM

William H. Slavik, Palos Hills, Ill., assignor to Nuvatec, Inc., Downer's Grove, Ill.

Filed Jul. 19, 1983, Ser. No. 515,350
Int. Cl.³ H02J 3/14
U.S. Cl. 307—10 R 15 Claims

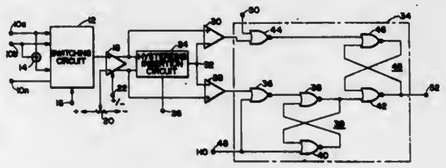


6. In a recreational vehicle comprising means for receiving electrical current from a source of power characterized by a power voltage, a major electrically powered appliance, a plurality of additional electrically powered appliances, and means for electrically interconnecting the major appliance and the additional appliances to the receiving means, the improvement comprising:
a switch, included in the interconnecting means, for disconnecting the major appliance from the receiving means;
current sensor means for generating a current load signal indicative of the current drawn by the additional appliances from the source of power;
switch control means, responsive to the current load signal, for automatically controlling the switch to disconnect the major appliance from the receiving means when the current load signal enters a first range of values, and for automatically controlling the switch to reconnect the major appliance to the receiving means when the current load signal enters a second range of values, said first and second ranges of values chosen such that the major appliance is automatically removed from the source of power when the current to the additional appliances exceeds a maximum value before the combined current to the major and additional appliances exceeds a predetermined value characteristic of the source of power, and the major appliance is automatically reconnected with the source of power after the current to the additional appliances falls to a point where the combined current to the major and additional appliances is less than the predetermined value;
voltage sensor means for generating a voltage signal indicative of the magnitude of the power voltage; and
means, included in the switch control means, for automatically controlling the switch to automatically disconnect the major appliance from the receiving means when the voltage signal enters a third range of values, indicative of excessively low power voltage, and to automatically reconnect the major appliance to the receiving means after the voltage signal enters a fourth range of values, higher than the third range of values and indicative of normal power voltage.

4,499,386
TRIGGER CIRCUIT

Kenneth G. Schlotzhauer, Beaverton, and Arthur J. Metz, Gervais, both of Oreg., assignors to Tektronix, Inc., Beaverton, Oreg.

Filed Nov. 26, 1982, Ser. No. 444,764
Int. Cl.³ H03K 5/153, 5/113, 3/037, 4/08
U.S. Cl. 307—260 7 Claims

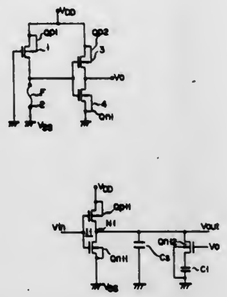


1. A trigger circuit, comprising:
a differential amplifier responsive to an input signal from an input means;
first and second comparators to receive as one input at a first input terminal in each the push-pull output of said differential amplifier;
a hysteresis circuit responsive to the common mode component of the push-pull output of said differential amplifier and applying a predetermined hysteresis level to be applied in common to a second input of both said first and second comparators, and
a logic circuit responsive to the outputs of said first and second comparators from providing a trigger signal at an output terminal.

4,499,387
INTEGRATED CIRCUIT FORMED ON A SEMICONDUCTOR SUBSTRATE WITH A VARIABLE CAPACITOR CIRCUIT

Satoshi Konishi, Tokyo, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Dec. 3, 1982, Ser. No. 446,724
Claims priority, application Japan, Dec. 15, 1981, 56-201837; Jan. 18, 1982, 57-5690
Int. Cl.³ H03K 4/94, 5/01
U.S. Cl. 307—443 23 Claims



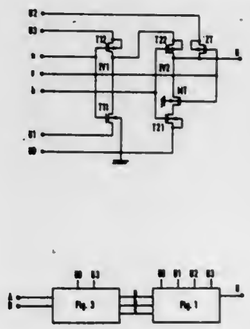
1. An integrated circuit formed on a semiconductor substrate, comprising:
a first terminal for receiving a first power supply voltage;
a second terminal for receiving a second power supply voltage;
a transistor circuit comprising a plurality of transistors connected in series via their drain-source current paths between said first and second terminals, at least one of the transistors being supplied with an input signal at the gate thereof;
a variable capacitor circuit connected to an output terminal of said transistor circuit between a node at which two of said transistors are interconnected and a reference voltage; and
a voltage generator for producing an output voltage signal applied to an input terminal of said variable capacitor circuit for controlling the capacitance thereof, the voltage generator being capable of irreversibly changing the level of the output voltage signal thereby changing the capacitance of said variable capacitor circuit.

4,499,388
SELECTION CIRCUIT FOR THREE OR FOUR POTENTIALS

Fritz G. Adam, Freiburg, Fed. Rep. of Germany, assignor to ITT Industries, Inc., New York, N.Y.

Filed Mar. 18, 1982, Ser. No. 359,532
Claims priority, application European Pat. Off., Apr. 1, 1981, 81102461.1
Int. Cl.³ H03K 19/094, 19/20
U.S. Cl. 307—474 10 Claims

1. An integrated selection circuit for four potentials corresponding to the zero point of the circuit (U0) and three potentials differing therefrom, (U1, U2, U3), which is realized in a complementary insulated-gate field-effect transistor (CMOS) technology, comprising:
a first inverter (IV1) comprising first and second complementary channel type transistors (T11, T12) connected in series between the first (U1) and the third potential (U3), said first transistor (T11) connected to the first potential (U1) with its substrate connected to the zero point of the circuit (U0), and said second transistor (T12) having its substrate connected to the third potential (U3); and
a second inverter (IV2) comprising two complementary channel type transistors (T21, T22) and intermediate transistor (MT), all connected in series, and having intermediate transistor (MT) connected between the transistors (T21, T22), said intermediate transistor (MT) being of the same channel conduction type as that of the transistor (T21) that is connected to the zero point of the circuit, the second inverter being connected between the zero point of the circuit and the output of the first inverter (IV1), the substrate of the transistor T21 is connected to the zero point of the circuit and the substrate of the intermediate transistor (MT) is also connected to the zero point of the circuit, and the substrate of the other transistor T22 forming an insulated island and is connected to the source electrode thereof and to the output of the first inverter, a connection between the intermediate transistor (MT) and the other transistor T22 of the second inverter (IV2) is the output of the selection circuit, an additional transistor (ZT) being of the same channel-conduction type as that of said other transistor T22 is connected by its source electrode to the second potential (U2) and by its drain electrode to the output of the selection circuit, the substrate of said additional transistor (ZT) forms an insulating island of its own which is connected to the source electrode of said additional transistor (ZT);



the four potentials satisfying the relationship: U2, U3>U1>U0, when the selection circuit is realized in accordance with the CMOS technology comprising n-insulating islands in a p-substrate, and U2, U3<U1<U0 when the selection circuit is realized in accordance with the CMOS technology comprising p-insulating islands in an n-substrate;
wherein a first circuit means provides a first or a second selection signal (a, b) to the first or the second inverter (IV1, IV2) respectively, and a second circuit means provides a third selection signal (c) to the gates of both said intermediate and said additional transistor (MT, ZT) with the third selection signal (c) meeting one of the Boolean logic functions:

$c=a\cdot b=a+b$ or $c=a\cdot b=a+b$

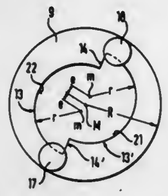
4,499,389
SELF-STARTING ELECTRIC MOTOR

Günter Hoche, Bretten, Fed. Rep. of Germany, assignor to Hermann Mellert GmbH & Co. KG, Bretten, Fed. Rep. of Germany

Filed Jul. 6, 1983, Ser. No. 511,174
Claims priority, application Fed. Rep. of Germany, Jul. 7, 1982, 3225435
Int. Cl.³ H02K 7/10
U.S. Cl. 310—41 13 Claims

1. A self-starting synchronous electric motor comprising: a permanent magnet rotor having an axis of rotation, first and

second end faces and a side surface; a stator having pole pieces disposed adjacent said side surface and spaced therefrom by an air gap; stator windings energisable by an AC current; a stationary part spaced from and facing said first end face of said rotor; an eccentric element mounted adjacent said first end face for rotation with said rotor, said eccentric element comprising an inner part and a single abutment part which projects radially outwardly from said inner part and has a part-cylindrical outer surface with a radius of curvature and an abutment surface extending generally radially between said part-cylindrical outer surface and said inner part; a blocking member having a profiled aperture surrounding said eccentric element and cooperating therewith to determine the direction of rotation of said rotor about said axis, said blocking member being disposed between said stationary part and said first end face; first and second guide pins on said blocking member for guiding said blocking member for linear oscillatory movement in an axial plane which includes said axis of rotation, said guide pins



being disposed in said axial plane on diametrically opposite sides of said axis of rotation and being directed parallel to said axis of rotation; and first and second elongate slot guides in said stationary part for receiving said first and second guide pins respectively, said first and second elongate slot guides extending radially of said axis of rotation on opposite sides thereof along respective radii which lie in said axial plane; and wherein said profiled aperture is bounded by two semi-circular arcs, which are displaced relative to one another and have respective ends, and by two substantially radially directed counterabutment surfaces which respectively extend between adjacent ends of said semi-circular arcs; whereby, on rotation of said rotor in one direction, said abutment surface strikes one of said counterabutment surfaces, thus preventing further rotation of said rotor in said direction, and whereby, on rotation of said rotor in an opposite direction, said eccentric element produces said linear oscillatory movement of said blocking member and said blocking member does not block further rotation of said rotor.

4,499,390

WATERPROOF STRUCTURE FOR SLIP RINGS OF AN A.C. GENERATOR FOR A CAR

Yoshiyuki Iwaki, Himeji; Hideo Imori, Kanzaki, and Hitoshi Gotou, Himeji, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 30, 1983, Ser. No. 556,410
Claims priority, application Japan, Nov. 30, 1982, 57-182816
Int. Cl.³ H02K *5/10*
U.S. Cl. 310—88 **2 Claims**

1. An a.c. generator for a motor vehicle, said a.c. generator comprising:

(a) a housing comprising a rear bracket;

(b) a stator disposed in said housing;

(c) a rotor disposed in said housing in operative association with said stator;

(d) slip rings operatively connected to said rotor;

(e) a rectifier disposed in said housing adjacent to said slip rings, said rectifier being mounted on said rear bracket;

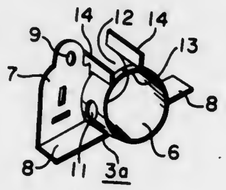
(f) an external terminal mounted on said rear bracket;

(g) a brush holder disposed in said housing, said brush holder containing contact brushes in operative contact with said slip rings; and

(h) a protective member made of plastic resin, said protective member comprising:

(i) a cylindrical portion which covers the outer periphery of said slip rings, said cylindrical portion having a drain hole formed in the lower part thereof and having a substantially rectangular opening in the upper part thereof which is sized and shaped to permit said contact brushes to pass therethrough with a small clearance therearound;

(ii) a first flat plate in the form of a flange which is perpendicular to said cylindrical portion and which extends outwardly from said cylindrical portion at one end



thereof, said first flat plate being provided with a fitting hole through which said first flat plate and said brush holder are fastened to said rear bracket, said first flat plate serving to separate and insulate said external terminal from said bracket;

(iii) a second flat plate extending perpendicularly from the bottom of said first flat plate and laterally from the lower part of said cylindrical portion, said second flat plate being spaced from said rectifier by a small predetermined gap which permits cooling air to pass therethrough to cool said rectifier; and

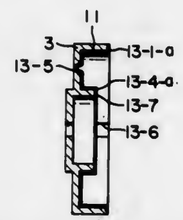
(iv) at least one upright piece extending upwardly from said cylindrical portion at an edge of the rectangular opening therein and covering a side surface of said contact brushes.

4,499,391

END BRACKET FOR MOTOR

Masafumi Sakamoto, Kiryu, Japan, assignor to Japan Servo Co., Ltd., Tokyo, Japan

Filed Sep. 13, 1982, Ser. No. 416,933
Claims priority, application Japan, Dec. 28, 1981, 56-193056
Int. Cl.³ H02K *3/42*
U.S. Cl. 310—89 **5 Claims**



1. In an electric motor that comprises a rotor with a shaft that defines an axis and a stator core within which the rotor coaxially rotates, an end bracket whereby a bearing for said shaft is supported in coaxial relation to the core, said end bracket comprising:

(A.) an outer member of light, substantially rigid material,

(1) having one portion that is connected with the core and projects in an axially outward direction therefrom, and

(2) having another portion that provides a seat wherein said bearing is supported in fixed coaxial relation to the core; and

(B.) a magnetic shielding member of magnetically permeable material, disposed inwardly adjacent to said outer member and having

(1) a larger diameter substantially cylindrical wall portion which is coaxial with the core and has an axially inner end abutting the core,

(2) a concentric smaller diameter cylindrical wall portion surrounding said other portion of the outer member, having an axially outer end that is substantially radially opposite the axially outer end of the larger diameter cylindrical wall portion and having an axially inner end that is axially spaced from the core, and

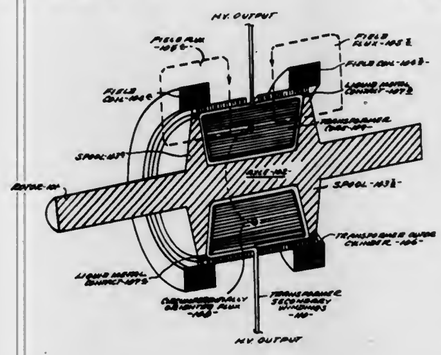
(3) a concentric annular wall portion that extends radially between the axially outer ends of said cylindrical wall portions and connects them.

4,499,392

HOMOPOLAR ALTERNATOR ELECTROMECHANICAL POWER CONVERSION MACHINE

Lawrence J. Giacoletto, Okemos, Mich., assignor to Carol G. Heiser, Wilmington, Del., a part interest

Filed Jul. 18, 1983, Ser. No. 514,610
Int. Cl.³ H02K *31/04*
U.S. Cl. 310—178 **18 Claims**



1. An electromechanical conversion machine which comprises, in combination:

an electrical conducting member of circular symmetry rotating in an alternating magnetic field;

a field coil with alternating electrical excitation for producing said field;

a stator conducting member electrically connected to the rotating member in such a manner as to form with said rotating member a continuous electrical conducting transformer primary circuit;

a nonrotating magnetic core of toroidal shape positioned within said continuous electrical circuit and magnetically coupled therewith;

a multiturn secondary circuit formed around, but insulated from, said magnetic core so as to be magnetically coupled to the alternating magnetic field produced therein; and

output terminals joined to said secondary circuit.

4,499,393

SURFACE ACOUSTIC WAVE SPECTRUM ANALYZER

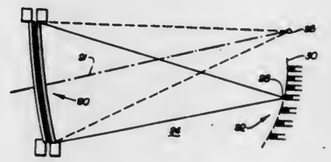
Robert B. Stokes, Torrance; Kuo-Hsiung Yen, Manhattan Beach; Kei-Fung Lau, Harbor City; Reynold S. Kagiwada, Los Angeles, and Michael J. Delaney, Lomita, all of Calif., assignors to TRW Inc., Redondo Beach, Calif.

Filed Feb. 15, 1984, Ser. No. 580,575
Int. Cl.³ H03H *9/25*; H01L *41/08*
U.S. Cl. 310—313 A **41 Claims**

1. A surface acoustic wave (SAW) device for use as a spectrum analyzer, said device comprising:

a piezoelectric substrate;

an input transducer array disposed on the surface of said substrate, said array having a plurality of individual interdigital transducers connected electrically for the application of input signals, and spaced along an approximately circular arc having a transverse axis of symmetry, to provide acoustic radiation that is focused onto a focal arc of greater than zero order, laterally spaced from said axis of symmetry, each position on the focal arc being representative of a different frequency component in the input signals; and



an output transducer array, disposed on said substrate in such positions as to convert acoustic signals received at the focal arc into corresponding electrical output signals representative of relatively narrow frequency bands in the input signals;

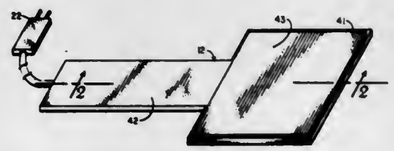
wherein said input transducer array is amplitude-weighted to improve beam focusing and reduce beam sidelobes, and wherein said input transducer array is amplitude-weighted by means including series capacitance coupling of the input signals to selected ones of said input transducers.

4,499,394

POLYMER PIEZOELECTRIC SENSOR OF ANIMAL FOOT PRESSURE

Jan G. Koal, NE. 820 California St., Pullman, Wash. 99163

Filed Oct. 21, 1983, Ser. No. 544,227
Int. Cl.³ H01L *41/08*
U.S. Cl. 310—330 **2 Claims**



1. A piezoelectric sensor for measuring the pressure between a part of an animal's foot and a reactive surface, comprising, in combination:

a flat, sheet-like plastic type, piezoelectric sensing element defining a sensing body and an elongate connecting tail with opposed sensing surfaces defined only in the medial portion of the sensing body and being completely surrounded by a peripheral non-sensing band,

electrical connecting circuitry communicating with the sensor including

two similar sheet-like, electrically conductive metallic foil connectors each smaller than and of shape similar to the sensor and each defining a sensor connecting portion with a connecting tail projecting therefrom, one connector communicating with the sensing surface on each side of the sensor and each connector having its tail portion positionally adhered by electrically non-conductive adhesive on the medial part of the connecting tail of the sensor,

connecting wires electrically communicating with the outer end portion of each connector tail, and

an electrically conductive adhesive, joining adjacent sur-

faces of each metallic foil connector and sensing surface, and

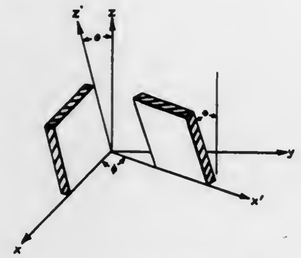
a casement covering at least the sensor and foil connectors of the connecting circuitry, the potentially exposed surface of the casement, outwardly adjacent the sensing area, being covered by a semi-rigid protective plate of substantially the same areal extent as the sensing body of the casement.

4,499,395

CUT ANGLES FOR QUARTZ CRYSTAL RESONATORS

Alfred Kahan, Brookline, Mass., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed May 26, 1983, Ser. No. 498,336
Int. Cl.³ H01L *41/08*
U.S. Cl. 310—361 **9 Claims**



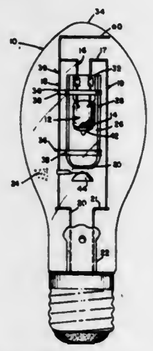
1. A crystal resonator comprising a thin, quartz plate vibrating in a thickness shear c-mode resonance and (A) having a doubly rotated crystallographic orientation around (1) the z-axis of said plate by an angle phi (ϕ) ranging from about 30° to 60° and (2) the x-axis of said plate by an angle theta (θ) ranging from about 12° to 31.92°; and (B) said crystalline resonator further characterized by having turnover temperatures in the range of about 60° C. to 200° C.

4,499,396

METAL HALIDE ARC DISCHARGE LAMP WITH MEANS FOR SUPPRESSING CONVECTION CURRENTS WITHIN THE OUTER ENVELOPE AND METHODS OF OPERATING SAME

Timothy Fohl, Carlisle; William M. Keeffe, Rockport, and Harold L. Rothwell, Rowley, all of Mass., assignors to GTE Products Corporation, Stamford, Conn.

Filed Aug. 18, 1982, Ser. No. 409,280
Int. Cl.³ H01J *61/34, 61/18*
U.S. Cl. 313—25 **11 Claims**



1. A metal halide arc discharge lamp comprising:

(a) an outer envelope;

(b) an arc tube positioned within said outer envelope, said arc tube having a fill including metal halide additives;

(c) a gaseous fill within said outer envelope, said fill being subject to convection currents during operation of said lamp; and

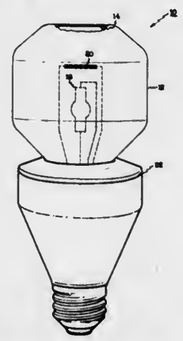
(d) convection-suppressing means for suppressing convection currents within said fill of said outer envelope, said convection-suppressing means being shaped and mounted with respect to said arc tube such that the value of the Rayleigh Number in the atmosphere laterally surrounding said arc tube is less than 5×10^4 during continuous operation of said lamp.

4,499,397

COLOR CORRECTIVE COATING FOR ARC LAMP

William G. James, Cleveland Heights, Ohio, assignor to General Electric Company, Schenectady, N.Y.

Filed Nov. 5, 1982, Ser. No. 439,519
Int. Cl.³ H01J *5/16, 61/40*; H01K *1/32*
U.S. Cl. 313—112 **4 Claims**



1. An arc lamp having an inner envelope of a quartz type arc tube containing a mercury vapor or other metallic vapors, an inner tungsten filament light source, means to produce an electrical discharge, and an outer envelope having a color corrective coating on its inner surface; said color corrective coating effective for shifting the color point on a MacAdam type color plot of an arc tube lamp from approximately x=0.4, y=0.365 and CCT=3400° C. to approximately x=0.435, y=0.405 and CCT=3000° C., which is substantially a color point of an incandescent lamp having a tungsten type filament, wherein said color corrective coating comprises:

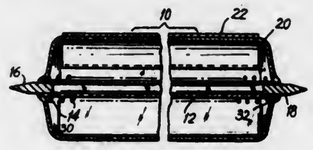
a mix of electrostatic silica blend and a yellow oxide pigment.

4,499,398

INCANDESCENT LIGHTING

Ronald G. Munroe, 600 Hylan Blvd., Staten Island, N.Y. 10305

Filed Jun. 8, 1982, Ser. No. 386,345
Int. Cl.³ H01K *1/24, 1/64, 1/18*
U.S. Cl. 313—113 **19 Claims**



1. An improved incandescent lamp comprising:

(A) an elongated light-transmissive envelope having ends,

(B) an elongated refractory stiff hollow element disposed within the envelope substantially coaxially thereof,

(C) at least one elongated helical resistive filament wound about and internally supported over substantially the full length of the filament by the stiff hollow element over substantially the full length of said stiff hollow element, said filament generating light when heated to incandescence by flow of electric current therethrough,

(D) means supporting the ends of the stiff hollow element at the ends of the envelope,

(E) two electrically conductive terminals, one of said terminals being situate proximate and connected to one end of the resistive filament, and the other terminal being situate proximate and connected to the other end of the resistive filament,

(F) means mounting each terminal to a different end of the envelope coaxially of the envelope.

4,499,399

ANTI-POLLUTANT SPARK PLUG ADAPTOR

Manuel Flores, 1208 Lee St., Marrero, La. 70072

Filed Aug. 9, 1982, Ser. No. 406,496
Int. Cl.³ H01T *13/00*; F02B *19/18*
U.S. Cl. 313—143 **5 Claims**



1. A spark plug adaptor apparatus for an internal combustion engine, comprising:

a. a tubular member having an enlarged upper portion internally threaded to receive spark producing means and a smaller lower portion externally threaded and adapted for threading into a spark-plug receiving bore of the internal combustion engine;

b. an internal central conduit of said tubular member defining an upper preliminary combustion chamber, which houses a spark-producing means of said spark plug, and a acceleration orifice with said upper chamber and which communicates with a primary combustion chamber of said internal combustion engine;

c. a deflector means disposed below said secondary chamber for imparting turbulence to the preliminary combustion products;

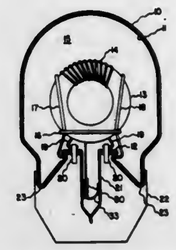
d. air cooling means integral to said upper portion of said tubular member for dissipating heat from said preliminary combustion chamber surrounding said spark-producing means of said spark plug.

4,499,400

USE OF AMALGAMS IN SOLENOIDAL ELECTRIC FIELD LAMPS

John M. Anderson, Scotia, and Peter D. Johnson, Schenectady, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Continuation-in-part of Ser. No. 214,903, Dec. 10, 1980, abandoned, which is a division of Ser. No. 954,411, Oct. 25, 1978, Pat. No. 4,262,231. This application Jul. 19, 1982, Ser. No. 399,552
Int. Cl.³ H01J *63/02*
U.S. Cl. 313—265 **6 Claims**



1. A solenoidal electric field discharge lamp comprising:

an evacuable, light-transmissive envelope having an interior phosphor coat;

a gaseous discharge medium disposed in said envelope, at least a portion of said medium being mercury vapor;

an electrically energizable toroidal magnetic core disposed within said medium, said core being electrically couplable to a ballast located at a base end of said envelope;

a metallic wetting agent attached to an inner, phosphor-free surface of said envelope; and

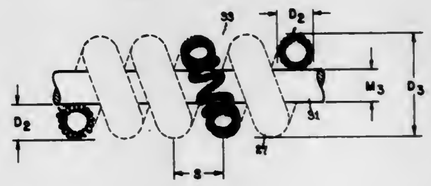
an amalgamating alloy attached over said wetting agent, for controlling mercury vapor pressure within said envelope.

4,499,401

TRIPLE COIL INCANDESCENT FILAMENT

James A. Graves, Highland Heights, and Gilbert H. Reiling, Chardon, both of Ohio, assignors to General Electric Company, Schenectady, N.Y.

Filed Mar. 3, 1983, Ser. No. 471,609
Int. Cl.³ H01K *1/14*
U.S. Cl. 313—315 **3 Claims**



1. An incandescent lamp comprising an electrically conductive base having a hermetically sealed light-transmissive envelope attached thereto, means for structurally and electrically mounting a filament within the said enclosure, a triple-coil filament electrically connected to and supported by said means for mounting, wherein said triple-coil filament comprises:

a coiled-coiled-coil of tungsten wire having an outer diameter D3 in the range of 20d to 26d, where d is the diameter of the tungsten wire

said triple coil filament with the given range having a coil geometry that allows its successful arrangement within said incandescent lamp without sagging and without the

need of prior recrystallization or stress-relieving treatment.

4,499,402

COLOR DISPLAY TUBE

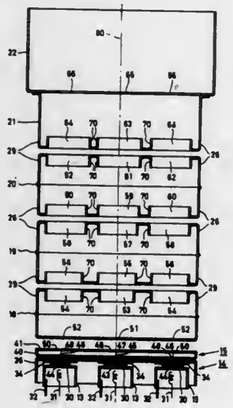
Antonius W. F. van der Heijden, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 21, 1982, Ser. No. 370,428

Claims priority, application Netherlands, May 22, 1981, 8102527

Int. Cl.³ H01J *29/50, 29/82*

U.S. Cl. 313—414 **2 Claims**



1. A color display tube comprising an envelope containing a display screen and an electron gun system for producing three electron beams directed at said screen, said electron gun system including a plurality of cup-shaped focusing electrodes successively-arranged along a longitudinal axis of the tube, each focusing electrode having an aperture centered on the axis for passing a central one of the electron beams and having two outer apertures for passing the other two electron beams, the outer apertures in at least one of the focusing electrodes being laterally-shifted with respect to the corresponding apertures in another one of the focusing electrodes for passing the same electron beams, said laterally-shifted apertures being defined by axially-extending collars,

characterized in that a side of said cup-shaped focusing electrode having the laterally-shifted apertures includes at least one slot-shaped opening to facilitate passage, during assembly of the electrodes, of an arm having a shaped end for engaging one of said collars and for positioning the respective laterally-shifted aperture relative to the corresponding aperture in said other focusing electrode.

4,499,403

SKIN TANNING FLUORESCENT LAMP CONSTRUCTION UTILIZING A PHOSPHOR COMBINATION

Elton T. Leppelmeier, Highland Heights, and Frank I. Ewing, Cleveland Heights, both of Ohio, assignors to General Electric Company, Schenectady, N.Y.

Filed Sep. 6, 1979, Ser. No. 72,958

Int. Cl.³ H01J *61/44*

U.S. Cl. 313—487 **4 Claims**

1. An improved skin tanning fluorescent lamp having a sealed transparent envelope enclosing means to generate a low pressure mercury discharge within said envelope, and a coating contained within said envelope for conversion of at least a portion of the radiation emitted from said discharge to skin tanning radiation, the improved coating comprising a physical mixture consisting essentially of a first phosphor emitting in the 320–400 nanometer region of the spectrum and a second phosphor emitting in the 280–320 nanometer region of the spectrum, so that principal lamp emission resides in said 320–400



nanometer region, wherein the second phosphor is approximately 4–16% by weight of said coating.

4,499,404

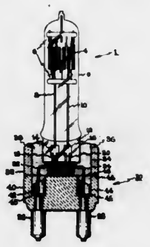
INCANDESCENT LAMP WITH CERAMIC BASE

LaVerne E. Walsh, Chagrin Falls, Ohio, assignor to General Electric Company, Schenectady, N.Y.

Filed Aug. 5, 1982, Ser. No. 405,650

Int. Cl.³ H01K *1/46, 1/50;* H01R *33/74*

U.S. Cl. 313—579 **7 Claims**



1. An incandescent lamp of the relatively high wattage type requiring a ceramic base which comprises:

(a) a transparent vitreous envelope containing a multifilament incandescent lamp coil suspended from a filament mount and connected to a pair of conductive inleads hermetically sealed to the vitreous envelope in a press seal region at one end of said envelope;

(b) external connector pins secured to said lamp inleads to provide electrical current to said lamp; and

(c) a two-part base for said lamp formed of electrically insulative ceramic material joined together in butt-seal engagement along a horizontal plane transverse to the longitudinal lamp axis with one base part having a central cavity opening in which the press seal end of said lamp is disposed while the other base part contains longitudinal openings which physically support said connector pins.

4,499,405

HOT CATHODE FOR BROAD BEAM ELECTRON GUN

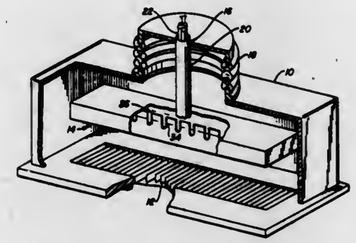
Gary K. Loda, Danville, Calif., assignor to RPC Industries, Hayward, Calif.

Filed May 20, 1981, Ser. No. 265,462

Int. Cl.³ H01J *29/50, 31/00*

U.S. Cl. 315—13.1 **14 Claims**

1. An improved broad beam electron gun of the type having a generally planar anode assembly which is generally transparent to accelerated electrons, a cathode assembly, which is arranged parallel to and spaced apart from the anode assembly to form an unobstructed chamber between the cathode assembly and the anode assembly, means for creating an electrostatic potential between the anode assembly and the cathode assembly to accelerate electrons from the cathode assembly toward and through the anode assembly, and an evacuated housing, of which the anode assembly forms one wall, surrounding the cathode assembly, wherein the improvement comprises



cathode means, which are operated in a space-charge-limited mode and which are positioned within the cathode assembly, for generating a substantially hemispherically shaped space-charge distribution, the cathode means including an electron emitting structure having a major axis of symmetry and principal electron emissive surfaces which are positioned to collectively extend parallel to and to be spaced equidistant from the major axis of symmetry of the electron emitting structure, the major axis of symmetry being orthogonal to the plane of the anode.

4,499,406

ELECTRONIC DISCHARGE TUBE AND ELECTRONIC LIGHT EMITTER USING IT

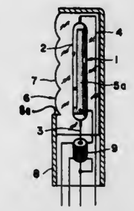
Numata Saburo, Urawa, Japan, assignor to Fuji Photo Optical Co., Ltd., Japan

Filed Mar. 22, 1982, Ser. No. 360,818

Claims priority, application Japan, Mar. 30, 1981, 56-46744

Int. Cl.³ H01J *7/44, 17/34, 19/78, 29/96*

U.S. Cl. 315—57 **19 Claims**



1. An electronic light emitter comprising an electric-discharge tube having a cathode, an anode, a trigger electrode and a transparent tube with a peripheral surface for enclosing said cathode and anode, said trigger electrode being provided on said peripheral surface of said transparent tube and serving as a reflecting portion for reflecting light emitted from said electric-discharge tube toward outside said discharge tube; and a transparent body comprising an elongated, solid block of transparent material having a substantially tubular opening for receiving and enclosing said electric-discharge tube therein, said transparent body having a reflecting surface for reflecting the light reflected by said reflecting portion of said electric-discharge tube toward outside said transparent body.

4,499,407

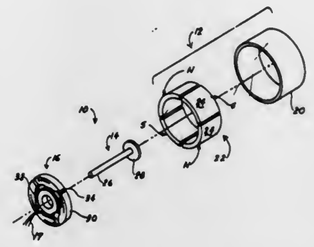
BRUSHLESS DC MOTOR ASSEMBLY WITH IMPROVED STATOR POLE

Donald J. MacLeod, Aptos, Calif., assignor to Applied Motion Products, Inc., Scotts Valley, Calif.

Filed Jan. 21, 1983, Ser. No. 459,797

Int. Cl.³ H02K *29/00*

U.S. Cl. 318—254 **6 Claims**



1. An improved brushless direct current electric motor comprising:

a rotor portion including a ring magnet divided into a plurality of alternately radially polarized zones of equal size and shape;

a shaft attached to the rotor portion and providing an axis of rotation therefor;

A stator portion including a rigid magnetically conducting stator stack and plurality of conducting windings wrapped thereabout, the stator stack including a plurality, equal to the number of said polarized zones, of symmetrically arrayed pole portions of equal size, each said pole portion in the form of a generalized anchor shape with the arcial two pronged portion thereof arrayed outward toward said ring magnet so as to have a constant airgap therebetween, with one selected prong of each said anchor shaped pole portion having one or more apertures formed therethrough such that said selected prong includes less magnetic conducting material than the opposing prong;

electrical power and control means for operating the motor.

4,499,408

CONTROL CIRCUIT FOR AN ELECTRONICALLY COMMUTATED MOTOR, AN INTEGRATED CIRCUIT FOR AN ECM, AND A METHOD OF OPERATING AN ECM

Ricky F. Bitting, Raleigh, N.C.; William Pell, No. Syracuse, N.Y.; Thomas A. Brown, Fulton, N.Y., and William K. Guzek, Liverpool, N.Y., assignors to General Electric Company, Fort Wayne, Ind.

Filed Jun. 9, 1983, Ser. No. 502,601

Int. Cl.³ H02P *6/02*

U.S. Cl. 318—254 **70 Claims**

1. An integrated circuit for use in a control circuit for an electronically commutated motor adapted to be energized from a power source, said motor having a multistage winding assembly with a neutral connection, and a magnetic assembly, the two arranged for mutual relative rotation, said motor in a given state of a multistate energization sequence having an unenergized winding stage and at least one winding stage energized in the appropriate sense to cause relative rotation, said integrated circuit comprising:

input terminal means for connection to the winding stages and to the neutral motor connection or equivalent for deriving the back emf induced in successive unenergized winding stages;

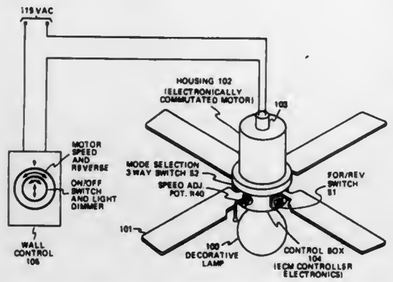
input switching means connected to said input terminal means for selecting an unenergized winding stage for differential derivation of the induced back emf, said input

switching means being responsive to an unenergized winding-stage selection signal;

a two input, differential transconductance amplifier means, the selected differentially derived back emf being coupled between the two inputs of said amplifier means for conversion to a corresponding current;

a terminal for connecting the amplifier output to capacitive integration means, the voltage appearing at said terminal being substantially proportional to the integral of said selected, differentially derived back emf;

timing comparison means for comparing the voltage of said integration means to a value suitable for commutation, and upon sensing equality generating a timing signal at the instant for commutation;



control logic means for generating winding stage selection signals for motor operation in a multistate energization sequence having m motor-energization states, in each state of which a signal is generated for selecting an unenergized winding stage for sensing said induced back emf, and a signal is generated for selecting at least one winding stage for energization, the motor energization state changing in response to said timing signal at the instant for commutation to the next state in a sequence; and

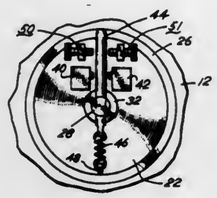
output terminals means for coupling said winding stage energization signals to a plurality of power switching means for appropriate energization of the winding stages in said multistate sequence.

4,499,409

PLUGGING DEFEAT SYSTEM FOR ELECTRIC MOTORS

James J. Bauer, Richland, Mich., assignor to Clark Equipment Company, Buchanan, Mich.

Filed Jan. 31, 1984, Ser. No. 575,529
Int. Cl.³ H01H 35/06; H02P 3/10
U.S. Cl. 318—383 **14 Claims**



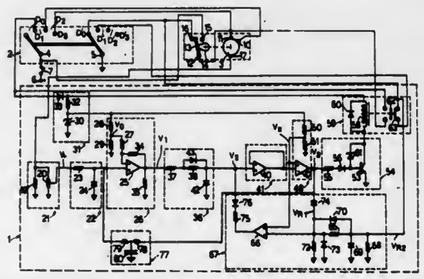
8. A plugging defeat system for use with a reversible electric motor having a shaft and a power source, comprising a slipping clutch means for sensing the speed and direction of the motor, including a viscous drive unit having a housing, a driver disc connected to said motor shaft, a driven disc closely spaced from and co-axial with said driver disc, and a viscous fluid in said housing for acting on said driven disc under the force applied by said driver disc, when the motor reaches a predetermined speed in either direction, a shaft member operatively connected to said driven disc for rotation therewith when the motor reaches a predetermined speed in either direction, switch means for enabling the motor in forward and reverse directions, and a lever means operatively connected to said shaft member for selectively opening said switch means, said switch means including a normally closed forward enabling switch and a normally closed reverse enabling switch mounted on said housing on opposite sides of said lever means for transmitting electrical current from the power source to the motor when in a closed position and for preventing the respective current flow when either of said switches is opened by said lever means.

4,499,410

DEVICE FOR AUTOMATICALLY ADJUSTING THE FREQUENCY OF ACTIVATION OF A MOTOR VEHICLE WINDSCREEN WIPER

Stefano Iacoponi, and Vittorio Di Nunzio, both of Turin, Italy, assignors to Fiat Auto Spa., Turin, Italy

Filed Jun. 17, 1983, Ser. No. 505,300
Claims priority, application Italy, Jun. 22, 1982, 67793 A/82
Int. Cl.³ H02P 1/04
U.S. Cl. 318—444 **12 Claims**



1. An electronic circuit for automatic adjustment of the frequency of activation of an intermittent motor vehicle windscreen wiper based upon the quantity of moisture on the windscreen, comprising:

a wiper motor;

means for detecting the variance in current passing through said motor wherein said means generates a proportional voltage signal (V_i);

means for filtering and amplifying said voltage signal (V_i) generated by said detecting means wherein said filtering and amplifying means generates a filtered voltage signal (V_2);

means for generating a threshold voltage signal (V_3);

means for comparing said voltage signal (V_2) derived from said detecting means with said threshold signal (V_3) wherein said comparing means generates a control signal (V_3);

means for controlling the power supplied to said motor responsive to said control signal wherein said controlling means simultaneously controls a first direct supply circuit for said motor and a second circuit forming a short circuit connection to said motor;

means for overriding the intermittent activation of the wiper wherein said overriding means provides continuous operation for at least two wiping cycles upon initial activation of the circuit whereby said means generates a voltage signal which is added to said signal derived from said detecting means; and

switch means for controlling the activation of the circuit.

4,499,411

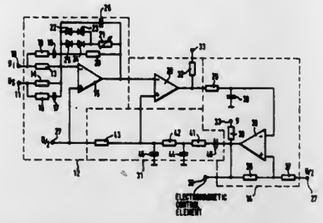
Patent Not Issued For This Number

4,499,412

REGULATING DEVICE FOR AN ELECTROMAGNETIC CONTROL ELEMENT, ESPECIALLY IN AN INTERNAL COMBUSTION ENGINE WITH AUTO-IGNITION

Johannes Locher, Stuttgart, and Dieter Schaller, Neubulach, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Sep. 29, 1982, Ser. No. 426,329
Claims priority, application Fed. Rep. of Germany, Mar. 4, 1982, 3207863
Int. Cl.³ G05B 11/42
U.S. Cl. 318—592 **12 Claims**



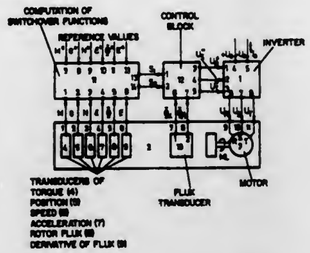
1. A regulating device for an electromagnetic control element for regulating an actual value of said electromagnetic control element corresponding to the position of said control element, especially in an internal combustion engine with auto-ignition, comprising, a first, non-linear regulator producing a first output signal for regulating said actual value to a desired value, and a second pulse regulator receiving said first output signal for producing a second output signal and regulating said second output signal to said first output signal for controlling said electromagnetic control element.

4,499,413

METHOD AND APPARATUS FOR THE CONTROL OF SYNCHRONOUS MOTORS

Dimitrij B. Izosimov, Ulica Profsojuzaja, and Asif Sabanovic, Sarajevo, both of Yugoslavia, assignors to Energoinvest, Yugoslavia, and IAT, U.S.S.R.

Continuation of Ser. No. 903,208, May 5, 1978, abandoned. This application Nov. 26, 1980, Ser. No. 210,617
Claims priority, application Yugoslavia, May 6, 1977, 1155/77
Int. Cl.³ H02P 7/26
U.S. Cl. 318—802 **12 Claims**



1. A method of controlling an asynchronous machine supplied via a frequency converter comprising:

sensing the value of rotor flux of said machine and the time derivative thereof;

providing a set value of rotor flux and of the time derivative thereof;

producing a first control signal corresponding to a sum of the differences between the sensed and set values of the rotor flux and of their time derivatives;

sensing the rotor angular position of said machine, and the velocity and acceleration thereof;

providing set values of rotor angular position, velocity and acceleration;

providing a second control signal corresponding to a linear combination of differences between the sensed and set values of rotor angular position, velocity and acceleration; and

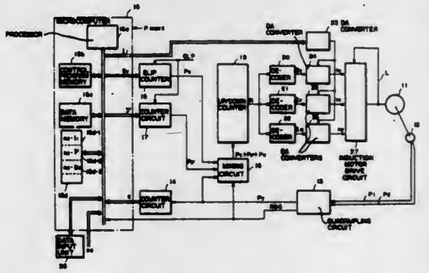
forming the supply voltage vector of said asynchronous machine by use of switching circuitry, said voltage vector having a first component which is the scalar product of a vector whose components are of fixed magnitude and have polarity signs equal to the signs of the first and second control signal, respectively, with the rotor flux vector, such relationship being sign functions, and a second component which is the scalar product of the same vector whose components are sign functions of the control signals and the vector orthogonal to the rotor flux vector having the same magnitude as the rotor flux vector.

4,499,414

AC MOTOR CONTROL METHOD

Yoshiki Fujioka, Higashiyamato, and Mitsuhiko Hirota, Tokyo, both of Japan, assignors to Fanuc Ltd, Minamitsuru, Japan

Filed Nov. 2, 1982, Ser. No. 438,692
Claims priority, application Japan, Nov. 4, 1981, 56-176748
Int. Cl.³ H02P 5/40
U.S. Cl. 318—803 **5 Claims**



1. A method of controlling an induction motor which exhibits a constant torque characteristic at a rotational speed N below a first base speed N_b and a constant output characteristic at a rotational speed N above the first base speed N_b, comprising the steps of:

(a) finding a second base speed N_L after limiting the output power of the induction motor, N_L being derived from the base speed N_b and the ratio η between maximum output power $Pmax_1$ and the maximum output power $Pmax_2$ before and after the output power of the induction motor is limited, respectively;

(b) rendering the slip frequency of the induction motor constant until the rotational speed N of the induction motor reaches the second base speed N_L;

(c) varying the slip frequency in inverse proportion to the rotational speed N for N between N_L and N_b ($N_L < N \leqq N_b$), said step (c) comprising:

(ci) finding a slip frequency f_{1s} at the first base speed N_b by multiplying said ratio η and a constant slip frequency f_{1s} together, wherein the latter resides in a region where the slip frequency is constant and is stored in memory beforehand; and

(cii) varying the slip frequency in inverse proportional to the rotational speed N in such a manner that the slip frequency takes on the value f_{1s} at the base speed N_b; and

(d) varying the slip frequency in proportion to the rotational speed N for N above N_b ($N_b < N$), said step (d) comprising:

(di) finding a slip s' at a rotational speed N above the first

base speed N_b by multiplying said ratio η and a constant slip s together, wherein the latter resides in a region where the slip is constant and the slip frequency is proportional to the induction motor rpm, the slip s being stored in memory beforehand; and

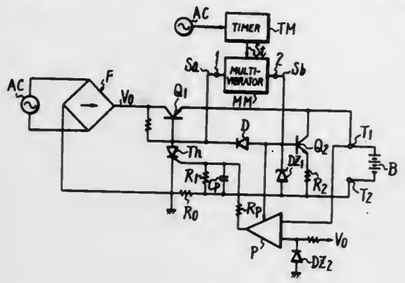
(dii) varying the slip frequency in proportion to the rotational speed N, with the slip s' serving as a proportional constant at a rotational speed N above N_L;

whereby the output power of the induction motor is rendered constant at a rotational speed N above N_L.

4,499,415
BATTERY RAPID CHARGING CIRCUIT

Tadatsugu Itoh, Tokyo, Japan, assignor to Minicam Research Corporation, Tokyo, Japan

Filed Dec. 6, 1982, Ser. No. 447,472
Claims priority, application Japan, Feb. 15, 1982, 57-22268
Int. Cl.³ H01M 10/44
U.S. Cl. 320—5 5 Claims



1. A battery rapid charging circuit comprising:

(a) a DC power source supplying a DC voltage across first and second terminals between which a battery to be charged is connected;

(b) means for short-circuiting said first and second terminals in a short period of time during a charging period of said battery, said short-circuiting means including a one-shot multivibrator producing first and second outputs and a first transistor which is connected across said first and second terminals, whereby when said transistor is supplied with the first output from said one-shot multivibrator, said transistor is made ON to short-circuit said first and second terminals;

(c) means for comparing a terminal voltage of said battery upon said short-circuiting period with a reference voltage; and

(d) means for stopping the supply of said DC voltage to said first and second terminals in response to an output of said comparing means.

4,499,416
REFERENCE VOLTAGE CIRCUIT FOR OBTAINING A CONSTANT VOLTAGE IRRESPECTIVE OF THE FLUCTUATIONS OF A POWER SUPPLY VOLTAGE

Hideharu Koike, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

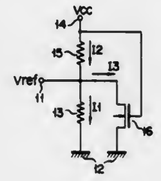
Filed Nov. 22, 1982, Ser. No. 443,630
Claims priority, application Japan, Nov. 25, 1981, 56-188843
Int. Cl.³ G05F 5/00
U.S. Cl. 323—303 8 Claims

1. A reference voltage circuit for obtaining a constant reference voltage irrespective of the fluctuations of a power supply voltage, having a first power supply voltage terminal, a reference voltage terminal and a second power supply voltage terminal, said reference voltage circuit comprising:

a first resistor, connected between said first power supply voltage terminal and said reference voltage terminal;

a second resistor, connected between said second power supply voltage terminal and said reference voltage terminal; and

a first metal oxide semiconductor field effect transistor, the drain thereof being connected to said reference voltage terminal, the source thereof being connected to said first power supply voltage terminal, and the gate thereof being connected to said second power supply voltage terminal, wherein said second resistor has a resistance R_2, said first transistor has a constant β, and a reference voltage V_{ref} is obtained at said reference voltage terminal, with the relationship between R_2, β, and V_{ref} being as follows:



$$R_2 = 1/(\beta \cdot V_{ref})$$

for $\beta = (W/L)(\epsilon \cdot \mu / t)$

where

W is the gate width of said transistor,

L is the gate length of said transistor,

ϵ is the permittivity of a gate oxide film of said transistor,

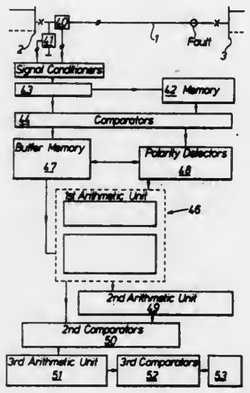
t is the thickness of said gate oxide film of said transistor, and

μ is the surface mobility of the substrate.

4,499,417
DETERMINING LOCATION OF FAULTS IN POWER TRANSMISSION LINES

Arthur Wright, Bridgford, and Christos Christopoulos, Wollaton, both of England, assignors to General Electric Company p.l.c., London, England

Filed Oct. 26, 1982, Ser. No. 436,806
Claims priority, application United Kingdom, Oct. 27, 1981, 8132378
Int. Cl.³ G01R 31/08
U.S. Cl. 324—52 9 Claims



1. A method of determining the location of a fault occuring in an electric power transmission line, comprising the steps of

(i) detecting at a point adjacent to one end of the line a first disturbance in voltage and/or current in the line resulting from occurence of the fault,

(ii) comparing at least one characteristic of each disturbance detected after the first disturbance with the or each characteristic predicted from values measured in the first disturbance, and thereby identifying a reflected disturbance in voltage and/or current produced by reflection of the first disturbance from the said one end, or another point beyond said one end, and then from the fault,

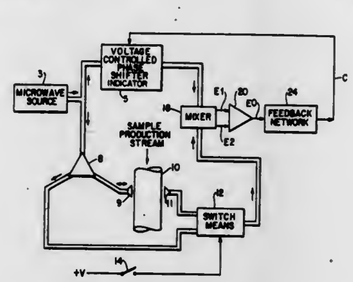
(iii) determining the time taken for the reflected disturbance to travel from the said point to the fault and back to the said point after reflection at the fault, and

(iv) obtaining from said time the distance between the said point and the fault.

4,499,418
WATER CUT MONITORING MEANS AND METHOD

David A. Helms; Gregory J. Hatton, and Thomas M. Williams, all of Houston, Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Aug. 5, 1982, Ser. No. 405,458
Int. Cl.³ G01N 22/04
U.S. Cl. 324—58.5 A 4 Claims



1. A water cut monitor comprising

test cell means for having a fluid mixture flowing through it,

means for transmitting microwave energy into a flowing fluid mixture in the test cell means, said means for transmitting microwave energy comprising microwave source means and transmitting antenna means, and

indicator means for providing an indication of the water cut of the fluid mixture in accordance with the phase difference between the transmitted microwave energy and either microwave energy that has passed through the flowing fluid mixture or microwave energy that is reflected from the flowing fluid mixture said indicator means includes

circulator means connected between said microwave source means and said transmitting antenna means for providing the microwave energy from said source means to said transmitting antenna means and for providing the reflected microwave energy in accordance with the microwave energy which has been reflected by the flowing fluid mixture,

receiving means for receiving the microwave energy that has passed through the flowing fluid mixture to provide received microwave energy,

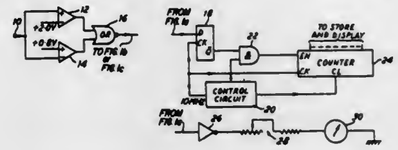
means for providing a control signal, and

switch means connected to the control signal means, to the receiving means and to the circulator means for selecting either the received microwave energy from the receiving means or the reflected microwave energy from the circulator means in accordance with the control signal so that the reference microwave energy is utilized with either the microwave energy that has passed through the fluid mixture or the reflected microwave energy.

4,499,419
METHODS AND APPARATUS FOR ASSESSING THE QUALITY OF LOGIC SIGNALS

Charles Bockett-Pugh, Bracknell, England, assignor to Schlumberger Electronics (U.K.) Ltd., Farnborough, England

Filed Jun. 15, 1981, Ser. No. 273,536
Claims priority, application United Kingdom, Jun. 23, 1980, 8020424
Int. Cl.³ G01R 19/00, 29/00
U.S. Cl. 324—102 8 Claims



1. A method of assessing the quality of a logic signal, comprising the steps of:

generating a first threshold signal corresponding to a lower limiting value below which said logic signal represents a first defined logic state;

generating a second threshold signal corresponding to an upper limiting value above which said logic signal represents a second defined logic state;

comparing said logic signal with said first threshold signal and generating an output signal indicative of whether said logic signal is below said lower limiting value;

comparing said logic signal with said second threshold signal and generating an output signal indicative of whether said logic signal is above said upper limiting value;

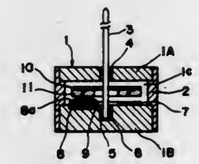
combining said output signals, to generate a control signal indicative of whether said logic signal lies within a range of signal values, between said lower and upper limiting values, not corresponding to any defined logic state; and

integrating said control signal with respect to time, whereby the magnitude of the integral is indicative of the quality of the logic signal.

4,499,420
DISK TYPE MOTOR SPEED DETECTING DEVICE

Manabu Shiraki; Akihiro Nakajima, and Takashi Miyazawa, all of Tokyo, Japan, assignors to Sinano Denki Kabushiki Kaisha, Japan

Filed Feb. 3, 1982, Ser. No. 345,420
Claims priority, application Japan, Mar. 5, 1981, 56-30524
Int. Cl.³ G01P 3/48, 3/54
U.S. Cl. 324—174 4 Claims



1. A disk type motor speed detecting device comprising:

a motor speed detecting device body having upper and lower plates;

a doughnut shaped plate made of a material high in magnetic permeability secured to the inner surface of said lower plate;

a coil which is wound on a portion of said doughnut shaped plate in toroidal manner;

a doughnut shaped magnet confronted with said doughnut shaped plate with a relatively small space therebetween,

said doughnut shaped magnet having angular S and N poles one of which has a magnetization angle of more than 180°;

a disk-shaped yoke which is fixedly placed on the upper surface of said doughnut shaped magnet, said disk-shaped yoke being made of a material high in magnetic permeability; and

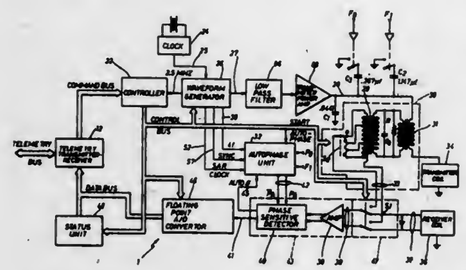
a rotary shaft which penetrates a substantially central portion of said doughnut shaped magnet and is rotatably supported by said upper and lower plates of said body.

4,499,421

DIGITAL INDUCTION LOGGING SYSTEM INCLUDING MEANS FOR GENERATING A PLURALITY OF TRANSMITTER FREQUENCIES

Paul L. Sinclair, Houston, Tex., assignor to Schlumberger Technology Corporation, Houston, Tex.

Filed Jun. 8, 1981, Ser. No. 271,275
Int. Cl.³ G01V *3/28, 3/34;* H03K *13/02*
U.S. Cl. 324—339 **1 Claim**



1. An induction logging tool adapted for operation in a borehole in association with surface equipment, for measuring a characteristic of sub-surface formations, the tool including a transmitter coil which induces formation currents to flow in response to a transmitter signal and a receiver coil which generates a signal characteristic of the formation in response to these currents, the tool comprising:

a waveform generator for digitally generating a sinusoidal transmitter signal and a reference clock signal, said generator including:

a digital memory having a plurality of address sections, said address sections having stored therein magnitude values of sinusoidal waveforms of a respective plurality of different predetermined frequencies, said memory having further stored therein reference clock signal generating data, said data being stored in memory address locations selected relative to said magnitude values in such manner that the reference clock signal generated from said data is phase shifted a predetermined amount with respect to the transmitter signal of the respective frequency, said memory having a frequency select address portion the content of which specifies a particular address section,

latch means providing the content of said frequency select address portion in response to commands received from the surface equipment,

a phase shift unit responsive to said reference clock signal for generating a reference phase signal, and

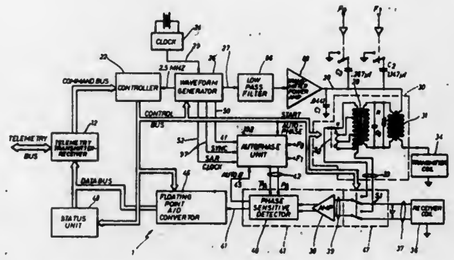
a phase sensitive detector responsive to said reference phase signal and said characteristic signal from the receiver coil for generating an output signal indicative of the magnitude of a component of the characteristic signal that is in-phase with the reference phase signal.

4,499,422

DIGITAL INDUCTION LOGGING TOOL INCLUDING MEANS FOR COMPENSATING FOR PHASE SHIFT ERRORS

Paul L. Sinclair, Houston, Tex., assignor to Schlumberger Technology Corporation, Houston, Tex.

Filed Jun. 8, 1981, Ser. No. 271,280
Int. Cl.³ G01V *3/28*
U.S. Cl. 324—339 **14 Claims**



1. In a digital induction logging tool having a transmitter coil which responds to a transmitter signal to induce eddy currents to flow in the earth's sub-surface formations and a receiver coil which generates a formation characteristic signal in response to the presence of these currents, the tool measuring at least one component of the characteristic signal in a phase sensitive detector in response to a reference phase signal having the same phase as the component signal to be detected, said reference signal being generated in response to a reference clock signal, said tool including a device for compensating for phase shift errors introduced into the component signal measurement by electrical circuit involved in both the generation of the eddy currents and in the detection of the phase component signal of the characteristic signal, the device comprising:

(a) a memory having stored therein first digital data signals for generating the transmitter signal and second digital data siganls for generating the reference clock signal, the first and second data signals being stored in memory address locations selected so that the reference clock signal generated from said second data signals is phase shifted by a predetermined amount relative to the transmitter signal generated from said first data signals in a direction to compensate for phase shift errors introduced by circuits in the tool; and

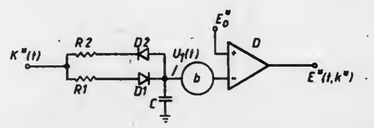
(b) address generating means synchronized to the outputting of said first data signals for generating the memory address signals to said memory.

4,499,423

CIRCUIT ARRANGEMENT FOR CORRECTION OF A SENSOR OUTPUT

Hans Matthiessen, Gross Parin, Fed. Rep. of Germany, assignor to Drägerwerk Aktiengesellschaft, Fed. Rep. of Germany

Filed Dec. 8, 1981, Ser. No. 328,506
Claims priority, application Fed. Rep. of Germany, Dec. 18, 1980, 3047782
Int. Cl.³ G01N *27/42*
U.S. Cl. 324—425 **5 Claims**



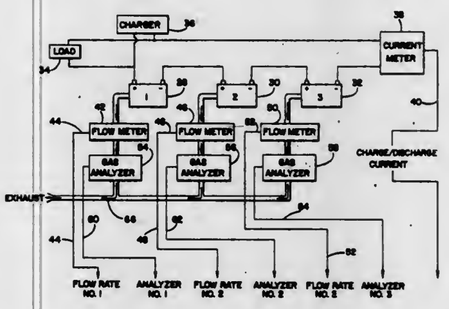
1. A circuit arrangement for correcting the output of a sensor which experiences time dependent error changes in sensitivity, according to a sensitivity curve, as a function of at least one influence factor comprising: correction circuit means which simulates the sensitivity curve as a function of time and the at least one influence factor, connected to the sensor for receiving the sensor output and for producing from the sensor output a corrected output signal of constant sensitivity, said correction circuit means comprising a differential amplifier having two inputs and an output, one of said inputs being provided with a value corresponding to a sensitivity of the sensor when it is not experiencing a load, the other input provided for receiving a quantity proportional to the sensor output as it is changed according to the sensitivity curve.

4,499,424

STATE-OF-CHARGE COULOMETER

John J. Rowlette, Monrovia, Calif., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Apr. 9, 1982, Ser. No. 367,136
Int. Cl.³ G01N *27/46*
U.S. Cl. 324—427 **15 Claims**



10. A coulometer for measuring the state-of-charge of an open-cell lead/acid battery, said coulometer comprising:

a gas flow meter coupled to a gas vent of the battery;

a gas analyzer coupled to the gas vent of the battery;

computing means responsive to outputs of said gas flow meter and said gas analyzer for producing a state-of-charge signal indicative of the state-of-charge of the battery; and

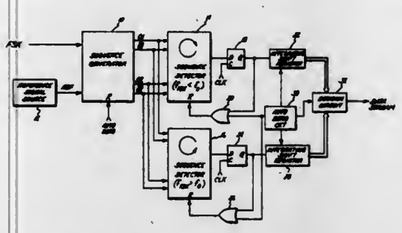
display means responsive to said state-of-charge meter for visually indicating the state-of-charge of the battery.

4,499,425

PHASE VELOCITY SIGN DETECTOR FOR FREQUENCY SHIFT KEY DEMODULATION

Michael F. Maas, White Bear Lake, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Aug. 4, 1982, Ser. No. 404,959
Int. Cl.³ H03D *13/00;* H03K *9/06;* H04L *27/14*
U.S. Cl. 329—50 **25 Claims**



1. A circuit for determining whether an input signal has a frequency greater than or less than a reference signal, the circuit comprising:

means for producing a digital code as a function of the input and reference signals, the digital code being representative of a phase angle between the input and reference signals and changing in a first predetermined sequence when the frequency of the input signal is less than the frequency of the reference signal and changing in a second predetermined sequence when the frequency of the input signal is greater than the frequency of the reference signal;

means for providing a complementary digital code which is a complement of the digital code; and

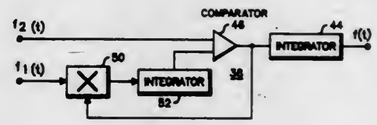
means for receiving both the digital code and the complementary digital code and producing an output indicating whether the input signal has a frequency greater than or less than the reference signal based upon the sequence of the digital code received.

4,499,426

BASEBAND DISCRIMINATOR FOR FREQUENCY OR TRANSFORM MODULATION

Norman W. Parker, Wheaton, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Division of Ser. No. 165,474, Jul. 2, 1980,. This application Sep. 30, 1982, Ser. No. 429,380
Int. Cl.³ G06G *7/62;* H03D *5/00*
U.S. Cl. 329—50 **3 Claims**



1. A baseband discriminator comprising:

first input means for receiving signals of the form sin f(t) where f(t) is an information signal;

second input means for receiving signals of the form cos f(t);

first circuit means coupled to one of said first and second input means for providing from one of said received trigonometric signals, an intermediate signal which is the derivative of one of said received signals; and

second circuit means coupled to said first circuit means and the other of said input means for providing an output signal which is proportional to the derivative of f(t), and

integrating means coupled to the output of said second circuit means to integrate said output signal.

4,499,427

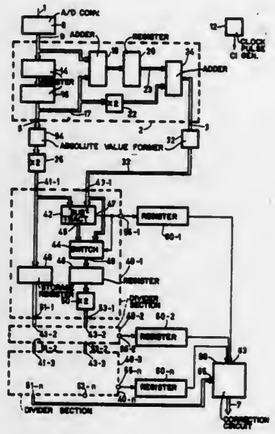
DIGITAL FM DEMODULATOR USING A FILTER HAVING A LINEARLY SLOPING FREQUENCY-AMPLITUDE CHARACTERISTIC

Walter Demmer; Rolf D. Gutsmann, and Jürgen Lenth, all of Hamburg, Fed. Rep. of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jun. 25, 1982, Ser. No. 392,099
Claims priority, application Fed. Rep. of Germany, Jun. 25, 1981, 3124963
Int. Cl.³ H03D *3/06;* H03K *9/06*
U.S. Cl. 329—107 **10 Claims**

1. An arrangement for demodulating a frequency-modulated input signal by means of a filter which, in a range of the possible frequencies of the input signal, has a sloping frequency-amplitude characteristic, characterized in that for demodulation with digital components, a sampling device generates digital sampling values from the input signal at uniformly distributed instants, that an output of the sampling device is connected to an input of a filter, which is in the form of a digital transversal filter having a constant group delay time, and also to an input of a delay device having a time delay equal

to the group delay time of the filter, and that an output of the filter is connected to a numerator input of a divider and an output of the delay device is connected to a denominator input



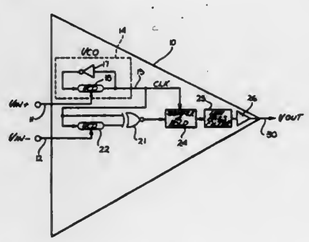
of the divider, said divider producing a sequence of digital words, said sequence indicating the variation of the instantaneous frequency of the input signal.

4,499,428

IC DELAY CONVERSION OPERATIONAL AMPLIFIER

Mel Bazes, Haifa, Israel, assignor to Intel Corporation, Santa Clara, Calif.

Filed Sep. 6, 1983, Ser. No. 529,212
Int. Cl.³ H03F *3/38, 3/16*
U.S. Cl. 330—10 **13 Claims**



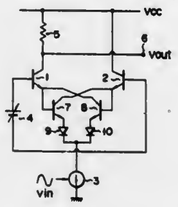
1. An MOS operational amplifier fabricated as an integrated circuit comprising:
- a voltage controlled oscillator (VCO) coupled to receive a first input signal to said amplifier, the frequency of oscillation of said oscillator being a function of said first input signal;
- a voltage controlled delay (VCD) means for providing a delay which is a function of a second input signal to said amplifier coupled to said amplifier, said VCD means being coupled to said VCO for delaying an oscillator signal from said VCO;
- a logic gate coupled to receive (i) the delayed oscillator signal from said VCD means and (ii) said oscillator signal;
- a sample-and-hold means for sampling a signal and for providing an output signal representative of said sampled signal, said sample-and-hold means being coupled to said logic gate and said VCO;
- whereby said amplifier provides adequate operational amplifier performance over a large range of variations in MOS processing, temperature and power supply potential.

4,499,429

VARIABLE GAIN CONTROL CIRCUIT

Yasuhiro Sugimoto, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Feb. 8, 1983, Ser. No. 465,022
Claims priority, application Japan, Feb. 26, 1982, 57-28735
Int. Cl.³ H03F *3/45;* H03G *3/10*
U.S. Cl. 330—254 **10 Claims**



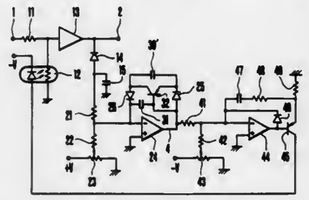
1. A variable gain control circuit comprising:
- a first transistor having an emitter, a base and a collector connected to a first reference power source through resistor means for generating an output signal from the node of said collector and said resistor means;
- a second transistor having an emitter, a base and a collector connected to said first reference power source;
- control means, provided between the base of said first transistor and the base of said second transistor, for controlling base voltages of said first and second transistors;
- a third transistor and a fourth transistor, each having an emitter, a base and a collector;
- means for connecting the emitter of said first transistor to the base of said third transistor;
- means for connecting the emitter of said second transistor to the collector of said third transistor;
- means for connecting the emitter of said first transistor to the collector of said fourth transistor;
- means for connecting the emitter of said second transistor to the base of said fourth transistor;
- a first PN junction forwardly connected in series to the base-emitter junction of said third transistor;
- a second PN junction forwardly connected in series to the base-emitter junction of said fourth transistor; and
- input signal supplying means connected between a second reference power source and said first and second PN junctions for receiving an input signal and supplying current containing a DC component and an AC component which is varied by said input signal.

4,499,430

AUTOMATIC LEVEL CONTROL CIRCUIT

Akira Fujii, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Nov. 30, 1983, Ser. No. 556,632
Claims priority, application Japan, Dec. 6, 1982, 57-213673
Int. Cl.³ H03G *3/30*
U.S. Cl. 330—279 **4 Claims**



1. An automatic level control circuit comprising:
- variable gain amplifier means which is supplied with an input signal, for outputting a level controlled signal;

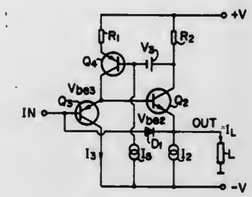
- detector means for detecting the output signal of said variable gain amplifier means;
- integration circuit means including an operational amplifier and a first capacitor;
- means for applying an output voltage of said detector means to a first input terminal of said operational amplifier via a first resistor;
- means for applying a first reference voltage to said first input terminal via a second resistor;
- a first diode with one end connected to an output terminal of said operational amplifier and the other end connected to one end of said first capacitor;
- a second diode connected between the other end of said first capacitor and said first input terminal;
- a transistor with its first and second electrodes connected in parallel with said first capacitor, a third electrode of said transistor being connected to the output terminal of said operational amplifier; and
- circuit means which decreases the gain of said variable gain amplifier means only when an output voltage of said integration circuit means appearing at the output terminal of said operational amplifier exceeds a second reference voltage.

4,499,431

DRIVER CIRCUIT CONFIGURATION FOR THE OUTPUT STAGE OF ELECTRONIC POWER AMPLIFIERS

Matti N. Otala, Oulu, Finland, assignor to Shin-Shirasuna Electric Corp., Nagoya, Japan

Filed May 3, 1982, Ser. No. 374,412
Claims priority, application Japan, Jul. 8, 1981, 56-106424
Int. Cl.³ H03F *1/26*
U.S. Cl. 330—296 **7 Claims**



1. A circuit for improving the characteristics of a transistorized power amplifier, comprising:
- a common collector stage, an inverted common collector stage together with a common emitter stage for driving said collector stage, and means associated with said stages for sensing the output current of said circuit; and
- means connected to said circuit for transforming said output current into a corresponding internal correction signal for compensating for nondesirable circuit characteristics upon changes in said output current, and means for compensating for variation in input current or voltage of said circuit, to thereby yield an output voltage essentially independent of load and signal characteristics.

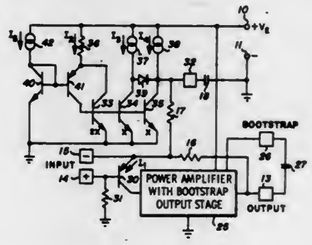
4,499,432

LOW VOLTAGE OP AMP BIAS OPTIMIZER

William H. Gross, and Tadashi Sakurai, both of Tokyo, Japan, assignors to National Semiconductor Corporation, Santa Clara, Calif.

Filed Nov. 4, 1982, Ser. No. 439,001
Int. Cl.³ H03F *3/04*
U.S. Cl. 330—296 **6 Claims**

1. In an operational amplifier having inverting and noninverting imputs and that employs a bootstrapped power output stage and is designed to operate from a low source of supply voltage having one terminal grounded and operative to function over a wide range of supply voltage, circuit means for optimizing the output terminal quiescent voltage whereby above a threshold voltage limit, the output voltage is made equal to one-half of said supply voltage and below said threshold voltage limit the output voltage is made equal to said supply voltage less a fixed constant voltage thereby maximizing the dynamic range at all supply voltages, said circuit means comprising:
- a current mirror having an input and first and second outputs;



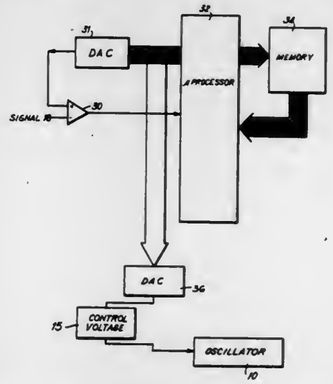
- means for coupling said input to a source of biasing current;
- means for coupling the first of said outputs to the inverting input of said operational amplifier; and
- diode means coupled between said first and second outputs whereby said second output is coupled to said first output and whereby said diode means is turned on when said supply voltage is below said threshold voltage and turned off when said supply voltage is above said threshold voltage.

4,499,433

AUTOLOCK FOR RESONATORS FOR FREQUENCY STANDARDS

Robert M. Garvey, Swampscott, Mass., assignor to Frequency and Time Systems, Inc., Beverly, Mass.

Filed Jul. 31, 1981, Ser. No. 289,069
Int. Cl.³ H03L *7/26*
U.S. Cl. 331—3 **16 Claims**



1. A system to find and identify the desired resonant peak in the response of a resonator used for frequency standards, said system comprising,
- a voltage controlled oscillator connected to a synthesizer, a voltage applied to said voltage controlled oscillator to control the oscillator frequency, said synthesizer producing a frequency which is applied to said resonator to produce a resonator response,

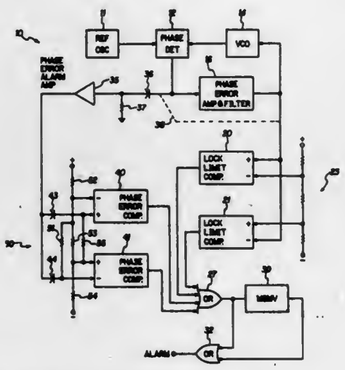
a peak analyzer receiving the output of said resonator, said peak analyzer comprising means to simultaneously store the amplitude of the voltage applied to said voltage controlled oscillator and the amplitude of the corresponding resonator output, means to compare the amplitudes of successively generated and stored resonator outputs and to select the resonator output having the maximum peak value.

4,499,434

PLL PHASE ERROR ALARM RELATED TO ASSOCIATED RECEIVER

William J. Thompson, Richardson, Tex., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Jul. 19, 1982, Ser. No. 399,535
Int. Cl.³ H03L 7/08; H03B 1/00
U.S. Cl. 331—17 **7 Claims**



1. In a circuit for providing a source frequency for use in a radio, including a receiver having a detector with a known response to spurious phase modulation, the circuit having an alarm circuit to indicate that a source phase error exceeds a limit, the improvement comprising, means for making a frequency response of the alarm circuit similar to the spurious phase modulation response of the detector, whereby the alarm circuit indicates an error when the phase error of the source exceeds the spurious phase modulation response of the detector.

4,499,435

SYSTEM FOR LINEARIZING SWEEP OF VOLTAGE CONTROLLED OSCILLATOR

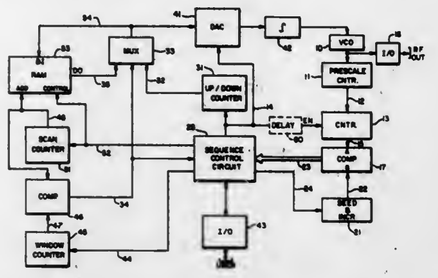
David W. Thomson, Palm Bay, and Donald E. Trimble, Melbourne, both of Fla., assignors to Harris Corporation, Melbourne, Fla.

Filed Sep. 30, 1982, Ser. No. 428,980
Int. Cl.³ H03L 1/00
U.S. Cl. 331—44 **31 Claims**

1. For use with a variable frequency generator which produces a variable output frequency the value of which depends upon an input control signal applied thereto, a system for correcting for deviations in the output frequency variation produced by said generator from an intended frequency variation as defined by a prescribed input control signal variation comprising:

first means for supplying to said variable frequency generator a plurality of input control signals the value of each of which changes with time so as to have a respective prescribed slope during a respective subinterval of time within a defined interval of time during which said variable frequency generator is to produce said intended frequency variation, said first means including memory means for storing a plurality of input control codes the value of each of which control codes is associated with a respective prescribed rate of change of frequency to be produced by said variable frequency generator for a corresponding respective subinterval of time, and means for sequentially accessing from said memory said control codes and producing therefrom a plurality of respective ramp voltage signals that are coupled to said generator as said input control signals thereto;

second means, coupled to the output of said variable frequency generator, for producing a plurality outputs representative of the variations in frequency produced by said variable frequency generator during said subintervals of



time in response to said plurality of input control signals supplied thereto by said first means;

third means for comparing the plurality of outputs produced by said second means with a plurality of respective reference signals supplied thereto indicative of intended variations in frequency produced by said variable frequency generator during said subintervals of time, and generating a plurality of difference signals representative of the respective deviations therefrom; and

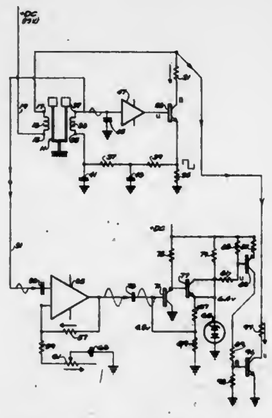
fourth means for modifying said plurality of input control codes stored in said memory means in accordance with difference signals generated by said third means.

4,499,436

MOTION AMPLITUDE REGULATOR WITH BREAKING PULSE REGULATION

Boris F. Grib, Huntington, N.Y., assignor to Philamon, Inc., Farmingdale, N.Y.

Filed Mar. 1, 1979, Ser. No. 16,160
Int. Cl.³ H03B 5/30
U.S. Cl. 331—116 M **11 Claims**



1. A drive current control circuit for an electromechanical

device having a drive means and velocity sensing means comprising,

a source of electric power with a power terminal and a ground terminal,

first means for providing a conductive path for a signal from said power terminal to said ground terminal through said drive means in a predetermined frequency and phase relation appropriate to accelerate motion of said device

second means for controllably providing a conductive path for a substantially square wave pulse signal from said power terminal to said ground terminal through said drive means in a phase relation substantially opposed to the signal of said first means, and

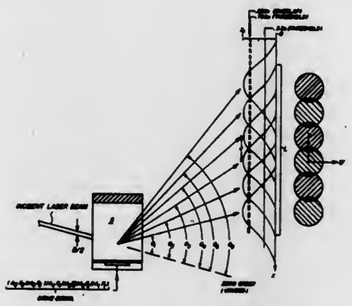
third means for controlling said second means to cause it to be operative only when said velocity sensing means produces a signal of instantaneous magnitude exceeding a reference value.

4,499,437

APPARATUS AND METHOD PROVIDING IMPROVED CONTROL OF A LASER BEAM

Richard N. Blazey, Penfield, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jul. 8, 1981, Ser. No. 281,266
Int. Cl.³ G02F 1/32; H04B 9/00; H01S 3/10
U.S. Cl. 332—7.51 **27 Claims**



1. Apparatus for use in angularly deflecting and intensity modulating an incident laser beam comprising:

(a) an acousto-optic cell controllable by a drive signal for angularly deflecting and intensity modulating a laser beam incident thereon having an effective diameter D;

(b) means for producing a drive signal which varies in frequency over a range Δf to cause the incident laser beam to be deflected through an angular range $\Delta\theta$; and

(c) means, operable during the variation of the drive signal through said frequency range Δf, for varying the amplitude of the drive signal in accordance with a number of pixels N_{pix} of information, said number of pixels (N_{pix}) being substantially greater than a resolution parameter N_{res} defined as

$$N_{res} = \frac{\Delta f D}{\epsilon V_s} + 1,$$

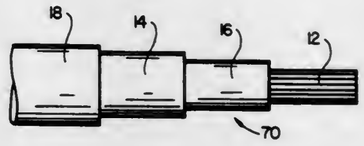
where V_s is the acoustic velocity of said acousto-optic cell, and τ is the beam separation constant.

4,499,438

HIGH FREQUENCY ATTENUATION CORE AND CABLE

Rajendra S. Cornelius, Palo Alto; Albert R. Martin, Oakland; Hans E. Lunk, Menlo Park, and Mark D. Mendenhall, Fremont, all of Calif., assignors to Raychem Corporation, Menlo Park, Calif.

Continuation-in-part of Ser. No. 328,346, Dec. 7, 1981,. This application Sep. 14, 1982, Ser. No. 417,954
Int. Cl.³ H01P 3/00; H01B 11/06
U.S. Cl. 333—1 **12 Claims**



1. A high frequency attenuation cable core, comprising:

at least one conductor;

dielectric surrounding the conductor;

a high frequency energy absorption medium for attenuating high frequency energy propagating through the core in use, the absorption medium surrounding the dielectric; and

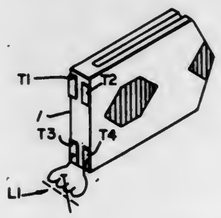
an outer layer made from material having a high complex dielectric constant directly surrounding the absorption medium, said outer layer being made from a titanate loaded polymer.

4,499,439

BIFURCATED ELECTROACOUSTIC DELAY LINES

Roger G. Claes, St. Troud, Belgium, assignor to GTE Products Corporation, Stamford, Conn.

Filed Apr. 22, 1983, Ser. No. 487,649
Int. Cl.³ H03H 9/13, 9/36, 9/66
U.S. Cl. 333—142 **22 Claims**



18. A bifurcated, solid transmission medium for an electroacoustic delay line [illegible] medium comprising two substantially identical branches, each branch assuming a generally pentagonal profile, the pentagonal profile characterized by a first side, second and third sides extending substantially perpendicularly from the first side in a substantially parallel relationship with respect to each other, a fourth side extending from the second side so as to form a first obtuse angle with the second side, and a fifth side extending from the third side so as to form a second obtuse angle substantially equal to the first obtuse angle, so that the fourth and fifth sides form a third obtuse angle at a point of intersection, wherein said branches are joined along their respective fourth and fifth sides.

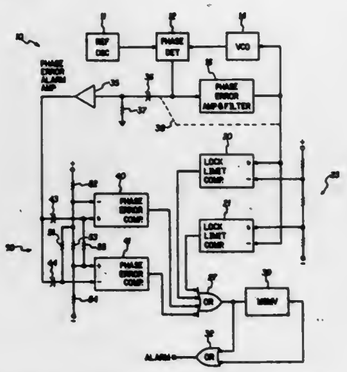
a peak analyzer receiving the output of said resonator, said peak analyzer comprising means to simultaneously store the amplitude of the voltage applied to said voltage controlled oscillator and the amplitude of the corresponding resonator output, means to compare the amplitudes of successively generated and stored resonator outputs and to select the resonator output having the maximum peak value.

4,499,434

PLL PHASE ERROR ALARM RELATED TO ASSOCIATED RECEIVER

William J. Thompson, Richardson, Tex., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Jul. 19, 1982, Ser. No. 399,535
Int. Cl.³ H03L 7/08; H03B 1/00
U.S. Cl. 331—17 **7 Claims**



1. In a circuit for providing a source frequency for use in a radio, including a receiver having a detector with a known response to spurious phase modulation, the circuit having an alarm circuit to indicate that a source phase error exceeds a limit, the improvement comprising, means for making a frequency response of the alarm circuit similar to the spurious phase modulation response of the detector, whereby the alarm circuit indicates an error when the phase error of the source exceeds the spurious phase modulation response of the detector.

4,499,435

SYSTEM FOR LINEARIZING SWEEP OF VOLTAGE CONTROLLED OSCILLATOR

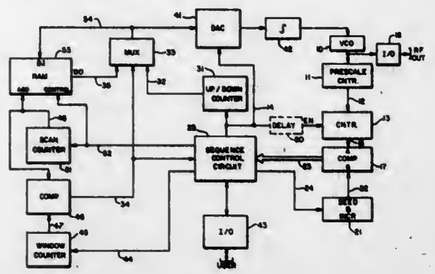
David W. Thomson, Palm Bay, and Donald E. Trimble, Melbourne, both of Fla., assignors to Harris Corporation, Melbourne, Fla.

Filed Sep. 30, 1982, Ser. No. 428,980
Int. Cl.³ H03L 1/00
U.S. Cl. 331—44 **31 Claims**

1. For use with a variable frequency generator which produces a variable output frequency the value of which depends upon an input control signal applied thereto, a system for correcting for deviations in the output frequency variation produced by said generator from an intended frequency variation as defined by a prescribed input control signal variation comprising:

first means for supplying to said variable frequency generator a plurality of input control signals the value of each of which changes with time so as to have a respective prescribed slope during a respective subinterval of time within a defined interval of time during which said variable frequency generator is to produce said intended frequency variation, said first means including memory means for storing a plurality of input control codes the value of each of which control codes is associated with a respective prescribed rate of change of frequency to be produced by said variable frequency generator for a corresponding respective subinterval of time, and means for sequentially accessing from said memory said control codes and producing therefrom a plurality of respective ramp voltage signals that are coupled to said generator as said input control signals thereto;

second means, coupled to the output of said variable frequency generator, for producing a plurality outputs representative of the variations in frequency produced by said variable frequency generator during said subintervals of



time in response to said plurality of input control signals supplied thereto by said first means;

third means for comparing the plurality of outputs produced by said second means with a plurality of respective reference signals supplied thereto indicative of intended variations in frequency produced by said variable frequency generator during said subintervals of time, and generating a plurality of difference signals representative of the respective deviations therefrom; and

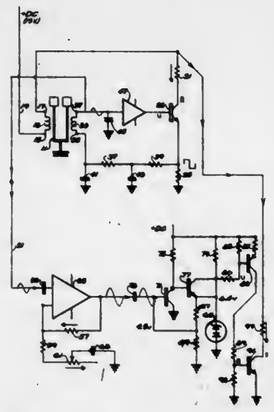
fourth means for modifying said plurality of input control codes stored in said memory means in accordance with difference signals generated by said third means.

4,499,436

MOTION AMPLITUDE REGULATOR WITH BREAKING PULSE REGULATION

Boris F. Grib, Huntington, N.Y., assignor to Philamon, Inc., Farmingdale, N.Y.

Filed Mar. 1, 1979, Ser. No. 16,160
Int. Cl.³ H03B 5/30
U.S. Cl. 331—116 M **11 Claims**



1. A drive current control circuit for an electromechanical

device having a drive means and velocity sensing means comprising,

a source of electric power with a power terminal and a ground terminal,

first means for providing a conductive path for a signal from said power terminal to said ground terminal through said drive means in a predetermined frequency and phase relation appropriate to accelerate motion of said device

second means for controllably providing a conductive path for a substantially square wave pulse signal from said power terminal to said ground terminal through said drive means in a phase relation substantially opposed to the signal of said first means, and

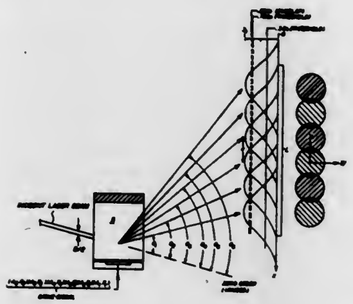
third means for controlling said second means to cause it to be operative only when said velocity sensing means produces a signal of instantaneous magnitude exceeding a reference value.

4,499,437

APPARATUS AND METHOD PROVIDING IMPROVED CONTROL OF A LASER BEAM

Richard N. Blasey, Penfield, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jul. 8, 1981, Ser. No. 281,266
Int. Cl.³ G02F 1/32; H04B 9/00; H01S 3/10
U.S. Cl. 332—7.51 **27 Claims**



1. Apparatus for use in angularly deflecting and intensity modulating an incident laser beam comprising:

(a) an acousto-optic cell controllable by a drive signal for angularly deflecting and intensity modulating a laser beam incident thereon having an effective diameter D;

(b) means for producing a drive signal which varies in frequency over a range Δf to cause the incident laser beam to be deflected through an angular range $\Delta\theta$; and

(c) means, operable during the variation of the drive signal through said frequency range Δf, for varying the amplitude of the drive signal in accordance with a number of pixels N_{pix} of information, said number of pixels (N_{pix}) being substantially greater than a resolution parameter N_{res} defined as

$$N_{res} = \frac{\Delta f D}{\epsilon V_s} + 1,$$

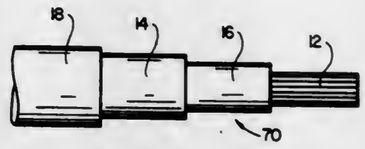
where V_s is the acoustic velocity of said acousto-optic cell, and τ is the beam separation constant.

4,499,438

HIGH FREQUENCY ATTENUATION CORE AND CABLE

Rajendra S. Cornelius, Palo Alto; Albert R. Martin, Oakland; Hans E. Lunk, Menlo Park, and Mark D. Mendenhall, Fremont, all of Calif., assignors to Raychem Corporation, Menlo Park, Calif.

Continuation-in-part of Ser. No. 328,346, Dec. 7, 1981,. This application Sep. 14, 1982, Ser. No. 417,954
Int. Cl.³ H01P 3/00; H01B 11/06
U.S. Cl. 333—1 **12 Claims**



1. A high frequency attenuation cable core, comprising:

at least one conductor;

dielectric surrounding the conductor;

a high frequency energy absorption medium for attenuating high frequency energy propagating through the core in use, the absorption medium surrounding the dielectric; and

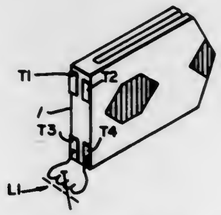
an outer layer made from material having a high complex dielectric constant directly surrounding the absorption medium, said outer layer being made from a titanate loaded polymer.

4,499,439

BIFURCATED ELECTROACOUSTIC DELAY LINES

Roger G. Claes, St. Trond, Belgium, assignor to GTE Products Corporation, Stamford, Conn.

Filed Apr. 22, 1983, Ser. No. 487,649
Int. Cl.³ H03H 9/13, 9/36, 9/66
U.S. Cl. 333—142 **22 Claims**



18. A bifurcated, solid transmission medium for an electroacoustic delay line, the medium comprising two substantially identical branches, each branch assuming a generally pentagonal profile, the pentagonal profile characterized by a first side, second and third sides extending substantially perpendicularly from the first side in a substantially parallel relationship with respect to each other, a fourth side extending from the second side so as to form a first obtuse angle with the second side, and a fifth side extending from the third side so as to form a second obtuse angle substantially equal to the first obtuse angle, so that the fourth and fifth sides form a third obtuse angle at a point of intersection, wherein said branches are joined along their respective fourth and fifth sides.

4,499,440

LOW REFLECTIVITY ELECTRODES IN SEMICONDUCTIVE SAW DEVICES

Thomas W. Grudkowski, Glastonbury, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Aug. 22, 1983, Ser. No. 525,204
Int. Cl.[3] H03H *9/13, 9/25, 9/42*
U.S. Cl. 333—151 2 Claims



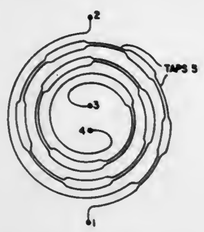
1. A surface acoustic wave device comprising:
a substrate of semiconductive gallium arsenide and a plurality of electrodes comprising aluminum disposed on said substrate, characterized by:
said electrodes being formed in recesses (slots, grooves) extending into said substrate from a major surface thereof, whereby the surface of the electrodes is essentially coplanar with said major surface of said substrate.

4,499,441

SUPERCONDUCTING SIGNAL PROCESSING CIRCUITS

John T. Lynch, Cambridge; Alfredo C. Anderson, Watertown; Richard S. Withers, Bedford, all of Mass., and Peter V. Wright, Dallas, Tex., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Oct. 14, 1982, Ser. No. 434,431
Int. Cl.[3] H01P *1/203, 9/00, 5/18*
U.S. Cl. 333—161 25 Claims



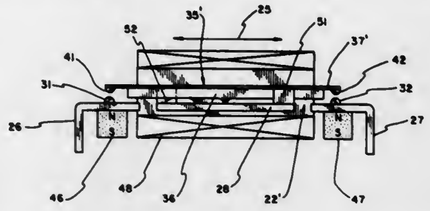
1. A superconducting transversal filter circuit for processing analog signals, the circuit having an input channel and an output channel and further comprising;
(a) a miniature transmission means for delaying the signal from the input channel to the output channel the transmission means comprising;
(i) an essentially planar substrate;
(ii) an input line connected to the input channel and disposed upon the substrate; and
(iii) an output line connected to the output channel and also disposed upon the substrate in a spaced-apart but proximal relation to the input line;
(b) a cooling means for cooling the input and output lines of the transmission means to a temperature where superconduction is achieved; and
(c) a plurality of tap means integrally formed with the transmission means for tapping transmission means at predetermined locations, each tap means providing a coupling between the input and output lines of a particular strength at a particular location whereby the plurality of tap means, in concert, provide signal processing.

4,499,442

TRANSFER-TYPE ELECTROMAGNETIC RELAY COMPRISING A PERMANENT MAGNET UNDER A FIXED CONTACT STUD

Yuichi Kamo; Nobuo Mikami; Kazutoshi Wakamatsu, and Kunio Naito, all of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Jul. 6, 1983, Ser. No. 511,508
Claims priority, application Japan, Jul. 6, 1982, 57-117512; Jul. 19, 1982, 57-109128[U]; Dec. 21, 1982, 57-224729; Jan. 14, 1983, 58-4741
Int. Cl.[3] H01H *51/22*
U.S. Cl. 335—79 12 Claims



1. In a transfer-type electromagnetic relay comprising a housing and a contact assembly, said housing comprising a base member having an inner surface and a cap member defining a space in cooperation with said inner surface, said space having a space axis extended parallel to said inner surface, said inner surface being divisible into a center area extended transversely of said space axis and first and second end areas which are parallel to each other with said center area interposed therebetween, said contact assembly comprising a first, a second, and a third lead member which are extended from said first and said second end areas and said center area outwardly of said housing, respectively, and each of which has a front surface and a back surface, armature means swingably held on the front surface of said third lead member in said space, energizing means for electromagnetically energizing and deenergizing said armature means, and latching means for latching said armature means, said armature means being for carrying out seesaw movement in cooperation with said energizing and said latching means about an axis transverse to said space axis to electrically connect said first and said second lead members to said third lead member and to provide a first and a second contact on the front surfaces of said first and said second lead members, respectively, said energizing means being thereby for making said armature means carry out transfer of contact between said first and said second contacts, said latching means keeping at least a prede ermined one of said first and said second contacts while said armature means is left deenergized, the improvement wherein said latching means comprises:
at least one permanent magnet extending on at least a predetermined area preselected from said first and said second end areas transversely of said space axis, said permanent magnet having a selected one of north and south poles directed towards the back surface of one of said first and said second lead members that is extended from said predetermined area.

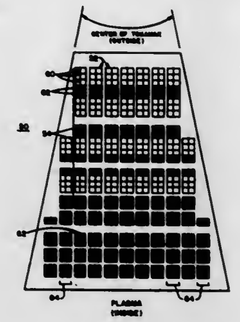
4,499,443

HIGH-FIELD DOUBLE-PANCAKE SUPERCONDUCTING COILS AND A METHOD OF WINDING

Peter A. Materna, Lawrenceville, N.J., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jan. 31, 1984, Ser. No. 575,598
Int. Cl.[3] H01F *7/22;* H01L *39/24*
U.S. Cl. 335—216 18 Claims

1. A double-pancake coil having first and second pancakes comprising a plurality of conductor means, each conductor means having a different grade, and each conductor means having one or more conductors;
wherein each pancake of said double-pancake coil comprises inner and outer turns;
wherein said inner turns comprise at least one of said conductor means wound about an axis and nested within one another;



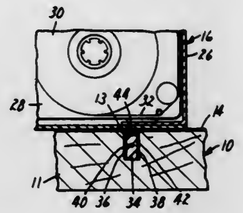
wherein said outer turns comprise said inner conductor means and at least one other conductor means co-wound about said inner turns and nested within one another; and
wherein each of said conductor means is wound along said axis from said first pancake to said second pancake at a different turn.

4,499,444

DESENSITIZER FOR FERROMAGNETIC MARKERS USED WITH ELECTROMAGNETIC ARTICLE SURVEILLANCE SYSTEMS

Eugene C. Heltemes, White Bear Lake, and Samuel Montean, Blaine, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed May 20, 1983, Ser. No. 496,554
Int. Cl.[3] H01F *13/00*
U.S. Cl. 335—284 8 Claims



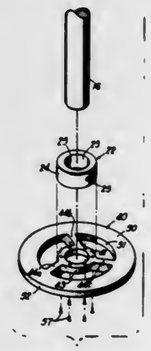
1. A desensitizer apparatus adapted for use with an electronic article surveillance system for detecting a desensitizable marker secured to an article the presence of which within an interrogation zone is desirably known, said marker including an elongated section of low coercive force, high permeability ferromagnetic material having proximate thereto at least one section of a remanently magnetizable high coercive force material which when magnetized magnetically biases the elongated section of low coercive force material and thereby alters the detectability of the marker, said desensitizer apparatus comprising a permanent magnet assembly which includes at least one section of ferromagnetic material having two substantially opposed major surfaces and which is substantially uniformly magnetized to present one magnetic polarity at one of said major surfaces and the opposite polarity on the other major surface, and a pair of pole pieces each of which is proximate to and extends over a major portion of said major surfaces and terminates proximate to the other pole piece to provide a gap of substantially constant width extending along said section for concentrating external magnetic lines of flux resulting from said magnetized material near the gap such that the resultant external magnetic field decreases rapidly with increasing distance from the gap, thereby enabling a said marker to be moved relative to said gap to remanently magnetize the section of said high coercive force material within the marker, the external field intensity extending beyond a short distance from the gap being insufficient to alter magnetic states such as may exist within an article to which the marker is secured.

4,499,445

STIRRING DEVICE FOR SAND MILL

Phillip G. Mitchell, P.O. Box 612, Opelika, Ala. 36801

Filed May 16, 1984, Ser. No. 610,783
Int. Cl.[3] B01F *7/26*
U.S. Cl. 366—316 6 Claims



1. A stirring device, for being received on a rotatable shaft of a stirring machine for rotation with the shaft, said shaft protruding into a container in which a liquid is disposed, comprising:
(a) an annular collar having a central circular hole therein and through which the collar is adapted to receive said shaft, said collar having a flat radially extending base surface;
(b) a flat circular, unitary, plastic, stirrer member having a hub with a central, circular hole therein, said stirrer member having a planar inner surface along one side thereof and a planar outer surface along the other side thereof, said stirrer member having its central hole concentric with the central hole in said collar;
(c) securing means securing said hub against said base surface of said collar, said stirrer extending radially beyond said collar; and
(d) said stirrer member including an outer ring spaced radially outward of said collar and said hub, and circumferentially spaced spokes joining said ring and said hub.

4,499,446

PRESSURE-OPERATED SWITCH FOR A HIGH-VOLTAGE INTERRUPTING MODULE

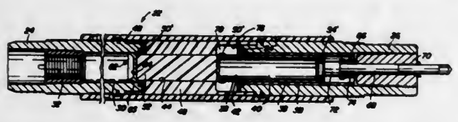
Roy T. Swanson, North Riverside, Ill., assignor to S&C Electric Company, Chicago, Ill.

Filed Aug. 22, 1983, Ser. No. 525,205
Int. Cl.[3] H01H *39/00*
U.S. Cl. 337—30 19 Claims

1. An improved switch for a high-voltage device, the switch being of the type in which ignition of a power cartridge generates pressure at one end of an insulative piston to move the piston, which is normally located in a bore formed in a conductive member, away therefrom and into a passageway formed in an insulative liner, such movement of the piston moving a movable contact, through the passageway and away from the

conductive member to break an electrical interconnection between the conductive member and the movable contact, thereby opening the switch; the bore and the passageway being aligned; wherein the improvement comprises:

an insulative lip seal located in the bore between the power cartridge and the one end of the piston, the lip seal being



movable with the piston and being conformally force-fit into the bore, and

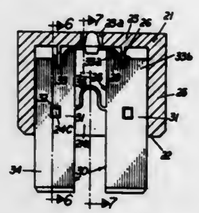
means for limiting movement of the lip seal through the bore so that the lip seal remains in the bore after the switch is open, the force-fit of the lip seal in the bore restricting or preventing the flow of the ignition products of the power cartridge therepast.

4,499,447

BLADE TERMINAL FUSES WITH INTEGRITY INDICATOR

M. Barry Greenberg, N. Miami Beach, Fla., assignor to Guim Multi-Tech Corporation, Miami, Fla.

Filed Jun. 17, 1983, Ser. No. 505,334
Int. Cl.³ H01H 85/32
U.S. Cl. 337—266 9 Claims



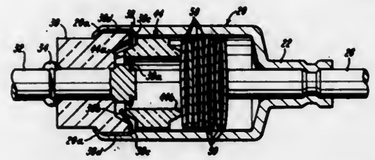
1. A blade terminal fuse having an integrity indicator comprising an insulator housing formed with a top wall, an interior chamber having relatively narrow lateral sections on opposite sides of a central section and an open bottom, a pair of flat terminal blades in coplanar spaced relation having upper portions located in said chamber lateral sections and lower portions projecting downwardly from said open bottom, a fuse-wire extending through said chamber central section conductively connected in series with said terminal blades, said top wall being formed with a central window above said chamber central section and being formed on the interior side thereof on opposite sides of said window with a component of a clamping means, said integrity indicator being an illuminable bead located in said chamber central section in register with said top wall window and having wire leads extending oppositely into said chamber lateral sections conductively contacting said terminal blade upper portions whereby said illuminable bead is in series with said blades and in parallel with said fuse-wire, said terminal blade upper portions each being formed with a companion component of said clamping means, the clamping means securing each of said wire leads in said conductive contact with each terminal blade upper portion.

4,499,448

ELECTRIC CIRCUIT INTERRUPTER

Jack W. Grable, 7010 Malabar Ct., Dayton, Ohio 45459

Filed Feb. 18, 1983, Ser. No. 467,587
Int. Cl.³ H01H 37/52
U.S. Cl. 337—370 6 Claims



3. An electric circuit interrupter device comprising:

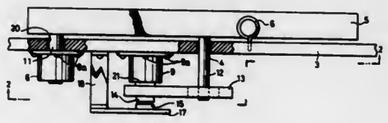
a housing, electric circuit means extending through the housing, the electric circuit means including frangible link means within the housing, plunger means engageable with the frangible link means, thermally responsive disc means changeable in physical shape in response to a temperature change to move the plunger means to break the frangible link means to interrupt the electric circuit means, the housing including a cup-shape housing portion and a relatively flat housing portion, the relatively flat housing portion having a recess therein, a part of the cup-shape housing portion being positioned in the recess of the relatively flat housing portion, fastening means within the recess and retaining the position of the cup-shape housing portion with respect to the relatively flat housing portion, the fastening means being a material which is changeable from a liquid state to a solid state and which is introduced into the recess in a liquid state and which solidifies in the recess to retain the cup-shape housing portion with respect to the relatively flat housing portion.

4,499,449

SPEED SETTING DEVICE FOR A SEWING MACHINE

Nozomu Shinozaki; Takashi Dohi, both of Hirakata; Shinji Yamazaki, Yao, and Shigeo Neki, Osaka, all of Japan, assignors to Matsushita Electric Industrial Company, Ltd., Japan

Filed Jun. 7, 1982, Ser. No. 386,785
Claims priority, application Japan, Jun. 11, 1981, 56-89882
Int. Cl.³ H01L 43/02
U.S. Cl. 338—32 R 7 Claims



1. A device for use in a sewing machine for generating a speed setting signal in resonse to an angular displacement caused by an operator's action, comprising:

a first member pivotally mounted at one end thereof on a first rotary axis of a stationary member and adapted to turn about said rotary axis in response to said angular displacement;

a second member pivotally mounted at one end thereof on a secondary rotary axis of said stationary member spaced from said first rotary axis;

a shaft extending transversely from one of said first and second members to the other member through an opening provided on said other member for rotatably coupling said first and second members at a point adjacent said first rotary axis but remote from said first rotary axis so that said second member rotates through an angle greater than the angle through which the first member rotates;

means for urging said first and second members against each

other for minimizing the amount of loose play which might otherwise exist between said shaft and said opening;

magnetic flux generating means;

magnetic flux sensing means for generating said speed setting signal, one of the flux generating and sensing means being mounted on said second member in coaxial relationship with said secondary rotary axis, the other of said flux generating and sensing means being mounted on said stationary member coaxially with and spaced from said means mounted on said second member; and

means for maintaining the spacing between the flux generating means and the flux sensing means constant in the axial direction of said second rotary means comprising:

(i) spacer means located between said flux generating means and said flux sensing means so that the flux generating means abut against oppositely disposed segments of the spacer means, and

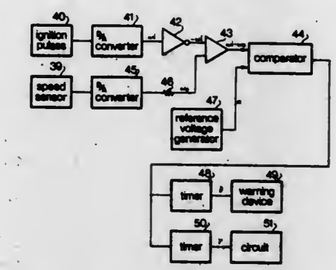
(ii) means for urging said flux generating means and said flux sensing means in a direction toward each other.

4,499,450

SYSTEM TO DETECT SLIPPAGE OF A CLUTCH FOR AN INTERNAL COMBUSTION ENGINE

Fujio Makita, Hachioji, Japan, assignor to Fuji Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 22, 1982, Ser. No. 350,974
Claims priority, application Japan, Feb. 24, 1981, 56-26482
Int. Cl.³ G08B 21/00; B60Q 1/00
U.S. Cl. 340—52 R 5 Claims



1. A system for detecting slippage of a clutch for an internal combustion engine which has a drive member secured to a crankshaft of said internal combustion engine and a driven member adjacent to said drive member, comprising:

first circuit means for producing an output signal in proportion to the number of revolutions of said drive member;

second circuit means for producing an output signal in proportion to the number of revolutions of said driven member;

third circuit means for producing the difference between output signals of said first and second circuit means;

comparator means for comparing said difference with a predetermined reference value and for producing an output signal when said difference is higher than said reference value;

timer means operated in dependency on said output signal of said comparator; and

a warning device connected to said timer means;

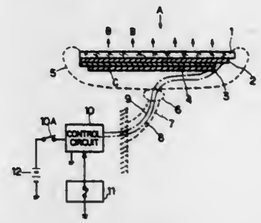
said timer means being so arranged as to produce an output signal for operating said warning device when a predetermined time elapses.

4,499,451

MIRROR

Yasutoshi Suzuki, Osaka; Kunihiko Hara, Aichi, and Ryo Sato, Kariya, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Apr. 2, 1982, Ser. No. 364,633
Claims priority, application Japan, Apr. 7, 1981, 56-52022; Apr. 15, 1981, 56-57472
Int. Cl.³ B60Q 1/00; G08B 5/00
U.S. Cl. 340—98 6 Claims



6. A mirror arrangement comprising:

a transparent glass member;

a thin film of translucent layer deposited on one whole surface of said glass member in complete contact relation therewith for uniformly reflecting and passing part of light applied thereto; and

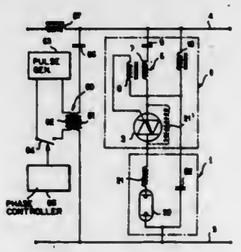
light generating means having a light emitting portion that is shaped in a form of information to be conveyed, disposed only behind the translucent layer for uniformly emitting information carrying light therefrom upon application of a voltage thereto, said mirror arrangement functioning as an ordinary mirror when said light generating means is not activated, the light generating means not being visible, and functioning to display said information when said light emitting means is activated by said voltage.

4,499,452

MODULATION INSTALLATION FOR SECTOR SUPPLY OF CHARGE ELEMENTS

Jean-Pierre Nicolas, Nice, France, assignor to Etablissements Augier, Carros, France

Filed Nov. 2, 1981, Ser. No. 317,489
Claims priority, application France, Nov. 3, 1980, 80 23458
Int. Cl.³ H04B 3/54
U.S. Cl. 340—310 A 13 Claims



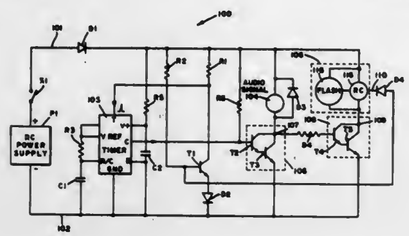
1. An installation for controlling the electric supply of charge elements which are distributed along supply lines in response to periodical control transitions superposed, at a selected phase angle, upon an alternating supply voltage supplied across said supply lines,

said installation comprising supply circuits through which each of said charge elements is connected between first and second supply lines,

each supply circuit including:

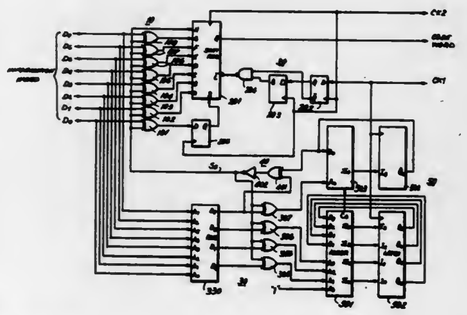
a transition detector means comprising;
a pulse transformer having two windings,
a capacitor connected in series with one of the two windings to form a series assembly,
a choke coil connected in parallel with said series assembly,
means for coupling said series assembly between said supply lines, and
a controlled switching device connected in series with the charge element, via the series assembly, across said supply lines, said controlled switching device having a trigger circuit comprising the other of the two windings,
wherein said capacitor and said one winding connected in series to form the series assembly offer a high impedance, at the alternating supply voltage frequency in relation to said choke coil, and
said capacitor and said one winding connected in series offer a low impedance in relation to the choke coil for the periodical control transitions, whereby the conduction of said controlled switching device and the supply of the charge element occur upon detection of transitions by said pulse transformer.

4,499,453
POWER SAVER CIRCUIT FOR AUDIO/VISUAL SIGNAL UNIT
Robert W. Right, Huntington, Conn., assignor to General Signal Corporation, Stamford, Conn.
Continuation of Ser. No. 382,881, May 28, 1982, abandoned. This application Mar. 21, 1984, Ser. No. 591,889
Int. Cl.³ G08B 27/00
U.S. Cl. 340—326 **14 Claims**



1. A combined audio visual alarm device having audio and visual components activating relatively simultaneous so that at any given time either the audio or visual component will alternately draw power from a power source, so that at a given period of time the audio signal will be either clearly sounding, or not sounding, while providing an audible signal whose tone, i.e. amplitude, frequency and quality is uneffected by said visual components, said device comprising:
(a) an audible device;
(b) a light emitting device;
(c) timing means for producing a control signal of predetermined duration in response to a start signal;
(d) a power supply;
(e) start control means coupled to said timing means and said power supply for controlling the production of said start signal and coupling same to said timing means, in response to the connection of said power supply to said start means;
(f) said control signal being coupled to an audible device activation circuit for coupling said audible device to said power supply for the predetermined duration of said control signal;
(g) a light emitting device actuation circuit coupled to said audible device activation circuit for coupling said light emitting device to said power supply in response to the termination of said control signal; and wherein
(h) said light emitting device produces a pulse subsequent to said light emitting device being coupled to said power supply and which pulse is coupled to said start control means for initiating the generation of another signal whereby said power supply will at any given time only draw the power required by said audible device or said light emitting device, to conserve power.

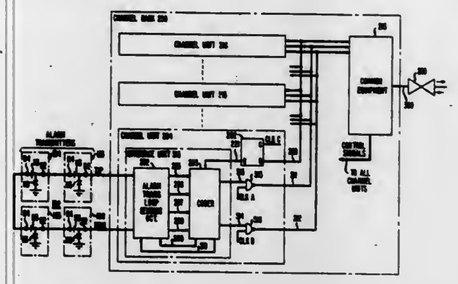
4,499,454
METHOD AND APPARATUS FOR ENCODING A DIGITAL SIGNAL WITH A LOW DC COMPONENT
Toshiyuki Shimada, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan
Continuation of Ser. No. 201,781, Oct. 29, 1980, abandoned. This application Dec. 9, 1983, Ser. No. 559,845
Claims priority, application Japan, Nov. 21, 1979, 54-142252
Int. Cl.³ H03K 13/00
U.S. Cl. 340—347 DD **51 Claims**



1. A method of passing information encoded in successive binary word signals through a system employing a transferring means for transferring said information, wherein said transferring means is of the type which suppresses a DC component of a transferred signal, said method minimizing both said DC component and redundancy in said binary word signals, said method comprising the steps of:
receiving said information as a present information word signal in a form having n two-level bits, $n \geq 2$;
selectively generating a selected one of a plurality of binary code word signals formed of m two-level bits in response to said present n-bit information word signal and utilizing a preceding digital sum variation calculated from a plurality of preceding m-bit code word signals selectively generated from previously received n-bit informatoin words, $m > n$;
calculating a present digital sum variation from said preceding digital sum variation of said plurality of preceding m-bit code word signals in combination with said selected one of said m-bit code signals;
said selected one of said m-bit code signals being selectively generated such that said present digital sum variation, calculated as a function of said selected one of said m-bit code word signals is reduced in value; and
transferring said selected one of said m-bit code word signals by means of said transferring means.

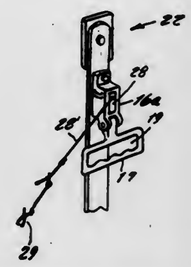
4,499,455
ALARM CIRCUIT INTERFACE UNITS
Michael A. Leveille, Newton, and Charles F. Walker, Derry, both of N.H., assignors to AT&T Bell Laboratories, Murray Hill, N.J.
Filed May 3, 1982, Ser. No. 374,505
Int. Cl.³ G08B 1/00; H04M 11/04
U.S. Cl. 340—531 **9 Claims**

5. Apparatus for interfacing a communications loop having changeable signal transmission properties comprising an alarm receiver with one or more digital transmission facilities which transmit multiplexed digital signals in a predetermined format including a predetermined number of digital words and a framing bit forming a frame, each word representing a corresponding transmission channel and having a predetermined number of bits, a predetermined one of said bits in each word being used as a signaling bit position during one frame out of a predetermined number of frames, said signaling bit position alternating between A and B signaling bit positions, said apparatus being characterized by
means responsive to one or more digital signals from one of



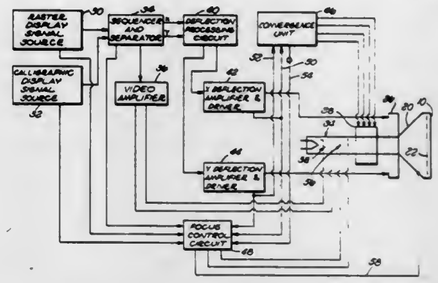
said digital facilities for changing the signal transmission properties of said loop;
means for sensing a signal on said loop responsive to said alarm receiver and the signal transmission properties of said loop and generating a digital output signal therefrom; and
means for inserting said output signal within a predetermined one of said A and B signaling bit positions for a channel within each of said digital facilities.

4,499,456
DRIVER ALERT
Robert Turpin, Sr., c/o George Spector, 3615 Woolworth Bldg., 233 Broadway, and George Spector, c/o Robert Turpin Sr., 3615 Woolworth Bldg., 233 Broadway, both of New York, N.Y. 10007
Filed Nov. 20, 1981, Ser. No. 323,660
Int. Cl.³ G08B 21/00
U.S. Cl. 340—576 **4 Claims**



1. A driver alert device for attachment to the interior of an automobile, at a location near a driver thereof, comprising in combination, an elongated bar which at its upper end includes means for mounting on said interior and a pull handle unit adjustably mounted to an intermediate portion of said bar, said device including a warning means for audibly warning said driver when the driver starts to slump over.

4,499,457
SHADOW MASK COLOR SYSTEM WITH CALLIGRAPHIC DISPLAYS
Richard A. Hintze, Sandy, Utah, assignor to Evans & Sutherland Computer Corp., Salt Lake City, Utah
Continuation of Ser. No. 948,734, Oct. 5, 1978, abandoned. This application May 14, 1982, Ser. No. 378,149
Int. Cl.³ G09G 1/28
U.S. Cl. 340—703 **5 Claims**

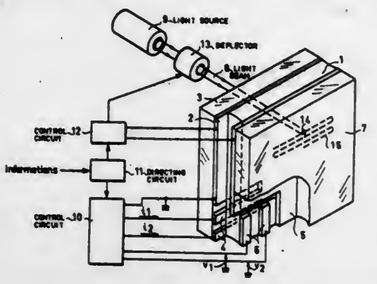


1. A color display system for providing a dynamic color presentation, comprising:
a cathode ray display device incorporating deflection means and a shadow mask in combination with a color screen;
means for providing raster scan color display signals for modulating said display device to produce a display;
means for providing calligraphic display signals for modulating said display device to produce a display;
driver means for said deflection means to provide beam deflection in said cathode ray display device to accommodate both said raster scan display signals and said calligraphic display signals;
sequencing means to sequence both the operation of said driver means and the alternative application of said raster scan signals and said calligraphic display signals to control said cathode ray display device for producing a dynamic color presentation manifesting both said raster scan color display signals and said calligraphic display signals; and
focus control means to vary the focus of said cathode ray display device with the sequencing of a raster scan signal and a calligraphic display signal.

4,499,458
LIQUID CRYSTAL DISPLAY DEVICE ASSOCIATING TWO ADDRESSING MODES
Serge Le Berre, and Michel Hareng, both of Paris, France, assignors to Thomson-CSF, Paris, France
Filed Jan. 9, 1982, Ser. No. 386,522
Claims priority, application France, Jan. 10, 1981, 81 11394
Int. Cl.³ G09G 3/36
U.S. Cl. 340—713 **3 Claims**

1. A liquid crystal display device comprising:
a cell including two plates, at least one of which is transparent, a continuous layer of smectic liquid crystal encloseed between said two plates, and two electrodes supported on the respective internal faces of said plates;
first and second means for modifying the optical properties of said layer wherein each of said means are supplied by electrical signals representative of data to be displayed and wherein said first and second means produce a heating and cooling cycle on a first and second display portion with said first display portion being defined by the area where each of said two electrodes is continuous and with said second display portion being defined by the area formed by the crossing of a pair of crossed sets of striped portions of each electrode with each set of striped portions being associated with a respective one of said electrodes and wherein said pair of crossed sets of striped

portions defines an addressing matrix whose heating is caused by a current crossing one of said sets of stripes, wherein said first means for modifying comprises an optical beam scanning means for scanning said first display portion and said second means for modifying comprises a current generating means to heat said second display portion; and



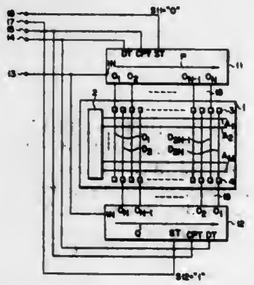
control means including a switching means which feeds said electrical signals to one of a first circuit means for controlling an optical deflector in order to control said beam scanning means, and a second circuit means for controlling said addressing matrix depending upon an addressing mode fed to said control means.

4,499,459

DRIVE CIRCUIT FOR DISPLAY PANEL HAVING DISPLAY ELEMENTS DISPOSED IN MATRIX FORM

Minoru Sasaki, Tokyo, and Toshiharu Kamiya, Yokohama, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Sep. 29, 1982, Ser. No. 428,302
Claims priority, application Japan, Oct. 29, 1981, 56-173259; Oct. 29, 1981, 56-173260
Int. Cl.³ G09G 3/29
U.S. Cl. 340—752 5 Claims



1. A display device comprising:

a display panel having address lines and data lines, and display elements connected to said address lines and data lines in a matrix form, said address lines being connected to successively receive scanning pulses, and said data lines being connected to successively receive picture data signals and divided into odd-numbered data lines and even-numbered data lines each having upper and lower ends; and

first and second driver circuit means respectively arranged on upper and lower sides of said display panel along the direction of said data lines for successively applying the picture data signals to said data lines of said display panel during a scanning period, said first and second driver circuit means having an identical integrated-circuit configuration and each having outputs arranged in an order, said outputs of said first driver circuit being coupled to said upper ends of said odd-numbered data lines, respectively, and said outputs of said second driver circuit being coupled to said lower ends of said even-numbered data lines, respectively, in an opposite order to that of connection of said outputs of said first driver circuit means to said odd-numbered data lines,

said first and second driver circuit means each having a control signal input, a clock pulse input, a scanning start pulse input, and a picture signal input respectively connected to receive control signals with different logic levels, common clock pulses, common scanning start pulses, and common picture signals,

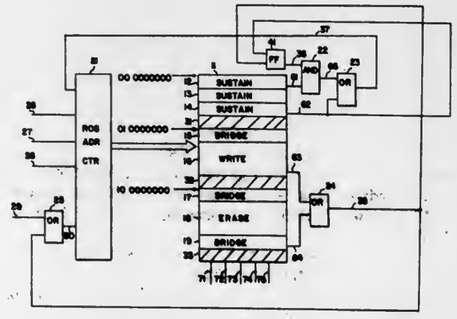
said first and second driver circuit means capable of scanning in opposite directions in relation to the respective order of outputs thereof and being responsive to said control signals, which selectively control a scanning direction of said first and second driver circuit means, and said scanning start pulse to successively output said picture signals to said outputs thereof in opposite scanning directions relative to each other in synchronism with said clock pulses such that said data lines of said display panel are successively supplied with said picture signals in one direction of said display panel during the scanning period.

4,499,460

ROS CONTROL OF GAS PANEL

Kenneth A. Pearson, Kingston, and Larry R. Zacker, Saugerties, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 9, 1982, Ser. No. 386,493
Int. Cl.³ G09G 3/28
U.S. Cl. 340—771 4 Claims



1. A system for applying sustain, write and erase signal sequences to control the discharge state of a plurality of cells in a plasma display device comprising:

a storage device having a plurality of sections in which said sustain, write and erase signal sequences are stored;

means for generating erase and write command signals;

means for detecting the presence of said erase and write command signals;

means for reading said signal sequences from said storage device in response to said erase and write command signals, said erase command signal initiating the reading of said erase signal sequence, said write command signal initiating the reading of said write signal sequence, and the absence of said erase and write command signals initiating the reading of said sustain signal sequence; and

means for applying said signal sequences to said plasma display device,

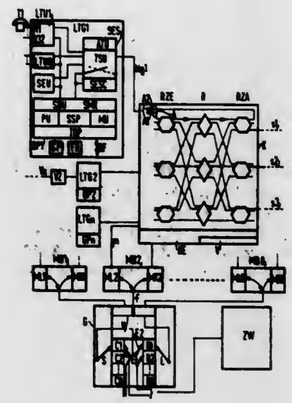
whereby the discharge state of said plasma display device can be periodically changed in response to write and erase command signals.

4,499,461

CIRCUIT ARRANGEMENT FOR CENTRALLY-CONTROLLED TELECOMMUNICATION EXCHANGE SYSTEMS, PARTICULARLY FOR TIME-DIVISION MULTIPLEX TELEPHONE EXCHANGE SYSTEMS, WITH INFORMATION EXCHANGE BETWEEN PBX DEVICES

Alfred Schneider, Haar, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Jul. 1, 1982, Ser. No. 394,136
Claims priority, application Fed. Rep. of Germany, Jul. 17, 1981, 3128365
Int. Cl.³ H04Q 9/00; H04J 3/16
U.S. Cl. 340—825.03 1 Claim



1. In a circuit arrangement for a telecommunication exchange system of the type in which a central control unit transmits information to and receives information from sub-central devices over individually assigned lines or time division multiplex channels, in which the central control unit is provided with an input/output device for receiving information called in by the central control unit for processing, and in which an input/output memory is provided for the information exchange between the sub-central devices and between the control unit and the sub-central devices, the improvement wherein:

the information memory comprises an input/output control, an output part divided into output sub-memories and an input part likewise divided into input sub-memories, for information to be fetched by the central control unit and operable to intermediately store information worked up by the central control unit to be distributed to the sub-central devices and information to be output by a first sub-central device to a second sub-central device together with a respective address identify the second sub-central device via the input/output control,

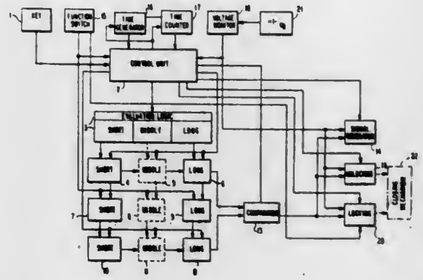
means providing that the information to be emitted from the first sub-central device and destined for the second sub-central device unchanged and serving for signaling of call-associated switch identifiers which have arrived in the first sub-central device and are to be transmitted via the second sub-central device are transmitted by the first sub-central device to said input/output control with an auxiliary criterion in addition to the destination address, the auxiliary criterion causing the input/output control to input the information into the output sub-memory assigned to the destination sub-central device.

4,499,462

CIRCUIT ARRANGEMENT FOR THE ELECTRONIC CODE LOCKING OF LOCKS

Klaus Stoessner, Langenhain-Hofheim, and Heinz Vinson, Langen, both of Fed. Rep. of Germany, assignors to Battelle Institut e.V., Postfach, Fed. Rep. of Germany

PCT No. PCT/EP81/00143, § 371 Date Apr. 21, 1982, § 102(e) Date Apr. 21, 1982, PCT Pub. No. WO82/00847, PCT Pub. Date Mar. 18, 1982
PCT Filed Sep. 2, 1981, Ser. No. 373,488
Claims priority, application Fed. Rep. of Germany, Sep. 4, 1980, 3033232
Int. Cl.³ H04Q 9/00; E05B 49/00
U.S. Cl. 340—825.31 17 Claims



1. A lock, comprising:

a supply voltage;

a manually operable key which includes an electrical switch adapted to be manually operated selectively to open or close an electrical circuit; each operation of said switch producing an input signal;

a means for storing a reference code;

a locking signal generator adapted to be triggered to generate a locking signal;

an unlocking signal generator adapted to be triggered to generate an unlocking signal;

an electronic means for classifying temporal intervals between successive ones of said input signals produced by actuations of said key into a plurality of groupings;

a comparator; said comparator being adapted to generate a signal to selectively trigger an unlocking signal or a locking signal;

said electronic means for classifying supplying said classified input signals to said comparator;

said comparator being adapted to compare said stored reference code to said classified input signals;

said comparator triggering said unlocking signal when said stored reference code is identical to said classified input signals;

a latch adapted to be selectively moved to an open condition or a closed condition;

a means for operating said latch selectively to an open condition or a closed position;

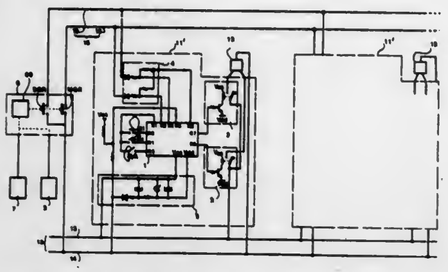
said means for operating being actuated selectively by said unlocking signal or said locking signal in an opening operation or a closing operation, respectively;

whereby when entry of input signals by operation of said key matches said stored reference code, said latch is triggered by an unlocking signal from said comparator to be operated to an open condition by said means for operating.

4,499,463
APPARATUS FOR CONTROLLING ELECTRICAL RECEIVERS OCCUPYING AT LEAST TWO STATES

Dominique Jacquel, Marnaz, France, assignor to Somfy, France

Filed Jul. 8, 1982, Ser. No. 396,337
Claims priority, application France, Jul. 28, 1981, 81 14623
Int. Cl.³ H04Q 9/00
U.S. Cl. 340—825.52 6 Claims



1. Apparatus for controlling a plurality of electrical devices each able to occupy at least two states, comprising individual control means connected to a power supply associated respectively with said devices, each individual control means comprising switching means for positioning the corresponding electrical device in any one of its states, and general control means connected to the power supply, comprising switching means for positioning all the electrical devices in any one of their states,

characterised in that each individual control means comprises a logic processing unit permanently connected to the power supply and comprising first and second groups of input terminals, the first group of input terminals including at least one input terminal to which is connected the switching means of said individual control means, said logic processing unit also comprising output terminals connected to the corresponding electrical device, the switching means of the general control device being connected to said second group of input terminals provided on each logic processing unit each logic processing unit accepting commands given non-simultaneously by the corresponding individual control means or by the general control means and accepting only the command given by the general control means when such command is given simultaneously with a command from the corresponding individual control means.

4,499,464
APPARATUS FOR REMOTE AUTHORIZATION FOR DISPENSING FLUIDS

Bruce R. Knox, Wickliffe, and Andrew J. Hruby, Northfield, both of Ohio, assignors to Ardac, Inc., Eastlake, Ohio

Continuation of Ser. No. 077,715, Sep. 21, 1979, abandoned. This application Feb. 19, 1982, Ser. No. 350,399
Int. Cl.³ G08C 19/00; H04Q 7/00
U.S. Cl. 340—825.72 11 Claims

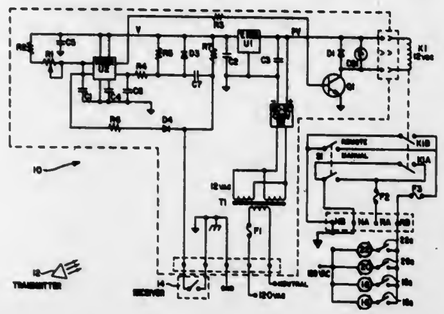
1. Apparatus for remotely authorizing the dispensing of fluids, comprising:

operator-actuatable transmitting means for producing an output signal;

receiver means in operative communication with said transmitting means for receiving said output signal;

a plurality of motor-driven pumps having electric resets for dispensing the fluids; and

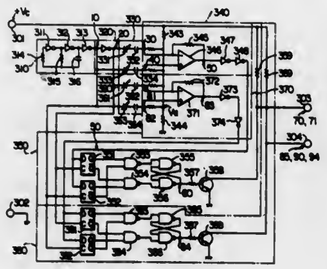
circuit means comprising a timing circuit interconnecting said receiver means and said electric resets, said timing circuit producing a signal of fixed time duration for enabling said resets for said time duration after receipt by said receiver means of said output signal.



4,499,465
CAPACITIVE-TYPE INCREMENTAL AND REFERENCE ANGULAR ROTATION DETECTING APPARATUS

Hiroaki Tanaka, and Shigeyuki Akita, both of Okazaki, Japan, assignors to Nippon Soken, Inc., Nishio, Japan

Filed Mar. 17, 1982, Ser. No. 358,903
Claims priority, application Japan, Mar. 18, 1981, 56-40051; May 25, 1981, 56-78872; May 27, 1981, 56-80585; Jun. 5, 1981, 56-86507
Int. Cl.³ G08C 19/10
U.S. Cl. 340—870.37 4 Claims



1. A capacitive-type incremental rotational position and reference angular position detecting apparatus, comprising:

a stationary part;

a rotational part;

a first plate, mounted on said stationary part, having first and second first-input electrodes, each including a plurality of electrode pieces, said electrode pieces being arranged around a circumference of said first plate at respective equal intervals and contiguously intermeshed, and said first plate having third and fourth semi-circular second-input electrodes arranged around said circumference;

a second plate, mounted on said rotational part and facing said first plate, having first-output electrode means including a plurality of electrode pieces arranged along a circumference of said second plate at equal intervals facing said electrode pieces of said first-input electrodes of said first plate, and said second plate having second-output electrode means facing said second-input electrodes of said first plate;

a periodic signal supply circuit for supplying two periodic signals of predetermined period and opposite phase respectively to said first-input electrodes and to said second-input electrodes;

signal transmission means for transmitting signals between said first plate and said second plate;

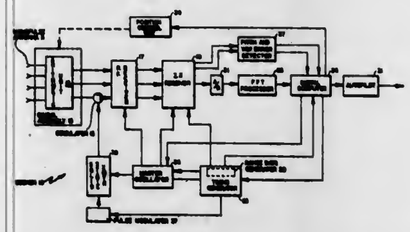
an incremental rotational position signal generating circuit means for detecting incremental rotation of said second plate by detecting the phase relation between periodic signals output by said first-output electrode means and the periodic signals supplied by said periodic signal supply circuit; and

a reference angular position signal generating circuit means for detecting reference angular position of said second plate by detecting the phase relation between periodic signals output by said second-output electrode means and the periodic signals supplied by said periodic signal supply circuit.

4,499,466
METHOD OF PRODUCING VELOCITY-AIDED RANGE GATES

Arthur J. Torino, Jr., Merrimack, N.H.; George A. Bouchard, Arlington, and Philip A. Keane, North Reading, both of Mass., assignors to Raytheon Company, Lexington, Mass.

Filed Jul. 1, 1982, Ser. No. 394,243
Int. Cl.³ G01S 13/70
U.S. Cl. 343—7.3 1 Claim



1. In the operation of a guidance system for a guided missile in flight, such missile carrying the combination of a pulse Doppler radar and a digital computer to derive digital signals representative of the position of a selected target relative to such missile during an intercept and representative of the then existing Doppler velocity between such missile and target, the method of generating a range gate compensated for Doppler velocity, such method comprising the steps of:

(a) firstly, periodically recording the then existing digital signals out of the digital computer to provide corresponding digital signals extant in each interval between recording, each such interval being greater than the pulse repetition interval of the pulse Doppler radar;

(b) secondly, transferring the extant digital signals indicative of the position of the selected target to a random access memory and the extant digital signals indicative of the Doppler velocity to a counter;

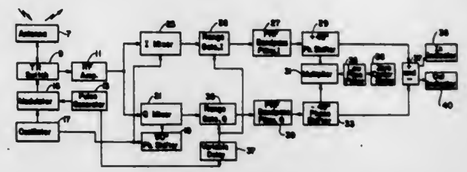
(c) addressing the random access memory and actuating the counter at different rates to produce a velocity-aided range gate control signal, the time of occurrence of such control signal after each transmitted pulse being varied in accordance with extant digital signals indicative of Doppler velocity; and

(d) synchronizing the velocity-aided range gate control signal with each pulse transmitted by the pulse Doppler radar.

4,499,467
DOPPLER RADAR SETS WITH TARGET DIRECTION SENSING CAPABILITY

Otto Rittenbach, Neptune, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Apr. 14, 1982, Ser. No. 368,482
Int. Cl.³ G01S 13/62
U.S. Cl. 343—9 R 7 Claims

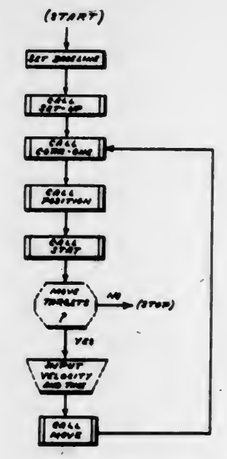


1. A Doppler radar set comprising a pulse generator providing a pulse repetition frequency for operation of said radar at a frequency which is a high multiple of the highest expected Doppler shift frequency, means for receiving a video pulse signal at said pulse repetition frequency modulated by the Doppler frequency including a pair of quadrature receiving channels each including a mixer, the input to one mixer being phase shifted by 90° with respect to the other, a pulse repetition frequency bandpass filter coupled to each mixer in each channel, a Doppler phase shifter connected to each bandpass filter of each said channel, said Doppler phase shifters being adapted to shift the relative phases of the signals of said channels by 90°, and circuitry connected to the outputs of said Doppler phase shifters to determine and indicate the direction of moving target motion along the beam of said radar, and wherein said Doppler phase shifters are operated at said frequency higher than the frequency of the highest Doppler frequency of said radar set.

4,499,468
RANGE-ONLY MULTISTATIC RADAR SYSTEM

Donald M. Montana, New Hartford, and Randy S. Herd, Rome, both of N.Y., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Apr. 21, 1982, Ser. No. 370,234
Int. Cl.³ G01S 13/46
U.S. Cl. 343—15 7 Claims



1. A process of determining real targets from bistatic range

measurements in a range-only multistatic radar system having N^2 radar stations, $N \geq 2$, located in a grid pattern, said radar system having a plurality of transmitters and receivers, comprising the steps of:

applying a range difference similarity test to bistatic range differences to determine similar range difference elements;

applying a uniqueness test to said similar range difference elements;

computing positions of targets having unique range differences as determined by said uniqueness test; and

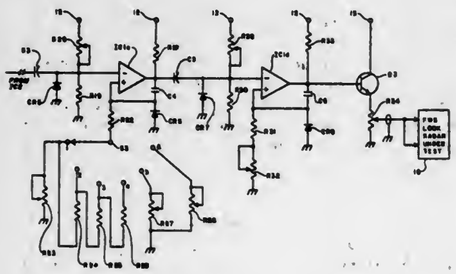
identifying real targets from a real time track file and track smoothing.

4,499,469

RADAR TESTER

John W. Kesterson, 6201 Turtle Dove Dr., Austin, Tex. 78744

Filed Sep. 23, 1982, Ser. No. 422,517
Int. Cl.³ G01S 7/40, 9/02
U.S. Cl. 343—17.7 12 Claims



1. Video signal generating apparatus for simulated target rapid testing of video circuits in a terrain following, forward-looking, airborne radar system having an elevation scan demodulated signal indicating the position of the radar antenna, and a trigger signal indicating the firing of the transmitter, said apparatus comprising:

means for an operator to input a desired range of simulated target antenna positions:

first logic means for comparing the operator's selected range of antenna positions with said elevation scan demodulated signal;

second logic means for generating a simulated target initiating signal when the position of the radar antenna is within the range of operator selected antenna positions and said trigger signal is present;

first converting means for converting said target initiating signal into a pulsed signal having operator controlled pulse length, thereby controlling the range to said simulated target;

second converting means for converting said pulsed signal into a video signal second pulsed signal having operator controlled pulse width, thereby controlling the width of said simulated target; and

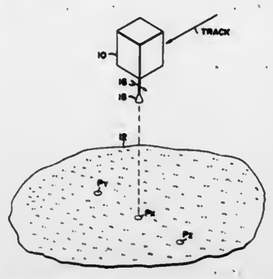
means for coupling said video second pulsed signal to the video signal circuitry of said terrain-following, forward-looking, airborne radar system for rapidly evaluating the performance of the radar video system under controllable, stable conditions.

4,499,470

METHOD OF MEASURING SEA SURFACE WATER TEMPERATURE WITH A SATELLITE INCLUDING WIDEBAND PASSIVE SYNTHETIC-APERTURE MULTICHANNEL RECEIVER

Joseph M. Stacey, La Canada, Calif., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed May 6, 1982, Ser. No. 375,620
Int. Cl.³ H04B 7/185; G01W 1/08
U.S. Cl. 343—352 3 Claims



3. A method for measuring the temperature of water at the sea surface, over a large area of the sea, by a satellite which has a microwave antenna that can detect microwave emissions from the sea surface, comprising:

establishing a plurality of widely spaced buoy devices in said area of the sea, wherein each buoy device transmits signals representing the precise temperature of the at the buoy device;

detecting microwave emissions from a multiplicity of limited areas or pixels of the sea from said satellite, including detecting emissions from calibration pixels that are close to the locations of said buoy devices so the sea surface temperature is substantially the same as at the buoy device, and from noncalibration pixels that are far from a buoy device;

determining the ratio between a difference in the amplitude of microwave emissions received from pixels and the difference in sea temperature represented by the difference in microwave emissions, by measuring the change in emissions from at least two of said buoy devices whose difference in sea temperatures is precisely known; and

determining the sea temperature at each of a plurality of noncalibration pixels according to the magnitude of microwave emissions detected from the pixel, based on the temperature at at least one buoy device and the determined relationship between a difference in amplitude and the difference in temperature.

4,499,471

RECONFIGURABLE DUAL MODE NETWORK

Howard H. Luh, Sunnyvale, Calif., assignor to Ford Aerospace & Communications Corporation, Detroit, Mich.

Filed May 2, 1983, Ser. No. 490,928
Int. Cl.³ H01Q 3/22, 3/24, 3/26; H01P 5/16
U.S. Cl. 343—373 10 Claims

1. A reconfigurable dual mode network having first and second input ports, and first, second, and third output ports, wherein the maximum amplitudes (a, b, and c, respectively) of the voltages appearing at the three output ports are the same regardless of which input port is excited;

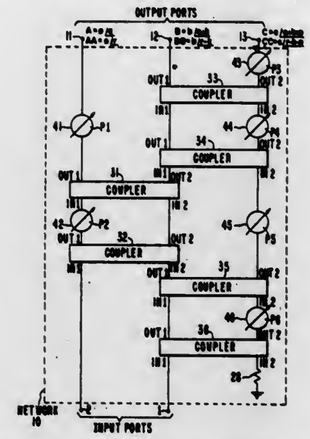
wherein a, b, and c are preselected, are reconfigurable, and are arbitrary subject only to the constraint that the sum of the squares of any two members of the set consisting of a, b, and c must be greater than or equal to the square of the third member of said set;

said network further comprising a first coupler having a first output coupled via a first phase shifter to the first output port;

a second coupler having a first output coupled via a second phase shifter to a first input of the first coupler, a second output coupled to a second input of the first coupler, and a first input coupled to the second input port;

a third coupler having a first output coupled to the second output port, and a second output coupled via a third phase shifter to the third output port;

a fourth coupler having a first output coupled to a first input of the third coupler, a second output coupled via a fourth phase shifter to a second input of the third coupler, and a first input coupled to a second output of the first coupler;



a fifth coupler having a first output coupled to a second input of the second coupler, and a second output coupled via a fifth phase shifter to a second input of the fourth coupler; and

a sixth coupler having a first output coupled to a first input of the fifth coupler, a second output coupled via a sixth phase shifter to a second input of the fifth coupler, and a first input coupled to the first input port.

5. The apparatus of claim 1 further comprising a feed element coupled to each of the output ports, wherein the feed elements are directed at an antenna.

4,499,472

SEQUENTIALLY STEERED RECEIVER WITH TIMED RECYCLE CALIBRATION

Richard L. Willett, 10716 Citrus Dr., Moorpark, Calif. 93021

Filed Nov. 14, 1983, Ser. No. 550,832
Int. Cl.³ H01Q 3/02, 3/12
U.S. Cl. 343—374 6 Claims

1. A system for sequentially steering and calibrating an omnidirectional receiver providing an indication of the phase relation of received signals comprising:

(a) antenna means having directional arrays for receiving input signals in selected directions,

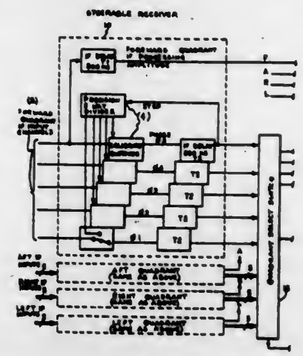
(b) quadrant processing means connected to receive the input signals from said antenna means,

(c) said quandrant processing means including delay means for storing and providing said input signals at the output of said delay means after a predetermined time delay,

(d) amplitude comparison means for comparing the input signals received by said antenna means during a first delay period,

(e) switch means connected to said amplitude comparison means for connecting the quadrant processing means associated with the respective directional array developing the greatest amplitude input signal, to a phase comparator,

(f) said delay means providing said input signals at its output, subsequent to said first delay period, and to said phase comparator,



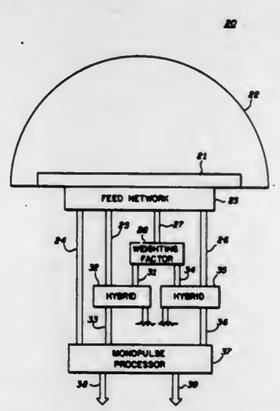
(g) said phase comparator providing an indication of the phase relation of said input signals.

4,499,473

CROSS POLARIZATION COMPENSATION TECHNIQUE FOR A MONOPULSE DOME ANTENNA

Basrur R. Rao, Lexington, Mass., assignor to Sperry Corporation, New York, N.Y.

Filed Mar. 29, 1982, Ser. No. 363,357
Int. Cl.³ H01Q 19/06, 23/00
U.S. Cl. 343—754 4 Claims



1. In an antenna of the type including a non-planar lens positioned in the field of a planar scannable antenna for modifying the scanning properties thereof, the planar scannable antenna having a plurality of elements, a planar array aperture, a planar array aperture distribution function, and at least one monopulse difference signal output port, the improvement comprising:

a receiving array, having a receiving array aperture and an output port, positioned in cross polarized relationship with said planar scannable antenna; and

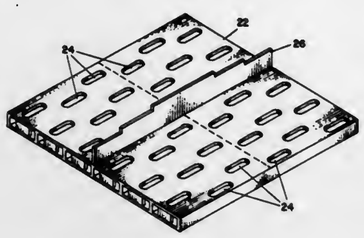
means coupled to said receiving array output port and to at least one of said difference signal output ports for combining signals at said difference signal output ports with signals at said receiving array output port in a predetermined manner to reduce null filling in said difference signal output ports due to polarization distortion caused by said non-planar lens.

4,499,474

SLOT ANTENNA WITH FACE MOUNTED BAFFLE

Harvey P. Muhs, Jr., 10331 Shirley Ave., Northridge, Calif. 91326, and Charles K. Watson, 653-33rd St., Manhattan Beach, Calif. 90266

Filed Mar. 29, 1982, Ser. No. 363,264
Int. Cl.³ H01Q 13/10
U.S. Cl. 343—771 4 Claims



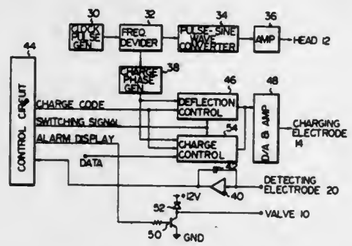
1. A waveguide slot antenna consisting of four quadrants A, B, C and D which create two functional halves (A+B) and (C+D) comprising a flat plate, said plate containing a plurality of radiating slots, said slots having longitudinal and transverse axes and arranged in a lattice, a baffle interposed between the two functional halves of the plate (A+B) and (C+D) in a plane (perpendicular) parallel to the (E-field) longitudinal axes of the (plate) slots.

4,499,475

INK JET PRINTING APPARATUS

Koichiro Jinnai, Tokyo, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Nov. 9, 1981, Ser. No. 319,520
Claims priority, application Japan, Nov. 25, 1980, 55-165575
Int. Cl.³ G01D 15/18
U.S. Cl. 346—75 7 Claims



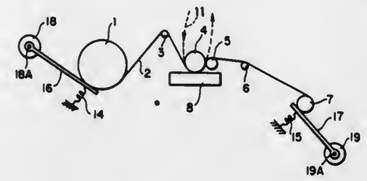
1. An ink jet printing apparatus comprising:
ink ejection means for ejecting and charging a jet of ink droplets;
deflection means for electrostatically deflecting the jet by a variable amount;
deflection detector means for detecting deflection of the jet to predetermined reference deflection and a direction of deviation of the jet from the reference deflection; and
control means responsive to the detector means for controlling the deflection means to vary deflection of the jet toward the reference deflection in accordance with a sensed direction of deviation by progressively smaller amounts and terminating variation of the deflection when an amount of deflection variation has been reduced to a predetermined value, the control means comprising alarm means for producing an alarm signal when variation of the deflection has been terminated and the detector means does not detect the jet at the reference deflection.

4,499,476

TRANSFER TYPE HEAT SENSITIVE RECORDING APPARATUS

Toshiharu Inui; Masami Kurata; Hisao Nakajima, and Takashi Ohmori, all of Kanagawa, Japan, assignors to Fuji Xerox Co., Inc., Tokyo, Japan

Filed Apr. 27, 1982, Ser. No. 372,355
Claims priority, application Japan, Apr. 30, 1981, 56-65486
Int. Cl.³ G01D 15/10, 15/24; B65H 25/28, 59/00
U.S. Cl. 346—76 PH 6 Claims



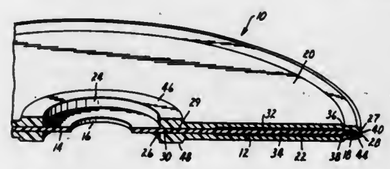
1. A transfer type heat sensitive recording apparatus comprising:
a feed roll having a donor sheet supplied with a heat transfer type ink wound up into a roll;
a recording section for selectively heating said donor sheet delivered from said feed roll in dependence upon image information, and transferring said ink onto a recording paper in contact with said donor sheet;
a take-up roll for the recovery of said used donor sheet passing through said recording section;
means for detecting the tension of the donor sheet transported from the feed roll to the take-up roll;
means for correcting the tension of the ink donor sheet in accordance with the result of the detection, said tension detecting means comprising variable resistors having rotary shafts, said shafts being fixedly coupled to first ends of actuator levers, second ends of said actuator levers being in contact with said feed roll and said take-up roll, respectively, movement of said second ends of said actuator levers in response to changes in diameters of said feed roll and said take-up roll, respectively, rotating said respective rotary shafts; and
springs for urging said second ends of said levers in contact with said feed roll and said take-up roll, a variable resistor being provided for each of said feed roll and said take-up roll, whereby an increase or decrease in the amount of donor sheet on said rolls changes a diameter of said rolls and thereby varies the resistance of said resistors.

4,499,477

COVER ASSEMBLY FOR OPTICAL RECORDING MEDIUM

David H. Davies, Cupertino, and Daniel E. Evanicky, Morgan Hill, both of Calif., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Mar. 14, 1983, Ser. No. 474,877
Int. Cl.³ G01D 15/34, 15/14; B29C 19/00
U.S. Cl. 346—137 13 Claims



1. A cover assembly adapted for use with an optical recording medium having a disk-shaped substrate including a central

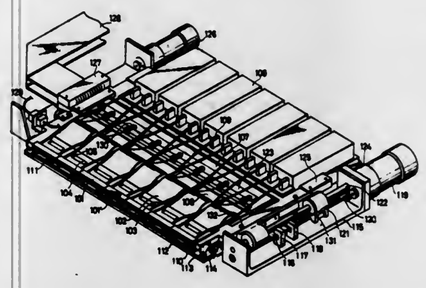
aperture and outer periphery and having an optically recordable coating on at least one major surface thereof extending at least between the central aperture and outer periphery, wherein said cover assembly comprises two substantially identical disk-like halves each of which is a single, integrally molded construction having a central aperture and outer periphery,
(a) the inner surface of each half including
(i) a first substantially planar annulus adjacent to the central aperture thereof adapted to be bonded to a like planar annulus on said substrate,
(ii) a second substantially planar annulus extending radially outward from said first annulus and off-set relative thereto, adapted to be slightly spaced from a said substrate surface over an annular region on which a said optically recordable coating extends, said cover half in the region of said second annulus being formed of a material which is substantially transparent and has substantially no birefringent characteristics at the wavelength of the light to be used for subsequent recording and playback, thereby allowing a light beam having said wavelength to pass substantially unimpeded therethrough,
(iii) a third substantially planar annulus adjacent to said outer periphery adapted to partially support said substrate upon assembly therewith, and
(iv) a portion on the outer periphery adapted to be bonded to a corresponding member of an opposing half to thereby enclose the space between said substrate and said second annulus, and
(b) the outer surface of each half including a raised, substantially planar annulus adjacent to the central aperture thereof for supporting the assembly, thereby minimizing contact with the portion of the halves overlying the recordable coating to prevent scratches and the like which would otherwise interfere with subsequent optical recording and playback.

4,499,478

INK JET RECORDING APPARATUS

Yohji Matsufuji; Shigeo Togano, and Hiroo Ichihashi, all of Tokyo, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 28, 1981, Ser. No. 334,909
Claims priority, application Japan, Jan. 16, 1981, 56-5517; Jan. 16, 1981, 56-5518; Jan. 16, 1981, 56-5519; Jan. 16, 1981, 56-5520
Int. Cl.³ G01D 15/16, 15/18
U.S. Cl. 346—140 R 13 Claims



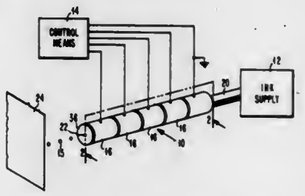
1. Ink jet recording apparatus comprising:
a head unit of the cassette type comprising a plurality of ink jet head sections of which each comprises a multi-array orifice ink jet head for effecting recording at a predetermined position and a drive control element for driving the associated ink jet head to project a liquid droplet on demand from at least one orifice thereof;
common multiplex wiring means for supplying electric signals to each of said drive control elements;
a reservoir for storing liquid to be fed to said head unit of the cassette type; and
a common supporting member supporting said head unit of the cassette type, said common multiplex wiring means and said reservoir, each of said ink jet heads and each of said drive control element being removably fixed on said common supporting member in such a manner as to be removable therefrom independently of the other said ink jet heads and drive control elements.

4,499,479

GRAY SCALE PRINTING WITH INK JET DROP-ON DEMAND PRINTING HEAD

Francis Chee-Shuen Lee, San Jose; Ross N. Mills, and Frank E. Talke, both of Morgan Hill, all of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 30, 1982, Ser. No. 413,039
Int. Cl.³ G01D 15/16
U.S. Cl. 346—140 R 7 Claims



1. A drop-on-demand ink jet printing system for gray scale printing comprising a print head having an ink cavity filled with ink from an ink source which is not pressurized and means for selectively energizing a transducer to eject a single drop of ink from said ink cavity each time the transducer is energized, the improvement comprising:
means to eject a drop of ink having a selectively variable size, said means comprising a continuous electromechanical transducer having a plurality of separately actuable sections;
print data specifying the drop size of each of the ink drops required to produce the print image defined by said print data;
logic circuit control means operable in response to said print data to generate voltage control pulses for each ink drop required, means for coupling said voltage control pulses to drive a predetermined combination of sections of said transducer for actuation to produce an ink drop having the specified drop size and a predetermined drop velocity, said voltage control pulses for producing subsequent ones of said ink drops being operable to produce ink drops of the specified drop size and drop velocities equal to said predetermined drop velocity within predetermined limits.

4,499,480

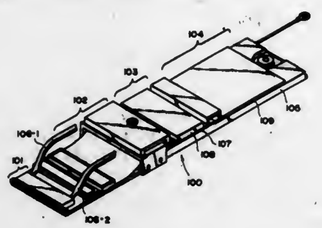
LIQUID JET RECORDING DEVICE

Yasushi Takatori, Sagamihara; Yasuhiro Yano, Kawasaki, and Yoshifumi Hattori, Yamato, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 22, 1982, Ser. No. 421,424
Claims priority, application Japan, Oct. 13, 1981, 56-163645; Nov. 13, 1981, 56-163646
Int. Cl.³ G01D 15/18
U.S. Cl. 346—140 R 9 Claims

1. A liquid jet recording device which comprises a liquid discharging portion including means defining a number of discharging orifices for formation of flying liquid droplets by discharging a liquid, a respective liquid channel communicating with each of said discharging orifices, and electrothermal

transducers which are arranged each for a corresponding one of said discharging orifices along a respective one of said liquid channels; respective driving control portions for driving respective ones of said electrothermal transducers of said liquid discharging portion; a connecting wiring portion for electrical connection of respective ones of said electrothermal transducers to the corresponding ones of said driving control portions; a matrix wiring portion for sending signals to said driving control portions; and a substrate; said liquid discharging portion, said driving control portions, said connecting wiring portion and said matrix wiring portion being mounted on said substrate.

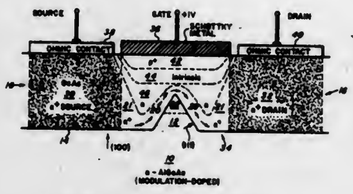


4,499,481

HETEROJUNCTION SCHOTTKY GATE MESFET WITH LOWER CHANNEL RIDGE BARRIER

Richard F. Greene, Bethesda, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sep. 14, 1983, Ser. No. 532,122
Int. Cl.³ H01L *29/80*
U.S. Cl. 357—22 **11 Claims**



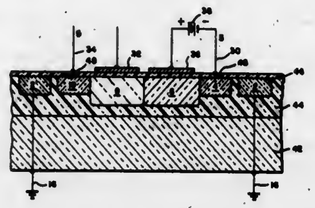
1. A semiconductor switching device including in combination:
- a doped semiconductor substrate of the first conductivity type and of a first material with one surface thereof being approximately flat but with a ridge structure rising from a portion of said flat surface;
- a semiconductor layer of a second material disposed over the flat surface and ridge structure of said substrate to form an epitaxial heterojunction interface therewith, heavily doped source and drain regions of the first conductivity type being formed down into said semiconductor layer on opposite sides of said ridge structure;
- source and drain ohmic contacts being disposed on said semiconductor layer above said source and drain regions;
- a gate material being disposed on said semiconductor layer above said substrate ridge structure to form a barrier with said semiconductor layer.

4,499,482

WEAK-SOURCE FOR CRYOGENIC SEMICONDUCTOR DEVICE

Michael A. Levine, 383 Sycamore Pl., Sierra Madre, Calif. 91024

Continuation-in-part of Ser. No. 333,465, Dec. 22, 1981, Pat. No. 4,433,433, and Ser. No. 357,866, Mar. 15, 1982,. This application Jan. 25, 1982, Ser. No. 392,081
Int. Cl.³ H01L *27/14*
U.S. Cl. 357—30 **10 Claims**



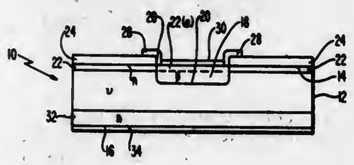
1. A cryogenic semiconductor device comprising:
- a substrate of a first conductivity type;
- a source region;
- a drain region spaced apart from said source region, said source region and said drain region each being of a second conductivity type;
- a weak-source region contiguous to said source region and also of said second conductivity type but having a lower concentration of carriers than in said source region;
- a channel region between said weak-source region and said drain region;
- a dielectric layer extending above said weak-source region and said channel region;
- at least one control gate electrode above said channel region and separated therefrom by said dielectric layer for selectively inducing within said channel region an induced channel of said second conductivity type extending from said weak-source region to said drain region;
- at least one weak-source gate electrode above said weak-source region and separated therefrom by said dielectric layer; and
- means for applying a predetermined voltage potential between said source region and said weak-source gate electrode to create a potential bucket connecting said source region with said induced channel.

4,499,483

SILICON PHOTODIODE WITH N-TYPE CONTROL LAYER

Tsuneo Yamazaki, Pointe Claire; Mervat Faltas, Kirkland, and Paul P. Webb, Beaconsfield, all of Canada, assignors to RCA, Inc., Ste-Anne-de-Bellevue, Canada

Continuation of Ser. No. 321,280, Nov. 13, 1981,. This application Apr. 26, 1984, Ser. No. 603,983
Claims priority, application Canada, Sep. 16, 1981, 386011
Int. Cl.³ H01L *27/14*
U.S. Cl. 357—30 **6 Claims**



1. A photodiode comprising:
a silicon body having ν-type conductivity with a resistivity

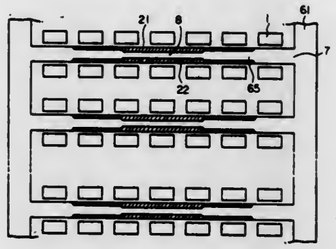
greater than 1,000 ohm-cm and first and second major surfaces;
- a continuous p-type conductivity region extending a distance into the body from a portion of the first surface through which light enters the body and having a dimension along said first surface greater than the distance said p-type region extends into the body;
- an n-type conductivity control layer extending a distance into the silicon body from a portion of said first surface contiguous with and around that portion of said first surface from which said p-type region extends;
- an n-type conductivity region extending a distance into the body from said second surface;
- a first electrical contact overlying a portion of said p-type region at said first surface; and
- a second electrical contact overlying at least a portion of said n-type region at said second surface.

4,499,484

INTEGRATED CIRCUIT MANUFACTURED BY MASTER SLICE METHOD

Tetsu Tanizawa; Hitoshi Omichi, both of Kawasaki, and Yoshiharu Mitono, Tokyo, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Sep. 8, 1982, Ser. No. 415,795
Int. Cl.³ H01L *21/70, 21/90, 29/44*
U.S. Cl. 357—68 **6 Claims**



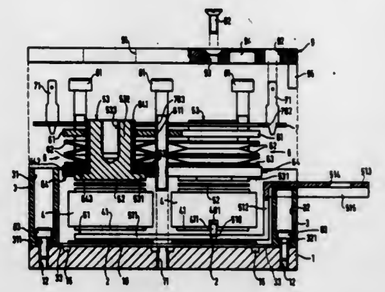
1. An integrated circuit, manufactured by the master slice method, having an array of interconnected unit-cells having electrical elements, the array having a periphery and a middle portion and including interconnecting domains for interconnecting the unit-cells and interconnecting the electrical elements within each of the unit cells and for forming desired logic circuits by changing the interconnections of the electrical elements within each of the unit cells and changing the interconnections between each of the unit cells, the circuit comprising feeder lines, having first portions in the middle portion of the array and second portions, wider than the first portions, in the periphery of the array, operatively connected to the unit-cells, for supplying power to the unit-cells, said feeder lines extending from the periphery of the array toward the middle portion of the array and the first portions being substantially narrowed in width from the periphery of the array toward the middle portion of the array.

4,499,485

SEMICONDUCTOR UNIT

Winfried Schlarz, Roth, and Helmut Creutz, Zirndorf, both of Fed. Rep. of Germany, assignors to SEMIKRON Gesellschaft für Gleichrichterbau und Elektronik mbH, Nuremberg, Fed. Rep. of Germany

Continuation of Ser. No. 234,429, Feb. 13, 1981,. This application Oct. 20, 1983, Ser. No. 543,787
Claims priority, application Fed. Rep. of Germany, Feb. 13, 1980, 3005313
Int. Cl.³ H01L *23/02*
U.S. Cl. 357—74 **30 Claims**



1. In a semiconductor unit composed of at least two semiconductor members each having two opposed ends and provided at each end with a respective current contact, a housing including a metallic base plate and a cover, means for mounting the semiconductor members in electrically insulated and thermally conductive communication with the base plate, external connecting leads, and spring means for establishing pressure contact between the leads and the current contacts, the improvement wherein:
- said connecting leads comprise at least one contact rail which defines a lower lead contacting said current contact at that end of at least one of said members which is directed toward said base plate and interposed between said base plate and said at least one of said members;
- said contact rail includes a free end region which extends through an opening in said housing to provide an external connection in a selected connection plane;
- said connecting leads further comprise an upper lead for each said member arranged concentrically with its respective member, contacting said current contact at that end of its associated member which is directed toward said cover, and provided with threaded means for establishing a screw connection with an external conductor;
- said cover is provided with an opening for each said upper lead through which said upper leads extend to expose said threaded means of each said upper lead for connection to an associated external conductor; and
- said unit further comprises means securing each said upper lead against rotation relative to said housing.

4,499,486

DEVICE FOR CORRECTING COLOR INFORMATION SUPPLIED BY A TELEVISION CAMERA WITH A VIEW TO IMPROVING THE PERCEPTION OF PICTURES

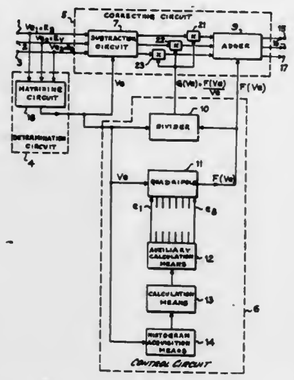
Michel Favreau, Paris; Jean Bajon, Toulouse, and Serge Soca, Paris, all of France, assignors to Thomson-CSF, Paris, France

Filed May 19, 1982, Ser. No. 379,945
Claims priority, application France, May 22, 1981, 81 10253
Int. Cl.³ H04N *5/14*
U.S. Cl. 358—37 **8 Claims**

1. A device for correcting color information signals of values V_{e1}, V_{e2} and V_{e3} supplied by a television camera, comprising:

a determination circuit having three inputs respectively receiving the three color information signals and an output, for supplying a signal of value V_e which is a function of the values of the color information signals;

a control circuit having an input coupled to the output of the determination circuit and having an output for supplying a signal of value $G(V)_e=(F(V_e)/V_e)$, in which F is a function such that its histogram has a predetermined distribution chosen for improving the perception of images; and



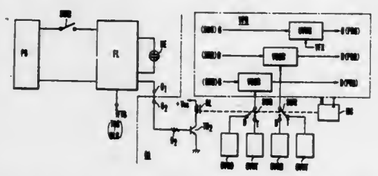
a correction circuit comprising a first, a second, and a third multiplier, each having a first and a second input, and an output, said multipliers first inputs being respectively coupled to three first inputs of the correction circuit receiving the three color information signals, said multipliers second inputs being coupled to a second input of the correcting circuit receiving the value $G(V_e)$, and said multipliers three outputs being respectively coupled to three outputs of the correcting circuit for supplying three corrected color information signals.

4,499,487

CAMERA OPERABLE WITH FLASH AND IN DAYLIGHT AND TUNGSTEN MODES

Makoto Takayama, Kanagawa; Tomotaka Muramoto, Tokyo, and Akimasa Nishimura, Kanagawa, all of Japan, assignors to Canon Kabushiki Kaisha, Japan

Filed Feb. 17, 1983, Ser. No. 467,348
Claims priority, application Japan, Feb. 26, 1982, 57-31228
Int. Cl.³ H04N *9/04*
U.S. Cl. 358—41 **6 Claims**



1. A camera for use with a flash device having means for generating an indication indicative of completion of preparation for flash emission, said camera comprising:

(A) means for selecting a photographic mode of the camera from a first mode suited for photography under day-light illumination and a second mode suited for photography under tungsten-light illumination; and

(B) means responsive to completion of preparation for the flash emission for fixing the photographic mode of the camera at said first mode irrespective of the selection by said selecting means.

2. The camera according to claim 1, further comprising:

image pick-up means for providing an electrical signal indicative of image scanning;

processing means for processing said electrical signal to produce a color image signal; and

control means for controlling color balance of said color image signal produced by said processing means, said control means having a first control mode suited for said first photographic mode and second control mode suited for said second photographic mode;

said selecting means being coupled to said control means to select the control mode from one of said first and second control modes in accordance with the selection of the photographic mode from said first and second photographic modes; and

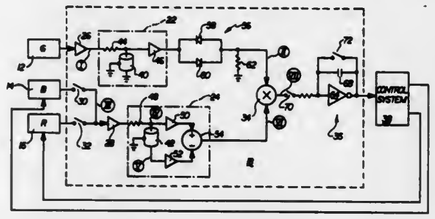
said fixing means being coupled to said control means to fix the control mode thereof at said first control mode in response to the completion of the preparation for the flash light emission of said flash device.

4,499,488

AUTOMATIC REGISTRATION CONTROL SYSTEM FOR COLOR TELEVISION CAMERAS

Charles M. White, and William J. Cosgrove, both of Quincy, Ill., assignors to Harris Corporation, Melbourne, Fla.

Filed Feb. 3, 1983, Ser. No. 463,637
Int. Cl.³ H04N *9/09*
U.S. Cl. 358—51 **22 Claims**



1. Apparatus comprising:

first means responsive to a first video signal for providing a first output signal including an AC pulse in timed relation to a scene edge-representative transition in said first video signal;

second means responsive to a second video signal for providing a second output signal including a unipolar pulse in timed relation to a scene edge-representative transition in said second video signal;

means for multiplying said first and second output signals together to provide a product signal whose integral is dependent upon the relative times of occurrence of said AC and unipolar pulses and thus upon the relative times of occurrence of the corresponding transitions in said first and second video signals; and,

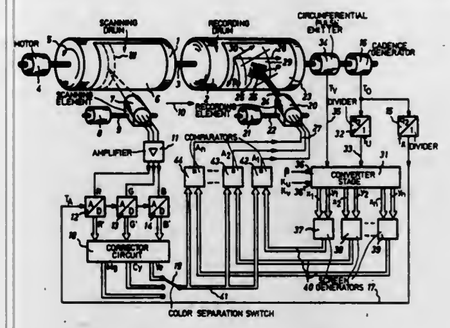
means for integrating said product signal to provide an integral signal having a level dependent upon and thus indicative of said relative times of occurrence of said corresponding transitions in said first and second video signals.

4,499,489

PRODUCTION OF SCREEN PRINTING BLOCKS

Winrich Gall, Klausdorf, and Klaus Wellendorf, Kitzeberg bei Kiel, both of Fed. Rep. of Germany, assignors to Dr. Ing. Rudolf Hell GmbH, Fed. Rep. of Germany

Continuation of Ser. No. 271,102, Jun. 8, 1981, abandoned, which is a continuation of Ser. No. 054,978, Jul. 5, 1979, abandoned. This application Mar. 25, 1983, Ser. No. 479,974
Int. Cl.³ H04N *1/46*
U.S. Cl. 358—75 **50 Claims**



1. A method for producing half-tone reproductions of an original on a recording medium by means of a recording element using rotated screens having any screen angle and any screen line spacing and being formed of periodically repeated, adjacent screen grid elements comprising screen dots varying in size with the tone values of the original, comprising the steps of:

(a) optoelectronically scanning said original line-by-line and dot-by-dot;

(b) generating image values from the scanning representing the tone values of the original;

(c) providing a matrix having a number of matrix elements, said matrix representing said periodically repeated grid elements;

(d) generating a threshold value for each matrix element, said threshold values representing predetermined grey tone values, and said threshold values having amplitudes and a distribution in the matrix according to a predetermined function;

(e) subdividing the recording medium into a plurality of adjacent areal elements which are aligned in scanning directions of the recording element and from which the screen dots of the rotated screen are built up inside each screen grid element; and

(f) during recording medium scanning, generating a recording element recording signal for each areal element to form the screen dots inside the screen grid elements of the rotated screen by comparison of at least one image value with a threshold value of a matrix element whose location within said matrix corresponds to a respective location of said recording medium areal element within said screen grid element of the rotated screen and determining by said comparison of the threshold value and the image value whether the areal element is recorded or not when forming the screen dots.

4,499,490

SCANNING APPARATUS WITH VIDEO CAMERA

Jack B. Morgan, 1657 Parkhills Ave., Los Altos, Calif. 94022

Filed May 10, 1982, Ser. No. 376,326
Int. Cl.³ H04N *7/00, 7/18, 5/26*
U.S. Cl. 358—67 **21 Claims**

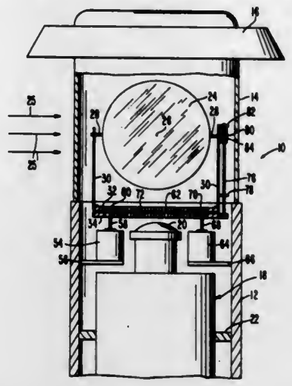
1. Scanning apparatus comprising:

a housing;

a video camera secured in a fixed position in the housing and having a generally vertical optical axis;

a mirror;

means including rotatable first and second gears for mounting the mirror above the video camera for rotation about



a generally vertical axis and for rotation about a generally horizontal axis relative to the video camera; and

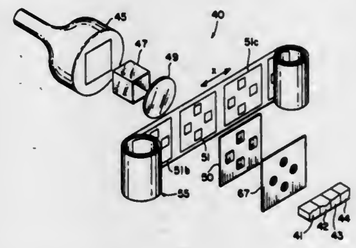
a pair of drive motors coupled with respective gears for rotating the mirror about said vertical and horizontal axes, each motor being secured in a fixed position on the housing.

4,499,491

MOVING MAP DISPLAY USING OPTICAL TUNNEL

Mitchell Aron, Harrington Park, and Martin W. Feintuch, Fort Lee, both of N.J., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Filed Jul. 21, 1983, Ser. No. 515,825
Int. Cl.³ H04N *7/18*
U.S. Cl. 358—102 **19 Claims**



1. A moving map display for displaying images of continuously changing locations of a map, characterized by:

(a) means for converting electrical signals into optical signals, said means providing a line trace pattern;

(b) image producing means translating the line trace pattern to a plurality of separate images thereof;

(c) film carrier means for aligning a plurality of film frames to preselected positions, the image producing means focusing the images of the line trace patterns onto the positions;

(d) means for receiving light transmitted through the film frames;

(e) means disposed between the light receiving means and the image producing means selectively blocking and transmitting light passing through sections of the aligned film frame so that at any given time light from at least one section is being received by the light receiving means and

light may be blocked from being transmitted through at least one of the sections to the light receiving means; and

(f) means to control the line trace patterns so as to provide signals from the light receiving means representing a composite image of selectively one or more portions of the aligned film frame.

4,499,492

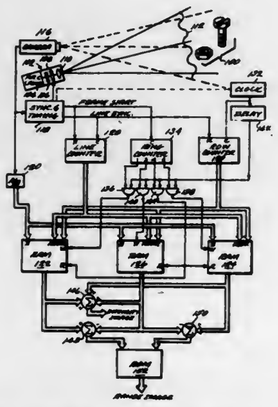
METHOD AND APPARATUS FOR THREE FRAME RANGE IMAGING

Richard A. Hutchin, Marlboro, Mass., assignor to Novon, Inc., Swampscott, Mass.

Continuation-in-part of Ser. No. 409,344, Aug. 18, 1982,. This application Feb. 7, 1983, Ser. No. 464,600

Int. Cl.³ H04N *7/18*

U.S. Cl. 358—107 **40 Claims**



1. Apparatus for imaging a scene comprising:

means for illuminating said scene with a moving periodic modulation pattern;

means, offset from said illuminating means, for converting light reflected from a plurality of points in said scene into electrical signals; and

means for determining the relative phase with respect to said periodic modulation pattern of light reflected from each of said points in said scene using three of said electrical signals for each of said points generated at different times, said relative phase being related to the relative range of said points.

4,499,493

MULTIPLE MEASUREMENT NOISE REDUCING SYSTEM USING ARTIFACT EDGE IDENTIFICATION AND SELECTIVE SIGNAL PROCESSING

Dwight G. Nishimura, Palo Alto, Calif., assignor to The Board of Trustees of the Leland Stanford Junior University, Stanford, Calif.

Filed Feb. 22, 1983, Ser. No. 468,656

Int. Cl.³ H04N *5/32, 1/40*

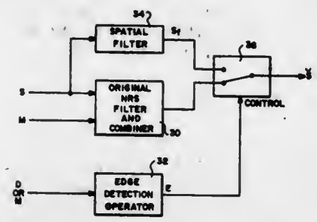
U.S. Cl. 358—111 **14 Claims**

1. In an imaging system, apparatus for reducing extraneous image signals in a processed image signal of an object representing a desired parameter derived from a plurality of measurements comprising:

first processing means for processing said plurality of measurements and producing a first processed image signal representing said desired parameter,

second processing means for processing said plurality of measurements and producing a second processed image signal having a greater signal-to-noise ratio from said first processed image signal,

third processing means interconnected with said first processing means and said second processing means for receiving and combining said first processed image signal and said second processed image signal and producing a third processed image signal,



means for determining the spatial location of edges of extraneous images in said second processed image signal, and means for switching from said third processed image signal to a signal based on said first processed image signal when edges of extraneous images are detected.

4,499,494

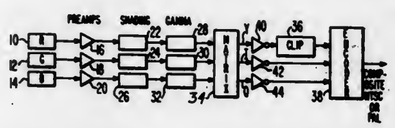
TELEVISION GAMMA CORRECTOR WITH SYMMETRICAL RESPONSE ABOUT BLACK-LEVEL

Robert A. Dischert, Burlington, N.J., and Robert J. Topper, Rockledge, Pa., assignors to RCA Corporation, New York, N.Y.

Filed Sep. 27, 1982, Ser. No. 424,233

Int. Cl.³ H04N *5/20, 9/07*

U.S. Cl. 358—164 **14 Claims**



1. An improved gamma correction arrangement for a television signal having a normal range of signal amplitude extremes and having a particular signal amplitude extreme recurring regularly, comprising:

a source of said television signal;

a source of synchronizing signals for producing a sampling signal during each of the regular recurrences of said particular signal amplitude extreme;

a reference voltage source;

clamping means coupled to said source of synchronizing signals, to said source of said television signal and to said reference voltage source for clamping said particular signal amplitude extreme to a clamp voltage related to said reference voltage, thereby producing a clamped television signal;

gamma correction translation means coupled to said clamping means for providing an output signal in response to a selected nonlinear transfer function for said clamped television signal over said normal range of said clamped television signal, whereby unavoidable noise superimposed on said television signal creates a noisy television signal which causes said clamped television signal applied to said gamma correction translation means to exceed said normal range, whereby said noise may be rectified and perturb the value of said output signal;

wherein the improvement comprises range extension means coupled to said gamma correction translation means for extending the operating range of said gamma correction translation means whereby it responds to said noisy television signals in a region outside said normal range with a transfer function which is complementary to said selected nonlinear transfer function thereby reducing said perturbation.

4,499,495

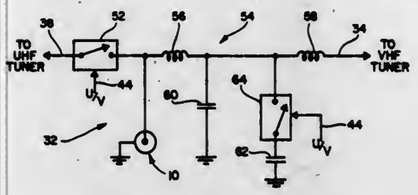
SWITCHING DIPLEXER FOR SINGLE ANTENNA INPUT TELEVISION RECEIVERS

Peter Strammello, Arlington Heights, Ill., assignor to Zenith Electronics Corporation, Glenview, Ill.

Filed Jul. 26, 1982, Ser. No. 401,449

Int. Cl.³ H04N *5/44*

U.S. Cl. 358—188 **9 Claims**



1. In a television receiver selectively operable in a first mode for enabling a first tuning means for tuning a first band of television signal frequencies and in a second mode for enabling a second tuning means for tuning a second band of television signal frequencies having a higher frequency content than said first band, an antenna interface circuit comprising:

an input terminal for receiving RF television signals broadcast over said first and second frequency bands;

switching means for coupling said input terminal to said second tuning means in said second mode of operation and for decoupling said input terminal from said second tuning means in said first mode of operation; and

lowpass filter means coupled between said input terminal and said first tuning means, said lowpass filter means having a first cutoff frequency in said first mode of operation for coupling said first band of signal frequencies to said first tuning means in substantially unattenuated form and having a second lower cutoff frequency in said second mode of operation for facilitating coupling by said switching means of said second band of signal frequencies to said second tuning means in substantially unattenuated form.

4,499,496

SOLID STATE IMAGE SENSING DEVICE

Nobuyoshi Tanaka, Yokohama, and Takao Kinoshita, Tokyo, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 18, 1982, Ser. No. 390,055

Claims priority, application Japan, Sep. 17, 1981, 56-146585; Sep. 17, 1981, 56-146586

Int. Cl.³ H04N *3/14*

U.S. Cl. 358—213 **26 Claims**

1. A radiation sensing device comprising:

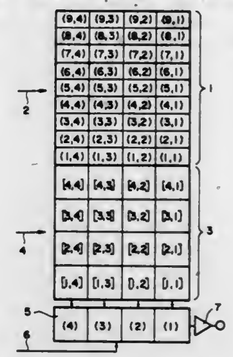
(A) radiation sensing means for generating an electrical indication indicative of a distribution pattern of received radiation representative of television signal frame information;

(B) storing means for storing an electrical indication generated by said sensing means and representative of field information based on the frame image information; and

(C) read-out means for reading out said stored electrical indication from said storing means,

wherein said sensing means includes a first plurality of sensing elements, and said storing means includes a second plurality of storage elements, the second plurality being approximately equal to one-half the first plurality, and

wherein each of said sensing elements has a storage capacity for storing an electrical signal generated in response to a received radiation pattern, while each of said storage elements has a storage capacity for storing an electrical



signal, the storage capacity of one storage element being larger than that of one sensing element.

4,499,497

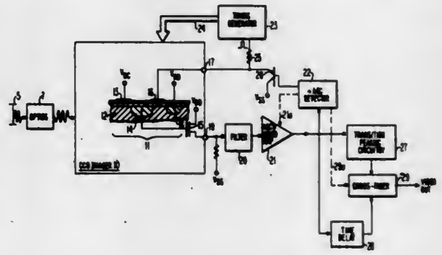
CCD IMAGER WITH IMPROVED LOW LIGHT LEVEL RESPONSE

Peter A. Levine, Trenton, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Dec. 27, 1982, Ser. No. 452,914

Int. Cl.³ H04N *3/14*

U.S. Cl. 358—213 **6 Claims**



1. In the method of operating a CCD imager of the type having a floating diffusion output stage, said method comprising the steps of:

periodically introducing charge packets descriptive of image elements under the floating diffusion;

sensing the potential of the floating diffusion following the introduction of each charge packet; and

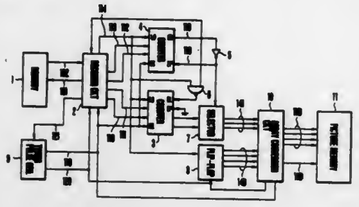
providing, during reset intervals following each sensing of potential and preceding the next introduction of a charge packet, a conductance path for transfer of charge stored under the floating diffusion to a reset drain-the improvement for providing a video signal with improved signal-to-noise ratio responsive to low light input levels to the imager, which improvement in said method comprises the step of:

reducing the conductance of the path provided during each reset interval for transfer of charge stored under the floating diffusion to the reset drain to such value as to slow the transfer of the charge stored under the floating diffusion to the reset drain during each reset interval in inverse relation to the level of the charge stored under the floating diffusion, whereby there is integration of the charge packets formed in response to low light levels to increase the level of the signal component of sensed potential respective to the noise component thereof.

4,499,498
RUN LENGTH DECODING APPARATUS

Kazumoto Iinuma, Tokyo, Japan, assignor to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Jan. 6, 1983, Ser. No. 456,034
Claims priority, application Japan, Jan. 14, 1982, 57-3403; Jan. 14, 1982, 57-3404
Int. Cl.³ H04N 1/00
U.S. Cl. 358—261 3 Claims

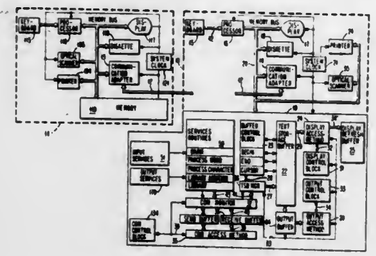


1. In run length decoding apparatus of the type comprising a decoding circuit which decodes a series of run length encoded data to sequentially output binary data indicative of respective run lengths, and means for decoding a white or black signal having a number of bits represented by an output value of said decoding circuit so as to sequentially accumulate decoded signals in a picture memory device, the improvement which comprises a lower order counter to be set with a surplus less than n (an integer larger than 2) of the output value of said decoding circuit, an upper order counter to be set with an upper order value, counts of said upper order counter being decremented according to a clock pulse, a selector which, in response to a carry signal outputted by said upper order counter selects and outputs either one of a fixed value n and an output signal of said lower order counter at each clock pulse, a flip-flop circuit whose state is reversed at each one run length, and an array conversion circuit inputted with decoded data outputted from said flip-flop circuit and a number of effective data outputted from said selector to sequentially array effective decoded data for outputting them as parallel data each having more than n bits.

4,499,499
METHOD FOR IDENTIFICATION AND COMPRESSION OF FACSIMILE SYMBOLS IN TEXT PROCESSING SYSTEMS

Norman F. Brickman, Potomac, and Walter S. Rosenbaum, Bethesda, both of Md., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 29, 1982, Ser. No. 454,230
Int. Cl.³ H04N 1/40
U.S. Cl. 358—263 6 Claims



1. A method for deciphering the identity of facsimile symbols in a string of facsimile symbols input to a first information processing system for storage and transmission to a second remote information processing system comprising the steps of:

(a) storing an addressable library of facsimile symbols in said first information processing system including sensitive feature data points associated with certain ones of said facsimile symbols;

(b) storing an identical addressable library of facsimile symbols in said second remote information processing system;

(c) storing a predetermined maximum match value in said information processing systems for identifying an input facsimile symbol;

(d) receiving an input facsimile symbol in said first information processing system from an optical scanner as a matrix of picture elements;

(e) comparing said input facsimile symbol to a facsimile symbol stored in said addressable library of facsimile symbols in a series of positional relationships by taking the picture element by picture element Exclusive-OR of the two facsimile symbols to form a difference symbol for each positional relationship;

(f) calculating a weighted value for each difference symbol for each positional relationship based on the number of picture elements in the difference symbol and the clustering of the difference picture elements into groups of contiguous picture elements;

(g) selecting the difference symbol which produces the lowest calculated weighted value for the positional relationship;

(h) amplifying the weighted value of the selected difference symbol by the sensitive feature data points for the library facsimile symbol;

(i) repeating steps e through h for each library facsimile symbol;

(j) comparing the amplified weighted value to the predetermined maximum match value;

(k) selecting the library facsimile symbol as a match for the input facsimile symbol when the amplified weighted value compares less than the maximum match value;

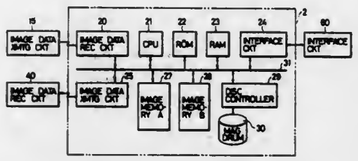
(l) repeating steps d through k for each character in the string of characters input to said first information processing system;

(m) transmitting only the library address and the page location of each facsimile symbol that matches a library facsimile symbol from said first information processing system to said second remote information processing system.

4,499,500
TWO-SIDE IMAGE FORMING APPARATUS

Nao Nagashima, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 25, 1982, Ser. No. 392,340
Claims priority, application Japan, Jul. 7, 1981, 56-106405
Int. Cl.³ H04N 1/26, 1/40
U.S. Cl. 358—296 8 Claims



1. A two-side image forming apparatus comprising:

first memory means for storing image information corresponding to a first image;

second memory means for storing image information corresponding to a second image;

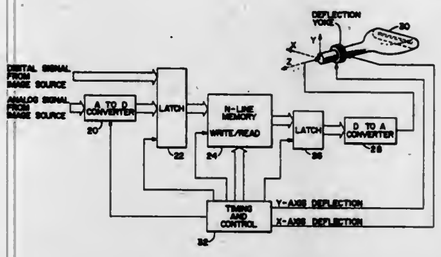
image forming means for reproducing an image on the first or second side of a recording sheet; and

control means adapted for reproducing the first image on the first side of said recording sheet and the second image on the second side of said recording sheet by means of said image forming means according to the image information stored in said first memory means and said second memory means.

4,499,501
IMAGE TRANSFER METHOD AND APPARATUS

Joern B. Eriksen, Oregon City, and Pierre Radochonski, Lake Oswego, both of Oreg., assignors to Tektronix, Inc., Beaverton, Oreg.

Filed Sep. 1, 1982, Ser. No. 413,858
Int. Cl.³ H04N 1/22
U.S. Cl. 358—302 5 Claims



1. A method of transferring image information associated with at least one line of an image from an image source to an image receiving medium, comprising the steps of:

recording the image information associated with said one line of said image through a first information transmission path onto a line of said image receiving medium; and

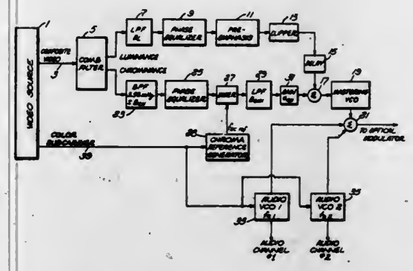
re-recording the image information associated with said one line of said image through a second information transmission path onto said line of said image receiving medium;

whereby the quality of the image disposed on said line of said image receiving medium representing the image information associated with said one line of said image source is improved following the re-recording step.

4,499,502
COMPRESSED BANDWIDTH FREQUENCY MODULATION SIGNAL FORMAT APPARATUS AND METHOD

Wayne R. Dakin, Huntington Beach, and Jordan Isailovic, Fountain Valley, both of Calif., assignors to Discovision Associates, Costa Mesa, Calif.

Filed Jul. 12, 1982, Ser. No. 397,309
Int. Cl.³ H04N 9/491
U.S. Cl. 358—310 20 Claims



1. A method for generating a compressed bandwidth frequency modulation carrier signal, relative to a full-luminance/full-color bandwidth frequency modulation carrier signal, and containing encoded signal information representing a composite color video signal and at least one audio signal, wherein a full-luminance/full-color carrier signal has an upper carrier frequency limit of f_{max1}, a white level carrier frequency of f_{w1}, a blanking level carrier frequency of f_{b1}, a sync tip carrier frequency of f_{s1}, a luminance video bandwidth B_{L1}, a color video bandwidth B_{CH1}, a nominal color carrier frequency of $f_{sc1}=3.579$ mHz, and an audio subcarrier frequency of f_{as1}, said method comprising the steps of:

(a) providing a composite color video signal having a compressed luminance video component of bandwidth $B_{L2}=\frac{1}{4}B_{L1}$, a color video component of compressed bandwidth B_{CH2} and nominal frequency f_{sc2}, and a synchronizing component consisting of horizontal and vertical synchronization pulses and a color sync burst;

(b) providing a video carrier signal having an upper carrier frequency limit f_{max2}, a white level carrier frequency f_{w2}, a blanking level carrier frequency of f_{b2}, and a sync tip carrier frequency of f_{s2};

(c) providing at least one audio frequency signal having a bandwidth B_{a2};

(d) providing an audio subcarrier signal having a nominal frequency of f_{as2};

(e) selecting f_{sc2} by

(i) maximizing the variable B_{CH2} in the equation set,

$$f_{sc2} + B_{CH2} \leqq \tfrac{1}{4} f_{b1}$$

$$3f_{sc2} - 2B_{CH2} \geqq \tfrac{1}{4} f_{w1};$$

(f) frequency modulating said video carrier signal with said composite color video signal while controlling frequency deviation to produce a frequency modulated carrier in which,

$f_{max2}=\frac{1}{4}f_{max1}$,

$f_{w2}=\frac{1}{4}f_{w1}$,

$f_{b2}=\frac{1}{4}f_{b1}$, and

$f_{s2}=\frac{1}{4}f_{s1}$;

(g) frequency modulating said audio subcarrier with said audio frequency signal; and

(h) summing the modulated video and audio carrier signals.

17. A method for recording audio and video information onto a recording medium having a predetermined useful frequency upper limit f_{max}, comprising the steps of:

(a) providing a video carrier signal;

(b) providing a composite video signal comprising a luminance video signal having a bandwidth B_L, and a color video signal having a predetermined nominal frequency f_{sc2} and chrominance bandwidth B_{CH2};

(c) providing first and second audio frequency signals a_1 and a_2;

(d) providing an audio subcarrier f_{a1} for audio signal a_1, and an audio subcarrier f_{a2} for audio signal a_2;

(e) frequency modulating said video carrier signal with said composite video signal to produce a carrier frequency f_{b2} at blanking level of the composite video signal and to produce a carrier frequency f_{w2} at white level of the composite video signal;

(f) selecting said audio subcarrier frequency f_{a1} according to the relationship,

$$0 \leqq f_{a1} \leqq f_{b2} - 2f_{sc2};$$

(g) selecting said audio subcarrier frequency f_{a2} according to the relationship,

$$f_{sc2} - B_{CH2} \geqq f_{a2} \geqq f_{w2} - 2f_{sc2};$$

(h) frequency modulating said audio subcarriers f_{a1} and f_{a2} with said audio frequency signals a_1 and a_2, respectively;

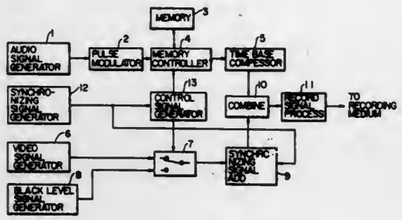
(i) summing said frequency modulated video and audio signals, and recording the summed signals on the recording medium.

4,499,503

VIDEO FORMAT SIGNAL RECORDING AND REPRODUCTION SYSTEM

Tsutomu Suzuki, Saitama, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

Filed Mar. 16, 1982, Ser. No. 358,733
Claims priority, application Japan, Mar. 17, 1981, 56-38497
Int. Cl.³ H04N 9/491
U.S. Cl. 358—316 18 Claims



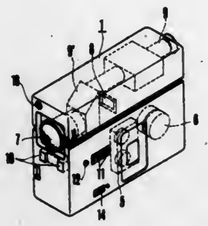
13. A system for reproducing a video format signal in which audio data to be reproduced along with video data is inserted and recorded for a predetermined period corresponding to at least one of the horizontal lines which occur successively within a selected portion of each field period of said video format signal, comprising means for extracting said audio data in said period and subjecting said data to audio reproduction processing, and means for adding, in said period of said video format signal, a signal corresponding to a predetermined color level to perform video reproduction processing.

4,499,504

VIDEO SYSTEM

Hiroo Edakubo, Tokyo, and Masaya Maeda, Kanagawa, both of Japan, assignors to Canon Kabushiki Kaisha

Filed Mar. 23, 1982, Ser. No. 361,041
Claims priority, application Japan, Mar. 31, 1981, 56-45712
Int. Cl.³ H04N 5/76
U.S. Cl. 358—335 15 Claims



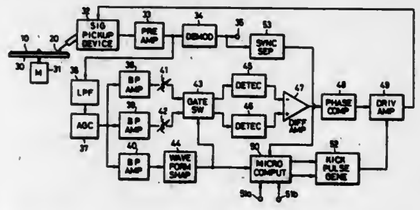
1. A device used solely for recording image pick-up video signals, comprising:
- image pick-up means to convert an object image into electrical signals;
- recording means to record on a long sized recording medium such video signals corresponding to said electrical signals;
- a transporting mechanism to transport said long sized recording medium;
- a main motor to produce a first driving power for transporting the recording medium at a first speed by the transporting mechanism;
- receiving means to mechanically receive a second driving power from an external auxiliary motor provided separately from said device to produce a second driving power for transporting the recording medium at a second speed which is faster than the first speed by the transporting mechanism; and
- a transmission mechanism to transmit the second driving power received by said receiving means to the transporting means.

4,499,505

APPARATUS FOR PLAYING BACK VIDEO SIGNALS RECORDED ON A ROTARY RECORDING MEDIUM ON SEVERAL QUASI-SLOW MOTION REPRODUCTION MODES

Hiroyuki Sugiyama, Isehara; Ryozo Abe, Yokohama, and Kenji Yoshihara, Chiba, all of Japan, assignors to Victor Company of Japan, Ltd., Yokohama, Japan

Filed Oct. 1, 1981, Ser. No. 307,582
Claims priority, application Japan, Oct. 3, 1980, 55-138329
Int. Cl.³ H04N 5/76; G11B 21/08
U.S. Cl. 358—342 6 Claims



1. An apparatus for playing back a rotary recording medium in which an even number of fields of video signals are recorded on each track turn of a spiral track, said apparatus comprising:
- reproducing transducer means having a reproducing element for scanning over tracks on said rotary recording medium in order to reproduce recorded signals, and shifting means responsive to a signal applied thereto for shifting said reproducing element by one track pitch in a radial direction across said rotary recording medium; and
- circuit means for producing and applying a shifting signal to said shifting means to cause said reproducing element to shift by one track pitch toward an outer adjacent track on said rotary recording medium every time said reproducing element reaches one predetermined position on said rotary recording medium, and said means for producing the shifting signal operating responsive to a quasi-slow-motion ratio and to the direction of the quasi-slow-motion reproduction when said reproducing element reaches another predetermined position on said rotary recording medium,

said tracks being scanned a plurality of times with respect to each track turn, to perform a quasi-slow-motion reproduction.

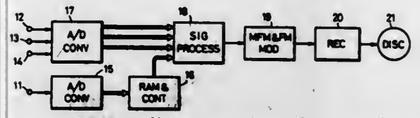
4,499,506

VIDEO SIGNAL RECORDING AND/OR REPRODUCING SYSTEM

Nobuaki Takahashi, Yamato, and Takeshi Shibamoto, Sagamihara, both of Japan, assignors to Victor Company of Japan, Ltd., Yokohama, Japan

Filed Feb. 25, 1982, Ser. No. 352,305
Claims priority, application Japan, Feb. 27, 1981, 56-27845; Feb. 27, 1981, 56-27846; Mar. 30, 1981, 56-46699
Int. Cl.³ H04N 5/76
U.S. Cl. 358—343 14 Claims

1. A video signal recording system comprising:
- first converting means for sampling an analog composite video signal which is related to a still picture at a first sampling frequency and for converting the analog composite video signal into a digital video signal;
- memory means responsive to said first converting means for storing an output digital video signal and for reading out a sample of the stored digital video signal at a second sampling frequency, said second sampling frequency being lower than said first sampling frequency, said digital video signal read-out from said memory means corresponding to only a video signal duration which excludes a synchronizing signal duration of said analog composite video signal;
- second converting means for converting the analog audio signals into a digital audio signal in response to a sampling



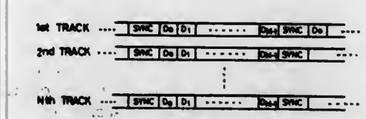
of analog audio signals of a plurality of channels at a third sampling frequency;
- signal processing means simultaneously supplied with parallel data, made up of the digital video signal read-out from said memory means and with the output digital audio signals of said second converting means, said signal processing means converting the parallel data into a serial data; and
- reading means for recording the serial data from said signal processing means on a recording medium,
- a product of a quantization number of said digital video signal read-out from said memory means and said second sampling frequency being substantially equal to a product of a quantization member of said digital audio signals and said third sampling frequency.

4,499,507

DATA REPRODUCING APPARATUS FOR REPRODUCING DIGITAL DATA RECORDED ON MULTI-TRACKS

Yasuhiro Yamada, Fuusa, and Takaro Mori, Sagamihara, both of Japan, assignors to Victor Company of Japan, Ltd., Kanagawa, Japan

Filed Sep. 30, 1982, Ser. No. 429,334
Claims priority, application Japan, Oct. 13, 1981, 56-163122
Int. Cl.³ G11B 15/02, 5/09
U.S. Cl. 360—26 6 Claims



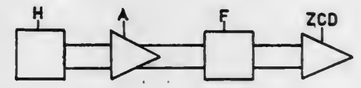
1. A data reproducing apparatus for reproducing data recorded on multi-tracks, which reproduces data within reproduced frame signals by simultaneously reproducing a plurality of tracks on a recording medium, said frame signal being constituted by said data obtained by subjecting an analog information signal to digital pulse modulation and at least a synchronizing signal, signals obtained by time-sequentially composing said frame signals in terms of frame signals being dispersed and recorded on said plurality of tracks on said recording medium, said data reproducing apparatus comprising:
- a signal transducer for simultaneously reproducing said frame signals recorded on said recording medium from said plurality of tracks;
- a write-in address generating circuit provided in each of transmission systems for reproduced signals from each track of said plurality of tracks obtained in parallel from said signal transducer, for generating a write-in address indicating the number of bits of data within one frame signal from a counter which counts clock pulses having a period equal to the transmission bit rate, said write-in address generating circuit being preset or cleared by a detection pulse obtained by detecting said synchronizing signal within the reproduced frame signals;
- a memory into which data within frame signals reproduced from each track among said plurality of tracks are written, and from which said written-in data are read out; and
- memory control means for controlling said memory so as to successively and recursively apply the data within the frame signals reproduced from each track among said plurality of tracks and write in the data at the write-in addresses obtained from said write-in address generating circuit, and read out the written-in data of each of the tracks from said memory with the timing arranged after a predetermined time has elapsed.

4,499,508

DIGITAL MAGNETIC RECORDING

Archibald M. Pettigrew, "West Glean", West Glean Rd., Kilmacolm, Renfrewshire, England

Filed Feb. 18, 1982, Ser. No. 349,845
Claims priority, application United Kingdom, Feb. 20, 1981, 8105396
Int. Cl.³ G11B 5/09
U.S. Cl. 360—41 9 Claims



1. A method of data recovery in digital magnetic recording, comprising the steps of deriving an information-carrying data signal from a recording medium, delaying the third harmonic of said data signal with respect to the fundamental of said data signal by one half period of said third harmonic to produce a modified signal, and deriving a digital information-carrying pulse train from said modified signal wherein the delaying of said third harmonic is effected by passing the data signal through two resonant networks whose resonant frequencies are equal to the frequency of said third harmonic.

4,499,509

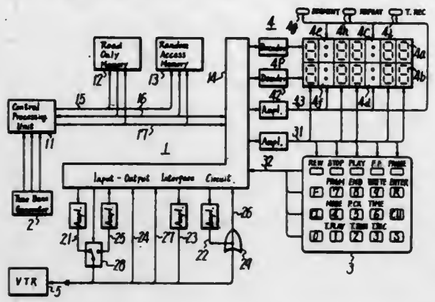
TAPE POSITION CONTROL APPARATUS

Seiichi Gohda, and Mamoru Ishiguro, both of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan

Continuation of Ser. No. 132,885, Mar. 24, 1980, abandoned.
This application Feb. 16, 1982, Ser. No. 349,155
Claims priority, application Japan, Mar. 29, 1979, 54-37429
Int. Cl.³ H04N 5/782
U.S. Cl. 360—72.1 6 Claims

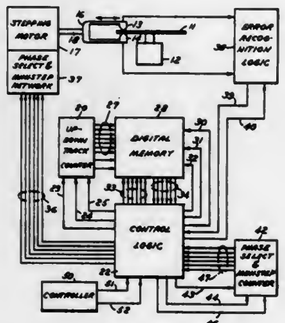
1. A tape position control apparatus for video tape recorders comprising:
- a. tape drive control means for controlling the tape movement of a video tape storing segmented video information installed in a video tape recorder;
- b. means for reproducing pulses in response to control signals recorded on a track on said video tape;
- c. count means for counting the number of said control pulses reproduced from said control signals on a track on said video tape;
- d. segment data memory means for storing data for a segment which is requested, indicating the number of said data control pulses from one end of said video tape at least for each point of segmented video information recorded on said video tape with reference to a segment number corresponding to a segment of the segmented video information;

e. input means for making a request for at least searching one segment of said segmented video information by generating a segment number;
f. comparison means connected and responsive to said input means and connected to said segment data memory means and to said count means for comparing the currently counted number stored in said count means with the data for the requested segment;
g. command signal generating means connected to said tape drive control means for generating command signals and



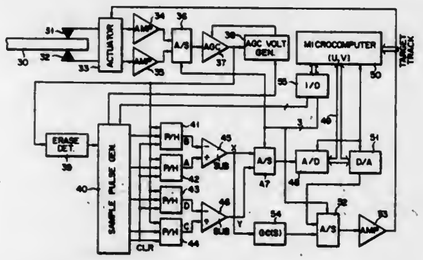
supplying said command signals to said tape drive control means in order to search the requested video information, by controlling said drive means to move said tape; and
h. segment number memory means connected to said input means and to said command signal generating means for storing a plurality of requested segment numbers supplied by said input means and for controlling said command signal generating means, whereby respective requested video information are searched one after another in accordance with the requested order in which said segment numbers are stored.

4,499,510
PRECISION ALIGNMENT SYSTEM FOR INFORMATION STORAGE DEVICES
Philip A. Harding, Rancho Palos Verdes, and Leonard Schupak, Irvine, both of Calif., assignors to Weltec Digital, Inc., Anaheim, Calif.
Filed Aug. 3, 1982, Ser. No. 404,749
Int. Cl.³ G11B *5/58, 21/10*
U.S. Cl. 360—77 **9 Claims**



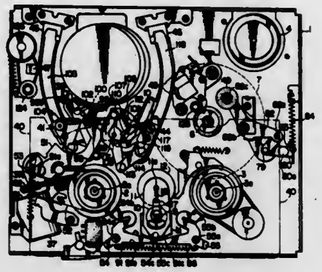
1. In a system for controlling read-write head position of a digitized information storage device, the device including a magnetizable medium for recording information in tracks having a predetermined nominal spacing; a read-write head; means for driving the medium so that the head scans the tracks; and motor means for traversing the head for registration with any selected track, the improvement comprising memory means for digitally storing the location of each track in which the least significant digits identify fractional values of the nominal track spacing, and means for controlling the said motor means to traverse the head to optimum registration with any selected track responsive to the said memory means and employing the said least significant digits to control the motor means by fractional portions of the said nominal value.

4,499,511
SYSTEM FOR DETECTING POSITION OF A READ-WRITE HEAD IN SEEK OPERATION ON A DISK MEMORY HAVING DATA SERVO SPECTORS
Toshihiro Sugaya, Tokyo, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan
Filed Feb. 23, 1983, Ser. No. 469,144
Claims priority, application Japan, Feb. 24, 1982, 57-28509; Jun. 14, 1982, 57-101612
Int. Cl.³ G11B *21/08*
U.S. Cl. 360—78 **9 Claims**



1. A method of detecting the position of a head which is moved by an actuator to seek a selected data track on a disk comprising data sectors each having concentric data tracks, and servo sectors each having concentric servo tracks and embedded between said data sectors, a two-phase servo information pattern having a period of 4 tracks being recorded on each of said servo sectors in the radial direction of said disk, comprising the steps of:
extracting first, second, third and fourth position information from the two-phase servo information reproduced by said head from each of said servo sectors of said disk which is rotated during a seek operation;
forming a first position signal indicative of a difference between the first and second position information, and a second position signal indicative of a difference between the third and fourth position information;
forming a third position signal indicative of a sum of the first and second position signals and a fourth position signal indicative of a difference between the first and second position signals;
detecting a track within one period of the servo information pattern on which said head is present in accordance with the first and second position signals; and
detecting the present position of said head within the detected track in accordance with either one of the third and fourth position signals which depends on the detected track.

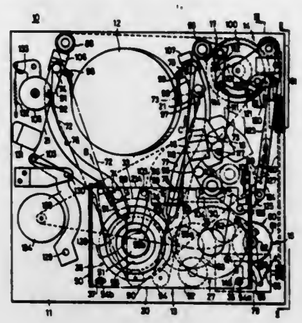
4,499,512
REEL DRIVE SYSTEM OF MAGNETIC RECORDING AND REPRODUCING APPARATUS
Masashi Yoshida, Nakaminato; Noboru Katokno, Mito; Hajime Yokota, Katsuta, and Masao Okayama, Ibaraki, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Nov. 3, 1982, Ser. No. 438,766
Claims priority, application Japan, Nov. 6, 1981, 56-177159; Nov. 20, 1981, 56-185370
Int. Cl.³ G11B *5/00, 15/00*
U.S. Cl. 360—90 **24 Claims**



1. A magnetic recording reproducing apparatus wherein a magnetic head is brought into contact with a magnetic tape wound on a pair of reels for effecting magnetic recording and reproducing of information, the apparatus comprising:
(a) a first motor capable of rotation in the normal and the reverse direction;
(b) a drive pulley rotatable about a support shaft located in a predetermined position between said pair of reels;
(c) oscillating idler means connected to said drive pulley an automatically oscillatable around said support shaft dependent upon the direction of rotation of said drive pulley to drivingly engage with one of said pair of reels for rotating the reel;
(d) a first transmitting path for directly transmitting the rotation of said first motor to said drive pulley;
(e) a second transmitting path for transmitting the rotation of said first motor to said drive pulley through a slip mechanism for obtaining a desired output torque; and
(f) a transmitting path switching mechanism for selecting one of said first and second transmitting paths depending on the operation mode.

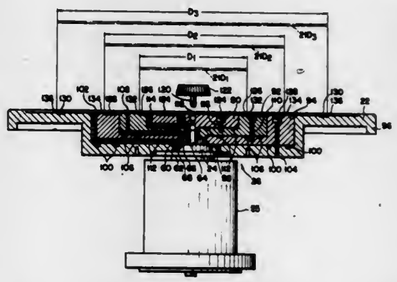
4,499,513
RECORDING AND/OR REPRODUCING APPARATUS
Hiroyuki Umeda, Yokohama, Japan, assignor to Victor Company of Japan, Ltd., Yokohama, Japan
Filed Jan. 26, 1982, Ser. No. 342,926
Claims priority, application Japan, Jan. 31, 1981, 56-13264; Jan. 31, 1981, 56-13266
Int. Cl.³ G11B *15/30, 23/04, 15/66, 15/32*
U.S. Cl. 360—96.3 **16 Claims**

1. A recording and/or reproducing apparatus for recording and/or reproduction when loaded with a tape cassette having a cassette case including a supply side reel and a take-up side reel for winding a tape, said recording and/or reproducing apparatus comprising:
a reel driving shaft for relatively entering the bottom of said cassette case to engage a center part of and rotate one of said reels when said tape cassette is loaded into a predetermined position within said recording and/or reproducing apparatus;
a rotation transmitting means for engaging a part of and rotating the other of said reels, with said engaging part being at a part other than a center part thereof; and



means for alternatively driving the reel driving shaft and the rotation transmitting means in a direction in which said one reel and the other reel alternatively wind the tape.

4,499,514
DISC DRIVE APPARATUS
Kunio Yamamiya; Hiroshi Kodama; Ken Ohshima; Shoji Yoshikawa; Kiichi Kato, and Masaharu Sakamoto, all of Tokyo, Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan
Filed Mar. 29, 1982, Ser. No. 362,614
Claims priority, application Japan, Mar. 31, 1981, 56-48007; Mar. 31, 1981, 56-46397[U]; Mar. 31, 1981, 56-46398[U]
Int. Cl.³ G11B *5/012*
U.S. Cl. 360—97 **13 Claims**



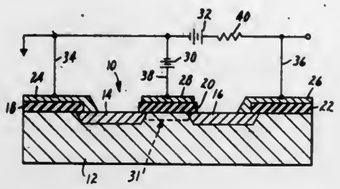
1. In a disc inspection apparatus, a disc drive for driving a disc selected from discs of various diameters with and without a central hole, the disc drive for disc inspection comprising:
a turntable;
a turntable support for rotatably supporting said turntable;
driving means for driving said turntable;
a centering member for mounting a disc with a central hole;
holding means, disposed at the center of rotation of said turntable, for detachably holding said centering member;
a plurality of elastic disc support members which are coaxial with the center of rotation of said turntable, which extent from the surface of said turntable, and which form a plurality of annular shapes;
centering index means, disposed on said turntable, for centering a disc without a central hole;
suction means; and
suction channel means, one end of which is open to the surface of said turntable and the other end of which is connected to said suction means, for fixing on at least one of said disc support members, a disc selected from discs of various diameters with or without a central hole and placed on said at least one disc support member.

4,499,515

INTEGRATED MAGNETOSTRICTIVE-PIEZORESISTIVE MAGNETIC RECORDING PLAYBACK HEAD

Chester Piotrowski, White Bear Lake, and Neil W. Loeding, Mounds View, and Raymond M. Werner, Jr., Edina, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Jul. 14, 1982, Ser. No. 398,419
Int. Cl.³ G11B 5/12, 5/30
U.S. Cl. 360—113 21 Claims



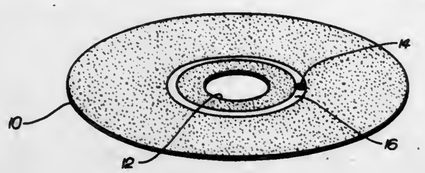
1. A magnetic sensor comprising
a magnetostrictive stratum
a piezoresistive stratum coupled to the magnetostrictive stratum enabling strain magnetically induced in the magnetostrictive stratum to produce in said piezoresistive stratum a corresponding change in the electrical resistivity thereof, and
means for sensing said change in resistivity and for supplying an electrical output signal solely in response thereto which is representative of the intensity of magnetic fields impressed upon said magnetostrictive stratum and which is directly coupled to said piezoresistive stratum to monitor the change in resistivity.

4,499,516

CLEANING DISK WITH OPAQUE RING

Richard T. Purdy, Inglewood, and Alden H. Packard, Glendora, both of Calif., assignors to Perfect Data Corporation, Chatsworth, Calif.

Filed Feb. 8, 1982, Ser. No. 346,557
Int. Cl.³ G11B 5/41, 3/58, 23/50
U.S. Cl. 360—128 18 Claims



1. A cleaning disk for cleaning magnetic heads in a flexible disk system, wherein the flexible disk system incldues a light source and light sensor for detecting the presence of a disk therein, said cleaning disk comprising:
a disk made of an absorbant and porous material and having a central opening through which the drive unit of the flexible disk system passes, said disk further including a sensing area which selectively prevents light from the light source from striking the light sensor, said sensing area including a first section of substantially opaque material applied to the disk in the form of a ring located near the central opening and a second section which is substantially transparent formed in the disk and located in the ring, wherein the flexible disk system rotates the cleaning disk to alternatly bring the first and second section in a position between the light source and light sensor.

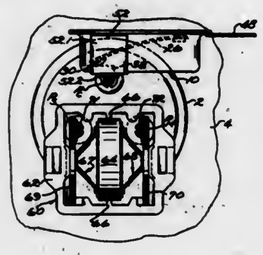
11. A cleaning disk for use with flexible disk systems comprising:
a disk made of fibrous material and adapted to be saturated with a cleaning solution, said disk including a central opening, said disk further including a ring shaped area near the central opening, said ring shaped area including a first section comprised of an opaque material applied to the disk and a second section comprised of a light transmitting area.

4,499,517

MOTOR PROTECTOR PARTICULARLY SUITED FOR USE WITH COMPRESSOR MOTORS

Richard J. Lisauskas, Wrentham, Mass., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Nov. 14, 1983, Ser. No. 551,619
Int. Cl.³ H02H 7/085
U.S. Cl. 361—24 13 Claims



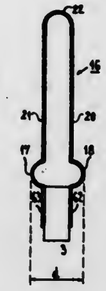
1. A motor protector particularly adapted for use with compressors having a compressor shell and at least three pins electrically separated from one another and from the shell extending through the shell, the pins electrically connected to the windings of a motor disposed within the shell, the first pin connected to a start winding, the second pin connected to a main winding and the third pin connected to a common connection between the start and main winding; the first and second pins adapted to be connected to motor starting means having pin receiving terminals on the motor protector comprising
a thermally and electrically conductive metallic housing generally in the configuration of a parallelepiped having a bottom wall and four side walls extending therefrom to form a switch chamber, a thermally and electrically conductive lid to close the chamber, electrically insulative gasket means disposed between the housing and the lid to electrically separate the housing from the lid and means to attach the lid to the housing,
a thermally responsive switch means disposed in the chamber adapted to connect and disconnect the housing and the lid upon the occurrence of selected thermal conditions, a portion of the switch means mounted on the lid and another portion of the switch means mounted in the housing, and terminal means respectively attached to the housing and the lid,
the terminal means attached to the housing comprising a metallic electrically and thermally conductive mounting bracket having two opposite ends, one end bonded to the housing in good electrical and heat transfer relation therewith and the other end formed into a female pin connector configuration adapted to be received on the third pin, the bracket adapted to suspend the protector on the third pin so that it is physically and thermally separated from the motor starting means, a direct metal to metal heat conductive path extending from the main and start windings through the third pin, through the protector mounting bracket, through the protector housing to the thermally responsive switch means.

4,499,518

PROCESS FOR THE PRODUCTION OF AN ELECTRONIC COMPONENT ENCLOSED IN A HOUSING AND APPARATUS FOR CARRYING OUT THE PROCESS

Jean Anne, Bagnolet, France, assignor to L.C.C.-C.I.C.E. Compagnie Europeenne de Composants Electroniques, Bagnolet, France

Filed Dec. 14, 1982, Ser. No. 449,695
Claims priority, application France, Dec. 31, 1981, 81 24578
Int. Cl.³ H01G 1/14, 7/00
U.S. Cl. 361—306 26 Claims



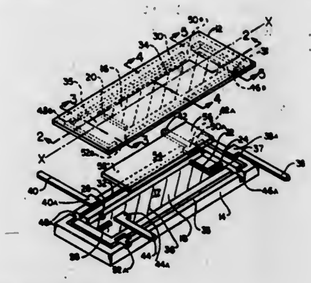
12. An electronic component comprising at least two lateral surfaces to which are soldered the second extremities of an electrical connection in the form of a hairpin comprising two parallel branches interconnected at their first extremity, in which on each of its branches and close to their second extremity, the said hairpin has a convex part, the distance between the said convex parts having a predetermined value (d) greater than the distance between the two lateral surfaces of the component.

4,499,519

DECOUPLING CAPACITOR AND METHOD OF MANUFACTURE THEREOF

David S. Fishman, West Hartford, Conn., assignor to Rogers Corporation, Rogers, Conn.

Filed Nov. 14, 1983, Ser. No. 552,107
Int. Cl.³ H01G 1/14, 7/00, 9/00
U.S. Cl. 361—306 40 Claims



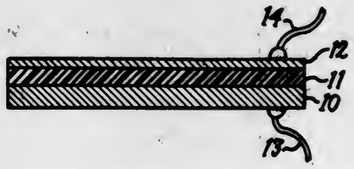
1. A capacitor including:
a first molded housing segment;
a first border segment around the periphery of said first molded housing segment;
a second molding housing segment;
a second border segment around the periphery of said second molded housing segment;
said first and second border segments being in facing and abutting contact and being bonded together;
a recess in at least one of said molded housing segments;
said first and second molded housing segments cooperating to define within said border segments an interior cavity having opposed first and second face surfaces, said first face surface being on said first molded housing segment and said second face surface being on said second molded housing segment;
a first layer of electrically conductive material on a first part of said second face surface of said first housing segment, a second part of said first face surface being electrically nonconductive;
a second layer of electrically conductive material on part of said second face surface of said second housing segment, a second part of said second face surface being electrically nonconductive;
a flat dielectric element in said cavity, said dielectric element having first and second opposed faces, with a first electrically conductive layer on said first face and a second electrically conductive layer on said second face;
said first layer of electrically conductive material on said first part of said first face surface of said first housing segment being physically and electrically connected to said first electrically conductive layer on said dielectric element, and said second layer of electrically conductive material on said first part of said second face surface of said second housing segment being physically and electrically connected to said second electrically conductive layer on said dielectric element;
first electrically conductive terminal pin means sandwiched between said first part of said first face surface of said first housing segment and said second part of said second face surface of said second housing segment, said first electrically conductive terminal pin means being electrically connected to said first layer of electrically conductive material on said first part of said first face surface of said first housing element;
second electrically conductive terminal pin means sandwiched between said second part of said first face surface of said first housing segment and said first part of said second face surface of said second housing segment, said second electrically conductive terminal pin means being electrically connected to said second layer of electrically conductive material on said first part of said second face surface of said second housing element; and
passage means in at least one of said border segments for passage of said first and second terminal pins.

4,499,520

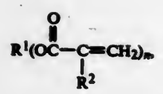
CAPACITOR WITH DIELECTRIC COMPRISING POLY-FUNCTIONAL ACRYLATE POLYMER AND METHOD OF MAKING

Stanley W. Cichanowski, Bennington, Vt., assignor to General Electric Company, Hudson Falls, N.Y.

Filed Dec. 19, 1983, Ser. No. 562,873
Int. Cl.³ H01G 1/01, 7/00; H01B 3/00
U.S. Cl. 361—311 20 Claims



1. A capacitor comprising two electrodes separated by a dielectric member, said dielectric member comprising a polymer of at least one polyfunctional acrylate having the formula



(I)

wherein:

R^1 is a hydrocarbon or substituted hydrocarbon radical containing at least 4 carbon atoms;

R^2 is hydrogen or an alkyl radical containing 1-5 carbon atoms; and

n is from 2 to 6.

4,499,521

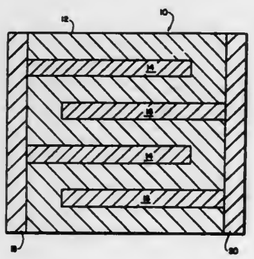
LOW-FIRE CERAMIC DIELECTRIC COMPOSITIONS FOR MULTILAYER CERAMIC CAPACITORS

Robert T. McSweeney, and Stanley A. Long, both of Valencia, Calif., assignors to North American Philips Corporation, New York, N.Y.

Division of Ser. No. 417,258, Sep. 13, 1982, Pat. No. 4,459,364. This application Dec. 16, 1982, Ser. No. 562,324

Int. Cl.³ H01G 4/12

U.S. Cl. 361—321 **7 Claims**



1. A multilayer capacitor comprising at least two layers of a low-fire ceramic dielectric composition separated by an electrode layer, characterized in that:

the ceramic dielectric composition meets or exceeds EIA specification X7R and consists essentially of a reacted mixture of:

83 to 91 weight percent $BaTiO_3$;

8 to 13 weight percent Bi_2O_3;

up to 4 weight percent Nb_2O_5;

0 to 1.8 weight percent TiO_2 or SnO_2; and

0.04 to 0.18 weight percent $MnCO_3$; and

the electrode layer consists essentially of a mixture of at least 65 atomic percent silver and not more than 35 atomic percent palladium.

4,499,522

FLYBACK TRANSFORMER

Kenzi Nakamura, Katano, Japan, assignor to Sanyo Electric Co., Ltd., Osaka, Japan

Filed Jun. 30, 1982, Ser. No. 393,767

Claims priority, application Japan, Jun. 30, 1981, 56-98145[U]; Jul. 31, 1981, 56-114811[U]

Int. Cl.³ H01F 27/04, 27/06

U.S. Cl. 361—331 **19 Claims**

1. A flyback transformer comprising:

a casing having a coil disposed therein, said casing providing a first opening, said first opening disposed adjacent the periphery of said casing, said casing further having a plurality of terminal legs extending therefrom and electrically connected to said coil;

a first terminal positioned in said first opening and electrically connected with said coil;

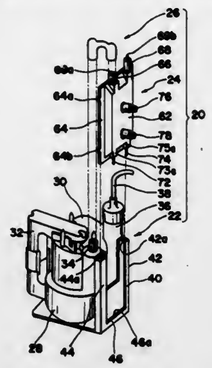
mounting means disposed in the outside of said casing securing a component on the peripheral surface of said casing;

a component housing having a second opening formed thereon and at least one terminal pin extending therefrom and electrically connected thereto;

an electrical resistance element disposed within said component housing;

a second terminal positioned in said second opening and electrically connected with said electrical resistance element;

engaging means, disposed on said component housing, in cooperative engagement with said mounting means such



that said component housing is detachably mounted on the surface of said casing, the axial direction of said first opening is aligned in parallel with the axial direction of said second opening, and such that said terminal pin is in parallel with and extending in the same direction as said terminal legs such that said terminal legs and terminal pin extend through a plane perpendicular thereto so as to be mounted on a common circuit board; and

connector means providing an electrical connection between said first terminal and said second terminal, said connector means disposed between said first and second terminals.

4,499,523

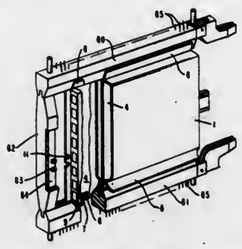
ELECTRONIC COMPONENT ASSEMBLY WITH A PRINTED CIRCUIT BOARD UNIT AND COVER

John B. Gillett, Kingston, and John A. Miraglia, West Hurley, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 30, 1983, Ser. No. 480,427

Int. Cl.³ H05K 7/14

U.S. Cl. 361—383 **15 Claims**



2. In an electronic component assembly including a printed circuit board unit with electrical contact pads disposed along one edge thereof, and a cover constructed from a single member containing said printed circuit board unit, said cover comprising:

hinge means folding said cover over said printed circuit board unit;

sealing means retaining said cover in a closed position and maintaining said cover in fixed contact with said printed circuit board unit; and

flexible flap means, associated with said printed circuit board unit edge and integral with said cover, movable between a relaxed first position wherein the flap means conceals said electrical contact pads, and a flexed second position wherein the flap means exposes said electrical contact pads.

4,499,524

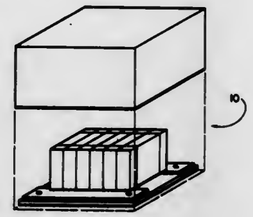
HIGH VALUE SURFACE MOUNTED CAPACITOR

Lewis J. Shioleno, Milwaukee, Wis., assignor to North American Philips Corporation, New York, N.Y.

Filed Nov. 7, 1983, Ser. No. 549,112

Int. Cl.³ H05K 7/06

U.S. Cl. 361—404 **2 Claims**



1. A modular capacitor system comprising:

a substrate;

at least two conductive termination footprints on said substrate;

at least two ceramic capacitors being electrically connected to each other and to said substrate such that the end terminations of said capacitors are in conductive contact with said conductive termination footprints on said substrate;

a five-sided housing of general hexahedral shape; said substrate having said capacitors connected thereto being inserted into said housing such that the base of said substrate forms the sixth side of the hexahedral housing; and

a plurality of termination pads at the base of said housing in electrical contact with said termination footprints.

4,499,525

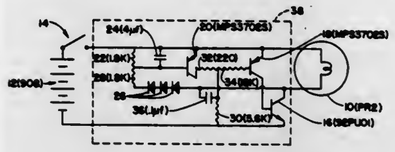
CONSTANT ILLUMINATION FLASHLIGHT

Henry R. Mallory, Greenwich, Conn., assignor to Duracell Inc., Bethel, Conn.

Filed Dec. 16, 1981, Ser. No. 331,432

Int. Cl.³ F21V 23/00

U.S. Cl. 362—157 **2 Claims**



1. A portable flashlight designed to provide a relatively constant illumination output over the useful service life of the battery power supply therefor, despite a relatively poor battery maintenance characteristic during discharge, comprising an incandescent lamp for providing illumination, a circuit for providing relatively constant electrical power to the incandescent lamp over substantially the entire useful life of at least one power supply battery, having a relatively poor voltage maintenance characteristic during discharge, said circuit including a drive transistor having the incandescent lamp coupled in series with the emitter and collector of the drive transistor and further coupled in series with said battery power supply, said circuit further including a control circuit including first and second control transistors coupled in a complementary manner such that only one control transistor is conducting at a time, said first control transistor being coupled to the base of said drive transistor, to drive it into a saturated conductive mode when said first control transistor is conducting, and said second control transistor being an inhibit transistor having a drive output thereof coupled to the base of said first control transistor to turn it off when said inhibit transistor is conducting, wherein said control circuit causes said drive transistor to generate a current pulse train in which the duty cycle thereof is increased, by providing current pulses having a greater pulse width to compensate for a lesser pulse amplitude, as the voltage from the power supply declines during its discharge to provide relatively constant electrical power to the incandescent lamp over substantially the entire useful life of the battery power supply, wherein said drive transistor has a relatively high beta characteristic and is driven by said control circuit in a non-dissipative manner in substantially either a fully conductive state or a fully non-conductive state to produce the pulse train, whereby power dissipation in the drive transistor during partially conductive modes is substantially eliminated, and wherein an RC timing network is coupled to the base of said inhibit transistor for controlling the frequency of the pulse train generated by the circuit.

4,499,526

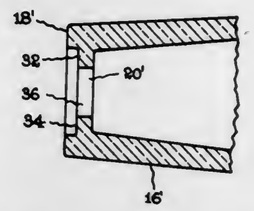
LAMP UNIT HAVING GLASS REFLECTOR MEMBER WITH RECESSED BASE END

Denes Tarnay, Cleveland, Ohio, assignor to General Electric Company, Schenectady, N.Y.

Filed Aug. 25, 1983, Ser. No. 526,301

Int. Cl.³ F21V 7/00

U.S. Cl. 362—263 **7 Claims**



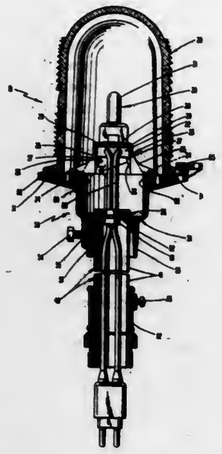
1. A lamp unit which includes a molded glass reflector member terminating at its base in an elongated hollow cavity protruding from the rear side of said reflector member, said cavity having a recessed opening of smaller size at the rearmost end formed by spaced apart shoulders extending from the inner walls of said cavity when the lamp components are assembled together which provides a recessed engagement surface for mounting said lamp, and a tungsten halogen lamp secured in said hollow cavity so that its light source is positioned at the focal point of said reflector member with the lamp inleads projecting through said recessed opening.

4,499,527

AIRPORT RUNWAY/TAXIWAY EDGE LIGHT FIXTURE

Richard J. Tauber, Simsbury, and Daniel J. Roeberg, Bristol, both of Conn., assignors to Cooper Industries, Inc., Houston, Tex.

Filed May 27, 1983, Ser. No. 498,637
Int. Cl.³ F21V 29/00
U.S. Cl. 362—267 28 Claims



1. An airport light fixture for mounting on a substantially cylindrical support column, comprising:

lamp means for providing illumination;

an optical globe for covering said lamp means and for directing the light emanating therefrom; and

a base member for securely mounting said globe and said lamp means in an adjustable, substantially upright position on said support column, said globe being releasably securable to said base member and substantially sealed over said lamp means for protecting said lamp means, said base member including, at its bottom, a mounting hub for mounting said base member on the upper end of said support column, said mounting hub including:

(a) a substantially annular planar support surface positioned on said upper end of said support column when said base member is mounted thereon;

(b) substantially cylindrical collar means depending downwardly from said planar support surface and having a plurality of leveling screws extending transversely therethrough for contacting the peripheral surface of said support column when said base member is mounted thereon for adjusting the tilt of said base member, as necessary, to obtain and securely maintain the desired vertical positioning of said globe; and

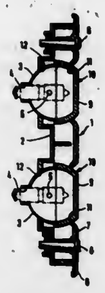
(c) a plurality of guide ribs depending downwardly from said planar support surface and situated interiorly of said collar means, said guide ribs being spaced around said support surface, the interior surface of each of said ribs facing said support column when said base member is mounted thereon being equivalently tapered such that an imaginary surface passing through each of said individual surfaces is frusto-conically shaped, having its smaller diameter end adjacent said planar support surface, said smaller diameter being substantially equal to the outer diameter of said upper end of said support column for guiding said planar support surface of said mounting hub to the desired position above said upper end during mounting of said base member on said support column, the taper and positioning of each of said guide ribs, and the positioning of said collar means and said leveling screws, being selected to permit adjustment of the tilt of said support member at any point on the circumference of said support column, as necessary, to obtain said desired vertical positioning of said globe.

4,499,528

INTERIOR LIGHT ASSEMBLY FOR A VEHICLE

Christian Hawiltzki, Pulheim, Fed. Rep. of Germany, assignor to Ford Motor Company, Dearborn, Mich.

Filed Sep. 19, 1983, Ser. No. 533,482
Claims priority, application Fed. Rep. of Germany, Dec. 22, 1982, 3247449
Int. Cl.³ F21V 3/00
U.S. Cl. 362—275 5 Claims



1. A combination interior illumination and reading lamp assembly for a vehicle enclosure comprising:

means providing a structural support housing for the assembly;

lamp means for providing visible radiation;

means surrounding a portion of said lamp means for reflecting a portion of said visible radiation in a predetermined direction;

means surrounding second portion of said lamp means and being connected to said reflector means for directing said visible radiation in a plurality of predetermined directions; and

means defining a diffusing lens element mounted on said housing means and surrounding said directing means;

wherein said directing means comprises a focusing lens positioned opposite said reflector means for directing a portion of said visible radiation in a beam away from said housing and a transmittance portion for allowing the remaining of said radiation to be transmitted towards said diffusing lens means and said directing means is movable, within said assembly to allow free selection of the direction of said beam.

4,499,529

LIGHT REFLECTOR

Luisito A. Figueroa, 2275 Taft Ave., Malate, Manila, Philippines

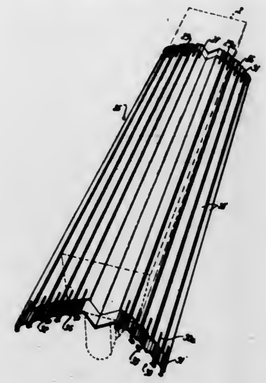
Continuation of Ser. No. 265,828, May 21, 1981, abandoned.
This application Aug. 24, 1983, Ser. No. 526,216
Int. Cl.³ F21V 7/00
U.S. Cl. 362—283 7 Claims

1. A light reflector for use with an elongated light source comprising:

a substantially M shaped light reflecting element extending in a coaxial parallel longitudinal fashion along a light source, the element having a central V section and at least two wing sections centrally positioned about said central V section;

said central V section includes two opposing tangent light reflecting planar surfaces fixedly joined together to create a V configuration with a centrally positioned apex, said apex being approximately two millimeters above the horizontal axis leading edge of said light source, and said opposing tangent light reflecting planar surfaces being positioned at approximately 33 degrees relative to the horizontal whereby all light rays emitted from said light source impinge on said V section planar surfaces and are reflected away from said light source to prevent light source illumination losses generated by light source interference with reflected light rays; and

said two wing sections are symetrically positioned on either side of said V section so as to create said M shape configuration with each wing section having at least five individu-



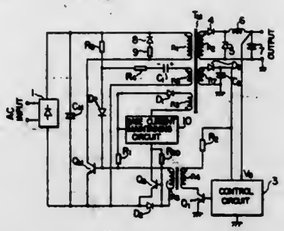
ally dimensioned and oriented light reflective angled planar surfaces with widths in the range of 10 to 20 millimeters, said light reflective angled planar surfaces being inclined at angles in the range of 16 to 40 degrees relative to the horizontal, said wing section surfaces being positioned such that the widest are adjacent to said V section while the narrowest surfaces form the farthest portion of said wing sections from said V section whereby light rays emitted from said light source illuminate a predetermined area in a substantially glare-free manner.

4,499,530

SWITCHING POWER SUPPLY APPARATUS

Kenichi Onda; Kojin Abe; Kohei Yabuno, all of Hitachi, and Takeshi Uemura, Niigata, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Sep. 27, 1982, Ser. No. 424,369
Claims priority, application Japan, Sep. 30, 1981, 56-153634; Mar. 30, 1982, 57-52546
Int. Cl.³ H02M 3/335
U.S. Cl. 363—17 12 Claims



1. A switching power supply apparatus comprising a main semiconductor device having a control electrode and a semiconductor device drive circuit, a first main electrode of said main semiconductor device being connected to one electrode of a DC power source via a primary winding of a main transformer, a second main electrode of said main semiconductor device being connected to the other electrode of said DC power source, said control electrode of said main semiconductor device being connected to said second main electrode via a secondary winding of a semiconductor device drive transformer, a drive current from said semiconductor device drive circuit being fed to said main semiconductor device via a primary winding of said semiconductor device drive transformer, said main semiconductor device being turned on or off according to feeding or interruption of said drive current for producing an output on a secondary winding of said main transformer;

a first diode inserted between one end of said secondary winding of said semiconductor device drive transformer and said second main electrode of said main semiconductor device;

a tertiary winding provided on said main transformer having one end coupled to said control electrode of said main semiconductor device via a second diode and the other end coupled to an anode of said first diode via an auxiliary semiconductor device having a control electrode; and

a connecting means for coupling said control electrode of said auxiliary semiconductor device to a cathode of said first diode.

8. A switching power supply apparatus comprising:

a first capacitor and a second capacitor connected in series between both electrodes of a DC power source;

a first main semiconductor device having a control electrode and a second main semiconductor device having a control electrode, connected in series between said both electrodes of said DC power source;

a primary winding of a main transformer connected between a point for coupling said first capacitor to said second capacitor and another point for coupling said first main semiconductor device having a control electrode to said second main semiconductor device having a control electrode;

a first semiconductor device drive transformer having a secondary winding coupled between a control electrode of said first main semiconductor device and one main electrode thereof and having a primary winding connected to a semiconductor device drive circuit;

a second semiconductor device drive transformer having a secondary winding coupled between a control electrode of said second main semiconductor device and one main electrode thereof and having a primary winding connected to said semiconductor device drive circuit;

a secondary winding of said main transformer for obtaining the output according to turning on and turning off of said first and second main semiconductor devices; characterized by the provision of

a first diode inserted between one end of said secondary winding of said first semiconductor device drive transformer and said one main electrode of said first main semiconductor device;

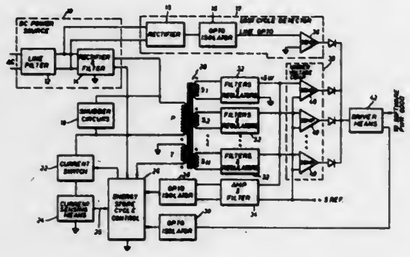
another first diode inserted between one end of said secondary winding of said second semiconductor device drive transformer and said one main electrode of said second main semiconductor device;

a tertiary winding provided on said main transformer, having one end connected to said control electrode of said first main semiconductor device via a second diode and having the other end connected to an anode of said first diode via an auxiliary semiconductor device with a control electrode;

another tertiary winding provided on said main transformer, having one end connected to said control electrode of said second main semiconductor device via another second diode and having the other end connected to an anode of said first diode via another auxiliary semiconductor device with a control electrode;

connecting means respectively for connecting said respective control electrodes of said auxiliary semiconductor devices to said respective cathode of said first diodes.

4,499,531
POWER CONVERTER
William E. Bray, Houston, Tex., assignor to 501 Gateway Technology, Inc., Houston, Tex.
Filed Nov. 3, 1982, Ser. No. 438,794
Int. Cl.[3] H02M 3/335
U.S. Cl. 363—19 11 Claims



1. A self-referencing self-oscillating power converter which operates in the flyback switch mode through a power transformer for converting an input DC power source to voltage regulated output power supply votages applied to a load, where energy is stored in a primary winding of the power ansformer during energy store-cycles by causing a current to flow in the primary winding, and where the stored energy is delivered from secondary windings of the transformer to the load during an energy transfer cycle, the converter comprising:

(a) a current switch for switching the primary winding current on and off, said switch including a proportional base drive current transformer connected to said switch with its primary winding conducting the primary current of said power transformer and its secondary winding providing base drive current to said switch in response to said current transformer primary current, the turns ratio of said voltage transformer determining a minimum saturation current gain for said switch;

(b) a means for electrically sensing at low voltage potentials the primary winding current, said sensing means generating a primary current level signal in response to the primary current;

(c) a voltage sensing means for sensing one of the output regulated voltages, said voltage sensing means generating a secondary voltage level signal in response to the level of said sensed output voltage; and

(d) an energy store-cycle control means including means for electrically summing said primary current level signal and said secondary voltage level signal to obtain a switch control signal, said energy store-cycle control means responding to said switch control signal to control the duration of each energy store-cycle thereby to deliver power to the load at regulated supply voltages.

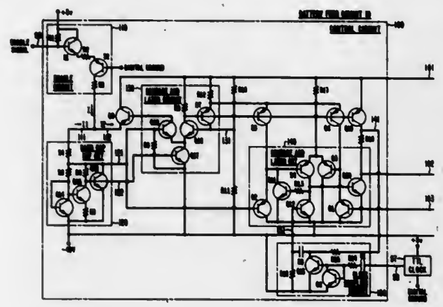
4,499,532
FLOATING BATTERY FEED CIRCUIT
Robert C. Hudson, Woodridge; William F. MacPherson, Wheaton, and Charles H. Sharpless, Wayne, all of Ill., assignors to AT&T Bell Laboratories, Murray Hill, N.Y.
Filed Mar. 23, 1983, Ser. No. 477,985
Int. Cl.[3] H02M 3/335
U.S. Cl. 363—21 12 Claims

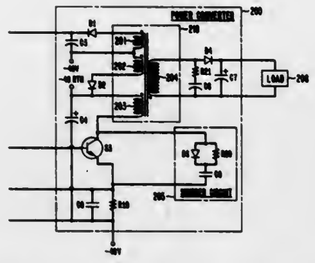
1. A battery feed circuit for supplying power from a source of potential to an electrical load comprising

transformer means comprising first winding means, second winding means magnetically coupled to said first winding means and connectible to said load and third winding means magnetically coupled to said first winding means,

energizing means comprising energy storage means connected to said third winding means for storing energy to develop a voltage,

control signal generator means responsive to said voltage for generating control signals only after said voltage exceeds a first predetermined magnitude and

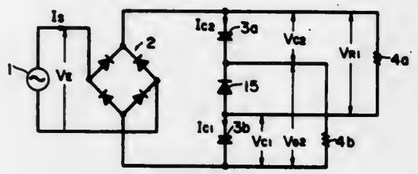




switching means responsive to said control signals for selectively connecting said source of potential to said first winding means,

wherein said control signal generator means further comprises means for terminating the generation of said control signals by said control signal generator means when said voltage is below a second predetermined magnitude.

4,499,533
POWER SUPPLY APPARATUS
Futoshi Okamoto, Hirakata, Japan, assignor to Matsushita Electric Works, Ltd., Kadoma, Japan
Filed Mar. 2, 1983, Ser. No. 471,525
Claims priority, application Japan, Sep. 14, 1982, 57-159938
Int. Cl.[3] H02N 7/06
U.S. Cl. 363—126 9 Claims



1. A power supply apparatus, comprising:

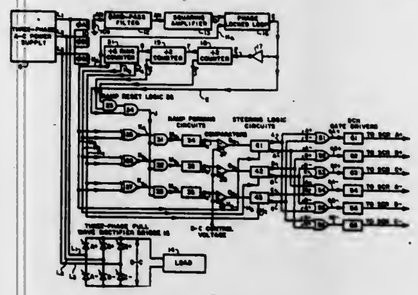
an alternating current voltage source (1),

rectifying means (2) coupled to the output of said alternating current voltage source for rectifying an alternating current voltage obtained therefrom,

a series connection including a first smoothing capacitor (3a), a diode (15), and a second smoothing capacitor (3b) being connected to said rectifying means such that the rectifying direction of said diode may be opposite to the rectifying direction of said rectifying means, a first load (4a) being connected in parallel with the series connection portion including said first smoothing capacitor and said diode, and

a second load (4b) being connected in parallel with the series connection portion including said second smoothing capacitor and said diode.

4,499,534
CONTROL SYSTEM FOR CONTROLLING AN SCR NETWORK TO REGULATE THREE-PHASE A-C POWER FLOW
Harold R. Schnetzka, Spring Grove; Frank E. Wills, and Dean K. Norbeck, both of York, all of Pa., assignors to Borg-Warner Corporation, Chicago, Ill.
Filed Oct. 12, 1982, Ser. No. 434,018
Int. Cl.[3] H02P 13/24
U.S. Cl. 363—129 8 Claims



1. A control system for controlling the conduction angles of three pairs of SCR's, to each of which pairs is applied a respective assigned one of the three alternating sinusoidal phase voltages of a three-phase A-C power supply, in order to regulate the power flow from the power supply to a load circuit, comprising:

a transformer for deriving the corresponding line-to-neutral voltage for a predetermined one of the alternating phase voltages;

a band-pass filter for attenuating, in the derived line-to-neutral voltage, frequencies above and below the voltage's fundamental frequency, while at the same time introducing no phase shift to that fundamental frequency, the output signal from the band-pass filter thereby being sinusoidal shaped and identical to the predetermined phase voltage except that any harmonics, noise, transients or other distortions in the phase voltage are not present in the filter's output signal;

means for effectively detecting the zero voltage crossings in the filter's sinusoidal output signal and producing a square wave signal which constitutes a reference voltage waveform having the same frequency as said phase voltages and having amplitude excursions which are precisely synchronized to the zero voltage crossings of the predetermined phase voltage;

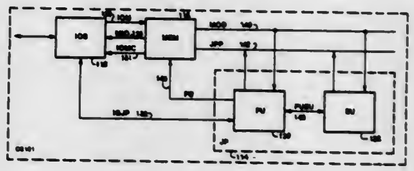
means for developing, from said reference voltage waveform, three phase-displaced square wave signals which are phase-displaced with respect to each other by 120° and have the same frequency as said phase voltages, each of the three phase-displaced square wave signals having its amplitude excursions occurring in exact time coincidence with the zero voltage crossings of a respective one of the three line-to-neutral voltages for the three phase voltages;

means responsive to the three phase-displaced square wave signals for developing three phase-displaced, ramp-shaped analog signals each of which corresponds to and is in phase with a respective associated one of the three square wave signals, each ramp-shaped analog signal having a linearly changing ramp-shaped pulse during each half cycle of its associated square wave signal;

means for supplying a d-c analog control voltage representing a desired power flow to the load circuit;

and means for comparing said d-c control voltage to each of the three ramp-shaped analog signals and for producing, from the comparisons, gating signals for triggering the six SCR's into conduction at the angles necessary to delivery the desired power flow to the load circuit.

4,499,535
DIGITAL COMPUTER SYSTEM HAVING DESCRIPTORS FOR VARIABLE LENGTH ADDRESSING FOR A PLURALITY OF INSTRUCTION DIALECTS
Brett L. Bachman, Boston, Mass.; Richard A. Belgard, Saratoga, Calif.; David H. Bernstein, Ashland; Richard G. Bratt, Wayland, both of Mass.; Gerald F. Clancy, Saratoga, Calif.; Edward S. Gavrin, Lincoln, Mass.; Ronald H. Gruner, Cary, N.C.; Thomas M. Jones, Chapel Hill, N.C.; Craig J. Mundie; James T. Nealon, both of Cary, N.C.; John F. Pilat, Raleigh, N.C.; Stephen I. Schleimer, Chapel Hill, N.C., and Steven J. Wallach, Saratoga, Calif., assignors to Data General Corporation, Westboro, Mass.
Filed May 22, 1981, Ser. No. 266,427
Int. Cl.[3] G06F 9/34, 7/04
U.S. Cl. 364—200 10 Claims



1. A digital computer system (CS 101) including

processor means (JP 114) for performing operations on operands;

memory means (112) for storing the operands and instructions for directing the operations;

bus means (MOD 140, JPD 142) for conducting the instructions and the operands between the memory means and the processor means, and;

I/O means (IOS 116) for conducting the operands in either direction between the digital computer system and devices external thereto;

the processor means including:

addressing means (DESCRIPTOR PROCESSOR 715) connected to the bus means for providing to the memory means addresses used for controlling transfer of said operands and instructions between the memory means and the processor means, the addressing means including means for receiving and translating descriptors, each said descriptor comprising:

an object field for identifying a certain object, an object being a block of contiguous storage of variable length,

an offset field for specifying how many bits into the said object a certain operand or instruction begins, and

a length field for specifying the number of contiguous bits comprising said certain operand or instruction, and;

microcode control means (10236) responsive to the instructions, the microcode control means including:

microcode storage means (uCCS 10238, FIGS. 102 & 110) for storing sequences of microinstructions for controlling the processor means, having at least one sequence of microinstructions corresponding to each instruction from each dialect of a plurality of dialects, and

microcode fetch means (uPC 20276) responsive to in-

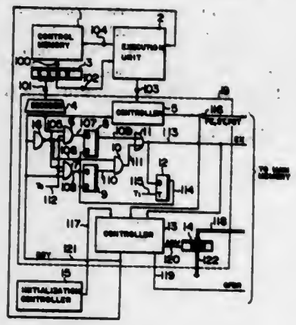
structions in conjunction with a dialect code to retrieve from the microcode storage means the corresponding sequence of microinstructions and to provide said sequence of microinstructions to the processor means.

4,499,536

SIGNAL TRANSFER TIMING CONTROL USING STORED DATA RELATING TO OPERATING SPEEDS OF MEMORY AND PROCESSOR

Kazutoshi Gemma, Ebina, and Michiyasu Ishibashi, Hadano, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 9, 1981, Ser. No. 329,048
Claims priority, application Japan, Dec. 17, 1980, 55-177290
Int. Cl.³ G06F *13/00*
U.S. Cl. 364—200 14 Claims



1. A memory controlling apparatus for controlling signal transfer between a memory for storing data and a processor for processing the data accessed to said memory, comprising:

means for retaining time information based on the operating speed of at least said memory and said processor, including means for receiving from said processor and storing respective data relating to the operating speed of said processor and the operating speed of said memory; and

control means for controlling the timing of signal transfer between said processor and said memory based on at least said time information of said retaining means, including first means responsive to said processor for transmitting a memory access signal to said memory and second means connected to said receiving and storing means and responsive to said access signal for transmitting to said memory a signal to command said memory to transmit data to said processor at a time subsequent to transmission of said memory access signal which is determined by said data relating to the operating speed of said memory and said processor as stored in said receiving and storing means.

4,499,537

APPARATUS FOR RAPID EXECUTION OF INTERRUPTS AFTER THE RECOGNITION OF AN INTERRUPT REQUEST

Alfred Eckert; Ernst Hellmeir, and Klaus Hempen, all of Munich, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Sep. 15, 1982, Ser. No. 418,436
Claims priority, application Fed. Rep. of Germany, Sep. 30, 1981, 3138961
Int. Cl.³ G06F *9/46*
U.S. Cl. 364—200 4 Claims

1. A circuit arrangement for the rapid execution of interrupts after recognition of interrupt requests in a proccessor which comprises a control unit, control lines and a but connected to said control unit and an external program memory connected to said bus and storing an external program and in which instructions for executing and processing interrupts are inserted between instructions for working off a program, in which the inserted instructions are addressed with a plurality of instruction indicators which work in parallel and which are addressable in parallel, and in which the instruction indicators are addressed, on the one hand, by a program and, on the other hand, by recognition of interrupt requests, comprising:

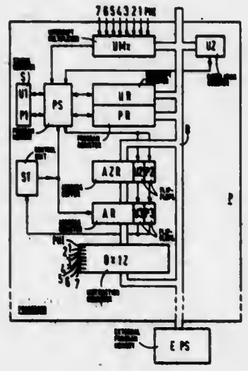
an interrupt multiplexer connected to said bus and including inputs for receiving interrupt requests;

a circulating counter connected to said bus and operable to form addresses of said inputs and search said interrupt multiplexer for set interrupt requests;

a multilevel interrupt register connected to said bus for storing interrupt requests under specific address as U-bits in a level determined by the address;

a program register connected to said bus for storing and erasing P-bits in response to instructions of the external program in said external program memory;

a program memory connected to said program register and to said interrupt register and storing an internal program for controlling the operation of said circuit arrangement;



status register means connected to said control unit, to said circulating counter and to said program memory and operable to indicate the operational states of the search operation;

means connected to said status register means and including said circulating counter, said interrupt register and said program register, operable to search for set U-bits and P-bits as a function of the states of said status register means;

an address buffer connected to said bus and operable to store circulating counter addresses in response to the finding of U-bits and P-bits;

an address register connected to said address buffer for storing the address stored in the address buffer at the end of each instruction worked off by said processor; and

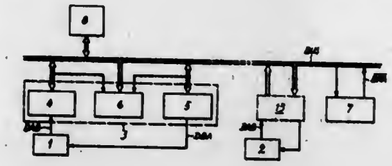
instruction indicator means connected to said bus and to said address register for providing parallel instruction indicators to said external program memory in response to the current address in said address register.

4,499,538

ACCESS ARBITRATION SYSTEM TO SEVERAL PROCESSORS OR MICROPROCESSORS WITH A COMMON BUS

Ulrich Finger, 30, rue du Moulin de Pierre, 92140 Clamart; Pierre Desprez, 50, Ave. A. Briand, 92220 Bagneux, and Pierre Lignores, 80 bis, Rue des Murets, 92160 Antony, all of France

Filed Sep. 3, 1982, Ser. No. 414,591
Claims priority, application France, Sep. 24, 1981, 81 18014
Int. Cl.³ G06F *15/16*
U.S. Cl. 364—200 9 Claims



1. An arbitration system for access requests to several processors having common resources by means of a common bus, comprising for each processor an arbitration means for access request conflicts, said arbitration means comprising: means for processing access requests connected to the bus and to the processor; and a resolution circuit for access priorities connected to the bus, to the access request processing means and to the processor, for allocating to the access requests fixed priorities, cyclic priorities or mixed fixed and cyclic priorities; said means for processing the access requests comprising a bus access request circuit receiving a signal indicating an access request of the corresponding processor to the arbitration means in question, as well as a signal indicating whether the other processors have made an access request; and a circuit for transmitting a signal representing the access request arbitration verdict of the corresponding processor, as a function of the priorities of the other access requests; said request and verdict transmission circuits being connected to the bus, to the processor and to the priority resolution circuit.

4,499,539

METHOD AND APPARATUS FOR LIMITING ALLOCATED DATA-STORAGE SPACE IN A DATA-STORAGE UNIT

Robert H. Vosacek, Tucson, Ariz., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 20, 1982, Ser. No. 450,894
Int. Cl.³ G06F *13/00*
U.S. Cl. 364—200 10 Claims

7. For use in a data-storage hierachy having a backing store coupled to a front store, each store having a plurality of addressable data-storage spaces, said hierarchy being adapted to be coupled to a host processor for transferring data signals therewith, means for coupling the host processor and said front and back stores together for transferring data signals therebetwean;

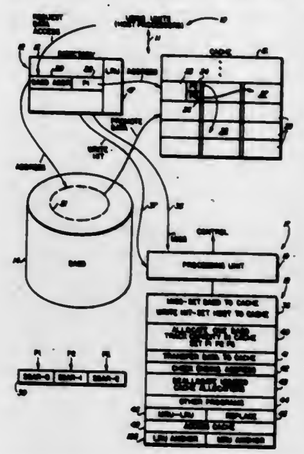
the improvement including in combination;

means for indicating that data is to be written into said front store;

allocation means coupled to said indicating means for allocating a plurality of allocatable sets of said addressable data-storage spaces in said front store for said data indicated to be written therein, said allocation means also having means indicating that the allocatable unit of said backing store has a given multiple of data-storage spaces equal to the storage capacity of a given number of data-storage spaces in each set of data-storage spaces of said front store;

means coupled and being responsive to said allocation means for allocating said sets of addressable data-storage spaces and to activate said coupling means to transfer said indicated data into said front store for storage in said allocated sets;

examining means coupled to said front store for examining said allocated sets of data-storage spaces for determining which of said allocated data-storage spaces in fact received data signals during said indicated data transfer; and



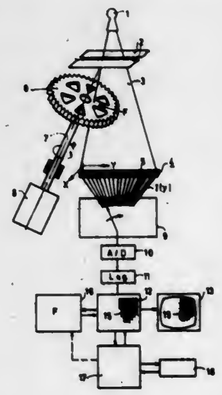
deallocation means coupled to said examining means and to said front store for deallocating all of said data storage paces that in fact did not receive and store data during said indicated data transfer and that were allocated therefor.

4,499,540

DEVICE FOR THE TESTING OF BODIES COMPRISING PERIODIC STRUCTURES

Günter Kowalski, Pinneberg, Fed. Rep. of Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 25, 1982, Ser. No. 362,019
Claims priority, application Fed. Rep. of Germany, Mar. 31, 1981, 3112758
Int. Cl.³ G01N *23/00*
U.S. Cl. 364—414 7 Claims



1. A device for testing a body having a periodic structure comprising:

image forming means for scanning a body structure and supplying measurement values, said image forming means including an array of separate detectors producing electric signals representative of said measurement values,

electronic means for processing said measurement values,

said electronic means including Fourier transformation means for forming a frequency spectrum of neighboring measurement values in a direction of said periodic structure, first means for suppressing fundamental and higher harmonics (G,B_1,B_3) of said periodic structure in said frequency spectrum, and second means for retransforming said frequency spectrum thus modified into a spatial structure; and

display means for displaying information derived from said measurement values, said display device receiving a signal from said second means.

4,499,541

INPUT CIRCUIT OF A FORK LIFT TRUCK CONTROL SYSTEM FOR A FORK LIFT TRUCK

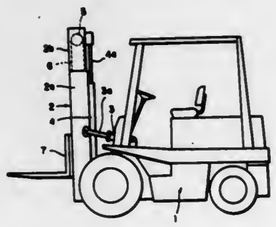
Katsumi Yuki, Toyota; Susumu Yoshida, Aichi; Mineo Ozeki, Ichinomiya; Yasuyuki Miyazaki, Aichi, and Masaru Kawamata, Numazu, all of Japan, assignors to Kabushiki Kaisha Toyoda Jidoh Shokki Seisakusho, Japan

Filed Mar. 31, 1982, Ser. No. 364,401

Claims priority, application Japan, Mar. 31, 1981, 56-45958[U]

Int. Cl.³ G06F *15/50*; B66F *9/06*

U.S. Cl. 364—424 **7 Claims**



3. A forklift truck control system for a fork lift truck including:

(A) a sensing unit including a first sensor for detecting optically and signalling electrically a lifting height of a fork located on a front side of the fork lift truck vertically movable with respect to an upright from a lowest position thereof, a second sensor for detecting and signalling a tilting angle of the upright with respect to a neutral position of the upright, and a third sensor for detecting and signalling the load applied on the fork;

(B) a control unit which stores and produces various predetermined command signals to control the lifting height of the fork and tilting angle of the upright according to the various detection signals received from said sensing unit, said control unit comprising a microcomputer main frame which stores and outputs predetermined command signals and an input interface circuit connected between said sensing unit and the microcomputer main frame via a common bus for producing and inputting the data based on each of the output signals from said sensing unit into the microcomputer main frame when the microcomputer main frame issues an input command to input one of the produced data thereinto,

wherein the input interface circuit of said control unit comprises a lift height counting circuit, connected to each of said two photocouplers for counting incrementally or decrementally the length of chain passed through the chain wheel based on output electrical signals converted by said two photocouplers,

(C) a driving unit, responsive to one of the predetermined command signals from said control unit, which drives a tilt cylinder for tilting the upright backward to an angle corresponding to the predetermined command signal and which drives a lift cylinder for lifting and lowering the fork according to the predetermined command signal so as to change the lifting height of the fork to a target height,

(D) said first sensor comprising a disc through which a plurality of slits are penetrated along the radial direction thereof and two photocouplers are provided across said disc,

(E) said disc attached coaxially on a chain wheel which is attached to an inner mast of the upright and to a top end of a piston of the lift cylinder and rotating as a chain engaged with the chain wheel moves according to the movement of the piston of the lift cylinder, one end of the chain attached to an outer mast of the upright and the other end thereof linked with the fork,

one of the photocouplers producing an electrical signal having a phase difference of 90° from that of a signal produced by the other photocoupler whenever a light emitted from a light emitting member of each photocoupler is passed through one of the slits of said disc,

(F) said lift height counting circuit including:

(a) two voltage amplifiers, each having an input connected to a separate one of said two photocouplers, each of said amplifiers amplifying the electrical signal received from the corresponding photocoupler and producing an output signal on an output terminal thereof;

(b) two waveform shapers, each having an input connected to the output of a separate one of said two amplifiers, each of said shapers shaping the waveform of the output signal from the corresponding amplifier into a rectangular wave;

(c) a first differentiator, connected to an output of one of said two waveform shapers, for differentiating each falling edge of the rectangular wave fed from the corresponding waveform shaper;

(d) a second differentiator, connected to said output of said waveform shaper in parallel with said first differentiator, for differentiating each rising edge of the rectangular wave fed from the corresponding waveform shaper;

(e) a first inverter, connected to an output of said first differentiator, for inverting the logical level thereof;

(f) a second inverter, connected to an output of the other waveform shaper which inverts the logical level thereof;

(g) four AND gate circuits, a first AND gate circuit having inputs connected to an output of said second differentiator and to an input terminal of said second inverter, a second AND gate circuit having inputs connected to an output terminal of said first inverter and to an output terminal of said second inverter, a third AND gate circuit having inputs connected to said output of said first inverter and to the input terminal of said second inverter, and a fourth AND gate circuit having inputs connected to the output of said second differentiator and to the output terminal of said second inverter;

(h) a first NOR gate having inputs connected to outputs of said first and second AND gate circuits;

(i) a second NOR gate circuit having inputs connected to outputs of said third and fourth AND gate circuits;

(j) a fifth AND gate circuit having inputs connected to outputs of said first and second NOR gate circuits; and

(k) an UP/DOWN counter, a clock terminal of which is connected to an output of said fifth AND gate circuit, an UP terminal of which is connected to the output of said second NOR gate circuit, and a DOWN terminal of which is connected to the output of said first NOR gate circuit, for counting incrementally the number of output pulses from said fifth AND gate circuit when an output pulse signal from said second NOR gate circuit is received at the UP terminal thereof, for counting decrementally the number of output pulses from said fifth AND gate circuit when an output pulse signal from said first NOR gate circuit is received at the DOWN terminal thereof, and including a reset terminal for resetting the counter to zero when the fork is placed at the lowest position.

4,499,542

AUTOMATIC TRANSMISSION CONTROL SYSTEM WITH RESET

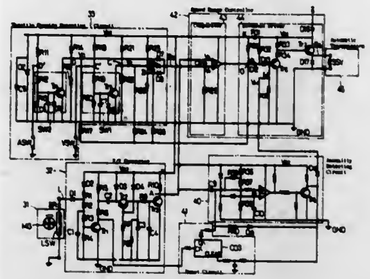
Shigemitsu Hamajima, Oobu; Tomoaki Nishimura, Toyota; Naoji Sakakibara, Chiryu, and Shoji Kawata, Okazaki, all of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Apr. 14, 1982, Ser. No. 368,476

Claims priority, application Japan, Apr. 20, 1981, 56-59601

Int. Cl.³ B60K *41/08*; G06F *15/20*

U.S. Cl. 364—424.1 **8 Claims**



1. An automatic transmission control system comprising:

vehicle speed responsive signal generating means for generating a vehicle speed responsive signal which changes its level at a frequency corresponding to vehicle speed;

vehicle speed signal processing means for processing said vehicle speed responsive signal and issuing a vehicle speed signal representing the vehicle speed;

means for generating an engine power indexing signal representing engine power;

a speed range controller for determining the speed range of an automatic transmission in accordance with speed range reference signals including said engine power indexing signal and vehicle speed signal as well as in accordance with detection of anomalies;

anomaly detecting means for detecting anomalies in said speed range reference signals applied to said speed range controller and outputting an anomaly detection signal to said speed range controller; and

reset means for counting the number of level changes in said vehicle speed responsive signal and releasing the anomaly detecting state of said anomaly detecting means when the counted value reaches a predetermined value.

5. An automatic transmission control system comprising:

vehicle speed responsive signal generating means for generating a vehicle speed responsive signal which changes its level at a frequency corresponding to vehicle speed;

vehicle speed signal processing means for processing said vehicle speed responsive signal for detecting vehicle speed;

means for generating an engine power indexing signal representing engine power; and

a microprocessor for determining the speed range of an automatic transmission in accordance with the engine power index and vehicle speed, detecting an anomalous change in said vehicle speed, setting said automatic transmission at a safety speed range in the presence of the anomalous change, and then counting the level changes in said vehicle speed responsive signal for setting said automatic transmission at a speed range in accordance with said engine power index and vehicle speed after the counted value reaches a predetermined value.

4,499,543

ANTI-SKID BRAKE CONTROL SYSTEM WITH FAIL-SAFE ARRANGEMENT

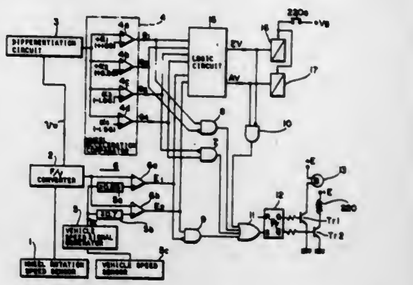
Toshiro Matsuda, Zama, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

Filed Sep. 24, 1982, Ser. No. 423,187

Claims priority, application Japan, Sep. 28, 1981, 56-152164

Int. Cl.³ B60T *8/00*

U.S. Cl. 364—426 **14 Claims**



1. An anti-skid brake control system for an automotive vehicle, comprising:

a detector associated with a wheel of said vehicle for detecting acceleration of said wheel and for producing an acceleration indicative signal having a value indicative of said detected wheel acceleration;

a reference signal generator for producing a plurality of reference signals, each differing in value from any of the other reference signals of said plurality of reference signals, and each representing a threshold value to be compared with the value of said acceleration indicative signal;

a comparator for respectively comparing the value of said acceleration indicative signal with the value of each of said plurality of reference signals and for producing a comparator signal which is a discrete combination of a plurality of outputs, each of said outputs resulting from a corresponding one of said respective comparisons;

a control signal generator responsive to said comparator signal for producing a control signal for controlling braking operation, said control signal having a value derived on the basis of the combination of said outputs; and

a fault detector responsive to said comparator signal for detecting whether said combination of outputs is a member of a predetermined set all possible combinations occurring in a non-malfunctioning control system, and for producing a fault signal whenever said combination of outputs constituting said comparator signal is detected not to be a member of said set, said fault signal being useable to demand a predetermined back-up operation.

4,499,544

ELECTRONIC IGNITION CONTROL APPARATUS

Masahiro Obba, Toyohashi; Kenzo Ito, Okazaki; Susumu Akiyama, Kariya; Yuuji Hirabayashi, Aichi; Satoshi Hirano, Kariya, and Naoto Ooka, Gamagori, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Continuation of Ser. No. 199,234, Oct. 21, 1980, Pat. No. 4,360,874. This application Aug. 25, 1982, Ser. No. 411,362

Claims priority, application Japan, Oct. 22, 1979, 54-136216

The portion of the term of this patent subsequent to Nov. 23, 1999, has been disclaimed.

Int. Cl.³ F02P *5/04*, *3/02*; G05B *15/02*

U.S. Cl. 364—431.04 **8 Claims**

4. An electronic ignition control apparatus for an internal combustion engine having an output shaft rotated by a piston, an ignition coil adapted to generate a spark voltage upon deenergization thereof and a spark plug activated by the spark voltage to ignite the air-fuel mixture metered into a combustion

chamber of said engine so as to operate said piston, the ignition control apparatus comprising:

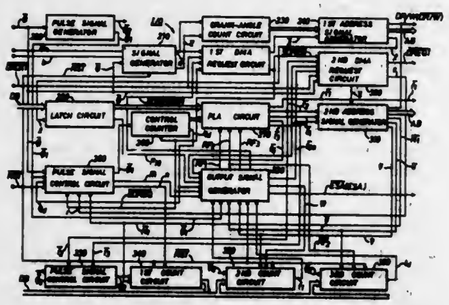
first detecting means for producing a reference signal indicative of a reference angular position of said output shaft;

second detecting means for producing a series of electric angular signals respectively at a predetermined angular interval of said output shaft related to the reference signal;

third detecting means for producing a first binary signal indicative of the operating condition of said engine;

a pulse signal generator for producing a series of pulse signals at a predetermined frequency;

first memory means for previously memorizing second and third binary signals respectively indicative of the starting and terminating points for calculation of a time necessary for rotation of a predetermined angle defined by integer times as large as said predetermined angular interval, said first memory means further memorizing a program for calculating an optimum spark advance angle of said engine based on a function describing a desired relationship among the operating condition of said engine, a rotational time of said output shaft and the spark advance angle, for determining fourth and fifth binary signals indicative of angular positions defined by integer times as large as said predetermined angular interval at the advance and retard angle sides of the calculated advance angle respectively, and for calculating a time defined by the difference between the calculated advance angle and the angular position defined by said fourth binary signal;



second memory means for temporarily storing the second and third binary signals from said first memory means and storing the fourth and fifth binary signals and a sixth binary signal indicative of the time defined by the difference between the calculated advance angle and the angular position defined by the fourth binary signal;

control means responsive to the pulse signals from said pulse signal generator and the electric angular signals from said second detecting means for producing a first control signal based on a first logic equation describing a relationship between the second binary signal and the first predetermined number of the pulse signals, for producing a second control signal based on a second logic equation describing a relationship between the third binary signal and the second predetermined number of the pulse signals, for producing a third control signal based on a third logic equation describing a relationship between the fourth binary signal and the third predetermined number of the pusle signals and for producing a fourth control signal based on a fourth logic equation describing a relationship between the fifth binary signal and the fourth predetermined number of the pulse signals;

calculation means responsive to the first control signal to start calculation of number of the pulse signals and responsive to the second control signal to cease the calculation of the number of the pulse signals, said calculation means producing a seventh binary signal indicative of the calculated number of the pulse signals defining the actual rotation time of said output shaft;

processing means for calculating the optimum spark advance angle from the function in dependence upon the first and seventh binary signals such that the fourth and fifth binary signals are determined in relation to the calculated spark advance angle to be stored in said second memory means, said processing means further determining an energization timing of said ignition coil in relation to the calculated advance angle and calculating the difference between the calculated spark advance angle and the angular position defined by the fourth binary signal such that the sixth binary signal is determined in relation to the calculated difference to be stored in said second memory means; and

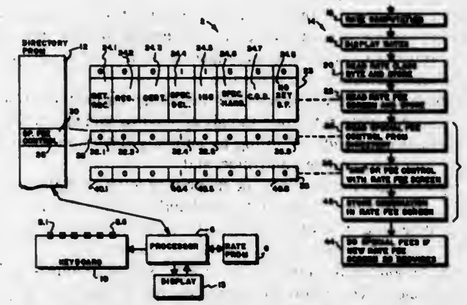
drive means responsive to the determined energization timing from said processing means to energize said ignition coil and responsive to the third control signal from said control means to start calculation of the value of the sixth binary signal from said second memory means to conduct deenergization of said ignition coil upon completing the calculation, said drive means being responsive to the fourth control signal to conduct deenergization of said ignition coil if the calculation of the value of the sixth binary signal may not be completed by said drive means prior to lapse of time necessary for the actual rotation of said output shaft corresponding to the difference between the calculated advance angle and the angular position defined by the fourth binary signal.

4,499,545

METHOD AND APPARATUS FOR INDIVIDUALIZED SELECTION OF SPECIAL FEE POSTAGE VALUE COMPUTATIONS

Edward P. Daniels, Bridgeport, and Daniel F. Dlugos, Huntington, both of Conn., assignors to Pitney Bowes Inc., Stamford, Conn.

Filed Jun. 30, 1982, Ser. No. 393,857
Int. Cl.³ G06F 9/36
U.S. Cl. 364—464 8 Claims



1. A method for controlling access to the computation of special fees so as to limit access to selected allowable special fee computations with a postage value computing system having a program operated processor, a rate memory to store postage rate information, a directory memory to store vectors to direct the program in the processor to rate charts and special fee computations to which access is requested by actuations of a keyboard comprising the steps of:

storing in the system a rate fee screen byte representative of special fee computations permitted with a particular mailing class;

recalling a special fee control byte representative of special fee computations as to which access is allowable;

combining the rate fee screen byte with the special fee control byte to form a modified rate fee screen byte; and

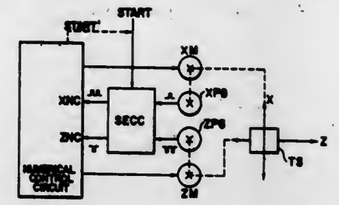
computing special fees in accordance with the modified rate fee screen byte.

4,499,546

NUMERICAL CONTROL MACHINE TOOL WITH SLIDING ERROR COMPENSATION FUNCTION

Akihiko Kuga, Iruma, and Hiroo Kuga, Mitaka, both of Japan, assignors to Kabushiki Kaisha Yaskawa Denki Seisakusho, Nagano, Japan

Filed May 10, 1982, Ser. No. 376,983
Claims priority, application Japan, May 19, 1981, 56-74234
Int. Cl.³ G06F 15/46; G05B 19/18
U.S. Cl. 364—474 2 Claims



1. A numerical control machine tool in which linear or rotary position detectors which produce incremental pulse trains with motion on control axes are provided as position feedback equipment for said control axes, respectively, which comprises:

a position register for detecting a current position on a first axis at all times in response to an output signal from a first-axis position detector;

a compensation data memory in which compensation data for a second axis corresponding to a number of positions on said first axis have been stored in advance, said memory outputting a compensation data corresponding to a position which coincides with a current position specified by said position register;

a pulse generator section for calculating a difference between said compensation data thus outputted and a preceding compensation data outputted by said memory and generating a pulse train the number of pulses of which is proportional to said difference;

a pulse adder for performing one of adding said pulse train obtained for said first axis to a pulse train which is obtained by converting an output signal of a second-axis position detector, and subtracting the former pulse train from the latter pulse train;

a pulse restoring section for converting a pulse train which is provided as a result of calculation by said pulse adder into a signal which is similar in form to the output from said position detector; and

a compensation control section for outputting, as a position feedback signal for said second axis, said signal outputted by said pulse restoring section, and for similarly processing an output signal from said second-axis position detector to be outputted as a position feedback signal for said first axis, to have a sliding error compensation function.

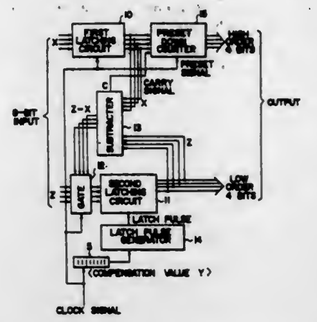
4,499,547

OUTPUT COMPENSATING SYSTEM

Masafumi Inuiya, and Makoto Murakoshi, both of Asaka, Japan, assignors to Fuji Photo Optical Co., Ltd., Kanagawa, Japan

Filed Aug. 13, 1981, Ser. No. 292,400
Claims priority, application Japan, Aug. 19, 1980, 55-113765
Int. Cl.³ H04N 5/21
U.S. Cl. 364—571 2 Claims

2. A system for compensating for variation in an output for each of a plurality of components in which the said output has relatively small variations proportional to the magnitude of inputs, comprising a memory means for storing a compensation value (B) predetermined for each component with reference to a given unit level of output on the basis of the variation among said components, an analog-to-digital conversion means for converting said output into several bits of digital output, means for lowering the order of the value (A) of the high order bits of said digital output to coincide with the order of the value (C) of the lower order bits of said digital output, a subtraction



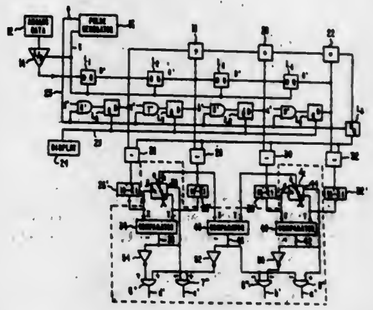
means which subtracts the value (A) of high order bits a number of times, as determined by said compensation value B, from the value (C) of the low order bits, and means for outputting a compensated signal.

4,499,548

DATA COMPRESSION APPARATUS

Richard P. Beebe, Billerica, Mass., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Continuation of Ser. No. 165,169, Jul. 2, 1980, abandoned, and Ser. No. 165,172, Jul. 2, 1980,. This application Oct. 12, 1982, Ser. No. 433,748
Int. Cl.³ H03K 5/20
U.S. Cl. 364—575 4 Claims



1. Apparatus for compressing data represented by samples occurring at a given frequency in such manner that it can be displayed with a minimum of loss of significant detail, comprising

an input means to which said samples representing successive values of data can be applied,

an output means,

means coupled to said input means for deriving a representation of an average of the values represented by each successive group of data samples,

means for providing a signal identifying the data sample of each group having the greatest absolute difference with respect to the average of the data samples of the previous group,

means responsive to said signal for conducting the data sample having the said greatest absolute difference to said output means,

a display means, and

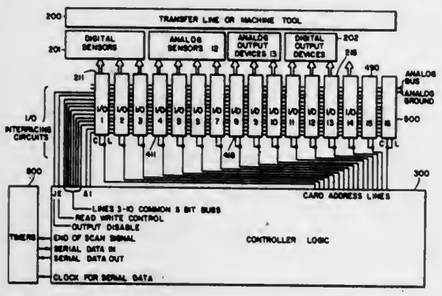
means for coupling said output means to said display means.

4,499,549

DIGITAL COMPUTER HAVING ANALOG SIGNAL CIRCUITRY

Peter G. Bartlett, Davenport, Iowa, assignor to Automation Systems, Inc., Eldrige, Iowa

Filed Jun. 25, 1982, Ser. No. 392,374
Int. Cl.³ G06J 1/00; G06F 3/04
U.S. Cl. 364—601 **29 Claims**



1. A hybrid digital and analog computer comprising:

a. a hybrid computer having several interface locations each suitable for insertion of an interface module and each of said interface locations having connections for

(1) common multibit data bus
(2) common anlog signal bus
(3) common read and/or write signal bus
(4) common supply voltage
(5) common ground
(6) card enable address line
(7) multiple external lines for connection to external devices:

b. means for permitting either of the following to be operationally inserted into any one of said several interface locations without rewiring being necessary:

(1) a digital data interface module for controlling connections between the computer and external devices, or
(2) an analog data interface module for controlling connections between the computer and external devices.

4,499,550

WALSH FUNCTION MIXER AND TONE DETECTOR

John M. Ray, III, North Lauderdale, Fla., and Robert J. Martin, Lynchburg, Va., assignors to General Electric Company, Lynchburg, Va.

Filed Sep. 30, 1982, Ser. No. 430,390
Int. Cl.³ G06J 1/00; G06F 15/332
U.S. Cl. 364—606 **26 Claims**

1. A mixer stage for multiplying an input signal by the sine and cosine of a reference frequency, comprising:

(a) input means for receiving said input signal;

(b) a first set of transmission gates, each gate having an input means for receiving said input signal, an output, and a control input for receiving a control signal for causing the gate to pass the input signal from the gate input to its output or block the input signal so that it does not pass to the output;

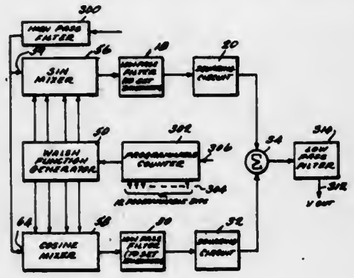
(c) first means associated with said first set of transmission gates for combining the signals at the outputs thereof into a first mixer section output providing a signal defined by the input signal multiplied by the sine of the reference frequency;

(d) first means associated with said first set of transmission gates for weighting the contributions of the signals from each transmission gate to said first combining means;

(e) a second set of transmission gates, each gate having an input means for receiving said input signal, an output and a control input for receiving a control signal for causing the gate to pass the input signal from the gate input to its output or block the input signal so that it does not pass to the output;

(f) second means associated with said second set of transmission gates for combining signals at the outputs thereof into a second mixer section output providing a signal defined by the input signal multiplied by the cosine of the reference frequency;

(g) second means associated with said second set of transmission gates for weighting the contributions of the signals from each transmission gate to said second combining means;



(h) a reference frequency source;

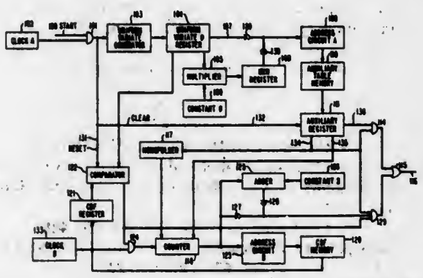
(i) Walsh function generating means, having an input coupled to said reference frequency source, for generating a first set of outputs representing a sine wave synthesis of reference frequency from Walsh function pulse trains, said first set of outputs being coupled to said control inputs of said first set of transmission gates, and for generating a second set of outputs representing a cosine synthesis of said reference frequency from Walsh function pulse trains, said second set of outputs being coupled to said control inputs of said second set of transmission gates.

4,499,551

RAPID GENERATION OF DISCRETE RANDOM VARIATES FROM GENERAL DISTRIBUTIONS

Amalie J. Frank, Chatham Township, Morris County, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Sep. 27, 1982, Ser. No. 423,856
Int. Cl.³ G06F 7/38
U.S. Cl. 364—717 **8 Claims**



1. A generator of discrete random variates comprising

a source of random numbers suppliable on demand from a uniformly distributed number set for use in generating addresses;

a first random access memory storing mappings of said addresses into a set of numerical values corresponding to a preselected discrete probability distribution, each numerical value covering a range of addresses, and coded addresses corresponding to transitional values in said probability distribution;

a second random access memory storing transitional values only of a cumulative distribution function derived from said probability distribution;

means responsive to the address corresponding to a selected random number from said source for accessing said first memory to retrieve a random variate directly, and for accessing said second memory using said coded address; and

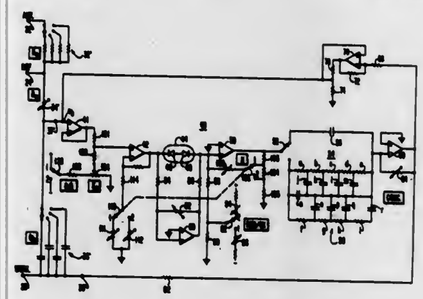
means responsive to a coded address corresponding to a selected random number from said source for comparing said selected random number with successive cumulative distribution function values from said second memory in increasing order until the cumulative distribution function value next higher than said random number is determined, the random variate corresponding to such next highest value being the valid output random variate.

4,499,552

ELECTROCHEMICAL CELL SIMULATING CIRCUIT ARRANGEMENT

Kay K. Kanazawa, San Jose, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 31, 1981, Ser. No. 336,128
Int. Cl.³ G06G 7/58
U.S. Cl. 364—802 **14 Claims**



1. An electronic circuit for simulating the electrical characteristics of an electrochemical cell comprising:

a plurality of impedance elements connected in series to partially simulate an electrochemical cell;

simulator circuit means for producing potential and current which define the faradaic resistance of said electrochemical cell;

means for connecting said simulator circuit means across one of said impedance elements;

said simulator circuit means including

electronic impedance simulating circuitry for generating said current; and

electronic current time-processing circuitry connected in series across said one of said impedance elements.

5. An electronic circuit for simulating the electrical characteristics of an electrochemical cell comprising:

a first and a second interconnection terminal;

a first differential amplifier circuit having one input terminal coupled to said first interconnection terminal, having another input terminal and having an output terminal;

a second differential amplifer circuit having a first input terminal, having a second input terminal connected to a point of reference potential and having an output terminal;

a resistance simulator circuit having one terminal connected to said output terminal of said first amplifier circuit and having another terminal coupled to said first input terminal of said second amplifier circuit;

a third amplifier circuit having an input terminal coupled to the output terminal of said second amplifier circuit and having an output terminal;

a first resistor connected between the output terminal of said third amplifier circuit and said first interconnection terminal; and

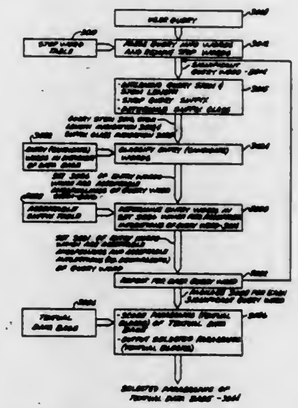
a second resistor connected between the output terminal of said second amplifier circuit and the second interconnection terminal whereby the circuit coupled between said first and said second interconnection terminals is operable to substantially simulate the faradaic resistance of said electrochemical cell.

4,499,553

LOCATING DIGITAL CODED WORDS WHICH ARE BOTH ACCEPTABLE MISSPELLINGS AND ACCEPTABLE INFLECTIONS OF DIGITAL CODED QUERY WORDS

Robert V. Dickinson, 118 Morningside Dr., Westport, Conn. 06880; Louis M. Galle, 4 Black Cherry La., Sandy Hook, Conn. 06482, and Craig A. Snow, 1816 Walnut Ave., Manhattan Beach, Calif. 90266

Filed Sep. 30, 1981, Ser. No. 307,571
Int. Cl.³ G06F 15/40
U.S. Cl. 364—900 **44 Claims**



1. A method using a digital data processing means for locating from a plurality of digital coded candidate words at least one candidate word which is both an acceptable misspelling and an acceptable inflection of a digital coded query word, the candidate and query words each comprising plural characters, the method comprising the steps of:

determining characters forming a stem portion and an ending portion of such query word;

forming a suffix class indication for any one of a plurality of classes in which the query word may be included;

comparing the characters forming the stem portion with characters starting at the beginning of each of a plurality of such candidate words for finding candidate words having acceptable misspelling matches and those with nonacceptable misspelling matches;

determining characters forming an ending portion, if any, in each of individual ones of the candidate words;

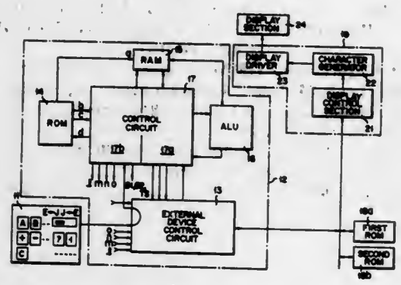
utilizing the suffix class indication to select, from among other suffixes, a representation of characters forming at least one acceptable suffix for the candidate words; and

comparing, character by character, the characters of said at least one acceptable suffix with the characters in the ending portion of each of individual ones of the candidate words for finding candidate words having acceptable ending portions;

the first and second recited steps of comparing thereby locating the candidate words which are both an accept-

able misspelling match and an acceptable inflection of the query word.

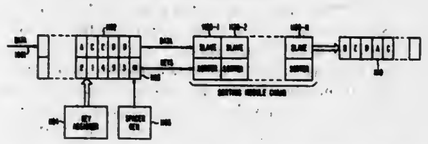
4,499,554
ELECTRONIC TRANSLATING APPARATUS WITH EXTENDED MEMORY
Saburo Kobayashi, Tokyo, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan
Filed Apr. 7, 1982, Ser. No. 366,198
Claims priority, application Japan, Apr. 17, 1981, 56-57886
Int. Cl.³ G06F *15/38*
U.S. Cl. 364—900 **6 Claims**



1. An electronic translating apparatus with an extended memory, comprising:
a basic memory for storing in a predetermined order a number of codes corresponding to words in a translation dictionary;
an extended memory which is physically separate from said basic memory and which stores in a predetermined order codes corresponding to words different from the codes stored in said basic memory;
address designating means, coupled to said basic memory and to said extended memory, for designating addresses of said basic memory and said extended memory and for reading out the codes of words at the designated addresses;
comparing means coupled to said basic memory and to said extended memory, for comparing the codes of words read out by said address designating means from said basic memory and extended memory, respectively;
selecting means coupled to said comparing means, for selecting one of the codes of the words compared by said comparing means according to the order in which the words would be listed in a translation dictionary;
converting means, connected to said selecting means, for converting said selected codes of the words into visual patterns; and
displaying means coupled to said converting means for displaying said visual patterns.

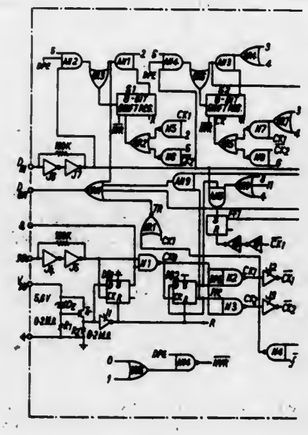
4,499,555
SORTING TECHNIQUE
Alan Huang, Ocean Township, Monmouth County, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.
Filed May 6, 1982, Ser. No. 375,669
Int. Cl.³ G06F *15/21*
U.S. Cl. 364—900 **16 Claims**

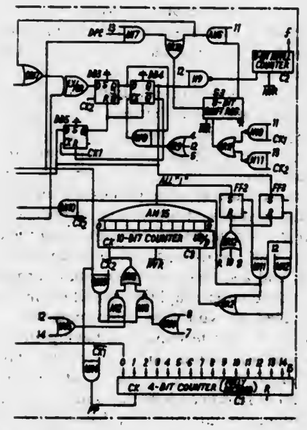
1. Apparatus for rearranging items in a desired sequence, comprising:
a plurality of serially connected sorting modules;
means in each module in said series for receiving two sequentially applied items; and
means in each module normally operative to determine an order for transmitting said items to the next module in said series by comparing the values of said items;
wherein said modules further include:



means responsive to detection of a unique spacer item for transmitting said items in the same order in which said items were received by said module.

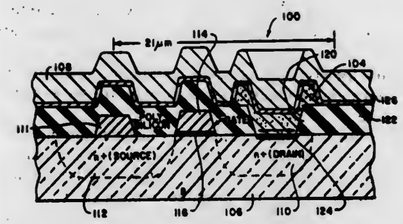
4,499,556
SECURITY ARRANGEMENTS IN DATA TRANSFER EQUIPMENT
John W. Halpern, 14 Belsize Park Gardens, London N.W.3, England
Filed Sep. 5, 1980, Ser. No. 184,377
Claims priority, application United Kingdom, Sep. 7, 1979, 7931208
Int. Cl.³ G06K *19/06*
U.S. Cl. 364—900 **22 Claims**





1. Data transfer equipment comprising at least one storage station for storing data and at least one control station for interaction with the storage station to alter the stored data, the storage station including memory means for holding a reference signal and a test signal and means for transferring said reference signal to said control station, and the control station including a plurality of addressable memory locations into which different test signals can be entered at different times and selection means responsive to a reference signal from the storage to select a test signal stored by the control station and transfer it to the storage station, means for comparing the transferred test signal with the storage-station test signal and for permitting or inhibiting alteration of said stored data in the storage station in accordance with the results of the comparison, said memory locations including at any one time first and second groups of locations, the control station further including means for enabling a test signal held in one of said first group of memory locations and a reference signal representing the address of said one location to be substituted after said comparison for the test signal and reference signal previously held by the memory means in the storage station.

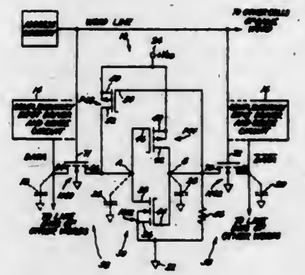
4,499,557
PROGRAMMABLE CELL FOR USE IN PROGRAMMABLE ELECTRONIC ARRAYS
Scott H. Holmberg, Milford, and Richard A. Flasck, Rochester, both of Mich., assignors to Energy Conversion Devices, Inc., Troy, Mich.
Continuation-in-part of Ser. No. 201,594, Oct. 28, 1980, abandoned, and Ser. No. 103,011, Dec. 13, 1979, abandoned. This application Jul. 6, 1981, Ser. No. 281,018
Int. Cl.³ G11C *13/00*
U.S. Cl. 365—163 **37 Claims**



1. An improved programmable cell comprising:
an amorphous cell body, said body including at least a portion having a doped amorphous silicon alloy therein which is settable and non-resettable, said alloy portion having a highly nonconductive state settable into a highly conductive state.

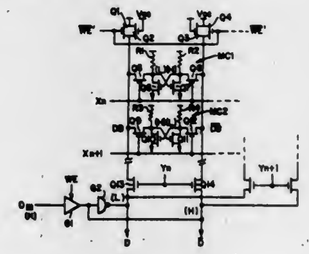
4,499,558
FIVE-TRANSISTOR STATIC MEMORY CELL IMPLEMENTAL IN CMOS/BULK
Moshe Mazin, and William E. Engeler, both of Scotia, N.Y., assignors to General Electric Company, Schenectady, N.Y.
Filed Feb. 4, 1983, Ser. No. 464,099
Int. Cl.³ G11C *11/40*
U.S. Cl. 365—182 **21 Claims**

1. A binary memory cell for connection to a pair of complementary data input/output lines and to an address line carrying cell-enabling signals, said cell capable of storing either of a pair of digital logic states and comprising:
a pair of voltage supply nodes;
a pair of complementary data input/output nodes
a latch for actively storing one of the logic states, said latch including a complementary pair of insulated-gate field-effect transistors, one of said active latch transistors having a channel of one conductivity type arranged to selectively electrically connect one of said data nodes to one of said voltage supply nodes, the other of said active latch transistors having a channel of opposite conductivity type arranged to selectively electrically connect the other of said data nodes to the other of said voltage supply nodes, the gate of said one latch transistor being electrically connected to said other data node, and the gate of said other latch transistor being electrically connected to said one data node;
an active pull-up insulated-gate field-effect transistor having a channel of the opposite conductivity type arranged to selectively electrically connect said one data node to said other voltage supply node, the gate of said active pull-up transistor being electrically connected to said other data node;



a high impedance leakage current discharge path electrically connecting said other data node to said one voltage supply node; and
a gating circuit including a pair of insulated gate field-effect transistors, the channel of one gating transistor arranged to selectively electrically connect said one data node to one of the data lines, the channel of the other gating transistor arranged to selectively electrically connect said other data node to the other data line, and the gates of said gating transistors arranged for connection to the address line for controlling conduction through the channels of said gating transistors.

4,499,559
STATIC RAM WITH BIT-LINE-CHARGING TRANSISTOR
Setsuo Kurafuji, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan
Continuation of Ser. No. 261,876, May 8, 1981, abandoned. This application Jan. 31, 1984, Ser. No. 575,718
Claims priority, application Japan, May 22, 1980, 55-68270
Int. Cl.³ G11C *11/40*
U.S. Cl. 365—190 **9 Claims**



1. A static RAM for performing read and write operations and operatively connectable to receive a write enable signal, comprising:
a plurality of bit line pairs;
a plurality of memory cells connected to each pair of said bit line pairs;
a plurality of bit line load elements, one of which is connected to a respective one of said bit lines;

a plurality of bit-line-charging transistors each having a gate, said plurality of bit-line-charging transistors respectively connected to corresponding ones of said bit lines so that each of said bit-line-charging transistors is connected between a power supply and the corresponding one of said bit lines; and

means, connected to the respective gates of said respective bit-line-charging transistors and connected to receive the write enable signal, for providing a pulse signal whenever the write enable signal changes state at the end of each write operation, said means for providing a pulse signal comprising:

a first inverter having an input connected to receive the write enable signal and having an output;

a second inverter having an input connected to said output of said first inverter and having an output;

a capacitor connected to said output of said second inverter; and

a NOR gate having a first input connected to said output of said second inverter, having a second input connected to said output of said first inverter, and having an output connected to said respective bit-line-charging transistors.

4,499,560

NON-VOLATILE FLIP-FLOP WITH A DYNAMIC RESETTING

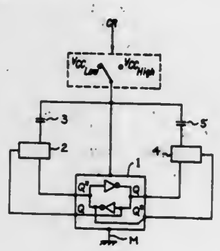
Jean-Michel Brice, Grenoble, France, assignor to E.F.C.I.S., Grenoble, France

Filed Sep. 28, 1982, Ser. No. 425,700

Claims priority, application France, Nov. 20, 1981, 81 21802

Int. Cl.³ G11C *11/40*

U.S. Cl. 365—228 **7 Claims**



1. A non-volatile storing flip-flop with a dynamic resetting comprising a classical MOS transistor flip-flop with complementary nodes Q and Q* connected between a supply voltage and a reference voltage, further comprising at least one storing branch, each of which comprises the serial connection of a non-volatile storing element (electrically programmable threshold voltage MOS transistor) and a capacitor, a terminal of each capacitor being connected to the supply voltage, one of the main terminals and the control terminal of the storing element of the first branch being connected respectively to the node Q and the node Q* and reciprocally as regards the storing elements of the second branch; and further comprising means for modifying the supply voltage between a first level permitting the normal operation of the flip-flop and a second level permitting to condition the storing elements for memorizing the state of the flip-flop, said means also permitting to modify abruptly the power voltage from zero to the first level, thereby automatically resetting the flip-flop in the memorized state.

4,499,561

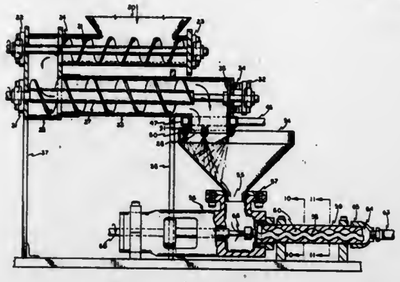
APPARATUS FOR CONTINUOUSLY PRODUCING A DRY MATERIAL AND LIQUID SLURRY

Walter R. Mason, Cincinnati, and Jimmie L. Cummings, Winchester, both of Ohio, assignors to Hoge, Warren, Zimmerman Company, Cincinnati, Ohio

Filed Dec. 6, 1982, Ser. No. 447,491

Int. Cl.³ B01F *15/02*

U.S. Cl. 366—156 **25 Claims**



1. Apparatus for continuously generating a slurry of metered dry hemi-hydrate gypsum and metered water comprising:

means for simultaneously agitating and propelling said metered dry hemi-hydrate gypsum to a removed location;

means for discharging said metered dry gypsum downward into a receptacle means;

means for generally enclosing and confining said discharging gypsum within a sheet or spray of said metered water, whereby said gypsum and said metered water are commingled;

means for converging said commingled hemi-hydrate gypsum and said metered water toward the base of said receptacle;

means for turbulent mixing, said means being in communication with said base of said receptacle means; and

conduit means of at least two meters length communicating with said means for turbulent mixing.

4,499,562

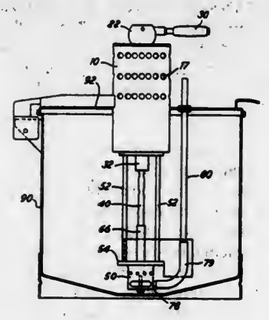
MIXER HAVING WORKHEAD OPERABLE IN MIXING AND PUMPING MODES

John Campolini, and Dennis Khaan, both of London, England, assignors to Coldstream (Engineering) Limited, London, England

Filed Nov. 7, 1983, Ser. No. 549,902

Int. Cl.³ B01F *5/12*

U.S. Cl. 366—264 **7 Claims**



1. A mixer having a work head comprising a rotor rotatable within a stator, the stator having inlet and outlet holes, said outlet holes being arranged in a cylindrical wall of the stator, and the rotor having vanes fitting closely within the stator so

that rotation of the rotor causes liquid to be drawn in through the inlet holes and expelled through the outlet holes thereby effecting mixing of the liquid, characterised in that the cylindrical wall of the stator has an outlet aperture and an outlet tube which communicates with the outlet aperture and extends from the head, and in that the rotor is axially movable relative to the stator between a first position in which the vanes of the rotor move past the outlet holes to effect mixing of the liquid and a second position in which the vanes of the rotor are at the same level as the outlet aperture so that rotation of the rotor causes liquid to be expelled through the outlet tube.

4,499,563

APPARATUS FOR TRANSMITTING DATA FROM A BOREHOLE TO THE SURFACE OF THE EARTH DURING THE OPERATION OF A DRILLING DEVICE

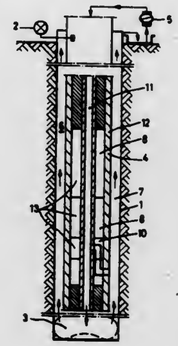
Rainer Jürgens, Altencelle, Fed. Rep. of Germany, assignor to Christensen, Inc., Salt Lake City, Utah

Filed Mar. 25, 1982, Ser. No. 361,704

Claims priority, application Fed. Rep. of Germany, Apr. 4, 1981, 3113749

Int. Cl.³ G01V *1/40*

U.S. Cl. 367—84 **4 Claims**



1. Apparatus for transmitting data from a borehole to the surface of the earth during the operation of a drilling device which comprises a rotary drill bit, a drilling pipe string and a pump conveying a flushing liquid downwards in the flow passage of the drilling pipe string, through the rotary drill bit and upwards in the annular space of the borehole surrounding the drilling pipe string, the apparatus comprising devices disposed in the drilling pipe string to ascertain said data, to convert the data into a sequence of electrical control signals, and to produce pressure pulses in the downwardly directed flow of the flushing liquid, depending on the control signals, said devices being disposed inside chambers surrounding the flow passage of the drilling pipe string and bounded on the outside by an outer tube, said flow passage being a straight passage of constant diameter and normally unrestricted through its length whereby conventional tools can be passed through said apparatus for operation below said apparatus, and said apparatus including a rotatable valve member including a flow passage defined by a boundary wall, operation of said valve being effective to produce said pressure pulses.

4,499,564

PATTERN COMPARISON ULTRASONIC SURVEILLANCE SYSTEM WITH NOISE SUPPRESSION

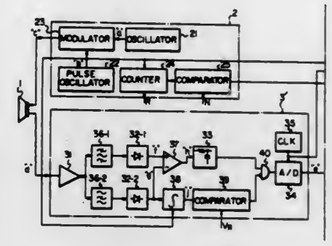
Sirou Sirai, Fukushima, Japan, assignor to Secom Co., Ltd., Tokyo, Japan

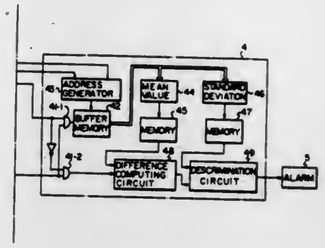
PCT No. PCT/JP80/00188, § 371 Date Jan. 7, 1982, § 102(e) Date Jan. 7, 1982, PCT Pub. No. WO82/00727, PCT Pub. Date Mar. 4, 1982

PCT Filed Aug. 20, 1980, Ser. No. 341,982

Int. Cl.³ G08B *13/16*

U.S. Cl. 367—93 **5 Claims**





1. An ultrasonic surveillance system comprising: transmitter means for transmitting pulse-like ultrasonic waves to an area under surveillance; receiving means for receiving ultrasonic waves reflected from the area under surveillance to convert the reflected ultrasonic waves into electrial signals and for subjecting the electrical signals to analog-to-digital conversion; and an operation processing means for statistically comparing a reflection pattern established by the digital signals sent from said receiving means with reference patterns based upon the area under surveillance when there is no obstacle, to produce an alarm signal when these patterns are not in agreement, characterized in that said receiving means comprises:

a first frequency means for permitting frequencies of said pulse-like ultrasonic waves to pass therethrough;

a second frequency selection means for permitting frequencies other than the frequencies of said ultrasonic waves to pass therethrough;

an analog-to-digital convertor converting the output signal of said first frequency selection means;

an integrator for integrating the output signal of said second frequency selection means; and

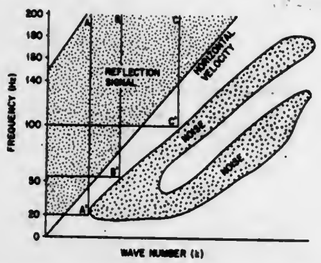
interrupting means for interrupting the signal transmission from said first frequency selection means to said analog-to-digital converter when the output level of said integrator exceeds a predetermined value.

4,499,565

METHOD AND APPARATUS FOR RECORDING BROAD-BAND SEISMIC DATA

James E. Fix, Richardson, and Gary A. Crews, Plano, both of Tex., assignors to Atlantic Richfield Company, Los Angeles, Calif.

Filed Jan. 30, 1980, Ser. No. 110,956
Int. Cl.³ G01V 0/00
U.S. Cl. 367—49 7 Claims



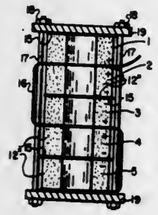
1. A method for enhancing the signal-to-noise ratio of broad-band seismic signals comprising the steps of forming a receiver array consisting of a plurality of subarrays of said receivers, said receivers having preselected natural frequencies varying from one subarray to another, over a desired frequency range, and selecting the respective lengths of said receiver subarrays to provide spatial filtering of coherent noise at or above the natural frequency of the receivers of said respective subarrays.

4,499,566

ELECTRO-CERAMIC STACK

Frank R. Abbott, San Diego, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jan. 21, 1981, Ser. No. 226,668
Int. Cl.³ H04R 17/00
U.S. Cl. 367—165 1 Claim



1. In a transducer for projecting or receiving energy through a water medium including a stack of axially ferroelectric elements each having two parallel faces polarized for axial deformation or to provide signals representative of impinging acoustic energy, an improvement is provided in the conductors interposed between abutting pairs of the parallel faces of adjacent axially aligned elements that impress electric fields and pass the representative signals comprising:

a first integral, one-piece conductor fabricated from a soft lead conductive material that deforms when interposed between every other pair of abutting faces of the axially aligned ferroelectric stack shaped in a sinuous cross-sectional configuration for sinuously interleaving and intimately contacting abutting faces of every other pair of abutting faces of the axially aligned elements the length of the stack;

a second integral, one-piece conductor fabricated from a soft lead conductive material that deforms when interposed between every other pair of abutting faces of the axially aligned ferroelectric stack that are offset one element from the elements that the first integral one-piece conductor is interposed between and shaped in a sinous cross-sectional configuration for sinuously interleaving and intimately contacting abutting faces of every other pair of abutting faces of the axially aligned elements the length of the stack, the first sinuously interleaving integral one-piece conductor and the second sinuously interleaving integral one-piece conductor being orthogonally disposed with respect to one another and the axis of the stack and arranged in a contacting relationship with the axially aligned elements to couple the axially aligned elements electrically in parallel, the integral strips of conductive material are formed with round edges to reduce the possibility of corona and arcing;

end caps on opposite ends of the ferroelectric stack; and

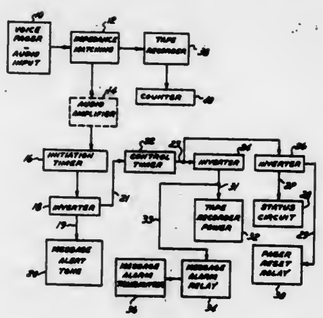
at least one nonconductive rod coupled to the end caps to exert a compressive force on the stack and integral strips of conductive material for compressing the elements and the first sinuously interleaving integral, one-piece conductor and the orthogonally disposed second sinuously interleaving integral, one-piece conductor.

4,499,567

RADIO ACTUATED RECORD CONTROLLER DEVICE

Carl R. Armstrong, 426 W. 3rd St., Apt. 1E, Connersville, Ind. 47331

Filed Jun. 21, 1982, Ser. No. 390,164
Int. Cl.³ H04B 1/00
U.S. Cl. 369—7 3 Claims



1. A control circuit for interconnecting a radio actuated portable voice pager or the like with a record-play-back recorder, the pager operative in a stand-by condition to receive and respond to coded tones from a transmitter to provide an alert pager activating signal which precedes a radio transmitted voice message, said radio transmitted voice message being allotted a defined message time period, said circuit comprising:

an initiation timer;

means operative to couple the alert pager activating signal to the input of said initiation timer means to trigger said initiation timer on;

said initiation timer operative to time-out after the completion of a first predetermined time cycle interval;

control timer means;

means coupling the output of said initiation timer to the input of said control timer means, said coupling means converting the output of said initiation timer into a one-time signal for triggering said control timer means on such that said control timer means starts its predetermined time cycle interval substantially concurrently with said initiation timer time interval;

said control timer means having a second predetermined time cycle interval which is of shorter duration than the duration of the first predetermined time cycle interval;

said second time cycle corresponding to the defined message time period; and

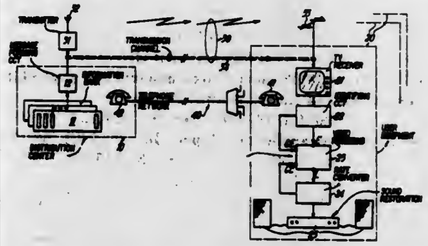
logic means receiving the output from said control timer means for controlling relay means for operating the recorder to record the message being received by the pager only during said control timer means interval, said logic means further operative, upon said control timer means timing out, for resetting the pager to its standby condition.

4,499,568

PROCESS FOR THE TELEDISTRIBUTION OF RECORDED INFORMATION AND A SYSTEM FOR PERFORMING THIS PROCESS

Jacques Gremillet, 2, route de Choisel, 78460 Chevreuse, France

Filed Dec. 13, 1982, Ser. No. 449,199
Claims priority, application France, Dec. 16, 1981, 81 23518
Int. Cl.³ G11B 15/02; H04M 17/02; H04Q 9/00
U.S. Cl. 369—30 9 Claims



1. A process for the remote distribution of recorded information corresponding to sound, said recorded information having a normal speed, wherein it comprises the steps of:

forming an information recording bank, recording being carried out at a speed at least 100 times faster than said normal speed, receiving and identifying calls from subscribers requesting a particular work, forming a message consisting of a preamble constituted by an addressing code to the requesting subscriber, a message body constituted by the information corresponding to requested information and an end of message, transmitting to the requesting subscriber the said message by means of a picture transmission channel having an information flow rate of at least 50 Mbits/s,

recognizing, in equipment housed with the requesting subscriber, the addressing code of said equipment and, in the case of the reception of this code, recording the transmitted message body, after reception of the end of message, reading the recorded message and decelerating the read message in order to give it its normal speed again and restoring the corresponding information on the basis of the decelerated message.

4,499,569

WRITING BEAM FOCUS MONITOR

Eduardo A. Lopez De Romana, Torrance, Calif., assignor to Discovision Associates, Costa Mesa, Calif.

Filed Sep. 7, 1982, Ser. No. 415,501
Int. Cl.³ G11B 7/00
U.S. Cl. 369—45 19 Claims

1. A method for monitoring the focus condition of a writing light beam impinging upon the writing surface of a recording medium, comprising the steps of:

providing a source of high intensity light to form a writing light beam;

directing said light beam through a signal-responsive light beam modulator;

passing the modulated beam from the modulator along a path through a quarter-wave plate and an objective lens to impinge, in focussed condition, incident upon the writing surface of the medium;

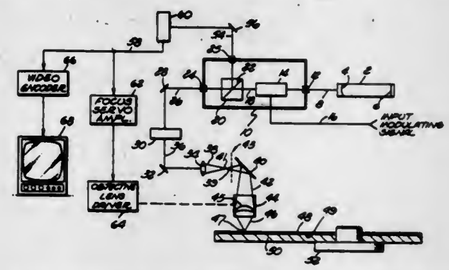
directing the light beam reflected from the medium in a reverse direction along said path through the objective lens, the converging lens, and the quarter-wave plate, and to the modulator;

diverting the reflected light beam reaching the modulator out of the path of the incident writing beam and onto a light sensitive transducer;

sensing the output signal of the transducer to monitor the focus condition of the writing beam at the surface of the medium;

preserving a recording of the profile characteristics of the beam impinging the transducer when the writing beam impinging the surface of the medium is in focus, to define a reference profile; and

when the writing beam impinging the surface of the recording medium is out of focus, adjusting the optics affecting focus of the writing beam on the recording medium until the beam impinging the transducer assumes said reference profile.

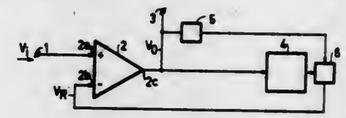


4,499,570

DROPOUT CIRCUIT ARRANGEMENT FOR CONVERTING AN INFORMATION SIGNAL INTO A RECTANGULAR SIGNAL

Kornelis A. Schouhamer Immink, and Ronaldus M. Aarts, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jan. 11, 1982, Ser. No. 338,716
Claims priority, application Netherlands, Nov. 11, 1981, 8105095
Int. Cl.³ G11B 27/36; H04N 5/94
U.S. Cl. 369—48 3 Claims



1. A circuit arrangement for converting an information signal read from a record carrier into a rectangular signal, which arrangement comprises

a threshold-value circuit having a first input for receiving the information signal, a second input for receiving a reference signal, and an output, which threshold-value circuit is adapted to produce a rectangular output signal on its output, whose edges correspond to the instants at which the information signal passes through the value of the reference signal, and

means for generating the reference signal for the threshold-value circuit depending on the information signal being read,

means for detecting dropouts in the information signal being read, and

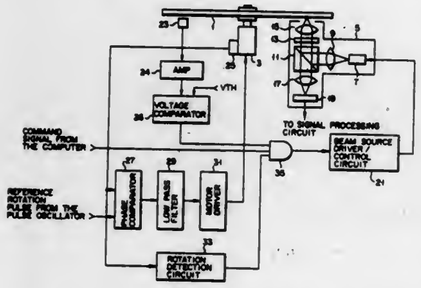
means coupled to said dropout detecting means for maintaining, during the dropout, the reference signal applied to the threshold-value circuit at substantially the value of the reference signal at the beginning of the dropout.

4,499,571

OPTICAL DISK SYSTEM WITH LASER SAFETY ARRANGEMENT

Tsuneshi Yokota, Kawasaki, Japan, assignor to Tokyo Shibaura Denki Kabushiki, Kawasaki, Japan

Filed Apr. 30, 1982, Ser. No. 373,784
Claims priority, application Japan, May 1, 1981, 56-66471
Int. Cl.³ G11B *7/00*
U.S. Cl. 369—54 **6 Claims**



1. An optical disk apparatus having an optical disk, a motor for rotating the disk and an optical head for emitting a laser beam, in which a laser beam illuminates the disk thereby to record data on the disk and read out data from the disk, the improvement comprising:

(a) first detection means for detecting non-rotation of the disk;

(b) second detection means for detecting absence of the disk in a prescribed position; and

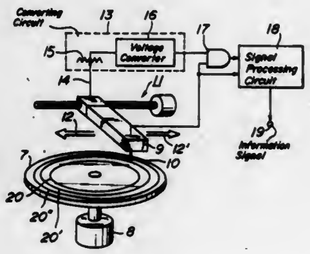
(c) control means electrically connected to the first and second detection means for turning off a laser beam source in response to output signals from the first and second detection means.

4,499,572

METHOD FOR READING INFORMATION OR DEFECT OUT OF ROTATING DISC

Shozi Yoshikawa, Hachioji; Masaharu Sakamoto, Tokyo; Hiroshi Kodama, Hachioji; Kunio Yamamiya, Tokyo; Kiichi Kato, and Ken Ohsima, both of Hachioji, all of Japan, assignors to Olympus Optical Co., Ltd., Japan

Filed Jul. 26, 1982, Ser. No. 402,075
Claims priority, application Japan, Jul. 29, 1981, 56-118647
Int. Cl.³ G11B *7/00*
U.S. Cl. 369—111 **8 Claims**



1. A method of detecting information or defects out of a disc by rotating the disc at a constant angular velocity with respect to a pick-up head which is moved in a radial direction of the disc and scans the disc along spiral or concentric tracks to produce a detection signal, comprising the steps of

detecting a position of the pick-up head above the disc to produce a position signal;

generating in response to said position signal a pulse signal having a frequency which is proportional to a distance from a center of the disc to the pick-up head; and

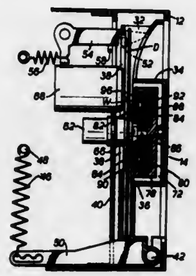
deriving an output signal from the detection signal supplied from the pick-up head under the control of said pulse signal.

4,499,573

DISC ROTATING APPARATUS

Kaoru Morinaga, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Jul. 19, 1982, Ser. No. 399,234
Claims priority, application Japan, Jul. 20, 1981, 56-113248; Jul. 20, 1981, 56-113249; Jul. 20, 1981, 56-113250
Int. Cl.³ G11B *3/60, 25/04, 23/00*
U.S. Cl. 369—270 **14 Claims**



1. An apparatus for rotating a disc comprising:

a turntable adapted for receiving the disc;

clamping means, including a holder and a plunger, for engaging and clamping the disc firmly into cooperation with said turntable when the plunger is in a first position and for permitting the removal of the disc from the turntable when the plunger is in a second position; said holder being positioned opposite to the turntable;

said plunger being adapted to engage the side of the disc opposite to the turntable, being slideable relative to said holder, and being rotatable about its own axis;

a first permanent magnet fixed to a portion of the plunger and magnetic material fixed to the holder and positioned between the turntable and the portion of the plunger to which the permanent magnet is fixed, said first permanent magnet and magnetic material cooperating to create a magnetic clamping force for urging the plunger to slide relative to the holder toward the turntable; and

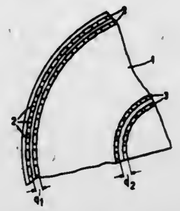
means for creating a revolving magnetic field for rotationally driving said permanent magnet together with said plunger about the plunger's axis, said magnetic field creating means and the permanent magnet cooperating to provide a magnetic motor system serving as a means for rotating the turntable, the disc and the plunger when the plunger is in the first position and the disc is clamped between the turntable and the plunger.

4,499,574

RECORD CARRIER WITH AN OPTICALLY READABLE INFORMATION STRUCTURE

Josephus J. M. Braat, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jun. 7, 1979, Ser. No. 46,419
Claims priority, application Netherlands, Mar. 27, 1979, 7902363
Int. Cl.³ G11B *5/82, 7/06*
U.S. Cl. 369—275 **5 Claims**



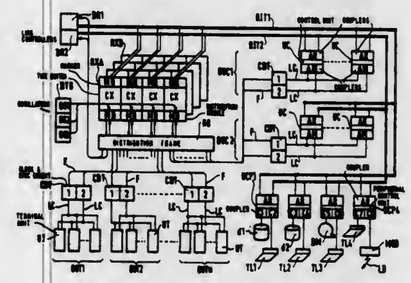
1. A record carrier with an optically readable information structure comprising information areas arranged in a plurality of spaced apart tracks and separated from each other in the track direction by intermediate areas, at least the length of said information areas in the track direction varying in accordance with the information contained therein and the width of said information areas in a direction perpendicular to said track direction being substantially constant, the distance between the tracks in a direction normal to said track direction being dependent on the average length of said information areas such that said distance between tracks increases with decreasing average length of said information areas to thereby reduce cross-talk during reading of the information recorded on said carrier.

4,499,575

GROUP OF TERMINAL UNITS FOR A DIGITAL EXCHANGE

Bernard Dupuis, Montigny Le Bretonneux, and Francois Behague, Gif Sur Yvette, both of France, assignors to Compagnie Industrielle des Telecommunications Cit-Alcatel, Paris, France

Filed Sep. 20, 1982, Ser. No. 420,210
Claims priority, application France, Sep. 18, 1981, 81 17645
Int. Cl.³ H04J *3/00*
U.S. Cl. 370—58 **7 Claims**



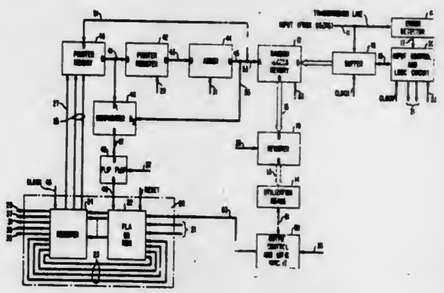
1. A group of terminal units in an exchange which comprises a switching network having four independent planes of time switches controlled by markers, the terminal units being organised into groups connected to the switching network and each terminal unit including a microprocessor and terminals each of which is constituted by some specific piece of exchange equipment the switching network also having distribution modules for distributing clock signals and synchronising signals and control units for controlling and managing the terminal units and the distribution modules, the improvement wherein each group of terminal units comprises two clock and synchronisation circuits each having a time base connected to a distribution module, first and second synchronisation circuits each connected to a plane of the switching network via an outlet link and via a terminal inlet link to the terminal units, and third and fourth synchronisation circuits each connected via an inlet link to each of the planes to which the first and second synchronising circuits are connected and via a terminal outlet link to the terminal units, and wherein the control of a terminal unit by a control unit is performed by interchanging messages between the microprocessors of the terminal unit and the control unit, said interchange taking place over the switching network using a question and answer procedure on one of the time slots on said inlet and outlet links and said terminal inlet and outlet links.

4,499,576

MULTIPLEXED FIRST-IN, FIRST-OUT QUEUES

Alexander G. Fraser, Bernardsville, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Aug. 13, 1982, Ser. No. 407,885
Int. Cl.³ H04J *3/00*
U.S. Cl. 370—60 **3 Claims**



1. Apparatus for temporarily storing a plurality of packets in a plurality of first-in, first-out queues, each of said packets comprising one or more information bits being received on a transmission line as a multiplexed stream of said packets transmitted from a plurality of sources, each of said packets being identified with one of said sources, said apparatus characterized by

means for identifying said source of each of said packets,

means for assigning each of said packets to one of said first-in, first-out queues,

means for storing said packets in said first-in, first-out queues, and

means for indicating when each of said first-in, first-out queues has at least one of said packets stored therein,

said indicating means further comprising

means for registering the change of state in response to said first-in, first-out queue having entered therein at least one of said packets, and

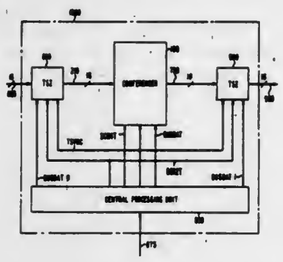
means for periodically and simultaneously reading and storing therein the status of all of said first-in, first-out queues registered in said change of state means.

4,499,577

LINEAR TIME DIVISION MULTIPLEXED CONFERENCER FOR DATA TRANSFER APPLICATIONS

Lawrence Baranyai, Holmdel, and John R. Colton, Freehold, both of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Oct. 18, 1982, Ser. No. 434,822
Int. Cl.³ H04Q *11/04*; H04M *3/56*
U.S. Cl. 370—62 **18 Claims**



1. A system for accepting message samples at an input, said message samples arriving in time slots within a frame, said system comprising

means for selectively summing said message samples of groups of said time slots,

first storage means having a plurality of memory locations for storing each said summed message samples during a first time frame and for supplying said stored summation during a next second time frame,

second storage means having a plurality of memory locations for storing each said summed message samples accepted during said next second time frame and for supplying said stored summation during a next third time frame, and

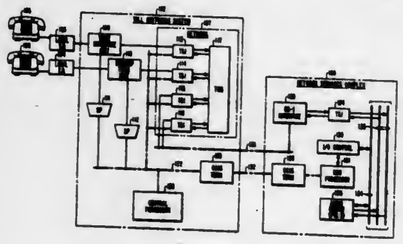
control means operative for supplying said summed message samples respective to a group of time slots to the first occurring time slot of that group of time slots and for supplying the message sample of said first time slot to the other time slots of said respective group of time slots.

4,499,578

METHOD AND APPARATUS FOR CONTROLLING SIGNAL LEVEL IN A DIGITAL CONFERENCE ARRANGEMENT

Mohamed A. Marouf, and Paul W. Vancil, both of Lisle, Ill., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Continuation-in-part of Ser. No. 382,672, May 27, 1982, Pat. No. 4,475,190. This application Oct. 29, 1982, Ser. No. 437,740
Int. Cl.³ H04M *3/56*
U.S. Cl. 370—62 **32 Claims**



1. In a digital conference arrangement having a plurality of ports for receiving information samples each representing the level of a signal, a method for controlling the signal level represented by an information sample to be included in an output sample for distribution to the ports; comprising the steps of:

forming a composite level from the signal levels represented by information samples received on a port,

generating a coefficient in accordance with said composite level,

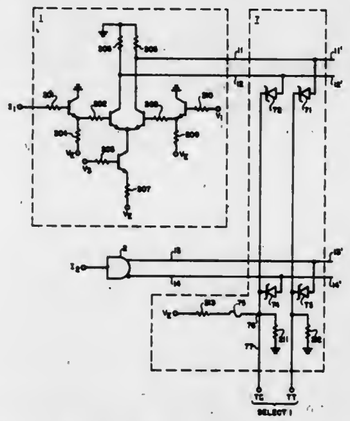
adjusting in accordance with said coefficient the signal level represented by an information sample from the port to be included in an output sample.

4,499,579

PROGRAMMABLE LOGIC ARRAY WITH DYNAMIC TEST CAPABILITY IN THE UNPROGRAMMED STATE

David W. Still, Phoenix, and Peter C. Economopoulos, Scottsdale, both of Ariz., assignors to Honeywell Information Systems Inc., Phoenix, Ariz.

Filed Mar. 10, 1983, Ser. No. 474,070
Int. Cl.³ G01R *31/28*; G06F *11/00*
U.S. Cl. 371—15 **6 Claims**



1. A dynamically testable programmable circuit array having a plurality of input terminals, each input terminal adapted to receive one of a plurality of input signals, comprising:

(a) input buffer means, having a plurality of output terminals and inverted output terminals, said input buffer means operatively connected to said input terminals, for outputting equivalent input signals and inverted input signals, said equivalent input signals forming a first output group and said inverted input signals forming a second output group;

(b) programmable product array means, operatively connected to the output terminals and the inverted output terminals of said input buffer means thereby receiving said equivalent input signals and said inverted input signals, for generating a plurality of product terms;

(c) programmable sum array means, operatively connected to said programmable product array means, for combining said plurality of product terms to generate a plurality of sum terms, each of said plurality of sum terms being an output of said dynamically testable programmable circuit array; and

(d) test means, having a first and second control input terminal adapted to receive a first and second control signal, operatively coupled to the output terminals of said input buffer means, for causing one of said output groups to have a predetermined logic state, said test means including;

(i) a plurality of first circuit component means, each of said first circuit component means operatively connected to a respective output terminal and inverted output terminal of said input buffer means, and further, each of said first circuit component means which is operatively connected to a respective output terminal of said input buffer means being operatively connected to said first control input terminal, and each of said first circuit component means which is operatively connected to a respective inverted output terminal of said input buffer means being operatively connected to said second control input terminal, for causing each of said output terminals and each of said inverted output terminals of said input buffer means to be forced to a first predetermined logic level in response to said first and second control signals, respectively; and

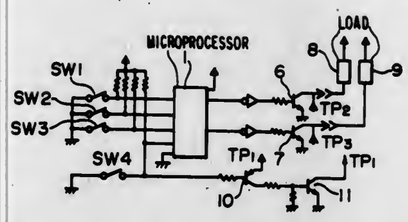
(ii) second circuit component means, operatively connected to one of said control input terminals, for forcing a second predetermined logic level to the respective control input terminal in the absence of the respective control signals, said second predetermined logic level partially enabling the respective inputs of said programmable product array means.

4,499,580

OUTPUT CHECK APPARATUS FOR ELECTROPHOTOGRAPHIC COPIER

Izumi Takahashi; Kenichiro Nakayama; Terumasa Sugiyama, and Takanobu Suzuki, all of Kanagawa, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Jul. 14, 1982, Ser. No. 398,150
Claims priority, application Japan, Jul. 15, 1981, 56-109220
Int. Cl.³ G06F *11/00*
U.S. Cl. 371—17 **4 Claims**



1. Test apparatus for use with an electrophotographic copier control system comprising; sensor means in said copier, a controller receiving inputs from said sensor means and generating outputs for driving plural loads via drive circuits, means for switching said controller to a check mode, check drive circuits having equivalent circuits as said drive circuits, and means for selectively coupling said check drive circuits to said loads, to thereby check the output of said controller.

4,499,581

SELF TESTING SYSTEM FOR REPRODUCTION MACHINE

Dennis E. Mianzo, Fairport; Tuan A. Nguyen, Webster, and Michael T. Dugan, Fairport, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

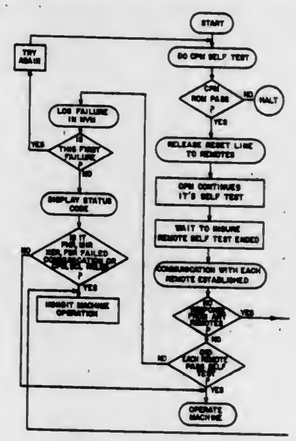
Filed Sep. 21, 1982, Ser. No. 420,967
Int. Cl.³ G06F *11/00*
U.S. Cl. 371—20 **5 Claims**

1. The process of fault checking a reproduction machine having a main controller and plural remote controllers coupled together by a shared communication line through which operating instructions for said machine is transmitted, said machine including display means for visually identifying faults, the steps comprising:

(a) individually testing the operating integrity of said main controller and said remote controllers;

(b) polling said remote controllers by establishing communication between said main controller and said remote controllers when testing of all of said controllers is completed to identify to said main controller any failed remote controller;

(c) when communication by said main controller with said remote controllers cannot be established, attempting to establish communication between at least two of said remote controllers directly with one another to identify whether said communication line or said master controller is at fault;



(d) repeating testing of said controllers in the event a fault is detected in one of said controllers; and

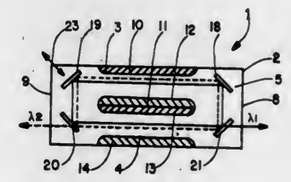
(e) inhibiting operation of said reproduction machine in response to said fault being detected a second time in said one controller when testing of said controllers is repeated or when said communication line is identified as having a fault.

4,499,582

LASER SYSTEM

Heinrich Karning, Albert-Fritz-Str. 6, 6900 Heidelberg; Franz Prein, Tulpenweg 3, 6901 Waldhilsbach, and Karl-Heinz Vierling, Joh.-Seb.-Bach-Str. 46, 6901 Bammental, all of Fed. Rep. of Germany

PCT No. PCT/DE81/00021, § 371 Date Dec. 4, 1981, § 102(e) Date Dec. 4, 1981, PCT Pub. No. WO81/02952, PCT Pub. Date Oct. 15, 1981
PCT Filed Jan. 24, 1981, Ser. No. 329,267
Claims priority, application Fed. Rep. of Germany, Apr. 5, 1980, 3013300; Apr. 5, 1980, 3013301
Int. Cl.³ H01S *3/081*
U.S. Cl. 372—93 **20 Claims**



1. A laser system comprising:

(a) a housing defining a resonator chamber having two opposite ends and sidewalls disposed between said ends;

(b) an electrode system disposed within said housing, comprising:

(i) a center electrode having first and second discharge surfaces for electrical discharge;

(ii) a first outer electrode disposed in facing spaced rela-

tionship to said first discharge surface of said center electrode and

(iii) a second outer electrode disposed in facing spaced relationship to said second discharge surface of said center electrode; and

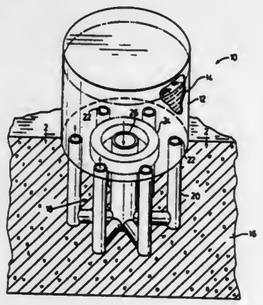
(c) at least four optical elements provided at the ends of said housing, and positioned, configured and dimensioned to form an optical loop, said first and second optical elements being positioned in line with a first channel formed between said first outer electrode and said first discharge surface of said center electrode, and said third and fourth optical elements being positioned in line with a second channel formed between said second outer electrode and said second discharge surface of said center electrode, wherein said optical elements are at least partially reflecting, two of said at least partially reflecting optical elements extracting beams with a wavelength which is a function of the position of said partially reflecting optical elements.

4,499,583

INDUCTION FURNACE

Joseph A. Mulcahy, Brooklin, Canada, assignor to J. Mulcahy Enterprises Incorporated, Whitby, Canada

Filed Jan. 3, 1983, Ser. No. 455,014
Claims priority, application Canada, Dec. 3, 1982, 417009
Int. Cl.³ H05B 6/34
U.S. Cl. 373—161 **9 Claims**



1. A method of induction heating of a body of molten metal in a bath thereof, which comprises:

forming a magnetic field rotating about a generally vertical axis in operative relationship with said body of molten metal, thereby simultaneously electromagnetically inducing:

(1) flow of molten metal which is not electromagnetically heated from the molten metal body and flow of electromagnetically heated molten metal to the molten metal body and

(2) rotational motion of the molten metal in the bath about said generally vertical axis.

4,499,584

DATA VALIDATION MONITOR

Robert F. Howarth, El Cajon, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 26, 1983, Ser. No. 499,030
Int. Cl.³ H04L 1/22
U.S. Cl. 375—58 **14 Claims**

12. A method of improving the validity of data by rejecting spurious signals from a recorder comprising:

providing at least one sensor data channel receiving data from a data source to the recorder;

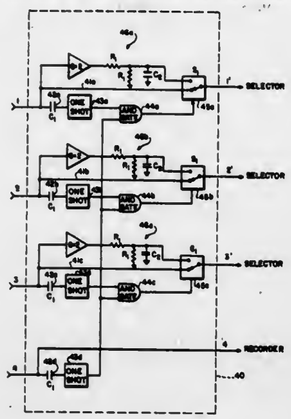
providing a blind data channel adjacent and from the data source to the recorder;

providing a data link to the recorder for the sensor data channel;

generating a sensor channel pulse whenever a signal on the sensor data channel exceeds a predetermined threshold;

generating a blind data channel use whenever a signal on the blind channel exceeds a predetermined threshold;

initiating an interruption of the data link for the duration of



a coincident receipt of the sensor channel pulse and the blind channel pulse;

providing a potential source for the sensor data channel; and

connecting the potential source to the recorder throughout the duration of the coincident receipt; and

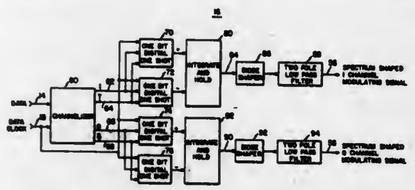
disconnecting the potential source from the recorder and reconnecting the data link to the recorder when the coincident receipt stops.

4,499,585

METHOD AND APPARATUS FOR PRODUCING A SHAPED SPECTRUM MODULATING SIGNAL

William H. Mosley; David E. Sanders, both of St. Petersburg, and Richard E. Roberson, New Port Richey, all of Fla., assignors to E-Systems, Inc., Dallas, Tex.

Filed Oct. 14, 1982, Ser. No. 434,415
Int. Cl.³ H03C 3/04
U.S. Cl. 375—62 **22 Claims**



1. A method for producing a shaped spectrum modulating signal, comprising the steps of:

generating quadrature I and Q channel digital signals derived from an input signal wherein the I and Q channel signals have first and second data states,

detecting transitions between the first and the second data states for each of the I and Q channel signals,

generating first and second data signals from the I and the Q channel signals, respectively, each of the data signals having a positive ramp signal segment upon the detection of a transition from the first data state to the second data state for the corresponding one of the I and the Q channel signals, and each of the data signals having a negative ramp signal segment upon the detection of a transition

from the second data state to the first data state for the corresponding one of the I and the Q channel signals,

low pass filtering the first data signal to produce a shaped spectrum I channel modulating signal, and

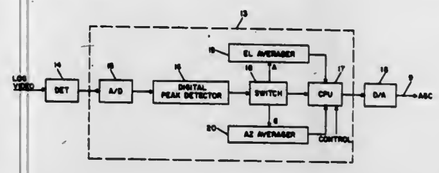
low pass filtering the second data signal to produce a shaped spectrum Q channel modulating signal.

4,499,586

MICROPROCESSOR CONTROLLED AGC

Thomas Cafarella, East Northport, and Mohamed Enein, Northport, both of N.Y., assignors to Hazeltine Corporation, Commack, N.Y.

Filed Feb. 28, 1983, Ser. No. 470,830
Int. Cl.³ H04L 27/08
U.S. Cl. 375—98 **3 Claims**



1. An apparatus for receiving recurring first and second scanning signal comprising:

(a) means for receiving the first and second signals;

(b) means for converting each of the received signals into a corresponding intermediate frequency signal;

(c) a linear amplifier having a controllable gain input, said linear amplifier for amplifying said intermediate frequency signals;

(d) a logarithmic amplifier for amplifying the linearly amplified signals;

(e) means for detecting the logarithmically amplified signals;

(f) an analog-to-digital converter for converting the detected signals into corresponding digital first and second signals;

(g) a digital peak detector for detecting a peak magnitude of said digital first and second signals;

(h) first means for providing a first average peak magnitude signal corresponding to an average of the magnitudes of the detected peaks of the digital signal corresponding to said received first signal;

(i) second means for providing a second average peak magnitude signal corresponding to an average of the magnitudes of the detected peaks of the digital signal corresponding to said received second signal;

(j) means for providing a digital gain control signal in response to the first and second average peak magnitude signals; and

(k) digital-to-analog converter means for converting the first and second digital gain control signals into corresponding analog gain control signals which are applied to the gain control input of said linear amplifier.

4,499,587

COUNTING DEVICE FOR INFORMATION RECORDING-REPRODUCING DEVICE

Isao Harigaya, Kanagawa, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 22, 1981, Ser. No. 304,623
Claims priority, application Japan, Sep. 24, 1980, 55-133195; Sep. 24, 1980, 55-133207
Int. Cl.³ G06M 3/08
U.S. Cl. 377—18 **2 Claims**

1. A counting device for counting the used amount of the recording medium capable of recording and reproducing information such as pictures, voices and so on and of being loaded into or taken out of the information recording or the record reproducing device, comprising:

signal producing means for producing signals in accordance with the running of the recording medium;

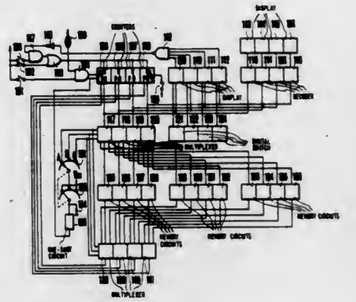
a counter for counting the signals;

display means for displaying the content of the counter;

plural number of memory means for memorizing the content of the counter;

selection means for selecting a memory means to be connected to the counter, whereby display means is changed over from displaying the content of said counter to display the content of a selected memory means when said memory means is connected to said counter;

set means for setting the total usable length of the recording medium;



comparator means for comparing the content of the set means with that of the counter so as to produce a coincidence signal;

means for producing a signal when the recording medium is taken out of the recording device;

means to be operated alone so as to produce a reset signal of the counter; and

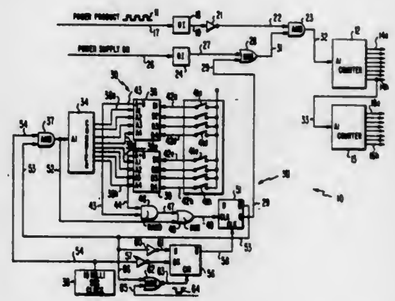
gating means for carrying out the reset operation of the counter either with the logic product of the coincidence signal from the comparator means with the signal produced when the recording medium is taken out of the recording device or with the reset signal.

4,499,588

SYSTEM FOR CONVERTING THE FREQUENCY OF A PULSE TRAIN TO A BINARY NUMBER

Craig E. Deyer, Akron, Pa., assignor to RCA Corporation, New York, N.Y.

Filed Jul. 28, 1982, Ser. No. 402,428
Int. Cl.³ H03K 13/20, 13/256, 21/36
U.S. Cl. 377—42 **6 Claims**



1. A system for converting the frequency of a pulse train to a binary number and providing said binary number to a computer controlled system comprising:

input logic means responsive to said pulse train for providing frequency pulses;

output counter means responsive to said frequency pulses for providing binary numbers representative of the number of frequency pulses received;

timing means for setting sampling time periods;

enabling means for selecting a desired number of said sampling time periods and for enabling said logic means during said sampling time periods whereby said counter means provides said binary number representative of the frequency of said pulse train during said sampling time periods;

said enabling means including comparator means; means for setting said desired number of sampling periods into said comparator, and second counter means responsive to said timing means for providing said sampling periods to said comparator means whereby said comparator means provides an inhibit signal to said logic means between said sampling periods; and

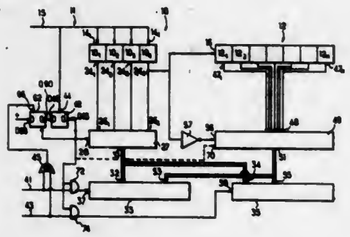
bistable enabling logic arranged between said comparator means and said logic means, whereby said bistable enabling logic enables said logic means during said sampling time periods and inhibits said logic means between sampling time periods.

4,499,589

COUNTER CIRCUIT FOR COUNTING HIGH FREQUENCY PULSES USING THE COMBINATION OF A SYNCHRONOUS AND AN ASYNCHRONOUS COUNTER

Michel Geesen, Antony, France, assignor to Electronique Marcel Dassault, Paris, France

Filed Oct. 19, 1981, Ser. No. 312,477
Claims priority, application France, Oct. 20, 1980, 80 22416
Int. Cl.³ H03K 21/02, 21/08, 21/16
U.S. Cl. 377—55 12 Claims



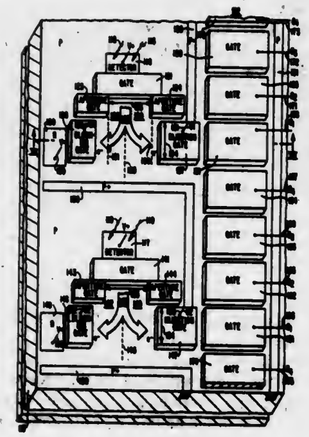
1. A counter circuit adapted to counting high frequency pulses and to being read while counting said pulses, comprising a plurality of pulse counting stages of increasing numerical significance with the lower significance stages connected as a synchronous counter and the higher significance stages connected as a ripple counter, early count signal means for applying a count signal to the ripple counter during each count cycle of the synchronous counter at an instant which is early relative to the synchronous counter cycling from its full count to its empty count, and read means including read timing means connected to read the state of the ripple counter regularly at a predetermined state of the synchronous counter.

4,499,590

SEMICONDUCTOR CIRCUIT FOR COMPRESSING THE DYNAMIC RANGE OF A SIGNAL

Nathan Blazer, Silver Springs, Md., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 327,155, Dec. 3, 1981, abandoned. This application Jan. 14, 1983, Ser. No. 458,223
Int. Cl.³ G11C 19/28; H01L 29/78, 27/14, 31/00
U.S. Cl. 377—60 24 Claims



1. A device for compressing the dynamic range of an input signal comprising:

a semiconductor substrate having a channel doped with impurities for forming a depletion mode channel therein and adapted for receiving charge indicative of said input signal,

a charge barrier across said channel having an aperture of predetermined width for passing charge through said barrier from a first side to a second side of said barrier,

a first region formed in said substrate positioned adjacent said second side of said barrier and to a first side of a center line through said aperture for generating a first electric field having a first potential gradient in said channel as a function of its potential for attracting charge passing through said aperture,

a second region formed in said substrate positioned adjacent said second side of said barrier and to a second side of said center line through said aperture for generating a second electric field having a second potential gradient in said channel as a function of its potential for attracting charge passing through said aperture,

first means for applying a first predetermined potential to said first region at selected times and for electrically isolating said first predetermined potential from said first region at other times to allow said first region to float electrically,

second means for applying a second predetermined potential to said second region,

said first and second predetermined potentials having a voltage sufficient to deplete the channel between said first and second regions of majority charge and to attract charge in said channel through said aperture from said first side to said second side, and

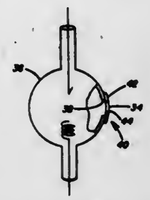
means for generating an output signal indicative of the charge collected on said first region.

4,499,591

FLUOROSCOPIC FILTERING

Gary Hartwell, Rte. 1, Box 260X, Troy, Va. 22974

Filed Nov. 17, 1982, Ser. No. 442,318
Int. Cl.³ A61B 6/00
U.S. Cl. 378—062 12 Claims



1. Apparatus for limiting the radiation dosage to an examination object within a limited photon energy range comprising,

a source of radiation including an X-ray generator for emitting a beam of penetrating radiation toward the examination object,

said X-ray generator having a slot through which said beam of radiation passes,

a radiation beam limiting device positioned on said X-ray generator in overlying relation with said slot,

a protective filter positioned in the path of said beam between said source and the examination object,

said protective filter being supported by said radiation beam limiting device such that the center of the radiation beam emitted from the X-ray generator passes through said protective filter,

said protective filter composed of a material having a preselected critical absorption edge energy operable to obstruct from the beam photon energy below 20 keV and permit a filtered beam having a photon energy above 20 keV to pass through the examination object,

a radiation detector positioned to receive the filtered radiation emerging from the examination object,

said radiation detector being operable to generate an output signal corresponding to the intensity of the emerging filtered radiation, and

image processing means for converting said output signal to a radiographic image displaying the examination object.

4,499,592

X-RAY TUBE HAVING FLASHOVER PREVENTION MEANS

Horst Brettschneider, Tangstedt, and Walter Hartl, Hamburg, both of Fed. Rep. of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 19, 1982, Ser. No. 369,958
Claims priority, application Fed. Rep. of Germany, Apr. 23, 1981, 3116169
Int. Cl.³ H01J 35/16
U.S. Cl. 378—121 6 Claims

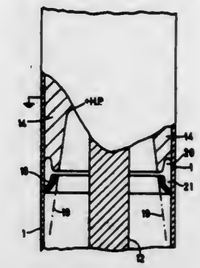
1. An X-ray tube comprising:

(a) an electrically-conductive housing;

(b) an insulator having a cavity at one end, said end including an outer surface, an inner surface defining the cavity, and an end surface extending between the inner and outer surfaces, said end being disposed within and affixed to the housing;

(c) a high-voltage electrode at least partly enclosed within the housing, said high voltage electrode extending into the cavity and being secured to the insulator;

characterized in that said X-ray tube includes a shielding electrode electrically-connected to the housing, said shielding electrode being disposed within the housing such that it is closely-spaced from the end surface of the insulator and being shaped such that it inhibits impingement on the inner surface of the insulator of any electrons emitted by the shielding electrode.

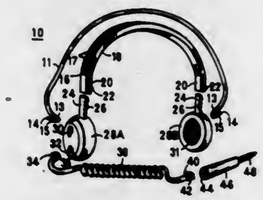


4,499,593

MODULAR STEREO HEADPHONES

Gary W. Antle, 6 Atwood St., Kingston, Mass. 02364

Filed Jul. 25, 1983, Ser. No. 516,745
Int. Cl.³ H04R 5/00
U.S. Cl. 381—25 8 Claims



1. A modular stero headphone apparatus comprising:

a tensioned headband comprising an arcuate member to fit over the top of a wearer's head provided along the length of the headband with a means for removably receiving a length of wire, and at each end of the headband a means for adjustably and removably receiving a headphone;

a headphone adjustably and removably attached to each end of the headband, a first of which headphones is provided with a first receptacle shaped for removably receiving a polarity correct clip wired to a sound transmitting source and a second receptacle shaped for removably receiving a polarity correct clip wired to a second headphone, which second headphone is provided with a single receptacle for removably receiving a polarity correct clip wired to the first headphone and each headphone is provided with a protrusion to fit adjustably and removably into an end of the headband;

a first wire component comprising a signal transmitting conducting wire for each of the two headphones and two grounding wires all within an insulating covering, and at a first end of the first wire component a polarity correct clip which plugs removably into a male connector plug to a sound transmitting source, and at a second end of the first wire component a polarity correct clip which plugs removably into the first receptacle of the first headphone;

a second wire component removably secured to the headband, which second wire component comprises a single signal transmitting conducting wire and a single ground wire within an insulating covering, and at a first end of the second wire component a polarity correct clip which plugs removably into the second receptacle of the first headphone and at a second end of the second wire component a polarity correct clip which plugs removably into the receptacle in the second headphone;

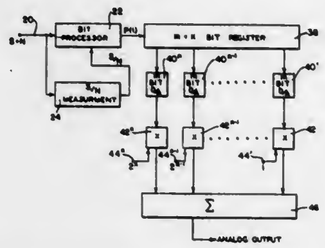
wherein each polarity correct clip comprises a molded body enclosing wires exposed at an end face of the clip and extending eccentrically from the clip body a movable latching means, and each receptacle is provided with a matching removably interlocking latch and each receptacle is provided with wires from sound components to contact the matching clip wires and each receptacle is shaped to receive each clip in only one orientation thereby assuring correct polarity, and wherein each clip is secured to the insulation so that the clip absorbs any tension put on the wire component and the wire contacts are not stressed.

4,499,594

DIGITAL TO ANALOG CONVERTER

Sidney W. Lewinter, Redondo Beach, Calif., assignor to The Aerospace Corporation, Los Angeles, Calif.

Filed Jun. 10, 1982, Ser. No. 386,836
Int. Cl.³ G10L 1/00
U.S. Cl. 381—46 **6 Claims**



1. A method of converting a multibit digital data word into a corresponding analog signal, said method comprising:
measuring an electrical characteristic associated with each bit position in the word;
measuring the signal to noise ratio associated with the word to be converted;
generating a probability value for each bit corresponding to the probability that the bit is a given logical state as a function of the measured signal to noise ratio and the electrical characteristics of the bit; and
using said probability values of the bits as scaling factors for each bit position in the generation of a corresponding analog signal for the digital word thereby reducing potential error.

4,499,595

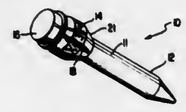
SYSTEM AND METHOD FOR PATTERN RECOGNITION

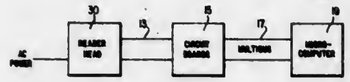
William Massaitis, Castle Hayne, and Robert O. Canada, Wilmington, both of N.C., assignors to General Electric Co., Orlando, Fla.

Filed Oct. 1, 1981, Ser. No. 307,541
Int. Cl.³ G06K 9/68
U.S. Cl. 382—9 **46 Claims**

MICROFICHE APPENDIX INCLUDED
(1 Microfiche, 63 Pages)

1. A system for serially reading out a succession of unknown, discrete line patterns approximately conforming to an expected pattern size, spacing and line width respectively and disposed in approximate alignment along a predetermined pattern on a pattern-carrying medium,
each of said unknown patterns being selected from at least one set of known mutually different patterns;
said system comprising:
means for illuminating said medium:
a light-receiving system including an array of light sensitive devices for sensing diffused light reflected from said path, said array being adapted to generate a plurality of output signals each having an amplitude which is a function of the intensity of light reflected by a corresponding one of a plurality of discrete area elements on the surface of said medium;
means for periodically sampling said output signals of said array, successive samplings of said output signals of said array being representative of the light reflected by successive columns of said discrete area elements on said medium surface, wherein each column is perpendicular to said path;
means responsive to said samplings of said output signals for providing status indications for respective ones of said area elements each representative of the presence or absence of a pattern line in each of said area elements;
first and second storage means;
means for storing said status indications derived from successive samplings of said output signals of said array at addressable memory locations of said first storage means, said stored status indications jointly defining a pattern map of each of said unknown patterns by the position of said status indications on an imaginary grid matrix whose matrix elements correspond to said area elements of said pattern-carrying medium surface;
means for counting said status indications representative of the presence of a pattern line in each of said area elements derived from each of said samplings;
means for determining the running sum of said line-present status indications for M samplings, where M samplings covers a dimension in the path direction which approaches without exceeding the expected pattern dimension in said path direction;
means for storing a predetermined count threshold in said second storage means;





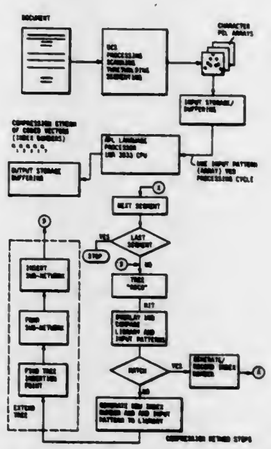
means for comparing the running sum of line-present status indications in the information accumulated from M samplings of said array output signals until first and second running sums are detected which are, in sequence, smaller and greater respectively than said count threshold;
means for accumulating said status indications in said first storage means from a plurality of successive samplings, said plurality of samplings comprising said M samplings whose running sum is greater than said count threshold and N subsequent samplings, where N+M is the number of samplings required to completely cover said succession of unknown patterns;
means for collecting data from said stored status indications;
means for determining the running sum of line-present status indications in said collected data for P samplings, where P is the number of samplings required to cover the maximum expected pattern dimension in said path direction;
means for detecting peaks in said last-recited running sum of line-present status indications;
means for eliminating data collected from said samplings outside a span which asymmetrically straddles a first selected one of said peaks in said path direction, said span measuring $H_1 > P$, said last-recited means being effective to reduce the area for consideration in said grid matrix to a portion of the latter which includes a first unknown pattern corresponding to said first selected peak;
means for locating the centroid of said status indications representative of the presence of a pattern line in each of said area elements in said path direction within said grid matrix portion;
means for locating the centroid of said status indications representative of the presense of a pattern line in each of said area elements in said grid matrix portion in a direction perpendicular to said path;
means for reducing the area for consideration of said grid matrix portion by eliminating data collected outside a span having a dimension of V_1 elements in said perpendicular direction centered on said last-located centroid, where $V_1 > P$;
said centroid-locating and area-reducing means being adapted to carry out at least one further area reduction to locate said first unknown pattern within a grid matrix portion having dimensions in said path direction and said perpendicular direction respectively of H_2 by V_2 elements where $H_1 > H_2 P$, and $V_1 > V_2 > P$;
means including said centroid-locating and area-reducing means for locating the remaining unknown patterns of said succession in identically dimensioned grid matrix portions each of which straddles a separate selected peak whereby the map of each unknown pattern is defined in a separate one of said grid matrix portions;
means for identifying said unknown patterns with reference to known patterns of said set, said identifying means including:
means for storing a pattern map and a care map respectively in said second storage means for each of said known patterns;
means for comparing the pattern map of a first one of said succession of unknown patterns with the pattern map of a first known pattern to determine identities between correspondingly positioned area elements in said compared maps;
means for comparing the identical elements so determined with correspondingly located elements of the care map of said first known pattern to determine identities there between, the number of elements determined to be identical by said last-recited comparing means constituting a correlation index;
means including both said previously recited comparing means for successively comparing said first unknown pattern with the remaining known patterns of said set to provide a correlation index for each such comparison;
means for selecting the largest and second largest ones of said correlation indices;
means for storing in said second storage means respectively, a predetermined correlation threshold, a predetermined minimum difference threshold, and the difference in magnitude between the largest and second largest ones of said correlation indices;
means for comparing said largest correlation index to said correlation threshold;
means responsive to said last-recited comparing means if said correlation threshold is exceeded for comparing said difference in magnitude to said minimum difference threshold;
means responsive to said last-recited comparing means if said minimum difference threshold is exceeded for storing a standard code for said first unknown pattern representative of the known pattern that produced said largest correlation index upon comparison; and
means for storing an error code if either one of said thresholds is larger than the quantity compared thereto;
whereby said system is further adapted to read out the remaining stored for each identified pattern, and an error code is stored for each pattern which remains unidentified.

4,499,596

ADAPTIVE FACSIMILE COMPRESSION USING A DYNAMIC EXTENDABLE DECISION NETWORK

Richard G. Casey, Morgan Hill, and Theodore D. Friedman, San Francisco, both of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 28, 1982, Ser. No. 392,839
Int. Cl.³ G06K 9/62
U.S. Cl. 382—37 **5 Claims**



1. A method for adaptively assigning index numbers to each one of a set of input PEL array patterns in a system formed from a scanner for elucidating input array patterns, a memory for storing pograms and data including a library of at least one pattern, output means, and a processor intercoupling the scanner, memory and output means, and responsive to the programs for operating upon the data, comprising the steps of:
preclassifying an input pattern provided by the scanner according to one of the patterns in the library using color values in the input pattern at each location specified by a decision tree node in order to determine a successor node in a root-to-leaf node direction until terminating in an index number designating a library pattern;
comparing the designated library pattern with the input and either
upon a match, generating an index number and processing the next input pattern; or
upon a mismatch, generaing a new index number, adding the input pattern to the library in the memory, and extending the decision tree; and
processing the next input pattern.

4,499,597

SMALL-OBJECT LOCATION UTILIZING CENTROID ACCUMULATION

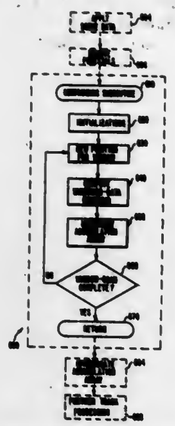
James F. Alves, Chatsworth, Calif., assignor to Hughes Aircraft Company, El Segundo, Calif.

Filed Mar. 29, 1982, Ser. No. 363,318
Int. Cl.³ G06K 9/52
U.S. Cl. 382—41 **4 Claims**

1. In a scene-sensing and imaging system having data-analysis apparatus which includes (a) an array for storing a given pixel-based scene image, (b) window gating networks associated with said image-storage array, and (c) an accumulation array, a method of operating said data-analysis apparatus so as to locate smaller-dimensioned objects in predetermined sectors of said given image, this method comprising the steps of:
(A) utilizing said gating networks both to establish at least one processing window dimensioned with respect to desired small objects in said scene, and then to read out of

said image array each dimensioned-window grouping of pixels in said image sector;

(B) for each such dimensioned-window pixel grouping, determining which pixel is the intra-window image centroid;



(C) utilizing said accumulation array to tabulate the number of times each pixel in said sector is determined to be a windowed-pixel centroid; and then

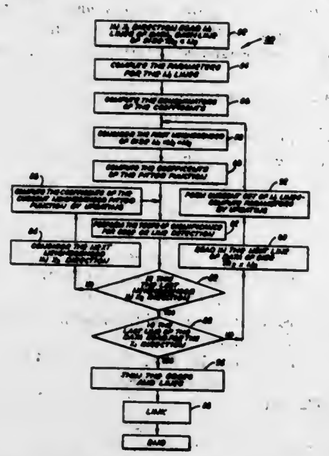
(D) interrogating said accumulation array for a pixel having a high tabulated centroid account, with any such pixel being the location of smaller-demensioned objects in said scene.

4,499,598

EDGE AND LINE DETECTION IN MULTIDIMENSIONAL NOISEY, IMAGERY DATA

Chittibabu Chittineni, Ponca City, Okla., assignor to Conoco Inc., Ponca City, Okla.

Filed Jul. 2, 1982, Ser. No. 394,674
Int. Cl.³ G06K 9/56
U.S. Cl. 382—54 6 Claims



1. A machine process for analysis of multidimensional data for detection of edge and line distinctions, comprising the steps of:

inputting multidimensional digital image data of line dimension $m_1 \times m_2 \times N_3$ wherein m_1 and m_2 are the horizontal coordinate values of a rectangular pixel array and N_3 is the respective vertical coordinate value;

compute parameters for image values for a selected N_1 of said m_1 lines of data of size $m_2 \times N_3$ and determine denominators of coefficients for a fitting hyper surface wherein $N_1 \times N_2 \times N_3$ defines a selected neighborhood of multidimensional pixels within the coordinates $m_1 \times m_2 \times N_3$;

examine a first pixel neighborhood of data of $N_1 \times N_2 \times N_3$ dimension and compute coefficients of the fitting hypersurface;

continue examining and computing said coefficients of the fitting hypersurface for successive, overlapping pixel neighborhoods of $N_1 \times N_2 \times N_3$ across lines N_1 and successively through all sequential lines N_1 of said m_1 lines of data;

perform tests for significance of magnitude and direction of each successive pixel neighborhood $N_1 \times N_2 \times N_3$ to derive edge and line data; and

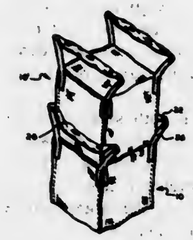
outputting a visual display of selected edge and line data.

4,499,599

STACKABLE FLEXIBLE BULK CONTAINER

Walter J. Polett, and Muriel S. Polett, both of 61 Algonquin Trail, Medford Lakes, N.J. 08055

Filed Jan. 3, 1983, Ser. No. 455,194
Int. Cl.³ B65D 33/02, 33/06, 88/22
U.S. Cl. 383—6 5 Claims



1. A stackable flexible bulk container comprising:

a bag portion including a bottom, a top wall and an encircling side wall connected to said bottom and top wall and defining the outer perimeter of said bag portion;

a pair of lifting strap loops, each of said loops having a pair of ends secured to said bag portion so that said loops can extend above said top wall, and

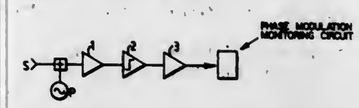
means for maintaining the substantial portion of said loops in an upward position above the level of said top wall and outwardly beyond the outer perimeter of said bag portion, said maintaining means comprising a substantially vertical relatively rigid member associated with each end of each of said loops, each of said rigid members being secured to said bag portion and extending diagonally upwardly above the level of said top wall and outwardly beyond the maximum dimensions of said bottom whereby a second similarly constructed container can be stacked on top of the bag portion without substantially interfering with said loops, each of said loops including a substantially horizontally disposed flexible material bight portion extending between the upper ends of two of said rigid members.

4,499,600

SUPERVISION OF TRANSMISSION SYSTEMS

William H. Powell, Sawbridgeworth, England, and Hugo F. J. Wittera, Berlaar, Belgium, assignors to International Standard Electric Corporation, New York, N.Y.

Continuation of Ser. No. 278,133, Jun. 29, 1981, abandoned. This application Apr. 27, 1983, Ser. No. 487,237
Claims priority, application United Kingdom, Aug. 26, 1980, 8027564
Int. Cl.³ H04B 9/00
U.S. Cl. 455—9 10 Claims



5. A repeater for use in a communications transmission system in which signals propagate in a predetermined direction in a transmission path from a transmitting to a receiving terminal, comprising

at least one component performing a non-linear function on the signal reaching the same in the transmission path;

means for generating a pilot signal and summing the same in the repeater at a point situated ahead of said one component as considered in the predetermined direction with the incoming signal propagating in the transmission path toward said repeater and having a predetermined frequency for combining with said incoming signal prior to the performance of the non-linear function on the combined signal in said one component, said pilot signal having such a frequency that said combined signal has a frequency component close to but different from said predetermined frequency, with attendant phase modulation of the outgoing signal leaving the repeater; and

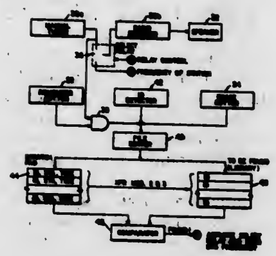
means for transmitting said outgoing phase-modulated signal into the transmission path for propagation toward the receiving terminal without any further change in said outgoing signal at said repeater so that the phase modulation of said outgoing signal is preserved even when the repeater is operating properly and for monitoring the phase of said outgoing phase modulation signal at the receiving terminal.

4,499,601

METHOD AND APPARATUS FOR AUTOMATICALLY DETECTING AND PLAYING DESIRED AUDIO SEGMENTS OVER A BROADCAST RECEIVER.

Gordon H. Matthews, 2420 Trellis, Plano, Tex. 75075

Filed Oct. 18, 1982, Ser. No. 434,868
Int. Cl.³ H03J 7/18; H04B 1/16
U.S. Cl. 455—166 32 Claims



1. A method for detecting and playing desired audio segments over a broadcast receiver comprising:

selecting and storing representations of a first portion of a plurality of desired audio segments being broadcast on a plurality of stations being received by the receiver;

detecting the occurrence of an audio portion that corresponds to one of said stored first portions on one of the plurality of stations being received by the receiver;

switching the receiver to the station upon which the corresponding audio portion is detected, and

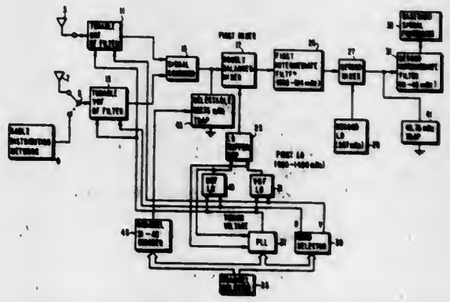
broadcasting the remaining portion of the audio segment on the station over the receiver.

4,499,602

DOUBLE CONVERSION TUNER FOR BROADCAST AND CABLE TELEVISION CHANNELS

Gilbert C. Hermeling, Jr., and Max W. Muterspaugh, both of Indianapolis, Ind., assignors to RCA Corporation, New York, N.Y.

Filed Jun. 28, 1983, Ser. No. 508,595
Int. Cl.³ H04B 1/26
U.S. Cl. 455—180 20 Claims



1. A tuning arrangement capable of tuning broadcast UHF and broadcast and cable VHF RF television signals, each including respective modulated picture and sound carriers, in a substantially continuous frequency range corresponding to respective television channels provided at respective UHF and VHF inputs comprising:

first frequency converter means coupled to said UHF and VHF inputs for converting the RF television signal corresponding to a selected channel to a first intermediate signal in the RF frequency range of a predetermined UHF television channel which is not used for the broadcast transmission of television information;

RF coupling means coupled to said UHF and VHF inputs for coupling said UHF and VHF RF television signals to said first frequency converter;

first filter means;

said RF coupling means and said first frequency converter means being susceptible to coupling the RF signals corresponding to the upper and lower adjacent UHF television channels immediately above and below, respectively, said unused UHF television channel to said first filter means even when another one of said television channels is selected;

said first filter means having a passband filter characteristic selected to pass the picture and sound carriers of said first intermediate signal corresponding to said selected channel but to relatively attenuate the picture carrier of said RF signal corresponding to said upper adjacent UHF television channel for producing a filtered first intermediate signal;

second frequency converter means for converting said filtered first intermediate to a second intermediate signal in a predetermined IF frequency range; and

second filter means having a passband characteristic selected to pass the picture and sound carriers of said second filtered intermediate signal corresponding to said selected

television channel but to relatively attenuate said sound carrier of said RF signal corresponding to said lower adjacent UHF television channel in frequency as converted to said predetermined IF frequency range by said second frequency conversion means for producing a second filtered intermediate signal.

4,499,603

RADIO RECEIVER WITH RECEPTION-READINESS MONITORING FEATURE AND METHOD

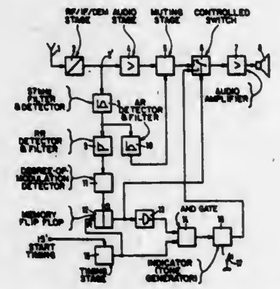
Norbert Eilers, Hildesheim, Fed. Rep. of Germany, assignor to Blaupunkt Werke GmbH, Hildesheim, Fed. Rep. of Germany

Filed Mar. 23, 1983, Ser. No. 478,070

Claims priority, application Fed. Rep. of Germany, Mar. 31, 1982, 3211813

Int. Cl.³ H04B *1/26*

U.S. Cl. 455—205 **6 Claims**



6. In a radio signalling system, in which a radiated carrier wave is frequency modulated with both on intelligence signal and an amplitude modulated subcarrier (57 kHz),

wherein the subcarrier is amplitude modulated, selectively, with a region recognition (RR) frequency signal in a first low frequency range, and an announcement recognition (AR) frequency signal in a second low frequency range,

and wherein when the AR modulation frequency signal is impressed on the sub-carrier, the degree of modulation of the RR frequency signal responsively decreases.

a method comprising the steps of

recognizing the degree of modulation of the RR frequency signal, and providing an RR change output signal if the degree of modulation changes abruptly;

storing a representation of an abrupt change of modulation degree of the RR frequency signal;

detecting the presence or absence of said stored representation within a predetermined time period;

and providing an output indication signal if no such representation is present within the time period.

4,499,604

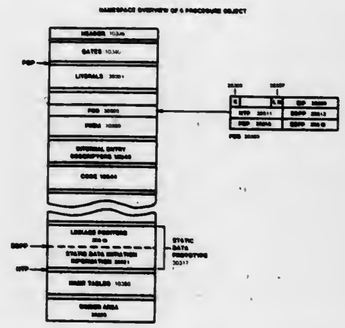
DIGITAL DATA PROCESSING SYSTEM FOR EXECUTING INSTRUCTIONS CONTAINING OPERATION CODES BELONGING TO A PLURALITY OF OPERATION CODE SETS AND NAMES CORRESPONDING TO NAME TABLE ENTRIES

Gerald F. Clancy, Saratoga, Calif.; Ronald H. Gruner, Cary, N.C.; Stephen I. Schleimer, Chapel Hill, N.C.; Craig J. Mundie, Cary, N.C.; Steven J. Wallach, Saratoga, Calif.; Walter A. Wallach, Jr., Raleigh, N.C.; John K. Ahlstrom, Mountain View, Calif.; Michael S. Richmond, Pittsboro, N.C.; David H. Bernstein, Ashland, and Richard G. Bratt, Wayland, both of Mass., assignors to Data General Corporation, Westboro, Mass.

Filed May 22, 1981, Ser. No. 266,423

Int. Cl.³ G06F *9/30*

U.S. Cl. 364—200 **12 Claims**



1. A digital computer system comprising:

(1) memory means for performing memory operations including storing and providing items of data in response to memory operation specifiers, each one of said memory operation specifiers specifying one said memory operation and an address of one said item of data in said memory means, and wherein said items include

(A) instructions, each one of said instructions including an operation code of a plurality of operation codes, said operation codes belonging to a plurality of functionally different operation code sets, said operation codes in a given one of said operation code sets being definable solely with reference to said given operation code set, and certain ones of said instructions further including names representing other said items and

(B) name table entries corresponding to said means, each said corresponding name table entry containing information specifying said address of said item represented by said name to which said name table entry corresponds and

(2) processor means connected to said memory means for processing said items of data and providing said memory operation specifiers to said memory means in response to said instructions, said processor means including

(A) operation code decoding means for decoding said operation code in a current instruction of said instructions to which said processor means is currently responding as required by said operation code set to which said operation code in said current instruction belongs,

(B) name processing means responsive to any said name contained in said current instruction for receiving said name contained in said current instruction and resolving said received name to produce said address of said represented item specified by said corresponding name table entry, and

(C) control means responsive to said operation code decoding means and to said name processing means for controlling operation of said processor means and providing said memory operation specifiers including said address produced by said name processing means to said memory means.

4,499,605

FM-RECEIVER USING A RATIO DETECTOR WITH SILICON DIODES

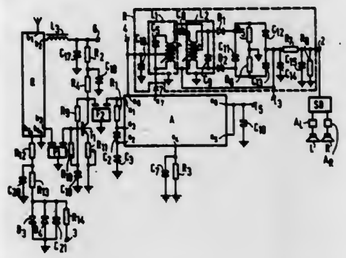
Arnoldus Garskamp, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Oct. 18, 1982, Ser. No. 435,145

Claims priority, application Netherlands, Nov. 13, 1981, 8105147

Int. Cl.³ H04B *1/16*

U.S. Cl. 455—210 **3 Claims**



1. An FM-receiver comprising an FM-channel coupled to an aerial input for receiving an FM signal, the FM-channel comprising in succession an RF-input stage, a mixer stage, an IF-circuit having an IF bandwidth and a ratio detector, the ratio detector including silicon detector diodes for detection of the FM signal and a smoothing capacitor conductively connected to said diodes for a dynamic amplitude limitation of the ratio detector output signal in dependence on the amplitude of the ratio detector input signal, characterized in amplifier means for adjusting the total gain of the FM signal between the aerial input and the ratio detector, and generating an average noise voltage from a noise component of the FM signal within the IF bandwidth, said average noise voltage corresponding to a threshold voltage of the silicon detector diodes, said amplifier means applying the average noise voltage to the silicon detector diodes to produce an average noise current in the silicon detector diodes at least equal to a forward current of the silicon detector diodes, the average noise current producing a d.c. voltage deviating from zero across the smoothing capacitor.

4,499,606

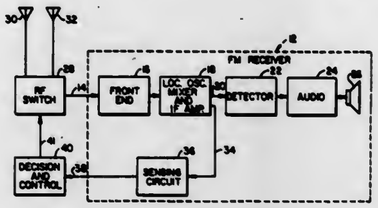
RECEPTION ENHANCEMENT IN MOBILE FM BROADCAST RECEIVERS AND THE LIKE

William R. Rambo, Stanford, Calif., assignor to SRI International, Menlo Park, Calif.

Filed Dec. 27, 1982, Ser. No. 453,470

Int. Cl.³ H04B *7/08, 1/10*

U.S. Cl. 455—277 **28 Claims**



28. In a diversity receiver having at least two antennas, antenna switching means for switching the receiver system from one antenna to the other,

sensing means for producing a control signal related to the amplitude of the received signal, multipath disturbances in the received signal such as frequency selective fading being manifested in said control signal,

means for setting a reference threshold voltage, and

comparing/peak level detector means responsive to the control signal and the reference threshold voltage and having first and second outputs for activating said switching means and for momentarily resetting the reference threshold voltage to a level related to the control signal, respectively.

4,499,607

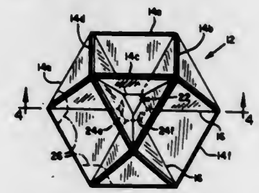
GEOMETRICALLY-INTEGRATED ARCHITECTURE OF MICROCIRCUITS FOR HIGH-SPEED COMPUTERS

David M. Higgins, 346 Palouse, Walla Walla, Wash. 99362

Filed Sep. 13, 1982, Ser. No. 417,508

Int. Cl.³ H04B *9/00*

U.S. Cl. 455—606 **20 Claims**



1. An electronic circuit chip for use in combination with a second said chip in a circuit physically configured as a geometrical solid, the chip comprising:

a planar substrate having a broad face and a straight edge face;

an electronic circuit on the broad face; and

connecting means disposed along the edge face for electrically connecting the circuit to a second circuit on the second chip;

said edge face being formed to mate with a complementary edge face of said second chip to interconnect said chips edge to edge at an angle such that the broad faces of the chips are angularly spaced apart and vertices orient towards the center of said geometrical solid.

4,499,608

TERMINAL DEVICE HAVING CLOSED CHAMBER COMMUNICATIONS BETWEEN FUNCTIONAL UNITS

Eric C. Broockman; Robert T. Cato, both of Raleigh, and Robert C. Lynch, Cary, all of N.C., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 12, 1983, Ser. No. 457,531

Int. Cl.³ H04B *9/00*

U.S. Cl. 455—607 **16 Claims**

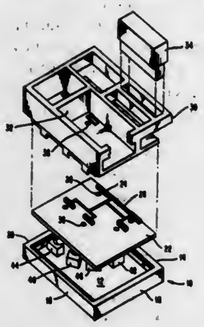
1. A data processing terminal characterized by:

a substantially enclosed chamber having interior walls;

a plurality of functional units mounted outside the substantially enclosed chamber, each of said functional units having a transducer for injecting radiation into and for receiving radiation from the chamber through optical openings in a first wall thereof; and

a plurality of radiation reflectors extending from a second wall toward the first wall, with the transducer for each functional unit being placed at the focal point of the re-

spective reflector whereby said reflectors direct injected radiation along predetermined paths within the chamber



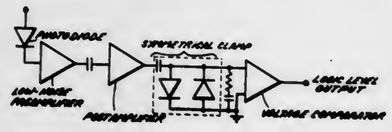
so that absorption and scattering losses resulting from multiple reflections are being minimized.

4,499,609

SYMMETRICALLY CLAMPED FIBER OPTIC RECEIVER

Willis M. Muska, Roanoke, Va., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Continuation of Ser. No. 181,585, Aug. 27, 1980, abandoned.
This application Feb. 28, 1983, Ser. No. 470,755
Int. Cl.³ H04B 9/00
U.S. Cl. 455—619 6 Claims



1. An optical receiver comprising

photodetector means operative for converting a received optical signal into an electrical output signal;

fixed gain amplifying means for amplifying said output signal of said photodetector means and issuing an amplified output signal;

complementary clamping means having an input receiving said amplified output signal of said amplifying means and an output, and operative for clamping said amplified output signal to a respective one of two potential levels depending on whether said amplified output signal is above or below a predetermined potential level situated intermediate said two two potential levels and for issuing a clamped output signal at said output thereof; and

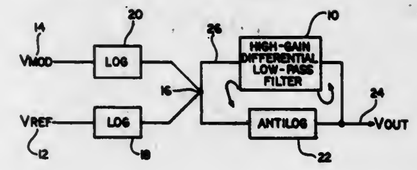
means for quantizing said clamped output signal of said complementary clamping means.

4,499,610

FEEDBACK SYSTEM WITH AUTOMATIC GAIN CONTROL ACTION

Thomas W. Miltenberger, Grayslake, Ill., assignor to Gould Inc., Rolling Meadows, Ill.

Filed Jun. 30, 1983, Ser. No. 509,751
Int. Cl.³ H04B 9/00
U.S. Cl. 455—619 4 Claims



1. A feedback device for cancelling low-frequency noise from a reference signal and a high frequency modulated signal from a monitoring device wherein said modulated signal and/or said reference signal is further modulated by a low-frequency modulation signal, comprising:

first means for receiving said reference and said modulated signals and for producing a first signal which is a logarithmic value of one of said reference signal or said modulated signal and a second signal which is a negative logarithmic value of the other of said reference signal or said modulated signal; and

a summing junction operatively connected to said first means, said summing junction receiving said first and second signals from said first means and producing a logarithmic difference signal therefrom; and

a feedback loop in electrical connection with said summing junction, said loop having an antilog means for receiving at least said logarithmic difference signal and producing an antilog signal therefrom, and a high-gain differential, low-pass filter for receiving said antilog signal on an input thereof and filtering any high-frequency portion contained therein to present a third signal to said summing junction, said third signal being out of phase with said logarithmic difference signal by 180 degrees;

wherein said antilog signal is an output signal which is related to the ratio of said modulated signal to said reference signal and wherein any low frequency modulation in said modulated and/or reference signals has been substantially removed from said output signal so that the high frequency modulated signal can be measured.

DESIGN PATENTS

GRANTED FEB. 12, 1985

ERRATA

For CLASS	See PATENT NO.
D07–405	277,523
D34–017	277,532
D13–003	277,541

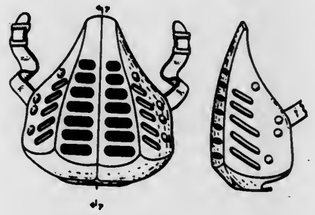
DESIGNS

FEBRUARY 12, 1985

277,519
WEIGHTLIFTER'S VEST
Ira J. Silberman, Opelika, Ala., assignor to Diversified Products Corporation, Opelika, Ala.
Filed Sep. 29, 1982, Ser. No. 428,366
Term of patent 14 years
U.S. Cl. D2—27

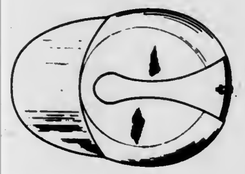


277,520
FACE GUARD
John R. Gregory, 303 W. 35th St., Suite C, National City, Calif. 92054
Filed Sep. 30, 1982, Ser. No. 429,560
Term of patent 14 years
U.S. Cl. D2—233



277,521
CAP STRETCHER
Victor B. Nasby, P.O. Box 127, Waldron, Ind. 46182
Filed Jul. 12, 1982, Ser. No. 397,541
Term of patent 14 years
U.S. Cl. D2—262

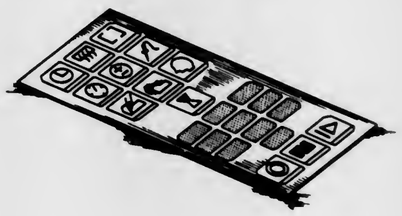




277,522
PROTECTIVE CONTAINER FOR A COMPUTER FLOPPY DISK
Joseph Pritzker, 15016 San Feliciano Dr., La Mirada, Calif. 90638
Filed Aug. 9, 1982, Ser. No. 406,399
Term of patent 14 years
U.S. Cl. D3—35



277,523
LABEL FOR A MICROWAVE OVEN CONTROL PANEL
Joo H. Kim, Seoul, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Kyungki, Rep. of Korea
Filed Aug. 30, 1982, Ser. No. 413,088
Claims priority, application Rep. of Korea, Mar. 20, 1982, 1982-2422
Term of patent 14 years
U.S. Cl. D7—405



277,524
FLOOR BRUSH
Matthew D. Kubick, Poland, N.Y., assignor to Perfex Corporation, Poland, N.Y.
Filed Nov. 17, 1982, Ser. No. 442,279
Term of patent 14 years
U.S. Cl. D4—134



277,525
CHAIR
Randall P. Buhk, Wyoming; Kenneth W. Honeski, Grandville, and Alex Karrip, Grand Rapids, all of Mich., assignors to Steelcase Inc., Grand Rapids, Mich.
Filed Nov. 5, 1979, Ser. No. 91,540
The portion of the term of this patent subsequent to Feb. 8, 1997, has been disclaimed.
Term of patent 14 years
U.S. Cl. D6—366



277,526
VEHICLE SEAT OR THE LIKE
Thomas H. White, Issaquah, Wash., assignor to The Boeing Company, Seattle, Wash.
Filed Sep. 29, 1982, Ser. No. 426,496
Term of patent 14 years
U.S. Cl. D6—356



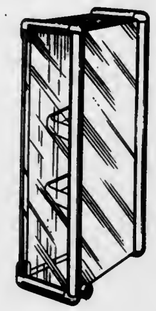
277,527
SEAT
Gianbattista Giudici, Seveso, Italy, assignor to Altena Salotti S.n.c., Cabiate, Italy
Filed Sep. 3, 1982, Ser. No. 414,684
Claims priority, application Italy, Mar. 9, 1982, 21079/82[U]
Term of patent 14 years
U.S. Cl. D6—379



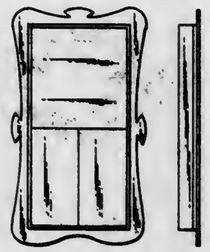
277,528
TISSUE PAPER HOLDER
Polyn Spirtos, 11939 Gorham Ave., Los Angeles, Calif. 90049
Filed Feb. 22, 1983, Ser. No. 468,335
Term of patent 14 years
U.S. Cl. D6—518



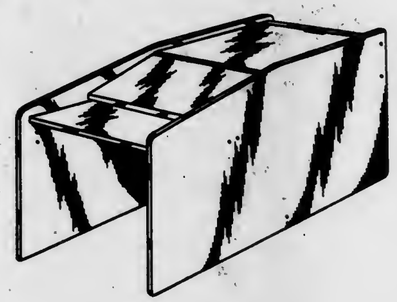
277,529
MIRROR CABINET
Winfried Scholl, Düsseldorf, Fed. Rep. of Germany, assignor to Hewi GmbH, Arolsen, Fed. Rep. of Germany
Filed Sep. 11, 1981, Ser. No. 301,435
Term of patent 14 years
U.S. Cl. D6—561



277,530
WALL MOUNTED BAR
Dunstan R. Hutchinson, 318 Carteret Ter., Orange, N.J. 07050
Continuation-in-part of Ser. No. 256,979, Apr. 23, 1981, abandoned. This application Jan. 3, 1984, Ser. No. 567,935
Term of patent 14 years
U.S. Cl. D6—561



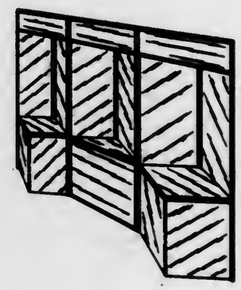
277,531
VISUAL DISPLAY UNIT DESK
Kenneth R. Moon, 140-150 Lambton Quay, Wellington, New Zealand
Filed Aug. 3, 1981, Ser. No. 289,131
Claims priority, application New Zealand, Feb. 16, 1981, 16968
Term of patent 14 years
U.S. Cl. D6—420



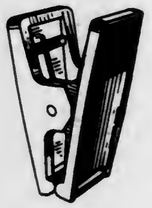
277,532
MOBILE DISPLAY COUNTER
Jean-Pierre Duhamel, 10 Deneuve St., Ville Lorraine, Quebec, Canada (J6Z 1W9)
Filed Jun. 14, 1982, Ser. No. 387,806
Term of patent 14 years
U.S. Cl. D34—17



277,533
DISPLAY STAND
Melvin M. Miller, Bloomington, Ind., assignor to Channel-Kor Systems Inc., Bloomington, Ind.
Filed Jun. 18, 1982, Ser. No. 389,578
The portion of the term of this patent subsequent to Dec. 11, 1998, has been disclaimed.
Term of patent 14 years
U.S. Cl. D6—470



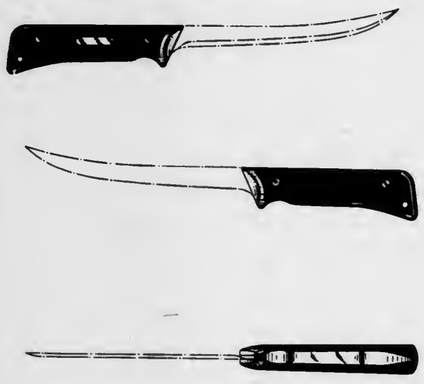
277,534
GARMENT CLIP
John Warmath, Brooklyn, N.Y., assignor to S.M.S. Plastics Corp., Chicago, Ill.
Filed Aug. 31, 1983, Ser. No. 528,037
Term of patent 14 years
U.S. Cl. D6—328



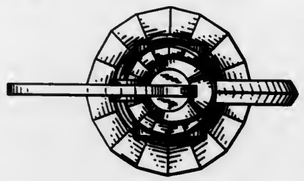
277,535
MUG
Dick G. Langer, 1001 Main St., Venice, Calif. 90291, and Charles H. Feltman, 943½ 17th St., Santa Monica, Calif. 90403
Filed Nov. 15, 1982, Ser. No. 441,616
Term of patent 14 years
U.S. Cl. D7—9

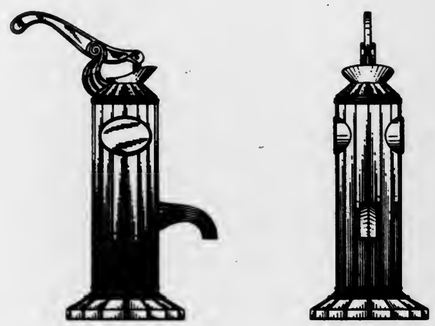


277,536
KNIFE HANDLE
Albert Baer, New York, N.Y., assignor to Imperial Knife Associated Companies, Inc., New York, N.Y.
Filed Nov. 8, 1982, Ser. No. 439,794
Term of patent 14 years
U.S. Cl. D7—152

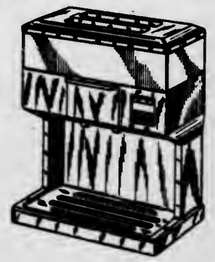


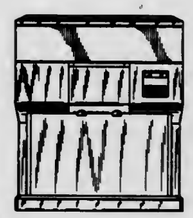
277,537
PUMP DISPENSER FOR A BEVERAGE OR THE LIKE
Milton J. Merl, New York, N.Y., and Maurice Ascouline, Shelton, Conn., assignors to Marlboro Marketing Incorporated, New York, N.Y.
Filed Jun. 21, 1982, Ser. No. 390,589
Term of patent 14 years
U.S. Cl. D7—301





277,538
COFFEE MAKER
Alister Jack, Grijpskerk, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.
Filed May 17, 1982, Ser. No. 378,561
Claims priority, application Benelux, Nov. 25, 1981, 56322-00
Term of patent 14 years
U.S. Cl. D7—309







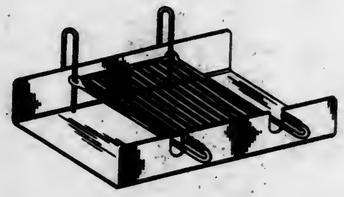
277,539
COFFEE MAKER
Marten F. Elkerbout, Peine, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.
Filed Jun. 28, 1982, Ser. No. 393,202
Claims priority, application Benelux, Jan. 6, 1982, 56438-01
Term of patent 14 years
U.S. Cl. D7—309



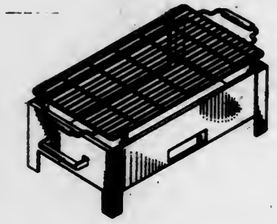




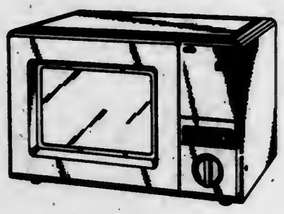
277,540
BARBECUE GRILL OR THE LIKE
Robert J. Thomas, and Craig R. Thomas, both of Cherokee, Iowa, assignors to R. J. Thomas Manufacturing Company, Cherokee, Iowa
Filed Apr. 1, 1982, Ser. No. 364,503
Term of patent 14 years
U.S. Cl. D7—337



277,541
CHARCOAL BARBECUE GRILL
Henry M. Espinda, 2413 Aniania St., Pearl City, Hi. 96782
Filed Nov. 19, 1982, Ser. No. 443,152
Term of patent 14 years
U.S. Cl. D13—3



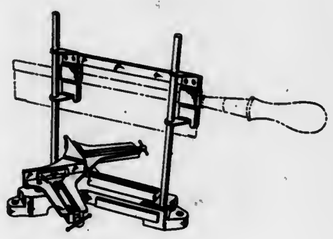
277,542
MICROWAVE OVEN
Taiji Nanbe; Akira Takebata, and Shigefumi Inoue, all of Nara, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed May 5, 1982, Ser. No. 375,257
Claims priority, application Japan, Dec. 9, 1981, 56-54753
Term of patent 14 years
U.S. Cl. D7—351



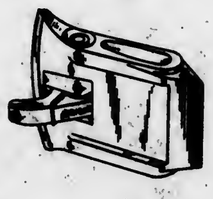
277,543
BOTTLE OR SIMILAR ARTICLE
Serge Mansau, Paris, France, assignor to Lever Brothers Co., New York, N.Y.
Filed Jun. 3, 1982, Ser. No. 384,464
Claims priority, application France, Dec. 1, 1981, 814124
Term of patent 14 years
U.S. Cl. D9—370



277,544
MITRE BOX WITH CORNER CLAMPS
Joseph P. DeCarolis, Bristol, Conn., assignor to The Stanley Works, New Britain, Conn.
Filed Mar. 22, 1982, Ser. No. 360,070
Term of patent 14 years
U.S. Cl. D8—71



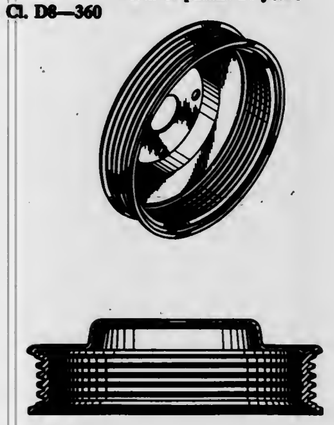
277,545
WOOD-SPLITTING AXE
F. Craig Newmeyer, Niles, and Keith E. Dunbar, Cortland, both of Ohio, assignors to Warren Tool Corporation, Warren, Ohio
Filed Mar. 8, 1982, Ser. No. 356,129
Term of patent 14 years
U.S. Cl. D8—76



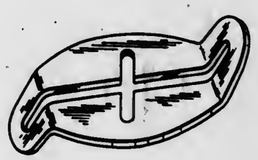
277,546
TABLE SKIRT MOUNTING CLIP
Carmen Trotta, Oak Brook, Ill., assignor to Midwest Marko, Inc., Chicago, Ill.
Filed May 5, 1982, Ser. No. 374,966
Term of patent 14 years
U.S. Cl. D8—349



277,547
POLY-V PULLEY
Yukio Kanemitsu, Kobe, Japan, assignor to Goshi Kaisha Kanemitsu Doko Yosetsu-Sho, Japan
Filed Jun. 8, 1982, Ser. No. 386,299
Claims priority, application Japan, Dec. 16, 1981, 56-55943
The portion of the term of this patent subsequent to Jan. 4, 1997, has been disclaimed.
Term of patent 14 years
U.S. Cl. D8—360



277,548
CHAIN CONNECTOR
Odd Halsnes, Mästad, 1866 Bästad, Norway
Filed Nov. 5, 1982, Ser. No. 439,428
Claims priority, application Norway, May 7, 1982, 62921
Term of patent 14 years
U.S. Cl. D8—499



277,549
SPRAY DISPENSER
Carlos M. Martinez, Barcelona, Spain, assignor to Monturas Y Fornituras, S.A., Barcelona, Spain
Filed Jul. 2, 1982, Ser. No. 394,512
Claims priority, application Spain, Feb. 9, 1982, 101146
Term of patent 14 years
U.S. Cl. D9—300



277,550
JAR
Paul R. Campbell; Robert E. Dilgard, Jr., and William J. O'Neil, Jr., all of Cincinnati, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio
Filed Sep. 13, 1982, Ser. No. 416,806
Term of patent 14 years
U.S. Cl. D9—349



277,551
BOTTLE
Jayne K. Kerr, Toledo, Ohio, assignor to Brown-Forman Distillers Corporation, Louisville, Ky.
Filed Jan. 11, 1983, Ser. No. 457,303
Term of patent 14 years
U.S. Cl. D9—367



277,552
CONTAINER FOR LIQUIDS
Edmard R. König, Oberwil, Switzerland, assignor to Ciba-Geigy AG., Basel, Switzerland
Filed May 10, 1982, Ser. No. 376,880
Claims priority, application Switzerland, Nov. 19, 1981, DM/001027
Term of patent 14 years
U.S. Cl. D9—376



277,553
DISPENSING CARTON FOR SHEET MATERIAL
John M. Ito, Cheltenham, Canada, and James D. Cotton, Livonia, Mich., assignors to Kimberly-Clark Corporation, Neenah, Wis.
Filed Apr. 1, 1982, Ser. No. 364,388
Term of patent 14 years
U.S. Cl. D9—416



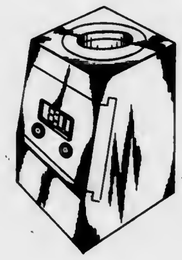
277,554
BOTTLE CARRIER
Jean-Marie Chabot, St-Damien, Canada, assignor to Les Industries Provinciales Ltee., St-Damien, Canada
Filed Jul. 26, 1982, Ser. No. 401,907
Term of patent 14 years
U.S. Cl. D9—434



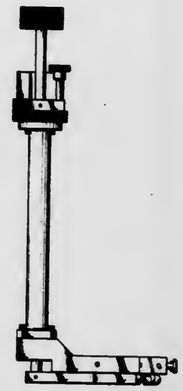
277,555
FORM FOR SUPPORTING PLASTIC BAGS
John W. Pattillo, 1038 Lancelot Dr., Norcross, Ga. 30071, and William S. Pritchard, 1011 McLynn Ave., Atlanta, Ga. 30306
Filed Aug. 25, 1982, Ser. No. 411,288
Term of patent 14 years
U.S. Cl. D9—434



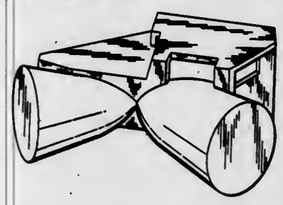
277,556
COMBINED CLOCK AND PAPER CLIP HOLDER
Chris J. Pappas, Grand Rapids, Mich., assignor to Comus, Inc., Grand Rapids, Mich. and Vosca Corporation, Taipei, Taiwan
Filed Dec. 27, 1982, Ser. No. 453,532
Term of patent 14 years
U.S. Cl. D10—2



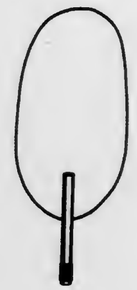
277,557
BORE GAUGE
Joseph W. Lenceski, Greenfield, Ind., assignor to Standard Locknut & Lockwasher Inc., Indianapolis, Ind.
Filed Jul. 19, 1982, Ser. No. 399,835
Term of patent 14 years
U.S. Cl. D10—73



277,558
SMOKE DETECTING PHOTOELECTRIC SENSING CHAMBER
John Mallory, Mississauga, Canada, assignor to Isotec Industries Limited, Toronto, Canada
Filed Jan. 24, 1983, Ser. No. 460,396
Term of patent 14 years
U.S. Cl. D10—106



277,559
NECKLACE OR SIMILAR ARTICLE
Laura J. Mackie, 2620 Oxford, Troy, Mich. 48084
Filed Aug. 16, 1982, Ser. No. 408,069
Term of patent 14 years
U.S. Cl. D11—6



277,560
FIGURINE OF A SPANIEL DOG
Jesus A. Carbajales Santa-Eulalia, and Javier B. Carbajales Santa-Eulalia, both of Montevideo, Uruguay, assignors to John J. Madison Company, Inc., Laguna Hills, Calif.
Filed Sep. 21, 1981, Ser. No. 303,981
Term of patent 14 years
U.S. Cl. D11—158

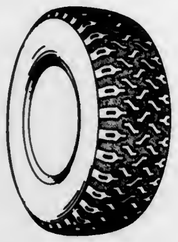




277,561
WHEELED WALKER
Ronald Erfurth, 880 N. Main St., Oregon, Wis. 53575
Filed Mar. 29, 1982, Ser. No. 362,758
Term of patent 14 years
U.S. Cl. D12—130



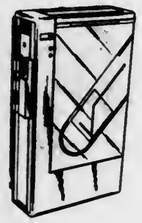
277,562
VEHICLE TIRE
Junichi Kawajiri; Toshio Hayakawa, both of Tokyo, and Hideaki Nishio, Saitama, all of Japan, assignors to Bridgestone Tire Company, Ltd., Tokyo, Japan
Filed Jun. 23, 1982, Ser. No. 391,336
Claims priority, application Japan, Dec. 23, 1981, 56-56642
Term of patent 14 years
U.S. Cl. D12—149



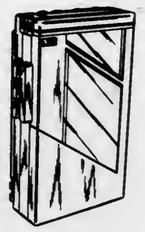
277,563
COMBINED RADIO RECEIVER AND TAPE RECORDER
Shinzo Murakami, Osaka; Katsutoshi Kido, Kyoto, and Benito Mishiro, Osaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Oct. 20, 1982, Ser. No. 435,445
Claims priority, application Japan, Apr. 20, 1982, 57-17203
Term of patent 14 years
U.S. Cl. D14—5



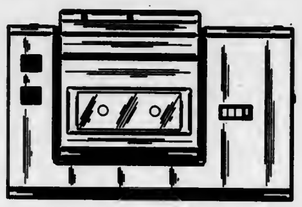
277,564
COMBINED TAPE RECORDER AND RADIO RECEIVER
Akio Ohno, and Masanori Hamada, both of Osaka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Nov. 12, 1982, Ser. No. 441,012
Claims priority, application Japan, May 12, 1982, 57-20685
Term of patent 14 years
U.S. Cl. D14—5



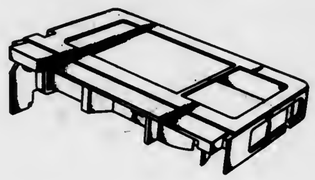
277,565
COMBINED TAPE RECORDER AND RADIO RECEIVER
Shinzo Murakami, Osaka, and Katsutoshi Kido, Kyoto, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Nov. 12, 1982, Ser. No. 441,328
Claims priority, application Japan, May 12, 1982, 57-20684
Term of patent 14 years
U.S. Cl. D14—5



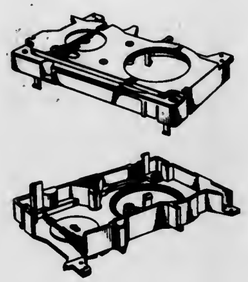
277,566
TAPE RECORDER
Naoki Wada; Tomitaro Saito, and Takeo Hashiba, all of Osaka, Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan
Filed Jun. 18, 1982, Ser. No. 389,961
Claims priority, application Japan, Dec. 29, 1981, 56-57943
Term of patent 14 years
U.S. Cl. D14—6



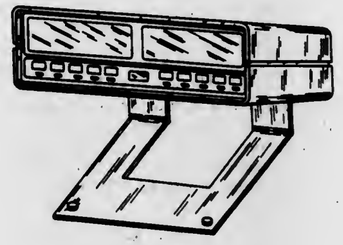
277,567
VIDEO TAPE CASSETTE UPPER HALF CASING
Haruki Ogata, Sagamihara, and Kimio Ogawa, Yokohama, both of Japan, assignors to Victor Company of Japan, Limited, Yokohama, Japan
Filed Nov. 10, 1982, Ser. No. 440,711
Claims priority, application Japan, May 20, 1982, 57-22012
Term of patent 14 years
U.S. Cl. D14—11



277,568
VIDEO TAPE CASSETTE LOWER HALF CASING
Haruki Ogata, Sagamihara, and Kimio Ogawa, Yokohama, both of Japan, assignors to Victor Company of Japan, Limited, Yokohama, Japan
Filed Nov. 10, 1982, Ser. No. 440,712
Claims priority, application Japan, May 20, 1982, 57-22013
Term of patent 14 years
U.S. Cl. D14—11

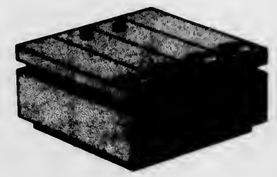


277,569
HOUSING FOR A BUSY LAMP DISPLAY UNIT
Thomas Georgopulos, Clearwater, Fla., assignor to GTE Automatic Electric Inc., Northlake, Ill.
Filed Sep. 1, 1982, Ser. No. 413,932
Term of patent 14 years
U.S. Cl. D14—59

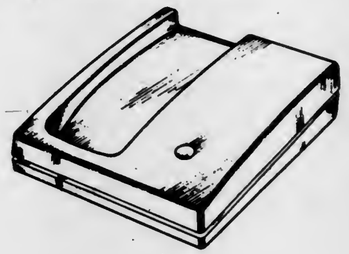




277,570
ADJUNCT KEY TO A TELEPHONE SET OR SIMILAR ARTICLE
Donald M. Genaro, Haworth, N.J.; Norris R. Hall, Indianapolis, Ind.; John N. McGarvey, Drexel Hill, Pa., and Michael T. Skubiak, Carmel, Ind., assignors to AT&T Bell Laboratories, Murray Hill, N.J.
Filed Dec. 1, 1982, Ser. No. 445,905
Term of patent 14 years
U.S. Cl. D14—59



277,571
TELEPHONE INSTRUMENT BASE
Kenneth R. Cooke, New York, and Vito L. Porcelli, Ossining, both of N.Y., assignors to AT&T Technologies, Inc., New York, N.Y.
Filed Jan. 16, 1984, Ser. No. 570,944
Term of patent 14 years
U.S. Cl. D14—60

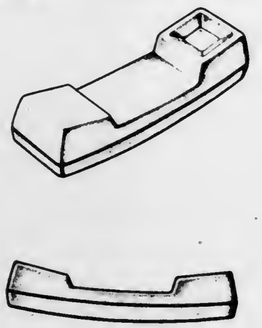




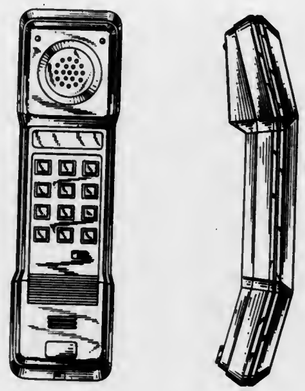
277,572
TELEPHONE SUPPORT
Giovanni Offredi, Milan, Italy, assignor to Gnecchi and Company S.P.A., Milan, Italy
Filed Dec. 16, 1981, Ser. No. 331,292
Claims priority, application Italy, Jun. 17, 1981, 60931/81[U]
Term of patent 14 years
U.S. Cl. D14—61



277,573
HOUSING FOR A HANDSET TELEPHONE
John N. McGarvey, Drexel Hill, Pa., and Alvin R. Tilley, Red Bank, N.J., assignors to AT&T Technologies, Inc., New York, N.Y.
Filed Jun. 8, 1984, Ser. No. 618,478
Term of patent 14 years
U.S. Cl. D14—53



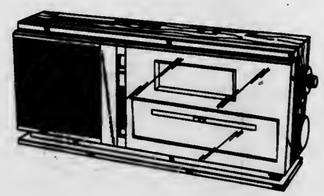
277,574
HANDSET TELEPHONE
Ping M. Lee, Hong Kong, Hong Kong, assignor to Bondwell Electronics Ltd., Kwun Tong, Hong Kong
Filed Jul. 16, 1982, Ser. No. 398,940
Claims priority, application United Kingdom, Mar. 22, 1982, 005736
Term of patent 14 years
U.S. Cl. D14—64



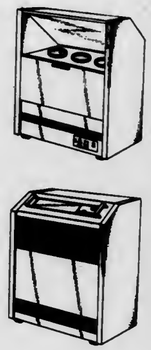
277,575
RADIO RECEIVER
Yoichi Hisano, Osaka, Japan, assignor to Matsushita Electrical Industrial Co., Ltd., Osaka, Japan
Filed Nov. 12, 1982, Ser. No. 441,329
Claims priority, application Japan, May 12, 1982, 57-20680
Term of patent 14 years
U.S. Cl. D14—68



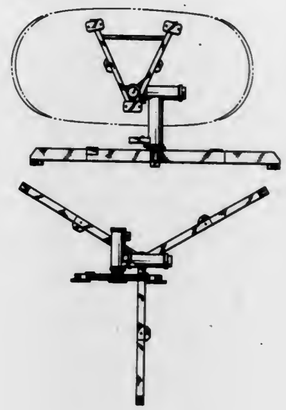
277,576
CLOCK RADIO
Benito Mishiro; Kazuya Ohhashi, and Teruyuki Nishimoto, all of Osaka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Oct. 6, 1982, Ser. No. 433,192
Claims priority, application Japan, Apr. 20, 1982, 57-17212
Term of patent 14 years
U.S. Cl. D14—73



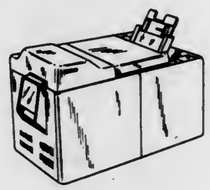
277,577
PROJECTION TELEVISION RECEIVER
Tadashi Sumino, Kyoto; Toshihiro Iyama, Osaka; Yutaka Kono, Osaka; Akishige Sai, Osaka, and Fumioki Ichihara, Kyoto, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Nov. 1, 1982, Ser. No. 438,232
Claims priority, application Japan, May 17, 1982, 57-21557
Term of patent 14 years
U.S. Cl. D14—83



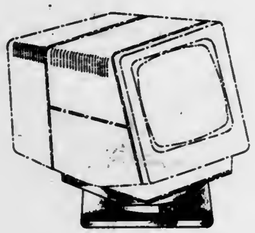
277,578
ANTENNA BASE
James D. Nichols, Carmichael, Calif., assignor to Jones Futura Foundation, Ltd., Fair Oaks, Calif.
Filed Jul. 19, 1982, Ser. No. 399,725
Term of patent 14 years
U.S. Cl. D14—91



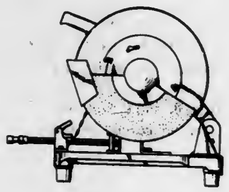
277,579
DOCUMENT SCANNER
Daniel T. Noonan, Irving, Tex., assignor to The Mead Corporation, Dayton, Ohio
Filed Mar. 8, 1982, Ser. No. 355,802
Term of patent 14 years
U.S. Cl. D14—107

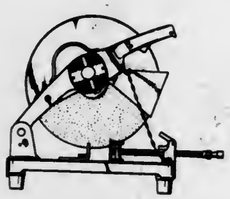


277,580
TILT ROTATE BASE FOR A COMPUTER DISPLAY
John A. Wiseman, Winchester, England, assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Nov. 16, 1981, Ser. No. 322,040
Claims priority, application United Kingdom, May 26, 1981, 1 000 663
Term of patent 14 years
U.S. Cl. D14—114

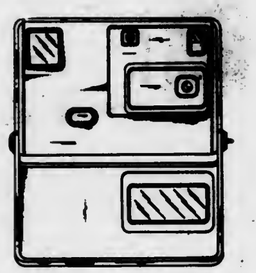


277,581
CUTTER
Kouzou Hakoda, Fukuyama, Japan, assignor to Ryobi Limited, Tokyo, Japan
Filed Aug. 13, 1982, Ser. No. 407,776
Claims priority, application Japan, Feb. 15, 1982, 57-6393; Mar. 9, 1982, 57-9734
Term of patent 14 years
U.S. Cl. D15—125





277,582
PHOTOGRAPHIC CAMERA WITH INTEGRAL COVER-HANDLE
Andrew V. McClare, Rochester, N.N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Feb. 1, 1982, Ser. No. 344,574
Term of patent 14 years
U.S. Cl. D16—5

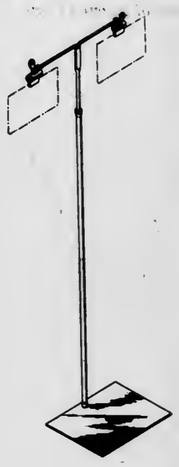


277,583
OPTICAL FIBER CONNECTOR
Ichiro Kono, Kanagawa, Japan, assignor to Sumitomo Electric Industries, Ltd., Osaka, Japan
Continuation of Ser. No. 536,047, Sep. 26, 1983, abandoned. This application May 16, 1984, Ser. No. 610,186
Claims priority, application Japan, Mar. 25, 1983, 58-12191
Term of patent 14 years
U.S. Cl. D16—130





277,584
SIGN SUPPORT STAND
James W. Annastedt, 2328 Glencliff St., Memphis, Tenn. 38119
Filed Aug. 9, 1982, Ser. No. 406,382
Term of patent 14 years
U.S. Cl. D20—43



277,585
RATTLE
Erik P. Tapdrup, Virum, Denmark, assignor to Interiego A.G., Baar, Switzerland
Filed Jun. 11, 1982, Ser. No. 387,521
Term of patent 14 years
U.S. Cl. D21—65



277,586
RATTLE
Erik P. Tapdrup, Virum, Denmark, assignor to Interiego A.G., Baar, Switzerland
Filed Jun. 11, 1982, Ser. No. 387,523
Term of patent 14 years
U.S. Cl. D21—65



277,587
TOY BUNNY RABBIT RATTLE
Terry Paczko, Cleveland, Ohio, assignor to Questor Corp., Tampa, Fla.
Filed Sep. 30, 1982, Ser. No. 431,667
Term of patent 14 years
U.S. Cl. D21—65



277,588
TOY PUPPY DOG RATTLE
Terry Paczko, Cleveland, Ohio, assignor to Questor Corp., Tampa, Fla.
Filed Sep. 30, 1982, Ser. No. 431,668
Term of patent 14 years
U.S. Cl. D21—65



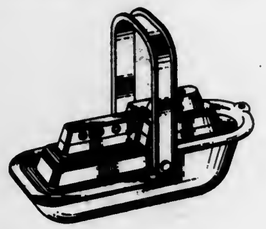
277,589
TOY SAW
Valerie Daugherty, Alta Loma, Calif., assignor to Questor Corp., Tampa, Fla.
Filed Sep. 30, 1982, Ser. No. 431,831
Term of patent 14 years
U.S. Cl. D21—120



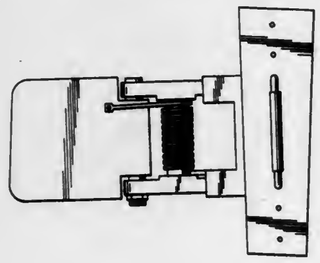
277,590
TOY REFRIGERATOR OR SIMILAR ARTICLE
John W. Spirk, Jr., 2533 Euclid Heights. Blvd., Cleveland Heights, Ohio 44106, and John R. Nottingham, 4875 Stacy Ct., Richmond Heights, Ohio 44143
Filed Jun. 11, 1982, Ser. No. 387,447
Term of patent 14 years
U.S. Cl. D21—122



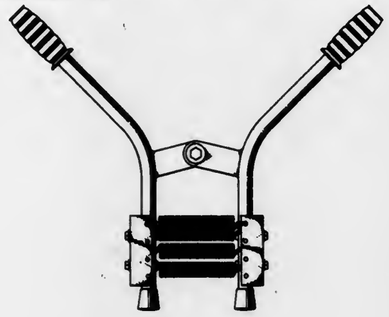
277,591
TOY BOAT
Marc Rivollet, Oxonnax, France, assignor to Etablissments Fernand Berchet, France
Filed Jul. 13, 1981, Ser. No. 282,748
Claims priority, application France, Jan. 12, 1981, 810082
Term of patent 14 years
U.S. Cl. D21—130



277,592
KARATE KICK TRAINING TARGET
Daniel T. Jackson, 16215 Stockbridge Ave., Cleveland, Ohio 44128
Filed Mar. 6, 1981, Ser. No. 238,879
Term of patent 14 years
U.S. Cl. D21—191



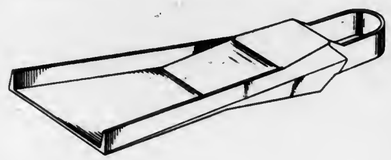
277,593
PHYSICAL EXERCISER
Patrick J. Terrian, 6525 E. Towaline Rd., Birch Run, Mich. 48415, and Randy T. Terrian, 2247 Bay St., Saginaw, Mich. 48602
Filed May 5, 1982, Ser. No. 374,994
Term of patent 14 years
U.S. Cl. D21—198



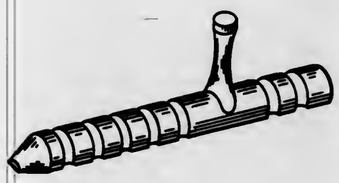
277,594
GOLF PUTTER
Henry M. Mundt, 539 Highview St., Newbury Park, Calif. 91320
Filed Dec. 11, 1981, Ser. No. 329,734
Term of patent 14 years
U.S. Cl. D21—218



277,595
SWIM FIN
John F. Simpson, 1622 Ponderosa Ave., Costa Mesa, Calif. 92626
Filed Jun. 27, 1983, Ser. No. 508,152
Term of patent 14 years
U.S. Cl. D21—239

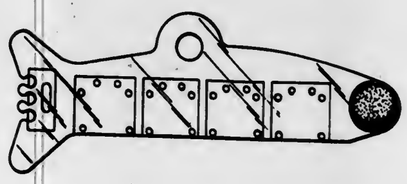


277,596
COMBAT STICK
Mikio Nishiuchi, 4649 N. 81st St., Omaha, Nebr. 68134
Filed Jul. 19, 1982, Ser. No. 399,373
Term of patent 14 years
U.S. Cl. D21—1

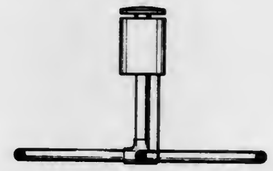


277,597
AMMUNITION PROJECTILE TO BE USED FOR TRAINING PURPOSES
Torsten Wik; Christer Lagerstam; Kurt Pettersson, all of Karlskoga, Sweden, and Kjell Mattsson, San Leandro, Calif., assignors to Aktiebolaget Bofors, Bofors, Sweden
Filed Mar. 18, 1982, Ser. No. 359,623
Term of patent 14 years
U.S. Cl. D22—10

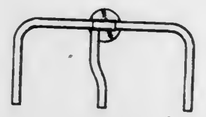
277,598
FISH HOOK HOLDER
Stephen A. Marusak, 537 E. Oak Ridge Ave., New Port Richey, Fla. 33552
Filed Sep. 30, 1982, Ser. No. 431,842
Term of patent 14 years
U.S. Cl. D22—22



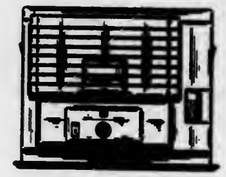
277,599
VACUUM BREAKER ASSEMBLY FOR BIDET
Don C. Arnold, Buffalo Grove, Ill., and Thomas J. Wilcox, East Troy, Wis., assignors to Indiana Brass, Inc., Frankfort, Ind.
Filed May 17, 1982, Ser. No. 379,271
Term of patent 14 years
U.S. Cl. D23—69



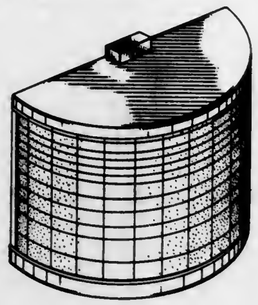




277,600
OIL HEATER
Shigetoshi Hazama; Shuzo Sawa; Matafumi Ikeda, and Akira Esaki, all of Osaka, Japan, assignors to Sharp Corporation, Osaka, Japan
Filed Dec. 7, 1982, Ser. No. 447,710
Claims priority, application Japan, Jun. 9, 1982, 57-25694
Term of patent 14 years
U.S. Cl. D23—123



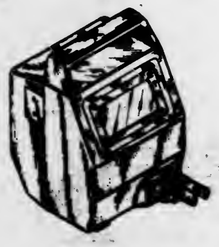
277,601
PRECOOLER FOR AIR CONDITIONING UNIT
Dunniel R. Freeman, 326 E. Port Au Prince, Phoenix, Ariz. 85022
Filed Jun. 1, 1982, Ser. No. 383,497
Term of patent 14 years
U.S. Cl. D23—139



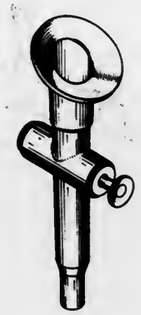
277,602
FLUID DISPENSING PUMP
James A. Benson, Bellevue, and Paul W. Jones, Issaquah, both of Wash., assignors to Physio-Control Corporation, Redmond, Wash.
Filed May 6, 1982, Ser. No. 375,556
Term of patent 14 years
U.S. Cl. D24—8



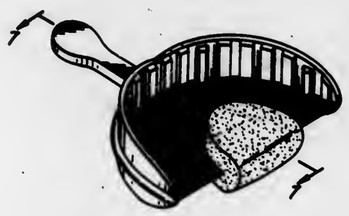
277,603
I.V. FLOW CONTROL APPARATUS
Herbert F. D'Alo, Lakewood, and Robert Case, Chicago, both of Ill., assignors to Abbott Laboratories, North Chicago, Ill.
Filed May 14, 1982, Ser. No. 378,298
Term of patent 14 years
U.S. Cl. D24—8



277,604
SALIVA EVACUATOR
Gerald W. Keresztes, 1822 Coachmans Trail, South Bend, Ind. 46637, and Katherine D. Wade, 144 Bertrand Rd., Niles, Mich. 49120
Filed Sep. 1, 1982, Ser. No. 413,964
Term of patent 14 years
U.S. Cl. D24—10



277,605
DENTAL BITE TRAY
Samuel R. Werrin, Pittsburgh, Pa., assignor to Morton Charlestein, Narberth and Jerrold Frezel, Wynnewood, both of, Pa.
Filed Apr. 19, 1982, Ser. No. 369,532
Term of patent 14 years
U.S. Cl. D24—16



277,606
GLASS EYE FOR TAXIDERMY
Jerome J. Cebula, 14900 W. 31st Ave., Golden, Colo. 80401
Filed Jul. 26, 1982, Ser. No. 401,887
Term of patent 14 years
U.S. Cl. D24—33

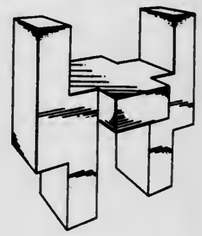


277,607
ARTIFICIAL ACETABULAR CUP OR SIMILAR ARTICLE
Shinkichi Himeno, Fukuoka, Japan, assignor to Yugen Kaisha Yoshin Kaihatsu, Fukuoka, Japan
Filed Sep. 23, 1982, Ser. No. 421,806
Claims priority, application Japan, Apr. 6, 1982, 57-15066
Term of patent 14 years
U.S. Cl. D24—33

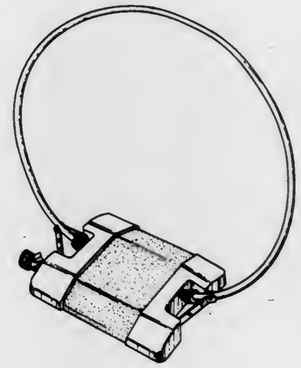


277,608
TROCAR
Fred V. G. Ekbladh, Pl 178, S-430 40 Särö, Sweden, and Hans Tillander, Humlegårdsgatan 3, S-412 74 Göteborg, Sweden
Filed Apr. 13, 1982, Ser. No. 367,889
Claims priority, application Sweden, Oct. 14, 1981, 81-2313
Term of patent 14 years
U.S. Cl. D24—51

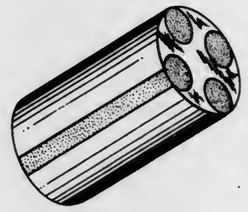
277,609
BUILDING BLOCK
Michael L. Deimen, 11695 Oak Hill, Pinckney, Mich. 48169
Filed Sep. 20, 1982, Ser. No. 419,770
Term of patent 14 years
U.S. Cl. D25—80



277,610
SPRAY HOOP
Richard C. Arginsky, Ellenville, N.Y., assignor to Master Juvenile Products, Ellenville, N.Y.
Filed Aug. 30, 1982, Ser. No. 412,958
Term of patent 14 years
U.S. Cl. D23—6



277,611
DETERGENT BAR
Jose A. Sanabria, Guatemala City, Guatemala, assignor to Colgate-Palmolive Company, New York, N.Y.
Filed Sep. 30, 1982, Ser. No. 425,208
Term of patent 14 years
U.S. Cl. D28—8.1



277,612
FLASHLIGHT
Robert Lievin, Vernon, France, assignor to Societe les Piles Wonder, Saint Oven, France
Filed May 13, 1981, Ser. No. 263,160
Claims priority, application France, Nov. 14, 1980, 803505
Term of patent 14 years
U.S. Cl. D26—46



277,613
HAIR DRYER
James M. Rittenhouse, Watchung, N.J., assignor to Conair Corporation, Edison, N.J.
Filed Jul. 7, 1983, Ser. No. 511,634
Term of patent 14 years
U.S. Cl. D28—13



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 12TH DAY OF FEBRUARY, 1985

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A. Monforts GmbH & Co.: *See*—
Pabst, Manfred, 4,498,248, Cl. 34-89.000.
A/S Alfred Benzon: *See*—
Uhlin, Bernt E.; Nordstrom, Kurt; and Molin, Soeren, 4,499,189, Cl. 435-253.000.
Aanestad, Robert D. Animal restrainer. 4,498,425, Cl. 119-96.000.
Aarts, Ronaldus M.: *See*—
Schouhamer Immink, Kornelis A.; and Aarts, Ronaldus M., 4,499,570, Cl. 369-48.000.
AB Asea-Atom: *See*—
Borrman, Bo; and Ode, Bengt, 4,499,047, Cl. 376-434.000.
Abbott, Frank R., to United States of America, Navy. Electro-ceramic stack. 4,499,566, Cl. 367-165.000.
Abbott Laboratories: *See*—
Finch, Dale E., 4,498,901, Cl. 604-65.000.
Abe, Kojin: *See*—
Onda, Kenichi; Abe, Kojin; Yabuno, Kohei; and Uemura, Takeshi, 4,499,530, Cl. 363-17.000.
Abe, Ryozo: *See*—
Sugiyama, Hiroyuki; Abe, Ryozo; and Yoshihara, Kenji, 4,499,505, Cl. 358-342.000.
Abe, Takeo: *See*—
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Abraham, Nedumparambil A.: *See*—
Sestanj, Kazimir; Fung, Steven; Abraham, Nedumparambil A.; and Bellini, Francesco, 4,499,310, Cl. 568-634.000.
Access Engineering Ltd.: *See*—
Garton, John W., 4,498,556, Cl. 182-19.000.
ACF Industries, Incorporated: *See*—
Vorwerk, Frederick E.; and Mundloch, James D., 4,498,400, Cl. 105-248.000.
Achar, Bappalige N.; Fohlen, George M.; and Parker, John A., to United States of America, National Aeronautics and Space Administration. Phthalocyanine polymers. 4,499,260, Cl. 528-229.000.
Ackerman, Don, to Economy Color Card Co., Inc. Sample book and method of making same. 4,498,828, Cl. 412-4.000.
Acme Engineering Products Ltd.: *See*—
Presser, Gustave S., 4,499,377, Cl. 250-343.000.
Adam, Fritz G., to ITT Industries, Inc. Selection circuit for three or four potentials. 4,499,388, Cl. 307-474.000.
Adams, George C., to Rollform, Incorporated. Panel fastener. 4,498,272, Cl. 52-714.000.
Adamson, Gerald J.: *See*—
Brema, Robert J.; Adamson, Gerald J.; Poissant, Philip L.; and Cleminson, John H., 4,498,660, Cl. 256-19.000.
Adeka Argus Chemical Co., Ltd.: *See*—
Minagawa, Motonobu; Kubota, Naohiro; and Shibata, Toshihiro, 4,499,220, Cl. 524-102.000.
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Stirbis, James S., 4,498,387, Cl. 101-40.000.
AE PLC: *See*—
Haggett, Mervyn T., 4,498,898, Cl. 494-49.000.
Aerodyne, Research, Inc.: *See*—
Caulfield, H. John, 4,498,740, Cl. 350-3.660.
Aerospace Corporation, The: *See*—
Lewinter, Sidney W., 4,499,594, Cl. 381-46.000.
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Oda, Yoshio; Otouma, Hiroshi; and Endoh, Eiji, 4,498,962, Cl. 204-129.000.
Agfa-Gevaert Aktiengesellschaft: *See*—
Bauer, Walter, 4,499,381, Cl. 250-483.100.
Schirk, Gunter; and Koninger, Horst, 4,498,752, Cl. 354-301.000.
Agfa-Gevaert N.V.: *See*—
Nelen, Petrus R., 4,498,758, Cl. 355-3.0TR.
Aggour, Mohamed A.; and Banerjee, Sanjoy, to ESSO Resources Canada, Ltd. Apparatus and method for determining the hydrogen content of a substance. 4,499,380, Cl. 250-390.000.
Ahlstrom, John K.: *See*—
Clancy, Gerald F.; Gruner, Ronald H.; Schleimer, Stephen I.; Mundie, Craig J.; Wallach, Steven J.; Wallach, Walter A., Jr.; Ahlstrom, John K.; Richmond, Michael S.; Bernstein, David H.; and Bratt, Richard G., 4,499,604, Cl. 364-200.000.
Ahoor, Rooin, to O'Donnell, Harry B., III. Continuously variable ratio transmission. 4,498,351, Cl. 74-439.000.
Air Industrie: *See*—
Benicourt, Michel; Buffet, Jean; and Huard, Jean-Francois, 4,499,329, Cl. 136-208.000.
Aisin Seiki Kabushiki Kaisha: *See*—
Hamajima, Shigemitsu; Nishimura, Tomoaki; Sakakibara, Naoji; and Kawata, Shoji, 4,499,542, Cl. 364-424.100.
Katagiri, Masayoshi; and Kondo, Toshio, 4,498,559, Cl. 188-1.110.
Nishio, Shigeru, 4,498,494, Cl. 137-514.000.
Onda, Tsutomu; Kano, Keiichi; and Itakura, Shinji, 4,498,965, Cl. 204-228.000.
Aizawa, Takao: *See*—
Senuma, Akitaka; and Aizawa, Takao, 4,499,210, Cl. 521-91.000.
Ajiki, Mitunori: *See*—
Yanagida, Tomomi; Ajiki, Mitunori; and Suzuki, Shigeru, 4,499,145, Cl. 428-418.000.
Ajimine, Akio: *See*—
Kasai, Junichi; Yanagishima, Takayuki; Ajimine, Akio; Murakami, Yoshiaki; Shino, Akimitsu; and Watanabe, Tatsuya, 4,499,340, Cl. 179-115.5DV.
Ajinomoto Company Incorporated: *See*—
Ohashi, Hiroyuki; Ohara, Ikuo; and Takami, Toru, 4,499,076, Cl. 424-143.000.
Ajioka, James S.: *See*—
Mulliner, Richard R.; and Ajioka, James S., 4,499,157, Cl. 428-624.000.
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Miyakawa, Susumu; Fukuta, Toshiaki; Akado, Hajime; and Taki, Yoshihiro, 4,498,989, Cl. 210-450.000.
Akita, Shigeyuki: *See*—
Tanaka, Hiroaki; and Akita, Shigeyuki, 4,499,465, Cl. 340-870.370.
Akita, Shinji; and Tanaka, Megumu, to Nippon Kokan Kabushiki Kaisha. Restrained mandrel mill inlet table. 4,498,324, Cl. 72-208.000.
Akiyama, Susumu: *See*—
Ohba, Masahiro; Ito, Kenzo; Akiyama, Susumu; Hirabayashi, Yuuji; Hirano, Satoshi; and Ooka, Naoto, 4,499,544, Cl. 364-431.040.
Akiyama, Teruo, to Kabushiki Kaisha Komatsu Seisakusho. Control system for variable displacement hydraulic pumps. 4,498,847, Cl. 417-216.000.
Akzo N.V.: *See*—
Panneman, Harm J., 4,499,105, Cl. 514-631.000.
Alba, Andrew J.: *See*—
Gordon, Robert L.; Alba, Andrew J.; Bodary, Michael; and Mesquida-Feirman, Barbara, 4,498,585, Cl. 206-518.000.
Albert Bocker GmbH & Co KG: *See*—
Bocker, Albert, 4,498,263, Cl. 52-223.00R.
Alcan International Limited: *See*—
Suzuki, Masamichi; Sugihara, Atsushi; Sano, Tadaaki; and Suzuki, Toshihiro, 4,499,123, Cl. 427-282.000.
Alfieri, Carlo: *See*—
Bergamaschi, Mario; and Alfieri, Carlo, 4,499,107, Cl. 514-575.000.
Allen, Danny H.; and Sumner, John H., to Burlington Industries, Inc. Filling fringe waste reduction. 4,498,504, Cl. 139-302.000.
Allen, Frank W., to Project Packaging, Inc. Apparatus for temporarily supporting a cable. 4,498,651, Cl. 248-65.000.
Allen, John: *See*—
Tripp, Jeff; Allen, John; and Murphy, F. Merrick, 4,498,365, Cl. 84-1.240.
Allied Corporation: *See*—
Aron, Mitchell; and Feintuch, Martin W., 4,499,491, Cl. 358-102.000.
Brandt, David S.; and Costello, Samuel J., 4,498,326, Cl. 72-318.000.
Juris, Mitchell A.; and Gallagher, David A., 4,498,719, Cl. 339-60.00R.
Allis-Chalmers Corp.: *See*—
Sexton, Robert W.; and Smith, Richard L., 4,499,031, Cl. 261-66.000.
Altenpohl, Paul J., to W. F. Altenpohl, Inc. Easy-drop sizing carrier for poultry. 4,498,578, Cl. 198-680.000.
Altschuler, J. George: *See*—
Paisley, Gary V.; Altschuler, J. George; and Rommler, Josef, 4,499,141, Cl. 428-318.800.
Aluminum Company of America: *See*—
Bowman, Kenneth A.; and Gantz, Marvin E., Jr., 4,498,523, Cl. 164-477.000.
Bowman, Kenneth A.; Christini, Roy A.; and Ballain, Marlyn D., 4,498,927, Cl. 75-67.00R.
Phelps, Frankie E.; Francis, Thomas L.; and LaCamera, Alfred F., 4,499,193, Cl. 501-98.000.
Alves, James F., to Hughes Aircraft Company. Small-object location utilizing centroid accumulation. 4,499,597, Cl. 382-41.000.
Amano, Toshihiko: *See*—
Nakagawa, Shinichi; Nakagawa, Tsuneo; Yamaguchi, Sadaatsu; Ihara, Kiyohiko; Amano, Toshihiko; Omori, Mitsugu; and Asano, Kohzoh, 4,499,249, Cl. 526-206.000.
Amariti, Luigi; and Santos, Llandro C., to Richardson Graphics Company. Lithographic plates and photoresists having stabilized photo-

sensitive diazo resin with theophylline derivative. 4,499,170, Cl. 430-169.000.

Amerace Corporation: *See—*
Flanagan, Robert M., 4,498,733, Cl. 350-102.000.

American Cyanamid Company: *See—*
Lee, May D.; Martin, John H.; Borders, Donald B.; Yao, Raymond C.; and Testa, Raymond T., 4,499,075, Cl. 424-118.000.
Raghu, Sivaraman; and Peake, Steven L., 4,499,283, Cl. 548-343.000.
Tomcufcik, Andrew S.; Meyer, Walter E.; and Eudy, Nancy H., 4,499,097, Cl. 514-341.000.

American Desk Mfg. Co.: *See—*
Strausheim, Myron A., 4,499,128, Cl. 428-35.000.

American Standard Inc.: *See—*
Hart, James E., 4,498,712, Cl. 303-23.00R.

Amjad, Zahid: *See—*
Masler, William F., III; and Amjad, Zahid, 4,499,002, Cl. 252-180.000.

AMP Incorporated: *See—*
Boyd, James F., 4,499,341, Cl. 191-12.400.
Bright, Edward J.; Marpoe, Gary R., Jr.; Schuemann, Klaus D.; and Sheesley, Wilmer L., 4,498,725, Cl. 339-176.00M.
Fedder, James L.; and Kandros, Michael A., 4,498,722, Cl. 339-75.0MP.
Peppler, Michael S., 4,498,715, Cl. 339-14.00R.
van Dijk, Petrus R. M., 4,498,721, Cl. 339-75.0MP.

AMSTED Industries Incorporated: *See—*
Day, Donald C., 4,498,798, Cl. 403-24.000.

AMT Co., Ltd.: *See—*
Inaba, Morimitsu, 4,498,987, Cl. 210-222.000.

Anderson, Alfredo C.: *See—*
Lynch, John T.; Anderson, Alfredo C.; Withers, Richard S.; and Wright, Peter V., 4,499,441, Cl. 333-161.000.

Anderson, John M.; and Johnson, Peter D., to General Electric Company. Use of amalgams in solenoidal electric field lamps. 4,499,400, Cl. 313-265.000.

Anderson, Larry A., to Columbia Machine, Inc. Pail palletizer with rotatable clamps. 4,498,573, Cl. 198-374.000.

Anderson, Vernon J. Product conveyor lane divider. 4,498,576, Cl. 198-426.000.

Andreasen, Norman H. Kiln floor system. 4,498,269, Cl. 52-669.000.

Angelov, Georgi; and Shibley, Paul W. M., to Bitumen Development Corporation Limited. Separation of bituminous material from oil sands and heavy crude oil. 4,498,971, Cl. 208-11.0LE.

Anne, Jean, to L.C.C.-C.I.C.E. Compagnie Europeenne de Composants Electroniques. Process for the production of an electronic component enclosed in a housing and apparatus for carrying out the process. 4,499,518, Cl. 361-306.000.

Anthony, Blair T.; and LeGrand, Donald G., to General Electric Company. Upgrading silicone resin coating compositions. 4,499,224, Cl. 524-261.000.

Antle, Gary W. Modular stereo headphones. 4,499,593, Cl. 381-25.000.

Anzai, Satoru: *See—*
Uehara, Makoto; and Anzai, Satoru, 4,498,762, Cl. 355-55.000.

Aoi, Tomio: *See—*
Nomura, Toshio; Imai, Yasuhiro; Aoi, Tomio; Nakajima, Tetsuo; and Irino, Hiroshi, 4,498,440, Cl. 123-438.000.

Aoki, Tomohiro: *See—*
Ohkubo, Masaharu; Hayashi, Nobuhiro; and Aoki, Tomohiro, 4,498,755, Cl. 355-3.0DD.

Aoyama, Shunichi: *See—*
Hara, Seinosuke; Aoyama, Shunichi; and Miisho, Kazuyuki, 4,498,432, Cl. 123-90.160.

Applied Motion Products, Inc.: *See—*
MaCleod, Donald J., 4,499,407, Cl. 318-254.000.

Applied Thermodynamics & LNG Service: *See—*
Guilhem, Jean R., 4,498,304, Cl. 62-49.000.

Aquastat AB: *See—*
Otteblad, Sven I.; and Dovertie, Ralph G., 4,498,408, Cl. 114-52.000.

Arbed S.A.: *See—*
Metzdorf, Jacques, 4,498,323, Cl. 72-177.000.

Arbisi, Dominic S. Battery-driven vehicle and recharging system. 4,498,551, Cl. 180-65.500.

Ardac, Inc.: *See—*
Knox, Bruce R.; and Hruby, Andrew J., 4,499,464, Cl. 340-825.720.

Arenas, Frank B. Solar efficient structure. 4,498,526, Cl. 165-45.000.

Arfert, Horst F. W.; and Leyco, Reynaldo P., to Reynolds Metals Company. Method and apparatus for conveying articles. 4,498,575, Cl. 198-400.000.

Arginsky, Richard C., to Master Juvenile Products. Spray hoop. 4,498,627, Cl. 239-279.000.

Arias, Beatriz; Kum, Humberto; and Galiasso, Roberto, to Intevep, S.A. Hydrocracking catalyst. 4,499,202, Cl. 502-211.000.

Arild, Tor. Universal mechanical linkage. 4,498,656, Cl. 248-608.000.

Arimatsu, Yoshikazu: *See—*
Saitoh, Minoru; Arimatsu, Yoshikazu; Tani, Katsuya; and Mitamura, Hideyuki, 4,499,221, Cl. 524-109.000.

Armco Inc.: *See—*
Haselkorn, Michael H., 4,498,936, Cl. 148-6.15R.

Armstrong, Carl R. Radio actuated record controller device. 4,499,567, Cl. 369-7.000.

Arnold, Jacobus J.: *See—*
Steinmetz, Anthony; Arnold, Jacobus J.; Verweg, Fransiacus G. C.; and Groeneboer, Hendrik, 4,498,727, Cl. 339-278.00C.

Aron, Mitchell; and Feintuch, Martin W., to Allied Corporation. Moving map display using optical tunnel. 4,499,491, Cl. 358-102.000.

Asahi-Dow Limited: *See—*
Yoshimura, Isao; Hata, Hideo; and Kaneko, Takashi, 4,499,241, Cl. 525-211.000.

Asahi Kogaku Kogyo Kabushiki Kaisha: *See—*
Ogawa, Ryota; and Negoro, Ikuo, 4,498,759, Cl. 355-8.000.

Asano, Hiroshi; Shimamune, Takayuki; and Goto, Toshiki, to Permelec Electrode Ltd. Electrolysis apparatus using a diaphragm of a solid polymer electrolyte, and method for production thereof. 4,498,942, Cl. 156-151.000.

Asano, Kohzoh: *See—*
Nakagawa, Shinichi; Nakagawa, Tsuneo; Yamaguchi, Sadaatsu; Ihara, Kiyohiko; Amano, Toshihiko; Omori, Mitsugu; and Asano, Kohzoh, 4,499,249, Cl. 526-206.000.

Ash, Donald L.: *See—*
Pye, David S.; Ash, Donald L.; and Rardin, Robert W., 4,498,543, Cl. 166-376.000.

Ash, Stephen R.; Wolf, Gordon C.; and Bloch, Richard, to Purdue Research Foundation. Catheter guide. 4,498,902, Cl. 604-164.000.

Ashland Oil, Inc.: *See—*
Scaccia, Carlo; and Overley, John R., 4,499,029, Cl. 260-544.00A.

Ashworth, Robert A.: *See—*
Milner, Geoffrey; Butler, Michael F.; and Ashworth, Robert A., 4,498,909, Cl. 48-209.000.

Aske, Vernon H., to Honeywell Inc. Integrated silicon accelerometer with stress-free rebalancing. 4,498,342, Cl. 73-517.00B.

Assaf, Gad; and Doron, Benjamin, to Solmat Systems, Ltd. Dual purpose solar pond for evaporation and heat storage. 4,498,300, Cl. 60-641.800.

Assaf, Gad. Method of and means for seasonally storing heat in a body of water. 4,498,454, Cl. 126-415.000.

Asulab S.A.: *See—*
Dinger, Rudolf, 4,498,344, Cl. 73-778.000.

AT&T Bell Laboratories: *See—*
Baranyai, Lawrence; and Colton, John R., 4,499,577, Cl. 370-62.000.
Cook, Joel M.; Donnelly, Vincent M.; Flamm, Daniel L.; Ibbotson, Dale E.; and Mucha, John A., 4,498,953, Cl. 156-646.000.
Frank, Amalie J., 4,499,551, Cl. 364-717.000.
Fraser, Alexander G., 4,499,576, Cl. 370-60.000.
Huang, Alan, 4,499,555, Cl. 364-900.000.
Hudson, Robert C.; MacPherson, William F.; and Sharpless, Charles H., 4,499,532, Cl. 363-21.000.
Leveille, Michael A.; and Walker, Charles F., 4,499,455, Cl. 340-531.000.
Marouf, Mohamed A.; and Vancil, Paul W., 4,499,578, Cl. 370-62.000.

AT&T Technologies, Inc.: *See—*
Banks, Edward L.; Ellington, Thomas S., IV; and Kuyel, Birol, 4,499,162, Cl. 430-5.000.
Beltz, Richard K.; and Large, Donald M., 4,498,451, Cl. 125-23.00R.

Ataka, Tatsuaki: *See—*
Itaya, Kingo; Shibayama, Kimio; Toshima, Shinobu; Ataka, Tatsuaki; and Iwasa, Koji, 4,498,739, Cl. 350-357.000.

Atkinson, Bernard; Black, Geoffrey M.; Pinches, Anthony; and Lewis, Paul J. S., to University of Manchester Institute of Science and Technology, The; and Simon-Hartley Limited. Growth of biomass. 4,498,985, Cl. 210-151.000.

Atlantic Research Corporation: *See—*
Scheffee, Robert S., 4,498,906, Cl. 44-51.000.

Atlantic Richfield Company: *See—*
Fix, James E.; and Crews, Gary A., 4,499,565, Cl. 367-49.000.
Gaffney, Anne M., 4,499,323, Cl. 585-500.000.
Gaffney, Anne M., 4,499,324, Cl. 585-500.000.
Hutchison, David A., 4,498,998, Cl. 252-52.00R.
Jones, C. Andrew; and Sofranko, John A., 4,499,322, Cl. 585-500.000.
Manikian, Victor; and McDonald, Giles N., 4,498,808, Cl. 405-61.000.
Skinner, James L., 4,498,905, Cl. 44-1.00C.

Atlas Copco Aktiebolag: *See—*
Molin, Alexis, 4,498,544, Cl. 173-1.000.

Atsumi, Kinya: *See—*
Yoshida, Hitoshi; Atsumi, Morihiro; Ito, Nobuei; and Atsumi, Kinya, 4,499,366, Cl. 219-270.000.

Atsumi, Morihiro: *See—*
Yoshida, Hitoshi; Atsumi, Morihiro; Ito, Nobuei; and Atsumi, Kinya, 4,499,366, Cl. 219-270.000.

Audi Nsu Auto Auto Union Aktiengesellschaft: *See—*
Kromer, Gunter, 4,498,435, Cl. 123-306.000.

Aultz, Thomas R.; Hughes, Charles C.; and Humbert, Stanley F., to R. A. Jones & Co., Inc. Perimeter guard for a machine. 4,498,567, Cl. 192-133.000.

Automation Systems, Inc.: *See—*
Bartlett, Peter G., 4,499,549, Cl. 364-601.000.

Automobiles Citroen: *See—*
Blion, Didier, 4,498,600, Cl. 220-255.000.

Automobiles Peugeot: *See—*
Blion, Didier, 4,498,600, Cl. 220-255.000.

Avrea, Walter C. Closure and valving apparatus. 4,498,599, Cl. 220-203.000.

Azonica, Inc.: *See—*
Calenoff, Emanuel; Jones, Ruth M.; Tsay, Yuh-Geng; and Beigler, Myron A., 4,499,065, Cl. 424-9.000.

Ayers, McKenna & Harrison, Inc.: *See—*
Sestanj, Kazimir; Fung, Steven; Abraham, Nedumparambil A.; and Bellini, Francesco, 4,499,310, Cl. 568-634.000.

Ayres, Charles A.: *See—*
Measura, Kathleen A.; and Ayres, Charles A., 4,499,263, Cl. 528-483.000.

B. F. Goodrich Company, The: *See—*
Masler, William F., III; and Amjad, Zahid, 4,499,002, Cl. 252-180.000.

Baader, Wolfgang. Apparatus for the treatment of animal excrements and sewage sludges. 4,498,855, Cl. 425-308.000.

Babel, Matzliach; and Maishar, Uzi. Cathode and electrochemical cell containing same. 4,499,160, Cl. 429-101.000.

Bachman, Brett L.; Belgard, Richard A.; Bernstein, David H.; Bratt, Richard G.; Clancy, Gerald F.; Gavrin, Edward S.; Gruner, Ronald H.; Jones, Thomas M.; Mundie, Craig J.; Nealon, James T.; Pilat, John F.; Schleimer, Stephen I.; and Wallach, Steven J., to Data General Corporation. Digital computer system having descriptors for variable length addressing for a plurality of instruction dialects. 4,499,535, Cl. 364-200.000.

Bae, Ik J., to Dong Hwa Engineering Co. Ltd. Collapsible container. 4,498,598, Cl. 220-6.000.

Baika, Toyokazu: *See—*
Nakamura, Norihiko; and Baika, Toyokazu, 4,498,431, Cl. 123-90.150.

Bailey, Denis M.: *See—*
Wentland, Mark P.; and Bailey, Denis M., 4,499,091, Cl. 514-254.000.

Bailey, Fay W., to Phillips Petroleum Company. Thermoplastic resin composition having high impact strength. 4,499,227, Cl. 524-399.000.

Bajon, Jean: *See—*
Favreau, Michel; Bajon, Jean; and Soca, Serge, 4,499,486, Cl. 358-37.000.

Baker, George A.: *See—*
Sattelberg, Stanley E.; and Baker, George A., 4,498,602, Cl. 220-452.000.

Baker Oil Tools, Inc.: *See—*
Ross, Richard J.; and Speller, David J., 4,498,536, Cl. 166-250.000.

Balcke-Durr Aktiengesellschaft: *See—*
Ruecheweyh, Hans, 4,498,786, Cl. 366-336.000.

Balczun, Paul J., to Lord Corporation. Grease seal. 4,498,679, Cl. 277-92.000.

Balde, Daniel: *See—*
Bernard, Michel; Balde, Daniel; Ghenassia, Elie; and Laumain, Francois, 4,499,222, Cl. 524-123.000.

Balducci, Walter O.; and Miller, Theodore H., to Emhart Industries, Inc. Exit device. 4,498,319, Cl. 70-92.000.

Ballain, Marlyn D.: *See—*
Bowman, Kenneth A.; Christini, Roy A.; and Ballain, Marlyn D., 4,498,927, Cl. 75-67.00R.

Ballantine, James A.; Purnell, John H.; and Thomas, John M., to British Petroleum Company p.l.c., The. Proton-catalysed reactions in which water is not a stoichiometric reactant catalysed by metal cation-exchanged layered clays. 4,499,319, Cl. 585-467.000.

Balnave, Peter, to Kahle Engineering Company. Method and means for spooling tubing. 4,498,945, Cl. 156-256.000.

Baltz, Gene F.; Clark, Amos M.; Hartke, David J.; and Jourdan, Donovan K., to Outboard Marine Corporation. Fuel priming system with integral auxilliary enrichment feature. 4,498,434, Cl. 123-187.50R.

Balzar, Juliane: *See—*
Engelhardt, Friedrich; Piesch, Steffen; Balzar, Juliane; and Dawson, Jeffery C., 4,499,232, Cl. 524-548.000.

Balzers Aktiengesellschaft: *See—*
Thoni, Werner; Huber, Peter; and Hohenegger, Karl, 4,498,728, Cl. 350-1.700.

Bamberg, Joe T.: *See—*
Kohn, Gustave K.; and Bamberg, Joe T., 4,499,271, Cl. 546-22.000.

Ban, Keisuke; and Daimaru, Akimasa, to Honda Giken Kogyo Kabushiki Kaisha. Method of constructing a fiber-reinforced piston for internal combustion engines. 4,498,219, Cl. 29-156.50R.

Banerjee, Sanjoy: *See—*
Aggour, Mohamed A.; and Banerjee, Sanjoy, 4,499,380, Cl. 250-390.000.

Banks, Edward L.; Ellington, Thomas S., IV; and Kuyel, Birol, to AT&T Technologies, Inc. Photomask and method of using same. 4,499,162, Cl. 430-5.000.

Banks, Robert L.: *See—*
Kukes, Simon G.; and Banks, Robert L., 4,499,328, Cl. 585-646.000.

Banno, Taiichi; Hijikata, Kazuo; and Takekawa, Hiroshi, to Olympus Optical Co., Ltd. Photometering apparatus for use in chemical analyzer. 4,498,780, Cl. 356-414.000.

Baptist Medical Center of Oklahoma, Inc.: *See—*
Richard, Gordon L., 4,499,339, Cl. 179-107.0FD.

Baran, John S.; and Liang, Chi-Dean, to G. D. Searle & Co. Octahydroseptholenes. 4,499,289, Cl. 549-292.000.

Baranyai, Lawrence; and Colton, John R., to AT&T Bell Laboratories. Linear time division multiplexed conferencer for data transfer applications. 4,499,577, Cl. 370-62.000.

Barcellona, Alessandro; Ferrando Goria, Guido; and Lausarot, Aldo, to Fiat Auto S.p.A. Mixing of gaseous substances. 4,498,496, Cl. 137-599.000.

Barlow, Anthony; Schlossman, Irwin S.; and Borgerding, Robert E., to National Distillers and Chemical Corporation. Electrical tree and water tree resistant compounds and polymer compositions containing the same. 4,499,013, Cl. 252-567.000.

Barnett, Phillip R.: *See—*
Tank, Gene F.; Dawson, Samuel O.; and Barnett, Phillip R., 4,498,913, Cl. 55-356.000.

Barnum, Thomas G.; and Pelt, Thomas E., to Bradley Corporation. Flood preventer for fluid filling systems. 4,498,203, Cl. 4-427.000.

Baron, Richard D., to Lykes Pasco Packing Company. Rotary filling and capping apparatus. 4,498,275, Cl. 53-506.000.

Barrus, Gordon E.; Emenaker, Leo J.; Radke, Glen R.; Farb, Norman E.; and Holser, Gerold, to Printronix, Inc. Printer shuttle drive having castered cam followers. 4,498,793, Cl. 400-320.000.

Barth, Hubert; Hartenstein, Johannes; Satzinger, Gerhard; Fritschi, Edgar; Genser, Volker; Tauschel, Horst-Dietmar; and Wolf, Gunter, to Warner-Lambert Company. 2-Alkylthio-1-aminoalkyl-2-pyrroline-3-carbonitriles, compositions and use. 4,499,089, Cl. 514-222.000.

Bartlett, Peter G., to Automation Systems, Inc. Digital computer having analog signal circuitry. 4,499,549, Cl. 364-601.000.

BASF Aktiengesellschaft: *See—*
Eicken, Karl; Rohr, Wolfgang; and Wuerzer, Bruno, 4,498,922, Cl. 71-111.000.
Treiber, Hans J.; Hofmann, Hans P.; Kreiskott, Horst; Teschendorf, Hans-Juergen; and Traut, Martin, 4,499,087, Cl. 514-211.000.

Bashour, Joseph E. Container and closure. 4,498,597, Cl. 215-329.000.

Battais, Alain; Boutevin, Bernard J. L.; and Pietrasanta, Yves J. D., to Etat Francais. Organometallic telomers, methods of preparation and biocidal compositions obtained. 4,499,022, Cl. 260-429.700.

Battelle Institut e.V.: *See—*
Stoesser, Klaus; and Vinson, Heinz, 4,499,462, Cl. 340-825.310.

Bauer, James J., to Clark Equipment Company. Plugging defeat system for electric motors. 4,499,409, Cl. 318-383.000.

Bauer, Walter, to Agfa-Gevaert Aktiengesellschaft. Means for converting X-rays into radiation which darkens X-ray films. 4,499,381, Cl. 250-483.100.

Baumgen, Heinz: *See—*
von Bonin, Wulf; Mummenhoff, Peter; Beck, Ulrich; and Baumgen, Heinz, 4,499,153, Cl. 428-479.600.

Baxter Travenol Laboratories, Inc.: *See—*
Bilstad, Arnold C.; Foley, John T.; and Woodworth, Walker P., 4,498,983, Cl. 210-97.000.

Bayer Aktiengesellschaft: *See—*
Hentschel, Karl-Heinz; Dhein, Rolf; Winter, Hans; and Vojacek, Herbert, 4,499,000, Cl. 252-73.000.
Holmwood, Graham; and Regel, Erik, 4,499,281, Cl. 548-262.000.
Kerimis, Dimitrios; Muller, Hanns P.; and Wagner, Kuno, 4,499,253, Cl. 528-45.000.
Mitrowsky, Alexander; Wissner, Adolf; and Hauser, Werner, 4,499,023, Cl. 260-453.0SP.
Schafer, Walter; Meiners, Hans-Joachim; Seel, Klaus; Reichmann, Wolfgang; Wagner, Kuno; and Findeisen, Kurt, 4,499,038, Cl. 264-51.000.
Scholl, Walter, 4,499,015, Cl. 534-697.000.
Tacke, Peter; Korber, Helmut; Merten, Josef; and Neuray, Dieter, 4,499,237, Cl. 525-67.000.
von Bonin, Wulf; Mummenhoff, Peter; Beck, Ulrich; and Baumgen, Heinz, 4,499,153, Cl. 428-479.600.

Bayerische Motoren Werke AG: *See—*
Kalchschmied, Dietmar; Bonenberger, Hartmut; and Huber, Bernd, 4,498,696, Cl. 293-126.000.

Bazes, Mel, to Intel Corporation. IC Delay conversion operational amplifier. 4,499,428, Cl. 330-10.000.

BBC Brown, Boveri & Company, Limited: *See—*
Koppl, Georg, 4,499,351, Cl. 200-148.00R.

Bearpark, John P.: *See—*
Nelson, William; and Bearpark, John P., 4,498,522, Cl. 164-460.000.

Beck, Ermon. Simulated clay tile roof construction and method of making same. 4,498,267, Cl. 52-555.000.

Beck, Ulrich: *See—*
von Bonin, Wulf; Mummenhoff, Peter; Beck, Ulrich; and Baumgen, Heinz, 4,499,153, Cl. 428-479.600.

Beckschafer, Klaus: *See—*
Temme, Karl; Beckschafer, Klaus; and Pruller, Helmut, 4,498,986, Cl. 210-199.000.

Becton, Dickinson and Company: *See—*
Fulwyler, Mack J., 4,499,052, Cl. 422-52.000.
Unterleitner, Fred C. 4,498,766, Cl. 356-73.000.
Wilner, Leslie B., 4,498,229, Cl. 29-580.000.

Bedini, Dante. Automatic coffee pot. 4,498,375, Cl. 99-303.000.

Beebe, Richard P., to Hewlett-Packard Company. Data compression apparatus. 4,499,548, Cl. 364-575.000.

Beecham Group p.l.c.: *See—*
Watts, Eric A., 4,499,099, Cl. 514-299.000.

Behague, Francois: *See—*
Dupuis, Bernard; and Behague, Francois, 4,499,575, Cl. 370-58.000.

Beigler, Myron A.: *See—*
Calenoff, Emanuel; Jones, Ruth M.; Tsay, Yuh-Geng; and Beigler, Myron A., 4,499,065, Cl. 424-9.000.

Belgard, Richard A.: *See—*
Bachman, Brett L.; Belgard, Richard A.; Bernstein, David H.; Bratt, Richard G.; Clancy, Gerald F.; Gavrin, Edward S.; Gruner, Ronald H.; Jones, Thomas M.; Mundie, Craig J.; Nealon, James T.; Pilat, John F.; Schleimer, Stephen I.; and Wallach, Steven J., 4,499,535, Cl. 364-200.000.

Bellini, Francesco: *See—*
Sestanj, Kazimir; Fung, Steven; Abraham, Nedumparambil A.; and Bellini, Francesco, 4,499,310, Cl. 568-634.000.

Beloit Corporation: *See—*
Cooke, Ronald D.; and Laage, Neil A., 4,498,249, Cl. 34-125.000.

Beltone Electronics Corporation: *See—*
Cerny, Elmer J., 4,498,555, Cl. 181-129.000.

Beltz, John P.: *See—*
Southgate, Peter D.; Fairbanks, David W.; Davis, Richard B.; and Beltz, John P., 4,498,779, Cl. 356-384.000.

Beltz, Richard K.; and Large, Donald M., to AT&T Technologies, Inc. Cutting articles along known planes. 4,498,451, Cl. 125-23.00R.

Bemis Company, Inc.: *See—*
Odom, Robert E., 4,498,893, Cl. 493-12.000.

Ben-Gurion University of the Negev: *See—*
Korin, Eliyaho; Rappaport, Elazar; Pasternak, Dov; Roy, Aharon S.; and Wolf, David, 4,498,459, Cl. 126-430.000.

Bendahan, Samuel H., to Dynalube Holdings Limited. Cable lubricating device. 4,498,558, Cl. 184-15.100.

Bendickson, Roy B.; and Wridt, Alfred A., to Snap-on Tools Corporation. Target including sliding scale. 4,498,244, Cl. 33-203.150.

Benevento, Peter J., to Lambro Industries, Inc. Vent attachment for a hot air clothes dryer. 4,498,247, Cl. 34-82.000.

Benicourt, Michel; Buffet, Jean; and Huard, Jean-Francois, to Air Industrie. Thermoelectric installation. 4,499,329, Cl. 136-208.000.

Benkmann, Christian, to Linde Aktiengesellschaft; and Chemische Werke Huels Aktiengesellschaft. Safe adsorption process for the separation of hydrocarbons from oxygen containing gas. 4,498,910, Cl. 55-18.000.

Bennett and Bennett: *See—*
Bennett, Rodney W.; Bennett, Jerry C.; Bennett, William C.; and Bennett, Charlie, 4,498,277, Cl. 56-1.000.

Bennett, Charlie: *See—*
Bennett, Rodney W.; Bennett, Jerry C.; Bennett, William C.; and Bennett, Charlie, 4,498,277, Cl. 56-1.000.

Bennett, Dennis W.: *See—*
Spicer, Leonard D.; Bennett, Dennis W.; and Davis, Jon F., 4,499,190, Cl. 436-122.000.

Bennett, Jerry C.: *See—*
Bennett, Rodney W.; Bennett, Jerry C.; Bennett, William C.; and Bennett, Charlie, 4,498,277, Cl. 56-1.000.

Bennett, Richard W.: *See—*
Sikonia, John G.; and Bennett, Richard W., 4,498,973, Cl. 208-63.000.

Bennett, Rodney W.; Bennett, Jerry C.; Bennett, William C.; and Bennett, Charlie, to Bennett and Bennett. Method for harvesting narrowly spaced rows of plants, method for converting conventional apparatus for such harvesting and apparatus for such harvesting. 4,498,277, Cl. 56-1.000.

Bennett, William C.: *See—*
Bennett, Rodney W.; Bennett, Jerry C.; Bennett, William C.; and Bennett, Charlie, 4,498,277, Cl. 56-1.000.

Bennion, Colin, to Fisons plc. Fused 1,3,5-triazines. 4,499,269, Cl. 544-198.000.

Benson Inc.: *See—*
Doggett, David E., 4,498,737, Cl. 350-237.000.

Benton, Stephen A., to Polaroid Corporation. Method and apparatus for making achromatic holograms. 4,498,729, Cl. 350-3.690.

Berg, Arthur H. Method for making plastic article with fibrous reinforcement. 4,499,039, Cl. 264-137.000.

Bergamaschi, Mario; and Alfieri, Carlo, to Dr. L°. Zambeletti, S.p.A. Method for treating infected renal calculosis. 4,499,107, Cl. 514-575.000.

Berger, Abe, to M&T Chemicals Inc. Siloxane-containing polymers. 4,499,149, Cl. 428-447.000.

Berkeley, Bernard, to Hysan Corporation. Diphase drain cleaner with halogenated aliphatic solvent. 4,498,933, Cl. 134-22.140.

Bernard, Michel; Balde, Daniel; Ghenassia, Elie; and Laumain, Francois, to Produits Chimiques Ugine Kuhlmann. Phosphorus-containing flame proofing compositions for synthetic materials. 4,499,222, Cl. 524-123.000.

Bernhardsson, Goran; and Jargell, Tomas. Method and a device for mixing and homogenization of a main substance with at least one additive substance, liquids in particular. 4,498,784, Cl. 366-134.000.

Bernstein, David H.: *See—*
Bachman, Brett L.; Belgard, Richard A.; Bernstein, David H.; Bratt, Richard G.; Clancy, Gerald F.; Gavrin, Edward S.; Gruner, Ronald H.; Jones, Thomas M.; Mundie, Craig J.; Nealon, James T.; Pilat, John F.; Schleimer, Stephen I.; and Wallach, Steven J., 4,499,535, Cl. 364-200.000.
Clancy, Gerald F.; Gruner, Ronald H.; Schleimer, Stephen I.; Mundie, Craig J.; Wallach, Steven J.; Wallach, Walter A., Jr.; Ahlstrom, John K.; Richmond, Michael S.; Bernstein, David H.; and Bratt, Richard G., 4,499,604, Cl. 364-200.000.

Bernstein, Peter R.; and Willard, Alvin K., to ICI Americas Inc. Pharmaceutically active phenylcarboxylic acid derivatives. 4,499,299, Cl. 514-570.000.

Bertram, James L.: *See—*
Wang, Chun S.; Pham, Ha Q.; and Bertram, James L., 4,499,255, Cl. 528-95.000.

Berube, Gilles, to Canada, Her Majesty the Queen in right of, as represented by the Minister of National Defence. 2.75 Inch plastic warhead. 4,498,396, Cl. 102-529.000.

Besser Industries, Inc.: *See—*
Salts, Thomas R., 4,498,831, Cl. 414-46.000.

Bessho, Yoshinori: *See—*
Yanagi, Toshiaki; and Bessho, Yoshinori, 4,498,403, Cl. 112-121.120.

Best, Gerd; and Weikert, Norbert B., to Krampe & Co. Fertigung in Bergbaubedarf GmbH Zweigniederlassung. Cutting roller. 4,498,707, Cl. 299-81.000.

Beta Engineering & Development Ltd.: *See—*
Sadeh, Yaacov, 4,498,404, Cl. 112-121.120.

Beta Industries, Inc.: *See—*
Corwin, Richard R.; and Moorman, Stephen L., 4,498,770, Cl. 356-349.000.

Bialek, Rene F., to Texaco Canada Resources Ltd. Apparatus for treating tar sands emulsion. 4,498,958, Cl. 196-46.000.

BICC Public Limited Company: *See—*
Nelson, William; and Bearpark, John P., 4,498,522, Cl. 164-460.000.
White, Cyril J.; and Joyce, Christopher, 4,498,724, Cl. 339-97.00R.

Billard, Alain A.; Calmettes, Hubert C.; and Encoyand, Roland C., to Etienne LaCroix - Tous Artifices. Infrared decoy launching device to be deployed rapidly with a double safety device. 4,498,392, Cl. 102-342.000.

Billon, Alain; Le Page, Jean-Francois; and Peries, Jean-Pierre, to Institut Francais du Petrole. Process for converting a highly viscous hydrocarbon charge to a less viscous, more easily transportable and more easily refinable hydrocarbon fraction. 4,498,974, Cl. 208-96.000.

Billon, Alain: *See—*
Toulhoat, Herve ; Plumail, Jean-Claude; Billon, Alain; and Quignard, Alain, 4,498,972, Cl. 208-59.000.

Bilstad, Arnold C.; Foley, John T.; and Woodworth, Walker P., to Baxter Travenol Laboratories, Inc. Pressure cuff draw mode enhancement system and method for a single needle blood fractionation system. 4,498,983, Cl. 210-97.000.

Binder, Dieter, to Leavoson-Gesellschaft m.b.H. & Co. KG. Derivatives of thienylacetic acid amides and their pharmaceutically acceptable acid salts and a process for the preparation thereof. 4,499,286, Cl. 548-527.000.

Bishop, John F.; and Braun, Thomas O., to Eastman Kodak Company. Hydrophilic layers adjacent a stripping layer for diffusion transfer assemblages. 4,499,174, Cl. 430-215.000.

Bissell, Douglas E.; and Jozepaitis, Charles M., to Nash Engineering Company, The. Liquid ring pump with conical or cylindrical port member. 4,498,844, Cl. 417-68.000.

Bissell Inc.: *See—*
Rosendall, Henry J., 4,498,207, Cl. 15-42.000.

Bitting, Ricky F.; Peil, William; Brown, Thomas A.; and Guzek, William K., to General Electric Company. Control circuit for an electronically commutated motor, an integrated circuit for an ECM, and a method of operating an ECM. 4,499,408, Cl. 318-254.000.

Bitumen Development Corporation Limited: *See—*
Angelov, Georgi; and Shibley, Paul W. M., 4,498,971, Cl. 208-11.0LE.

Biziere, Kathleen: *See—*
Hallot, Andre ; and Biziere, Kathleen, 4,499,092, Cl. 514-254.000.

Bjarnason, Gudmundur; and Eggertsson, Thorsteinn, to Swiss Aluminium Ltd. Device for batch feeding of a fluidizable particulate material. 4,498,818, Cl. 406-137.000.

Bjornstrom, Ann O.: *See—*
Kridl, Thomas A.; Claunch, Carney P.; and Bjornstrom, Ann O., 4,499,129, Cl. 428-36.000.

Black & Decker Inc.: *See—*
Harris, David; and Hays, Alan, 4,498,230, Cl. 29-597.000.

Black, Geoffrey M.: *See—*
Atkinson, Bernard; Black, Geoffrey M.; Pinches, Anthony; and Lewis, Paul J. S., 4,498,985, Cl. 210-151.000.

Blackburn, Gary R.; Mackerer, Carl R.; and Schreiner, Ceinwen A., to Mobil Oil Corporation. Method for evaluating mutagenicity. 4,499,187, Cl. 435-34.000.

Blackley, David C.: *See—*
James, Michael H.; Bratby, David M.; Duck, Roger; Podell, Howard I.; Goldstein, Albert; and Blackley, David C., 4,499,154, Cl. 428-494.000.

Blasing, Elmer P.; Keeling, Ronald J.; and Roe, Jin-Young K., to Formica Corporation. Continuously produced melt reacted melamine-formaldehyde resins. 4,499,125, Cl. 428-503.000.

Blaupunkt Werke GmbH: *See—*
Eilers, Norbert, 4,499,603, Cl. 455-205.000.

Blazey, Richard N., to Eastman Kodak Company. Apparatus and method providing improved control of a laser beam. 4,499,437, Cl. 332-7.510.

Blion, Didier, to Automobiles Citroen; and Automobiles Peugeot. Filler cap having a hinged cover. 4,498,600, Cl. 220-255.000.

Bloch, Richard: *See—*
Ash, Stephen R.; Wolf, Gordon C.; and Bloch, Richard, 4,498,902, Cl. 604-164.000.

Bloomer, James W., II; and Nunn, Robert H., to United States of America, Navy. Apparatus for measurement of sliding friction using gyroscopic mass. 4,498,329, Cl. 73-9.000.

Blundell, David J.; Griffin, Brian P.; and MacDonald, William A., to Imperial Chemical Industries PLC. Anisotropic polyesteramide polymers having improved retention of physical properties at elevated temperatures and methods of manufacture thereof. 4,499,256, Cl. 528-172.000.

Bluzer, Nathan, to Westinghouse Electric Corp. Semiconductor circuit for compressing the dynamic range of a signal. 4,499,590, Cl. 377-60.000.

BOC Group, Inc., The: *See—*
Corville, Richard E., 4,498,832, Cl. 414-217.000.

Bocker, Albert, to Albert Bocker GmbH & Co KG. Telescopic beam. 4,498,263, Cl. 52-223.00R.

Bockett-Pugh, Charles, to Schlumberger Electronics (U.K.) Ltd. Methods and apparatus for assessing the quality of logic signals. 4,499,419, Cl. 324-102.000.

Bodary, Michael: *See—*
Gordon, Robert L.; Albe, Andrew J.; Bodary, Michael; and Mesquida-Feirman, Barbara, 4,498,585, Cl. 206-518.000.

Boehringer Ingelheim KG: *See—*
Traunecker, Werner; Frolke, Wilhelm; Kreuzer, Heinrich; and Kollmer, Hans P., 4,499,106, Cl. 514-603.000.

Boehringer, Wilfred E.; and Pastor, Vincent J., to McDonnel Douglas Corporation. Surface hold-down mechanism. 4,498,647, Cl. 244-75.00R.

Boeing Company, The: *See—*
Mayor, Robert B., 4,498,245, Cl. 33-286.000.
Trautman, Robert D., 4,498,823, Cl. 410-84.000.

Boesewetter, Chester C.; Langley, Lawrence W.; and Mabie, John H., to Kollmorgen Technologies Corporation. Stator winding apparatus and method. 4,498,636, Cl. 242-1.10R.

Bolkow, Ludwig; Mehnert, Walter; and Chaborski, Hoiko, to Bolkow, Ludwig. Dynamic control arrangement for a distance measuring apparatus. 4,498,764, Cl. 356-5.000.

Bolyo, Laszlo: *See—*
Kiss, Laszlo; Faludi, Arpad; Grof, Gyula; Bolyo, Laszlo; Szolgyen, Csaba; Mihadak, Istvan; and Varga, Imre, 4,498,789, Cl. 374-164.000.

Bonenberger, Hartmut: *See—*
Kalchschmied, Dietmar; Bonenberger, Hartmut; and Huber, Bernd, 4,498,696, Cl. 293-126.000.

Bonseau, Marc. Method of preparing natural beverages having a low alcohol level, using ultrafiltration techniques. 4,499,117, Cl. 426-592.000.

Booker, Reginald A., to Du Pont de Nemours, E. I., and Company. In situ film hardening with pyridinium chlorochromate and aldehyde precursor alcohol. 4,499,182, Cl. 430-621.000.

Boonstra, Alexander H.; Mutsaers, Cornelis A. H. A.; and van der Kruijs, Franciscus N. G. R., to U.S. Philips Corporation. Resistance paste for a resistor body. 4,499,011, Cl. 252-518.000.

Boquet, Patrice: *See—*
Duflot, Anabela; Gras, Helene; Tartar, Andre; Duflot, Edith; and Boquet, Patrice, 4,499,080, Cl. 514-12.000.

Borders, Donald B.: *See—*
Lee, May D.; Martin, John H.; Borders, Donald B.; Yao, Raymond C.; and Testa, Raymond T., 4,499,075, Cl. 424-118.000.

Borg-Warner Corporation: *See—*
Harnish, James R., 4,498,622, Cl. 236-25.00R.
Huntley, Peter, 4,498,892, Cl. 474-242.000.
Schnetzka, Harold R.; Wills, Frank E.; and Norbeck, Dean K., 4,499,534, Cl. 363-129.000.

Borgerding, Robert E.: *See—*
Barlow, Anthony; Schlossman, Irwin S.; and Borgerding, Robert E., 4,499,013, Cl. 252-567.000.

Bornhauser, Heinz K. Hair curler. 4,498,489, Cl. 132-40.000.

Borovian, Gayle E., to Lever Brothers Company. Synergistic preservative compositions. 4,499,071, Cl. 424-78.000.

Borrman, Bo; and Ode, Bengt, to AB Asea-Atom. Fuel assembly with a top plate arranged above the upper end surfaces of the fuel rods. 4,499,047, Cl. 376-434.000.

Botha, Charles F.; and Lambrechts, Adriaanus L., to Ru-Korrel (Propietary) Limited. Compacting mill. 4,498,856, Cl. 425-331.000.

Botterman, D. L.; Wolff, N. A.; and Ver Planck, H. T., to Container Corporation of America. Carton for insects. 4,498,420, Cl. 119-15.000.

Bottolfson, Gary, to O'Connor, Michael, a part interest. Retractable brush. 4,498,211, Cl. 15-203.000.

Bouchaib, Pierre, to Instrument S.A. Installation for treatment of materials for the production of semi-conductors. 4,498,416, Cl. 118-719.000.

Bouchard, Andre C.; and Hall, Harold H., Jr., to GTE Products Corporation. Method of encapsulating a photoflash lamp using a powdered resin. 4,498,883, Cl. 445-28.000.

Bouchard, George A.: *See—*
Torino, Arthur J., Jr.; Bouchard, George A.; and Keane, Philip A., 4,499,466, Cl. 343-7.300.

Bourgeois, Ivan M., to Medtronic, Inc. Apparatus for reducing polarization potentials in a pacemaker. 4,498,478, Cl. 128-419.0PG.

Boutevin, Bernard J. L.: *See—*
Battais, Alain; Boutevin, Bernard J. L.; and Pietrasanta, Yves J. D., 4,499,022, Cl. 260-429.700.

Bowes, David R.: *See—*
Luccarelli, Domenick, Jr.; Mookherjee, Braja D.; Wilson, Richard A.; Zampino, Michael J.; and Bowen, David R., 4,499,114, Cl. 426-534.000.

Bowen, Jack. Score keeping device. 4,498,668, Cl. 273-73.00R.

Bowling Green State University: *See—*
Neckers, Douglas C., 4,498,963, Cl. 204-159.190.

Bowling, James A.; and David, Wallace M., to Philip Morris Incorporated. Method and apparatus for embossing foil. 4,498,390, Cl. 101-365.000.

Bowman, Kenneth A.; and Gantz, Marvin E., Jr., to Aluminum Company of America. Continuous method for reclaiming, melting and casting aluminum scrap. 4,498,523, Cl. 164-477.000.

Bowman, Kenneth A.; Christini, Roy A.; and Ballain, Marlyn D., to Aluminum Company of America. Thermal reduction process for production of magnesium using aluminum skim as a reductant. 4,498,927, Cl. 75-67.00R.

Boyd, James F., to AMP Incorporated. Extensible electrical cable assembly. 4,499,341, Cl. 191-12.400.

Braat, Josephus J. M., to U.S. Philips Corporation. Record carrier with an optically readable information structure. 4,499,574, Cl. 369-275.000.

Brademeyer, David L., to General Motors Corporation. Valve assembly. 4,498,299, Cl. 60-562.000.

Bradley Corporation: *See—*
Barnum, Thomas G.; and Pelt, Thomas E., 4,498,203, Cl. 4-427.000.

Brake, Arthur L., to Vickers PLC of Vickers House. Releasable anchor connector for tension leg platform. 4,498,814, Cl. 405-224.000.

Brand, Leonard J.; and Nadelson, Jeffrey, to Sandoz, Inc. Isoxazolyl indolamines. 4,499,279, Cl. 548-247.000.

Brand-Rex Company: *See—*
Johnston, James J., 4,498,723, Cl. 339-97.00P.

Brandt, David S.; and Costello, Samuel J., to Allied Corporation. Apparatus and process for forming articles by heading. 4,498,326, Cl. 72-318.000.

Brannstrom, Roine; and Kreij, Sven-Erik, to Stal-Laval Turbin AB. Gas turbine plant with a fluidized bed combustion chamber. 4,498,286, Cl. 60-39.100.

Bratby, David M.: *See—*
James, Michael H.; Bratby, David M.; Duck, Roger; Podell, Howard I.; Goldstein, Albert; and Blackley, David C., 4,499,154, Cl. 428-494.000.

Bratt, Richard G.: *See—*
Bachman, Brett L.; Belgard, Richard A.; Bernstein, David H.; Bratt, Richard G.; Clancy, Gerald F.; Gavrin, Edward S.; Gruner, Ronald H.; Jones, Thomas M.; Mundie, Craig J.; Nealon, James T.; Pilat, John F.; Schleimer, Stephen I.; and Wallach, Steven J., 4,499,535, Cl. 364-200.000.
Clancy, Gerald F.; Gruner, Ronald H.; Schleimer, Stephen I.; Mundie, Craig J.; Wallach, Steven J.; Wallach, Walter A., Jr.; Ahlstrom, John K.; Richmond, Michael S.; Bernstein, David H.; and Bratt, Richard G., 4,499,604, Cl. 364-200.000.

Braukmann, Heinz W. Vacuum head for cleaning underwater surfaces. 4,498,206, Cl. 15-1.700.

Braun, Thomas O.: *See—*
Bishop, John F.; and Braun, Thomas O., 4,499,174, Cl. 430-215.000.

Bray, William E., to 501 Gateway Technology, Inc. Power converter. 4,499,531, Cl. 363-19.000.

Braziel, Jeffrey B., to Owens-Corning Fiberglas Corporation. Apparatus for stripping packaged linear material from a forming tube. 4,498,221, Cl. 29-283.500.

Breeden, Robert H.; and Taylor, Henry D., to Vickers, Incorporated. Power transmission. 4,498,370, Cl. 91-171.000.

Breitbach, Elmar; and Dehne, Ernst-August, to Deutsche Forschungsu. Versuchsanstalt fur Luft-u-Raumfahrt e.V. Method and arrangement for sensing the acceleration of oscillating bodies. 4,498,341, Cl. 73-517.00R.

Breitenfellner, Franz: *See—*
Buxbaum, Lothar; Breitenfellner, Franz; and Kainmuller, Thomas, 4,499,219, Cl. 524-94.000.

Brema, Robert J.; Adamson, Gerald J.; Poissant, Philip L.; and Cleminson, John H., to Union Carbide Canada Limited. Modular fence structure. 4,498,660, Cl. 256-19.000.

Brems, John H. Workpiece clamping mechanism for multiple station transfer machines. 4,498,572, Cl. 198-345.000.

Brennan, Albert T., to SMA Controls Inc. Cutting tool. 4,498,820, Cl. 409-179.000.

Breslow, Jeffrey D.: *See—*
Ferris, Michael J.; Wise, Paul H.; and Breslow, Jeffrey D., 4,498,674, Cl. 273-243.000.

Brettschneider, Horst; and Hartl, Walter, to U.S. Philips Corporation. X-Ray tube having flashover prevention means. 4,499,592, Cl. 378-121.000.

Breuer, Hermann; Denzel, Theodor; and Treuner, Uwe D., to E. R. Squibb & Sons, Inc. 2-Oxo-1-[(acylamino)sulfonyl]azetidines. 4,499,016, Cl. 260-239.00A.

Brice, Jean-Michel, to E.F.C.I.S. Non-volatile flip-flop with a dynamic resetting. 4,499,560, Cl. 365-228.000.

Brick, Jack. Combination towel and rain cover for a golf bag. 4,498,579, Cl. 206-315.400.

Brickman, Norman F.; and Rosenbaum, Walter S., to International Business Machines Corporation. Method for identification and compression of facsimile symbols in text processing systems. 4,499,499, Cl. 358-263.000.

Bridge, Elmer R.: *See—*
Kamping, Jan H.; and Bridge, Elmer R., 4,498,505, Cl. 140-2.000.

Bridges, Jack E., to IIT Research Institute. Apparatus and method for in situ controlled heat processing of hydrocarbonaceous formations with a controlled parameter line. 4,498,535, Cl. 166-248.000.

Bridgestone Tire Company Limited: *See—*
Muramatsu, Tateo; Kurihara, Mamoru; and Enami, Yasushi, 4,498,810, Cl. 405-115.000.
Ogawa, Masaki; Hirata, Yasushi; and Tsuchikura, Akira, 4,499,228, Cl. 524-413.000.

Brieger, Emmet F.; George, Flint R.; and Colle, Edward A., Jr., to GEO Vann. Method of well completion. 4,498,541, Cl. 166-297.000.

Bright, Edward J.; Marpoe, Gary R., Jr.; Schuemann, Klaus D.; and Sheesley, Wilmer L., to AMP Incorporated. Electrical connector. 4,498,725, Cl. 339-176.00M.

Brines, Marjorie J.; and Rabatin, Jacob G., to General Electric Company. X-ray image converters utilizing rare earth oxyhalide phosphors. 4,499,159, Cl. 428-691.000.

Brinker, Reiner G., to Philip Morris Incorporated. Laser beam interrupter and divider. 4,499,361, Cl. 219-121.0LK.

British Petroleum Company p.l.c., The: *See*—
Ballantine, James A.; Purnell, John H.; and Thomas, John M., 4,499,319, Cl. 585-467.000.
Brochieby, Pete, III. Conical line-pulling carrier. 4,498,659, Cl. 254-134.400.
Bromboz, Jonathan J. Continuous method and apparatus for making a brush. 4,498,708, Cl. 300-2.000.
Brookman, Eric C.; Cato, Robert T.; and Lynch, Robert C., to International Business Machines Corporation. Terminal device having closed chamber communications between functional units. 4,499,608, Cl. 455-607.000.
Brother Kogyo Kabushiki Kaisha: *See*—
Yanagi, Toshiaki; and Beasho, Yoshinori, 4,498,403, Cl. 112-121.120.
Brothers, Bennie R. Motion picture camera. 4,498,747, Cl. 352-191.000.
Brown, Albert E.; and Emerson, Robert T., to Leedall Products Incorporated. Pressure-sensitive transfer elements and method. 4,499,140, Cl. 428-308.400.
Brown, Robert L.; Henley, Virgil E.; and Kovalchik, Stephen J., to GenCorp Inc. Bead locking device of a tire building drum. 4,498,948, Cl. 156-401.000.
Brown, Thomas A.: *See*—
Bitting, Ricky F.; Peil, William; Brown, Thomas A.; and Guzek, William K., 4,499,408, Cl. 318-254.000.
Brown & Williamson Tobacco Corporation: *See*—
Johnson, Robert R., 4,498,488, Cl. 131-336.000.
Bruckhoff, Henning, to Siemens Aktiengesellschaft; and Bruckhoff, Henning. Test device for measuring the fit of hearing aid related devices. 4,498,332, Cl. 73-40.000.
Bruning, Donald D., to Phillips Petroleum Company. Selective plugging of highly permeable subterranean strata by in situ gelation of polymer solutions. 4,498,539, Cl. 166-294.000.
Bruning, Rolf; and Roth, Jurgen, to Heraeus Quarzschmelze GmbH. Method and apparatus for the decomposition of specimens of solid organic substances. 4,499,191, Cl. 436-160.000.
Brunswick Corporation: *See*—
Zemlicka, Alvin R., 4,498,876, Cl. 440-89.000.
Buckle, Brain L., to E. C. Hopkins Limited. Inflatable articles. 4,498,881, Cl. 441-93.000.
Budd Company, The: *See*—
Kinkle, Robert W., 4,498,824, Cl. 410-121.000.
McCafferty, Gerald P.; Navoczynski, Stanley J.; and Kinkle, Robert W., 4,498,264, Cl. 52-281.000.
Budge, James D. Electively detachably coupled ball joint and pivot cup combination for a wind-propelled surfboard. 4,498,410, Cl. 114-91.000.
Buekers, Valere: *See*—
Moisson, Marc; Van Noten, Lodewijk; Overbergh, Noel; Franckx, Joris; and Buekers, Valere, 4,498,938, Cl. 156-49.000.
Buffet, Jean: *See*—
Benicourt, Michel; Buffet, Jean; and Huard, Jean-Francois, 4,499,329, Cl. 136-208.000.
Bulanda, John J.: *See*—
Moody, Roy A.; Bulanda, John J.; Levin, Robert F.; Timian, Steven S.; and Waltasti, Stephen A., 4,498,506, Cl. 140-93.200.
Bulla, John G. Golf club head with flexure frequency matched with distortion-relaxation frequency of ball. 4,498,672, Cl. 273-169.000.
Buoncristiani, Vincenzo. Method for the automatic semicontinuous peritoneal dialysis. 4,498,900, Cl. 604-28.000.
Burdick, Laura M. Packaging for health care products. 4,498,590, Cl. 206-581.000.
Burgard, Michel; Piteau, Marc D.; Rollat, Alain J.; and Senet, Jean-Pierre G., to Societe Nationale des Poudres et Explosifs. Extraction of metals from aqueous solutions with cyclic organic carbonates. 4,499,057, Cl. 423-8.000.
Burks, Loyce O.: *See*—
Kinnamon, Herbert D., 4,498,857, Cl. 425-361.000.
Burlington Industries, Inc.: *See*—
Allen, Danny H.; and Sumner, John H., 4,498,504, Cl. 139-302.000.
Burov, Atanas T.: *See*—
Konstantinov, Ivan T.; Medaikarov, Borislav D.; Sahatchieva, Maria A.; and Burov, Atanas T., 4,499,173, Cl. 430-278.000.
Burr, J. Kelsey, to Halkey-Roberts Corporation. Emergency rescue device. 4,498,879, Cl. 441-80.000.
Burroughs Corporation: *See*—
Del Tufo, Mark J.; Lake, Ralph J., Jr.; and Solomon, Stephen R., 4,498,802, Cl. 403-300.000.
Lance, Wayne E.; and Rayfield, Wilson P., 4,498,757, Cl. 355-3.0FU.
Burroughs Wellcome Co.: *See*—
Farrell, Geoffrey, 4,499,012, Cl. 252-522.00A.
Butler, Michael F.: *See*—
Milner, Geoffrey; Butler, Michael F.; and Ashworth, Robert A., 4,498,909, Cl. 48-209.000.
Buxbaum, Lothar; Breitenfellner, Franz; and Kainmuller, Thomas, to Ciba-Geigy Corporation. Stabilized thermoplastic polyester moulding composition. 4,499,219, Cl. 524-94.000.
Badula, Joseph A., to Carrier Corporation. Probe for measuring electrical conductance. 4,498,305, Cl. 62-84.000.
Cafarella, Thomas; and Ensin, Mohamed, to Hazeltine Corporation. Microprocessor controlled AGC. 4,499,586, Cl. 375-98.000.
Calanoff, Emanuel; Jones, Ruth M.; Tsay, Yuh-Geng; and Beigler, Myron A., to Axonics, Inc. Chymopapain allergen and method. 4,499,065, Cl. 424-9.000.
Callander, Douglas D.: *See*—
Massey, Fred L.; and Callander, Douglas D., 4,499,226, Cl. 524-382.000.
Calmettes, Hubert C.: *See*—
Billard, Alain A.; Calmettes, Hubert C.; and Escoyund, Roland C., 4,498,392, Cl. 102-342.000.
Camco, Incorporated: *See*—
Johnston, Russell A., 4,498,533, Cl. 166-117.500.
Campbell, Bruce D.; and Fentress, Vernon A., to Raychem Corporation. Fiber optic splice organizer. 4,498,732, Cl. 350-96.200.
Campolini, John; and Khasa, Dennis, to Coldstream (Engineering) Limited. Mixer having workhead operable in mixing and pumping modes. 4,499,562, Cl. 366-264.000.
Canada, Her Majesty the Queen in right of, as represented by the Minister of National Defence: *See*—
Berube, Gilles, 4,498,396, Cl. 102-529.000.
Canada, Robert O.: *See*—
Masaitis, William; and Canada, Robert O., 4,499,595, Cl. 382-9.000.
Canadian Patents and Development Limited-Societe Candienne des Brevets et D'Exploitation (Limitee: *See*—
Ramachandran, Kovilvila, 4,498,969, Cl. 204-298.000.
Canon Kabushiki Kaisha: *See*—
Edakubo, Hiroo; and Maeda, Masaya, 4,499,504, Cl. 358-335.000.
Harigaya, Isao, 4,499,587, Cl. 377-18.000.
Matsufuji, Yohji; Togano, Shigeo; and Ichihashi, Hiroo, 4,499,478, Cl. 346-140.00R.
Mitsuhashi, Yasuo, 4,499,168, Cl. 430-99.000.
Nagashima, Nao, 4,499,500, Cl. 358-296.000.
Ohkubo, Masaharu; Hayashi, Nobuhiro; and Aoki, Tomohiro, 4,498,755, Cl. 355-3.0DD.
Suzuki, Masayuki; Yamamichi, Masayoshi; and Ohara, Tsunemasa, 4,498,750, Cl. 354-154.000.
Takatori, Yasushi; Yano, Yasuhiro; and Hattori, Yoshifumi, 4,499,480, Cl. 346-140.00R.
Takayama, Makoto; Muramoto, Tomotaka; and Nishimura, Akimasa, 4,499,487, Cl. 358-41.000.
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Canton Bio-Medical Products, Inc.: *See*—
Goodale, Robert H.; and DuJack, James M., 4,499,148, Cl. 428-447.000.
Cantu, Terry S.; and Williams, Mark C., to Conoco Inc. Alcohol/heavy liquid drying of coal. 4,498,246, Cl. 34-9.000.
Capuano, Terry D.: *See*—
Pamer, Walter R.; Zils, James A.; and Capuano, Terry D., 4,498,825, Cl. 411-11.000.
Carey, Thomas F. Pizza cooking utensil. 4,498,376, Cl. 99-345.000.
Carl Kurt Walther GmbH & Co. KG: *See*—
Temme, Karl; Beckschafer, Klaus; and Pruller, Helmut, 4,498,986, Cl. 210-199.000.
Carlqvist, Stig: *See*—
Darche, Michel J. P.; and Carlqvist, Stig, 4,498,297, Cl. 60-525.000.
Carlson, John E., to Chem-Nuclear Systems, Inc. Compound catalyst system usable for the polymerization or curing of urea-formaldehyde polymeric condensation systems. 4,499,200, Cl. 502-172.000.
Carn, Annick R.: *See*—
Grease, Herve R.; and Carn, Annick R., 4,498,735, Cl. 350-138.000.
Carpentier, Urgel R., to Plattsburgh Foundry, Inc. Dust valve and trap. 4,498,492, Cl. 137-315.000.
Carprotec, Inc.: *See*—
Questel, John M.; and Madonia, Ralph J., 4,499,130, Cl. 428-42.000.
Carr, Stephen P. Clamping tuning machine. 4,498,366, Cl. 84-304.000.
Carrier Corporation: *See*—
Budula, Joseph A., 4,498,305, Cl. 62-84.000.
Carter, R. S. Trouser support system. 4,498,201, Cl. 2-312.000.
Carter, William A., to Hem-Sub, Inc. Interferon and interferon inducers combined with tobacco products. 4,498,485, Cl. 131-331.000.
Casey, Richard G.; and Friedman, Theodore D., to International Business Machines Corporation. Adaptive facsimile compression using a dynamic extendable decision network. 4,499,596, Cl. 382-37.000.
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Kobayashi, Saburo, 4,499,554, Cl. 364-900.000.
Caslin, Richard L.: *See*—
Vaughn, James N., 4,498,238, Cl. 33-1.00K.
Cassella Aktiengesellschaft: *See*—
Engelhardt, Friedrich; Pieach, Steffen; Balzar, Juliane; and Dawson, Jeffery C., 4,499,232, Cl. 524-548.000.
Castonguay, Roger N.; and Powell, David B., to General Electric Company. Interlock arrangement for circuit breaker compartments. 4,499,344, Cl. 200-50.00C.
Castrec, Yves-Marie; and Launay, Jean-Pierre, to Framatome & Cie. Machine for monitoring nuclear reactor equipment at its storage station. 4,499,046, Cl. 376-245.000.
Catalysts & Chemicals Industries, Co. Ltd.: *See*—
Yoshimura, Masaru; and Saitoh, Sunio, 4,499,217, Cl. 523-456.000.
Cato, Robert T.: *See*—
Broockman, Eric C.; Cato, Robert T.; and Lynch, Robert C., 4,499,608, Cl. 455-607.000.
Caulfield, H. John, to Aerodyne, Research, Inc. Hologram writer and method. 4,498,740, Cl. 350-3.660.
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Moreschini, Luciano; Dalloro, Leonardo; Cavaterra, Enrico; Petrini, Guido; and Covini, Romano, 4,499,302, Cl. 562-599.000.
Cazaux, Joel, to Fives-Cail Babcock. Deburring apparatus. 4,498,821, Cl. 409-300.000.

Celette, Germain, to Celette S.A. Device for position-checking of the shock-absorber heads of a front vehicle suspension system. 4,498,242, Cl. 33-180.0AT.
Celette S.A.: *See*—
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Wartelle, Claude; and Favey, Charles, 4,498,799, Cl. 403-140.000.
Carey, Elmer J., to Belvose Electronics Corporation. Hearing aid nubbin and acoustic damper. 4,498,555, Cl. 181-129.000.
Cerovsky, Karel: *See*—
Dvorsky, Drahomir; and Cerovsky, Karel, 4,499,282, Cl. 548-336.000.
Cerwin, Robert J.; Joshi, Madhusudan; Meagos, John R.; Mericle, Robert W.; and Zwaskis, William J., to Ethicon, Inc. Non-metallic, bio-compatible hemostatic clips with interlocking latch means. 4,498,476, Cl. 128-346.000.
Cetus Corporation: *See*—
Konrad, Michael W.; and Mark, David F., 4,499,188, Cl. 435-70.000.
Chaborski, Hoiko: *See*—
Boltkow, Ludwig; Mehnert, Walter; and Chaborski, Hoiko, 4,498,764, Cl. 356-5.000.
Chalmers, Edward; and Huggins, William H. Epilation method. 4,498,474, Cl. 128-303.130.
Chamberland, Roger R.; and Stanland, Andrew J., to United States of America, Navy. Thermo-electric valve. 4,498,491, Cl. 137-72.000.
Champion International Corporation: *See*—
Dickert, James C.; Roccaforte, Harry I.; and Wysocki, Lawrence S., 4,498,620, Cl. 229-52.00A.
Dutcher, Daniel P., 4,498,581, Cl. 206-427.000.
Lepisto, J. George, 4,498,511, Cl. 141-85.000.
Roccaforte, Harry I., 4,498,619, Cl. 229-52.00B.
Scott, Raymond G., 4,498,588, Cl. 206-526.000.
Scott, Raymond G.; and McNulty, Sherry M., 4,498,589, Cl. 206-526.000.
Chand, Ramesh, to GC Industries. Electrochemical gas sensor. 4,498,970, Cl. 204-415.000.
Chaplin, John B.; and Ganczak, Edward G., to Textron Inc. Surface effect ship propeller mount. 4,498,873, Cl. 440-82.000.
Charles, Wesley: *See*—
Kachajian, George S.; Steere, Robert E., Jr.; and Charles, Wesley, 4,498,449, Cl. 125-15.000.
Chee, Aik T.; and Kist, Wee S., to Printed Circuits International, Inc. Electronic component cap and seal. 4,499,333, Cl. 174-52.0FP.
Chee-Shuen Lee, Francis; Mills, Ross N.; and Talke, Frank E., to International Business Machines Corporation. Gray scale printing with ink jet drop-on demand printing head. 4,499,479, Cl. 346-140.00R.
Chem-Nuclear Systems, Inc.: *See*—
Carlson, John E., 4,499,200, Cl. 502-172.000.
Chemische Werke Huels Aktiengesellschaft: *See*—
Benkmann, Christian, 4,498,910, Cl. 55-18.000.
Chemplex Company: *See*—
Pulhkat, Thomas J.; Hoff, Raymond E.; and Lynch, Michael W., 4,499,198, Cl. 502-104.000.
Cheng, Chia C.; and Zee-Cheng, Robert K., to Warner-Lambert Company. 3,6-Dinitro-1,8-naphthalimides. 4,499,266, Cl. 544-126.000.
Chertilina, Tamara A.: *See*—
Starostin, Alexandr M.; Malakhov, Alexei M.; Chertilina, Tamara A.; Ponomar, Vladislav I.; Postolaty, Nikolai I.; Kuchuk-Yatsenko, Sergei I.; Peretrukhin, Filipp I.; Gluschenko, Anatoly D.; Solodovnikov, Sergei A.; Shvets, Jury G.; and Serafin, Orest M., 4,499,364, Cl. 219-161.000.
Cheshire, James O.; Lindgren, Douglas L.; Marinack, Robert J.; Janda, Bruce W.; Thut, Robert S.; Larkey, John T.; and Jostad, Ray E., to James River-Norwalk, Inc. Apparatus and method for the manufacture of a non-woven fibrous web. 4,498,956, Cl. 162-101.000.
Chesley, Ray F.: *See*—
Minshew, Edward C., Jr.; and Chesley, Ray F., 4,498,510, Cl. 141-27.000.
Chevron Research Company: *See*—
Edwards, Laroy H., 4,499,098, Cl. 514-364.000.
Chiang, Robert L.: *See*—
Seese, Mark A.; and Chiang, Robert L., 4,499,197, Cl. 502-65.000.
Chiapetta, Frank: *See*—
Mack, William; Morrison, Herbert; and Chiapetta, Frank, 4,498,237, Cl. 30-200.000.
Chiba, Hiromasa; Obama, Kenjiro; Kawazoe, Shunji; Oka, Takahiro; and Satoh, Akihiro, to Chisso Corporation. High-rigidity, high-melt-viscoelasticity polypropylene and process for producing the same. 4,499,247, Cl. 526-142.000.
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Shimada, Kengo; Chiba, Yutaka; and Sanuki, Toshio, 4,498,363, Cl. 84-1.010.
Chibnik, Sheldon, to Mobil Oil Corporation. Liquid fuel composition containing reaction product of tetrahydropyrimidines. 4,498,908, Cl. 44-71.000.
Chicago Bridge & Iron Company: *See*—
Satterberg, Stanley E.; and Baker, George A., 4,498,602, Cl. 220-452.000.
Chisso Corporation: *See*—
Chiba, Hiromasa; Obama, Kenjiro; Kawazoe, Shunji; Oka, Takahiro; and Satoh, Akihiro, 4,499,247, Cl. 526-142.000.
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Chittineni, Chittibabu, to Conoco Inc. Edge and line detection in multi-dimensional noisy, imagery data. 4,499,598, Cl. 382-54.000.
Christensen, Alton O., to Condesin, Inc. Batch fabrication procedure for manufacture of arrays of field emitted electron beams with integral self-aligned optical lense in microguns. 4,498,952, Cl. 156-643.000.
Christensen, Inc.: *See*—
Jurgens, Rainer, 4,499,563, Cl. 367-84.000.
Christenson, Ronald E., to McNeilus Truck & Manufacturing Co., Inc. Swinging chute linkage assemblies. 4,498,568, Cl. 193-10.000.
Christiansen, David W., to United States of America, Energy. Valve for fuel pin loading system. 4,498,834, Cl. 414-291.000.
Christiansen, Tage; Imhof, Werner; Jensen, Poul F.; Kjaer, Jens B.; Kristiansen, Bjarne; Kristensen, Kjeld; and Pedersen, Bent, to Orum Sogns Mejeri APS. Process for the production of cheese curd. 4,499,109, Cl. 426-36.000.
Christini, Roy A.: *See*—
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Christopherson, Kjell H. I.: *See*—
Shaldon, Stanley; Christopherson, Kjell H. I.; Falkvall, Thore E.; and Mattiason, Ulf K., 4,498,990, Cl. 210-637.000.
Christophliemk, Peter; Novotny, Rudolf; von Laufenberg, Jurgen; and Sadlowsky, Josef, to Henkel Kommanditgesellschaft auf Aktien. Hydrothermal decomposition of aluminum silicates. 4,499,062, Cl. 423-332.000.
Christopoulos, Christos: *See*—
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Christy Machine Company: *See*—
Fielding, Randy L., 4,498,635, Cl. 241-94.000.
Chumley, Claude. Cattle car. 4,498,418, Cl. 119-10.000.
Chun, Dai S. Hand-held defense weapon. 4,498,669, Cl. 273-84.00R.
Ciampelli, Federigo: *See*—
Piacenti, Franco; Ciampelli, Federigo; and Pasetti, Adolfo, 4,499,146, Cl. 428-422.000.
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Ciba-Geigy Corporation: *See*—
Buxbaum, Lothar; Breitenfellner, Franz; and Kainmuller, Thomas, 4,499,219, Cl. 524-94.000.
Husler, Rinaldo; Rutsch, Werner; and Dietliker, Kurt, 4,498,964, Cl. 204-159.230.
Lohse, Friedrich; and Zoadler, Helmut, 4,499,268, Cl. 544-196.000.
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Fontana, Alberto; Fontanelli, Renzo; Sacrini, Egeo; and Cicchetti, Osvaldo, 4,499,273, Cl. 546-188.000.
Cichanowski, Stanley W., to General Electric Company. Capacitor with dielectric comprising poly-functional acrylate polymer and method of making. 4,499,520, Cl. 361-311.000.
Cincinnati Milacron Inc.: *See*—
Gibbemeyer, Joseph F., 4,498,859, Cl. 425-534.000.
Cities Service Oil and Gas Corporation: *See*—
Marrocco, Matthew L., 4,498,540, Cl. 166-295.000.
CLAAS OHG: *See*—
Dammaan, Johannes, 4,498,483, Cl. 130-27.00T.
Claes, Roger G., to GTE Products Corporation. Bifurcated electro-acoustic delay lines. 4,499,439, Cl. 333-142.000.
Clairol Incorporated: *See*—
Mack, William; Morrison, Herbert; and Chiapetta, Frank, 4,498,237, Cl. 30-200.000.
Walter, Henry J., 4,499,355, Cl. 219-10.49R.
Clancy, Gerald F.; Gruner, Ronald H.; Schleimer, Stephen I.; Mundie, Craig J.; Wallach, Steven J.; Wallach, Walter A., Jr.; Ahlstrom, John K.; Richmond, Michael S.; Bernstein, David H.; and Bratt, Richard G., to Data General Corporation. Digital data processing system for executing instructions containing operation codes belonging to a plurality of operation code sets and names corresponding to name table entries. 4,499,604, Cl. 364-200.000.
Clancy, Gerald F.: *See*—
Bachman, Brett L.; Belgard, Richard A.; Bernstein, David H.; Bratt, Richard G.; Clancy, Gerald F.; Gavrin, Edward S.; Gruner, Ronald H.; Jones, Thomas M.; Mundie, Craig J.; Nealon, James T.; Pilat, John F.; Schleimer, Stephen I.; and Wallach, Steven J., 4,499,535, Cl. 364-200.000.
Clarion Co., Ltd.: *See*—
Kasai, Junichi; Yanagishima, Takayuki; Ajimine, Akio; Murakami, Yoshiaki; Shino, Akimitsu; and Watanabe, Tatsuya, 4,499,340, Cl. 179-115.5DV.
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Baltz, Gene F.; Clark, Amos M.; Hartke, David J.; and Joardan, Donovan K., 4,498,434, Cl. 123-187.50R.
Clark Equipment Company: *See*—
Bauer, James J., 4,499,409, Cl. 318-383.000.
Clark, Robin D.: *See*—
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Clayton Foundation for Research: *See*—
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Brems, Robert J.; Adamson, Gerald J.; Poissant, Philip L.; and Cleminson, John H., 4,498,660, Cl. 256-19.000.

Cline, Harvey E., to General Electric Company. Method for producing eutectics as thin films using a quartz lamp as a heat source in a line heater. 4,498,923, Cl. 75-65.0ZM.
Cline, Harvey E., to General Electric Company. Method for producing eutectics as thin films using a line heater. 4,498,924, Cl. 75-65.0ZM.
Cline, Harvey E., to General Electric Company. Method for producing eutectics as thin films using an arc lamp, as a heat source in a line heater. 4,498,925, Cl. 75-65.0ZM.
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Coates, Clarence A., Jr.: *See*—
Hyatt, John A.; and Coates, Clarence A., Jr., 4,499,272, Cl. 346-172.000.
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King, Eddie W.; and Morgan, Annis R., Jr., 4,498,570, Cl. 194-1.00N.
Paisley, Gary V.; Altschuler, J. George; and Rommler, Josef, 4,499,141, Cl. 428-318.800.
Cochran, William H. Construction of rigid hull inflatable boat. 4,498,413, Cl. 114-345.000.
Coe, Anthony D.: *See*—
Williams, Frederick; and Coe, Anthony D., 4,498,839, Cl. 414-686.000.
Colamussi, Arturo. System for packaging ice-cream cones and like articles. 4,498,273, Cl. 53-54.000.
Coldstream (Engineering) Limited: *See*—
Campolini, John; and Khaan, Dennis, 4,499,562, Cl. 366-264.000.
Cole, Edward R.: *See*—
Minh, Thi H.; Cole, Edward R.; and Crank, George, 4,499,115, Cl. 426-546.000.
Colle, Edward A., Jr.: *See*—
Brieger, Emmet F.; George, Flint R.; and Colle, Edward A., Jr., 4,498,541, Cl. 166-297.000.
Collins, Paul W.; and Gasiecki, Alan F., to G. D. Searle & Co. Omega cycloalkyl prostaglandins. 4,499,296, Cl. 560-118.000.
Colombo, Piero, to Continua International Continuous Casting S.p.A. Apparatus for the continuous casting of metals. 4,498,520, Cl. 164-426.000.
Colson, Andrew E. Swimming pool apparatus. 4,498,984, Cl. 210-122.000.
Colton, John R.: *See*—
Baranyai, Lawrence; and Colton, John R., 4,499,577, Cl. 370-62.000.
Colucci, James, to Design Wire Products, Inc. Magazine display rack. 4,498,592, Cl. 211-42.000.
Columbia Machine, Inc.: *See*—
Anderson, Larry A., 4,498,573, Cl. 198-374.000.
Combustion Engineering, Inc.: *See*—
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Compagnie de Materiel de Micrographie "C.M.M.": *See*—
Gresse, Herve R.; and Carn, Annick R., 4,498,735, Cl. 350-138.000.
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Dupuis, Bernard; and Behague, Francois, 4,499,575, Cl. 370-58.000.
Conbraco Industries, Inc.: *See*—
Mullis, Jerry D., 4,498,320, Cl. 70-177.000.
Condesin, Inc.: *See*—
Christensen, Alton O., 4,498,952, Cl. 156-643.000.
Connors, Paul E. Footwear protector. 4,498,252, Cl. 36-72.00B.
Conoco Inc.: *See*—
Cantu, Terry S.; and Williams, Mark C., 4,498,246, Cl. 34-9.000.
Chittineni, Chittibabu, 4,499,598, Cl. 382-54.000.
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Container Corporation of America: *See*—
Botterman, D. L.; Wolff, N. A.; and Ver Planck, H. T., 4,498,420, Cl. 119-15.000.
Continental Disc Corporation: *See*—
Wilson, Bryce H.; and Hansen, Franklin A., 4,498,261, Cl. 52-1.000.
Continental Packaging Company, Inc.: *See*—
Roa, John M., 4,498,854, Cl. 425-116.000.
Continua International Continuous Casting S.p.A: *See*—
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Contrawl Limited: *See*—
Newbury, Arthur D., 4,498,584, Cl. 206-510.000.
Convay Systems Limited: *See*—
Potts, Roger F., 4,498,934, Cl. 134-254.000.
Convey, Frank H., Jr., to Harris Graphics Corporation. Signature transfer vehicle with stack clamping mechanism. 4,498,381, Cl. 100-100.000.
Cook, Edward H., Jr.: *See*—
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Cook, Evin L., to Mobil Oil Corporation. Producing well stimulation method - combination of thermal and solvent. 4,498,537, Cl. 166-257.000.
Cook, Joel M.; Donnelly, Vincent M.; Flamm, Daniel L.; Ibbotson, Dale E.; and Mucha, John A., to AT&T Bell Laboratories. Etching techniques. 4,498,953, Cl. 156-646.000.
Cook, John S., to Mattel, Inc. Shifting mechanism for toy vehicle. 4,498,887, Cl. 446-462.000.
Cooke, Horise M., to Stratoflex, Inc. Hose fitting and method of assembly. 4,498,691, Cl. 285-12.000.
Cooke, Ronald D.; and Lange, Neil A., to Beloit Corporation. Dryer stationary syphon adjustment mechanism. 4,498,249, Cl. 34-125.000.
Cooper Industries, Inc.: *See*—
Tauber, Richard J.; and Rosborg, Daniel J., 4,499,527, Cl. 362-267.000.
Cooper, Leo, to Tubular Specialties Mfg., Inc. Support for bathroom fixture or the like. 4,498,654, Cl. 248-251.000.
Cornelius, Rajendra S.; Martin, Albert R.; Lunk, Hans E.; and Mendenhall, Mark D., to Raychem Corporation. High frequency attenuation core and cable. 4,499,438, Cl. 333-1.000.
Corning Glass Works: *See*—
Mann, George H., 4,498,919, Cl. 65-30.110.
Corville, Richard E., to BOC Group, Inc., The. Workpiece accumulating and transporting apparatus. 4,498,832, Cl. 414-217.000.
Corwin, Richard R.; and Moorman, Stephen L., to Beta Industries, Inc. Apparatus and method for determining the configuration of a reflective surface. 4,498,770, Cl. 356-349.000.
Cosden Technology, Inc.: *See*—
Hahn, Granville J.; Rutledge, Raleigh N.; and Murley, Jackie D., 4,499,041, Cl. 264-173.000.
Cosgrove, William J.: *See*—
White, Charles M.; and Cosgrove, William J., 4,499,488, Cl. 358-51.000.
Costello, Samuel J.: *See*—
Brandt, David S.; and Costello, Samuel J., 4,498,326, Cl. 72-318.000.
Cousens, Donald E.: *See*—
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Schierz, Winfried; and Creutz, Helmut, 4,499,485, Cl. 357-74.000.
Creuzet, Marie-Helene; Feniou, Claude; Jarry, Christian; Prat, Gisele; and Pontagnier, Henri, to Societe Cortial, S.A. N-(5-aminomethyl-2-oxazolin-2-yl)-N'-phenylureas, compositions and use. 4,499,090, Cl. 514-210.000.
Crews, Gary A.: *See*—
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Crippen Manufacturing Co., Inc.: *See*—
Frevert, Robert E., 4,498,981, Cl. 209-243.000.
Crowley, Burlon C.: *See*—
Tetenbaum, Marvin T.; and Crowley, Burlon C., 4,499,233, Cl. 524-591.000.
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Csiki, Kalman, to Gullfiber AB. Ear plug as well as a method and apparatus for the production thereof. 4,498,469, Cl. 128-152.000.
Cull, Neville L.: *See*—
Pine, Lloyd A.; and Cull, Neville L., 4,498,975, Cl. 208-114.000.
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Mason, Walter R.; and Cummings, Jimmie L., 4,499,561, Cl. 366-156.000.
Curley, Mark D. Hurlable water rescue aid. 4,498,880, Cl. 441-81.000.
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Howell, Paul J.; and Currier, Gregory B., 4,498,227, Cl. 29-576.00B.
Curtis, John R.; and Renwick, John D., to Sericol Group Limited. Photopolymerizable materials for use in producing screen printing stencils. 4,499,175, Cl. 430-253.000.
Curtis, John R.; and Renwick, John D., to Sericol Group Limited. Photopolymerizable composition for producing screen printing stencils. 4,499,176, Cl. 430-253.000.
Cutter Laboratories, Inc.: *See*—
Tenold, Robert A., 4,499,073, Cl. 424-85.000.
Cuvilly, Jean-Pierre, to Essilor International. Device for examining an object under conditions of lighting on a black background. 4,498,769, Cl. 356-244.000.
Dai-Ichi Seiko Co., Ltd.: *See*—
Nishiuchi, Toshio, 4,499,370, Cl. 235-144.0HC.
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Suzuki, Norimoto; and Inoue, Shunji, 4,499,126, Cl. 428-13.000.
Daikin Kogyo Co., Ltd.: *See*—
Nakagawa, Shinichi; Nakagawa, Tsuneo; Yamaguchi, Sadaatsu; Ihara, Kiyohiko; Amano, Toshihiko; Omori, Mitsugu; and Asano, Kohzoh, 4,499,249, Cl. 526-206.000.
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Daimaru, Akimasa: *See*—
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Daimler-Benz Aktiengesellschaft: *See*—
Petrovsky, Jan; and Roloff, Heinz, 4,498,848, Cl. 417-253.000.
Schobbe, Hermann, 4,498,680, Cl. 277-112.000.
Dainippon Ink and Chemicals, Inc.: *See*—
Murakami, Yoichi; Shoji, Akio; Takezawa, Shoichiro; Ishikawa, Noboru; and Morita, Toshiaki, 4,499,239, Cl. 525-111.000.
Dakin, Wayne R.; and Isailovic, Jordan, to Discovision Associates. Compressed bandwidth frequency modulation signal format apparatus and method. 4,499,502, Cl. 358-310.000.

Dalloro, Leonardo: *See*—
Moreschini, Luciano; Dalloro, Leonardo; Cavaterra, Enrico; Petrini, Guido; and Covini, Romano, 4,499,302, Cl. 562-599.000.
Dalton, Thomas B., to Dyna-Torque, Inc. Torque measuring device. 4,498,336, Cl. 73-168.000.
Dammann, Johannes, to CLAAS OHG. Axial threshing and separating arrangement. 4,498,483, Cl. 130-27.00T.
Danavox A/S: *See*—
Elbaek, Jorgen F., 4,499,337, Cl. 179-27.00D.
Daniels, Edward P.; and Dugos, Daniel F., to Pitney Bowes Inc. Method and apparatus for individualized selection of special fee postage value computations. 4,499,545, Cl. 364-464.000.
Daprise, John G. Explosive target. 4,498,677, Cl. 273-380.000.
Darche, Michel J. P.; and Cariqvist, Stig, to Societe ECA. Heat exchanger module for Stirling engines. 4,498,297, Cl. 60-525.000.
Data General Corporation: *See*—
Bechman, Brett L.; Belgard, Richard A.; Bernstein, David H.; Bratt, Richard G.; Clancy, Gerald F.; Gavrin, Edward S.; Gruner, Ronald H.; Jones, Thomas M.; Mundie, Craig J.; Nealon, James T.; Pilat, John F.; Schleimer, Stephen I.; and Wallach, Steven J., 4,499,535, Cl. 364-200.000.
Clancy, Gerald F.; Gruner, Ronald H.; Schleimer, Stephen I.; Mundie, Craig J.; Wallach, Steven J.; Wallach, Walter A., Jr.; Ahlstrom, John K.; Richmond, Michael S.; Bernstein, David H.; and Bratt, Richard G., 4,499,604, Cl. 364-200.000.
Datawell B.V.: *See*—
Rademakers, Petrus J., 4,498,877, Cl. 441-23.000.
David Brown Tractors Ltd.: *See*—
Williams, Frederick; and Coe, Anthony D., 4,498,839, Cl. 414-686.000.
David, Wallace M.: *See*—
Bowling, James A.; and David, Wallace M., 4,498,390, Cl. 101-365.000.
Davies, David H.; and Evanicky, Daniel E., to Minnesota Mining and Manufacturing Company. Cover assembly for optical recording medium. 4,499,477, Cl. 346-137.000.
Davies, William, to J. C. Renfroe and Sons, Inc. Lifting clamp locking mechanism with push button release handle. 4,498,699, Cl. 294-101.000.
Davis, John D. Flue cleaner. 4,498,212, Cl. 15-242.000.
Davis, Jon F.: *See*—
Spicer, Leonard D.; Bennett, Dennis W.; and Davis, Jon F., 4,499,190, Cl. 436-122.000.
Davis, Richard B.: *See*—
Southgate, Peter D.; Fairbanks, David W.; Davis, Richard B.; and Beltz, John P., 4,498,779, Cl. 356-384.000.
Davison, John B.; Jasinski, Raymond J.; and Peerce-Landers, Pamela J., to Occidental Chemical Corporation. Electrochemical maintenance of catalyst activity. 4,499,025, Cl. 260-465.00R.
Davy McKee AG: *See*—
Heinze, Helmut; Wilhelm, Fritz; Mackensen, Klaus; and Finkeldei, Ferdinand, 4,499,261, Cl. 528-279.000.
Dawson, Jeffery C.: *See*—
Engelhardt, Friedrich; Piesch, Steffen; Balzar, Juliane; and Dawson, Jeffery C., 4,499,232, Cl. 524-548.000.
Dawson, Samuel O.: *See*—
Tank, Gene F.; Dawson, Samuel O.; and Barnett, Phillip R., 4,498,913, Cl. 55-356.000.
Day, Donald C., to AMSTED Industries Incorporated. Locating pin. 4,498,798, Cl. 403-24.000.
Deal, Carl H.; and Flynn, A. John, to Shell Oil Company. Simultaneous removal of water and hydrogen sulfide from gaseous carbon dioxide. 4,498,911, Cl. 55-32.000.
Deborde, Albert H.; and Remond, Pierre, to Saurer-Diedericha Societe Anonyme. Weft predelivery and measuring device for a shuttleless loom. 4,498,639, Cl. 242-47.010.
de Bruyne, Norman A., to Techne Corporation. Floating magnetic stirrer for culture medium. 4,498,785, Cl. 366-274.000.
Deere & Company: *See*—
Gassman, Max P., 4,498,846, Cl. 417-214.000.
Degnan, Thomas F.; and Partridge, Randall D., to Mobil Oil Corporation. Suppression of light gas production in cracking processes by the addition of highly siliceous materials having high surface area and low acidity. 4,498,976, Cl. 208-120.000.
Deguchi, Hidetaka: *See*—
Watanabe, Kazumasa; Deguchi, Hidetaka; and Suginaka, Shunji, 4,499,181, Cl. 430-558.000.
Dehne, Ernst-August: *See*—
Breitbach, Elmar; and Dehne, Ernst-August, 4,498,341, Cl. 73-517.00R.
DeJeney, Viktor. Device to correct the malfunction in film feed of a perforated film through a light beam. 4,498,745, Cl. 352-119.000.
Dejeux, Pol: *See*—
Leroy, Jean-Luc; and Dejeux, Pol, 4,498,426, Cl. 122-32.000.
Delaney, Michael J.: *See*—
Stokes, Robert B.; Yen, Kuo-Hsiung; Lau, Kei-Fung; Kagiwada, Reynold S.; and Delaney, Michael J., 4,499,393, Cl. 310-313.00A.
Del Tufo, Mark J.; Lake, Ralph J., Jr.; and Solomon, Stephen R., to Burroughs Corporation. Coupling arrangement. 4,498,802, Cl. 403-300.000.
DeLuca, Frank T.; and Dobson, Gordon A., to Lockheed Corporation. Cargo door assembly. 4,498,648, Cl. 244-118.300.
Demizu, Michinosuke: *See*—
Yamanaka, Takashi; Takeya, Yasushi; Yorita, Mitsumasa; Horiuchi, Toshiaki; Inagaki, Kouichi; Naya, Eizo; Demizu, Michinosuke; and Okumura, Mitsuhiro, 4,499,009, Cl. 252-512.000.
Demmer, Walter; Gutsmann, Rolf D.; and Lenth, Jurgen, to U.S. Philips Corporation. Digital FM demodulator using a filter having a linearly sloping frequency-amplitude characteristic. 4,499,427, Cl. 329-107.000.
Demovic, Vojtech: *See*—
Schmidhuber, Karl; Wall, Helmut; and Demovic, Vojtech, 4,498,703, Cl. 297-328.000.
Dentsply Research & Development Corp.: *See*—
Meisiitzer, Karl H.; and Hauner, Wigbert, 4,498,866, Cl. 432-239.000.
Schulmeyer, Herbert G., 4,498,865, Cl. 432-18.000.
Denzel, Theodor: *See*—
Breuer, Hermann; Denzel, Theodor; and Treuner, Uwe D., 4,499,016, Cl. 260-239.00A.
de Palezieux, Jacques; and Jobin, Georges F., to Runtal Holding Company S.A. Heat exchanger. 4,498,529, Cl. 165-176.000.
Derichs, Eberhard: *See*—
Gerarts, Wilhelm; Thielen, Gerd; and Derichs, Eberhard, 4,498,527, Cl. 165-89.000.
Derivaz, Charles, to Samvaz S.A. Plane. 4,498,513, Cl. 145-11.000.
Design Wire Products, Inc.: *See*—
Colucci, James, 4,498,592, Cl. 211-42.000.
Designs for Vision, Inc.: *See*—
Feinbloom, William, 4,498,743, Cl. 351-45.000.
de Solms, S. Jane, to Merck & Co., Inc. Benzothiazole-2-sulfonamide derivatives for the topical treatment of elevated intraocular pressure. 4,499,103, Cl. 514-365.000.
Desprez, Pierre: *See*—
Finger, Ulrich; Desprez, Pierre; and Ligneres, Pierre, 4,499,538, Cl. 364-200.000.
Deutsche Forschungs- u. Versuchsanstalt fur Luft-u-Raumfahrt e.V.: *See*—
Breitbach, Elmar; and Dehne, Ernst-August, 4,498,341, Cl. 73-517.00R.
Devoe, Richard A.: *See*—
Whitely, Elliot F.; Devoe, Richard A.; and Gadbois, Gerald W., 4,499,134, Cl. 428-102.000.
Deyer, Craig E., to RCA Corporation. System for converting the frequency of a pulse train to a binary number. 4,499,588, Cl. 377-42.000.
Dhein, Rolf: *See*—
Hentschel, Karl-Heinz; Dhein, Rolf; Winter, Hans; and Vojacek, Herbert, 4,499,000, Cl. 252-73.000.
Diachem Industries, Inc.: *See*—
Sortwell, Edwin T., 4,499,214, Cl. 523-336.000.
Diamond, Jeffrey S. Combined mailbox and supporting post. 4,498,621, Cl. 232-35.000.
Diba, Keyvan T., to Solir Corporation. Solar panel handling and mounting device. 4,498,822, Cl. 410-2.000.
Dickert, James C.; Roccaforte, Harry I.; and Wysocki, Lawrence S., to Champion International Corporation. Carton with carrying handle. 4,498,620, Cl. 229-52.00A.
Dickinson, Robert V.; Galie, Louis M.; and Snow, Craig A. Locating digital coded words which are both acceptable misspellings and acceptable inflections of digital coded query words. 4,499,553, Cl. 364-900.000.
Diehl GmbH & Co.: *See*—
Grimmer, Horst; and Lunz, Alfred-Gunther, 4,498,788, Cl. 368-106.000.
Diesel Kiki Company, Ltd.: *See*—
Ohkoshi, Masayoshi; and Suzuno, Yoshiro, 4,498,437, Cl. 123-373.000.
Dietliker, Kurt: *See*—
Husler, Rinaldo; Rutsch, Werner; and Dietliker, Kurt, 4,498,964, Cl. 204-159.230.
Dietrich, Bernhard, to SDS-Elektro G.m.b.H. Magnetic snap switch. 4,499,345, Cl. 200-67.00F.
Dietz, Peter W.; and Wood, Ralph T., to General Electric Company. Method for coating with an atomizable material. 4,499,118, Cl. 427-28.000.
Diggins, Joseph P., to Foster Wheeler Energy Corporation. Method for inspecting interior of a pressure vessel having replaceable plug assembly. 4,498,339, Cl. 73-432.00R.
Dijkstra, Kees; and Garenfeld, Andreas J., to U.S. Philips Corporation. Thermodynamic oscillator with average pressure control. 4,498,296, Cl. 60-521.000.
Dinger, Rudolf, to Asulab S.A. Sensitive element for use in a strain sensor and a sensor comprising such an element. 4,498,344, Cl. 73-778.000.
DiNicolantonio, Arthur R.; and Wei, Victor K., to Exxon Research & Engineering Co. Furnace having bent/single-pass tubes. 4,499,055, Cl. 422-197.000.
Di Nunzio, Vittorio: *See*—
Iacoponi, Stefano; and Di Nunzio, Vittorio, 4,499,410, Cl. 318-444.000.
DiRienzo, Armand. Emergency fuel flow shut-off device. 4,498,606, Cl. 222-52.000.
Dischert, Robert A.; and Topper, Robert J., to RCA Corporation. Television gamma corrector with symmetrical response about black-level. 4,499,494, Cl. 358-164.000.
Discovision Associates: *See*—
Dakin, Wayne R.; and Isailovic, Jordan, 4,499,502, Cl. 358-310.000.
Lopez De Romana, Eduardo A., 4,499,569, Cl. 369-45.000.
Dittmer, Mark W.: *See*—
Dittmer, Willard W.; and Dittmer, Mark W., 4,498,373, Cl. 98-33.100.

Dittmer, Willard W.; and Dittmer, Mark W. Air inlet system. 4,498,373, Cl. 98-33.100.

Dixon, Glen J. Ara-A Antiviral composition and method of administering the same. 4,499,084, Cl. 514-46.000.

Djelouah, Salah, to Sorelec. Thermomechanical-conversion engine, especially an engine working with a low-boiling-point fluid. 4,498,302, Cl. 60-671.000.

Dlugos, Daniel F.: *See*—
Daniels, Edward P.; and Dlugos, Daniel F., 4,499,545, Cl. 364-464.000.

DM International, Inc.: *See*—
Milner, Geoffrey; Butler, Michael F.; and Ashworth, Robert A., 4,498,909, Cl. 48-209.000.

Doane, William J., to United States of America, Navy. Frangible fly through diaphragm for missile launch canister. 4,498,368, Cl. 89-1.817.

Dobson, Gordon A.: *See*—
DeLuca, Frank T.; and Dobson, Gordon A., 4,498,648, Cl. 244-118.300.

Dr. C. Otto & Comp. G.m.b.H.: *See*—
Ritter, Horst; and Herpers, Edmund-Theo, 4,499,060, Cl. 423-232.000.

Dr. Carl Hahn G.m.b.H.: *See*—
Friese, Axel, 4,498,218, Cl. 28-119.000.

Dr. Ing. Rudolf Hell GmbH: *See*—
Gall, Winrich; and Wellendorf, Klaus, 4,499,489, Cl. 358-75.000.

Dr. L°. Zambeletti, S.p.A.: *See*—
Bergamaschi, Mario; and Alfieri, Carlo, 4,499,107, Cl. 514-375.000.

Doggett, David E., to Benson Inc. Adjusting mechanism for use with diode lasers. 4,498,737, Cl. 350-237.000.

Dohi, Takashi: *See*—
Shinozaki, Nozomu; Dohi, Takashi; Yamazaki, Shinji; and Neki, Shigeo, 4,499,449, Cl. 338-32.00R.

Dominguez, Richard J. G.; McEntire, Edward E.; and Naylor, Carter G., to Texaco Inc. Reaction injection molded elastomers containing high molecular weight organic acids. 4,499,254, Cl. 528-49.000.

Donahue, Barbara S.; and Ficca, Irene. Support device for nursing bottles and amusement items. 4,498,613, Cl. 224-251.000.

Donaldson, A. Burl: *See*—
Eisenhawer, Stephen; Mulac, Anthony J.; Donaldson, A. Burl; and Fox, Ronald L., 4,498,542, Cl. 166-303.000.

Donaldson Company, Inc.: *See*—
Ericksen, Donald J., 4,498,914, Cl. 55-480.000.

Dong Hwa Engineering Co. Ltd.: *See*—
Bae, Ik J., 4,498,598, Cl. 220-6.000.

Donnelly, Vincent M.: *See*—
Cook, Joel M.; Donnelly, Vincent M.; Flamm, Daniel L.; Ibbotson, Dale E.; and Mucha, John A., 4,498,953, Cl. 156-646.000.

Dore, Jacky; and Moser, Helmut, to Sandoz Ltd. Polyphthalocyanine compounds useful as dyestuffs. 4,499,018, Cl. 260-245.810.

Dornier GmbH: *See*—
Proksch, Hans-Jorg; Welte, Dieter; Zimmer, Herbert; and Lotz, Michael, deceased, 4,498,646, Cl. 244-35.00R.
Reccius, Helmut; and Ponitzsch, Werner, 4,498,325, Cl. 72-302.000.

Dornier System GmbH: *See*—
Kock, Wulf; Schmidberger, Rainer; and Wagner, Wolfgang, 4,498,395, Cl. 102-517.000.
Rottesbacher, Reinhard, 4,499,360, Cl. 219-85.00H.

Doron, Benjamin: *See*—
Assaf, Gad; and Doron, Benjamin, 4,498,300, Cl. 60-641.800.

Doty, Gerald A., to Gateway Industries, Inc. Seat belt retractors. 4,498,642, Cl. 242-107.40A.

Doty, John S, to Hughes Aircraft Company. Tool for optically finishing multiple mounted optical fibers. 4,498,260, Cl. 51-217.00R.

Douville, Jean-Pierre: *See*—
Rouly, Eric; and Douville, Jean-Pierre, 4,498,386, Cl. 101-40.000.

Dovertie, Ralph G.: *See*—
Otteblad, Sven I.; and Dovertie, Ralph G., 4,498,408, Cl. 114-52.000.

Dow Chemical Company, The: *See*—
Garces, Juan M., 4,499,320, Cl. 585-467.000.
Malhotra, Sudarhshan K.; and Orvik, Jon A., 4,499,277, Cl. 546-346.000.
Malhotra, Sudarshan K.; and Orvik, Jon A., 4,499,276, Cl. 546-346.000.
Wang, Chun S.; Pham, Ha Q.; and Bertram, James L., 4,499,255, Cl. 528-95.000.

Dowbenko, Rostyslaw; Stewart, Raymond S.; Hartman, Marvis E.; Gorman, Barbara; and Thomas, Stephen J., to PPG Industries, Inc. Color plus clear coating method utilizing addition interpolymers containing alkoxy silane and/or acyloxy silane groups. 4,499,150, Cl. 428-447.000.

Dowbenko, Rostyslaw; Stewart, Raymond S.; Hartman, Marvis E.; Gorman, Barbara; and Thomas, Stephen J., to PPG Industries, Inc. Color plus clear coating method utilizing addition interpolymers containing alkoxy silane and/or acyloxy silane groups. 4,499,151, Cl. 428-447.000.

Drageerwerk AG: *See*—
Warncke, Ernst, 4,498,470, Cl. 128-202.260.

Drageerwerk Aktiengesellschaft: *See*—
Matthiessen, Hans, 4,499,423, Cl. 324-425.000.

Dresser Industries, Inc.: *See*—
Engelhardt, Friedrich; Piesch, Steffen; Balzar, Juliane; and Dawson, Jeffery C., 4,499,232, Cl. 524-548.000.

Drug Concentrates, Inc.: *See*—
Smith, George B., II, 4,498,591, Cl. 206-620.000.

Drumm, Arthur E. Brush bristle unit for brush rolls. 4,498,210, Cl. 15-183.000.

DSM Resins B.V.: *See*—
Verwer, Andreas N. J.; and Evers, Johannes T. M., 4,499,235, Cl. 525-38.000.

Dso "Pharmachim": *See*—
Galabov, Angel S.; and Mastikova, Margarita H., 4,499,093, Cl. 514-258.000.

Dubey, Agnes: *See*—
Wyrick, Steven D.; Hall, Iris H.; and Dubey, Agnes, 4,499,303, Cl. 514-605.000.

Dubroeucq, Marie-Christine; Renault, Christian; and Le Fur, Gerard, to Pharmuka Laboratoires. Derivatives of arene and hetero-arene carboxamides and their use as medicaments. 4,499,094, Cl. 514-301.000.

Ducati, Adriano C.: *See*—
Merritt, Francis L.; and Ducati, Adriano C., 4,499,334, Cl. 174-111.000.

Duck, Roger: *See*—
James, Michael H.; Bratby, David M.; Duck, Roger; Podell, Howard I.; Goldstein, Albert; and Blackley, David C., 4,499,154, Cl. 428-494.000.

Duckett, Robert C.: *See*—
Pardo, Warren A., 4,498,695, Cl. 292-260.000.

Duffield, Thomas P.; and Winnale, James A., to General Motors Corporation. Storage reel for door mounted restraint belt. 4,498,689, Cl. 280-803.000.

Duflot, Anabela; Gras, Helene; Tartar, Andre; Duflot, Edith; and Boquet, Patrice, to Institut Pasteur. Synthetic ST toxin, process for its preparation and its use as a vaccinating agent. 4,499,080, Cl. 514-12.000.

Duflot, Edith: *See*—
Duflot, Anabela; Gras, Helene; Tartar, Andre; Duflot, Edith; and Boquet, Patrice, 4,499,080, Cl. 514-12.000.

Dufour, Mark D.: *See*—
Kurtz, John A.; Cousens, Donald E.; and Dufour, Mark D., 4,498,638, Cl. 242-45.000.

Dugan, Michael T.: *See*—
Miazga, Dennis E.; Nguyen, Tuan A.; and Dugan, Michael T., 4,499,581, Cl. 371-20.000.

DuJack, James M.: *See*—
Goodale, Robert H.; and DuJack, James M., 4,499,148, Cl. 428-447.000.

Duncan, Damon H., to Sperry Corporation. Damping mechanism for gyroscopes. 4,498,340, Cl. 73-504.000.

Duncan, William C. W., to Plessey Overseas Limited. Electrical connectors. 4,498,718, Cl. 339-59.00M.

Dunning, John S.: *See*—
Oden, Laurance L.; and Dunning, John S., 4,498,928, Cl. 75-124.000.

Dupin, Thierry: *See*—
Toulhoat, Herve ; Jacquin, Yves; and Dupin, Thierry, 4,499,203, Cl. 502-247.000.

Du Pont de Nemours, E. I., and Company: *See*—
Booker, Reginald A., 4,499,182, Cl. 430-621.000.
Ernst, Richard E., 4,499,291, Cl. 549-429.000.
Hermolin, Joshua, 4,499,305, Cl. 568-342.000.
Honsberg, Wolfgang, 4,499,244, Cl. 525-384.000.
Irwin, Robert S., 4,499,259, Cl. 528-190.000.
Kaplit, Michael, 4,498,781, Cl. 356-435.000.
Shenvi, Ashokkumar B.; and Kettner, Charles A., 4,499,082, Cl. 514-2.000.

Dupuis, Bernard; and Behague, Francois, to Compagnie Industrielle des Telecommunications Cit-Alcatel. Group of terminal units for a digital exchange. 4,499,575, Cl. 370-58.000.

Duracell Inc.: *See*—
Mallory, Henry R., 4,499,525, Cl. 362-157.000.

Durango Systems, Inc.: *See*—
Waibel, Helmut K., 4,498,794, Cl. 400-629.000.

Durant, Graham J.; and Ganellin, Charon R., to Smith Kline & French Laboratories Limited. Pharmacologically active isoxazole and triazole compounds. 4,499,101, Cl. 514-374.000.

Dutcher, Daniel P., to Champion International Corporation. Beverage can carton with opening panel. 4,498,581, Cl. 206-427.000.

Dvorsky, Drahomir; and Cerovsky, Karel, to Vyzkumny ustav zuslechtovaci. Quaternary ammonium compounds. 4,499,282, Cl. 548-336.000.

Dye, Lester L., to Eastern Company, The. Rock formation support plate. 4,498,815, Cl. 405-259.000.

Dyer, Lawrence D.; and McGregor, Anderson D., to Texas Instruments Incorporated. Method for measuring saw blade flexure. 4,498,345, Cl. 73-849.000.

Dyna-Torque, Inc.: *See*—
Dalton, Thomas B., 4,498,336, Cl. 73-168.000.

Dynalube Holdings Limited: *See*—
Bendahan, Samuel H., 4,498,558, Cl. 184-15.100.

Dynamit Nobel Aktiengesellschaft: *See*—
Fischer, Klaus; Kroschel, Heinz; Nicodemus, Joachim; and Petters, Willi, 4,498,393, Cl. 102-393.000.

E. C. Hopkins Limited: *See*—
Buckle, Brain L., 4,498,881, Cl. 441-93.000.

E.F.C.I.S.: *See*—
Brice, Jean-Michel, 4,499,560, Cl. 365-228.000.

E. R. Squibb & Sons, Inc.: *See*—
Breuer, Hermann; Denzel, Theodor; and Treuner, Uwe D., 4,499,016, Cl. 260-239.00A.

Gordon, Eric M.; and Weller, Harold N., III, 4,499,079, Cl. 514-2.000.

Krapcho, John, 4,499,287, Cl. 548-532.000.

Sprague, Peter W.; and Heikes, James E., 4,499,292, Cl. 549-459.000.

Varma, Ravi K., 4,499,021, Cl. 260-397.100.

E-Systems, Inc.: *See*—
Mosley, William H.; Sanders, David E.; and Roberson, Richard E., 4,499,585, Cl. 375-62.000.

E.V. Camp Steel Works, Inc.: *See*—
Gearhart, Gordon E., 4,498,284, Cl. 59-84.000.

Ealovega, George D.; and Langridge, Peter J. Method of and apparatus for producing a photograph of a mobile subject. 4,498,744, Cl. 352-89.000.

Eastern Company, The: *See*—
Dye, Lester L., 4,498,815, Cl. 405-259.000.

Eastman Kodak Company: *See*—
Bishop, John F.; and Braun, Thomas O., 4,499,174, Cl. 430-215.000.
Blazey, Richard N., 4,499,437, Cl. 332-7.510.
Fagerburg, David R.; and McFarlane, Finley E., 4,499,262, Cl. 528-279.000.
Gabrielsen, Rolf S.; Graham, Patricia A.; Klijanowicz, James E.; and Stern, Max H., 4,499,304, Cl. 564-92.000.
Goodhue, Charles T., 4,499,184, Cl. 435-11.000.
Hyatt, John A.; and Coates, Clarence A., Jr., 4,499,272, Cl. 546-172.000.
Molaire, Michel F., 4,499,165, Cl. 430-17.000.

Eaton Corporation: *See*—
Holtzhauser, Joseph C.; and Kwasniewski, Dale L., 4,498,515, Cl. 152-417.000.
Ross, Alan R., 4,498,350, Cl. 74-89.150.

Eaton, Thomas E.: *See*—
Peper, Henry; Eaton, Thomas E.; and Ferguson, Edward J., 4,498,797, Cl. 401-141.000.

Ebata, Yoshikazu: *See*—
Hanyu, Susumu; and Ebata, Yoshikazu, 4,498,405, Cl. 112-168.000.

Eberly, Paul E., Jr., to Exxon Research & Engineering Co. Hydrodesulfurization process with conversion of heavy hydrocarbons utilizing a catalyst containing a group IIA metal component. 4,498,979, Cl. 208-216.00R.

Ebert, Michael: *See*—
Miller, William, 4,498,500, Cl. 137-883.000.

Ebi, Hiroyuki: *See*—
Miyatake, Kimio; Ishida, Kozo; Ebi, Hiroyuki; and Shimada, Takeshi, 4,499,378, Cl. 250-343.000.

Eckert, Alfred; Heilmeir, Ernst; and Hempen, Klaus, to Siemens Aktiengesellschaft. Apparatus for rapid execution of interrupts after the recognition of an interrupt request. 4,499,537, Cl. 364-200.000.

Economopoulos, Peter C.: *See*—
Still, David W.; and Economopoulos, Peter C., 4,499,579, Cl. 371-15.000.

Economy Color Card Co., Inc.: *See*—
Ackerman, Don, 4,498,828, Cl. 412-4.000.

Economy, James; and Zachariades, Anagnostis E., to International Business Machines Corporation. Process for finishing surfaces achieving improved magnetic disk performance. 4,499,122, Cl. 427-130.000.

Edakubo, Hiroo; and Maeda, Masaya, to Canon Kabushiki Kaisha. Video system. 4,499,504, Cl. 358-335.000.

Edel, Maurice. Multi-hull sailboat. 4,498,409, Cl. 114-61.000.

Edwards, Laroy H., to Chevron Research Company. Insecticidal N-carbamoyl-oxadiazolidin-5-ones and thiones. 4,499,098, Cl. 514-364.000.

Eggertsson, Thorsteinn: *See*—
Bjarnason, Gudmundur; and Eggertsson, Thorsteinn, 4,498,818, Cl. 406-137.000.

EIC Laboratories, Inc.: *See*—
Foos, Joseph S., 4,499,161, Cl. 429-196.000.

Eicken, Karl; Rohr, Wolfgang; and Wuerzer, Bruno, to BASF Aktiengesellschaft. N-aminomethylhaloacetanilides and their use for controlling undesirable plant growth. 4,498,922, Cl. 71-111.000.

Eilers, Norbert, to Blaupunkt Werke GmbH. Radio receiver with reception-readiness monitoring feature and method. 4,499,603, Cl. 455-205.000.

Eisenhawer, Stephen; Mulac, Anthony J.; Donaldson, A. Burl; and Fox, Ronald L., to Enhanced Energy Systems. Direct contact low emission steam generating system and method utilizing a compact, multi-fuel burner. 4,498,542, Cl. 166-303.000.

Eisenlohr, Othmar: *See*—
Paulet, Jean-Francois; and Eisenlohr, Othmar, 4,498,967, Cl. 204-272.000.

Elbaek, Jorgen F., to Danavox A/S. Coupler for microtelephone set. 4,499,337, Cl. 179-27.00D.

Elder, Ivan R. Nipple, ring and cap dishwasher accessory. 4,498,594, Cl. 211-181.000.

Electric Power Research Institute, Inc.: *See*—
Nelson, Terry L.; and Reichman, James M., 4,498,813, Cl. 405-182.000.

Electronique Marcel Dassault: *See*—
Gessen, Michel, 4,499,589, Cl. 377-55.000.

Eliter, koncern textilniho strojirenstvi: *See*—
Pavek, Miloslav, 4,498,279, Cl. 57-22.000.
Pavek, Miloslav; and Hlubucek, Ladislav, 4,498,280, Cl. 57-22.000.

Ellington, Thomas S., IV: *See*—
Banks, Edward L.; Ellington, Thomas S., IV; and Kuyel, Birol, 4,499,162, Cl. 430-5.000.

El-Saie, Ahmed A., to Conoco Inc. Multipoint slurry injection junction. 4,498,819, Cl. 406-181.000.

Emenaker, Leo J.: *See*—
Barrus, Gordon B.; Emenaker, Leo J.; Radke, Glen R.; Farb, Norman E.; and Holzer, Gerold, 4,498,793, Cl. 400-320.000.

Emerson, Robert T.: *See*—
Brown, Albert E.; and Emerson, Robert T., 4,499,140, Cl. 428-308.400.

Emhart Industries, Inc.: *See*—
Balducci, Walter O.; and Miller, Theodore H., 4,498,319, Cl. 70-92.000.

Enami, Yasushi: *See*—
Muramatsu, Tateo; Kurihara, Mamoru; and Enami, Yasushi, 4,498,810, Cl. 405-115.000.

Encomech Product Development Limited: *See*—
Reed, Geoffrey R., 4,498,276, Cl. 53-588.000.

Encoyand, Roland C.: *See*—
Billard, Alain A.; Calmettes, Hubert C.; and Encoyand, Roland C., 4,498,392, Cl. 102-342.000.

Endoh, Eiji: *See*—
Oda, Yoshio; Otouma, Hiroshi; and Endoh, Eiji, 4,498,962, Cl. 204-129.000.

Enein, Mohamed: *See*—
Cafarella, Thomas; and Enein, Mohamed, 4,499,586, Cl. 375-98.000.

Energoinvest: *See*—
Izosimov, Dimitrij B.; and Sabanovic, Asif, 4,499,413, Cl. 318-802.000.

Energy Conversion Devices, Inc.: *See*—
Holmberg, Scott H.; and Flasck, Richard A., 4,499,557, Cl. 365-163.000.

Energy Innovations, Inc.: *See*—
Gourdine, Meredith C., 4,498,631, Cl. 239-692.000.

Engel, Dusan J.: *See*—
Malloy, Thomas P.; and Engel, Dusan J., 4,499,300, Cl. 562-495.000.

Engeler, William E.: *See*—
Mazin, Moshe; and Engeler, William E., 4,499,558, Cl. 365-182.000.

Engelhardt, Friedrich; Piesch, Steffen; Balzar, Juliane; and Dawson, Jeffery C., to Cassella Aktiengesellschaft; and Dresser Industries, Inc. Water soluble, crosslinkable polymer compositions, their preparation and use. 4,499,232, Cl. 524-548.000.

Engels, Walter, to Milliken Research Corporation. Pile fabric cutting device. 4,498,217, Cl. 26-9.000.

Englund, Rolf A.: *See*—
Schibbye, (Lars) Lauritz B.; and Englund, Rolf A., 4,498,849, Cl. 417-299.000.

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Enrique Garcia Associates: *See*—
Garcia, Enrique, 4,498,262, Cl. 52-173.00R.

Eoga, Anthony B. J., to Warner-Lambert Company. Controlled fade effervescing cleanser. 4,499,001, Cl. 252-99.000.

Epstein, Harry, to Kastar, Inc. Feeler gage mounting system. 4,498,239, Cl. 33-168.00R.

Ericksen, Donald J., to Donaldson Company, Inc. Filter apparatus including apparatus for clamping an air filter element in a filter housing. 4,498,914, Cl. 55-480.000.

Eriksen, Joern B.; and Radochonski, Pierre, to Tektronix, Inc. Image transfer method and apparatus. 4,499,501, Cl. 358-302.000.

Ernst, Richard E., to Du Pont de Nemours, E. I., and Company. Process for simultaneous hydrogenation of 2-butyne-1,4-diol and furan. 4,499,291, Cl. 549-429.000.

Erpelding, Edward J.: *See*—
Johnson, Elizabeth A., 4,498,615, Cl. 224-274.000.

Ertl, Wilhelm, to Siemens Aktiengesellschaft. Automatic insertion and removal device for components. 4,498,232, Cl. 29-741.000.

Esailor International: *See*—
Cuvilly, Jean-Pierre, 4,498,769, Cl. 356-244.000.

ESSO Resources Canada, Ltd.: *See*—
Aggour, Mohamed A.; and Banerjee, Sanjoy, 4,499,380, Cl. 250-390.000.

Estis, Leonard F., to Interferon Sciences, Inc. Method for purifying gamma-interferon. 4,499,014, Cl. 260-112.00R.

Etablissements Augier: *See*—
Nicolas, Jean-Pierre, 4,499,452, Cl. 340-310.00A.

Etat Francais: *See*—
Battais, Alain; Boutevin, Bernard J. L.; and Pietrasanta, Yves J. D., 4,499,022, Cl. 260-429.700.

Ethicon, Inc.: *See*—
Cerwin, Robert J.; Joshi, Madhusudan; Menges, John R.; Mericle, Robert W.; and Zwaskis, William J., 4,498,476, Cl. 128-346.000.

Ethyl Corporation: *See*—
Shepherd, Lawrence H., Jr., 4,499,290, Cl. 549-354.000.
Stahly, Barbara C.; and Stahly, G. Patrick, 4,499,026, Cl. 260-465.00R.

Ethyl Molded Products Company: *See*—
Gross, Richard A., 4,498,899, Cl. 604-16.000.

Etienne LaCroix - Tous Artifices: *See*—
Billard, Alain A.; Calmettes, Hubert C.; and Encoyand, Roland C., 4,498,392, Cl. 102-342.000.

Eudy, Nancy H.: *See—*
Tomcufcik, Andrew S.; Meyer, Walter E.; and Eudy, Nancy H., 4,499,097, Cl. 514-341.000.
European Electronic Systems Ltd.: *See—*
Loose, Peter W., 4,499,383, Cl. 250-561.000.
Evana Tool & Engineering Inc.: *See—*
Fuchs, Gilbet; Crowley, Norman; and Wink, Randall, 4,498,397, Cl. 104-35.000.
Evanicky, Daniel E.: *See—*
Davies, David H.; and Evanicky, Daniel E., 4,499,477, Cl. 346-137.000.
Evans & Sutherland Computer Corp.: *See—*
Hintze, Richard A., 4,499,457, Cl. 340-703.000.
Evans, Thomas L., to General Electric Company. Solvent free preparation of diarylthioethers. 4,499,285, Cl. 548-461.000.
Everett, Thomas D. Buoyancy prime mover with pressure control means. 4,498,294, Cl. 60-496.000.
Everitt, Delmar K.: *See—*
Goldfarb, Adolph E.; and Everitt, Delmar K., 4,498,886, Cl. 446-202.000.
Evers, Johannes T. M.: *See—*
Verwer, Andreas N. J.; and Evers, Johannes T. M., 4,499,235, Cl. 525-38.000.
Evert, Karla R., to Stearns Manufacturing Company. Hybrid personal flotation device. 4,498,882, Cl. 441-116.000.
Ewing, Frank I.: *See—*
Leppelmeier, Elton T.; and Ewing, Frank I., 4,499,403, Cl. 313-487.000.
Ex-Cell-O Corporation: *See—*
Grace, Wallace C., 4,498,361, Cl. 76-101.00R.
Extracorporeal Medical Specialties, Inc.: *See—*
Skinner, Christopher A., 4,498,982, Cl. 210-9o.200.
Exxon Research & Engineering Co.: *See—*
DiNicolantonio, Arthur R.; and Wei, Victor K., 4,499,055, Cl. 422-197.000.
Eberly, Paul E., Jr., 4,498,979, Cl. 208-216.00R.
Foroulis, Z. Andrew, 4,499,003, Cl. 252-192.000.
Liu, Huei-Cheng; and Spohn, Ralph J., 4,499,317, Cl. 585-438.000.
Liu, Huei-Cheng, 4,499,318, Cl. 585-438.000.
Pine, Lloyd A.; and Cull, Neville L., 4,498,975, Cl. 208-114.000.
Vanderspurt, Thomas H.; Richard, Michael A.; and Montagna, Angelo A., 4,499,204, Cl. 502-301.000.
Wheelock, Kenneth S., 4,499,195, Cl. 502-63.000.
Ezawa, Sadaaki, to Kabushiki Kaisha Kawai Gakki Seisakusho. Electronic musical instrument. 4,498,364, Cl. 84-1.170.
Fabrique Nationale Herstal: *See—*
Kaiser, Georges J. L., 4,498,369, Cl. 89-198.000.
Fabriques de Tabac Reunies, S.A.: *See—*
Frattolillo, Antonio P. A., 4,498,487, Cl. 131-336.000.
Fagerburg, David R.; and McFarlane, Finley E., to Eastman Kodak Company. Process for the preparation of sulfo-modified polyesters. 4,499,262, Cl. 528-279.000.
Fairbanks, David W.: *See—*
Southgate, Peter D.; Fairbanks, David W.; Davis, Richard B.; and Beltz, John P., 4,498,779, Cl. 356-384.000.
Fairchild Camera & Instrument Corporation: *See—*
Howell, Paul J.; and Currier, Gregory B., 4,498,227, Cl. 29-576.00B.
Kurtz, John A.; Cousens, Donald E.; and Dufour, Mark D., 4,498,638, Cl. 242-45.000.
Faison, Marilyn D. System for teaching visual discrimination of spatially oriented subject matter. 4,498,869, Cl. 434-184.000.
Falconieri, Remo, to Ing. C. Olivetti & C., S.p.A. Printing and/or correcting device for printing machines. 4,498,792, Cl. 400-214.000.
Falkvall, Thore E.: *See—*
Shaldon, Stanley; Christopherson, Kjell H. I.; Falkvall, Thore E.; and Mattisson, Ulf K., 4,498,990, Cl. 210-637.000.
Faltas, Mervat: *See—*
Yamazaki, Tsuneo; Faltas, Mervat; and Webb, Paul P., 4,499,483, Cl. 357-30.000.
Faludi, Arpad: *See—*
Kiss, Laszlo; Faludi, Arpad; Grof, Gyula; Bolyo, Laszlo; Szolgyen, Csaba; Mihadak, Istvan; and Varga, Imre, 4,498,789, Cl. 374-164.000.
Fanuc Ltd: *See—*
Fujioka, Yoshiki; and Hirota, Mitsuhiko, 4,499,414, Cl. 318-803.000.
Obara, Haruki, 4,499,359, Cl. 219-69.00W.
Farb, Norman E., to Printronix, Inc. Print hammer mechanism having intermediate pivot fulcrum. 4,498,388, Cl. 101-93.040.
Farb, Norman E.: *See—*
Barrus, Gordon B.; Emenaker, Leo J.; Radke, Glen R.; Farb, Norman E.; and Holzer, Gerold, 4,498,793, Cl. 400-320.000.
Farmatis S.r.l.: *See—*
Scalesciani, Juan, 4,499,104, Cl. 514-396.000.
Farmer, Edward J. Flow compensated computing controller. 4,498,809, Cl. 405-92.000.
Farmitalia Carlo Erba S.p.A.: *See—*
Moro, Luigi; Maffione, Grazia; Neri, Guido; and Rigamonti, Alessandro, 4,499,066, Cl. 424-19.000.
Faro, John H.: *See—*
Intengan, Franklin S., 4,498,684, Cl. 280-234.000.
Farrell, Geoffrey, to Burroughs Wellcome Co. Perfume dispensing material. 4,499,012, Cl. 252-522.00A.
Favey, Charles: *See—*
Wartelle, Claude; and Favey, Charles, 4,498,799, Cl. 403-140.000.
Favreau, Michel; Bajon, Jean; and Soca, Serge, to Thomson-CSF. Device for correcting color information supplied by a television camera with a view to improving the perception of pictures. 4,499,486, Cl. 358-37.000.
Fedder, James L.; and Kandros, Michael A., to AMP Incorporated. Latch device for ZIF card edge connectors. 4,498,722, Cl. 339-75.0MP.
Federal Paper Board Co., Inc.: *See—*
Sutherland, Robert L., 4,498,618, Cl. 229-40.000.
Feinbloom, William, to Designs for Vision, Inc. Binocular field of view simulator. 4,498,743, Cl. 351-45.000.
Feintuch, Martin W.: *See—*
Aron, Mitchell; and Feintuch, Martin W., 4,499,491, Cl. 358-102.000.
Fellwock, Charles G.: *See—*
Fellwock, Louis W.; Hortin, Kenneth L.; and Fellwock, Charles G., 4,498,713, Cl. 312-214.000.
Fellwock, Louis W.; Hortin, Kenneth L.; and Fellwock, Charles G., to Whirlpool Corporation. Thermal stress relief in refrigerators. 4,498,713, Cl. 312-214.000.
Feniou, Claude: *See—*
Creuzet, Marie-Helene; Feniou, Claude; Jarry, Christian; Prat, Gisele; and Pontagnier, Henri, 4,499,090, Cl. 514-210.000.
Fentress, Vernon A.: *See—*
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Ferag AG: *See—*
Reist, Walter, 4,498,664, Cl. 271-204.000.
Ferguson, Edward J.: *See—*
Peper, Henry; Eaton, Thomas E.; and Ferguson, Edward J., 4,498,797, Cl. 401-141.000.
Fern, Derek T.; and Harrison, Gary E., to McDermott Incorporated. Underwater pipeline sealing apparatus. 4,498,811, Cl. 405-168.000.
Ferns, Derek, to Selflevel Covers (Jersey) Limited. Manhole/access cover and frame assemblies. 4,498,804, Cl. 404-25.000.
Ferrando Gorin, Guido: *See—*
Barcellona, Alessandro; Ferrando Gorin, Guido; and Lausarot, Aldo, 4,498,496, Cl. 137-599.000.
Ferris, Michael J.; Wise, Paul H.; and Breslow, Jeffrey D., to Marvin Glass & Associates. Board game with a common piece having a spinner. 4,498,674, Cl. 273-243.000.
Feth, Georg; and Mills, John E., to McNeilab, Inc. Process for preparation of substituted formamidine and substituted N-iminomethyl piperidine. 4,499,274, Cl. 546-229.000.
Fiat Auto S.p.A.: *See—*
Barcellona, Alessandro; Ferrando Gorin, Guido; and Lausarot, Aldo, 4,498,496, Cl. 137-599.000.
Fiat Auto Spa.: *See—*
Iacoponi, Stefano; and Di Nunzio, Vittorio, 4,499,410, Cl. 318-444.000.
Ficca, Irene: *See—*
Donahue, Barbara S.; and Ficca, Irene, 4,498,613, Cl. 224-251.000.
Fiegen, Donald S.; and Ware, Chester D., to Trane Company, The. Method for pre-expanding heat exchanger tube. 4,498,220, Cl. 29-157.30C.
Fielding, Randy L., to Christy Machine Company. Material dispensing machine. 4,498,635, Cl. 241-94.000.
Fifolt, Michael J., to Occidental Chemical Corporation. Continuous process for preparing bisfluoroxydifluoromethane. 4,499,024, Cl. 260-453.00R.
Figueroa, Luisito A. Light reflector. 4,499,529, Cl. 362-283.000.
Finch, Dale E., to Abbott Laboratories. Intravenous monitoring system utilizing a dynamic reference threshold. 4,498,901, Cl. 604-65.000.
Findeisen, Kurt: *See—*
Schafer, Walter; Meiners, Hans-Joachim; Seel, Klaus; Reichmann, Wolfgang; Wagner, Kuno; and Findeisen, Kurt, 4,499,038, Cl. 264-51.000.
Finger, Ulrich; Desprez, Pierre; and Ligneres, Pierre. Access arbitration system to several processors or microprocessors with a common bus. 4,499,538, Cl. 364-200.000.
Finkeldei, Ferdinand: *See—*
Heinze, Helmut; Wilhelm, Fritz; Mackensen, Klaus; and Finkeldei, Ferdinand, 4,499,261, Cl. 528-279.000.
Firmenich, SA: *See—*
Rautenstrauch, Valentin, 4,499,297, Cl. 560-231.000.
Fischer, Georg, to Texas Instruments Incorporated. Apparatus for aligning tubular transport containers having a substantially U-shaped hollow cross-section for DIL housing prior to the emptying of such transport containers. 4,498,574, Cl. 198-380.000.
Fischer, Klaus; Kroschel, Heinz; Nicodemus, Joachim; and Petters, Willi, to Dynamit Nobel Aktiengesellschaft. Process for the distribution of submunition. 4,498,393, Cl. 102-393.000.
Fischer, Willy G.; and Thom, Elmar, to Henschel Flugzeug-Werke AG. Apparatus for adjusting the track of rotor blades through remote control. 4,498,842, Cl. 416-155.000.
Fisher, James E., to United Technologies Corporation. Bushing securing apparatus. 4,498,790, Cl. 384-428.000.
Fishman, David S., to Rogers Corporation. Decoupling capacitor and method of manufacture thereof. 4,499,519, Cl. 361-306.000.
Fisons plc: *See—*
Bennion, Colin, 4,499,269, Cl. 544-198.000.
Fitoussi, Richard; Leveque, Alain; and Sabot, Jean-Louis, to Rhone-Poulenc S.A. Liquid/liquid extraction of acidic aqueous streams comprising sulfate/titanium/iron values. 4,499,058, Cl. 423-70.000.
Fives-Cail Babcock: *See—*
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Fix, James E.; and Crews, Gary A., to Atlantic Richfield Company. Method and apparatus for recording broad-band seismic data. 4,499,565, Cl. 367-49.000.
Flamm, Daniel L.: *See—*
Cook, Joel M.; Donnelly, Vincent M.; Flamm, Daniel L.; Ibbotson, Dale E.; and Mucha, John A., 4,498,953, Cl. 156-646.000.
Flanagan, Robert M., to Amerace Corporation. Reflector structure. 4,498,733, Cl. 350-102.000.
Flasck, Richard A.: *See—*
Holmberg, Scott H.; and Flasck, Richard A., 4,499,557, Cl. 365-163.000.
Fletcher, James D. Release device. 4,498,448, Cl. 124-35.00A.
Flocchini, Andrew J. Backwash valve and system for teat cup assembly. 4,498,419, Cl. 119-14.180.
Flonic S.A.: *See—*
Rose, Rene, 4,499,371, Cl. 235-492.000.
Flores, Manuel. Anti-pollutant spark plug adaptor. 4,499,399, Cl. 313-143.000.
Flynn, A. John: *See—*
Deal, Carl H.; and Flynn, A. John, 4,498,911, Cl. 55-32.000.
Fohl, Timothy; Keeffe, William M.; and Rothwell, Harold L., to GTE Products Corporation. Metal halide arc discharge lamp with means for suppressing convection currents within the outer envelope and methods of operating same. 4,499,396, Cl. 313-25.000.
Fohlen, George M.: *See—*
Achar, Bappalige N.; Fohlen, George M.; and Parker, John A., 4,499,260, Cl. 528-229.000.
Foley, John T.: *See—*
Bilstad, Arnold C.; Foley, John T.; and Woodworth, Walker P., 4,498,983, Cl. 210-97.000.
Fontana, Alberto; Fontanelli, Renzo; Sacrini, Egeo; and Cicchetti, Osvaldo. Salts of aminic organic peroxides. 4,499,273, Cl. 546-188.000.
Fontanelli, Renzo: *See—*
Fontana, Alberto; Fontanelli, Renzo; Sacrini, Egeo; and Cicchetti, Osvaldo, 4,499,273, Cl. 546-188.000.
Foos, Joseph S., to EIC Laboratories, Inc. Electrochemical cell using dimethoxymethane and/or trimethoxymethane as solvent for electrolyte. 4,499,161, Cl. 429-196.000.
Ford Aerospace & Communications Corporation: *See—*
Luh, Howard H., 4,499,471, Cl. 343-373.000.
Ford Motor Company: *See—*
Hawlitzki, Christian, 4,499,528, Cl. 362-275.000.
Schechter, Michael M., 4,498,625, Cl. 239-5.000.
Forenade Fabriksverken: *See—*
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Formica Corporation: *See—*
Blasing, Elmer P.; Keeling, Ronald J.; and Roe, Jin-Young K., 4,499,125, Cl. 428-503.000.
Foroulis, Z. Andrew, to Exxon Research & Engineering Co. Antimony-molybdenum salt corrosion inhibitor composition. 4,499,003, Cl. 252-192.000.
Fort, Edward S. Lids for pressure vessels. 4,498,601, Cl. 220-256.000.
Forte, Paulino, to Union Carbide Corporation. Separation of aromatic and nonaromatic components in mixed hydrocarbon feeds. 4,498,980, Cl. 208-321.000.
Foster, Terry L.: *See—*
Proctor, David R.; and Foster, Terry L., 4,498,782, Cl. 356-436.000.
Foster Wheeler Energy Corporation: *See—*
Diggins, Joseph P., 4,498,339, Cl. 73-432.00R.
Fox, Ronald L.: *See—*
Eisenhawer, Stephen; Mulac, Anthony J.; Donaldson, A. Burl; and Fox, Ronald L., 4,498,542, Cl. 166-303.000.
Framatome & Cie.: *See—*
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Leroy, Jean-Luc; and Dejeux, Pol, 4,498,426, Cl. 122-32.000.
Frame, Robert R., to UOP Inc. Catalytic oxidation of mercaptan in petroleum distillate. 4,498,977, Cl. 208-207.000.
Frame, Robert R., to UOP Inc. Catalytic oxidation of mercaptan in petroleum distillate. 4,498,978, Cl. 208-207.000.
France Bed Co., Ltd.: *See—*
Masuda, Teruo; Abe, Takeo; and Koike, Matsuhiro, 4,498,477, Cl. 128-378.000.
Franchini, Mauro; Sarasso, Angelo; and Puccetti, Angelo, to Weber S.P.A. Carburetor fitted with electromagnetic devices for intercepting the flow of fuel during accelerator release. 4,498,439, Cl. 123-438.000.
Francis, Thomas L.: *See—*
Phelps, Frankie E.; Francis, Thomas L.; and LaCamera, Alfred F., 4,499,193, Cl. 501-98.000.
Franck, Gerhard: *See—*
Rake, Heinrich; Herchenbach, Horst; Jager, Gernot; and Franck, Gerhard, 4,498,930, Cl. 106-100.000.
Franckx, Joris: *See—*
Moisson, Marc; Van Noten, Lodewijk; Overbergh, Noel; Franckx, Joris; and Buekers, Valere, 4,498,938, Cl. 156-49.000.
Frank, Amalie J., to AT&T Bell Laboratories. Rapid generation of discrete random variates from general distributions. 4,499,551, Cl. 364-717.000.
Fraser, Alexander G., to AT&T Bell Laboratories. Multiplexed first-in, first-out queues. 4,499,576, Cl. 370-60.000.
Frattolillo, Antonio P. A., to Fabriques de Tabac Reunies, S.A. Rod-like smoking article with secondary air channels and apparatus for producing such an article. 4,498,487, Cl. 131-336.000.
Fredrick, Michael Douglas: *See—*
Lovitt, Robert O., 4,498,421, Cl. 119-17.000.
Frequency and Time Systems, Inc.: *See—*
Garvey, Robert M., 4,499,433, Cl. 331-3.000.
Frevert, Robert E., to Crippen Manufacturing Co., Inc. Vibrating anti-blinding cleaning and grading machines. 4,498,981, Cl. 209-243.000.
Friedman, Theodore D.: *See—*
Casey, Richard G.; and Friedman, Theodore D., 4,499,596, Cl. 382-37.000.
Friend, Barbara L., legal representative: *See—*
Mihalakis, Agis I., deceased; and Friend, Barbara L., legal representative, 4,498,734, Cl. 350-125.000.
Friese, Axel, to Dr. Carl Hahn G.m.b.H. Apparatus for transmitting a tampon blank to a tampon press. 4,498,218, Cl. 28-119.000.
Friesen, David. Harvester swath pick-up drive. 4,498,278, Cl. 56-364.000.
Fritschi, Edgar: *See—*
Barth, Hubert; Hartenstein, Johannes; Satzinger, Gerhard; Fritschi, Edgar; Ganser, Volker; Tauschel, Horst-Dietmar; and Wolf, Gunter, 4,499,089, Cl. 514-222.000.
Froes, Francis H.: *See—*
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Frolke, Wilhelm: *See—*
Traunecker, Werner; Frolke, Wilhelm; Kreuzer, Heinrich; and Kollmer, Hans P., 4,499,106, Cl. 514-603.000.
Fromm, Ellsworth H.: *See—*
Schirmer, Robert M.; and Fromm, Ellsworth H., 4,498,287, Cl. 60-39.020.
Frost, Paul T.; and Thomas, Robert T., to Frost, Paul T. Hydraulic oil counting device and water separator. 4,499,376, Cl. 250-341.000.
Fuchs, Gilbet; Crowley, Norman; and Wink, Randall, to Evana Tool & Engineering Inc. Conveyor transfer mechanism. 4,498,397, Cl. 104-35.000.
Fuderer, Andrija, to Union Carbide Corporation. Activated carbon adsorbent with increased heat capacity and the production thereof. 4,499,208, Cl. 502-415.000.
Fuji Electric Co., Ltd.: *See—*
Hino, Kazuhiko, 4,498,205, Cl. 5-449.000.
Tanaka, Nobuyasu; Ohashi, Mitunari; and Iwamoto, Shohzoh, 4,498,569, Cl. 193-27.000.
Fuji Jukogyo Kabushiki Kaisha: *See—*
Hara, Kazuo, 4,498,359, Cl. 74-850.000.
Kitade, Nobumitsu, 4,498,353, Cl. 74-606.00R.
Makita, Fujio, 4,499,450, Cl. 340-52.00R.
Ohgami, Masaaki; and Nakamura, Mitsuo, 4,498,441, Cl. 123-440.000.
Shibano, Kenji, 4,499,032, Cl. 261-72.00R.
Fuji Photo Film Co., Ltd.: *See—*
Hirai, Hiroyuki; and Sato, Kozo, 4,499,172, Cl. 430-203.000.
Hirai, Hiroyuki; and Kawata, Ken, 4,499,180, Cl. 430-559.000.
Sano, Kenji; Kondo, Syunichi; and Sato, Hideo, 4,499,167, Cl. 430-83.000.
Wada, Minoru; Takahashi, Yonosuke; and Hasegawa, Eiichi, 4,499,178, Cl. 430-495.000.
Yabe, Masao; Naruo, Kyoichi; and Ono, Kazuhiro, 4,499,043, Cl. 264-207.000.
Yamaguchi, Nobutaka; Fujiyama, Masaaki; Tada, Sugihiko; Tadokoro, Eiichi; Ryoke, Katsumi; Utsumi, Masahiro; and Suzuki, Masami, 4,499,121, Cl. 427-130.000.
Yamamoto, Nobuyuki, 4,499,138, Cl. 428-216.000.
Fuji Photo Optical Co., Ltd.: *See—*
Inuiya, Masafumi; and Murakoshi, Makoto, 4,499,547, Cl. 364-571.000.
Saburo, Numata, 4,499,406, Cl. 315-57.000.
Fuji Xerox Co., Inc.: *See—*
Inui, Toshiharu; Kurata, Masami; Nakajima, Hisao; and Ohmori, Takashi, 4,499,476, Cl. 346-76.0PH.
Fuji Xerox Co., Ltd.: *See—*
Takahashi, Izumi; Nakayama, Kenichiro; Sugiyama, Terumasa; and Suzuki, Takanobu, 4,499,580, Cl. 371-17.000.
Fujii, Akira, to NEC Corporation. Automatic level control circuit. 4,499,430, Cl. 330-279.000.
Fujii, Takayuki; and Tanaka, Norio, to Honda Giken Kogyo Kabushiki Kaisha. Ventilator for two- or three-wheeled vehicle. 4,498,700, Cl. 296-78.100.
Fujiki, Satoshi: *See—*
Tanino, Katsumi; Fujiki, Satoshi; and Okamoto, Shinzi, 4,499,010, Cl. 252-512.000.
Fujino, Shinji: *See—*
Iwata, Nobutoshi; Fukushima, Kiyoshi; Fujino, Shinji; Yamada, Takeshiro; Hao, Hideyuki; Tanaka, Shigeo; and Mitsuno, Tatsuyuki, 4,499,238, Cl. 525-98.000.
Fujioka, Yoshiki; and Hirota, Mitsuhiko, to Fanuc Ltd. AC Motor control method. 4,499,414, Cl. 318-803.000.
Fujisawa Pharmaceutical Co., Ltd.: *See—*
Takaya, Takao; Takasugi, Hisashi; and Yamanaka, Hideaki, 4,499,088, Cl. 514-202.000.
Fujita, Kiyoshi; Toyohisa, Shirou; Katou, Osamu; and Ishimaru, Kenji, to Kabushiki Kaisha Kobe Seiko Sho. Scraping mechanism. 4,498,988, Cl. 210-397.000.
Fujita, Teizo; and Kimura, Haruo, to Izumi Denki Corporation. Adapter for mounting switch onto panel. 4,499,352, Cl. 200-296.000.
Fujitsu Limited: *See—*
Isozumi, Shoji; and Kusunoki, Toshihiro, 4,498,937, Cl. 148-171.000.

Kurafuji, Setsuo, 4,499,559, Cl. 365-190.000.
Tanaka, Toshiaki; Fukai, Masao; Onuma Tatsuro; and Kinoshita, Ryohei, 4,498,256, Cl. 40-475.000.
Tanizawa, Tetsu; Omichi, Hitoshi; and Mitono, Yoshiharu, 4,499,484, Cl. 357-68.000.

Fujiyama, Masaaki: *See*—
Yamaguchi, Nobutaka; Fujiyama, Masaaki; Tada, Sugihiko; Tadokoro, Eiichi; Ryoke, Katsumi; Utsumi, Masahiro; and Suzuki, Masami, 4,499,121, Cl. 427-130.000.

Fukai, Masao: *See*—
Tanaka, Toshiaki; Fukai, Masao; Onuma, Tatsuro; and Kinoshita, Ryohei, 4,498,256, Cl. 40-475.000.

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Minowa, Nobuto; Fukatsu, Shunzo; Tachibana, Kunitaka; Niida, Taro; and Mase, Sadaaki, 4,499,027, Cl. 260-502.50G.

Fukushima, Kiyoshi: *See*—
Iwata, Nobutoshi; Fukushima, Kiyoshi; Fujino, Shinji; Yamada, Takeshiro; Hao, Hideyuki; Tanaka, Shigeo; and Mitsuno, Tatsuyuki, 4,499,238, Cl. 525-98.000.

Fukuta, Toshiaki: *See*—
Miyakawa, Susumu; Fukuta, Toshiaki; Akado, Hajime; and Taki, Yoshihiro, 4,498,989, Cl. 210-450.000.

Full, Donald A., to Philip Morris Incorporated. Heated die for carbonized material. 4,498,858, Cl. 425-466.000.

Fuller Company: *See*—
Nelson, Jeffrey A.; and Hanstine, Kenneth W., 4,498,634, Cl. 241-72.000.

Fulwyler, Mack J., to Becton, Dickinson and Company. Apparatus for distinguishing multiple subpopulations of cells. 4,499,052, Cl. 422-52.000.

Fung, Steven: *See*—
Sestanj, Kazimir; Fung, Steven; Abraham, Nedumparambil A.; and Bellini, Francesco, 4,499,310, Cl. 568-634.000.

Furukawa Battery Co., Ltd., The: *See*—
Watanabe, Yasushi; Suzuki, Yuichi; Nagata, Yukihiro; and Hoshino, Kiyotaka, 4,498,519, Cl. 164-417.000.

Furukawa Electric Co., Ltd., The: *See*—
Watanabe, Yasushi; Suzuki, Yuichi; Nagata, Yukihiro; and Hoshino, Kiyotaka, 4,498,519, Cl. 164-417.000.

Futaire Limited: *See*—
Toll, Ian C., 4,498,649, Cl. 244-118.600.

G. D. Searle & Co.: *See*—
Baran, John S.; and Liang, Chi-Dean, 4,499,289, Cl. 549-292.000.
Collins, Paul W.; and Gasiecki, Alan F., 4,499,296, Cl. 560-118.000.
Mueller, Richard A.; and Partis, Richard A., 4,499,295, Cl. 560-53.000.

Gabrielsen, Rolf S.; Graham, Patricia A.; Klijanowicz, James E.; and Stern, Max H., to Eastman Kodak Company. Color-forming sulfonamidodiphenylamines and corresponding sulfonimide dyes. 4,499,304, Cl. 564-92.000.

Gadberry, Donald L.: *See*—
Kranz, Max L.; and Gadberry, Donald L., 4,498,471, Cl. 128-204.260.

Gadbois, Gerald W.: *See*—
Whitely, Elliot F.; Devoe, Richard A.; and Gadbois, Gerald W., 4,499,134, Cl. 428-102.000.

Gaffney, Anne M., to Atlantic Richfield Company. Methane conversion. 4,499,323, Cl. 585-500.000.

Gaffney, Anne M., to Atlantic Richfield Company. Methane conversion. 4,499,324, Cl. 585-500.000.

Gage, Bobby D.: *See*—
Pittman, Homer F.; and Gage, Bobby D., 4,498,845, Cl. 417-545.000.

Gageur, Fritz; and Wohlgenannt, Horst, to Lindauer Dornier Gesellschaft mbH. Apparatus for treating lengths of materials with a gaseous medium. 4,498,250, Cl. 34-155.000.

Gahan, Geoffrey D., to Mouldmaking Design Centre Limited. Injection molding apparatus having a sprue holder with an inclined retractable ram. 4,498,860, Cl. 425-562.000.

Gainsboro, Leon; and Latham, Peter A., to OPUS, Inc. Bird feeder. 4,498,423, Cl. 119-51.00R.

Galabov, Angel S.; and Mastikova, Margarita H., to Dso "Pharmachim". Interferon induction method. 4,499,093, Cl. 514-258.000.

Galiasso, Roberto: *See*—
Arias, Beatriz; Kum, Humberto; and Galiasso, Roberto, 4,499,202, Cl. 502-211.000.

Galie, Louis M.: *See*—
Dickinson, Robert V.; Galie, Louis M.; and Snow, Craig A., 4,499,553, Cl. 364-900.000.

Gall, Winrich; and Wellendorf, Klaus, to Dr. Ing. Rudolf Hell GmbH. Production of screen printing blocks. 4,499,489, Cl. 358-75.000.

Gallagher, David A.: *See*—
Juris, Mitchell A.; and Gallagher, David A., 4,498,719, Cl. 339-60.00R.

Gambro Lundia AB: *See*—
Shaldon, Stanley; Christopherson, Kjell H. I.; Falkvall, Thore E.; and Mattiasson, Ulf K., 4,498,990, Cl. 210-637.000.

Ganczak, Edward G.: *See*—
Chaplin, John B.; and Ganczak, Edward G., 4,498,873, Cl. 440-82.000.

Ganea, Doina: *See*—
Teodorescu, Marius C.; Gaspar, Alexander M.; Spear, Gregory T.; Ganea, Doina; and Skosey, John L., 4,499,186, Cl. 435-23.000.

Ganellin, Charon R.: *See*—
Durant, Graham J.; and Ganellin, Charon R., 4,499,101, Cl. 514-374.000.

Ganser, Volker: *See*—
Barth, Hubert; Hartenstein, Johannes; Satzinger, Gerhard; Fritschi, Edgar; Ganser, Volker; Tauschel, Horst-Dietmar; and Wolf, Gunter, 4,499,089, Cl. 514-222.000.

Gantz, Marvin E., Jr.: *See*—
Bowman, Kenneth A.; and Gantz, Marvin E., Jr., 4,498,523, Cl. 164-477.000.

Garbis, Dennis: *See*—
Hill, Lawrence B.; Garbis, Dennis; Heller, Robert C.; and Granata, Amedeo J., 4,499,354, Cl. 219-10.49R.

Garces, Juan M., to Dow Chemical Company, The. Alkylation process employing magnesium silicate compositions. 4,499,320, Cl. 585-467.000.

Garcia, Enrique, to Enrique Garcia Associates. Solar shield assembly. 4,498,262, Cl. 52-173.00R.

Garenfeld, Andreas J.: *See*—
Dijkstra, Kees; and Garenfeld, Andreas J., 4,498,296, Cl. 60-521.000.

Garren, Frederick G. Medication for treatment of poison oak irritation and inflammation. 4,499,086, Cl. 424-195.100.

Garrett, Luther W., Jr., to Petro-Williams Service Company. Process for treating contaminated transformer oil. 4,498,992, Cl. 210-664.000.

Garska, Daniel C.; and Lok, Brent M., to Union Carbide Corporation. Conversion of certain hydrocarbons using silicoaluminophosphate catalysts. 4,499,315, Cl. 585-415.000.

Garska, Daniel C.; and Tellia, Cyril B., to Union Carbide Corporation. Conversion of effluent hydrocarbons streams using aluminophosphate catalysts. 4,499,316, Cl. 585-415.000.

Garskamp, Arnoldus, to U.S. Philips Corporation. FM-Receiver using a ratio detector with silicon diodes. 4,499,605, Cl. 455-210.000.

Garton, John W., to Access Engineering Ltd. Vertically movable, road towable work platform. 4,498,556, Cl. 182-19.000.

Garvey, Robert M., to Frequency and Time Systems, Inc. Autolock for resonators for frequency standards. 4,499,433, Cl. 331-3.000.

Gasiecki, Alan F.: *See*—
Collins, Paul W.; and Gasiecki, Alan F., 4,499,296, Cl. 560-118.000.

Gaspar, Alexander M.: *See*—
Teodorescu, Marius C.; Gaspar, Alexander M.; Spear, Gregory T.; Ganea, Doina; and Skosey, John L., 4,499,186, Cl. 435-23.000.

Gassman, Max P., to Deere & Company. Stroke control valve. 4,498,846, Cl. 417-214.000.

Gateway Industries, Inc.: *See*—
Doty, Gerald A., 4,498,642, Cl. 242-107.40A.

Gavrin, Edward S.: *See*—
Bachman, Brett L.; Belgard, Richard A.; Bernstein, David H.; Bratt, Richard G.; Clancy, Gerald F.; Gavrin, Edward S.; Gruner, Ronald H.; Jones, Thomas M.; Mundie, Craig J.; Nealon, James T.; Pilat, John F.; Schleimer, Stephen I.; and Wallach, Steven J., 4,499,535, Cl. 364-200.000.

Gaz de France: *See*—
Guilhem, Jean R., 4,498,304, Cl. 62-49.000.

GC Industries: *See*—
Chand, Ramesh, 4,498,970, Cl. 204-415.000.

Gearhart, Gordon E., to E.V. Camp Steel Works, Inc. Chain link. 4,498,284, Cl. 59-84.000.

Gebruder Buhler AG: *See*—
Oetiker, Hans; and Kummer, Emanuel, 4,499,111, Cl. 426-231.000.

Geekie, James A., Jr. Cartridge and shotgun shell carrying buckle. 4,498,612, Cl. 224-163.000.

Geesen, Michel, to Electronique Marcel Dassault. Counter circuit for counting high frequency pulses using the combination of a synchronous and an asynchronous counter. 4,499,589, Cl. 377-55.000.

Gemma, Kazutoshi; and Ishibashi, Michiyasu, to Hitachi, Ltd. Signal transfer timing control using stored data relating to operating speeds of memory and processor. 4,499,536, Cl. 364-200.000.

GenCorp Inc.: *See*—
Brown, Robert L.; Henley, Virgil E.; and Kovalchik, Stephen J., 4,498,948, Cl. 156-401.000.

General Dynamics, Pomona Division: *See*—
Marshall, George C., Jr., 4,499,120, Cl. 427-123.000.

General Electric Company: *See*—
Anderson, John M.; and Johnson, Peter D., 4,499,400, Cl. 313-265.000.
Anthony, Blair T.; and LeGrand, Donald G., 4,499,224, Cl. 524-261.000.
Bitting, Ricky F.; Peil, William; Brown, Thomas A.; and Guzek, William K., 4,499,408, Cl. 318-254.000.
Brines, Marjorie J.; and Rabatin, Jacob G., 4,499,159, Cl. 428-691.000.
Castonguay, Roger N.; and Powell, David B., 4,499,344, Cl. 200-50.00C.
Cichanowski, Stanley W., 4,499,520, Cl. 361-311.000.
Cline, Harvey E., 4,498,923, Cl. 75-65.0ZM.
Cline, Harvey E., 4,498,924, Cl. 75-65.0ZM.
Cline, Harvey E., 4,498,925, Cl. 75-65.0ZM.
Cline, Harvey E., 4,498,926, Cl. 75-65.0ZM.
Dietz, Peter W.; and Wood, Ralph T., 4,499,118, Cl. 427-28.000.
Evans, Thomas L., 4,499,285, Cl. 548-461.000.
Graves, James A.; and Reiling, Gilbert H., 4,499,401, Cl. 313-315.000.
Green, Robert W.; and Grey, Delton A., Jr., 4,499,152, Cl. 428-448.000.
James, William G., 4,499,397, Cl. 313-112.000.
Klein, Artur, 4,498,450, Cl. 123-16.00R.
Leppelmeier, Elton T.; and Ewing, Frank I., 4,499,403, Cl. 313-487.000.

Lockhart, Thomas P., 4,499,229, Cl. 524-450.000.
Lockhart, Thomas P., 4,499,230, Cl. 524-450.000.
Masaitis, William; and Canada, Robert O., 4,499,595, Cl. 382-9.000.
Mazin, Moshe; and Engeler, William E., 4,499,558, Cl. 365-182.000.
Payne, Thomas R., 4,499,368, Cl. 219-452.000.
Pratt, Sandra L.; Lucas, Gary M.; and Zembayashi, Michio, 4,499,234, Cl. 524-783.000.
Pustell, Robert A., 4,499,330, Cl. 136-230.000.
Ray, John M., III; and Martin, Robert J., 4,499,550, Cl. 364-606.000.
Rubinstein, Israel, 4,498,960, Cl. 204-1.00T.
Spiro, Clifford L.; and Lamby, Edward J., 4,499,311, Cl. 568-660.000.
Sutherland, George H., 4,498,890, Cl. 474-140.000.
Tarnay, Denes, 4,499,526, Cl. 362-263.000.
Vogt, Robert L., 4,498,288, Cl. 60-39.060.
Walsh, LaVerne E., 4,499,404, Cl. 313-579.000.

General Electrodynamics Corp.: *See*—
Menon, Narendranath, 4,498,550, Cl. 177-209.000.

General Instrument Corp.: *See*—
Hill, Lawrence B.; Garbis, Dennis; Heller, Robert C.; and Granata, Amedeo J., 4,499,354, Cl. 219-10.49R.

General Motors Corporation: *See*—
Brademeyer, David L., 4,498,299, Cl. 60-562.000.
Duffield, Thomas P.; and Winnale, James A., 4,498,689, Cl. 280-803.000.
Smith, Paul R., 4,498,776, Cl. 356-375.000.

General Signal Corporation: *See*—
Right, Robert W., 4,499,453, Cl. 340-326.000.
Smith, Barry L.; Hoelscher, James R.; and Petit, William A., 4,498,630, Cl. 246-122.00R.

Genest, Leonard J.: *See*—
McGlone, William E.; and Genest, Leonard J., 4,498,697, Cl. 293-128.000.

GEO Vann: *See*—
Brieger, Emmet F.; George, Flint R.; and Colle, Edward A., Jr., 4,498,541, Cl. 166-297.000.

George, Flint R.: *See*—
Brieger, Emmet F.; George, Flint R.; and Colle, Edward A., Jr., 4,498,541, Cl. 166-297.000.

George P. Johnson Co.: *See*—
Vallee, Robert G., 4,498,398, Cl. 104-44.000.

Geraets, Wilhelm; Thielen, Gerd; and Derichs, Eberhard, to Derichs, Eberhard. Heat-exchanging roller. 4,498,527, Cl. 165-89.000.

Gereg, Gordon A. Variable stiffness tracheal tube. 4,498,473, Cl. 128-207.150.

Gergo, Gyorgy; Nemeth, Jozsef; Sebestyen, Bela; and Solymossy, Bela, to Mecseki Szenbanyak. Explosive mine breaking apparatus with arc-suppressing heat-dissipating fluid around the charge bodies. 4,498,391, Cl. 102-312.000.

Gerster, John F., to Riker Laboratories, Inc. Substituted pyridoquinoxaline-6-carboxylic acids and derivatives thereof. 4,499,270, Cl. 544-344.000.

Getz, Edward J.; and Lombardi, Gerald T., to North American Philips Electric Corp. Lamp bulb carton, and resulting lamp bulb package. 4,498,580, Cl. 206-418.000.

Ghenassia, Elie: *See*—
Bernard, Michel; Balde, Daniel; Ghenassia, Elie; and Laumain, Francois, 4,499,222, Cl. 524-123.000.

Giacoletto, Lawrence J., to Heiser, Carol G., a part interest. Homopolar alternator electromechanical power conversion machine. 4,499,392, Cl. 310-178.000.

Gibb, Thomson B., to Vacuum Furnace System Corporation. Heating element arrangement for a vacuum furnace. 4,499,369, Cl. 219-552.000.

Gibbemeyer, Joseph F., to Cincinnati Milacron Inc. Chuck activating apparatus. 4,498,859, Cl. 425-534.000.

Gibson, David C. Space-defining mounting for room coolers. 4,498,374, Cl. 98-94.200.

Gilb, Tyrell T., to Simpson Strong-Tie Company, Inc. Ridge rafter connector. 4,498,801, Cl. 403-232.100.

Gilbert, Don M., to Texas Instruments Incorporated. Printer having improved stored energy printhead. 4,498,791, Cl. 400-124.000.

Gilbert, Jerald G. Tobacco stripper. 4,498,484, Cl. 130-30.00R.

Gillet, John B.; and Miraglia, John A., to International Business Machines Corporation. Electronic component assembly with a printed circuit board unit and cover. 4,499,523, Cl. 361-383.000.

Gillette Company, The: *See*—
Jacobson, Chester F., 4,498,235, Cl. 30-47.000.
Krafton, Thomas J., 4,499,069, Cl. 424-66.000.
Peper, Henry; Eaton, Thomas E.; and Ferguson, Edward J., 4,498,797, Cl. 401-141.000.

Gilligan, William H.: *See*—
Sitzmann, Michael E.; and Gilligan, William H., 4,499,309, Cl. 568-590.000.

Gismervik, Jan E.; and Sveinsbo, Gunnar. Magnetic float controlled electric switch. 4,499,348, Cl. 200-84.00C.

Giuliani, Karen A.: *See*—
Giuliani, Robert L.; Giuliani, Karen A.; and Giuliani, Mark A., 4,498,430, Cl. 123-58.00R.

Giuliani, Mark A.: *See*—
Giuliani, Robert L.; Giuliani, Karen A.; and Giuliani, Mark A., 4,498,430, Cl. 123-58.00R.

Giuliani, Robert L.; Giuliani, Karen A.; and Giuliani, Mark A. Linear reciprocating piston engine. 4,498,430, Cl. 123-58.00R.

Givens, Henry M. W.: *See*—
Young, Roy E.; Stricklin, Douglas K.; and Givens, Henry M. W., 4,498,554, Cl. 180-236.000.

Glass, Howard L., to Rockwell International Corporation. Strontium ferrite borate. 4,499,061, Cl. 423-277.000.

Glore, Thomas G., to Singer Company, The. Free floating actuating sleeve for keyless chuck. 4,498,682, Cl. 279-1.00K.

Gluschenko, Anatoly D.: *See*—
Starostin, Alexandr M.; Malakhov, Alexei M.; Chertilina, Tamara A.; Ponomar, Vladislav I.; Postolaty, Nikolai I.; Kuchuk-Yatsenko, Sergei I.; Peretrukhin, Filipp I.; Gluschenko, Anatoly D.; Solodovnikov, Sergei A.; Shvets, Jury G.; and Serafin, Orest M., 4,499,364, Cl. 219-161.000.

Gockel, Judith. Lost circulation drilling fluid. 4,498,995, Cl. 252-8.5LC.

Godwin Warren Engineering Limited: *See*—
Sanders, Maurice R., 4,498,561, Cl. 188-36.000.

Gohda, Seiichi; and Ishiguro, Mamoru, to Sony Corporation. Tape position control apparatus. 4,499,509, Cl. 360-72.100.

Goldfarb, Adolph E.; and Everitt, Delmar K., to Goldfarb, Adolph E. Wheeled turbine-powered toy vehicle and launcher apparatus. 4,498,886, Cl. 446-202.000.

Goldman, Ernest A.; McCarthy, Jeremiah P.; and Poppert, Paul E., to GTE Laboratories Incorporated. Method of fabrication of monolithic integrated circuit structure. 4,498,223, Cl. 29-571.000.

Goldstein, Albert: *See*—
James, Michael H.; Bratby, David M.; Duck, Roger; Podell, Howard I.; Goldstein, Albert; and Blackley, David C., 4,499,154, Cl. 428-494.000.

Goldstein, David: *See*—
Ilardi, Joseph M.; and Goldstein, David, 4,498,706, Cl. 299-5.000.

Goldsworthy Engineering, Inc.: *See*—
Goldsworthy, William B., 4,498,941, Cl. 156-148.000.

Goldsworthy, William B., to Goldsworthy Engineering, Inc. Method for producing fiber reinforced sheet structures. 4,498,941, Cl. 156-148.000.

Goletto, Jean: *See*—
Pusineri, Christian; and Goletto, Jean, 4,499,124, Cl. 427-385.500.

Goodale, Robert H.; and DuJack, James M., to Canton Bio-Medical Products, Inc.; and Visilox Systems, Inc. Composite materials of silicone elastomers and polyolefin films, and method of making. 4,499,148, Cl. 428-447.000.

Goodhue, Charles T., to Eastman Kodak Company. Analysis for total cholesterol using lecithin:cholesterol acyl transferase (LCAT). 4,499,184, Cl. 435-11.000.

Goodman, Albert: *See*—
Skolnick, Saul; and Goodman, Albert, 4,498,367, Cl. 86-1.00R.

Goodrich, David G.: *See*—
Takeda, Susumu; Mann, Allen W.; Goodrich, David G.; and Zinniger, Theodore C., 4,498,521, Cl. 164-453.000.

Goodyear Tire & Rubber Company, The: *See*—
Jalics, George, 4,499,248; Cl. 526-173.000.
Maathuis, Antonnis G.; and Parsons, Anthony W., 4,498,514, Cl. 152-356.00R.
Massey, Fred L.; and Callander, Douglas D., 4,499,226, Cl. 524-382.000.
Wraight, Frederick G., 4,498,281, Cl. 57-58.340.

Gordon, Eric M.; and Weller, Harold N., III, to E. R. Squibb & Sons, Inc. Carboxy and substituted carboxy alkanoyl and cycloalkanoyl peptides. 4,499,079, Cl. 514-2.000.

Gordon, Marvin; and Lichtenstein, Joseph, to Whitman Medical Corporation. Surgical scrub. 4,498,796, Cl. 401-132.000.

Gordon, Robert L.; Alba, Andrew J.; Bodary, Michael; and Mesquida-Feirman, Barbara, to International Paper Company. Denesting paperboard container. 4,498,585, Cl. 206-518.000.

Gorman, Barbara: *See*—
Dowbenko, Rostyslaw; Stewart, Raymond S.; Hartman, Marvis E.; Gorman, Barbara; and Thomas, Stephen J., 4,499,150, Cl. 428-447.000.
Dowbenko, Rostyslaw; Stewart, Raymond S.; Hartman, Marvis E.; Gorman, Barbara; and Thomas, Stephen J., 4,499,151, Cl. 428-447.000.

Gotaverken Arendal AB: *See*—
Liden, Hadar, 4,498,412, Cl. 114-264.000.

Goto, Tetsuro, to Nippon Kogaku K.K. Display device for camera. 4,498,751, Cl. 354-289.100.

Goto, Toshiki: *See*—
Asano, Hiroshi; Shimamune, Takayuki; and Goto, Toshiki, 4,498,942, Cl. 156-151.000.

Gotou, Hitoshi: *See*—
Iwaki, Yoshiyuki; Imori, Hideo; and Gotou, Hitoshi, 4,499,390, Cl. 310-88.000.

Gould Inc.: *See*—
Miltonberger, Thomas W., 4,499,610, Cl. 455-619.000.

Gourdine, Meredith C., to Energy Innovations, Inc. Electrogasdynamic coating system. 4,498,631, Cl. 239-692.000.

Grable, Jack W. Electric circuit interrupter. 4,499,448, Cl. 337-370.000.

Grace, Wallace C., to Ex-Cell-O Corporation. Broach manufacturing method. 4,498,361, Cl. 76-101.00R.

Graetz, Reinhard, to Hoechst Aktiengesellschaft. Wire rope having a durable marker. 4,498,282, Cl. 57-218.000.

Graham, Patricia A.: *See*—
Gabrielsen, Rolf S.; Graham, Patricia A.; Klijanowicz, James E.; and Stern, Max H., 4,499,304, Cl. 564-92.000.

Gramm, Ronald J. Glazing material. 4,498,455, Cl. 126-417.000.

Granata, Amedeo J.: *See*—
Hill, Lawrence B.; Garbis, Dennis; Heller, Robert C.; and Granata, Amedeo J., 4,499,354, Cl. 219-10.49R.
Grantham, LeRoy F.; and Heath, Norman W., to Rockwell International Corporation. Fluid flow measuring. 4,498,347, Cl. 73-861.660.
Gras, Helene: *See*—
Duflot, Anabela; Gras, Helene; Tartar, Andre; Duflot, Edith; and Boquet, Patrice, 4,499,080, Cl. 514-12.000.
Grassi, Fabrizio; and Iannarelli, Luigi, to Prima Progetti S.p.A. Automatic device for tightening bolts. 4,498,545, Cl. 173-43.000.
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Nelson, Jeffrey A.; and Hanstine, Kenneth W., 4,498,634, Cl. 241-72.000.
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Hardy, Arthur L. Wingless aircraft with ducted variable pitch airfoils. 4,498,645, Cl. 244-12.600.
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Wamsley, Richard D.; and Polman, David J., 4,498,663, Cl. 270-54.000.
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Harvey, Richard. Gasoline vaporizer for internal combustion engine. 4,498,447, Cl. 123-557.000.
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Hasegawa, Shumpei; Kishi, Noriyuki; and Koumura, Takashi, to Honda Giken Kogyo Kabushiki Kaisha. Air/fuel ratio feedback control system adapted to obtain stable engine operation under particular engine operating conditions. 4,498,445, Cl. 123-489.000.
Haselkorn, Michael H., to Armco Inc. Insulative coating composition for electrical steels. 4,498,936, Cl. 148-6.15R.
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Hawkes, J. Barry, Jr., to W. R. Grace & Co. Microwave curing of latex-based compositions. 4,499,036, Cl. 264-26.000.
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Heard, Malcolm G. Picture frames. 4,498,255, Cl. 40-156.000.
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Hedelin, Lars G. B. Cam apparatus with a rotatable, variable-profile cam means. 4,498,352, Cl. 74-568.00R.
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Heichberger, Albert N. Carbon dioxide liquification system. 4,498,303, Cl. 62-21.000.
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Heilweil, Israel J., to Mobil Oil Corporation. High temperature stable drilling fluids containing non-aqueous solvents. 4,498,994, Cl. 252-8.50M.
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Zoor, Reinhold, 4,498,685, Cl. 280-605.000.
Heinz, Larry. Universal seal cage lantern ring with channels and fluid slots. 4,498,681, Cl. 277-215.000.
Heinze, Helmut; Wilhelm, Fritz; Mackensen, Klaus; and Finkeldei, Ferdinand, to Davy McKee AG. Process for the continuous production of polybutylene terephthalate of high molecular weight. 4,499,261, Cl. 528-279.000.
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Hergeth, Hubert; and Hergeth, Helmut, to Hergeth Hollingsworth GmbH. Apparatus for conveying material as it is removed from rows of bales constituting spinning material. 4,498,215, Cl. 19-81.000.

Herkness, Wayne, II. Earth soil sampler. 4,498,547, Cl. 175-244.000.

Hermann, Hans D.; and Hutten, Ulrich M., to Hoechst Aktiengesellschaft. Finely divided polyvinyl acetals, a process for their preparation, and their use in baked coatings. 4,499,236, Cl. 525-58.000.

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Higgins, David M. Geometrically-integrated architecture of microcircuits for high-speed computers. 4,499,607, Cl. 455-606.000.

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Banno, Taiichi; Hijikata, Kazuo; and Takekawa, Hiroshi, 4,498,780, Cl. 356-414.000.

Hildreth, Joseph R. Headrest for chair with soft backrest. 4,498,704, Cl. 297-397.000.

Hill, Lawrence B.; Garbis, Dennis; Heller, Robert C.; and Granata, Amedeo J., to General Instrument Corp. Susceptor for radiant absorption heater system. 4,499,354, Cl. 219-10.49R.

Hinnenkamp, James A.: *See*—
Scheben, John A.; and Hinnenkamp, James A., 4,499,298, Cl. 560-241.000.

Hino, Kazuhiko, to Fuji Electric Co., Ltd. Medical bed with sheet retaining means. 4,498,205, Cl. 5-449.000.

Hintze, Richard A., to Evans & Sutherland Computer Corp. Shadow mask color system with calligraphic displays. 4,499,457, Cl. 340-703.000.

Hirabayashi, Hiromi: *See*—
Hosoyama, Kenji; and Hirabayashi, Hiromi, 4,498,313, Cl. 62-514.00R.

Hirabayashi, Yuuji: *See*—
Ohba, Masahiro; Ito, Kenzo; Akiyama, Susumu; Hirabayashi, Yuuji; Hirano, Satoshi; and Ooka, Naoto, 4,499,544, Cl. 364-431.040.

Hiradastechnikai Gepgyar: *See*—
Kiss, Laszlo; Paladi, Arpad; Grof, Gyula; Bolyo, Laszlo; Szolgyen, Csaba; Mihadak, Istvan; and Varga, Imre, 4,498,789, Cl. 374-164.000.

Hiraga, Masaharu, to Sanden Corporation. Scroll type fluid displacement apparatus with improved end plate fluid passage means. 4,498,852, Cl. 418-55.000.

Hirai, Hiroyuki; and Sato, Kozo, to Fuji Photo Film Co., Ltd. Heat-developable color light-sensitive material with alkyl carboxylic acid base precursor containing triple bond. 4,499,172, Cl. 430-203.000.

Hirai, Hiroyuki; and Kawata, Ken, to Fuji Photo Film Co., Ltd. Heat-developable color photographic materials with base precursor. 4,499,180, Cl. 430-559.000.

Hirano, Satoshi: *See*—
Ohba, Masahiro; Ito, Kenzo; Akiyama, Susumu; Hirabayashi, Yuuji; Hirano, Satoshi; and Ooka, Naoto, 4,499,544, Cl. 364-431.040.

Hirata, Yasushi: *See*—
Ogawa, Masaki; Hirata, Yasushi; and Tsuchikura, Akira, 4,499,228, Cl. 524-413.000.

Hirota, Mitsuhiko: *See*—
Fujioka, Yoshiki; and Hirota, Mitsuhiko, 4,499,414, Cl. 318-803.000.

Hitachi Chemical Company, Ltd.: *See*—
Ishimaru, Toshiaki; Tsukada, Katsushige; Hayashi, Nobuyuki; Koibuchi, Shigeru; and Isobe, Asao, 4,499,163, Cl. 430-5.000.

Hitachi, Ltd.: *See*—
Gemma, Kazutoshi; and Ishibashi, Michiyasu, 4,499,536, Cl. 364-200.000.
Hibino, Yozo; Kamejima, Kohji; and Nara, Yasuaki, 4,498,307, Cl. 62-148.000.
Onda, Kenichi; Abe, Kojin; Yabuno, Kohei; and Uemura, Takeshi, 4,499,530, Cl. 363-17.000.
Onuma, Tsutomu; and Hataya, Fumio, 4,499,158, Cl. 428-682.000.
Tabuchi, Kenji; Shida, Masami; and Ishii, Toshio, 4,498,444, Cl. 123-478.000.
Tamura, Masao; Yoshihiro, Naotsugu; Natsuaki, Nobuyoshi; Miyao, Masanobu; Ohkura, Makoto; Sunami, Hideo; and Tokuyama, Takashi, 4,498,951, Cl. 156-612.000.
Tsubouchi, Kuniyoshi, 4,498,301, Cl. 60-657.000.
Yoshida, Masashi; Katohno, Noboru; Yokota, Hajime; and Okayama, Masao, 4,499,512, Cl. 360-90.000.

Hitco: *See*—
Spain, Raymond G.; and Massie, James E., 4,499,216, Cl. 523-437.000.

Hlubucek, Ladislav: *See*—
Pavek, Miloslav; and Hlubucek, Ladislav, 4,498,280, Cl. 57-22.000.

Hoche, Gunter, to Hermann Mellert GmbH & Co. KG. Self-starting electric motor. 4,499,389, Cl. 310-41.000.

Hoechst Aktiengesellschaft: *See*—
Graetz, Reinhard, 4,498,282, Cl. 57-218.000.
Hermann, Hans D.; and Hutten, Ulrich M., 4,499,236, Cl. 525-58.000.
Walch, Axel; Seifried, Walter; Michel, Wolfgang; Kuhls, Jurgen; and Wildhardt, Jurgen, 4,499,211, Cl. 521-145.000.

Hoek, Arend; Post, Martin F. M.; Minderhoud, Johannes K.; and Lednor, Peter W., to Shell Oil Company. Process for the preparation of a Fischer-Tropach catalyst and preparation of hydrocarbons from syngas. 4,499,209, Cl. 518-707.000.

Hoelscher, James R.: *See*—
Smith, Barry L.; Hoelscher, James R.; and Petit, William A., 4,498,650, Cl. 246-122.00R.

Hoff, Raymond E.: *See*—
Pullukat, Thomas J.; Hoff, Raymond E.; and Lynch, Michael W., 4,499,198, Cl. 502-104.000.

Hofmann, Hans P.: *See*—
Treiber, Hans J.; Hofmann, Hans P.; Kreiskott, Horst; Teschendorf, Hans-Juergen; and Traut, Martin, 4,499,087, Cl. 514-211.000.

Hoge, Warren, Zimmerman Company: *See*—
Mason, Walter R.; and Cummings, Jimmie L., 4,499,561, Cl. 366-156.000.

Hohenegger, Karl: *See*—
Thoni, Werner; Huber, Peter; and Hohenegger, Karl, 4,498,728, Cl. 350-1.700.

Hokuriku Electric Industry Co., Ltd.: *See*—
Tanino, Katsumi; Fujiki, Satoshi; and Okamoto, Shinzi, 4,499,010, Cl. 252-512.000.

Holac Maschinenbau GmbH: *See*—
Maus, Helmut, 4,498,380, Cl. 100-98.00R.

Holiday, Paul R., deceased; by Holiday, Suzanne N., executrix; and Kear, Bernard H., to United Technologies Corporation. Article made from sheet having a controlled crystallographic orientation. 4,499,155, Cl. 428-586.000.

Holiday, Suzanne N., executrix: *See*—
Holiday, Paul R., deceased; Holiday, Suzanne N., executrix; and Kear, Bernard H., 4,499,155, Cl. 428-586.000.

Holl, Herbert B., to United States of America, Army. Angle of arrival meter. 4,498,768, Cl. 356-141.000.

Holman, Rury R.: *See*—
Turner, Robert C.; Stone, Anthony B.; and Holman, Rury R., 4,498,904, Cl. 604-211.000.

Holmberg, Scott H.; and Flasck, Richard A., to Energy Conversion Devices, Inc. Programmable cell for use in programmable electronic arrays. 4,499,557, Cl. 365-163.000.

Holmwood, Graham; and Regel, Erik, to Bayer Aktiengesellschaft. Substituted triazolylmethyl-oxiranes and their use as intermediates for fungicides. 4,499,281, Cl. 548-262.000.

Holscher & Leuschner GmbH & Co.: *See*—
Leuschner, Peter, 4,498,424, Cl. 119-51.00R.

Holtzhauser, Joseph C.; and Kwasniewski, Dale L., to Eaton Corporation. Onboard tire inflation system. 4,498,515, Cl. 152-417.000.

Holzer, Gerold: *See*—
Barrus, Gordon B.; Emenaker, Leo J.; Radke, Glen R.; Farb, Norman E.; and Holzer, Gerold, 4,498,793, Cl. 400-320.000.

Home of Champions, S.A.: *See*—
Tomar, Julius, 4,498,667, Cl. 273-60.00B.

Honda Giken Kogyo Kabushiki Kaisha: *See*—
Ban, Keisuke; and Daimaru, Akimasa, 4,498,219, Cl. 29-156.50R.
Fujii, Takayuki; and Tanaka, Norio, 4,498,700, Cl. 296-78.100.
Hasegawa, Shumpei; Kishi, Noriyuki; and Koumura, Takashi, 4,498,445, Cl. 123-489.000.
Kurata, Noboru; Miyazaki, Kunio; and Yamamoto, Kuniyuki, 4,498,553, Cl. 180-230.000.
Nomura, Toshio; Imai, Yasuhiro; Aoi, Tomio; Nakajima, Tetsuo; and Irino, Hiroshi, 4,498,440, Cl. 123-438.000.

Honda Motor Co., Ltd.: *See*—
Hasegawa, Shumpei; and Yamato, Akihiro, 4,498,443, Cl. 123-478.000.

Hone, Norbert; Horwege, Claus; and Rosenkranz, Otto, to Krupp Corpoplast Maschinenplast GmbH. Method for making a parison for blowmolding of a hollow article. 4,499,044, Cl. 264-521.000.

Honeywell Inc.: *See*—
Aske, Vernon H., 4,498,342, Cl. 73-517.00B.
Huston, Dennis L.; Kardashian, Vahram S.; and Mones, Arthur H., 4,498,954, Cl. 156-651.000.
Maas, Michael F., 4,499,425, Cl. 329-50.000.
Wellinghoff, Stephen T.; Jenekhe, Samson A.; and Kedrowski, Thomas J., 4,499,008, Cl. 252-500.000.

Honeywell Information Systems Inc.: *See*—
Still, David W.; and Economopoulos, Peter C., 4,499,579, Cl. 371-15.000.

Honsberg, Wolfgang, to Du Pont de Nemours, E. I., and Company. Process for curing a chlorinated polyolefin in the presence of aliphatic polyhydroxy alcohol. 4,499,244, Cl. 525-384.000.

Hoover Company, The: *See*—
Oxel, Berton R., 4,498,214, Cl. 15-320.000.

Hoover, Richard B. Folded optical large format photomicrographic camera system. 4,498,749, Cl. 354-79.000.

Horiba, Ltd.: *See*—
Miyatake, Kimio; Ishida, Kozo; Ebi, Hiroyuki; and Shimada, Takeshi, 4,499,378, Cl. 250-343.000.
Miyatake, Kimio; and Tomita, Katsuhiko, 4,499,379, Cl. 250-343.000.

Horiuchi, Tomofusa, to Nissan Motor Company, Limited. Auxiliary air supplying apparatus for an internal combustion engine. 4,498,436, Cl. 123-339.000.

Horiuchi, Toshiaki: *See*—
Yamanaka, Takashi; Takeya, Yasushi; Yorita, Mitsumasa; Horiuchi, Toshiaki; Inagaki, Kouichi; Naya, Eizo; Demizu, Michinosuke; and Okumura, Mitsuhiro, 4,499,009, Cl. 252-512.000.

Horne, June B. Emergency escape apparatus and method of using same. 4,498,557, Cl. 182-49.000.

Hortin, Kenneth L.: *See*—
Fellwock, Louis W.; Hortin, Kenneth L.; and Fellwock, Charles G., 4,498,713, Cl. 312-214.000.

Horwege, Claus: *See*—
Hone, Norbert; Horwege, Claus; and Rosenkranz, Otto, 4,499,044, Cl. 264-521.000.

Hosaka, Yoshihiro; Kamoshida, Yoichi; Harita, Yoshiyuki; and Harada, Kunihiro, to Japan Synthetic Rubber Co., Ltd. Positive type photosensitive resin composition with at least two o-quinone diazides. 4,499,171, Cl. 430-192.000.

Hoshino, Kiyotaka: *See*—
Watanabe, Yasushi; Suzuki, Yuichi; Nagata, Yukihiro; and Hoshino, Kiyotaka, 4,498,519, Cl. 164-417.000.

Hosokawa, Toshihiro: *See*—
Okumura, Yoshiharu; Kamiyama, Setsuo; Hosokawa, Toshihiro; and Kaneko, Katsumi, 4,499,313, Cl. 568-897.000.

Hosoya, Masahiro; and Ueno, Tsuyoshi, to Tokyo Shibaura Denki Kabushiki Kaisha. Developing device. 4,498,756, Cl. 355-3.0DD.

Hosoya, Toshiro, to U.S. Industrial Products Co. Gas detecting and monitoring device. 4,498,330, Cl. 73-23.000.

Hosoyama, Kenji; and Hirabayashi, Hiromi, to National Laboratory for High Energy Physics. Compact helium gas-refrigerating and liquefying apparatus. 4,498,313, Cl. 62-514.00R.

Hospal-Sodip, S.A.: *See*—
Pusineri, Christian; and Goletto, Jean, 4,499,124, Cl. 427-385.500.

Howarth, Robert F., to United States of America, Navy. Data validation monitor. 4,499,584, Cl. 375-58.000.

Howell, Paul J.; and Currier, Gregory B., to Fairchild Camera & Instrument Corporation. Wafer fabrication by implanting through protective layer. 4,498,227, Cl. 29-576.00B.

Hreschak, Bohdan O.; and Hreschak, Christine. Apparatus for the control of larvae of the Gypsy Moth and other hardwood defoliators. 4,498,587, Cl. 206-525.000.

Hreschak, Christine: *See*—
Hreschak, Bohdan O.; and Hreschak, Christine, 4,498,587, Cl. 206-525.000.

Hruby, Andrew J.: *See*—
Knox, Bruce R.; and Hruby, Andrew J., 4,499,464, Cl. 340-825.720.

Huang, Alan, to AT&T Bell Laboratories. Sorting technique. 4,499,555, Cl. 364-900.000.

Huang, Francis Y.: *See*—
Raba, Carl F., Jr.; Smith, Robert L.; and Huang, Francis Y., 4,498,993, Cl. 210-710.000.

Huard, Jean-Francois: *See*—
Benicourt, Michel; Buffet, Jean; and Huard, Jean-Francois, 4,499,329, Cl. 136-208.000.

Huber, Bernd: *See*—
Kalchschmied, Dietmar; Bonenberger, Hartmut; and Huber, Bernd, 4,498,696, Cl. 293-126.000.

Huber, Peter: *See*—
Thoni, Werner; Huber, Peter; and Hohenegger, Karl, 4,498,728, Cl. 350-1.700.

Hudson, Robert C.; MacPherson, William F.; and Sharpless, Charles H., to AT&T Bell Laboratories. Floating battery feed circuit. 4,499,532, Cl. 363-21.000.

Hue, Jean: *See*—
Salomon, Georges P. J.; and Hue, Jean, 4,498,687, Cl. 280-615.000.

Huffman, Lowell E. Closely coiled packing element, method of manufacture, and process for purifying gases. 4,499,033, Cl. 261-94.000.

Huggins, William H.: *See*—
Chalmers, Edward; and Huggins, William H., 4,498,474, Cl. 128-303.130.

Hughes Aircraft Company: *See*—
Alves, James F., 4,499,597, Cl. 382-41.000.
Doty, John S, 4,498,260, Cl. 51-217.00R.
Mulliner, Richard R.; and Ajioka, James S., 4,499,157, Cl. 428-624.000.

Hughes, Charles C.: *See*—
Aultz, Thomas R.; Hughes, Charles C.; and Humbert, Stanley F., 4,498,567, Cl. 192-133.000.

Humbert, Stanley F.: *See*—
Aultz, Thomas R.; Hughes, Charles C.; and Humbert, Stanley F., 4,498,567, Cl. 192-133.000.

Huntley, Peter, to Borg-Warner Corporation. Power transmission belt. 4,498,892, Cl. 474-242.000.

Husler, Rinaldo; Rutsch, Werner; and Dietliker, Kurt, to Ciba-Geigy Corporation. Process for the photopolymerization of unsaturated compounds. 4,498,964, Cl. 204-159.230.

Hussmann Store Equipment Limited: *See*—
Phillips, Parker V.; Lakdawala, Ness; and Lecompte, Michel, 4,498,308, Cl. 62-184.000.

Huston, Dennis L.; Kardashian, Vahram S.; and Mones, Arthur H., to Honeywell Inc. Selective process for etching chromium. 4,498,954, Cl. 156-651.000.

Hutchin, Richard A., to Novon, Inc. Method and apparatus for three frame range imaging. 4,499,492, Cl. 358-107.000.

Hutchison, David A., to Atlantic Richfield Company. Stabilization of hydrocracked oils against UV-light degradation with certain dihydroxy components. 4,498,998, Cl. 252-52.00R.

Hutten, Ulrich M.: *See*—
Hermann, Hans D.; and Hutten, Ulrich M., 4,499,236, Cl. 525-58.000.

Hyatt, John A.; and Coates, Clarence A., Jr., to Eastman Kodak Company. NH_4^+ Or group IA metal 2,7-dimethyl-1,2,3-tetrahydro-β-hydroxy-1-quinolinepropanesulfonates. 4,499,272, Cl. 546-172.000.

Hylsa, S.A.: *See*—
Martinez-Vera, Enrique; Guerra-Garcia, Gilberto; and Tovalin, Jose L. L., 4,498,498, Cl. 137-613.000.

Hysan Corporation: *See*—
Berkeley, Bernard, 4,498,933, Cl. 134-22.140.

Iacoponi, Stefano; and Di Nunzio, Vittorio, to Fiat Auto Spa. Device for automatically adjusting the frequency of activation of a motor vehicle windscreen wiper. 4,499,410, Cl. 318-444.000.

Iannarelli, Luigi: *See*—
Grassi, Fabrizio; and Iannarelli, Luigi, 4,498,545, Cl. 173-43.000.

IAT: *See*—
Izosimov, Dimitrij B.; and Sabanovic, Asif, 4,499,413, Cl. 318-802.000.

Ibbotson, Dale E.: *See*—
Cook, Joel M.; Donnelly, Vincent M.; Flamm, Daniel L.; Ibbotson, Dale E.; and Mucha, John A., 4,498,953, Cl. 156-646.000.

Ibiden Co., Ltd.: *See*—
Enomoto, Ryo; Yamauchi, Hidetoshi; and Tanikawa, Shoji, 4,499,147, Cl. 428-428.000.

Ichihashi, Hiroo: *See*—
Matsufuji, Yohji; Togano, Shigeo; and Ichihashi, Hiroo, 4,499,478, Cl. 346-140.00R.

Ichimura, Yoshiaki, to Japan Aviation Electronics Industry Limited. Flat pack with housing deformation prevention means. 4,498,720, Cl. 339-75.0MP.

ICI Americas Inc.: *See*—
Bernstein, Peter R.; and Willard, Alvin K., 4,499,299, Cl. 514-570.000.
Robertson, John R., 4,498,929, Cl. 106-38.200.

Icoma Packtechnik GmbH: *See*—
Kuckhermann, Gustav, 4,498,894, Cl. 493-234.000.

Igarashi, Kazumasa; Yamaguchi, Katsuhiko; and Tanaka, Munekazu, to Nitto Electric Industrial Co., Ltd. Process for producing polyimide precursor. 4,499,252, Cl. 528-38.000.

Ihara, Kiyohiko: *See—*
Nakagawa, Shinichi; Nakagawa, Tsuneo; Yamaguchi, Sadaatsu; Ihara, Kiyohiko; Amano, Toshihiko; Omori, Mitsugu; and Asano, Kohzoh, 4,499,249, Cl. 526-206.000.

Iijima, Makoto: *See—*
Harada, Masato; Iijima, Makoto; and Saitoh, Noriaki, 4,499,194, Cl. 502-8.000.

Iinuma, Kazumoto, to Nippon Electric Co., Ltd. Run length decoding apparatus. 4,499,498, Cl. 358-261.000.

IIT Research Institute: *See—*
Bridges, Jack E., 4,498,535, Cl. 166-248.000.

Ikeguchi, Nobuyuki; and Kimbara, Hidenori, to Mitsubishi Gas Chemical Company, Inc. Curable resin composition. 4,499,245, Cl. 525-417.000.

Ilardi, Joseph M.; and Goldstein, David, to Intermountain Research & Development Corp. Solution mining of trona or nahcolite ore with aqueous NaOH and HCl solvents. 4,498,706, Cl. 299-5.000.

Ilukowicz, Robert J., to Preco Industries Limited. Support for positioning reinforcing rods or mesh in concrete or the like. 4,498,270, Cl. 52-685.000.

Imai, Yasuhiro: *See—*
Nomura, Toshio; Imai, Yasuhiro; Aoi, Tomio; Nakajima, Tetsuo; and Irino, Hiroshi, 4,498,440, Cl. 123-438.000.

Imaki, Naoshi; and Nakanome, Takemi, to Mitsubishi Chemical Industries Ltd. 2,2-Dihalo-6-halo-6-(1-haloisobutyl)cyclohexanone. 4,499,306, Cl. 568-348.000.

Imanishi, Masami; and Tanaka, Naoki, to Mitsubishi Denki Kabushiki Kaisha. Heat pump system. 4,498,310, Cl. 62-211.000.

Imhof, Werner: *See—*
Christiansen, Tage; Imhof, Werner; Jensen, Poul F.; Kjaer, Jens B.; Kristiansen, Bjarne; Kristensen, Kjeld; and Pedersen, Bent, 4,499,109, Cl. 426-36.000.

Imori, Hideo: *See—*
Iwaki, Yoshiyuki; Imori, Hideo; and Gotou, Hitoshi, 4,499,390, Cl. 310-88.000.

Imperial Chemical Industries PLC: *See—*
Blundell, David J.; Griffin, Brian P.; and MacDonald, William A., 4,499,256, Cl. 528-172.000.
Seddon, Duncan; Mole, Thomas; and Whiteside, Judy A., 4,499,314, Cl. 585-408.000.

Inaba, Morimitsu, to Inabac Corporation; and AMT Co., Ltd. Magnetic separator. 4,498,987, Cl. 210-222.000.

Inabac Corporation: *See—*
Inaba, Morimitsu, 4,498,987, Cl. 210-222.000.

Inagaki, Kouichi: *See—*
Yamanaka, Takashi; Takeya, Yasushi; Yorita, Mitsumasa; Horiuchi, Toshiaki; Inagaki, Kouichi; Naya, Eizo; Demizu, Michinosuke; and Okumura, Mitsuhiro, 4,499,009, Cl. 252-512.000.

Ing. C. Olivetti & C., S.p.A.: *See—*
Falconieri, Remo, 4,498,792, Cl. 400-214.000.

Ingeniorfirmaet Lytzen KS: *See—*
Vestergaard, Alex D., 4,498,678, Cl. 277-3.000.

Inman, Calvin R. Undersea platform construction. 4,498,268, Cl. 52-593.000.

Inmont Corporation: *See—*
Panush, Sol, 4,499,143, Cl. 428-336.000.

Innovative Concepts, Inc.: *See—*
Long, Jerry M.; and Womack, James A., 4,498,583, Cl. 206-444.000.

Inoue, Shunji: *See—*
Suzuki, Norimoto; and Inoue, Shunji, 4,499,126, Cl. 428-13.000.

Inoue, Tomoyasu; and Shibata, Kenji, to Tokyo Shibaura Denki Kabushiki Kaisha. Method for manufacturing three-dimensional semiconductor device by sequential beam epitaxy. 4,498,226, Cl. 29-576.00B.

INRYCO, Inc.: *See—*
Shea, Yale R.; and Zuege, Kevin C., 4,499,332, Cl. 174-48.000.

Institut Francais du Petrole: *See—*
Billon, Alain; Le Page, Jean-Francois; and Peries, Jean-Pierre, 4,498,974, Cl. 208-96.000.
Juguin, Bernard; Martino, Germain; and Miquel, Jean, 4,498,907, Cl. 44-56.000.
Ramet, Claude; and Rojey, Alexandre, 4,498,999, Cl. 252-67.000.
Toulhoat, Herve ; Plumail, Jean-Claude; Billon, Alain; and Quignard, Alain, 4,498,972, Cl. 208-59.000.

Institut Pasteur: *See—*
Duflot, Anabela; Gras, Helene; Tartar, Andre; Duflot, Edith; and Boquet, Patrice, 4,499,080, Cl. 514-12.000.

Instrument S.A.: *See—*
Bouchaib, Pierre, 4,498,416, Cl. 118-719.000.

Instrumentation Laboratory Inc.: *See—*
Jones, Ronald L., 4,499,053, Cl. 422-68.000.

Intel Corporation: *See—*
Bazes, Mel, 4,499,428, Cl. 330-10.000.

Intengan, Franklin S., to Faro, John H. Manupedal bicycle. 4,498,684, Cl. 280-234.000.

Interferon Sciences, Inc.: *See—*
Estis, Leonard F., 4,499,014, Cl. 260-112.00R.

Intermountain Research & Development Corp.: *See—*
Ilardi, Joseph M.; and Goldstein, David, 4,498,706, Cl. 299-5.000.

International Business Machines Corporation: *See—*
Brickman, Norman F.; and Rosenbaum, Walter S., 4,499,499, Cl. 358-263.000.
Broockman, Eric C.; Cato, Robert T.; and Lynch, Robert C., 4,499,608, Cl. 455-607.000.
Casey, Richard G.; and Friedman, Theodore D., 4,499,596, Cl. 382-37.000.
Chee-Shuen Lee, Francis; Mills, Ross N.; and Talke, Frank E., 4,499,479, Cl. 346-140.00R.
Economy, James; and Zachariades, Anagnostis E., 4,499,122, Cl. 427-130.000.
Gillet, John B.; and Miraglia, John A., 4,499,523, Cl. 361-383.000.
Kanazawa, Kay K., 4,499,552, Cl. 364-802.000.
Lipschutz, Lewis D., 4,498,530, Cl. 165-185.000.
Makosch, Gunter; and Schedewie, Franz, 4,498,771, Cl. 356-351.000.
Pearson, Kenneth A.; and Zucker, Larry R., 4,499,460, Cl. 340-771.000.
Vosacek, Robert H., 4,499,539, Cl. 364-200.000.

International Flavors & Fragrances Inc.: *See—*
Klemarczyk, Philip T., 4,498,996, Cl. 252-8.600.
Luccarelli, Domenick, Jr.; Mookherjee, Braja D.; Wilson, Richard A.; Zampino, Michael J.; and Bowen, David R., 4,499,114, Cl. 426-534.000.
Pittet, Alan O.; Muralidhara, Ranya; and Hagedorn, Myrna L., 4,499,307, Cl. 568-355.000.

International Harvester Company: *See—*
Vater, George R.; and Melles, Harold W., 4,498,356, Cl. 74-745.000.

International Paper Company: *See—*
Gordon, Robert L.; Alba, Andrew J.; Bodary, Michael; and Mesquida-Feirman, Barbara, 4,498,585, Cl. 206-518.000.

International Solarpanel, Inc.: *See—*
Leflar, James A.; and Wardlow, William C., 4,498,265, Cl. 52-403.000.

International Standard Electric Corporation: *See—*
Powell, William H.; and Witters, Hugo F. J., 4,499,600, Cl. 455-9.000.

International Telephone and Telegraph Corporation: *See—*
Muska, Willis M., 4,499,609, Cl. 455-619.000.

Intevep, S.A.: *See—*
Arias, Beatriz; Kum, Humberto; and Galiasso, Roberto, 4,499,202, Cl. 502-211.000.

Intorp, Norbert B.: *See—*
Kent, Gary D.; Intorp, Norbert B.; and Springstead, Thomas H., 4,498,935, Cl. 148-6.15Z.

Inui, Toshiharu; Kurata, Masami; Nakajima, Hisao; and Ohmori, Takashi, to Fuji Xerox Co., Inc. Transfer type heat sensitive recording apparatus. 4,499,476, Cl. 346-76.0PH.

Inuiya, Masafumi; and Murakoshi, Makoto, to Fuji Photo Optical Co., Ltd. Output compensating system. 4,499,547, Cl. 364-571.000.

Iowa State University Research Foundation, Inc.: *See—*
Yeung, Edward E.; Steenhoek, Larry E.; Woodruff, Steven D.; and Kuo, Jeng-Chung, 4,498,774, Cl. 356-368.000.

Ipco Corporation: *See—*
Schneiderman, Max, 4,498,475, Cl. 128-303.140.

Irino, Hiroshi: *See—*
Nomura, Toshio; Imai, Yasuhiro; Aoi, Tomio; Nakajima, Tetsuo; and Irino, Hiroshi, 4,498,440, Cl. 123-438.000.

Irwin, Robert S., to Du Pont de Nemours, E. I., and Company. Optically anisotropic melt forming copolyesters. 4,499,259, Cl. 528-190.000.

Isailovic, Jordan: *See—*
Dakin, Wayne R.; and Isailovic, Jordan, 4,499,502, Cl. 358-310.000.

Iseki & Co., Ltd.: *See—*
Nishihara, Tadao, 4,498,349, Cl. 74-5.200.

Ishibashi, Michiyasu: *See—*
Gemma, Kazutoshi; and Ishibashi, Michiyasu, 4,499,536, Cl. 364-200.000.

Ishida, Kozo: *See—*
Miyatake, Kimio; Ishida, Kozo; Ebi, Hiroyuki; and Shimada, Takeshi, 4,499,378, Cl. 250-343.000.

Ishiguro, Mamoru: *See—*
Gohda, Seiichi; and Ishiguro, Mamoru, 4,499,509, Cl. 360-72.100.

Ishii, Akihiko: *See—*
Kubo, Akira; Ishii, Akihiko; Nishizaki, Ken; and Saito, Tomoharu, 4,499,225, Cl. 524-276.000.

Ishii, Norio: *See—*
Sato, Hiroshi; Ishii, Norio; and Nakamura, Shyuzo, 4,499,321, Cl. 585-486.000.

Ishii, Shigeru: *See—*
Ozawa, Kiyomi; and Ishii, Shigeru, 4,499,275, Cl. 546-298.000.

Ishii, Toshio: *See—*
Tabuchi, Kenji; Shida, Masami; and Ishii, Toshio, 4,498,444, Cl. 123-478.000.

Ishikawa, Noboru: *See—*
Murakami, Yoichi; Shoji, Akio; Takezawa, Shoichiro; Ishikawa, Noboru; and Morita, Toshiaki, 4,499,239, Cl. 525-111.000.

Ishimaru, Kenji: *See—*
Fujita, Kiyoshi; Toyohisa, Shirou; Katou, Osamu; and Ishimaru, Kenji, 4,498,988, Cl. 210-397.000.

Ishimaru, Toshiaki; Tsukada, Katsushige; Hayashi, Nobuyuki; Koibuchi, Shigeru; and Isobe, Asao, to Hitachi Chemical Company, Ltd. Soldering mask formed from a photosensitive resin composition and a photosensitive element. 4,499,163, Cl. 430-5.000.

Ishimura, Yoshio. Spindle tilting control device for a plane and spherical rotary grinding machine, fine grinding machine, lapping machine and polishing machine. 4,498,258, Cl. 51-131.300.

Ishino, Tokio: *See—*
Ohno, Yoshimi; Tsurukawa, Ikuya; and Ishino, Tokio, 4,498,754, Cl. 354-479.000.

Ishiwata, Tatsumi: *See—*
Segawa, Hideo; Mori, Koji; Itagaki, Masanori; Sakurai, Kohichi; and Ishiwata, Tatsumi, 4,499,384, Cl. 250-578.000.

Ishiyama, Shozo, to Konishiroku Photo Industry Co., Ltd. Compact, wide magnification-variable zoom lens system. 4,498,741, Cl. 350-427.000.

Ishizuka, Takashi; Moriyama, Yasuhiro; and Nakamura, Masao, to Nitto Electric Industrial Co., Ltd. Production of heat-shrinkable polyimide films. 4,499,042, Cl. 264-205.000.

Iso, Tadashi: *See—*
Oya, Masayuki; and Iso, Tadashi, 4,499,102, Cl. 514-365.000.

Isobe, Asao: *See—*
Ishimaru, Toshiaki; Tsukada, Katsushige; Hayashi, Nobuyuki; Koibuchi, Shigeru; and Isobe, Asao, 4,499,163, Cl. 430-5.000.

Isozumi, Shoji; and Kusunoki, Toshihiro, to Fujitsu Limited. Liquid phase epitaxial growth method. 4,498,937, Cl. 148-171.000.

Itagaki, Masanori: *See—*
Segawa, Hideo; Mori, Koji; Itagaki, Masanori; Sakurai, Kohichi; and Ishiwata, Tatsumi, 4,499,384, Cl. 250-578.000.

Itakura, Shinji: *See—*
Onda, Tsutomu; Kano, Keiichi; and Itakura, Shinji, 4,498,965, Cl. 204-228.000.

Itaya, Kingo; Shibayama, Kimio; Toshima, Shinobu; Ataka, Tatsuaki; and Iwasa, Koji, to Seiko Instruments & Electronics Ltd. Electrochromic display devices using iron(III) hexacyanoferrate(II) salt. 4,498,739, Cl. 350-357.000.

Itaya, Masahiko: *See—*
Haneda, Satoshi; Itaya, Masahiko; and Tomono, Makoto, 4,499,169, Cl. 430-102.000.

Ito, Kenzo: *See—*
Ohba, Masahiro; Ito, Kenzo; Akiyama, Susumu; Hirabayashi, Yuuji; Hirano, Satoshi; and Ooka, Naoto, 4,499,544, Cl. 364-431.040.

Ito, Nobuei: *See—*
Yoshida, Hitoshi; Atsumi, Morihiro; Ito, Nobuei; and Atsumi, Kinya, 4,499,366, Cl. 219-270.000.

Itoh, Shuji; and Hayashi, Koichi, to Kyokuto Fatty-Acid Corporation. Apparatus for producing composite corrugating media for the manufacture of corrugated fiberboard and method of making same. 4,498,943, Cl. 156-164.000.

Itoh, Tadatsugu, to Minicam Research Corporation. Battery rapid charging circuit. 4,499,415, Cl. 320-5.000.

Itoh, Teruyoshi: *See—*
Nakamura, Hirotoshi; Itoh, Teruyoshi; Haraguchi, Hiroshi; Narita, Kou; Iwata, Toshiharu; and Matsui, Takeshi, 4,498,331, Cl. 73-35.000.

Itoh, Yoshimasa: *See—*
Kiba, Hiroshi; Itoh, Yoshimasa; and Kiryu, Kiyuji, 4,498,414, Cl. 118-663.000.

ITT Industries, Inc.: *See—*
Adam, Fritz G., 4,499,388, Cl. 307-474.000.
Thysen, Albert A. P.; and Timmermans, Gilbert L. J., 4,498,317, Cl. 68-12.00R.

Iwaki, Yoshiyuki; Imori, Hideo; and Gotou, Hitoshi, to Mitsubishi Denki Kabushiki Kaisha. Waterproof structure for slip rings of an a.c. generator for a car. 4,499,390, Cl. 310-88.000.

Iwamoto, Shohzoh: *See—*
Tanaka, Nobuyasu; Ohashi, Mitunari; and Iwamoto, Shohzoh, 4,498,569, Cl. 193-27.000.

Iwasa, Koji: *See—*
Itaya, Kingo; Shibayama, Kimio; Toshima, Shinobu; Ataka, Tatsuaki; and Iwasa, Koji, 4,498,739, Cl. 350-357.000.

Iwata, Mamoru: *See—*
Tsuchiya, Toshiharu; and Iwata, Mamoru, 4,498,415, Cl. 118-712.000.

Iwata, Nobutoshi; Fukushima, Kiyoshi; Fujino, Shinji; Yamada, Takeshiro; Hao, Hideyuki; Tanaka, Shigeo; and Mitsuno, Tatsuyuki, to Nippon Steel Chemical Co., Ltd.; and Sumitomo Chemical Company, Limited. Thermoplastic resin products having pearl-like luster. 4,499,238, Cl. 525-98.000.

Iwata, Toshiharu: *See—*
Nakamura, Hirotoshi; Itoh, Teruyoshi; Haraguchi, Hiroshi; Narita, Kou; Iwata, Toshiharu; and Matsui, Takeshi, 4,498,331, Cl. 73-35.000.

Izosimov, Dimitrij B.; and Sabanovic, Asif, to Energoinvest; and IAT. Method and apparatus for the control of synchronous motors. 4,499,413, Cl. 318-802.000.

Izume, Takatomo; and Okado, Chihiro, to Tokyo Shibaura Denki Kabushiki Kaisha. DC Power source. 4,499,363, Cl. 219-130.210.

Izumi Denki Corporation: *See—*
Fujita, Teizo; and Kimura, Haruo, 4,499,352, Cl. 200-296.000.

J. C. Renfroe and Sons, Inc.: *See—*
Davies, William, 4,498,699, Cl. 294-101.000.

J. M. Huber Corporation: *See—*
White, Herbert V., 4,498,895, Cl. 493-476.000.

J. Mulcahy Enterprises Incorporated: *See—*
Mulcahy, Joseph A., 4,499,583, Cl. 373-161.000.

J. T. Baker Chemical Company: *See—*
Ward, Irl E.; and Papoojian, Philip M., 4,499,231, Cl. 524-506.000.

Jacobsen, Orval E. Heat exchanger with by-pass. 4,498,524, Cl. 165-36.000.

Jacobson, Chester F., to Gillette Company, The. Razor blade assembly. 4,498,235, Cl. 30-47.000.

Jacotra A. G.: *See—*
van Rijswijk, Jacob, 4,499,144, Cl. 428-376.000.

Jacquel, Dominique, to Somfy. Apparatus for controlling electrical receivers occupying at least two states. 4,499,463, Cl. 340-825.520.

Jacquet, Maurice, to Valeo. Means for holding a flap which is rotatably mounted in a conduit, and housing containing said means, for a vehicle air conditioning installation. 4,498,528, Cl. 165-42.000.

Jacquin, Yves: *See—*
Toulhoat, Herve ; Jacquin, Yves; and Dupin, Thierry, 4,499,203, Cl. 502-247.000.

Jacubert, Serge: *See—*
Grosbois, Jean; Jacubert, Serge; and Verdier, Jean-Michel, 4,499,063, Cl. 423-347.000.

Jager, Gernot: *See—*
Rake, Heinrich; Herchenbach, Horst; Jager, Gernot; and Franck, Gerhard, 4,498,930, Cl. 106-100.000.

Jalics, George, to Goodyear Tire & Rubber Company, The. Poly-diisopropenyl benzene synthesis. 4,499,248, Cl. 526-173.000.

James, Michael H.; Bratby, David M.; Duck, Roger; Podell, Howard I.; Goldstein, Albert; and Blackley, David C., to Podell, Howard L. Dipped rubber article. 4,499,154, Cl. 428-494.000.

James River-Norwalk, Inc.: *See—*
Cheshire, James O.; Lindgren, Douglas L.; Marinack, Robert J.; Janda, Bruce W.; Thut, Robert S.; Larkey, John T.; and Jostad, Ray E., 4,498,956, Cl. 162-101.000.

James, William G., to General Electric Company. Color corrective coating for arc lamp. 4,499,397, Cl. 313-112.000.

Janda, Bruce W.: *See—*
Cheshire, James O.; Lindgren, Douglas L.; Marinack, Robert J.; Janda, Bruce W.; Thut, Robert S.; Larkey, John T.; and Jostad, Ray E., 4,498,956, Cl. 162-101.000.

Janome Sewing Machine Co., Ltd.: *See—*
Hanyu, Susumu; and Ebata, Yoshikazu, 4,498,405, Cl. 112-168.000.

Janssen, Alexander P. Visible indexes. 4,499,132, Cl. 428-77.000.

Japan Aviation Electronics Industry Limited: *See—*
Ichimura, Yoshiaki, 4,498,720, Cl. 339-75.0MP.

Japan Servo Co., Ltd.: *See—*
Sakamoto, Masafumi, 4,499,391, Cl. 310-89.000.

Japan Synthetic Rubber Co., Ltd.: *See—*
Hosaka, Yoshihiro; Kamoshida, Yoichi; Harita, Yoshiyuki; and Harada, Kunihiro, 4,499,171, Cl. 430-192.000.

Jargell, Tomas: *See—*
Bernhardsson, Goran; and Jargell, Tomas, 4,498,784, Cl. 366-134.000.

Jarry, Christian: *See—*
Creuzet, Marie-Helene; Feniou, Claude; Jarry, Christian; Prat, Gisele; and Pontagnier, Henri, 4,499,090, Cl. 514-210.000.

Jaschinski, John J., to Manitowoc Company, Inc., The. Adjustable rate ice cube dispenser. 4,498,607, Cl. 222-146.600.

Jasinski, Raymond J.: *See—*
Davison, John B.; Jasinski, Raymond J.; and Peerce-Landers, Pamela J., 4,499,025, Cl. 260-465.00R.

Jastrzebski, Lubomir L.; and Lagowski, Jacek, to RCA Corporation. Method to determine the crystalline properties of an interface of two materials by an optical technique. 4,498,772, Cl. 356-357.000.

Jaszczak, Ronald J. Nuclear imaging phantom. 4,499,375, Cl. 250-252.100.

Jeffery, Graham J., to Rolls-Royce Limited. Turbine overspeed limiter for turbomachines. 4,498,291, Cl. 60-39.091.

Jekel: Harold L. Fishing rod butt. 4,498,257, Cl. 43-23.000.

Jelling, Murray: *See—*
Stockel, Richard F.; and Jelling, Murray, 4,499,077, Cl. 424-149.000.

Jenekhe, Samson A.: *See—*
Wellinghoff, Stephen T.; Jenekhe, Samson A.; and Kedrowski, Thomas J., 4,499,008, Cl. 252-500.000.

Jensen, Bruce A., to Phillips Petroleum Company. Control of a fractional distillation process. 4,498,916, Cl. 62-21.000.

Jensen, Poul F.: *See—*
Christiansen, Tage; Imhof, Werner; Jensen, Poul F.; Kjaer, Jens B.; Kristiansen, Bjarne; Kristensen, Kjeld; and Pedersen, Bent, 4,499,109, Cl. 426-36.000.

Jillie, Don W., Jr.; and Smith, Lawrence N., to Sperry Corporation. Method of manufacturing Josephson junction integrated circuits. 4,498,228, Cl. 29-577.00C.

Jinnai, Koichiro, to Ricoh Company, Ltd. Ink jet printing apparatus. 4,499,475, Cl. 346-75.000.

Jinno, Katsushi: *See—*
Maemoto, Kenichi; and Jinno, Katsushi, 4,499,040, Cl. 264-167.000.

Jobin, Georges F.: *See—*
de Palezieux, Jacques; and Jobin, Georges F., 4,498,529, Cl. 165-176.000.

Johann, James R. Steerable carriage for a sailboat. 4,498,683, Cl. 280-16.000.

Johannes Menschner Maschinenfabrik GMBH & Co. KG: *See—*
Van Dijk, Alfonsius A. J., 4,498,240, Cl. 33-147.00L.

Johannson, Richard J., to Towmotor Corporation. Retention device for a load engaging member. 4,498,838, Cl. 414-664.000.

Johnson, Elizabeth A., to Erpelding, Edward J. Golf tee holder. 4,498,615, Cl. 224-274.000.

Johnson, James R. Method and apparatus for making zipper bags. 4,498,939, Cl. 156-66.000.

Johnson & Johnson Products, Inc.: *See—*
Silbering, Steven B.; and Sipos, Tibor, 4,499,067, Cl. 424-52.000.
Silbering, Steven B.; and Sipos, Tibor, 4,499,068, Cl. 424-52.000.

Johnson, Peter D.: *See—*
Anderson, John M.; and Johnson, Peter D., 4,499,400, Cl. 313-265.000.

Johnson, Robert R., to Brown & Williamson Tobacco Corporation. Cigarette filter. 4,498,488, Cl. 131-336.000.

Johnson, Roy A.; Lincoln, Frank H.; and Pike, John E., to Upjohn Company, The. PGI_2 Salts. 4,499,293, Cl. 549-465.000.

Johnston, James J., to Brand-Rex Company. Electrical connector and method for terminating solid conductors. 4,498,723, Cl. 339-97.00P.

Johnston, James S., to Rosemount Engineering Company Limited. Differential pressure sensing apparatus. 4,499,373, Cl. 250-231.00P.

Johnston, Russell A., to Camco, Incorporated. Keyhole mandrel with insert pocket. 4,498,533, Cl. 166-117.500.

Jones, C. Andrew; and Sofranko, John A., to Atlantic Richfield Company. Methane conversion. 4,499,322, Cl. 585-500.000.

Jones, Peter W. J.; Plummer, William T.; and Purcell, Dennis W., to Polaroid Corporation. Camera for photographing scale models. 4,498,748, Cl. 354-79.000.

Jones, Ronald L., to Instrumentation Laboratory Inc. Fluid sampling. 4,499,053, Cl. 422-68.000.

Jones, Ruth M.: *See*—
Calenoff, Emanuel; Jones, Ruth M.; Tsay, Yuh-Geng; and Beigler, Myron A., 4,499,065, Cl. 424-9.000.

Jones, Thomas M.: *See*—
Bachman, Brett L.; Belgard, Richard A.; Bernstein, David H.; Bratt, Richard G.; Clancy, Gerald F.; Gavrin, Edward S.; Gruner, Ronald H.; Jones, Thomas M.; Mundie, Craig J.; Nealon, James T.; Pilat, John F.; Schleimer, Stephen I.; and Wallach, Steven J., 4,499,535, Cl. 364-200.000.

Jones, Timothy A.; and Snavely, Earl S., Jr., to Mobil Oil Corporation. In-line injection of alkaline absorbant to remove H_2S. 4,499,059, Cl. 423-226.000.

Jones, William A. Picture-backing foil with depressions and coloring materials therein. 4,499,127, Cl. 428-14.000.

Jones, William P. Board game with quoits movement indicator. 4,498,675, Cl. 273-249.000.

Joseph, Christian: *See*—
Tesson, Gerard; and Joseph, Christian, 4,499,246, Cl. 525-486.000.

Joshi, Madhusudan: *See*—
Cerwin, Robert J.; Joshi, Madhusudan; Menges, John R.; Mericle, Robert W.; and Zwaskis, William J., 4,498,476, Cl. 128-346.000.

Jostad, Ray E.: *See*—
Cheshire, James O.; Lindgren, Douglas L.; Marinack, Robert J.; Janda, Bruce W.; Thut, Robert S.; Larkey, John T.; and Jostad, Ray E., 4,498,956, Cl. 162-101.000.

Jourdan, Donovan K.: *See*—
Baltz, Gene F.; Clark, Amos M.; Hartke, David J.; and Jourdan, Donovan K., 4,498,434, Cl. 123-187.50R.

Joyce, Christopher: *See*—
White, Cyril J.; and Joyce, Christopher, 4,498,724, Cl. 339-97.00R.

Jozepaitis, Charles M.: *See*—
Bissell, Douglas E.; and Jozepaitis, Charles M., 4,498,844, Cl. 417-68.000.

Judson, Daniel G. Diesel fuel heater. 4,498,446, Cl. 123-557.000.

Juguin, Bernard; Martino, Germain; and Miquel, Jean, to Institut Francais du Petrole. Process for upgrading cuts of very high cycloparaffins content. 4,498,907, Cl. 44-56.000.

Jung-Sun, Lin. Reminder. 4,498,787, Cl. 368-10.000.

Jurgens, Rainer, to Norton Christensen, Inc. Cutting member for rotary drill bit. 4,498,549, Cl. 175-329.000.

Jurgens, Rainer, to Christensen, Inc. Apparatus for transmitting data from a borehole to the surface of the earth during the operation of a drilling device. 4,499,563, Cl. 367-84.000.

Juris, Mitchell A.; and Gallagher, David A., to Allied Corporation. Environmental connector assembly. 4,498,719, Cl. 339-60.00R.

Justus Technik GmbH Industrie-Anlagen: *See*—
Steinke, Hermann O.; Steinke, Roland; and Vornfett, Karl-Ulrich, 4,498,362, Cl. 83-304.000.

Kabaya, Yoshihiko, to Mitutoyo Mfg. Co., Ltd. Photoelectrical encoder employing an optical grating. 4,499,374, Cl. 250-237.00G.

Kabushiki Kaisha Kawai Gakki Seisakusho: *See*—
Ezawa, Sadaaki, 4,498,364, Cl. 84-1.170.

Kabushiki Kaisha Kobe Seiko Sho: *See*—
Fujita, Kiyoshi; Toyohisa, Shirou; Katou, Osamu; and Ishimaru, Kenji, 4,498,988, Cl. 210-397.000.

Kabushiki Kaisha Komatsu Seisakusho: *See*—
Akiyama, Teruo, 4,498,847, Cl. 417-216.000.

Kabushiki Kaisha Meidensha: *See*—
Sakuma, Shinzo; Warabi, Junichi; Kano, Masayuki; and Kashimoto, Yutaka, 4,499,349, Cl. 200-144.00B.

Kabushiki Kaisha Orii Judoki Seisakusho: *See*—
Orii, Masaru, 4,498,840, Cl. 414-759.000.

Kabushiki Kaisha Sato: *See*—
Sato, Yo; and Kashiwaba, Tadao, 4,498,950, Cl. 156-577.000.

Kabushiki Kaisha Toyoda Jidoh Shokki Seisakusho: *See*—
Yuki, Katsumi; Yoshida, Susumu; Ozeki, Mineo; Miyazaki, Yasuyuki; and Kawamata, Masaru, 4,499,541, Cl. 364-424.000.

Kabushiki Kaisha Toyoda Jidoshokki Seisakusho: *See*—
Suzuki, Yoshihisa; Yasui, Yoshiharu; and Takasu, Shigeru, 4,498,216, Cl. 19-244.000.

Kabushiki Kaisha Yaskawa Denki Seisakusho: *See*—
Kuga, Akihiko; and Kuga, Hiroo, 4,499,546, Cl. 364-474.000.

Kachajian, George S.; Steere, Robert E., Jr.; and Charles, Wesley, to Silicon Technology Corporation. Precision tensioning device for ID saw blade. 4,498,449, Cl. 125-15.000.

Kadokura, Hidekimi; and Umezaki, Hiroshi, to Sumitomo Chemical Company, Limited. Pigmented aluminum oxide powder and method of producing the same. 4,498,931, Cl. 106-307.000.

Kagiwada, Reynold S.: *See*—
Stokes, Robert B.; Yen, Kuo-Hsiung; Lau, Kei-Fung; Kagiwada, Reynold S.; and Delaney, Michael J., 4,499,393, Cl. 310-313.00A.

Kahan, Alfred, to United States of America, Air Force. Cut angles for quartz crystal resonators. 4,499,395, Cl. 310-361.000.

Kahle Engineering Company: *See*—
Balnave, Peter, 4,498,945, Cl. 156-256.000.

Kainmuller, Thomas: *See*—
Buxbaum, Lothar; Breitenfellner, Franz; and Kainmuller, Thomas, 4,499,219, Cl. 524-94.000.

Kaiser Aluminum & Chemical Corporation: *See*—
Takeda, Susumu; Mann, Allen W.; Goodrich, David G.; and Zinniger, Theodore C., 4,498,521, Cl. 164-453.000.

Kaiser, Georges J. L., to Fabrique Nationale Herstal. Hind absorber for automatic fire-arms actuated by barrel recoil. 4,498,369, Cl. 89-198.000.

Kaiser, Steven W., to Union Carbide Corporation. Production of light olefins. 4,499,327, Cl. 585-640.000.

Kajaani Oy: *See*—
Peltonen, Eero; Somerikko, Aarni; and Viitanen, Timo, 4,498,338, Cl. 73-432.00R.

Kalchschmied, Dietmar; Bonenberger, Hartmut; and Huber, Bernd, to Bayerische Motoren Werke AG. Bumper for automotive vehicles. 4,498,696, Cl. 293-126.000.

Kalfayan, Leonard J.: *See*—
Watkins, David R.; and Kalfayan, Leonard J., 4,498,538, Cl. 166-295.000.

Kamejima, Kohji: *See*—
Hibino, Yozo; Kamejima, Kohji; and Nara, Yasuaki, 4,498,307, Cl. 62-148.000.

Kamiya, Toshiharu: *See*—
Sasaki, Minoru; and Kamiya, Toshiharu, 4,499,459, Cl. 340-752.000.

Kamiyama, Setsuo: *See*—
Okumura, Yoshiharu; Kamiyama, Setsuo; Hosokawa, Toshihiro; and Kaneko, Katsumi, 4,499,313, Cl. 568-897.000.

Kamo, Yuichi; Mikami, Nobuo; Wakamatsu, Kazutoshi; and Naito, Kunio, to NEC Corporation. Transfer-type electromagnetic relay comprising a permanent magnet under a fixed contact stud. 4,499,442, Cl. 335-79.000.

Kamoshida, Yoichi: *See*—
Hosaka, Yoshihiro; Kamoshida, Yoichi; Harita, Yoshiyuki; and Harada, Kunihiro, 4,499,171, Cl. 430-192.000.

Kamping, Jan H.; and Bridge, Elmer R. Apparatus for separating a coil from following coils of coiled wire rod. 4,498,505, Cl. 140-2.000.

Kanazawa, Kay K., to International Business Machines Corporation. Electrochemical cell simulating circuit arrangement. 4,499,552, Cl. 364-802.000.

Kandros, Michael A.: *See*—
Fedder, James L.; and Kandros, Michael A., 4,498,722, Cl. 339-75.0MP.

Kanegafuchi Kagaku Kogyo Kabushiki Kaisha: *See*—
Hamakawa, Yoshihiro; and Tawada, Yoshihisa, 4,499,331, Cl. 136-258.000.

Kaneko, Katsumi: *See*—
Okumura, Yoshiharu; Kamiyama, Setsuo; Hosokawa, Toshihiro; and Kaneko, Katsumi, 4,499,313, Cl. 568-897.000.

Kaneko, Takashi: *See*—
Yoshimura, Isao; Hata, Hideo; and Kaneko, Takashi, 4,499,241, Cl. 525-211.000.

Kano, Kciichi: *See*—
Onda, Tsutomu; Kano, Keiichi; and Itakura, Shinji, 4,498,965, Cl. 204-228.000.

Kano, Masayuki: *See*—
Sakuma, Shinzo; Warabi, Junichi; Kano, Masayuki; and Kashimoto, Yutaka, 4,499,349, Cl. 200-144.00B.

Kaplit, Michael, to Du Pont de Nemours, E. I., and Company. Data compression system for a photometer. 4,498,781, Cl. 356-435.000.

Karacsonyi, Bela: *See*—
Tomko, Bela; Marai, Geza; and Karacsonyi, Bela, 4,499,110, Cl. 426-69.000.

Kardashian, Vahram S.: *See*—
Huston, Dennis L.; Kardashian, Vahram S.; and Mones, Arthur H., 4,498,954, Cl. 156-651.000.

Karning, Heinrich; Prein, Franz; and Vierling, Karl-Heinz. Laser system. 4,499,582, Cl. 372-93.000.

Kasai, Junichi; Yanagishima, Takayuki; Ajimine, Akio; Murakami, Yoshiaki; Shino, Akimitsu; and Watanabe, Tatsuya, to Nissan Motor Company, Limited; and Clarion Co., Ltd. Speaker for automotive audio system with vehicle panel utilized as sound amplifying medium. 4,499,340, Cl. 179-115.5DV.

Kashimoto, Yutaka: *See*—
Sakuma, Shinzo; Warabi, Junichi; Kano, Masayuki; and Kashimoto, Yutaka, 4,499,349, Cl. 200-144.00B.

Kashiwaba, Tadao: *See*—
Sato, Yo; and Kashiwaba, Tadao, 4,498,950, Cl. 156-577.000.

Kashiwagi, Hiroo, to Toyota Jidosha Kabushiki Kaisha. Motor vehicle centering system. 4,498,243, Cl. 33-203.120.

Kastar, Inc.: *See*—
Epstein, Harry, 4,498,239, Cl. 33-168.00R.

Katagiri, Masayoshi; and Kondo, Toshio, to Toyota Jidosha Kogyo Kabushiki Kaisha; and Aisin Seiki Kabushiki Kaisha. Friction-pad wear-limit warning device for disc brakes. 4,498,559, Cl. 188-1.110.

Kato, Kiichi: *See*—
Yamamiya, Kunio; Kodama, Hiroshi; Ohshima, Ken; Yoshikawa, Shoji; Kato, Kiichi; and Sakamoto, Masaharu, 4,499,514, Cl. 360-97.000.

Yoshikawa, Shoji; Sakamoto, Masaharu; Kodama, Hiroshi; Yamamiya, Kunio; Kato, Kiichi; and Ohsima, Ken, 4,499,572, Cl. 369-111.000.

Katohno, Noboru: *See*—
Yoshida, Masashi; Katohno, Noboru; Yokota, Hajime; and Okayama, Masao, 4,499,512, Cl. 360-90.000.

Katou, Osamu: *See*—
Fujita, Kiyoshi; Toyohisa, Shirou; Katou, Osamu; and Ishimaru, Kenji, 4,498,988, Cl. 210-397.000.

Katsura, Masaki; Harata, Mituo; Takikawa, Osamu; and Shiratori, Masayuki, to Tokyo Shibaura Denki Kabushiki Kaisha. Cation emission type halogenated hydrocarbon gas detecting element. 4,499,054, Cl. 422-98.000.

Kawada, Hiroshi: *See*—
Hasebe, Nobuhisa; Kawada, Hiroshi; and Komine, Isamu, 4,498,518, Cl. 164-416.000.

Kawamata, Masaru: *See*—
Yuki, Katsumi; Yoshida, Susumu; Ozeki, Mineo; Miyazaki, Yasuyuki; and Kawamata, Masaru, 4,499,541, Cl. 364-424.000.

Kawata, Ken: *See*—
Hirai, Hiroyuki; and Kawata, Ken, 4,499,180, Cl. 430-559.000.

Kawata, Shoji: *See*—
Hamajima, Shigemitsu; Nishimura, Tomoaki; Sakakibara, Naoji; and Kawata, Shoji, 4,499,542, Cl. 364-424.100.

Kawazoe, Shunji: *See*—
Chiba, Hiromasa; Obama, Kenjiro; Kawazoe, Shunji; Oka, Takahiro; and Satoh, Akihiro, 4,499,247, Cl. 526-142.000.

Keane, Philip A.: *See*—
Torino, Arthur J., Jr.; Bouchard, George A.; and Keane, Philip A., 4,499,466, Cl. 343-7.300.

Kear, Bernard H.: *See*—
Holiday, Paul R., deceased; Holiday, Suzanne N., executrix; and Kear, Bernard H., 4,499,155, Cl. 428-586.000.

Kedrowski, Thomas J.: *See*—
Wellinghoff, Stephen T.; Jenekhe, Samson A.; and Kedrowski, Thomas J., 4,499,008, Cl. 252-500.000.

Keeffe, William M.: *See*—
Pohl, Timothy; Keeffe, William M.; and Rothwell, Harold L., 4,499,396, Cl. 313-25.000.

Keeling, Ronald J.: *See*—
Blasing, Elmer P.; Keeling, Ronald J.; and Roe, Jin-Young K., 4,499,125, Cl. 428-503.000.

Keiper Recaro GmbH & Co.: *See*—
Schmidhuber, Karl; Wall, Helmut; and Demovic, Vojtech, 4,498,703, Cl. 297-328.000.

Kelmachter, Barry L.: *See*—
Weinstein, Paul; and Kelmachter, Barry L., 4,498,917, Cl. 65-2.000.

Kendall Company, The: *See*—
Schortmann, Walter E., 4,499,139, Cl. 428-245.000.

KenoGard AB: *See*—
Lundin, Claes O. A.; and Simonsson, Berit I., 4,499,250, Cl. 526-209.000.

Kent, Gary D.; Intorp, Norbert B.; and Springstead, Thomas H., to Parker Chemical Company. Zinc phosphate conversion coating composition. 4,498,935, Cl. 148-6.15Z.

Kerimis, Dimitrios; Muller, Hanns P.; and Wagner, Kuno, to Bayer Aktiengesellschaft. Process for the preparation of polyisocyanates containing isocyanurate groups and their use for the preparation of isocyanate-polyaddition products. 4,499,253, Cl. 528-45.000.

Kesling, Peter C., to TP Laboratories, Inc. Convertible orthodontic appliance. 4,498,867, Cl. 433-16.000.

Kesterson, John W. Radar tester. 4,499,469, Cl. 343-17.700.

Kettner, Charles A.: *See*—
Shenvi, Ashokkumar B.; and Kettner, Charles A., 4,499,082, Cl. 514-2.000.

Khaan, Dennis: *See*—
Campolini, John; and Khaan, Dennis, 4,499,562, Cl. 366-264.000.

Kiat, Wee S.: *See*—
Chee, Aik T.; and Kiat, Wee S., 4,499,333, Cl. 174-52.0FP.

Kiba, Hiroshi; Itoh, Yoshimasa; and Kiryu, Kiyuji, to Mazda Motor Corporation; and Tokico Ltd. Vehicle body painting robot. 4,498,414, Cl. 118-663.000.

Kim, Gwan; Pereira, Carmo J.; Hegedus, Louis; and Maselli, James M., to W. R. Grace & Co. Doubly promoted catalyst with high geometric surface area. 4,499,206, Cl. 502-304.000.

Kimball, David V. Method and apparatus for two-axis screening vibration. 4,498,343, Cl. 73-663.000.

Kimbara, Hidenori: *See*—
Ikeguchi, Nobuyuki; and Kimbara, Hidenori, 4,499,245, Cl. 525-417.000.

Kimberly-Clark Corporation: *See*—
Krause, Charles E.; and Moore, William J., 4,498,944, Cl. 156-205.000.

Kimura, Haruo: *See*—
Fujita, Teiso; and Kimura, Haruo, 4,499,352, Cl. 200-296.000.

King, Eddie W.; and Morgan, Annis R., Jr., to Coca-Cola Company, The. Multiple purchase discount module for a single price vending machine. 4,498,570, Cl. 194-1.00N.

King, William R.: *See*—
LaSpina, Ronald J.; Likins, Merle R., Jr.; and King, William R., 4,498,428, Cl. 122-448.00R.

Kingston, Alan C., to Trenwyth Industris, Inc. Faced masonry units and facing composition therefor. 4,499,142, Cl. 428-331.000.

Kinkle, Robert W., to Budd Company, The. Extendible and contractible vehicle bulkhead. 4,498,824, Cl. 410-121.000.

Kinkle, Robert W.: *See*—
McCafferty, Gerald P.; Navoczynski, Stanley J.; and Kinkle, Robert W., 4,498,264, Cl. 52-281.000.

Kinnamon, Herbert D., to Burks, Loyce O., a part interest. Apparatus for forming adobe bricks and drilling wells. 4,498,857, Cl 425-361.000.

Kinoshita, Ryohei: *See*—
Tanaka, Toshiaki; Fukai, Masao; Onuma, Tatsuro; and Kinoshita, Ryohei, 4,498,256, Cl. 40-475.000.

Kinoshita, Takao: *See*—
Tanaka, Nobuyoshi; and Kinoshita, Takao, 4,499,496, Cl. 358-213.000.

Kinoshita, Takashi: *See*—
Mashimo, Satoshi; Tanaka, Masayuki; and Kinoshita, Takashi, 4,498,891, Cl. 474-205.000.

Kirkpatrick, H. B.: *See*—
Kirkpatrick, Harold B.; Ravreby, Fred A.; and Richbourg, Henry L., 4,498,467, Cl. 128-90.000.

Kirkpatrick, Harold B.; Ravreby, Fred A.; and Richbourg, Henry L., to Kirkpatrick, H. B.; and Ravreby, F. A. Orthopedic cast, device and method for forming same and package therefor. 4,498,467, Cl. 128-90.000.

Kirkpatrick, Larry E.; and Williams, Barry C., to Polydrain, Inc. Drainage channel with means for maintaining proper slope during installation. 4,498,807, Cl. 405-43.000.

Kirkpatrick, Robert D.; and Weller, David W., to Union Carbide Corporation. Gas-liquid contacting tray with improved inlet bubbling means. 4,499,035, Cl. 261-114.0JP.

Kirsch, Francis, to Sanofi. Method for the therapeutic utilization of Coenzyme A. 4,499,074, Cl. 424-94.000.

Kiryu, Kiyuji: *See*—
Kiba, Hiroshi; Itoh, Yoshimasa; and Kiryu, Kiyuji, 4,498,414, Cl. 118-663.000.

Kishi, Noriyuki: *See*—
Hasegawa, Shumpei; Kishi, Noriyuki; and Koumura, Takashi, 4,498,445, Cl. 123-489.000.

Kiss, Laszlo; Faludi, Arpad; Grof, Gyula; Bolyo, Laszlo; Szolgyen, Csaba; Mihadak, Istvan; and Varga, Imre, to Hiradastechnikai Gepgyar. Method of and apparatus for measuring surface temperature of moving objects, particularly measuring the temperature of fibrous products particularly of wires during production. 4,498,789, Cl. 374-164.000.

Kitade, Nobumitsu, to Fuji Jukogyo Kabushiki Kaisha. Air breather structure for oil seals in an automatic transmission. 4,498,353, Cl. 74-606.00R.

Kjaer, Jens B.: *See*—
Christiansen, Tage; Imhof, Werner; Jensen, Poul F.; Kjaer, Jens B.; Kristiansen, Bjarne; Kristensen, Kjeld; and Pedersen, Bent, 4,499,109, Cl. 426-36.000.

Klein, Artur, to General Electric Company. Gang saw for cutting blocks of stone. 4,498,450, Cl. 125-16.00R.

Kleinewefers GmbH: *See*—
Pav, Josef; Schmitz, Wimmar; and Wenzel, Reinhard, 4,498,383, Cl. 100-162.00B.

Kleinman, Edward F.: *See*—
Pirie, Donald K.; Volkmann, Robert A.; and Kleinman, Edward F., 4,499,017, Cl. 260-245.20R.

Klemarczyk, Philip T., to International Flavors & Fragrances Inc. Use in augmenting or enhancing aroma of perfumed article with acyloxy alkanols and esters thereof. 4,498,996, Cl. 252-8.600.

Klijanowicz, James E.: *See*—
Gabrielsen, Rolf S.; Graham, Patricia A.; Klijanowicz, James E.; and Stern, Max H., 4,499,304, Cl. 564-92.000.

Klockner-Humboldt-Deutz AG: *See*—
Rake, Heinrich; Herchenbach, Horst; Jager, Gernot; and Franck, Gerhard, 4,498,930, Cl. 106-100.000.

Klotz, Marvin R.; and Peters, Edwin F., to Standard Oil Company (Indiana). Alkene conversion using AMS-1B crystalline borosilicate. 4,499,325, Cl. 585-671.000.

Kluge, Arthur F.; and Clark, Robin D., to Syntex (U.S.A.) Inc. Benzodioxanyl-hydroxyethyleneamino-piperidinyl acetanilides, ketones, esters and carbamates which effect immunity and calcium entry and β-blockade. 4,499,100, Cl. 514-321.000.

Knoos, Stellan. Thermal energy transfer system and method. 4,498,295, Cl. 60-517.000.

Knorreck, Peter; Kuhne, Wolfgang; and Muller, Norbert, to Robert Bosch GmbH. Valve for gaseous and/or liquid flow media. 4,498,499, Cl. 137-627.500.

Knox, Bruce R.; and Hruby, Andrew J., to Ardac, Inc. Apparatus for remote authorization for dispensing fluids. 4,499,464, Cl. 340-825.720.

Knox, Frank A., to Shelton, Albert; and Shelton, Verna. Reusable moisture impervious underpad. 4,499,131, Cl. 428-68.000.

Knud Simonsen Industries Limited: *See*—
Norrie, Lyle W.; Snider, Robert W.; and Simonsen, Knud, 4,498,378, Cl. 99-472.000.

Koal, Jan G. Polymer piezoelectric sensor of animal foot pressure. 4,499,394, Cl. 310-330.000.

Kobayashi, Sabaro, to Casio Computer Co., Ltd. Electronic translating apparatus with extended memory. 4,499,554, Cl. 364-900.000.

Kobayashi, Shinma; and Ohsawa, Eiji, to Nissan Shatai Company, Limited. Blower control arrangement for air conditioning unit or the like. 4,498,309, Cl. 62-186.000.

Kobe Steel, Limited: *See*—
Suzuki, Tomio; and Morimoto, Kotaro, 4,498,861, Cl. 431-12.000.

Kober, Alfred E.; and Macey, Christopher J. Method of reducing high temperature slagging in furnaces and condltioner for use therein. 4,498,402, Cl. 110-345.000.

Kobzar, Vladimir E. Teeming ladle. 4,498,661, Cl. 266-239.000.

Koch Adler AG: *See*—
Landwehr, Gunter; and Meyer, Horst, 4,498,407, Cl. 112-308.000.

Kock, Wulf; Schmidberger, Rainer; and Wagner, Wolfgang, to Dornier System GmbH. Powder comprising coated tungsten grains. 4,498,395, Cl. 102-517.000.

Kodama, Hiroshi: *See*—
Yamamiya, Kunio; Kodama, Hiroshi; Ohshima, Ken; Yoshikawa, Shoji; Kato, Kiichi; and Sakamoto, Masaharu, 4,499,514, Cl. 360-97.000.
Yoshikawa, Shozi; Sakamoto, Masaharu; Kodama, Hiroshi; Yamamiya, Kunio; Kato, Kiichi; and Ohsima, Ken, 4,499,572, Cl. 369-111.000.

Kodama, Ikuo; Muramatsu, Shigeru; Terasaki, Kazunori; and Morita, Takayuki, to Seisakusho Kabushiki Kaisha Toyoda Jidoshokki. Apparatus for locating a traveling-type servicing device in a multistation textile machine. 4,498,283, Cl. 57-261.000.

Koerwer, John F., to Union Carbide Corporation. Tetrahydrotriazines for aquatic herbicidal use. 4,498,920, Cl. 71-66.000.

Kogut, Jimmy A. Control unit with separate dampers for make-up and combustion air circulation. 4,498,624, Cl. 237-53.000.

Kohn, Gustave K.; and Bamberg, Joe T., to Zoecon Corporation. 3-Phosphinyloxy-4-(substituted phenoxy)alkenoic acid esters. 4,499,271, Cl. 546-22.000.

Koibuchi, Shigeru: *See*—
Ishimara, Toshiaki; Tsukada, Katsushige; Hayashi, Nobuyuki; Koibuchi, Shigeru; and Isobe, Asao, 4,499,163, Cl. 430-5.000.

Koike, Hideharu, to Tokyo Shibaura Denki Kabushiki Kaisha. Reference voltage circuit for obtaining a constant voltage irrespective of the fluctuations of a power supply voltage. 4,499,416, Cl. 323-303.000.

Koike, Matsuhiro: *See*—
Masuda, Teruo; Abe, Takeo; and Koike, Matsuhiro, 4,498,477, Cl. 128-378.000.

Kojima, Katsuhiko; Tanaka, Toyomi; and Nakajima, Shigeo, to Nakajima Seisakusho Co., Ltd. Filling method of particulate material into valved packing bag and apparatus employed therefor. 4,498,509, Cl. 141-10.000.

Kojima, Toshitada, to Sanyo Electric Co., Ltd. Electronically controlled cooking apparatus. 4,499,357, Cl. 219-10.55B.

Kokan Kikai Kogyo Kabushiki Kaisha: *See*—
Yoshihara, Tetsuya, 4,498,611, Cl. 222-599.000.

Kollmer, Hans P.: *See*—
Traunecker, Werner; Frolke, Wilhelm; Kreuzer, Heinrich; and Kollmer, Hans P., 4,499,106, Cl. 514-603.000.

Kollmorgen Technologies Corporation: *See*—
Boesewetter, Chester C.; Langley, Lawrence W.; and Mabie, John H., 4,498,636, Cl. 242-1.10R.

Kolm, Eric A.: *See*—
Kolm, Henry H.; and Kolm, Eric A., 4,498,851, Cl. 417-322.000.

Kolm, Henry H.; and Kolm, Eric A., to Piezo Electric Products, Inc. Solid state blower. 4,498,851, Cl. 417-322.000.

Komatsu, Yuichiro: *See*—
Yamamoto, Katsumi; Komatsu, Yuichiro; and Hamada, Ikuro, 4,498,259, Cl. 51-165.710.

Komine, Isamu: *See*—
Hasebe, Nobuhisa; Kawada, Hiroshi; and Komine, Isamu, 4,498,518, Cl. 164-416.000.

Kondo, Shinichi: *See*—
Umezawa, Hamao; Okami, Yoshiro; and Kondo, Shinichi, 4,499,083, Cl. 514-36.000.

Kondo, Syunichi: *See*—
Sano, Kenji; Kondo, Syunichi; and Sato, Hideo, 4,499,167, Cl. 430-83.000.

Kondo, Toshio: *See*—
Katagiri, Masayoshi; and Kondo, Toshio, 4,498,559, Cl. 188-1.110.

Kone Oy: *See*—
Martio, Asko; Reitmaa, Ilpo; and Lautamo, Esa, 4,498,479, Cl. 128-639.000.

Koniger, Kai: *See*—
Koniger, Rudolf; and Koniger, Kai, 4,498,271, Cl. 52-707.000.

Koniger, Rudolf; and Koniger, Kai. Fixing anchoring bars or the like in structures such as concrete. 4,498,271, Cl. 52-707.000.

Koninger, Horst: *See*—
Schirk, Gunter; and Koninger, Horst, 4,498,752, Cl. 354-301.000.

Konishi, Satoshi, to Tokyo Shibaura Denki Kabushiki Kaisha. Integrated circuit formed on a semiconductor substrate with a variable capacitor circuit. 4,499,387, Cl. 307-443.000.

Konishiroku Photo Ind., Co., Ltd.: *See*—
Watanabe, Kazumasa; Deguchi, Hidetaka; and Suginaka, Shunji, 4,499,181, Cl. 430-558.000.

Konishiroku Photo Industry Co., Ltd.: *See*—
Haneda, Satoshi; Itaya, Masahiko; and Tomono, Makoto, 4,499,169, Cl. 430-102.000.
Ishiyama, Shozo, 4,498,741, Cl. 350-427.000.
Ota, Hideo; and Yamashita, Kiyotoshi, 4,499,179, Cl. 430-523.000.

Konrad, Michael W.; and Mark, David F., to Cetus Corporation. Bacterial production of heterologous polypeptides under the control of a repressible promoter-operator. 4,499,188, Cl. 435-70.000.

Konstantinov, Ivan T.; Mednikarov, Borislav D.; Sahatchieva, Maria A.; and Burov, Atanas T., to Zlafop pri Ban. Photographic material for use in photolithography. 4,499,173, Cl. 430-278.000.

Kooi, Hessel; and Meijer, Sjoerd, to Selectiebedrijf Kooi Beheer B.V.; and Machine- en Constructiewerkplaats Meijer. Fork lifter comprising a slidable fork. 4,498,837, Cl. 414-664.000.

Koppers Company, Inc.: *See*—
Leston, Gerd, 4,499,312, Cl. 568-780.000.

Koppl, Georg, to BBC Brown, Boveri & Company, Limited. High-voltage switch and its use. 4,499,351, Cl. 200-148.00R.

Korber, Helmut: *See*—
Tacke, Peter; Korber, Helmut; Merten, Josef; and Neuray, Dieter, 4,499,237, Cl. 525-67.000.

Korin, Eliyaho; Rappaport, Elazar; Pasternak, Dov; Roy, Aharon S.; and Wolf, David, to Ben-Gurion University of the Negev. Phase-change heat storage building panels. 4,498,459, Cl. 126-430.000.

Korpela, Thomas; and Subrick, Joseph, to United States Steel Corporation. Mine roof support system. 4,498,816, Cl. 405-259.000.

Koslowski, Gerhard: *See*—
Kupper, Wilhelm; and Koslowski, Gerhard, 4,498,644, Cl. 242-131.100.

Kosower, Edward M.; Pazhenchevsky, Barak; and Hershkowitz, Eli, to Tel Aviv University. 1,5-Diazabicyclo [3.3.0.]octadienediones. 4,499,284, Cl. 548-359.000.

Kostow, Michael. Lotto dice. 4,498,671, Cl. 273-144.00B.

Koumura, Takashi: *See*—
Hasegawa, Shumpei; Kishi, Noriyuki; and Koumura, Takashi, 4,498,445, Cl. 123-489.000.

Kovalchik, Stephen J.: *See*—
Brown, Robert L.; Henley, Virgil E.; and Kovalchik, Stephen J., 4,498,948, Cl. 156-401.000.

Kovalerchik, Vulf P.: *See*—
Lyakhevich, Genrikh D.; Suzansky, Vasily G.; and Kovalerchik, Vulf P., 4,499,218, Cl. 524-79.000.

Kowalski, Gunter, to U.S. Philips Corporation. Device for the testing of bodies comprising periodic structures. 4,499,540, Cl. 364-414.000.

Krafton, Thomas J., to Gillette Company, The. Antiperspirant emulsion. 4,499,069, Cl. 424-66.000.

Krampe & Co. Fertigung in Bergbaubedarf GmbH Zweigniederlassung: *See*—
Best, Gerd; and Weikert, Norbert B., 4,498,707, Cl. 299-81.000.

Kranz, Max L.; and Gadberry, Donald L., to U.S.D. Corp. First and second stage regulator system for breathing gas. 4,498,471, Cl. 128-204.260.

Krapcho, John, to E. R. Squibb & Sons, Inc. Certain-4-hydroxy-proline derivatives. 4,499,287, Cl. 548-532.000.

Krause, Charles E.; and Moore, William J., to Kimberly-Clark Corporation. Method and apparatus for producing an elasticized garment by tucking a portion of the diaper web during bonding of elastic to the untucked portions of the web. 4,498,944, Cl. 156-205.000.

Kreamer, William. Control for solar system. 4,498,457, Cl. 126-429.000.

Kreij, Sven-Erik, to Stal-Laval Turbin AB. Gas turbine plant with a fluidized bed combustion chamber. 4,498,285, Cl. 60-39.100.

Kreij, Sven-Erik: *See*—
Brannstrom, Roine; and Kreij, Sven-Erik, 4,498,286, Cl. 60-39.100.

Kreiskott, Horst: *See*—
Treiber, Hans J.; Hofmann, Hans P.; Kreiskott, Horst; Teschendorf, Hans-Juergen; and Traut, Martin, 4,499,087, Cl. 514-211.000.

Kreuzer, Heinrich: *See*—
Traunecker, Werner; Frolke, Wilhelm; Kreuzer, Heinrich; and Kollmer, Hans P., 4,499,106, Cl. 514-603.000.

Kridl, Thomas A.; Claunch, Carney P.; and Bjornstrom, Ann O., to Raychem Corporation. Partially recoverable closure. 4,499,129, Cl. 428-36.000.

Krikor, Agop K.; and Puccini, Sergio E., to GTE Automatic Electric Inc. Common channel interoffice signaling system. 4,499,336, Cl. 179-18.0ES.

Kristensen, Kjeld: *See*—
Christiansen, Tage; Imhof, Werner; Jensen, Poul F.; Kjaer, Jens B.; Kristiansen, Bjarne; Kristensen, Kjeld; and Pedersen, Bent, 4,499,109, Cl. 426-36.000.

Kristiansen, Bjarne: *See*—
Christiansen, Tage; Imhof, Werner; Jensen, Poul F.; Kjaer, Jens B.; Kristiansen, Bjarne; Kristensen, Kjeld; and Pedersen, Bent, 4,499,109, Cl. 426-36.000.

Kromer, Gunter, to Audi Nsu Auto Auto Union Aktiengesellschaft. Fuel-injection internal-combustion engine. 4,498,435, Cl. 123-306.000.

Kroschel, Heinz: *See*—
Fischer, Klaus; Kroschel, Heinz; Nicodemus, Joachim; and Petters, Willi, 4,498,393, Cl. 102-393.000.

Kruka, Vitold R., to Shell Oil Company. Pipeline pig with restricted fluid bypass. 4,498,932, Cl. 134-8.000.

Krupp Corpoplast Maschinenplast GmbH: *See*—
Hone, Norbert; Horwege, Claus; and Rosenkranz, Otto, 4,499,044, Cl. 264-521.000.

Kubo, Akira; Ishii, Akihiko; Nishizaki, Ken; and Saito, Tomoharu, to Shinto Paint Co., Ltd. Coating composition. 4,499,225, Cl. 524-276.000.

Kubota, Naohiro: *See*—
Minagawa, Motonobu; Kubota, Naohiro; and Shibata, Toshihiro, 4,499,220, Cl. 524-102.000.

Kuchuk-Yatsenko, Sergei I.: *See*—
Starostin, Alexandr M.; Malakhov, Alexei M.; Chertilina, Tamara A.; Ponomar, Vladislav I.; Postolaty, Nikolai I.; Kuchuk-Yatsenko, Sergei I.; Peretrukhin, Filipp I.; Gluschenko, Anatoly D.; Solodovnikov, Sergei A.; Shveta, Jury G.; and Serafin, Orest M., 4,499,364, Cl. 219-161.000.

Kuckhermann, Gustav, to Icoma Packtechnik GmbH. Separation apparatus for separating perforated paper tube sections. 4,498,894, Cl. 493-234.000.

Kuga, Akihiko; and Kuga, Hiroo, to Kabushiki Kaisha Yaskawa Denki Seisakusho. Numerical control machine tool with sliding error compensation function. 4,499,546, Cl. 364-474.000.

Kuga, Hiroo: *See*—
Kuga, Akihiko; and Kuga, Hiroo, 4,499,546, Cl. 364-474.000.

Kuhls, Jurgen: *See*—
Walch, Axel; Seifried, Walter; Michel, Wolfgang; Kuhls, Jurgen; and Wildhardt, Jurgen, 4,499,211, Cl. 521-145.000.

Kuhne, Wolfgang: *See*—
Knorreck, Peter; Kuhne, Wolfgang; and Muller, Norbert, 4,498,499, Cl. 137-627.500.

Kukes, Simon G.; and Banks, Robert L., to Phillips Petroleum Company. Olefin metathesis and catalyst. 4,499,328, Cl. 585-646.000.

Kum, Humberto: *See*—
Arias, Beatriz; Kum, Humberto; and Galiasso, Roberto, 4,499,202, Cl. 502-211.000.

Kumai, Toshiyuki, to Murakami Kaimeido Co., Ltd. Electric mirror angle adjusting device with pivoting cross-shaped member. 4,498,738, Cl. 350-637.000.

Kummer, Emanuel: *See*—
Oetiker, Hans; and Kummer, Emanuel, 4,499,111, Cl. 426-231.000.

Kuo, Jeng-Chung: *See*—
Yeung, Edward E.; Steenhoek, Larry E.; Woodruff, Steven D.; and Kuo, Jeng-Chung, 4,498,774, Cl. 356-368.000.

Kupper, Wilhelm; and Koslowski, Gerhard, to W. Schlafhorst & Co. Creel. 4,498,644, Cl. 242-131.100.

Kurafuji, Setsuo, to Fujitsu Limited. Static RAM with bit-line-charging transistor. 4,499,559, Cl. 365-190.000.

Kuraray Co., Ltd.: *See*—
Omura, Ikuo; Yamauchi, Junichi; Nagase, Yoshinori; and Uemura, Fumiko, 4,499,251, Cl. 526-278.000.

Kurata, Masami: *See*—
Inui, Toshiharu; Kurata, Masami; Nakajima, Hisao; and Ohmori, Takashi, 4,499,476, Cl. 346-76.0PH.

Kurata, Noboru; Miyazaki, Kunio; and Yamamoto, Kuniyuki, to Honda Giken Kogyo Kabushiki Kaisha. Power transmission casing apparatus in motorized two-wheeled vehicle. 4,498,553, Cl. 180-230.000.

Kurihara, Mamoru: *See*—
Muramatsu, Tateo; Kurihara, Mamoru; and Enami, Yasushi, 4,498,810, Cl. 405-115.000.

Kurtz, John A.; Cousens, Donald E.; and Dufour, Mark D., to Fairchild Camera & Instrument Corporation. Apparatus for maintaining reserve bonding wire. 4,498,638, Cl. 242-45.000.

Kushima, Keiichi: *See*—
Tokano, Motoharu; and Kushima, Keiichi, 4,499,056, Cl. 422-299.000.

Kusunoki, Toshihiro: *See*—
Isozumi, Shoji; and Kusunoki, Toshihiro, 4,498,937, Cl. 148-171.000.

Kuwada, Yukio: *See*—
Mochizuki, Keizo; Kuwada, Yukio; and Mizoguchi, Yoshihiko, 4,499,113, Cl. 426-291.000.

Kuyel, Birol: *See*—
Banks, Edward L.; Ellington, Thomas S., IV; and Kuyel, Birol, 4,499,162, Cl. 430-5.000.

Kwasniewski, Dale L.: *See*—
Holtzhauser, Joseph C.; and Kwasniewski, Dale L., 4,498,515, Cl. 152-417.000.

Kyokuto Fatty-Acid Corporation: *See*—
Itoh, Shuji; and Hayashi, Koichi, 4,498,943, Cl. 156-164.000.

L.C.C.-C.I.C.E. Compagnie Europeenne de Composants Electroniques: *See*—
Anne, Jean, 4,499,518, Cl. 361-306.000.

Laage, Neil A.: *See*—
Cooke, Ronald D.; and Laage, Neil A., 4,498,249, Cl. 34-125.000.

LaCamera, Alfred F.: *See*—
Phelps, Frankie E.; Francis, Thomas L.; and LaCamera, Alfred F., 4,499,193, Cl. 501-98.000.

Lacourse, Norman L.: *See*—
Zwiercan, Gary A.; Lacourse, Norman L.; and Lenchin, Julianne M., 4,499,116, Cl. 426-582.000.

Laerum, Ole D., to Nyegaard & Co A/S. Peptide compounds. 4,499,081, Cl. 514-17.000.

Lagowski, Jacek: *See*—
Jastrzebski, Lubomir L.; and Lagowski, Jacek, 4,498,772, Cl. 356-357.000.

L'Air Liquide, Societe Anonyme Pour L'Etude et L'Exploitation des Procedes Georges Claude: *See*—
Roussel, Jacques, 4,498,705, Cl. 299-4.000.

Lakdawala, Ness: *See*—
Phillips, Parker V.; Lakdawala, Ness; and Lecompte, Michel, 4,498,308, Cl. 62-184.000.

Lake, Ralph J., Jr.: *See*—
Del Tufo, Mark J.; Lake, Ralph J., Jr.; and Solomon, Stephen R., 4,498,802, Cl. 403-300.000.

Lalezari, Iraj, to Montefiore Hospital and Medical Center, Inc. Mixed anhydrides and processes thereof. 4,499,020, Cl. 260-397.100.

Lambrechts, Adriaanus L.: *See*—
Botha, Charles F.; and Lambrechts, Adriaanus L., 4,498,856, Cl. 425-331.000.

Lambro Industries, Inc.: *See*—
Benevento, Peter J., 4,498,247, Cl. 34-82.000.

Lamby, Edward J.: *See*—
Spiro, Clifford L.; and Lamby, Edward J., 4,499,311, Cl. 568-660.000.

Lance, Wayne E.; and Rayfield, Wilson P., to Burroughs Corporation. Demountable, modular toner-fuser assembly for electrographic print apparatus. 4,498,757, Cl. 355-3.0FU.

Landwehr, Gunter; and Meyer, Horst, to Koch Adler AG. Sewing machine work piece turning device. 4,498,407, Cl. 112-308.000.

Lanfranconi, Gianmario; and Monti, Giuseppe, to Societa' Cavi Pirelli S.p.A. Process for laying a submarine cable. 4,498,812, Cl. 405-168.000.

Langford, Forrest L.: *See*—
Therien, Robert D.; Langford, Forrest L.; Motamed, Armond; and Williams, Robert D., 4,498,761, Cl. 355-24.000.

Langley, Keith W.; and Washbourn, Jack, to Westinghouse Brake and Signal. Pneumatic control for braking system providing snow brake operation. 4,498,711, Cl. 303-13.000.

Langley, Lawrence W.: *See*—
Boesewetter, Chester C.; Langley, Lawrence W.; and Mabie, John H., 4,498,636, Cl. 242-1.10R.

Langridge, Peter J.: *See*—
Salovega, George D.; and Langridge, Peter J., 4,498,744, Cl. 352-89.000.

Large, Donald M.: *See*—
Beltz, Richard K.; and Large, Donald M., 4,498,451, Cl. 125-23.00R.

Larkey, John T.: *See*—
Cheshire, James O.; Lindgren, Douglas L.; Marinack, Robert J.; Janda, Bruce W.; Thut, Robert S.; Larkey, John T.; and Jostad, Ray E., 4,498,956, Cl. 162-101.000.

LaSpisa, Ronald J.; Likins, Merle R., Jr.; and King, William R., to Phillips Petroleum Company. Combustion control for a boiler. 4,498,428, Cl. 122-448.00R.

Lasvaladas, Jean-Jacques: *See*—
Prioux, Jean-Jacques; Meleard, Roger; Pioger, Michel; and Lasvaladas, Jean-Jacques, 4,499,343, Cl. 200-5.00A.

Latham, Peter A.: *See*—
Gainsboro, Leon; and Latham, Peter A., 4,498,423, Cl. 119-51.00R.

Lau, Kei-Fung: *See*—
Stokes, Robert B.; Yen, Kuo-Hsiung; Lau, Kei-Fung; Kagiwada, Reynold S.; and Delaney, Michael J., 4,499,393, Cl. 310-313.00A.

Laumain, Francois: *See*—
Bernard, Michel; Balde, Daniel; Ghenassia, Elie; and Laumain, Francois, 4,499,222, Cl. 524-123.000.

Launay, Jean-Pierre: *See*—
Castrec, Yves-Marie; and Launay, Jean-Pierre, 4,499,046, Cl. 376-245.000.

Laussarot, Aldo: *See*—
Barcellona, Alessandro; Ferrando Gorin, Guido; and Lausarot, Aldo, 4,498,496, Cl. 137-599.000.

Lautamo, Esa: *See*—
Martio, Asko; Reitmaa, Ilpo; and Lautamo, Esa, 4,498,479, Cl. 128-639.000.

Lawrence, Randall K.: *See*—
Stevens, Aaron A.; and Lawrence, Randall K., 4,498,889, Cl. 474-133.000.

Lazarz, Christine A.; and Cook, Edward H., Jr., to Occidental Chemical Corporation. Method of electrolyzing brine with stable low voltage microporous diaphragm in electrolytic cells. 4,498,961, Cl. 204-98.000.

Lear Siegler, Inc.: *See*—
Pareja, Ramon, 4,498,372, Cl. 92-187.000.

Leas, Arnold M.; and Leas, Lawrence E. Rotary engine. 4,498,290, Cl. 60-39.550.

Leas, Lawrence E.: *See*—
Leas, Arnold M.; and Leas, Lawrence E., 4,498,290, Cl. 60-39.550.

Leavoson-Gesellschaft m.b.H. & Co. KG: *See*—
Binder, Dieter, 4,499,286, Cl. 548-527.000.

Le Berre, Serge; and Hareng, Michel, to Thomson-CSF. Liquid crystal display device associating two addressing modes. 4,499,458, Cl. 340-713.000.

Lecompte, Michel: *See*—
Phillips, Parker V.; Lakdawala, Ness; and Lecompte, Michel, 4,498,308, Cl. 62-184.000.

Lednor, Peter W.: *See*—
Hoek, Arend; Post, Martin F. M.; Minderhoud, Johannes K.; and Lednor, Peter W., 4,499,209, Cl. 518-707.000.

Lee, May D.; Martin, John H.; Borders, Donald B.; Yao, Raymond C.; and Testa, Raymond T., to American Cyanamid Company. Antibiotic agents from *S. coeruleorubidus*, rubidus. 4,499,075, Cl. 424-118.000.

Leedall Products Incorporated: *See*—
Brown, Albert E.; and Emerson, Robert T., 4,499,140, Cl. 428-308.400.

Leflar, James A.; and Wardlow, William C., to International Solarpanel, Inc. Solar collector construction and sealing arrangement. 4,498,265, Cl. 52-403.000.

Le Fur, Gerard: *See*—
Dubroeucq, Marie-Christine; Renault, Christian; and Le Fur, Gerard, 4,499,094, Cl. 514-301.000.

LeGrand, Donald G.: *See*—
Anthony, Blair T.; and LeGrand, Donald G., 4,499,224, Cl. 524-261.000.

Leis, Hans, to Messerschmitt-Bolkow-Blohm. Heatable centrifuge. 4,498,896, Cl. 494-14.000.

Leland Stanford Junior University, The Board of Trustees of the: *See*—
Nishimura, Dwight G., 4,499,493, Cl. 358-111.000.

Lemke, Judith K. Estrus cycle monitoring system. 4,498,481, Cl. 128-734.000.

Lenchin, Julianne M.: *See*—
Zwiercan, Gary A.; Lacourse, Norman L.; and Lenchin, Julianne M., 4,499,116, Cl. 426-582.000.

Lenth, Jurgen: *See*—
Demmer, Walter; Gutsmann, Rolf D.; and Lenth, Jurgen, 4,499,427, Cl. 329-107.000.

Le Page, Jean-Francois: *See*—
Billon, Alain; Le Page, Jean-Francois; and Peries, Jean-Pierre, 4,498,974, Cl. 208-96.000.

Lepisto, J. George, to Champion International Corporation. Apparatus for filling a valve bag. 4,498,511, Cl. 141-85.000.

Leppelmeier, Elton T.; and Ewing, Frank I., to General Electric Company. Skin tanning fluorescent lamp construction utilizing a phosphor combination. 4,499,403, Cl. 313-487.000.

Leroy, Jean-Luc; and Dejeux, Pol, to Framatome & Cie. Superheated steam generator comprising bank of U-tubes. 4,498,426, Cl. 122-32.000.

Leston, Gerd, to Koppers Company, Inc. Complex formed to separate 3,5-xylenol or 3,4-xylenol from other polymethylated phenolic compounds. 4,499,312, Cl. 568-780.000.

Leuschner, Peter, to Holscher & Leuschner GmbH & Co. Animal feeding method and apparatus. 4,498,424, Cl. 119-51.00R.

Leveille, Michael A.; and Walker, Charles F., to AT&T Bell Laboratories. Alarm circuit interface units. 4,499,455, Cl. 340-531.000.

Leveque, Alain: *See*—
Fitoussi, Richard; Leveque, Alain; and Sabot, Jean-Louis, 4,499,058, Cl. 423-70.000.

Lever Brothers Company: *See*—
Borovian, Gayle E., 4,499,071, Cl. 424-78.000.

Levin, Robert F.: *See*—
Moody, Roy A.; Bulanda, John J.; Levin, Robert F.; Timian, Steven S.; and Waltasti, Stephen A., 4,498,506, Cl. 140-93.200.

Levine, Michael A. Weak-source for cryogenic semiconductor device. 4,499,482, Cl. 357-30.000.

Levine, Peter A., to RCA Corporation. CCD Imager with improved low light level response. 4,499,497, Cl. 358-213.000.

Lew, Hyok S.: *See*—
Lew, Yon S.; and Lew, Hyok S., 4,498,371, Cl. 92-2.000.

Lew, Yon S.; and Lew, Hyok S. Direct acting rotary actuator cylinder. 4,498,371, Cl. 92-2.000.

Lewinter, Sidney W., to Aerospace Corporation, The. Digital to analog converter. 4,499,594, Cl. 381-46.000.

Lewis, Paul J. S.: *See*—
Atkinson, Bernard; Black, Geoffrey M.; Pinches, Anthony; and Lewis, Paul J. S., 4,498,985, Cl. 210-151.000.

Leyco, Reynaldo P.: *See*—
Arfert, Horst F. W.; and Leyco, Reynaldo P., 4,498,575, Cl. 198-400.000.

Leyerle, Richard W., to UOP Inc. Process for removing alumina or silica substrate from carbonaceous pyropolymers. 4,499,201, Cl. 502-180.000.

LFE Corporation: *See*—
Walker, Wellington J.; and Whitehouse, George M., deceased, 4,498,354, Cl. 74-625.000.

Liang, Chi-Dean: *See*—
Baran, John S.; and Liang, Chi-Dean, 4,499,289, Cl. 549-292.000.

Lichtenstein, Joseph: *See*—
Gordon, Marvin; and Lichtenstein, Joseph, 4,498,796, Cl. 401-132.000.

Liden, Hadar, to Gotaverken Arendal AB. Offshore platform. 4,498,412, Cl. 114-264.000.

Ligneres, Pierre: *See*—
Finger, Ulrich; Desprez, Pierre; and Ligneres, Pierre, 4,499,538, Cl. 364-200.000.

Likins, Merle R., Jr.: *See*—
LaSpisa, Ronald J.; Likins, Merle R., Jr.; and King, William R., 4,498,428, Cl. 122-448.00R.

Lin, See: *See*—
Marvel, Carl S.; and Lin, See, 4,499,258, Cl. 528-173.000.

Lincoln, Frank H.: *See*—
Johnson, Roy A.; Lincoln, Frank H.; and Pike, John E., 4,499,293, Cl. 549-465.000.

Lindauer Dornier Gesellschaft mbH: *See*—
Gageur, Fritz; and Wohlgenannt, Horst, 4,498,250, Cl. 34-155.000.

Linde Aktiengesellschaft: *See*—
Benkmann, Christian, 4,498,910, Cl. 55-18.000.

Lindgren, Douglas L.: *See*—
Cheshire, James O.; Lindgren, Douglas L.; Marinack, Robert J.; Janda, Bruce W.; Thut, Robert S.; Larkey, John T.; and Jostad, Ray E., 4,498,956, Cl. 162-101.000.

Lindsey, Hiram E., Jr., to MWL Tool and Supply Company. Liner hanger assembly. 4,498,534, Cl. 166-208.000.

Link, Theodore P.: *See*—
Walters, Donald N.; and Link, Theodore P., 4,498,688, Cl. 280-7.120.

Lipschutz, Lewis D., to International Business Machines Corporation. Flexible thermal conduction element for cooling semiconductor devices. 4,498,530, Cl. 165-185.000.

Lisauskas, Richard J., to Texas Instruments Incorporated. Motor protector particularly suited for use with compressor motors. 4,499,517, Cl. 361-24.000.

Liu, Huei-Cheng; and Spohn, Ralph J., to Exxon Research & Engineering Co. Modified zeolite catalyst composition and process for alkylating toluene with methanol to form styrene. 4,499,317, Cl. 585-438.000.

Liu, Huei-Cheng, to Exxon Research & Engineering Co. Modified zeolite catalyst composition and process for alkylating toluene with methanol to form styrene. 4,499,318, Cl. 585-438.000.

Livingstone, Jeanne. Garment having concealed pouch. 4,498,200, Cl. 2-247.000.

Lloyd-Davies, William: *See*—
Scholle, William R.; and Lloyd-Davies, William, 4,498,508, Cl. 141-5.000.

Locher, Johannes; and Schaller, Dieter, to Robert Bosch GmbH. Regulating device for an electromagnetic control element, especially in an internal combustion engine with auto-ignition. 4,499,412, Cl. 318-592.000.

Lockhart, Thomas P., to General Electric Company. One package, stable, moisture curable, alkoxy-terminated organopolysiloxane compositions. 4,499,229, Cl. 524-450.000.

Lockhart, Thomas P., to General Electric Company. One package, stable, moisture curable, alkoxy-terminated organopolysiloxane compositions containing a zeolite. 4,499,230, Cl. 524-450.000.

Lockheed Corporation: *See*—
DeLuca, Frank T.; and Dobson, Gordon A., 4,498,648, Cl. 244-118.300.

Loda, Gary K., to RPC Industries. Hot cathode for broad beam electron gun. 4,499,405, Cl. 315-13.100.

Loeding, Neil W.: *See*—
Piotrowski, Chester; and Loeding, Neil W., 4,499,515, Cl. 360-113.000.

Lohse, Friedrich; and Zondler, Helmut, to Ciba Geigy Corporation. Process for the preparation of isomelamines. 4,499,268, Cl. 544-196.000.

Lok, Brent M.: *See*—
Garska, Daniel C.; and Lok, Brent M., 4,499,315, Cl. 585-415.000.

Lombardi, Gerald T.: *See*—
Getz, Edward J.; and Lombardi, Gerald T., 4,498,580, Cl. 206-418.000.

Long, Jerry M.; and Womack, James A., to Innovative Concepts, Inc. Diskette storage container for storing a large quantity of diskettes. 4,498,583, Cl. 206-444.000.

Long, Stanley A.: *See*—
McSweeney, Robert T.; and Long, Stanley A., 4,499,521, Cl. 361-321.000.

Longley, Kermit D., to Witco Chemical Corporation. Preparation of isethionic acid. 4,499,028, Cl. 260-513.00R.

Loontjens, Jacobus A., to Stamicarbon B.V. Thermoplastic propylene block copolymer containing 1-alkene-propylene-diene copolymer block. 4,499,242, Cl. 525-289.000.

Loose, Peter W., to European Electronic Systems Ltd. Edge detection apparatus. 4,499,383, Cl. 250-561.000.

Lopez De Romana, Eduardo A., to Discovision Associates. Writing beam focus monitor. 4,499,569, Cl. 369-45.000.

Lord Corporation: *See*—
Balczun, Paul J., 4,498,679, Cl. 277-92.000.

L'Oreal: *See*—
Sebag, Henri; and Vanlerberghe, Guy, 4,499,070, Cl. 424-70.000.

Lotsof, Howard S. Rapid method for interrupting the narcotic addiction syndrome. 4,499,096, Cl. 514-214.000.

Lotz, Carla, nee Post, Andreas Lotz, heirs: *See*—
Proksch, Hans-Jorg; Welte, Dieter; Zimmer, Herbert; and Lotz, Michael, deceased, 4,498,646, Cl. 244-35.00R.

Lotz, Michael, deceased: *See*—
Proksch, Hans-Jorg; Welte, Dieter; Zimmer, Herbert; and Lotz, Michael, deceased, 4,498,646, Cl. 244-35.00R.

Love, Richard R. Loading ramp for truck bed. 4,498,836, Cl. 414-537.000.

Lovitt, Robert O., to Fredrick, Michael Douglas. Self-cleaning cage. 4,498,421, Cl. 119-17.000.

Lucas, Gary M.: *See*—
Pratt, Sandra L.; Lucas, Gary M.; and Zembayashi, Michio, 4,499,234, Cl. 524-783.000.

Lucas Industries public limited Company: *See*—
Smith, Robert J., 4,498,710, Cl. 303-6.00R.

Luccarelli, Domenick, Jr.; Mookherjee, Braja D.; Wilson, Richard A.; Zampino, Michael J.; and Bowen, David R., to International Flavors & Fragrances Inc. Flavoring some tropical flavored foodstuffs with mixture of C_4–C_{10} -N-alkanoic acid and ethyl ester of 2-hydroxy-4-methyl pentanoic acid. 4,499,114, Cl. 426-534.000.

Luh, Howard H., to Ford Aerospace & Communications Corporation. Reconfigurable dual mode network. 4,499,471, Cl. 343-373.000.

Lundin, Claes O. A.; and Simonsson, Berit I., to KenoGard AB. Process for the polymerization of ethylenically unsaturated monomers. 4,499,250, Cl. 526-209.000.

Lunk, Hans E.: *See*—
Cornelius, Rajendra S.; Martin, Albert R.; Lunk, Hans E.; and Mendenhall, Mark D., 4,499,438, Cl. 333-1.000.

Lunz, Alfred-Gunther: *See*—
Grimmer, Horst; and Lunz, Alfred-Gunther, 4,498,788, Cl. 368-106.000.

Lyakhevich, Genrikh D.; Suzansky, Vasily G.; and Kovalerchik, Vulf P. Vulcanizable rubber compound. 4,499,218, Cl. 524-79.000.

Lydall, Inc.: *See*—
Whitely, Elliot F.; Devoe, Richard A.; and Gadbois, Gerald W., 4,499,134, Cl. 428-102.000.

Lykes Pasco Packing Company: *See*—
Baron, Richard D., 4,498,275, Cl. 53-506.000.

Lyle, Stephen V., to T.A.D. Avanti, Inc. Announcement recording and message playback system for a telephone answering machine. 4,499,335, Cl. 179-6.030.

Lynch, John T.; Anderson, Alfredo C.; Withers, Richard S.; and Wright, Peter V., to Massachusetts Institute of Technology. Superconducting signal processing circuits. 4,499,441, Cl. 333-161.000.

Lynch, Michael W.: *See*—
Pulliam, Thomas J.; Hoff, Raymond E.; and Lynch, Michael W., 4,499,198, Cl. 502-104.000.

Lynch, Robert C.: *See*—
Broockman, Eric C.; Cato, Robert T.; and Lynch, Robert C., 4,499,608, Cl. 455-607.000.

M&T Chemicals Inc.: *See*—
Berger, Abe, 4,499,149, Cl. 428-447.000.

Maag Gear-Wheel & Machine Company Limited: *See*—
Thoma, Peter, 4,498,335, Cl. 73-162.000.

Maas, Michael F., to Honeywell Inc. Phase velocity sign detector for frequency shift key demodulation. 4,499,425, Cl. 329-50.000.

Maathuis, Antonnis G.; and Parsons, Anthony W., to Goodyear Tire & Rubber Company, The. Reinforcing belt for tires with radial casing. 4,498,514, Cl. 152-356.00R.

Mabie, John H.: *See*—
Boesewetter, Chester C.; Langley, Lawrence W.; and Mabie, John H., 4,498,636, Cl. 242-1.10R.

MacDonald, William A.: *See*—
Blundell, David J.; Griffin, Brian P.; and MacDonald, William A., 4,499,256, Cl. 528-172.000.

Macey, Christopher J.: *See*—
Kober, Alfred E.; and Macey, Christopher J., 4,498,402, Cl. 110-345.000.

Machine- en Constructiewerkplaats Meijer: *See*—
Kooi, Hessel; and Meijer, Sjoerd, 4,498,837, Cl. 414-664.000.

Mack, William; Morrison, Herbert; and Chiapetta, Frank, to Clairol Incorporated. Hair trimmer. 4,498,237, Cl. 30-200.000.

Mackal, Glenn H. Automatic inflator. 4,498,604, Cl. 222-5.000.

Mackal, Glenn H.; and TenBarge, John S., to Halkey-Roberts Corporation. Automatic inflator. 4,498,605, Cl. 222-5.000.

Mackensen, Klaus: *See*—
Heinze, Helmut; Wilhelm, Fritz; Mackensen, Klaus; and Finkeldei, Ferdinand, 4,499,261, Cl. 528-279.000.

Mackerer, Carl R.: *See*—
Blackburn, Gary R.; Mackerer, Carl R.; and Schreiner, Ceinwen A., 4,499,187, Cl. 435-34.000.

MacLeod, Donald J., to Applied Motion Products, Inc. Brushless DC motor assembly with improved stator pole. 4,499,407, Cl. 318-254.000.

MacPherson, William F.: *See*—
Hudson, Robert C.; MacPherson, William F.; and Sharpless, Charles H., 4,499,532, Cl. 363-21.000.

Madonia, Ralph J.: *See*—
Questel, John M.; and Madonia, Ralph J., 4,499,130, Cl. 428-42.000.

Madoona, William J. Stimulus/response device. 4,498,870, Cl. 434-335.000.

Maeda, Masaya: *See*—
Edakubo, Hiroo; and Maeda, Masaya, 4,499,504, Cl. 358-335.000.

Maeguchi, Kenji, to Tokyo Shibaura Denki Kabushiki Kaisha. Method of manufacturing a MOSFET using accelerated ions to form an amorphous region. 4,498,224, Cl. 29-571.000.

Maemoto, Kenichi; and Jinno, Katsushi, to Nissen Chemical Industries Co., Ltd. Production of stamped plastic sheet. 4,499,040, Cl. 264-167.000.

Maffione, Grazia: *See*—
Moro, Luigi; Maffione, Grazia; Neri, Guido; and Rigamonti, Alessandro, 4,499,066, Cl. 424-19.000.

Mair, Bernard. Fastening device. 4,498,827, Cl. 411-349.000.

Maishar, Uzi: *See*—
Babai, Matzliach; and Maishar, Uzi, 4,499,160, Cl. 429-101.000.

Makarov, George. Mass accelerator and power converter unit. 4,498,357, Cl. 74-752.00F.

Makita, Fujio, to Fuji Jukogyo Kabushiki Kaisha. System to detect slippage of a clutch for an internal combustion engine. 4,499,450, Cl. 340-52.00R.

Makley, James A.: *See*—
Hamisch, Paul H., Jr.; and Makley, James A., 4,498,947, Cl. 156-384.000.

Makosch, Gunter; and Schedewie, Franz, to International Business Machines Corporation. Method and means for interferometric surface topography. 4,498,771, Cl. 356-351.000.

Malakhov, Alexei M.: *See*—
Starostin, Alexandr M.; Malakhov, Alexei M.; Chertilina, Tamara A.; Ponomar, Vladislav I.; Postolaty, Nikolai I.; Kuchuk-Yatsenko, Sergei I.; Peretrukhin, Filipp I.; Gluschenko, Anatoly D.; Solodovnikov, Sergei A.; Shvets, Jury G.; and Serafin, Orest M., 4,499,364, Cl. 219-161.000.

Malhotra, Sudarhshan K.; and Orvik, Jon A., to Dow Chemical Company, The. Reduction of trichloromethylpyridines to dichloromethylpyridines. 4,499,277, Cl. 546-346.000.

Malhotra, Sudarshan K.; and Orvik, Jon A., to Dow Chemical Company, The. Reduction of trichloromethylpyridines to dichloromethylpyridines. 4,499,276, Cl. 546-346.000.

Malik, James J. Wire rack for plastic bag. 4,498,652, Cl. 248-99.000.

Mallory, Henry R., to Duracell Inc. Constant illuminstion flashlight. 4,499,525, Cl. 362-157.000.

Malloy, Thomas P.; and Engel, Dusan J., to UOP Inc. 4-Vinylbenzeneacetic acid. 4,499,300, Cl. 562-495.000.

Manikian, Victor; and McDonald, Giles N., to Atlantic Richfield Company. Process for prevention of ice buildup and reduction of ice forces on structures during breakup. 4,498,808, Cl. 405-61.000.

Manitowoc Company, Inc., The: *See*—
Jaschinski, John J., 4,498,607, Cl. 222-146.600.

Manley, Norman G. Can crusher. 4,498,385, Cl. 100-233.000.

Mann, Allen W.: *See*—
Takeda, Susumu; Mann, Allen W.; Goodrich, David G.; and Zinniger, Theodore C., 4,498,521, Cl. 164-453.000.

Mann, George H., to Corning Glass Works. Method for making colored photochromic prescription ophthalmic lenses. 4,498,919, Cl. 65-30.110.

Manufacture de Machines du Haut-Rhin: *See*—
Greslin, Bernard P.; and Rohmer, Daniel J., 4,498,234, Cl. 29-785.000.

Marai, Geza: *See*—
Tomko, Bela; Marai, Geza; and Karacsonyi, Bela, 4,499,110, Cl. 426-69.000.

Maresca, Louis M., to Union Carbide Corporation. Poly(ester-carbonate)s. 4,499,257, Cl. 528-173.000.

Margolis, Mark D., to Spearhead Industries, Inc. Multiple headed costume. 4,498,199, Cl. 2-69.000.

Marinack, Robert J.: *See*—
Cheshire, James O.; Lindgren, Douglas L.; Marinack, Robert J.; Janda, Bruce W.; Thut, Robert S.; Larkey, John T.; and Jostad, Ray E., 4,498,956, Cl. 162-101.000.

Mark, David F.: *See*—
Konrad, Michael W.; and Mark, David F., 4,499,188, Cl. 435-70.000.

Marker, Frank P., to Marker, Hannes. Sailboard rig and boom. 4,498,411, Cl. 114-97.000.

Marker, Hannes: *See*—
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Marouf, Mohamed A.; and Vancil, Paul W., to AT&T Bell Laboratories. Method and apparatus for controlling signal level in a digital conference arrangement. 4,499,578, Cl. 370-62.000.

Marpoe, Gary R., Jr.: *See*—
Bright, Edward J.; Marpoe, Gary R., Jr.; Schuemann, Klaus D.; and Sheesley, Wilmer L., 4,498,725, Cl. 339-176.00M.

Marrocco, Matthew L., to Cities Service Oil and Gas Corporation. Gel for retarding water flow. 4,498,540, Cl. 166-295.000.

Marshall, George C., Jr., to General Dynamics, Pomona Division. Method for solder tinning of component leads. 4,499,120, Cl. 427-123.000.

Martin, Albert R.: *See*—
Cornelius, Rajendra S.; Martin, Albert R.; Lunk, Hans E.; and Mendenhall, Mark D., 4,499,438, Cl. 333-1.000.

Martin, Claude: *See*—
Tomassi, Roberto; and Martin, Claude, 4,498,582, Cl. 206-427.000.

Martin, John H.: *See*—
Lee, May D.; Martin, John H.; Borders, Donald B.; Yao, Raymond C.; and Testa, Raymond T., 4,499,075, Cl. 424-118.000.

Martin, Peter, to Philip Morris Incorporated. Rotary beam chopper with continuously variable duty cycle. 4,499,362, Cl. 219-121.0LA.

Martin, Robert J.: *See*—
Ray, John M., III; and Martin, Robert J., 4,499,550, Cl. 364-606.000.

Martinez-Vera, Enrique; Guerra-Garcia, Gilberto; and Tovalin, Jose L. L., to Hylsa, S.A. Double valve assembly. 4,498,498, Cl. 137-613.000.

Martino, Germain: *See*—
Juguin, Bernard; Martino, Germain; and Miquel, Jean, 4,498,907, Cl. 44-56.000.

Martino, Phillip C., to SCM Corporation. Thermosetting acrylic latexes. 4,499,212, Cl. 523-201.000.

Martio, Asko; Reitmaa, Ilpo; and Lautamo, Esa, to Kone Oy. Electrocardiograph (ECG) electrode testing system. 4,498,479, Cl. 128-639.000.

Marvel, Carl S.; and Lin, See, to United States of America, Air Force. Polyaromatic ether-sulfone-keytones with fluoro-substituted-p-cyclophane units as cross-linking sites. 4,499,258, Cl. 528-173.000.

Marvin Glass & Associates: *See*—
Ferris, Michael J.; Wise, Paul H.; and Breslow, Jeffrey D., 4,498,674, Cl. 273-243.000.

Maryanoff, Cynthia A., to McNeilab, Inc. Process for production of methyl 2-tetradecylglycidate. 4,499,294, Cl. 549-519.000.

Masaitis, William; and Canada, Robert O., to General Electric Co. System and method for pattern recognition. 4,499,595, Cl. 382-9.000.

Maschinenfabrik Alfred Schmermund GmbH & Co.: *See*—
Vorhauer, Hans, 4,498,274, Cl. 53-412.000.

Mase, Ryoichi, to Toso Kabushiki Kaisha. Braking device for use in a roller blind. 4,498,517, Cl. 160-294.000.

Mase, Sadaaki: *See*—
Minowa, Nobuto; Fukatsu, Shunzo; Tachibana, Kunitaka; Niida, Taro; and Mase, Sadaaki, 4,499,027, Cl. 260-502.50G.

Maselli, James M.: *See*—
Kim, Gwan; Pereira, Carmo J.; Hegedus, Louis; and Maselli, James M., 4,499,206, Cl. 502-304.000.

Mashimo, Satoshi; Tanaka, Masayuki; and Kinoshita, Takashi, to Mitsuboshi Belting Ltd. Drive belt with tensile cords. 4,498,891, Cl. 474-205.000.

Masler, William F., III; and Amjad, Zahid, to B. F. Goodrich Company, The. Scale inhibiting copolymer. 4,499,002, Cl. 252-180.000.

Mason, Charles E., to Conoco Inc. Pump down tool and check valve. 4,498,532, Cl. 166-70.000.

Mason, Walter R.; and Cummings, Jimmie L., to Hoge, Warren, Zimmerman Company. Apparatus for continuously producing a dry material and liquid slurry. 4,499,561, Cl. 366-156.000.

Massachusetts Institute of Technology: *See—*
Guiseppi-Elie, Anthony; and Wnek, Gary E., 4,499,007, Cl. 252-500.000.
Lynch, John T.; Anderson, Alfredo C.; Withers, Richard S.; and Wright, Peter V., 4,499,441, Cl. 333-161.000.

Massaro, Thomas A.: *See—*
Schneider, Philip H.; Weber, J. William; and Massaro, Thomas A., 4,498,843, Cl. 417-22.000.

Massey, Fred L.; and Callander, Douglas D., to Goodyear Tire & Rubber Company, The. High clarity colorless polyesters. 4,499,226, Cl. 524-382.000.

Massie, James E.: *See—*
Spain, Raymond G.; and Massie, James E., 4,499,216, Cl. 523-437.000.

Master Juvenile Products: *See—*
Arginsky, Richard C., 4,498,627, Cl. 239-279.000.

Mastikova, Margarita H.: *See—*
Galabov, Angel S.; and Mastikova, Margarita H., 4,499,093, Cl. 514-258.000.

Masuda, Koji, to Nissan Motor Company, Limited. High activity catalyst for reforming of methanol and process of preparing same. 4,499,205, Cl. 502-303.000.

Masuda, Teruo; Abe, Takeo; and Koike, Matsuhiro, to France Bed Co., Ltd. Mattress. 4,498,477, Cl. 128-378.000.

Masuda, Yoshisobu, to Ono Pharmaceutical Co., Ltd. Method of anoxia treatment using prostaglandin analogues. 4,499,085, Cl. 514-58.000.

Materna, Peter A., to United States of America, Energy. High-field double-pancake superconducting coils and a method of winding. 4,499,443, Cl. 335-216.000.

Mathew, Christina C. Interoral tube fixing device. 4,498,903, Cl. 604-174.000.

Matsuda, Toshiro, to Nissan Motor Company, Limited. Anti-skid brake control system with fail-safe arrangement. 4,499,543, Cl. 364-426.000.

Matsuda, Yoshio, to Yoshida Kogyo K. K. Warp-knit stringer tape for slide fasteners. 4,498,316, Cl. 66-196.000.

Matsufuji, Yohji; Togano, Shigeo; and Ichihashi, Hiroo, to Canon Kabushiki Kaisha. Ink jet recording apparatus. 4,499,478, Cl. 346-140.00R.

Matsui, Takeshi: *See—*
Nakamura, Hirotoshi; Itoh, Teruyoshi; Haraguchi, Hiroshi; Narita, Kou; Iwata, Toshiharu; and Matsui, Takeshi, 4,498,331, Cl. 73-35.000.

Matsuo, Yasushi: *See—*
Shimamori, Toru; Hattori, Yoshinori; and Matsuo, Yasushi, 4,499,192, Cl. 501-97.000.

Matsushita Electric Industrial Co., Ltd.: *See—*
Hatagawa, Toyotsugu, 4,499,356, Cl. 219-10.55E.
Shinozaki, Nozomu; Dohi, Takashi; Yamazaki, Shinji; and Neki, Shigeo, 4,499,449, Cl. 338-32.00R.
Tanaka, Tsutomu; Tsujimoto, Yoshinobu; Serizawa, Hiroyuki; and Hattori, Katsuji, 4,498,730, Cl. 350-96.160.
Ueda, Katsuroh, 4,498,453, Cl. 126-21.00A.

Matsushita Electric Works, Ltd.: *See—*
Okamoto, Futoshi, 4,499,533, Cl. 363-126.000.

Mattel, Inc.: *See—*
Cook, John S., 4,498,887, Cl. 446-462.000.

Matthews, Gordon H. Method and apparatus for automatically detecting and playing desired audio segments over a broadcast receiver. 4,499,601, Cl. 455-166.000.

Matthiessen, Hans, to Dragerwerk Aktiengesellschaft. Circuit arrangement for correction of a sensor output. 4,499,423, Cl. 324-425.000.

Mattis, Donald J., to Sun Chemical Corporation. Connector receptacle for electric cigar lighter. 4,498,726, Cl. 339-182.00R.

Mattisson, Ulf K.: *See—*
Shaldon, Stanley; Christopherson, Kjell H. I.; Falkvall, Thore E.; and Mattisson, Ulf K., 4,498,990, Cl. 210-637.000.

Maus, Helmut, to Holac Maschinenbau GmbH. Apparatus for cutting foodstuffs. 4,498,380, Cl. 100-98.00R.

Max Factor & Co.: *See—*
Seidler, David, 4,498,490, Cl. 132-88.500.

Mayor, Robert B., to Boeing Company, The. Adaptor for clamping optical scale on tooling button. 4,498,245, Cl. 33-286.000.

Mazda Motor Corporation: *See—*
Kiba, Hiroshi; Itoh, Yoshimasa; and Kiryu, Kiyuji, 4,498,414, Cl. 118-663.000.
Satow, Haruhiko; Okimoto, Haruo; Sakurai, Shigeru; and Oda, Hiroyuki, 4,498,429, Cl. 123-26.000.

Mazin, Moshe; and Engeler, William E., to General Electric Company. Five-transistor static memory cell implemental in CMOS/bulk. 4,499,558, Cl. 365-182.000.

McAllister, John E., Jr., to United States of America, Energy. Vortex-augmented cooling tower-windmill combination. 4,499,034, Cl. 261-109.000.

McBride, Edward D.: *See—*
Hall, Charles B.; McBride, Edward D.; and Young, Robert F., 4,498,871, Cl. 440-61.000.

McCafferty, Gerald P.; Navoczynski, Stanley J.; and Kinkle, Robert W., to Budd Company, The. Adhesively bonded trailer including fiber reinforced panels. 4,498,264, Cl. 52-281.000.

McCallum, Neville C. Racetracks. 4,498,666, Cl. 272-5.000.

McCarthy, Jeremiah P.: *See—*
Goldman, Ernest A.; McCarthy, Jeremiah P.; and Poppert, Paul E., 4,498,223, Cl. 29-571.000.

McColl, James R.; and Peters, Thomas E., to GTE Laboratories Incorporated. Infrared emitting phosphor. 4,499,005, Cl. 252-301.60S.

McDaniel, Kenneth G., to Texaco Inc. Preparation of amino polyols. 4,499,264, Cl. 536-50.000.

McDaniel, Max P., to Phillips Petroleum Company. $TiCl_4$ Treated with organomagnesium/protonating agent. 4,499,199, Cl. 502-104.000.

McDermott Incorporated: *See—*
Fern, Derek T.; and Harrison, Gary E., 4,498,811, Cl. 405-168.000.

McDonald, Giles N.: *See—*
Manikian, Victor; and McDonald, Giles N., 4,498,808, Cl. 405-61.000.

McDonnel Douglas Corporation: *See—*
Boehringer, Wilfred E.; and Pastor, Vincent J., 4,498,647, Cl. 244-75.00R.

McEntire, Edward E.: *See—*
Dominguez, Richard J. G.; McEntire, Edward E.; and Naylor, Carter G., 4,499,254, Cl. 528-49.000.

McFarlane, Finley E.: *See—*
Fagerburg, David R.; and McFarlane, Finley E., 4,499,262, Cl. 528-279.000.

McGeehon, William C.: *See—*
Mihalakis, Agis I., deceased; and Friend, Barbara L., legal representative, 4,498,734, Cl. 350-125.000.

McGlone, William E.; and Genest, Leonard J. Portable, positionable, locking magnetic molding tubes for vehicle protection. 4,498,697, Cl. 293-128.000.

McGovern, William E.; and Tsao, Kuey Y., to Teletype Corporation. Apparatus for measuring light. 4,498,767, Cl. 356-121.000.

McGregor, Anderson D.: *See—*
Dyer, Lawrence D.; and McGregor, Anderson D., 4,498,345, Cl. 73-849.000.

McIntyre, Ernest L.: *See—*
McIntyre, Marvin H.; and McIntyre, Ernest L., 4,498,236, Cl. 30-34.100.

McIntyre, Marvin H.; and McIntyre, Ernest L. Shaving instrument complex. 4,498,236, Cl. 30-34.100.

McNeilab, Inc.: *See—*
Feth, Georg; and Mills, John E., 4,499,274, Cl. 546-229.000.
Maryanoff, Cynthia A., 4,499,294, Cl. 549-519.000.

McNeilus Truck & Manufacturing Co., Inc.: *See—*
Christenson, Ronald E., 4,498,568, Cl. 193-10.000.

McNulty, Sherry M.: *See—*
Scott, Raymond G.; and McNulty, Sherry M., 4,498,589, Cl. 206-526.000.

McSweeney, Robert T.; and Long, Stanley A., to North American Philips Corporation. Low-fire ceramic dielectric compositions for multilayer ceramic capacitors. 4,499,521, Cl. 361-321.000.

Mead Corporation, The: *See—*
Scott, Burton W., 4,499,358, Cl. 219-10.770.
Tomassi, Roberto; and Martin, Claude, 4,498,582, Cl. 206-427.000.

Meatto, Franklin: *See—*
Pilpel, Edward; and Meatto, Franklin, 4,498,686, Cl. 280-610.000.

Mecseki Szenbanyak: *See—*
Gergo, Gyorgy; Nemeth, Jozsef; Sebestyen, Bela; and Solymossy, Bela, 4,498,391, Cl. 102-312.000.

Mednikarov, Borislav D.: *See—*
Konstantinov, Ivan T.; Mednikarov, Borislav D.; Sahatchieva, Maria A.; and Burov, Atanas T., 4,499,173, Cl. 430-278.000.

Medtronic, Inc.: *See—*
Bourgeois, Ivan M., 4,498,478, Cl. 128-419.0PG.
Williams, Terrell M., 4,498,482, Cl. 128-786.000.

Mehnert, Walter: *See—*
Bolkow, Ludwig; Mehnert, Walter; and Chaborski, Hoiko, 4,498,764, Cl. 356-5.000.

Meijer, Sjoerd: *See—*
Kooi, Hessel; and Meijer, Sjoerd, 4,498,837, Cl. 414-664.000.

Meiji Seika Kaisha, Ltd.: *See—*
Minowa, Nobuto; Fukatsu, Shunzo; Tachibana, Kunitaka; Niida, Taro; and Mase, Sadaaki, 4,499,027, Cl. 260-502.50G.
Mochizuki, Keizo; Kuwada, Yukio; and Mizoguchi, Yoshihiko, 4,499,113, Cl. 426-291.000.

Meiners, Hans-Joachim: *See—*
Schafer, Walter; Meiners, Hans-Joachim; Seel, Klaus; Reichmann, Wolfgang; Wagner, Kuno; and Findeisen, Kurt, 4,499,038, Cl. 264-51.000.

Meislitzer, Karl H.; and Hauner, Wigbert, to Dentsply Research & Development Corp. Sagger furnace. 4,498,866, Cl. 432-239.000.

Meleard, Roger: *See—*
Prioux, Jean-Jacques; Meleard, Roger; Pioger, Michel; and Lasvaladas, Jean-Jacques, 4,499,343, Cl. 200-5.00A.

Melillo, David G.; and Ryan, Kenneth M., to Merck & Co., Inc. Trans-3-carboxymethylene-4-carboxy-5-methyl-delta2-isoxazoline as intermediate. 4,499,278, Cl. 548-240.000.

Melles, Harold W.: *See—*
Vater, George R.; and Melles, Harold W., 4,498,356, Cl. 74-745.000.

Melquist, John L., to Standard Oil Company (Indiana). Selective low-temperature isomerization of normal butenes using AMS-1B crystalline borosilicate molecular sieve. 4,499,326, Cl. 585-671.000.

Mendenhall, Mark D.: *See—*
Cornelius, Rajendra S.; Martin, Albert R.; Lunk, Hans E.; and Mendenhall, Mark D., 4,499,438, Cl. 333-1.000.

Menges, John R.: *See—*
Cerwin, Robert J.; Joshi, Madhusudan; Menges, John R.; Mericle, Robert W.; and Zwaskis, William J., 4,498,476, Cl. 128-346.000.

Menon, Narendranath, to General Electrodynamics Corp. Weight measuring apparatus with corrugated spring elements. 4,498,550, Cl. 177-209.000.

Mercil, Robert A. Moisture absorbent condiment container. 4,498,608, Cl. 222-190.000.

Merck & Co., Inc.: *See—*
de Solms, S. Jane, 4,499,103, Cl. 514-365.000.
Melillo, David G.; and Ryan, Kenneth M., 4,499,278, Cl. 548-240.000.

Merck Patent Gesellschaft mit beschrankter Haftung: *See—*
Haas, Gunther; and Weber, Georg, 4,499,004, Cl. 252-299.100.

Mercury International Trading Corp.: *See—*
Shin, Yoon K., 4,498,251, Cl. 36-30.00R.

Mericle, Robert W.: *See—*
Cerwin, Robert J.; Joshi, Madhusudan; Menges, John R.; Mericle, Robert W.; and Zwaskis, William J., 4,498,476, Cl. 128-346.000.

Merrell Dow Pharmaceuticals Inc.: *See—*
Sunkara, Sai P.; and Prakash, Nellikunja J., 4,499,072, Cl. 424-85.000.

Merritt, Francis L.; and Ducati, Adriano C., to United States of America, Air Force. Heat resistant sheathed insulated electrical conductors. 4,499,334, Cl. 174-111.000.

Merten, Josef: *See—*
Tacke, Peter; Korber, Helmut; Merten, Josef; and Neuray, Dieter, 4,499,237, Cl. 525-67.000.

Mesquida-Feirman, Barbara: *See—*
Gordon, Robert L.; Alba, Andrew J.; Bodary, Michael; and Mesquida-Feirman, Barbara, 4,498,585, Cl. 206-518.000.

Messerschmitt-Bolkow-Blohm: *See—*
Leis, Hans, 4,498,896, Cl. 494-14.000.

Messura, Kathleen A.; and Ayres, Charles A., to Phillips Petroleum Company. Vapor recovery from particles containing same. 4,499,263, Cl. 528-483.000.

Metal Alloys, Inc.: *See—*
Hanejko, Francis G., 4,499,048, Cl. 419-49.000.
Hanejko, Francis G., 4,499,049, Cl. 419-49.000.

Metz, Arthur J.: *See—*
Schlotzhauer, Kenneth G.; and Metz, Arthur J., 4,499,386, Cl. 307-260.000.

Metzdorf, Jacques, to Arbed S.A. Method of rolling sheet piling. 4,498,323, Cl. 72-177.000.

Meyer, Horst: *See—*
Landwehr, Gunter; and Meyer, Horst, 4,498,407, Cl. 112-308.000.

Meyer, Walter E.: *See—*
Tomcufcik, Andrew S.; Meyer, Walter E.; and Eudy, Nancy H., 4,499,097, Cl. 514-341.000.

Miazga, Dennis E.; Nguyen, Tuan A.; and Dugan, Michael T., to Xerox Corporation. Self testing system for reproduction machine. 4,499,581, Cl. 371-20.000.

Michel, Wolfgang: *See—*
Walch, Axel; Seifried, Walter; Michel, Wolfgang; Kuhls, Jurgen; and Wildhardt, Jurgen, 4,499,211, Cl. 521-145.000.

Mihadak, Istvan: *See—*
Kiss, Laszlo; Paludi, Arpad; Grof, Gyula; Bolyo, Laszlo; Szolgyen, Csaba; Mihadak, Istvan; and Varga, Imre, 4,498,789, Cl. 374-164.000.

Mihalakis, Agis I., deceased; and by Friend, Barbara L., legal representative, to McGeehon, William C.; and Mihalakis, George, a part interest. Means and method of controlling reflected image containment. 4,498,734, Cl. 350-125.000.

Mihalakis, George: *See—*
Mihalakis, Agis I., deceased; and Friend, Barbara L., legal representative, 4,498,734, Cl. 350-125.000.

Miisho, Kazuyuki: *See—*
Hara, Seinosuke; Aoyama, Shunichi; and Miisho, Kazuyuki, 4,498,432, Cl. 123-90.160.

Mikami, Nobuo: *See—*
Kano, Yuichi; Mikami, Nobuo; Wakamatsu, Kazutoshi; and Naito, Kunio, 4,499,442, Cl. 335-79.000.

Mikiya, Toshio, to Nitto Kohki Co., Ltd. Pipe coupler arrangement. 4,498,658, Cl. 251-149.600.

Miles Laboratories, Inc.: *See—*
Skjold, A. Christopher; Stover, Lonnie R.; and Trimmer, Robert W., 4,499,185, Cl. 435-19.000.

Miller, Dennis H.; and Mutka, Jerry R., to Sunkist Growers, Inc. Process for forming solid juice composition and product of the process. 4,499,112, Cl. 426-276.000.

Miller, Theodore H.: *See—*
Balducci, Walter O.; and Miller, Theodore H., 4,498,319, Cl. 70-92.000.

Miller, William, to Ebert, Michael. Manifold valve assembly. 4,498,500, Cl. 137-883.000.

Milliken Research Corporation: *See—*
Engels, Walter, 4,498,217, Cl. 26-9.000.

Mills, John E.: *See—*
Feth, Georg; and Mills, John E., 4,499,274, Cl. 546-229.000.

Mills, Laurence P.: *See—*
Preddey, Brian F.; and Mills, Laurence P., 4,498,327, Cl. 72-341.000.

Mills, Ross N.: *See—*
Chee-Shuen Lee, Francis; Mills, Ross N.; and Talke, Frank E., 4,499,479, Cl. 346-140.00R.

Milner, Geoffrey; Butler, Michael F.; and Ashworth, Robert A., to DM International, Inc. Process for the gasification of fuels. 4,498,909, Cl. 48-209.000.

Miltonberger, Thomas W., to Gould Inc. Feedback system with automatic gain control action. 4,499,610, Cl. 455-619.000.

Milum, J. David. Sharpener for a spreading tool. 4,498,360, Cl. 76-88.000.

Minagawa, Motonobu; Kubota, Naohiro; and Shibata, Toshihiro, to Adeka Argus Chemical Co., Ltd. Copolymer light stabilizers having at least one 2,2,6,6-tetraalkyl piperidyl group and synthetic resin compositions containing the same. 4,499,220, Cl. 524-102.000.

Minderhoud, Johannes K.: *See—*
Hoek, Arend; Post, Martin F. M.; Minderhoud, Johannes K.; and Lednor, Peter W., 4,499,209, Cl. 518-707.000.

Minh, Thi H.; Cole, Edward R.; and Crank, George, to Unisearch Limited. Antioxidant benzodioxole compound. 4,499,115, Cl. 426-546.000.

Minicam Research Corporation: *See—*
Itoh, Tadatsugu, 4,499,415, Cl. 320-5.000.

Minitube Systems: *See—*
Rodd, Derek E., 4,498,623, Cl. 237-8.00R.

Minnesota Mining and Manufacturing Company: *See—*
Davies, David H.; and Evanicky, Daniel E., 4,499,477, Cl. 346-137.000.
Heltemes, Eugene C.; and Montean, Samuel, 4,499,444, Cl. 335-284.000.
Piotrowski, Chester; and Loeding, Neil W., 4,499,515, Cl. 360-113.000.
Thompson, Craig D., 4,498,507, Cl. 140-93.200.

Minolta Camera Kabushiki Kaisha: *See—*
Sugiyama, Takashi, 4,498,760, Cl. 355-15.000.

Minowa, Nobuto; Fukatsu, Shunzo; Tachibana, Kunitaka; Niida, Taro; and Mase, Sadaaki, to Meiji Seika Kaisha, Ltd. Process for preparing optically active [(3-amino-3-carboxy)propyl-1]phosphinic acid derivatives. 4,499,027, Cl. 260-502.50G.

Minshew, Edward C., Jr.; and Chesley, Ray F. Device for drawing, holding and dispensing liquid. 4,498,510, Cl. 141-27.000.

Miquel, Jean: *See—*
Juguin, Bernard; Martino, Germain; and Miquel, Jean, 4,498,907, Cl. 44-56.000.

Miraglia, John A.: *See—*
Gillet, John B.; and Miraglia, John A., 4,499,523, Cl. 361-383.000.

Mitamura, Hideyuki: *See—*
Saitoh, Minoru; Arimatsu, Yoshikazu; Tani, Katsuya; and Mitamura, Hideyuki, 4,499,221, Cl. 524-109.000.

Mitchell, Barclay; and Moore, Kenneth, to Payez International Limited. Gaskets. 4,499,135, Cl. 428-137.000.

Mitchell, Phillip G. Stirring device for sand mill. 4,499,445, Cl. 366-316.000.

Mitono, Yoshiharu: *See—*
Tanizawa, Tetsu; Omichi, Hitoshi; and Mitono, Yoshiharu, 4,499,484, Cl. 357-68.000.

Mitrowsky, Alexander; Wissner, Adolf; and Hauser, Werner, to Bayer Aktiengesellschaft. Process for separating technically pure 2,4-diisocyanatotoluene or isomer mixtures having an increased content of 2,4-diisocyanatotoluene from isomer mixtures of 2,4- and 2,6-diisocyanatotoluene. 4,499,023, Cl. 260-453.0SP.

Mitsubishi Chemical Industries Ltd.: *See—*
Imaki, Naoshi; and Nakanome, Takemi, 4,499,306, Cl. 568-348.000.

Mitsubishi Denki Kabushiki Kaisha: *See—*
Imanishi, Masami; and Tanaka, Naoki, 4,498,310, Cl. 62-211.000.
Iwaki, Yoshiyuki; Imori, Hideo; and Gotou, Hitoshi, 4,499,390, Cl. 310-88.000.
Yamanaka, Takashi; Takeya, Yasushi; Yorita, Mitsumasa; Horiuchi, Toshiaki; Inagaki, Kouichi; Naya, Eizo; Demizu, Michinosuke; and Okumura, Mitsuhiro, 4,499,009, Cl. 252-512.000.

Mitsubishi Gas Chemical Company, Inc.: *See—*
Ikeguchi, Nobuyuki; and Kimbara, Hidenori, 4,499,245, Cl. 525-417.000.

Mitsuboshi Belting Ltd.: *See—*
Mashimo, Satoshi; Tanaka, Masayuki; and Kinoshita, Takashi, 4,498,891, Cl. 474-205.000.

Mitsuhashi, Yasuo, to Canon Kabushiki Kaisha. Fixing method. 4,499,168, Cl. 430-99.000.

Mitsuno, Tatsuyuki: *See—*
Iwata, Nobutoshi; Fukushima, Kiyoshi; Fujino, Shinji; Yamada, Takeshiro; Hao, Hideyuki; Tanaka, Shigeo; and Mitsuno, Tatsuyuki, 4,499,238, Cl. 525-98.000.

Mitter, Mathias. Apparatus for supplying foam to a consumer. 4,498,318, Cl. 68-200.000.

Mitutoyo Mfg. Co., Ltd.: *See—*
Kabaya, Yoshihiko, 4,499,374, Cl. 250-237.00G.
Nakaoki, Tokuzo, 4,498,241, Cl. 33-172.00R.

Miyakawa, Susumu; Fukuta, Toshiaki; Akado, Hajime; and Taki, Yoshihiro, to Nippondenso Co., Ltd. Fluid filter element and support. 4,498,989, Cl. 210-450.000.

Miyake, Yuzuru: *See—*
Yamamoto, Shigeru; Miyake, Yuzuru; and Nohara, Isao, 4,498,637, Cl. 242-18.100.

Miyao, Masanobu: *See—*
Tamura, Masao; Yoshihiro, Naotsugu; Natsuaki, Nobuyoshi; Miyao, Masanobu; Ohkura, Makoto; Sunami, Hideo; and Tokuyama, Takashi, 4,498,951, Cl. 156-612.000.

Miyatake, Kimio; Ishida, Kozo; Ebi, Hiroyuki; and Shimada, Takeshi, to Horiba, Ltd. Infrared radiation gas analyzer. 4,499,378, Cl. 250-343.000.

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Miyazaki, Kunio: *See*—
Kurata, Noboru; Miyazaki, Kunio; and Yamamoto, Kuniyuki, 4,498,553, Cl. 180-230.000.
Miyazaki, Yasuyuki: *See*—
Yuki, Katsumi; Yoshida, Susumu; Ozeki, Mineo; Miyazaki, Yasuyuki; and Kawamata, Masaru, 4,499,541, Cl. 364-424.000.
Miyazawa, Takashi: *See*—
Shiraki, Manabu; Nakajima, Akihiro; and Miyazawa, Takashi, 4,499,420, Cl. 324-174.000.
Mizoguchi, Yoshihiko: *See*—
Mochizuki, Keizo; Kuwada, Yukio; and Mizoguchi, Yoshihiko, 4,499,113, Cl. 426-291.000.
Mizokami, Kazunori, to Olympus Optical Co., Ltd. Photometric apparatus for cameras. 4,498,753, Cl. 354-425.000.
Mobil Oil Corporation: *See*—
Blackburn, Gary R.; Mackerer, Carl R.; and Schreiner, Ceinwen A., 4,499,187, Cl. 435-34.000.
Chibaik, Sheldon, 4,498,908, Cl. 44-71.000.
Cook, Evin L., 4,498,537, Cl. 166-257.000.
Degnan, Thomas F.; and Partridge, Randall D., 4,498,976, Cl. 208-120.000.
Hellwell, Israel J., 4,498,994, Cl. 252-8.50M.
Jones, Timothy A.; and Snavely, Earl S., Jr., 4,499,059, Cl. 423-226.000.
Mochizuki, Keizo; Kuwada, Yukio; and Mizoguchi, Yoshihiko, to Meiji Seika Kaisha, Ltd. Process for preparing snack products with expanded coating. 4,499,113, Cl. 426-291.000.
Moinson, Marc; Van Noten, Lodewijk; Overbergh, Noel; Franckx, Joris; and Buekers, Valere, to N.V. Raychem S.A. Splicing, branching or terminating cable. 4,498,938, Cl. 156-49.000.
Molnaire, Michel F., to Eastman Kodak Company. Amorphous compositions of dyes and binder-mixtures in optical recording elements and information recorded elements. 4,499,165, Cl. 430-17.000.
Mole, Thomas: *See*—
Seddon, Duncan; Mole, Thomas; and Whiteside, Judy A., 4,499,314, Cl. 585-408.000.
Molin, Alexis, to Atlas Copco Aktiebolag. Method for rock drilling. 4,498,544, Cl. 173-1.000.
Molin, Soeren: *See*—
Uhlin, Bernt E.; Nordstrom, Kurt; and Molin, Soeren, 4,499,189, Cl. 435-253.000.
Monarch Marking Systems, Inc.: *See*—
Hamisch, Paul H., Jr., 4,498,389, Cl. 101-288.000.
Hamisch, Paul H., Jr.; and Makley, James A., 4,498,947, Cl. 156-384.000.
Mones, Arthur H.: *See*—
Huston, Dennis L.; Kardashian, Vahram S.; and Mones, Arthur H., 4,498,954, Cl. 156-651.000.
Monier Resources, Inc.: *See*—
Raba, Carl F., Jr.; Smith, Robert L.; and Huang, Francis Y., 4,498,993, Cl. 210-710.000.
Monsanto Company: *See*—
Rader, Charles P., 4,499,243, Cl. 525-333.100.
Runkle, Charles J., 4,498,616, Cl. 225-1.000.
Montagna, Angelo A.: *See*—
Vandersport, Thomas H.; Richard, Michael A.; and Montagna, Angelo A., 4,499,204, Cl. 502-301.000.
Montana, Donald M.; and Herd, Randy S., to United States of America, Air Force. Range-only multistatic radar system. 4,499,468, Cl. 343-15.000.
Montean, Samuel: *See*—
Heltemes, Eugene C.; and Montean, Samuel, 4,499,444, Cl. 335-284.000.
Montedison S.p.A.: *See*—
Moreschini, Luciano; Dalloro, Leonardo; Cavaterra, Enrico; Petrini, Guido; and Covini, Romano, 4,499,302, Cl. 562-599.000.
Piacenti, Franco; Ciampelli, Federigo; and Pasetti, Adolfo, 4,499,146, Cl. 428-422.000.
Montefiore Hospital and Medical Center, Inc.: *See*—
Lalezari, Iraj, 4,499,020, Cl. 260-397.100.
Monti, Giuseppe: *See*—
Lanfranconi, Gianmario; and Monti, Giuseppe, 4,498,812, Cl. 405-168.000.
Moody, Roy A.; Bulanda, John J.; Levin, Robert F.; Timian, Steven S.; and Waltasti, Stephen A., to Panduit Corp. Tool for the automatic installation of discrete cable ties provided on a continuous ribbon of cable ties. 4,498,506, Cl. 140-93.200.
Mookherjee, Braja D.: *See*—
Luccarelli, Domenick, Jr.; Mookherjee, Braja D.; Wilson, Richard A.; Zampino, Michael J.; and Bowen, David R., 4,499,114, Cl. 426-534.000.
Moore, Kenneth: *See*—
Mitchell, Barclay; and Moore, Kenneth, 4,499,135, Cl. 428-137.000.
Moore, William J.: *See*—
Krause, Charles E.; and Moore, William J., 4,498,944, Cl. 156-205.000.
Moorman, Stephen L.: *See*—
Corwin, Richard R.; and Moorman, Stephen L., 4,498,770, Cl. 356-349.000.
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Morgan, Annis R., Jr.: *See*—
King, Eddie W.; and Morgan, Annis R., Jr., 4,498,570, Cl. 194-1.00N.
Morgan, Darrell W., Jr. Chiropractic instrument. 4,498,464, Cl. 128-54.000.
Morgan, George R. Stirling cycle piston engine. 4,498,298, Cl. 60-525.000.
Morgan, Jack B. Scanning apparatus with video camera. 4,499,490, Cl. 358-87.000.
Mori, Kei. Solar collector. 4,498,460, Cl. 126-440.000.
Mori, Koji: *See*—
Segawa, Hideo; Mori, Koji; Itagaki, Masanori; Sakurai, Kohichi; and Ishiwata, Tatsumi, 4,499,384, Cl. 250-578.000.
Mori, Takaro: *See*—
Yamada, Yasuhiro; and Mori, Takaro, 4,499,507, Cl. 360-26.000.
Morimoto, Kotaro: *See*—
Suzuki, Tomio; and Morimoto, Kotaro, 4,498,861, Cl. 431-12.000.
Morinaga, Kaoru, to Tokyo Shibaura Denki Kabushiki Kaisha. Disc rotating apparatus. 4,499,573, Cl. 369-270.000.
Morita, Takayuki: *See*—
Kodama, Ikuo; Muramatsu, Shigeru; Terasaki, Kazunori; and Morita, Takayuki, 4,498,283, Cl. 57-261.000.
Morita, Toshiaki: *See*—
Murakami, Yoichi; Shoji, Akio; Takezawa, Shoichiro; Ishikawa, Noboru; and Morita, Toshiaki, 4,499,239, Cl. 525-111.000.
Moriyama, Yasuhiro: *See*—
Ishizuka, Takashi; Moriyama, Yasuhiro; and Nakamura, Masao, 4,499,042, Cl. 264-205.000.
Moro, Luigi; Maffione, Grazia; Neri, Guido; and Rigamonti, Alessandro, to Farmitalia Carlo Erba S.p.A. Pharmaceutical sustained-release compositions. 4,499,066, Cl. 424-19.000.
Morrison, Herbert: *See*—
Mack, William; Morrison, Herbert; and Chiapetta, Frank, 4,498,237, Cl. 30-200.000.
Mortensen, John L. Adjustable probe belt assembly. 4,498,480, Cl. 128-644.000.
Moser, Helmut: *See*—
Dore, Jacky; and Moser, Helmut, 4,499,018, Cl. 260-245.810.
Mosley, William H.; Sanders, David E.; and Roberson, Richard E., to E-Systems, Inc. Method and apparatus for producing a shaped spectrum modulating signal. 4,499,385, Cl. 375-62.000.
Motamed, Armond: *See*—
Therien, Robert D.; Langford, Forrest L.; Motamed, Armond; and Williams, Robert D., 4,498,761, Cl. 355-24.000.
Motorola, Inc.: *See*—
Parker, Norman W., 4,499,426, Cl. 329-50.000.
Mouldmaking Design Centre Limited: *See*—
Gahan, Geoffrey D., 4,498,860, Cl. 425-562.000.
Mucha, John A.: *See*—
Cook, Joel M.; Donnelly, Vincent M.; Flamm, Daniel L.; Ibbotson, Dale E.; and Mucha, John A., 4,498,953, Cl. 156-646.000.
Mueller, Richard A.; and Partis, Richard A., to G. D. Searle & Co. Protease inhibitors. 4,499,295, Cl. 560-53.000.
Muha, Harvey P., Jr.; and Watson, Charles K. Slot antenna with face mounted baffle. 4,499,474, Cl. 343-771.000.
Mulac, Anthony J.: *See*—
Eisenhawer, Stephen; Mulac, Anthony J.; Donaldson, A. Burl; and Fox, Ronald L., 4,498,542, Cl. 166-303.000.
Mulcahy, Joseph A., to J. Mulcahy Enterprises Incorporated. Induction furnace. 4,499,583, Cl. 373-161.000.
Muller, Hanns P.: *See*—
Kerimis, Dimitrios; Muller, Hanns P.; and Wagner, Kuno, 4,499,253, Cl. 528-45.000.
Muller, Norbert: *See*—
Knorreck, Peter; Kuhne, Wolfgang; and Muller, Norbert, 4,498,499, Cl. 137-627.500.
Mulliner, Richard R.; and Ajioka, James S., to Hughes Aircraft Company. Solderable plated plastic components and processes for manufacture and soldering. 4,499,157, Cl. 428-624.000.
Mullis, Jerry D., to Conbraco Industries, Inc. Apparatus for locking a control device. 4,498,320, Cl. 70-177.000.
Mummenhoff, Peter: *See*—
von Bonin, Wulf; Mummenhoff, Peter; Beck, Ulrich; and Baumgen, Heinz, 4,499,153, Cl. 428-479.600.
Mundie, Craig J.: *See*—
Bachman, Brett L.; Belgard, Richard A.; Bernstein, David H.; Bratt, Richard G.; Clancy, Gerald F.; Gavria, Edward S.; Gruner, Ronald H.; Jones, Thomas M.; Mundie, Craig J.; Nealon, James T.; Pilat, John F.; Schleimer, Stephen I.; and Wallach, Steven J., 4,499,535, Cl. 364-200.000.
Clancy, Gerald F.; Gruner, Ronald H.; Schleimer, Stephen I.; Mundie, Craig J.; Wallach, Steven J.; Wallach, Walter A., Jr.; Ahlstrom, John K.; Richmond, Michael S.; Bernstein, David H.; and Bratt, Richard G., 4,499,604, Cl. 364-200.000.
Mundloch, James D.: *See*—
Vorwerk, Frederick E.; and Mundloch, James D., 4,498,400, Cl. 105-248.000.
Munroe, Ronald G. Incandescent lighting. 4,499,398, Cl. 313-113.000.
Murakami Kaimeido Co., Ltd.: *See*—
Kumai, Toshiyuki, 4,498,738, Cl. 350-637.000.
Nakayama, Kiyoshi, 4,499,342, Cl. 200-5.00E.
Murakami, Yoichi; Shoji, Akio; Takezawa, Shoichiro; Ishikawa, Noboru; and Morita, Toshiaki, to Dainippon Ink and Chemicals, Inc. Resin composition for powder coating. 4,499,239, Cl. 525-111.000.
Murakami, Yoshiaki: *See*—
Kasai, Junichi; Yanagishima, Takayuki; Ajimina, Akio; Murakami, Yoshiaki; Shino, Akimitsu; and Watanabe, Tatsuya, 4,499,340, Cl. 179-115.5DV.

Murakoshi, Makoto: *See*—
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Muralidhara, Ranya: *See*—
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Muramatsu, Shigeru: *See*—
Kodama, Ikuo; Muramatsu, Shigeru; Terasaki, Kazunori; and Morita, Takayuki, 4,498,283, Cl. 57-261.000.
Muramatsu, Tateo; Kurihara, Masaoru; and Enami, Yasushi, to Bridgestone Tire Company Limited. Collapsible rubber dam. 4,498,810, Cl. 405-115.000.
Muramoto, Tomotaka: *See*—
Takayama, Makoto; Muramoto, Tomotaka; and Nishimura, Akimasa, 4,499,487, Cl. 358-41.000.
Murib, Jawad H., to National Distillers and Chemical Corporation. Process for the preparation of unsaturated aldehydes and carboxylic acids. 4,499,301, Cl. 562-546.000.
Murley, Jackie D.: *See*—
Hahn, Granville J.; Rutledge, Raleigh N.; and Murley, Jackie D., 4,499,041, Cl. 264-173.000.
Murphy, F. Merrick: *See*—
Tripp, Jeff; Allen, John; and Murphy, F. Merrick, 4,498,365, Cl. 84-1.240.
Murphy, William P. Die transfer system. 4,498,384, Cl. 100-224.000.
Murray Ohio Manufacturing Co., The: *See*—
Stevens, Aaron A.; and Lawrence, Randall K., 4,498,889, Cl. 474-133.000.
Muska, Willis M., to International Telephone and Telegraph Corporation. Symmetrically clamped fiber optic receiver. 4,499,609, Cl. 455-619.000.
Muterspaugh, Max W.: *See*—
Hermeling, Gilbert C., Jr.; and Muterspaugh, Max W., 4,499,602, Cl. 455-180.000.
Mutka, Jerry R.: *See*—
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Mutsaers, Cornelis A. H. A.: *See*—
Boonstra, Alexander H.; Mutsaers, Cornelis A. H. A.; and van der Kruijs, Franciscus N. G. R., 4,499,011, Cl. 252-518.000.
MWL Tool and Supply Company: *See*—
Lindsey, Hiram E., Jr., 4,498,534, Cl. 166-208.000.
Nadelson, Jeffrey: *See*—
Brand, Leonard J.; and Nadelson, Jeffrey, 4,499,279, Cl. 548-247.000.
Nagakura, Seiju, to Toyokoki Co., Ltd. Press device. 4,498,328, Cl. 72-482.000.
Nagase, Yoshinori: *See*—
Omura, Ikuo; Yamauchi, Junichi; Nagase, Yoshinori; and Uemura, Fumiko, 4,499,251, Cl. 526-278.000.
Nagashima, Nao, to Canon Kabushiki Kaisha. Two-side image forming apparatus. 4,499,500, Cl. 358-296.000.
Nagata, Yukihiro: *See*—
Watanabe, Yasushi; Suzuki, Yuichi; Nagata, Yukihiro; and Hoshino, Kiyotaka, 4,498,519, Cl. 164-417.000.
Naito, Kunio: *See*—
Kano, Yuichi; Mikami, Nobuo; Wakamatsu, Kazutoshi; and Naito, Kunio, 4,499,442, Cl. 335-79.000.
Nakagawa, Shinichi; Nakagawa, Tsuneo; Yamaguchi, Sadaatsu; Ihara, Kiyohiko; Amano, Toshihiko; Omori, Mitsugu; and Asano, Kohzoh, to Daikin Kogyo Co., Ltd. Process for preparing tetrafluoroethylene/fluoro(alkyl vinyl ether) copolymer. 4,499,249, Cl. 526-206.000.
Nakagawa, Tsuneo: *See*—
Nakagawa, Shinichi; Nakagawa, Tsuneo; Yamaguchi, Sadaatsu; Ihara, Kiyohiko; Amano, Toshihiko; Omori, Mitsugu; and Asano, Kohzoh, 4,499,249, Cl. 526-206.000.
Nakajima, Akihiro: *See*—
Shiraki, Manabu; Nakajima, Akihiro; and Miyazawa, Takashi, 4,499,420, Cl. 324-174.000.
Nakajima, Hisao: *See*—
Inui, Toshiharu; Kurata, Masami; Nakajima, Hisao; and Ohmori, Takashi, 4,499,476, Cl. 346-76.0PH.
Nakajima Seisakusho Co., Ltd.: *See*—
Kojima, Katsuhiko; Tanaka, Toyomi; and Nakajima, Shigeo, 4,498,509, Cl. 141-10.000.
Nakajima, Shigeo: *See*—
Kojima, Katsuhiko; Tanaka, Toyomi; and Nakajima, Shigeo, 4,498,509, Cl. 141-10.000.
Nakajima, Tetsuo: *See*—
Nomura, Toshio; Imai, Yasuhiro; Aoi, Tomio; Nakajima, Tetsuo; and Irino, Hiroshi, 4,498,440, Cl. 123-438.000.
Nakamura, Hirotoshi; Itoh, Teruyoshi; Haraguchi, Hiroshi; Narita, Kou; Iwata, Toshiharu; and Matsui, Takeshi, to Nippondenso Co., Ltd. Knocking detecting apparatus for internal combustion engines. 4,498,331, Cl. 73-35.000.
Nakamura, Kazuharu; and Nakanishi, Yutaka, to Toyotomi Kogyo Co., Ltd. Device for adjusting the vertical position of wick in oil burner. 4,498,862, Cl. 431-88.000.
Nakamura, Kenzi, to Sanyo Electric Co., Ltd. Flyback transformer. 4,499,522, Cl. 361-331.000.
Nakamura, Masao: *See*—
Ishizuka, Takashi; Moriyama, Yasuhiro; and Nakamura, Masao, 4,499,042, Cl. 264-205.000.
Nakamura, Mitsuo: *See*—
Ohgami, Masaki; and Nakamura, Mitsuo, 4,498,441, Cl. 123-440.000.
Nakamura, Norihiko; and Baika, Toyokazu, to Toyota Jidosha Kabushiki Kaisha. Variable valve-timing apparatus in an internal-combustion engine. 4,498,431, Cl. 123-90.150.
Nakamura, Shyuzo: *See*—
Sato, Hiroshi; Ishii, Norio; and Nakamura, Shyuzo, 4,499,321, Cl. 585-486.000.
Nakamura, Yukio; and Tanaka, Tsuneo, to Ube Industries Ltd. Anticorrosive covering sheet. 4,499,136, Cl. 428-206.000.
Nakanishi Metal Works Co., Ltd.: *See*—
Wakabayashi, Takao, 4,498,399, Cl. 104-96.000.
Nakanishi, Yutaka: *See*—
Nakamura, Kazuharu; and Nakanishi, Yutaka, 4,498,862, Cl. 431-88.000.
Nakano, Kazumi, to Nippon Electric Co., Ltd. Mail-article tracing apparatus. 4,499,372, Cl. 250-223.00R.
Nakanome, Takemi: *See*—
Imaki, Naoshi; and Nakanome, Takemi, 4,499,306, Cl. 568-348.000.
Nakaoki, Tokuzo, to Mitutoyo Mfg. Co., Ltd. Height gauge. 4,498,241, Cl. 33-172.00R.
Nakayama, Kenichiro: *See*—
Takahashi, Izumi; Nakayama, Kenichiro; Sugiyama, Terumasa; and Suzuki, Takanobu, 4,499,580, Cl. 371-17.000.
Nakayama, Kiyoshi, to Murakami Kaimeido Co., Ltd. Multi-position electric switch. 4,499,342, Cl. 200-5.00E.
Nakayama, Yutaka: *See*—
Yamada, Tetsuyo; and Nakayama, Yutaka, 4,498,968, Cl. 204-412.000.
Namiki, Junji, to NEC Corporation. Space diversity system. 4,498,885, Cl. 455-273.000.
Nara, Yasuaki: *See*—
Hibino, Yozo; Kamejima, Kohji; and Nara, Yasuaki, 4,498,307, Cl. 62-148.000.
Narita, Kou: *See*—
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Naruo, Kyoichi: *See*—
Yabe, Masao; Naruo, Kyoichi; and Ono, Kazuhiro, 4,499,043, Cl. 264-207.000.
Nash Engineering Company, The: *See*—
Bissell, Douglas E.; and Jozepaitis, Charles M., 4,498,844, Cl. 417-68.000.
National Distillers and Chemical Corporation: *See*—
Barlow, Anthony; Schlossman, Irwin S.; and Borgerding, Robert E., 4,499,013, Cl. 252-567.000.
Harris, Eugene G., 4,499,288, Cl. 549-266.000.
Murib, Jawad H., 4,499,301, Cl. 562-546.000.
Scheben, John A.; and Hinnenkamp, James A., 4,499,298, Cl. 560-241.000.
National Laboratory for High Energy Physics: *See*—
Hosoyama, Kenji; and Hirabayashi, Hiromi, 4,498,313, Cl. 62-514.00R.
National Semiconductor Corporation: *See*—
Gross, William H.; and Sakurai, Tadashi, 4,499,432, Cl. 330-296.000.
National Starch and Chemical Corporation: *See*—
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Natsuaki, Nobuyoshi: *See*—
Tamura, Masao; Yoshihiro, Naotsugu; Natsuaki, Nobuyoshi; Miyao, Masanobu; Ohkura, Makoto; Sunami, Hideo; and Tokuyama, Takashi, 4,498,951, Cl. 156-612.000.
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McCafferty, Gerald P.; Navoczynski, Stanley J.; and Kinkle, Robert W., 4,498,264, Cl. 52-281.000.
Naya, Eizo: *See*—
Yamanaka, Takashi; Takeya, Yasushi; Yorita, Mitsumasa; Horiuchi, Toshiaki; Inagaki, Kouichi; Naya, Eizo; Demizu, Michinosuke; and Okumura, Mitsuhiro, 4,499,009, Cl. 252-512.000.
Naylor, Carter G.: *See*—
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NEC Corporation: *See*—
Fujii, Akira, 4,499,430, Cl. 330-279.000.
Kano, Yuichi; Mikami, Nobuo; Wakamatsu, Kazutoshi; and Naito, Kunio, 4,499,442, Cl. 335-79.000.
Namiki, Junji, 4,498,885, Cl. 455-273.000.
Neckers, Douglas C., to Bowling Green State University. Photopolymerizable composition containing peroxier photoinitiator and photopolymerization process. 4,498,963, Cl. 204-159.190.
Negoro, Ikuo: *See*—
Ogawa, Ryota; and Negoro, Ikuo, 4,498,759, Cl. 355-8.000.
Neki, Shigeo: *See*—
Shinozaki, Nozomu; Dohi, Takashi; Yamazaki, Shinji; and Neki, Shigeo, 4,499,449, Cl. 338-32.00R.
Nelea, Petrus R., to Agfa-Gevaert N.V. Apparatus for transferring zerographic images. 4,498,758, Cl. 355-3.0TR.
Nelson, H. Wharton, to Combustion Engineering, Inc. Control of active alkali in black liquor. 4,498,955, Cl. 162-30.110.

Nelson, Jeffrey A.; and Hanstine, Kenneth W., to Fuller Company. Division head for grinding mill. 4,498,634, Cl. 241-72.000.

Nelson, Terry L.; and Reichman, James M., to Electric Power Research Institute, Inc. Underground cable installing apparatus and method utilizing a fluid jet assisted, vibrating blade arrangement. 4,498,813, Cl. 405-182.000.

Nelson, William; and Bearpark, John P., to BICC Public Limited Company. Electrolytic refining of metal. 4,498,522, Cl. 164-460.000.

Nemeth, Jozsef: *See*—
Gergo, Gyorgy; Nemeth, Jozsef; Sebestyen, Bela; and Solymossy, Bela, 4,498,391, Cl. 102-312.000.

Neri, Guido: *See*—
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Neuray, Dieter: *See*—
Tacke, Peter; Korber, Helmut; Merten, Josef; and Neuray, Dieter, 4,499,237, Cl. 525-67.000.

Nevamar Corporation: *See*—
O'Dell, Robin D.; Ungar, Israel S.; and Scher, Herbert I., 4,499,137, Cl. 428-211.000.

Newbury, Arthur D., to Contrawl Limited. Stackable container for use in a containerization system. 4,498,584, Cl. 206-510.000.

NGK Spark Plug Co., Ltd.: *See*—
Shimamori, Toru; Hattori, Yoshinori; and Matsuo, Yasushi, 4,499,192, Cl. 501-97.000.
Yamada, Tetsuyo; and Nakayama, Yutaka, 4,498,968, Cl. 204-412.000.

Nguyen, Tuan A.: *See*—
Miazga, Dennis E.; Nguyen, Tuan A.; and Dugan, Michael T., 4,499,581, Cl. 371-20.000.

Nicodemus, Joachim: *See*—
Fischer, Klaus; Kroschel, Heinz; Nicodemus, Joachim; and Petters, Willi, 4,498,393, Cl. 102-393.000.

Nicolas, Jean-Pierre, to Etablissements Augier. Modulation installation for sector supply of charge elements. 4,499,452, Cl. 340-310.00A.

Niida, Taro: *See*—
Minowa, Nobuto; Fukatsu, Shunzo; Tachibana, Kunitaka; Niida, Taro; and Mase, Sadaaki, 4,499,027, Cl. 260-502.50G.

Nippon Electric Co., Ltd.: *See*—
Iinuma, Kazumoto, 4,499,498, Cl. 358-261.000.
Nakano, Kazumi, 4,499,372, Cl. 250-223.00R.

Nippon Kogaku K.K.: *See*—
Goto, Tetsuro, 4,498,751, Cl. 354-289.100.
Uehara, Makoto, 4,498,742, Cl. 350-523.000.
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Nippon Kokan Kabushiki Kaisha: *See*—
Akita, Shinji; and Tanaka, Megumu, 4,498,324, Cl. 72-208.000.
Hasebe, Nobuhisa; Kawada, Hiroshi; and Komine, Isamu, 4,498,518, Cl. 164-416.000.
Yoshihara, Tetsuya, 4,498,611, Cl. 222-599.000.

Nippon Paint Co., Ltd.: *See*—
Yamamori, Naoki; Yokoi, Junji; and Yoshikawa, Motoyoshi, 4,499,223, Cl. 524-176.000.

Nippon Piston Ring Co., Ltd.: *See*—
Sakamaki, Hiroshi; and Suzuki, Yukio, 4,498,853, Cl. 418-268.000.

Nippon Rotary Nozzle Co., Ltd.: *See*—
Yoshihara, Tetsuya, 4,498,611, Cl. 222-599.000.

Nippon Soken, Inc.: *See*—
Tanaka, Hiroaki; and Akita, Shigeyuki, 4,499,465, Cl. 340-870.370.
Yoshida, Hitoshi; Atsumi, Morihiro; Ito, Nobuei; and Atsumi, Kinya, 4,499,366, Cl. 219-270.000.

Nippon Steel Chemical Co., Ltd.: *See*—
Iwata, Nobutoshi; Fukushima, Kiyoshi; Fujino, Shinji; Yamada, Takeshiro; Hao, Hideyuki; Tanaka, Shigeo; and Mitsuno, Tatsuyuki, 4,499,238, Cl. 525-98.000.

Nippondenso Co., Ltd.: *See*—
Miyakawa, Susumu; Fukuta, Toshiaki; Akado, Hajime; and Taki, Yoshihiro, 4,498,989, Cl. 210-450.000.
Nakamura, Hirotoshi; Itoh, Teruyoshi; Haraguchi, Hiroshi; Narita, Kou; Iwata, Toshiharu; and Matsui, Takeshi, 4,498,331, Cl. 73-35.000.
Ohba, Masahiro; Ito, Kenzo; Akiyama, Susumu; Hirabayashi, Yuuji; Hirano, Satoshi; and Ooka, Naoto, 4,499,544, Cl. 364-431.040.
Suzuki, Yasutoshi; Hara, Kunihiko; and Sato, Ryo, 4,499,451, Cl. 340-98.000.
Yoshida, Hitoshi; Atsumi, Morihiro; Ito, Nobuei; and Atsumi, Kinya, 4,499,366, Cl. 219-270.000.

Nishihara, Tadao, to Iseki & Co., Ltd. Front power take-off for tractors. 4,498,349, Cl. 74-5.200.

Nishimura, Akimasa: *See*—
Takayama, Makoto; Muramoto, Tomotaka; and Nishimura, Akimasa, 4,499,487, Cl. 358-41.000.

Nishimura, Dwight G., to Leland Stanford Junior University, The Board of Trustees of the. Multiple measurement noise reducing system using artifact edge identification and selective signal processing. 4,499,493, Cl. 358-111.000.

Nishimura, Tomoaki: *See*—
Hamajima, Shigemitsu; Nishimura, Tomoaki; Sakakibara, Naoji; and Kawata, Shoji, 4,499,542, Cl. 364-424.100.

Nishio, Shigeru, to Aisin Seiki Kabushiki Kaisha. Air control for a lumbar support device. 4,498,494, Cl. 137-514.000.

Nishiuchi, Toshio, to Dai-Ichi Seiko Co., Ltd. Zero-reset type counter. 4,499,370, Cl. 235-144.0HC.

Nishizaki, Ken: *See*—
Kubo, Akira; Ishii, Akihiko; Nishizaki, Ken; and Saito, Tomoharu, 4,499,225, Cl. 524-276.000.

Nissan Chemical Industries, Ltd.: *See*—
Ozawa, Kiyomi; and Ishii, Shigeru, 4,499,275, Cl. 546-298.000.

Nissan Motor Company, Limited: *See*—
Hara, Seinosuke; Aoyama, Shunichi; and Miisho, Kazuyuki, 4,498,432, Cl. 123-90.160.
Horiuchi, Tomofusa, 4,498,436, Cl. 123-339.000.
Kasai, Junichi; Yanagishima, Takayuki; Ajimine, Akio; Murakami, Yoshiaki; Shino, Akimitsu; and Watanabe, Tatsuya, 4,499,340, Cl. 179-115.5DV.
Masuda, Koji, 4,499,205, Cl. 502-303.000.
Matsuda, Toshiro, 4,499,543, Cl. 364-426.000.
Ogawa, Naoki, 4,498,433, Cl. 123-90.380.

Nissan Shatai Company, Limited: *See*—
Kobayashi, Shinma; and Ohsawa, Eiji, 4,498,309, Cl. 62-186.000.

Nissen Chemical Industries Co., Ltd.: *See*—
Maemoto, Kenichi; and Jiano, Katsushi, 4,499,040, Cl. 264-167.000.

Nitto Electric Industrial Co., Ltd.: *See*—
Igarashi, Kazumasa; Yamaguchi, Katsuhiko; and Tanaka, Munekazu, 4,499,252, Cl. 528-38.000.
Ishizuka, Takashi; Moriyama, Yasuhiro; and Nakamura, Masao, 4,499,042, Cl. 264-205.000.

Nitto Kohki Co., Ltd.: *See*—
Mikiya, Toshio, 4,498,658, Cl. 251-149.600.

NL Industries, Inc.: *See*—
Tetenbaum, Marvin T.; and Crowley, Burlon C., 4,499,233, Cl. 524-591.000.

Nohara, Isao: *See*—
Yamamoto, Shigeru; Miyake, Yuzuru; and Nohara, Isao, 4,498,637, Cl. 242-18.100.

Nokami, Junzo: *See*—
Torii, Sigeru; Tanaka, Hideo; Nokami, Junzo; Shiroi, Takashi; Saito, Norio; and Sasaoka, Michio, 4,499,265, Cl. 544-16.000.

Nomura, Kenji; Yamakage, Tetsuro; and Noro, Katsuyoshi, to Toyoda Koki Kabushiki Kaisha. Pallet changer. 4,498,571, Cl. 198-339.000.

Nomura, Toshio; Imai, Yasuhiro; Aoi, Tomio; Nakajima, Tetsuo; and Irino, Hiroshi, to Honda Giken Kogyo Kabushiki Kaisha. Mixture control apparatus for carburetor. 4,498,440, Cl. 123-438.000.

Norbeck, Dean K.: *See*—
Schnetzka, Harold R.; Wills, Frank E.; and Norbeck, Dean K., 4,499,534, Cl. 363-129.000.

Nordson Corporation: *See*—
Tank, Gene F.; Dawson, Samuel O.; and Barnett, Phillip R., 4,498,913, Cl. 55-356.000.

Nordstrom, Kurt: *See*—
Uhlin, Bernt E.; Nordstrom, Kurt; and Molin, Soeren, 4,499,189, Cl. 435-253.000.

Noro, Katsuyoshi: *See*—
Nomura, Kenji; Yamakage, Tetsuro; and Noro, Katsuyoshi, 4,498,571, Cl. 198-339.000.

Norrie, Lyle W.; Snider, Robert W.; and Simonsen, Knud, to Knud Simonsen Industries Limited. Vacuum container for meat products. 4,498,378, Cl. 99-472.000.

North American Philips Corporation: *See*—
McSweeney, Robert T.; and Long, Stanley A., 4,499,521, Cl. 361-321.000.
Shioleno, Lewis J., 4,499,524, Cl. 361-404.000.

North American Philips Electric Corp.: *See*—
Getz, Edward J.; and Lombardi, Gerald T., 4,498,580, Cl. 206-418.000.

Northern Telecom, Ltd.: *See*—
Wetzel, David L., 4,499,338, Cl. 179-99.00E.

Norton Christensen, Inc.: *See*—
Jurgens, Rainer, 4,498,549, Cl. 175-329.000.

Novon, Inc.: *See*—
Hutchin, Richard A., 4,499,492, Cl. 358-107.000.

Novotny, Rudolf: *See*—
Christophliemk, Peter; Novotny, Rudolf; von Laufenberg, Jurgen; and Sadlowsky, Josef, 4,499,062, Cl. 423-332.000.

Novus Inc.: *See*—
Petersen, Paul S., 4,498,940, Cl. 156-98.000.

Nowak, Frank J., to Owens-Illinois, Inc. Apparatus and method for uniformly winding elongate sheet materials. 4,498,640, Cl. 242-67.10R.

NSK-Warner K.K.: *See*—
Ono, Katsuyasu; and Sato, Tomosaburo, 4,498,222, Cl. 29-509.000.
Ono, Katsuyasu, 4,498,643, Cl. 242-107.40D.

Nunn, Robert H.: *See*—
Bloomer, James W., II; and Nunn, Robert H., 4,498,329, Cl. 73-9.000.

Nuvatec, Inc.: *See*—
Slavik, William H., 4,499,385, Cl. 307-10.00R.

N.V. Raychem S.A.: *See*—
Moisson, Marc; Van Noten, Lodewijk; Overbergh, Noel; Franckx, Joris; and Buekers, Valere, 4,498,938, Cl. 156-49.000.

Nyegaard & Co A/S: *See*—
Laerum, Ole D., 4,499,081, Cl. 514-17.000.

Obama, Kenjiro: *See*—
Chiba, Hiromasa; Obama, Kenjiro; Kawazoe, Shunji; Oka, Takahiro; and Satoh, Akihiro, 4,499,247, Cl. 526-142.000.

Obara, Haruki, to Fanuc Ltd. Shape compensating method for wire-out electric discharge machining. 4,499,359, Cl. 219-69.00W.

Obsomer, Marc, to Solvay & Cie (Societe Anonyme). Process for the production of tubes of a molecularly oriented plastic. 4,499,045, Cl. 264-532.000.

Occidental Chemical Corporation: *See*—
Davison, John B.; Jasinski, Raymond J.; and Peerce-Landers, Pamela J., 4,499,025, Cl. 260-465.00R.
Fifolt, Michael J., 4,499,024, Cl. 260-453.00R.
Lazarz, Christine A.; and Cook, Edward H., Jr., 4,498,961, Cl. 204-98.000.

O'Connor, Michael: *See*—
Bottolfson, Gary, 4,498,211, Cl. 15-203.000.

Oda, Hiroyuki: *See*—
Satow, Haruhiko; Okimoto, Haruo; Sakurai, Shigeru; and Oda, Hiroyuki, 4,498,429, Cl. 123-26.000.

Oda, Yoshio; Otouma, Hiroshi; and Endoh, Eiji, to Agency of Industrial Science and Technology. Anode for the electrolysis of water. 4,498,962, Cl. 204-129.000.

Ode, Bengt: *See*—
Borrman, Bo; and Ode, Bengt, 4,499,047, Cl. 376-434.000.

O'Dell, Robin D.; Ungar, Israel S.; and Scher, Herbert I., to Nevamar Corporation. Scuff-resistant laminates. 4,499,137, Cl. 428-211.000.

Oden, Laurance L.; and Dunning, John S., to United States of America, Interior. Ductile duplex iron-based alloy containing aluminum. 4,498,928, Cl. 75-124.000.

Odom, Robert E., to Bemis Company, Inc. Case erector and bottom sealer apparatus. 4,498,893, Cl. 493-12.000.

O'Donnell, Harry B., III: *See*—
Ahoor, Rooin, 4,498,351, Cl. 74-439.000.

Oetiker, Hans; and Kummer, Emanuel, to Gebruder Buhler AG. Process for continuously determining the moisture content of spoilable grain products. 4,499,111, Cl. 426-231.000.

Ofusa, Masaatsu, to Yoshida Kogyo K. K. Method and apparatus for manufacturing woven slide fastener stringers. 4,498,503, Cl. 139-116.000.

Ogawa, Masaki; Hirata, Yasushi; and Tsuchikura, Akira, to Bridgestone Tire Company Limited. Rubber compositions having improved crack growth resistance. 4,499,228, Cl. 524-413.000.

Ogawa, Naoki, to Nissan Motor Company, Limited. Member such as an engine cover adjacent to an automotive engine. 4,498,433, Cl. 123-90.380.

Ogawa, Ryota; and Negoro, Ikuo, to Asahi Kogaku Kogyo Kabushiki Kaisha. Continuous variable magnification-type copying machine capable of enlarging and contracting an image. 4,498,759, Cl. 355-8.000.

Ohara, Ikuo: *See*—
Ohashi, Hiroyuki; Ohara, Ikuo; and Takami, Toru, 4,499,076, Cl. 424-143.000.

Ohara, Tsunemasa: *See*—
Suzuki, Masayuki; Yamamichi, Masayoshi; and Ohara, Tsunemasa, 4,498,750, Cl. 354-154.000.

Ohashi, Hiroyuki; Ohara, Ikuo; and Takami, Toru, to Ajinomoto Company Incorporated. Elemental diets for liver diseases. 4,499,076, Cl. 424-143.000.

Ohashi, Mitunari: *See*—
Tanaka, Nobuyasu; Ohashi, Mitunari; and Iwamoto, Shohzoh, 4,498,569, Cl. 193-27.000.

Ohba, Masahiro; Ito, Kenzo; Akiyama, Susumu; Hirabayashi, Yuuji; Hirano, Satoshi; and Ooka, Naoto, to Nippondenso Co., Ltd. Electronic ignition control apparatus. 4,499,544, Cl. 364-431.040.

Ohgami, Masaaki; and Nakamura, Mitsuo, to Fuji Jukogyo Kabushiki Kaisha. Air-fuel ratio control system. 4,498,441, Cl. 123-440.000.

Ohkoshi, Masayoshi; and Suzuno, Yoshiro, to Diesel Kiki Company, Ltd. Centrifugal governor for internal combustion engine. 4,498,437, Cl. 123-373.000.

Ohkubo, Masaharu; Hayashi, Nobuhiro; and Aoki, Tomohiro, to Canon Kabushiki Kaisha. Developing device for use in electrophotography. 4,498,755, Cl. 355-3.0DD.

Ohkura, Makoto: *See*—
Tamura, Masao; Yoshihiro, Naotsugu; Natsuaki, Nobuyoshi; Miyao, Masanobu; Ohkura, Makoto; Sunami, Hideo; and Tokuyama, Takashi, 4,498,951, Cl. 156-612.000.

Ohmori, Takashi: *See*—
Inui, Toshiharu; Kurata, Masami; Nakajima, Hisao; and Ohmori, Takashi, 4,499,476, Cl. 346-76.0PH.

Ohno, Yoshimi; Tsurukawa, Ikuya; and Ishino, Tokio, to Ricoh Company, Ltd. Single lens reflex camera. 4,498,754, Cl. 354-479.000.

Ohsawa, Eiji: *See*—
Kobayashi, Shinma; and Ohsawa, Eiji, 4,498,309, Cl. 62-186.000.

Ohshima, Ken: *See*—
Yamamiya, Kunio; Kodama, Hiroshi; Ohshima, Ken; Yoshikawa, Shoji; Kato, Kiichi; and Sakamoto, Masaharu, 4,499,514, Cl. 360-97.000.

Ohsima, Ken: *See*—
Yoshikawa, Shozi; Sakamoto, Masaharu; Kodama, Hiroshi; Yamamiya, Kunio; Kato, Kiichi; and Ohsima, Ken, 4,499,572, Cl. 369-111.000.

Oka, Takahiro: *See*—
Chiba, Hiromasa; Obama, Kenjiro; Kawazoe, Shunji; Oka, Takahiro; and Satoh, Akihiro, 4,499,247, Cl. 526-142.000.

Okada, Sadashige. Modified asphalt-epoxy resin composition. 4,499,215, Cl. 523-490.000.

Okado, Chihiro: *See*—
Izume, Takatomo; and Okado, Chihiro, 4,499,363, Cl. 219-130.210.

Okami, Yoshiro: *See*—
Umezawa, Hamao; Okami, Yoshiro; and Kondo, Shinichi, 4,499,083, Cl. 514-36.000.

Okamoto, Futoshi, to Matsushita Electric Works, Ltd. Power supply apparatus. 4,499,533, Cl. 363-126.000.

Okamoto, Shinzi: *See*—
Tanino, Katsumi; Fujiki, Satoshi; and Okamoto, Shinzi, 4,499,010, Cl. 252-512.000.

Okamoto, Yoshikazu, to Rank Xerox, Ltd. Method of developing an electrostatic latent image uses magnetic developer. 4,499,166, Cl. 430-33.000.

Okamura, Diane H. Fingernail jewelry device. 4,498,314, Cl. 63-2.000.

Okayama, Masao: *See*—
Yoshida, Masashi; Katohno, Noboru; Yokota, Hajime; and Okayama, Masao, 4,499,512, Cl. 360-90.000.

Okimoto, Haruo: *See*—
Satow, Haruhiko; Okimoto, Haruo; Sakurai, Shigeru; and Oda, Hiroyuki, 4,498,429, Cl. 123-26.000.

Okumura, Mitsuhiro: *See*—
Yamanaka, Takashi; Takeya, Yasushi; Yorita, Mitsumasa; Horiuchi, Toshiaki; Inagaki, Kouichi; Naya, Eizo; Demizu, Michinosuke; and Okumura, Mitsuhiro, 4,499,009, Cl. 252-512.000.

Okumura, Yoshiharu; Kamiyama, Setsuo; Hosokawa, Toshihiro; and Kaneko, Katsumi, to Toa Nenryo Kogyo Kabushiki Kaisha. Process for hydration of olefins. 4,499,313, Cl. 568-897.000.

Olin Corporation: *See*—
Pilpel, Edward; and Meatto, Franklin, 4,498,686, Cl. 280-610.000.
Weinstein, Paul; and Kelmachter, Barry L., 4,498,917, Cl. 65-2.000.
Wojtowicz, John A., 4,498,921, Cl. 71-67.000.

Oliver, Everett O.: *See*—
Hiestand, Wilfred; and Oliver, Everett O., 4,498,512, Cl. 144-2.00R.

Olympus Optical Co., Ltd.: *See*—
Banno, Taiichi; Hijikata, Kazuo; and Takekawa, Hiroshi, 4,498,780, Cl. 356-414.000.
Mizokami, Kazunori, 4,498,753, Cl. 354-425.000.
Yamamiya, Kunio; Kodama, Hiroshi; Ohshima, Ken; Yoshikawa, Shoji; Kato, Kiichi; and Sakamoto, Masaharu, 4,499,514, Cl. 360-97.000.
Yoshikawa, Shozi; Sakamoto, Masaharu; Kodama, Hiroshi; Yamamiya, Kunio; Kato, Kiichi; and Ohsima, Ken, 4,499,572, Cl. 369-111.000.

Omichi, Hitoshi: *See*—
Tanizawa, Tetsu; Omichi, Hitoshi; and Mitono, Yoshiharu, 4,499,484, Cl. 357-68.000.

Omori, Mitsugu: *See*—
Nakagawa, Shinichi; Nakagawa, Tsuneo; Yamaguchi, Sadaatsu; Ihara, Kiyohiko; Amano, Toshihiko; Omori, Mitsugu; and Asano, Kohzoh, 4,499,249, Cl. 526-206.000.

Omura, Ikuo; Yamauchi, Junichi; Nagase, Yoshinori; and Uemura, Fumiko, to Kuraray Co., Ltd. Adhesive compositions. 4,499,251, Cl. 526-278.000.

Onda, Kenichi; Abe, Kojin; Yabuno, Kohei; and Uemura, Takeshi, to Hitachi, Ltd. Switching power supply apparatus. 4,499,530, Cl. 363-17.000.

Onda, Tsutomu; Kano, Keiichi; and Itakura, Shinji, to Aisin Seiki Kabushiki Kaisha. Plating apparatus. 4,498,965, Cl. 204-228.000.

Ono, Katsuyasu; and Sato, Tomosaburo, to NSK-Warner K.K. Clinching process of buckle base and wire rope. 4,498,222, Cl. 29-509.000.

Ono, Katsuyasu, to NSK-Warner K.K. Automatic locking retractor. 4,498,643, Cl. 242-107.40D.

Ono, Kazuhiro: *See*—
Yabe, Masao; Naruo, Kyoichi; and Ono, Kazuhiro, 4,499,043, Cl. 264-207.000.

Ono Pharmaceutical Co., Ltd.: *See*—
Masuda, Yoshinobu, 4,499,085, Cl. 514-58.000.

Onuma, Tatsuro: *See*—
Tanaka, Toshiaki; Fukai, Masao; Onuma, Tatsuro; and Kinoshita, Ryohei, 4,498,256, Cl. 40-475.000.

Onuma, Tsutomu; and Hataya, Fumio, to Hitachi, Ltd. Welded structural member having high erosion resistance. 4,499,158, Cl. 428-682.000.

Ooka, Naoto: *See*—
Ohba, Masahiro; Ito, Kenzo; Akiyama, Susumu; Hirabayashi, Yuuji; Hirano, Satoshi; and Ooka, Naoto, 4,499,544, Cl. 364-431.040.

OPUS, Inc.: *See*—
Gainsboro, Leon; and Latham, Peter A., 4,498,423, Cl. 119-51.00R.

Orii, Masaru, to Kabushiki Kaisha Orii Judoki Seisakusho. Reversing apparatus. 4,498,840, Cl. 414-759.000.

Oroskar, Anil R., to UOP Inc. Serial flow continuous separation process. 4,498,991, Cl. 210-659.000.

Ortho Diagnostic Systems Inc.: *See*—
Sujansky, Daniel J.; and Rancourt, Martha W., 4,499,183, Cl. 435-6.000.

Orum Sogns Mejeri APS: *See*—
Christiansen, Tage; Imhof, Werner; Jensen, Poul F.; Kjaer, Jens B.; Kristiansen, Bjarne; Kristensen, Kjeld; and Pedersen, Bent, 4,499,109, Cl. 426-36.000.

Orvik, Jon A.: *See*—
Malhotra, Sudarhshan K.; and Orvik, Jon A., 4,499,277, Cl. 546-346.000.
Malhotra, Sudarshan K.; and Orvik, Jon A., 4,499,276, Cl. 546-346.000.

Osgerby, Ian. Carbon dioxide power cycle. 4,498,289, Cl. 60-39.520.

Ota, Hideo; and Yamashita, Kiyotoshi, to Konishiroku Photo Industry Co., Ltd. Silver halide photographic light-sensitive material. 4,499,179, Cl. 430-523.000.

Otala, Matti N., to Shin-Shirasuna Electric Corp. Driver circuit configuration for the output stage of electronic power amplifiers. 4,499,431, Cl. 330-296.000.

Otouma, Hiroshi: *See*—
Oda, Yoshio; Otouma, Hiroshi; and Endoh, Eiji, 4,498,962, Cl. 204-129.000.

Otsuka Kagaku Yakuhin Kabushiki Kaisha: *See*—
Torii, Sigeru; Tanaka, Hideo; Nokami, Junzo; Shiroi, Takashi; Saito, Norio; and Sasaoka, Michio, 4,499,265, Cl. 544-16.000.

Otteblad, Sven I.; and Dovertie, Ralph G., to Aquastat AB. Lifting body for diving. 4,498,408, Cl. 114-52.000.

Oulsnam, Bryon T. Roof bolts for mines and the like workings. 4,498,817, Cl. 405-260.000.

Outboard Marine Corporation: *See*—
Baltz, Gene F.; Clark, Amos M.; Hartke, David J.; and Jourdan, Donovan K., 4,498,434, Cl. 123-187.50R.
Hall, Charles B.; McBride, Edward D.; and Young, Robert F., 4,498,871, Cl. 440-61.000.

Overbergh, Noel: *See*—
Moisson, Marc; Van Noten, Lodewijk; Overbergh, Noel; Franckx, Joris; and Buekers, Valere, 4,498,938, Cl. 156-49.000.

Overley, John R.: *See*—
Scaccia, Carlo; and Overley, John R., 4,499,029, Cl. 260-544.00A.

Owens-Corning Fiberglas Corporation: *See*—
Braziel, Jeffrey B., 4,498,221, Cl. 29-283.500.

Owens-Illinois, Inc.: *See*—
Nowak, Frank J., 4,498,640, Cl. 242-67.10R.

Oxel, Berton R., to Hoover Company, The. Carpet cleaning apparatus with auxiliary cleaning device arrangement. 4,498,214, Cl. 15-320.000.

Oya, Masayuki; and Iso, Tadashi, to Santen Pharmaceutical Co., Ltd. Thiazolidine and pyrrolidine compounds and pharmaceutical compositions containing them. 4,499,102, Cl. 514-365.000.

Ozawa, Kiyomi; and Ishii, Shigeru, to Nissan Chemical Industries, Ltd. Phenoxypicolinic aldehydes. 4,499,275, Cl. 546-298.000.

Ozeki, Mineo: *See*—
Yuki, Katsumi; Yoshida, Susumu; Ozeki, Mineo; Miyazaki, Yasuyuki; and Kawamata, Masaru, 4,499,541, Cl. 364-424.000.

Pabst, Manfred, to A. Monforts GmbH & Co. Method and device for controlling a continuous heat treatment of a textile fabric web. 4,498,248, Cl. 34-89.000.

Pacer Technology and Resources, Inc.: *See*—
Stock, Hugh J., 4,498,609, Cl. 222-420.000.

Packard, Alden H.: *See*—
Purdy, Richard T.; and Packard, Alden H., 4,499,516, Cl. 360-128.000.

Paisley, Gary V.; Altschuler, J. George; and Rommler, Josef, to Coca-Cola Company, The. Composition for making a plastic closure for liquid product containers. 4,499,141, Cl. 428-318.800.

Pall Corporation: *See*—
Worwood, Bryan H.; and Stallard, Paul, 4,498,495, Cl. 137-557.000.

Pamer, Walter R.; Zils, James A.; and Capuano, Terry D., to Russell, Burdsall & Ward Corporation. Load indicating flange. 4,498,825, Cl. 411-11.000.

Panduit Corp.: *See*—
Moody, Roy A.; Bulanda, John J.; Levin, Robert F.; Timian, Steven S.; and Waltasti, Stephen A., 4,498,506, Cl. 140-93.200.

Panneman, Harm J., to Akzo N.V. Carboxyimidamide derivatives. 4,499,105, Cl. 514-631.000.

Panush, Sol, to Inmont Corporation. Multilayer automative paint system. 4,499,143, Cl. 428-336.000.

Paparizos, Christos; Shout, Robert S.; and Shaw, Wilfrid G., to Standard Oil Company, The. Catalytic reaction of acrolein and methacrolein with alcohols and glycols. 4,499,308, Cl. 568-465.000.

Papoojian, Philip M.: *See*—
Ward, Irl E.; and Papoojian, Philip M., 4,499,231, Cl. 524-506.000.

Pardo, Warren A., to Duckett, Robert C., a part interest. Pressure cooker lid latch and lock. 4,498,695, Cl. 292-260.000.

Pareja, Ramon, to Lear Siegler, Inc. Pump with ring retained floating wrist pins and connecting rods. 4,498,372, Cl. 92-187.000.

Parker Chemical Company: *See*—
Kent, Gary D.; Intorp, Norbert B.; and Springstead, Thomas H., 4,498,935, Cl. 148-6.15Z.

Parker, Hugh M. Tubeless tire bead seater and method of employing the same. 4,498,516, Cl. 157-1.100.

Parker, John A.: *See*—
Achar, Bappalige N.; Fohlen, George M.; and Parker, John A., 4,499,260, Cl. 528-229.000.

Parker, Norman W., to Motorola, Inc. Baseband discriminator for frequency or transform modulation. 4,499,426, Cl. 329-50.000.

Parker, Ray A., Jr., to Phillips Petroleum Company. Method for the recovery of thermoplastic from piping for reprocessing. 4,499,037, Cl. 264-37.000.

Parsons, Anthony W.: *See*—
Maathuis, Antonnis G.; and Parsons, Anthony W., 4,498,514, Cl. 152-356.00R.

Parthasarathy, Shakkottai P., to United States of America, National Aeronautics and Space Administration. Carbon granule probe microphone for leak detection. 4,498,333, Cl. 73-40.50A.

Partis, Richard A.: *See*—
Mueller, Richard A.; and Partis, Richard A., 4,499,295, Cl. 560-53.000.

Partridge, Randall D.: *See*—
Degnan, Thomas F.; and Partridge, Randall D., 4,498,976, Cl. 208-120.000.

Pasetti, Adolfo: *See*—
Piacenti, Franco; Ciampelli, Federigo; and Pasetti, Adolfo, 4,499,146, Cl. 428-422.000.

Pasternak, Dov: *See*—
Korin, Eliyaho; Rappaport, Elazar; Pasternak, Dov; Roy, Aharon S.; and Wolf, David, 4,498,459, Cl. 126-430.000.

Pastor, Vincent J.: *See*—
Boehringer, Wilfred E.; and Pastor, Vincent J., 4,498,647, Cl. 244-75.00R.

Pastor, William, to Torrington Company, The. Drive assembly coupling. 4,498,888, Cl. 464-112.000.

Paulet, Jean-Francois; and Eisenlohr, Othmar, to Swiss Aluminium Ltd. Device for producing dispersion coatings. 4,498,967, Cl. 204-272.000.

Pav, Josef; Schmitz, Wimmar; and Wenzel, Reinhard, to Kleinewefers GmbH. Calendar. 4,498,383, Cl. 100-162.00B.

Pavek, Miloslav, to Elitex, koncern textilniho strojirenstvi. Method of and apparatus for splicing fiber formations. 4,498,279, Cl. 57-22.000.

Pavek, Miloslav; and Hlubucek, Ladislav, to ELITEX, koncern textilniho strojirenstvi. Method of and apparatus for preparing and splicing the ends of fibrous formations. 4,498,280, Cl. 57-22.000.

Payez International Limited: *See*—
Mitchell, Barclay; and Moore, Kenneth, 4,499,135, Cl. 428-137.000.

Payne, Thomas R., to General Electric Company. Utensil removal detection system for cooking appliance. 4,499,368, Cl. 219-452.000.

Pazhenchevsky, Barak: *See*—
Kosower, Edward M.; Pazhenchevsky, Barak; and Hershkowitz, Eli, 4,499,284, Cl. 548-359.000.

Peake, Steven L.: *See*—
Raghu, Sivaraman; and Peake, Steven L., 4,499,283, Cl. 548-343.000.

Pearson, Kenneth A.; and Zucker, Larry R., to International Business Machines Corporation. ROS Control of gas panel. 4,499,460, Cl. 340-771.000.

Pedersen, Bent: *See*—
Christiansen, Tage; Imhof, Werner; Jensen, Poul F.; Kjaer, Jens B.; Kristiansen, Bjarne; Kristensen, Kjeld; and Pedersen, Bent, 4,499,109, Cl. 426-36.000.

Peerce-Landers, Pamela J.: *See*—
Davison, John B.; Jasinski, Raymond J.; and Peerce-Landers, Pamela J., 4,499,025, Cl. 260-465.00R.

Peil, William: *See*—
Bitting, Ricky F.; Peil, William; Brown, Thomas A.; and Guzek, William K., 4,499,408, Cl. 318-254.000.

Pelt, Thomas E.: *See*—
Barnum, Thomas G.; and Pelt, Thomas E., 4,498,203, Cl. 4-427.000.

Peltonen, Eero; Somerikko, Aarni; and Viitanen, Timo, to Kajaani Oy. Procedure and means for measuring the coal content in quick ash. 4,498,338, Cl. 73-432.00R.

Peper, Henry; Eaton, Thomas E.; and Ferguson, Edward J., to Gillette Company, The. Pressurized cartridge for a writing instrument. 4,498,797, Cl. 401-141.000.

Peppler, Michael S., to AMP Incorporated. Cable shield grounding clamp. 4,498,715, Cl. 339-14.00R.

Pera, Didier: *See*—
Pera, Jean; and Pera, Didier, 4,498,382, Cl. 100-117.000.

Pera, Jean; and Pera, Didier, to Societe S.O.M.A.V.I. Screw press for grape crop. 4,498,382, Cl. 100-117.000.

Pereira, Carmo J.: *See*—
Kim, Gwan; Pereira, Carmo J.; Hegedus, Louis; and Maselli, James M., 4,499,206, Cl. 502-304.000.

Peretrukhin, Filipp I.: *See*—
Starostin, Alexandr M.; Malakhov, Alexei M.; Chertilina, Tamara A.; Ponomar, Vladislav I.; Postolaty, Nikolai I.; Kuchuk-Yatsenko, Sergei I.; Peretrukhin, Filipp I.; Gluschenko, Anatoly D.; Solodovnikov, Sergei A.; Shvets, Jury G.; and Serafin, Orest M., 4,499,364, Cl. 219-161.000.

Perfect Data Corporation: *See*—
Purdy, Richard T.; and Packard, Alden H., 4,499,516, Cl. 360-128.000.

Peries, Jean-Pierre: *See*—
Billon, Alain; Le Page, Jean-Francois; and Peries, Jean-Pierre, 4,498,974, Cl. 208-96.000.

Perlov, Gena; and Tuchman, Samuel. Method and device for fluid transfer. 4,498,850, Cl. 417-322.000.

Permelec Electrode Ltd.: *See*—
Asano, Hiroshi; Shimamune, Takayuki; and Goto, Toshiki, 4,498,942, Cl. 156-151.000.

Perreton, Arnold. Concrete block and hollow insulating insert therefor. 4,498,266, Cl. 52-405.000.

Perrot, Jacques J.: *See*—
Thominet, Michel L.; and Perrot, Jacques J., 4,499,019, Cl. 514-428.000.

Peters, Albin, to Wico Corporation. Wide face horizontally movable kicker for pin ball game. 4,498,670, Cl. 273-129.00V.

Peters, Edwin F.: *See*—
Klotz, Marvin R.; and Peters, Edwin F., 4,499,325, Cl. 585-671.000.

Peters, Thomas E.: *See*—
McColl, James R.; and Peters, Thomas E., 4,499,005, Cl. 252-301.60S.

Petersen, Paul S., to Novus Inc. Plate glass repair apparatus and method. 4,498,940, Cl. 156-98.000.

Peterson, Thomas D., to Sperry Corporation. Apparatus for limiting electromagnetic interference radiation. 4,498,546, Cl. 174-35.00R.

Petit, William A.: *See*—
Smith, Barry L.; Hoelscher, James R.; and Petit, William A., 4,498,650, Cl. 246-122.00R.

Petrini, Guido: *See*—
Moreschini, Luciano; Dalloro, Leonardo; Cavaterra, Enrico; Petrini, Guido; and Covini, Romano, 4,499,302, Cl. 562-599.000.

Petro-Williams Service Company: *See*—
Garrett, Luther W., Jr., 4,498,992, Cl. 210-664.000.

Petrovsky, Jan; and Roloff, Heinz, to Daimler-Benz Aktiengesellschaft. Reciprocating piston air compressor. 4,498,848, Cl. 417-253.000.

Petters, Willi: *See*—
Fischer, Klaus; Kroschel, Heinz; Nicodemus, Joachim; and Petters, Willi, 4,498,393, Cl. 102-393.000.

Pettigrew, Archibald M. Digital magnetic recording. 4,499,508, Cl. 360-41.000.

Pfizer Inc.: *See*—
Pirie, Donald K.; Volkmann, Robert A.; and Kleinman, Edward F., 4,499,017, Cl. 260-245.20R.

Pham, Ha Q.: *See*—
Wang, Chun S.; Pham, Ha Q.; and Bertram, James L., 4,499,255, Cl. 528-95.000.

Pharmuka Laboratoires: *See*—
Dubroeucq, Marie-Christine; Renault, Christian; and Le Fur, Gerard, 4,499,094, Cl. 514-301.000.

Phelps, Frankie E.; Francis, Thomas L.; and LaCamera, Alfred F., to Aluminum Company of America. Process for producing beta'-silicon aluminum oxynitride (B'-SiAlON) using discrete particles. 4,499,193, Cl. 501-98.000.

Philamon, Inc.: *See*—
Grib, Boris F., 4,499,436, Cl. 331-116.00M.

Philip Morris Incorporated: *See*—
Bowling, James A.; and David, Wallace M., 4,498,390, Cl. 101-365.000.
Brinker, Reiner G., 4,499,361, Cl. 219-121.0LK.
Full, Donald A., 4,498,858, Cl. 425-466.000.
Martin, Peter, 4,499,362, Cl. 219-121.0LA.
Smith, Robert N., 4,498,486, Cl. 131-300.000.
Wiese, Lee, 4,498,714, Cl. 312-312.000.

Phillips, Parker V.; Lakdawala, Ness; and Lecompte, Michel, to Hussmann Store Equipment Limited. Non-flooding remote air cooled condensers. 4,498,308, Cl. 62-184.000.

Phillips Petroleum Company: *See*—
Bailey, Fay W., 4,499,227, Cl. 524-399.000.
Bruning, Donald D., 4,498,539, Cl. 166-294.000.
Jensen, Bruce A., 4,498,916, Cl. 62-21.000.
Kukes, Simon G.; and Banks, Robert L., 4,499,328, Cl. 585-646.000.
LaSpisa, Ronald J.; Likins, Merle R., Jr.; and King, William R., 4,498,428, Cl. 122-448.00R.
McDaniel, Max P., 4,499,199, Cl. 502-104.000.
Messura, Kathleen A.; and Ayres, Charles A., 4,499,263, Cl. 528-483.000.
Parker, Ray A., Jr., 4,499,037, Cl. 264-37.000.
Schirmer, Robert M.; and Fromm, Ellsworth H., 4,498,287, Cl. 60-39.020.

Piacenti, Franco; Ciampelli, Federigo; and Pasetti, Adolfo, to Montedison S.p.A.; and Consiglio Nazionale Delle Ricerche. Protecting materials subject to degradation by atmospheric and polluting agents by means of perfluoropolyethers. 4,499,146, Cl. 428-422.000.

Pichl, Heinz, to Volvo Penta AB. Blocking device for preventing axial movement in selected extent. 4,498,874, Cl. 440-83.000.

Piepenbreier, Ernst, to Thyssen Industrie AG. Disc brake arrangement for rail vehicles. 4,498,562, Cl. 188-58.000.

Piesch, Steffen: *See*—
Engelhardt, Friedrich; Piesch, Steffen; Balzar, Juliane; and Dawson, Jeffery C., 4,499,232, Cl. 524-548.000.

Pietrasanta, Yves J. D.: *See*—
Battais, Alain; Boutevin, Bernard J. L.; and Pietrasanta, Yves J. D., 4,499,022, Cl. 260-429.700.

Piezo Electric Products, Inc.: *See*—
Kolm, Henry H.; and Kolm, Eric A., 4,498,851, Cl. 417-322.000.

Pike, John E.: *See*—
Johnson, Roy A.; Lincoln, Frank H.; and Pike, John E., 4,499,293, Cl. 549-465.000.

Pilat, John F.: *See*—
Bachman, Brett L.; Belgard, Richard A.; Bernstein, David H.; Bratt, Richard G.; Clancy, Gerald F.; Gavrin, Edward S.; Gruner, Ronald H.; Jones, Thomas M.; Mundie, Craig J.; Nealon, James T.; Pilat, John F.; Schleimer, Stephen I.; and Wallach, Steven J., 4,499,535, Cl. 364-200.000.

Pilpel, Edward; and Meatto, Franklin, to Olin Corporation. Laminated aki reinforcement members. 4,498,686, Cl. 280-610.000.

Pinches, Anthony: *See*—
Atkinson, Bernard; Black, Geoffrey M.; Pinches, Anthony; and Lewis, Paul J. S., 4,498,985, Cl. 210-151.000.

Pine, Lloyd A.; and Cull, Neville L., to Exxon Research & Engineering Co. Phosphorus-containing catalyst and catalytic cracking process utilizing the same. 4,498,975, Cl. 208-114.000.

Pioger, Michel: *See*—
Prioux, Jean-Jacques; Meleard, Roger; Pioger, Michel; and Lasvaladas, Jean-Jacques, 4,499,343, Cl. 200-5.00A.

Pioneer Electronic Corporation: *See*—
Suzuki, Tsutomu, 4,499,503, Cl. 358-316.000.

Piotrowski, Chester; and Loeding, Neil W., to Minnesota Mining and Manufacturing Company. Integrated magnetostrictive-piezoresistive magnetic recording playback head. 4,499,515, Cl. 360-113.000.

Pirie, Donald K.; Volkmann, Robert A.; and Kleinman, Edward F., to Pfizer Inc. Beta-lactamase inhibiting 6-(alkoxyamino-methyl) penicillanic acid 1,1-dioxide and derivatives. 4,499,017, Cl. 260-245.20R.

Pitchford, Edward J., to Rain Bird Sprinkler Mfg. Corp. Reaction drive sprinkler. 4,498,626, Cl. 239-230.000.

Piteau, Marc D.: *See*—
Burgard, Michel; Piteau, Marc D.; Rollat, Alain J.; and Senet, Jean-Pierre G., 4,499,057, Cl. 423-8.000.

Pitney Bowes Inc.: *See*—
Daniels, Edward P.; and Dlugos, Daniel F., 4,499,545, Cl. 364-464.000.

Pittet, Alan O.; Muralidhara, Ranya; and Hagedorn, Myrna L., to International Flavors & Fragrances Inc. Process for preparing 4,4A,5,6-tetrahydro-7-methyl-2-(3H)-naphthalenone, intermediates used in said process and novel crystalline form of same. 4,499,307, Cl. 568-355.000.

Pittman, Homer F.; and Gage, Bobby D. Pumper bumper. 4,498,845, Cl. 417-545.000.

Plattsburgh Foundry, Inc.: *See*—
Carpentier, Urgel R., 4,498,492, Cl. 137-315.000.

Plessey Overseas Limited: *See*—
Duncan, William C. W., 4,498,718, Cl. 339-59.00M.

Plumail, Jean-Claude: *See*—
Toulhoat, Herve ; Plumail, Jean-Claude; Billon, Alain; and Quignard, Alain, 4,498,972, Cl. 208-59.000.

Plummer, William T., to Polaroid Corporation. Image carrying media employing an optical barrier. 4,499,164, Cl. 430-14.000.

Plummer, William T.: *See*—
Jones, Peter W. J.; Plummer, William T.; and Purcell, Dennis W., 4,498,748, Cl. 354-79.000.

Podell, Howard I.: *See*—
James, Michael H.; Bratby, David M.; Duck, Roger; Podell, Howard I.; Goldstein, Albert; and Blackley, David C., 4,499,154, Cl. 428-494.000.

Podell, Howard L.: *See*—
James, Michael H.; Bratby, David M.; Duck, Roger; Podell, Howard I.; Goldstein, Albert; and Blackley, David C., 4,499,154, Cl. 428-494.000.

Poissant, Philip L.: *See*—
Brema, Robert J.; Adamson, Gerald J.; Poissant, Philip L.; and Cleminson, John H., 4,498,660, Cl. 256-19.000.

Polaroid Corporation: *See*—
Benton, Stephen A., 4,498,729, Cl. 350-3.690.
Jones, Peter W. J.; Plummer, William T.; and Purcell, Dennis W., 4,498,748, Cl. 354-79.000.
Plummer, William T., 4,499,164, Cl. 430-14.000.

Polett, Muriel S.: *See*—
Polett, Walter J.; and Polett, Muriel S., 4,499,599, Cl. 383-6.000.

Polett, Walter J.; and Polett, Muriel S. Stackable flexible bulk container. 4,499,599, Cl. 383-6.000.

Polman, David J.: *See*—
Wamsley, Richard D.; and Polman, David J., 4,498,663, Cl. 270-54.000.

Polster, Peter: *See*—
Rosseels, Gilbert; and Polster, Peter, 4,499,095, Cl. 514-299.000.

Polydrain, Inc.: *See*—
Kirkpatrick, Larry E.; and Williams, Barry C., 4,498,807, Cl. 405-43.000.

Polysar Limited: *See*—
Sato, Kyosaku, 4,499,213, Cl. 523-335.000.

Polytype AG: *See*—
Schollkopf, Ernst; and Rimmele, Walter, 4,498,946, Cl. 156-324.000.

Pomeranz, Mark L. Condom with opening means for easy mounting. 4,498,466, Cl. 128-79.000.

Ponitzsch, Werner: *See*—
Reccius, Helmut; and Ponitzsch, Werner, 4,498,325, Cl. 72-302.000.

Ponomar, Vladislav I.: *See*—
Starostin, Alexandr M.; Malakhov, Alexei M.; Chertilina, Tamara A.; Ponomar, Vladislav I.; Postolaty, Nikolai I.; Kuchuk-Yatsenko, Sergei I.; Peretrukhin, Filipp I.; Gluschenko, Anatoly D.; Solodovnikov, Sergei A.; Shvets, Jury G.; and Serafin, Orest M., 4,499,364, Cl. 219-161.000.

Pontagnier, Henri: *See*—
Creuzet, Marie-Helene; Feniou, Claude; Jarry, Christian; Prat, Gisele; and Pontagnier, Henri, 4,499,090, Cl. 514-210.000.

Poppert, Paul E.: *See*—
Goldman, Ernest A.; McCarthy, Jeremiah P.; and Poppert, Paul E., 4,498,223, Cl. 29-571.000.

Portmann, Albert, to Sodeco-Saia, AG. Snap action miniature switch. 4,499,346, Cl. 200-67.00D.

Post, Martin F. M.: *See*—
Hoek, Arend; Post, Martin F. M.; Minderhoud, Johannes K.; and Lednor, Peter W., 4,499,209, Cl. 518-707.000.

Postolaty, Nikolai I.: *See*—
Starostin, Alexandr M.; Malakhov, Alexei M.; Chertilina, Tamara A.; Ponomar, Vladislav I.; Postolaty, Nikolai I.; Kuchuk-Yatsenko, Sergei I.; Peretrukhin, Filipp I.; Gluschenko, Anatoly D.; Solodovnikov, Sergei A.; Shvets, Jury G.; and Serafin, Orest M., 4,499,364, Cl. 219-161.000.

Potts, Roger F., to Convay Systems Limited. Machine and method for cleaning receptacles in a single immersion chamber having a soaking station and a scrubbing station. 4,498,934, Cl. 134-254.000.

Powell, David B.: *See*—
Castonguay, Roger N.; and Powell, David B., 4,499,344, Cl. 200-50.00C.

Powell, William H.; and Witters, Hugo F. J., to International Standard Electric Corporation. Supervision of transmission systems. 4,499,600, Cl. 455-9.000.

PPG Industries, Inc.: *See*—
Dowbenko, Rostyslaw; Stewart, Raymond S.; Hartman, Marvis E.; Gorman, Barbara; and Thomas, Stephen J., 4,499,150, Cl. 428-447.000.
Dowbenko, Rostyslaw; Stewart, Raymond S.; Hartman, Marvis E.; Gorman, Barbara; and Thomas, Stephen J., 4,499,151, Cl. 428-447.000.
Prakash, Nellikunja J.: *See*—
Sunkara, Sai P.; and Prakash, Nellikunja J., 4,499,072, Cl. 424-85.000.
Prat, Gisele: *See*—
Creuzet, Marie-Helene; Feniou, Claude; Jarry, Christian; Prat, Gisele; and Pontagnier, Henri, 4,499,090, Cl. 514-210.000.
Pratt, Sandra L.; Lucas, Gary M.; and Zembayashi, Michio, to General Electric Company. Non-corrosive silicone RTV compositions. 4,499,234, Cl. 524-783.000.
Preco Industries Limited: *See*—
Ilukowicz, Robert J., 4,498,270, Cl. 52-685.000.
Preddey, Brian F.; and Mills, Laurence P., to Taboola Pty. Ltd. Cylinder locks and keys therefor. 4,498,327, Cl. 72-341.000.
Prein, Franz: *See*—
Karning, Heinrich; Prein, Franz; and Vierling, Karl-Heinz, 4,499,582, Cl. 372-93.000.
Presser, Gustave S., to Acme Engineering Products Ltd. Detection and control system based on ambient air quality. 4,499,377, Cl. 250-343.000.
Prima Progetti S.p.A.: *See*—
Grassi, Fabrizio; and Iannarelli, Luigi, 4,498,545, Cl. 173-43.000.
Prince, Connie J. Multi-purpose sheet. 4,499,133, Cl. 428-81.000.
Printed Circuits International, Inc.: *See*—
Chee, Aik T.; and Kiat, Wee S., 4,499,333, Cl. 174-52.0FP.
Printronix, Inc.: *See*—
Barrus, Gordon B.; Emenaker, Leo J.; Radke, Glen R.; Farb, Norman E.; and Holzer, Gerold, 4,498,793, Cl. 400-320.000.
Farb, Norman E., 4,498,388, Cl. 101-93.040.
Prioux, Jean-Jacques; Meleard, Roger; Pioger, Michel; and Lasvaladas, Jean-Jacques, to Rogers Corporation. Monolithic flat tactile keyboard. 4,499,343, Cl. 200-5.00A.
Proctor, David R.; and Foster, Terry L., to Science Research Center, Inc. Assembly for determining light transmissiveness of a fluid. 4,498,782, Cl. 356-436.000.
Produits Chimiques Ugine Kuhlmann: *See*—
Bernard, Michel; Balde, Daniel; Ghenassia, Elie; and Laumain, Francois, 4,499,222, Cl. 524-123.000.
Project Packaging, Inc.: *See*—
Allen, Frank W., 4,498,651, Cl. 248-65.000.
Prokasch, Hans-Jorg; Welte, Dieter; Zimmer, Herbert; and Lotz, Michael, deceased (by Lotz, Carla, nee Post, Andreas Lotz, heirs), to Dornier GmbH. Wing for short take-off and landing aircraft. 4,498,646, Cl. 244-35.00R.
Provencal, Earl J.: *See*—
Guertin, Joseph J.; and Provencal, Earl J., 4,498,617, Cl. 228-119.000.
Pruller, Helmut: *See*—
Temme, Karl; Beckschafer, Klaus; and Pruller, Helmut, 4,498,986, Cl. 210-199.000.
Puccetti, Angelo: *See*—
Franchini, Mauro; Sarasso, Angelo; and Puccetti, Angelo, 4,498,439, Cl. 123-438.000.
Puccini, Sergio E.: *See*—
Krikor, Agop K.; and Puccini, Sergio E., 4,499,336, Cl. 179-18.0ES.
Pullukat, Thomas J.; Hoff, Raymond E.; and Lynch, Michael W., to Chemplex Company. Polymerization catalysts and methods. 4,499,198, Cl. 502-104.000.
Purcell, Dennis W.: *See*—
Jones, Peter W. J.; Plummer, William T.; and Purcell, Dennis W., 4,498,748, Cl. 354-79.000.
Purdue Research Foundation: *See*—
Ash, Stephen R.; Wolf, Gordon C.; and Bloch, Richard, 4,498,902, Cl. 604-164.000.
Purdy, Richard T.; and Packard, Alden H., to Perfect Data Corporation. Cleaning disk with opaque ring. 4,499,516, Cl. 360-128.000.
Purdy, Ronald R. Emergency stopping brake system for tractors and trailers. 4,498,560, Cl. 188-1.110.
Purnell, John H.: *See*—
Ballantine, James A.; Purnell, John H.; and Thomas, John M., 4,499,319, Cl. 585-467.000.
Pusineri, Christian; and Goletto, Jean, to Hospal-Sodip, S.A. Process of coating consisting of a mixture of vinyl chloride polymer and polyurethane with tertiary amine and/or ammonium groups. 4,499,124, Cl. 427-385.500.
Pustell, Robert A., to General Electric Company. Anti-vibration support for thermocouple tip. 4,499,330, Cl. 136-230.000.
Puzias, Abe. Portable heater for radiantly heating the underbody of a motor vehicle. 4,499,365, Cl. 219-205.000.
Pye, David S.; Ash, Donald L.; and Rardin, Robert W., to Union Oil Company of California. Method for placing a liner in a pressurized well. 4,498,543, Cl. 166-376.000.
Q. P. Corporation: *See*—
Tokano, Motoharu; and Kushima, Keiichi, 4,499,056, Cl. 422-299.000.
Quest, Thomas A. Adapter for receiving multi-hooks brackets of various model-designs. 4,498,653, Cl. 248-225.200.
Questel, John M.; and Madonia, Ralph J., to Carprotec, Inc. Temporary strippable protective laminate. 4,499,130, Cl. 428-42.000.
Queveau, Gerard. Retractable closure particularly sliding roof apparatus for a motor vehicle. 4,498,701, Cl. 296-216.000.
Quicksteel Engineering Pty. Ltd.: *See*—
Quittner, John P., 4,498,803, Cl. 404-6.000.
Quignard, Alain: *See*—
Toulhoat, Herve ; Plumail, Jean-Claude; Billon, Alain; and Quignard, Alain, 4,498,972, Cl. 208-59.000.
Quittner, John P., to Quicksteel Engineering Pty. Ltd. Moveable lane barrier locking system. 4,498,803, Cl. 404-6.000.
R. A. Jones & Co., Inc.: *See*—
Aultz, Thomas R.; Hughes, Charles C.; and Humbert, Stanley F., 4,498,567, Cl. 192-133.000.
Raba, Carl F., Jr.; Smith, Robert L.; and Huang, Francis Y., to Monier Resources, Inc. Process for the treatment of clay slimes. 4,498,993, Cl. 210-710.000.
Rabatin, Jacob G.: *See*—
Brines, Marjorie J.; and Rabatin, Jacob G., 4,499,159, Cl. 428-691.000.
Rademakers, Petrus J., to Datawell B.V. Anchoring system for a buoy, specially a measuring buoy. 4,498,877, Cl. 441-23.000.
Rader, Charles P., to Monsanto Company. Method of treating diene rubber with amino- and hydroxy aryl compounds. 4,499,243, Cl. 525-333.100.
Radke, Glen R.: *See*—
Barrus, Gordon B.; Emenaker, Leo J.; Radke, Glen R.; Farb, Norman E.; and Holzer, Gerold, 4,498,793, Cl. 400-320.000.
Radochonski, Pierre: *See*—
Eriksen, Joern B.; and Radochonski, Pierre, 4,499,501, Cl. 358-302.000.
Raftery, William B., to Steelcase Inc. Seating unit with front flex area. 4,498,702, Cl. 297-312.000.
Raghu, Sivaraman; and Peake, Steven L., to American Cyanamid Company. Process for preparing 1-substituted-6-n-propyl-8-methylimidazo[1,5-d]-as-triazin-4-(3H)-ones. 4,499,283, Cl. 548-343.000.
Rain Bird Sprinkler Mfg. Corp.: *See*—
Pitchford, Edward J., 4,498,626, Cl. 239-230.000.
Rake, Heinrich; Herchenbach, Horst; Jager, Gernot; and Franck, Gerhard, to Klockner-Humboldt-Deutz AG. Method and device for regulating the burning process of a cement burning system. 4,498,930, Cl. 106-100.000.
Ramachandran, Kovilvila, to Canadian Patents and Development Limited-Societe Candienne des Brevets et D'Exploitation (Limitee. Sputtering apparatus and method. 4,498,969, Cl. 204-298.000.
Rambo, William R., to SRI International. Reception enhancement in mobile FM broadcast receivers and the like. 4,499,606, Cl. 455-277.000.
Ramet, Claude; and Rojey, Alexandre, to Institut Francais du Petrole. Process for the heating and/or thermal conditioning of a building by means of a heat pump operated with a specific mixture of working fluids. 4,498,999, Cl. 252-67.000.
Rancourt, Martha W.: *See*—
Sujansky, Daniel J.; and Rancourt, Martha W., 4,499,183, Cl. 435-6.000.
Rand, James L., to United States of America, National Aeronautics and Space Administration. Thin film strain transducer. 4,498,231, Cl. 29-610.0SG.
Rank Xerox, Ltd.: *See*—
Okamoto, Yoshikazu, 4,499,166, Cl. 430-33.000.
Rao, Basrur R., to Sperry Corporation. Cross polarization compensation technique for a monopulse dome antenna. 4,499,473, Cl. 343-754.000.
Rappaport, Elazar: *See*—
Korin, Eliyaho; Rappaport, Elazar; Pasternak, Dov; Roy, Aharon S.; and Wolf, David, 4,498,459, Cl. 126-430.000.
Raque Food Systems Inc.: *See*—
Raque, Glen F.; and Robinson, Edward A., 4,498,358, Cl. 74-829.000.
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Pye, David S.; Ash, Donald L.; and Rardin, Robert W., 4,498,543, Cl. 166-376.000.
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Kirkpatrick, Harold B.; Ravreby, Fred A.; and Richbourg, Henry L., 4,498,467, Cl. 128-90.000.
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Campbell, Bruce D.; and Fentress, Vernon A., 4,498,732, Cl. 350-96.200.
Cornelius, Rajendra S.; Martin, Albert R.; Lunk, Hans E.; and Mendenhall, Mark D., 4,499,438, Cl. 333-1.000.
Kridl, Thomas A.; Claunch, Carney P.; and Bjornstrom, Ann O., 4,499,129, Cl. 428-36.000.
Rayfield, Wilson P.: *See*—
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Raytheon Company: *See*—
Torino, Arthur J., Jr.; Bouchard, George A.; and Keane, Philip A., 4,499,466, Cl. 343-7.300.

RCA Corporation: *See*—
Deyer, Craig E., 4,499,588, Cl. 377-42.000.
Dischert, Robert A.; and Topper, Robert J., 4,499,494, Cl. 358-164.000.
Hermeling, Gilbert C., Jr.; and Muterspaugh, Max W., 4,499,602, Cl. 455-180.000.
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Levine, Peter A., 4,499,497, Cl. 358-213.000.
Southgate, Peter D.; Fairbanks, David W.; Davis, Richard B.; and Beltz, John P., 4,498,779, Cl. 356-384.000.
White, Lawrence K., 4,498,775, Cl. 356-375.000.
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Yamazaki, Tsuneo; Faltas, Mervat; and Webb, Paul P., 4,499,483, Cl. 357-30.000.
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Reed, Geoffrey R., to Encomech Product Development Limited; and Head Wrightson Machine Company Limited. Handling and packaging apparatus. 4,498,276, Cl. 53-588.000.
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Reichman, James M.: *See*—
Nelson, Terry L.; and Reichman, James M., 4,498,813, Cl. 405-182.000.
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Graves, James A.; and Reiling, Gilbert H., 4,499,401, Cl. 313-315.000.
Reimer, William A., to GTE Communication Systems Corp. Printed wiring board interconnect arrangement. 4,498,717, Cl. 339-17.0LM.
Reisser, Fritz, to Sandoz Ltd. Triazoles, and their use against insect pests. 4,499,280, Cl. 548-255.000.
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Martio, Asko; Reitmaa, Ilpo; and Lautamo, Esa, 4,498,479, Cl. 128-639.000.
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Deborde, Albert H.; and Remond, Pierre, 4,498,639, Cl. 242-47.010.
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Curtis, John R.; and Renwick, John D., 4,499,175, Cl. 430-253.000.
Curtis, John R.; and Renwick, John D., 4,499,176, Cl. 430-253.000.
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Wyrick, Steven D.; Hall, Iris H.; and Dubey, Agnes, 4,499,303, Cl. 514-605.000.
Revere Copper and Brass Incorporated: *See*—
Tong, Hua S., 4,499,050, Cl. 420-528.000.
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Revici, Emanuel. Methods for counteracting the deleterious effects of sodium chloride. 4,499,078, Cl. 424-153.000.
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Arfert, Horst F. W.; and Leyco, Reynaldo P., 4,498,575, Cl. 198-400.000.
Tabereaux, Alton T., 4,498,966, Cl. 204-243.00R.
Rheinische Braunkohlenwerke AG: *See*—
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Rhone-Poulenc Specialities Chimiques: *See*—
Grosbois, Jean; Jacubert, Serge; and Verdier, Jean-Michel, 4,499,063, Cl. 423-347.000.
Richard, Gordon L., to Baptist Medical Center of Oklahoma, Inc. Amplitude modulation apparatus and method. 4,499,339, Cl. 179-107.0FD.
Richard, Michael A.: *See*—
Vanderspurt, Thomas H.; Richard, Michael A.; and Montagna, Angelo A., 4,499,204, Cl. 502-301.000.
Richards, Gary H. Fluid-flow-control-switch valve. 4,499,347, Cl. 200-81.90M.
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Amariti, Luigi; and Santos, Llandro C., 4,499,170, Cl. 430-169.000.
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Kirkpatrick, Harold B.; Ravreby, Fred A.; and Richbourg, Henry L., 4,498,467, Cl. 128-90.000.
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Ricoh Company, Ltd.: *See*—
Jinnai, Koichiro, 4,499,475, Cl. 346-75.000.
Ohno, Yoshimi; Tsurukawa, Ikuya; and Ishino, Tokio, 4,498,754, Cl. 354-479.000.
Tatara, Yoshikuni, 4,498,795, Cl. 400-637.100.
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Wickstrom, Claes G., 4,498,841, Cl. 414-778.000.
Riesenberg, Klaus-Otto, to Robert Bosch GmbH. Apparatus for measuring fuel consumption in an internal combustion engine. 4,498,334, Cl. 73-113.000.
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Moro, Luigi; Maffione, Grazia; Neri, Guido; and Rigamonti, Alessandro, 4,499,066, Cl. 424-19.000.
Right, Robert W., to General Signal Corporation. Power saver circuit for audio/visual signal unit. 4,499,453, Cl. 340-326.000.
Riker Laboratories, Inc.: *See*—
Gerster, John F., 4,499,270, Cl. 544-344.000.
Rimmele, Walter: *See*—
Schollkopf, Ernst; and Rimmele, Walter, 4,498,946, Cl. 156-324.000.
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Tucker, Alfred D., 4,498,628, Cl. 239-381.000.
Rittenbach, Otto, to United States of America, Army. Doppler radar sets with target direction sensing capability. 4,499,467, Cl. 343-9.00R.
Ritter, Horst; and Herpers, Edmund-Theo, to Dr. C. Otto & Comp. G.m.b.H. Process for removing hydrogen sulfide from gases, particularly coal distillation gases. 4,499,060, Cl. 423-232.000.
Roberson, Richard E.: *See*—
Moaley, William H.; Sanders, David E.; and Roberson, Richard E., 4,499,585, Cl. 375-62.000.
Robert Bosch GmbH: *See*—
Gruner, Heiko, 4,498,337, Cl. 73-204.000.
Knorreck, Peter; Kuhne, Wolfgang; and Muller, Norbert, 4,498,499, Cl. 137-627.500.
Locher, Johannes; and Schaller, Dieter, 4,499,412, Cl. 318-592.000.
Riesenberg, Klaus-Otto, 4,498,334, Cl. 73-113.000.
Tissot, Raymond, 4,498,442, Cl. 123-447.000.
Robertson, John R., to ICI Americas Inc. Stable dispersions of polyisocyanates containing polysiloxane mold release agents. 4,498,929, Cl. 106-38.200.
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Raque, Glen F.; and Robinson, Edward A., 4,498,358, Cl. 74-829.000.
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Roccaforte, Harry I.: *See*—
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Rock, Orville J.: *See*—
Shonley, Ivan T.; and Rock, Orville J., 4,498,872, Cl. 440-63.000.
Rockwell International Corporation: *See*—
Glass, Howard L., 4,499,061, Cl. 423-277.000.
Grantham, LeRoy F.; and Heath, Norman W., 4,498,347, Cl. 73-861.660.
Thompson, William J., 4,499,434, Cl. 331-17.000.
von Bieren, Karlheinz, 4,498,773, Cl. 356-360.000.
Vrolyk, John J., 4,498,531, Cl. 166-59.000.
Wells, Calvin G.; and Szabo, Steve B., 4,498,709, Cl. 301-5.0VH.
Rodd, Derek E., to Minitube Systems. Hot water heating system. 4,498,623, Cl. 237-8.00R.
Roe, Jin-Young K.: *See*—
Blasing, Elmer P.; Keeling, Ronald J.; and Roe, Jin-Young K., 4,499,125, Cl. 428-503.000.
Rogers Corporation: *See*—
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Rohr, Wolfgang: *See*—
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Rojey, Alexandre: *See*—
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Rollat, Alain J.: *See*—
Burgard, Michel; Piteau, Marc D.; Rollat, Alain J.; and Senet, Jean-Pierre G., 4,499,057, Cl. 423-8.000.
Rollform, Incorporated: *See*—
Adams, George C., 4,498,272, Cl. 52-714.000.
Rolls-Royce Limited: *See*—
Jeffery, Graham J., 4,498,291, Cl. 60-39.091.
Smith, Stanley, 4,498,525, Cl. 165-39.000.
Roloff, Heinz: *See*—
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Roming, Helmut. Massage apparatus. 4,498,463, Cl. 128-37.000.

Rommler, Josef: *See*—
Paisley, Gary V.; Altschuler, J. George; and Rommler, Josef, 4,499,141, Cl. 428-318.800.
Rosaen, Lars O., to Universal Filters, Inc. Flow meter bypass valve assembly. 4,498,497, Cl. 137-599.100.
Rosborg, Daniel J.: *See*—
Tauber, Richard J.; and Rosborg, Daniel J., 4,499,527, Cl. 362-267.000.
Rose, Rene, to Flonic S.A. Electrical connection system. 4,499,371, Cl. 235-492.000.
Rosemount Engineering Company Limited: *See*—
Johnston, James S., 4,499,373, Cl. 250-231.00P.
Rosenbaum, Walter S.: *See*—
Brickman, Norman F.; and Rosenbaum, Walter S., 4,499,499, Cl. 358-263.000.
Rosendall, Henry J., to Bissell Inc. Floor sweeper with improved drive wheel construction. 4,498,207, Cl. 15-42.000.
Rosenkranz, Otto: *See*—
Hone, Norbert; Horwege, Claus; and Rosenkranz, Otto, 4,499,044, Cl. 264-521.000.
Ross, Alan R., to Eaton Corporation. Shifting mechanism. 4,498,350, Cl. 74-89.150.
Ross, John M., to Continental Packaging Company, Inc. In-mold labeler—dual parison. 4,498,854, Cl. 425-116.000.
Ross, Richard J.; and Speller, David J., to Baker Oil Tools, Inc. Method of washing, injecting swabbing or flow testing subterranean wells. 4,498,536, Cl. 166-250.000.
Rosseels, Gilbert; and Polster, Peter, to Sanofi. Indolizine derivatives and their use in treating heart ailments. 4,499,095, Cl. 514-299.000.
Roth, Jurgen: *See*—
Bruning, Rolf; and Roth, Jurgen, 4,499,191, Cl. 436-160.000.
Roth, Reinhold C.; and Terra, Richard F., to Techmark Corporation. Method and apparatus for uniformly drying moving webs. 4,498,864, Cl. 432-8.000.
Rothwell, Harold L.: *See*—
Fohl, Timothy; Keeffe, William M.; and Rothwell, Harold L., 4,499,396, Cl. 313-25.000.
Rottenbacher, Reinhard, to Dornier System GmbH. Method of brazing silicon carbide parts using Si-Co solder. 4,499,360, Cl. 219-85.00H.
Rouly, Eric; and Douville, Jean-Pierre, to Societe d'Exploitation des Machines Dubuit. Silk screen printing machine. 4,498,386, Cl. 101-40.000.
Rouse, Russell V., to Snapper Power Equipment, Division of Fuqua Industries, Inc. Lawn mower friction drive mechanism. 4,498,552, Cl. 180-70.100.
Roussel, Jacques, to L'Air Liquide, Societe Anonyme Pour L'Etude et L'Exploitation des Procedes Georges Claude. Method and apparatus for in-situ mining by leaching ores containing metal values. 4,498,705, Cl. 299-4.000.
Rowlette, John J., to United States of America, National Aeronautics and Space Administration. State-of-charge coulometer. 4,499,424, Cl. 324-427.000.
Roy, Aharon S.: *See*—
Korin, Eliyaho; Rappaport, Elazar; Pasternak, Dov; Roy, Aharon S.; and Wolf, David, 4,498,459, Cl. 126-430.000.
RPC Industries: *See*—
Loda, Gary K., 4,499,405, Cl. 315-13.100.
Ru-Korrel (Propietary) Limited: *See*—
Botha, Charles F.; and Lambrechts, Adriaanus L., 4,498,856, Cl. 425-331.000.
Rubinstein, Israel, to General Electric Company. Electrochemical method for visual detection of nonmetallic surface inclusions in metallic substrates. 4,498,960, Cl. 204-1.00T.
Rudolph, Joachim, to Werner & Pfleiderer. Process for mixing and proportioning several mixing components. 4,498,783, Cl. 366-132.000.
Runkle, Charles J., to Monsanto Company. Method for fracturing a tube sheet. 4,498,616, Cl. 225-1.000.
Runner, Robert R. System for practicing roping. 4,498,676, Cl. 273-336.000.
Runtal Holding Company S.A.: *See*—
de Palezieux, Jacques; and Jobin, Georges F., 4,498,529, Cl. 165-176.000.
Ruscheweyh, Hans, to Balcke-Durr Aktiengesellschaft. Apparatus for mixing at least two individual streams having different thermodynamic functions of state. 4,498,786, Cl. 366-336.000.
Russell, Burdsall & Ward Corporation: *See*—
Pamer, Walter R.; Zils, James A.; and Capuano, Terry D., 4,498,825, Cl. 411-11.000.
Ruter, Bernhard, to Rheinische Braunkohlenwerke AG. Process for grind-drying wet solid fuel. 4,498,632, Cl. 241-18.000.
Rutledge, Joseph: *See*—
Valone, Frederick W.; and Rutledge, Joseph, 4,499,006, Cl. 252-392.000.
Rutledge, Raleigh N.: *See*—
Hahn, Granville J.; Rutledge, Raleigh N.; and Murley, Jackie D., 4,499,041, Cl. 264-173.000.
Rutsch, Werner: *See*—
Husler, Rinaldo; Rutsch, Werner; and Dietliker, Kurt, 4,498,964, Cl. 204-159.230.
Ryan, Kenneth M.: *See*—
Melillo, David G.; and Ryan, Kenneth M., 4,499,278, Cl. —548-240.000.
Ryoke, Katsumi: *See*—
Yamaguchi, Nobutaka; Fujiyama, Masaaki; Tada, Sugihiko; Tadokoro, Eiichi; Ryoke, Katsumi; Utsumi, Masahiro; and Suzuki, Masami, 4,499,121, Cl. 427-130.000.
S&C Electric Company: *See*—
Swanson, Roy T., 4,499,446, Cl. 337-30.000.
Sabanovic, Asif: *See*—
Izosimov, Dimitrij B.; and Sabanovic, Asif, 4,499,413, Cl. 318-802.000.
Sabot, Jean-Louis: *See*—
Fitoussi, Richard; Leveque, Alain; and Sabot, Jean-Louis, 4,499,058, Cl. 423-70.000.
Saburo, Numata, to Fuji Photo Optical Co., Ltd. Electronic discharge tube and electronic light emitter using it. 4,499,406, Cl. 315-57.000.
Sacrini, Egeo: *See*—
Fontana, Alberto; Fontanelli, Renzo; Sacrini, Egeo; and Cicchetti, Osvaldo, 4,499,273, Cl. 546-188.000.
Sadeh, Yaacov, to Beta Engineering & Development Ltd. Automatic sewing apparatus. 4,498,404, Cl. 112-121.120.
Sadler, Loren G., to Sperry Corporation. Drive mechanism for a manure spreader. 4,498,630, Cl. 239-677.000.
Sadlowsky, Josef: *See*—
Christophliemk, Peter; Novotny, Rudolf; von Laufenberg, Jurgen; and Sadlowsky, Josef, 4,499,062, Cl. 423-332.000.
Sahatchieva, Maria A.: *See*—
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Saito, Norio: *See*—
Torii, Sigeru; Tanaka, Hideo; Nokami, Junzo; Shiroi, Takashi; Saito, Norio; and Sasaoka, Michio, 4,499,265, Cl. 544-16.000.
Saito, Tomoharu: *See*—
Kubo, Akira; Ishii, Akihiko; Nishizaki, Ken; and Saito, Tomoharu, 4,499,225, Cl. 524-276.000.
Saitoh, Minoru; Arimatsu, Yoshikazu; Tani, Katsuya; and Mitamura, Hideyuki, to Toyo Boseki Kabushiki Kaisha. Polyurethane composition improved in dyeing property. 4,499,221, Cl. 524-109.000.
Saitoh, Noriaki: *See*—
Harada, Masato; Iijima, Makoto; and Saitoh, Noriaki, 4,499,194, Cl. 502-8.000.
Saitoh, Sumio: *See*—
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Sakakibara, Naoji: *See*—
Hamajima, Shigemitsu; Nishimura, Tomoaki; Sakakibara, Naoji; and Kawata, Shoji, 4,499,542, Cl. 364-424.100.
Sakamaki, Hiroshi; and Suzuki, Yukio, to Nippon Piston Ring Co., Ltd. Vane-type compressor. 4,498,853, Cl. 418-268.000.
Sakamoto, Masafumi, to Japan Servo Co., Ltd. End bracket for motor. 4,499,391, Cl. 310-89.000.
Sakamoto, Masaharu: *See*—
Yamamiya, Kunio; Kodama, Hiroshi; Ohshima, Ken; Yoshikawa, Shoji; Kato, Kiichi; and Sakamoto, Masaharu, 4,499,514, Cl. 360-97.000.
Yoshikawa, Shozi; Sakamoto, Masaharu; Kodama, Hiroshi; Yamamiya, Kunio; Kato, Kiichi; and Ohsima, Ken, 4,499,572, Cl. 369-111.000.
Sakamoto, Minoru. Cooling attachment for solar distiller. 4,498,959, Cl. 202-185.20A.
Sakano, Riichi; and Ubakata, Tadayoshi, to Sanden Corporation. Control device for a variable displacement compressor in an air conditioning system. 4,498,311, Cl. 62-227.000.
Sakuma, Shinzo; Warabi, Junichi; Kano, Masayuki; and Kashimoto, Yutaka, to Kabushiki Kaisha Meidensha. Vacuum interrupter. 4,499,349, Cl. 200-144.00B.
Sakurai, Kohichi: *See*—
Segawa, Hideo; Mori, Koji; Itagaki, Masanori; Sakurai, Kohichi; and Ishiwata, Tatsumi, 4,499,384, Cl. 250-578.000.
Sakurai, Shigeru: *See*—
Satow, Haruhiko; Okimoto, Haruo; Sakurai, Shigeru; and Oda, Hiroyuki, 4,498,429, Cl. 123-26.000.
Sakurai, Tadashi: *See*—
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Salomon, Georges P. J.; and Hue, Jean, to Salomon S.A. Pivotable cross-country ski binding. 4,498,687, Cl. 280-615.000.
Salomon S.A.: *See*—
Salomon, Georges P. J.; and Hue, Jean, 4,498,687, Cl. 280-615.000.
Salts, Thomas R., to Besser Industries, Inc. Article stacking apparatus. 4,498,831, Cl. 414-46.000.
Samvaz S.A.: *See*—
Derivaz, Charles, 4,498,513, Cl. 145-11.000.
Sanden Corporation: *See*—
Hiraga, Masaharu, 4,498,852, Cl. 418-55.000.
Sakano, Riichi; and Ubakata, Tadayoshi, 4,498,311, Cl. 62-227.000.
Sanders, David E.: *See*—
Mosley, William H.; Sanders, David E.; and Roberson, Richard E., 4,499,585, Cl. 375-62.000.
Sanders, Maurice R., to Godwin Warren Engineering Limited. Retractable wheel chock for railway wagons. 4,498,561, Cl. 188-36.000.
Sandoz, Inc.: *See*—
Brand, Leonard J.; and Nadelson, Jeffrey, 4,499,279, Cl. 548-247.000.
Sandoz Ltd.: *See*—
Dore, Jacky; and Moser, Helmut, 4,499,018, Cl. 260-245.810.
Reisser, Fritz, 4,499,280, Cl. 548-255.000.
Sanko Kiki Kabushiki Kaisha: *See*—
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Sano, Kenji; Kondo, Syunichi; and Sato, Hideo, to Fuji Photo Film Co., Ltd. Photoconductive compositions comprising an organic photoconductor and an amide compound and electro-photographic light-sensitive materials using the compositions. 4,499,167, Cl. 430-83.000.

Sano, Tadaaki: *See*—
Suzuki, Masamichi; Sugihara, Atsushi; Sano, Tadaaki; and Suzuki, Toshihiro, 4,499,123, Cl. 427-282.000.
Sanofi: *See*—
Hallot, Andre ; and Biziere, Kathleen, 4,499,092, Cl. 514-254.000.
Kirsch, Francis, 4,499,074, Cl. 424-94.000.
Rosseels, Gilbert; and Polster, Peter, 4,499,095, Cl. 514-299.000.
Sanshin Kogyo Kabushiki Kaisha: *See*—
Watanabe, Eifu, 4,498,875, Cl. 440-88.000.
Santen Pharmaceutical Co., Ltd.: *See*—
Oya, Masayuki; and Iso, Tadashi, 4,499,102, Cl. 514-365.000.
Santos, Llandro C.: *See*—
Amariti, Luigi; and Santos, Llandro C., 4,499,170, Cl. 430-169.000.
Sanuki, Toshio: *See*—
Shimada, Kengo; Chiba, Yutaka; and Sanuki, Toshio, 4,498,363, Cl. 84-1.010.
Sanyo Electric Co., Ltd.: *See*—
Kojima, Toshitada, 4,499,357, Cl. 219-10.55B.
Nakamura, Kenzi, 4,499,522, Cl. 361-331.000.
Sarasso, Angelo: *See*—
Franchini, Mauro; Sarasso, Angelo; and Puccetti, Angelo, 4,498,439, Cl. 123-438.000.
Sasaki, Hideharu; and Shimada, Keizo, to Teijin Limited. Aromatic polyamide paper-like sheet and processes for producing the same. 4,498,957, Cl. 162-146.000.
Sasaki, Minoru; and Kamiya, Toshiharu, to Tokyo Shibaura Denki Kabushiki Kaisha. Drive circuit for display panel having display elements disposed in matrix form. 4,499,459, Cl. 340-752.000.
Sasaoka, Michio: *See*—
Torii, Sigeru; Tanaka, Hideo; Nokami, Junzo; Shiroi, Takashi; Saito, Norio; and Sasaoka, Michio, 4,499,265, Cl. 544-16.000.
Sato, Hideo: *See*—
Sano, Kenji; Kondo, Syunichi; and Sato, Hideo, 4,499,167, Cl. 430-83.000.
Sato, Hircahi; Ishii, Norio; and Nakamura, Shyuzo, to Sumitomo Chemical Company, Limited. Method for selective dealkylation of 1,4-dialkylbenzene. 4,499,321, Cl. 585-486.000.
Sato, Kozo: *See*—
Hirai, Hiroyuki; and Sato, Kozo, 4,499,172, Cl. 430-203.000.
Sato, Kunihiko, to Toyota Jidosha Kabushiki Kaisha. Ignition timing control unit for a car engine and method thereof. 4,498,438, Cl. 123-418.000.
Sato, Kyosaku, to Polysar Limited. Coagulation. 4,499,213, Cl. 523-335.000.
Sato, Ryo: *See*—
Suzuki, Yasutoshi; Hara, Kunihiko; and Sato, Ryo, 4,499,451, Cl. 340-98.000.
Sato, Tomosaburo: *See*—
Ono, Katsuyasu; and Sato, Tomosaburo, 4,498,222, Cl. 29-509.000.
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Satoh, Akihiro: *See*—
Chiba, Hiromasa; Obama, Kenjiro; Kawazoe, Shunji; Oka, Takahiro; and Satoh, Akihiro, 4,499,247, Cl. 526-142.000.
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Sattelberg, Stanley E.; and Baker, George A., to Chicago Bridge & Iron Company. Resilient blanket with integral high strength facing and method of making same. 4,498,602, Cl. 220-452.000.
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Barth, Hubert; Hartenstein, Johannes; Satzinger, Gerhard; Fritschi, Edgar; Ganser, Volker; Tauschel, Horst-Dietmar; and Wolf, Gunter, 4,499,089, Cl. 514-222.000.
Saurer-Diederichs Societe Anonyme: *See*—
Deborde, Albert H.; and Remond, Pierre, 4,498,639, Cl. 242-47.010.
Saylor, Millard P. Method for forming wire connection. 4,498,379, Cl. 100-2.000.
Scaccia, Carlo; and Overley, John R., to Ashland Oil, Inc. Isobutyryl fluoride manufacture. 4,499,029, Cl. 260-544.00A.
Scalesciani, Juan, to Farmatis S.r.l. Imidazole compound, the process for its preparation, and therapeutically active compositions containing same. 4,499,104, Cl. 514-396.000.
Schadlich, Gotthard, to VEB Kombinat Textima. Spraying apparatus for laundry mangles. 4,498,254, Cl. 38-14.000.
Schafer, Walter; Meiners, Hans-Joachim; Seel, Klaus; Reichmann, Wolfgang; Wagner, Kuno; and Findeisen, Kurt, to Bayer Aktiengesellschaft. Process for the production of microcellular moldings from diisocyanate and compounds containing groups obtained by reacting amino groups with carbon dioxide. 4,499,038, Cl. 264-51.000.
Schaller, Dieter: *See*—
Locher, Johannes; and Schaller, Dieter, 4,499,412, Cl. 318-592.000.
Scheben, John A.; and Hinnenkamp, James A., to National Distillers and Chemical Corporation. Process for the production of esters. 4,499,298, Cl. 560-241.000.
Schechter, Michael M., to Ford Motor Company. Electromagnetic unit fuel injector and method for calibrating. 4,498,625, Cl. 239-5.000.
Schedewie, Franz: *See*—
Makosch, Gunter; and Schedewie, Franz, 4,498,771, Cl. 356-351.000.
Scheffee, Robert S., to Atlantic Research Corporation. Coal-water fuel slurries and process for making. 4,498,906, Cl. 44-51.000.
Scher, Herbert I.: *See*—
O'Dell, Robin D.; Ungar, Israel S.; and Scher, Herbert I., 4,499,137, Cl. 428-211.000.
Schering Corporation: *See*—
Sequeira, Joel A.; and Zupon, Michael A., 4,499,108, Cl. 514-653.000.
Schibbye, (Lars) Lauritz B.; and Englund, Rolf A., to Sullair Technology AB. Valve arrangement for capacity control of screw compressors. 4,498,849, Cl. 417-299.000.
Schierz, Winfried; and Creutz, Helmut, to SEMIKRON Gesellschaft fur Gleichrichterbau und Elektronik mbH. Semiconductor unit. 4,499,485, Cl. 357-74.000.
Schindele, Ernst F. Rail system with passageways for the conduction of fluid flow. 4,498,693, Cl. 285-137.00R.
Schirk, Gunter; and Koninger, Horst, to Agfa-Gevaert Aktiengesellschaft. Arrangement for spacing and conveying overlapping photosensitive articles. 4,498,752, Cl. 354-301.000.
Schirmer, Robert M.; and Fromm, Ellsworth H., to Phillips Petroleum Company. Combustors and methods of operating same. 4,498,287, Cl. 60-39.020.
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Bachman, Brett L.; Belgard, Richard A.; Bernstein, David H.; Bratt, Richard G.; Clancy, Gerald F.; Gavrin, Edward S.; Gruner, Ronald H.; Jones, Thomas M.; Mundie, Craig J.; Nealon, James T.; Pilat, John F.; Schleimer, Stephen I.; and Wallach, Steven J., 4,499,535, Cl. 364-200.000.
Clancy, Gerald F.; Gruner, Ronald H.; Schleimer, Stephen I.; Mundie, Craig J.; Wallach, Steven J.; Wallach, Walter A., Jr.; Ahlstrom, John K.; Richmond, Michael S.; Bernstein, David H.; and Bratt, Richard G., 4,499,604, Cl. 364-200.000.
Schlosser, Edward P. Method and apparatus for maintaining products at selected temperatures. 4,498,312, Cl. 62-457.000.
Schlosser, Erich J.; and Stephen, George, Jr., to Weber-Stephen Products Co. Kettle with ash catcher. 4,498,452, Cl. 126-9.00R.
Schlossman, Irwin S.: *See*—
Barlow, Anthony; Schlossman, Irwin S.; and Borgerding, Robert E., 4,499,013, Cl. 252-567.000.
Schlotzhauer, Kenneth G.; and Metz, Arthur J., to Tektronix, Inc. Trigger circuit. 4,499,386, Cl. 307-260.000.
Schlumberger Electronics (U.K.) Ltd.: *See*—
Bockett-Pugh, Charles, 4,499,419, Cl. 324-102.000.
Schlumberger Technology Corporation: *See*—
Sinclair, Paul L., 4,499,421, Cl. 324-339.000.
Sinclair, Paul L., 4,499,422, Cl. 324-339.000.
Schmidberger, Rainer: *See*—
Kock, Wulf; Schmidberger, Rainer; and Wagner, Wolfgang, 4,498,395, Cl. 102-517.000.
Schmidhuber, Karl; Wall, Helmut; and Demovic, Vojtech, to Keiper Recaro GmbH & Co. Seat for airplanes and buses. 4,498,703, Cl. 297-328.000.
Schmidt, Alfred. Snow removal. 4,498,253, Cl. 37-249.000.
Schmitz, Wimmar: *See*—
Pav, Josef; Schmitz, Wimmar; and Wenzel, Reinhard, 4,498,383, Cl. 100-162.00B.
Schneider, Alfred, to Siemens Aktiengesellschaft. Circuit arrangement for centrally-controlled telecommunication exchange systems, particularly for time-division multiplex telephone exchange systems, with information exchange between PBX devices. 4,499,461, Cl. 340-825.030.
Schneider, George W., Jr, to Singer Company, The. Metered gas volume correcting arrangement. 4,498,346, Cl. 73-861.010.
Schneider, Philip H.; Weber, J. William; and Massaro, Thomas A. Insulin infusion pump. 4,498,843, Cl. 417-22.000.
Schneiderman, Max, to Ipco Corporation. Electrosurgical unit. 4,498,475, Cl. 128-303.140.
Schnetzka, Harold R.; Wills, Frank E.; and Norbeck, Dean K., to Borg-Warner Corporation. Control system for controlling an SCR network to regulate three-phase A-C power flow. 4,499,534, Cl. 363-129.000.
Schobbe, Hermann, to Daimler-Benz Aktiengesellschaft. Sealing-ring arrangement for threaded closure bolt. 4,498,680, Cl. 277-112.000.
Scholl, Walter, to Bayer Aktiengesellschaft. Chromium complex azo dyestuffs and mixtures of chromium complex azo dyestuffs derivated from 1-amino-2-hydroxynaphtalene-4-sulphonic acids or aminophenols. 4,499,015, Cl. 534-697.000.
Scholle Corporation: *See*—
Scholle, William R.; and Lloyd-Davies, William, 4,498,508, Cl. 141-5.000.
Scholle, William R.; and Lloyd-Davies, William, to Scholle Corporation. Container filler. 4,498,508, Cl. 141-5.000.
Schollkopf, Ernst; and Rimmele, Walter, to Polytype AG. Apparatus and method for manufacturing a sandwich web. 4,498,946, Cl. 156-324.000.
Schortmann, Walter E., to Kendall Company, The. Microsized fabric. 4,499,139, Cl. 428-245.000.
Schou, Carl E. Self locking differential. 4,498,355, Cl. 74-650.000.
Schouhamer Immink, Kornelis A.; and Aarts, Ronaldus M., to U.S. Philips Corporation. Dropout circuit arrangement for converting an information signal into a rectangular signal. 4,499,570, Cl. 369-48.000.
Schreiner, Ceinwen A.: *See*—
Blackburn, Gary R.; Mackerer, Carl R.; and Schreiner, Ceinwen A., 4,499,187, Cl. 435-34.000.
Schuemann, Klaus D.: *See*—
Bright, Edward J.; Marpoe, Gary R., Jr.; Schuemann, Klaus D.; and Sheesley, Wilmer L., 4,498,725, Cl. 339-176.00M.
Schulmeyer, Herbert G., to Dentsply Research & Development Corp. Procedure for firing dental porcelain on metal. 4,498,865, Cl. 432-18.000.

Schupak, Leonard: *See*—
Harding, Philip A.; and Schupak, Leonard, 4,499,510, Cl. 360-77.000.
Schuss, Werner, to Siemens Aktiengesellschaft. Dental hand piece. 4,498,868, Cl. 433-29.000.
Schwob, Pierre, to SEB S.A. Device and method for wax depilation. 4,499,367, Cl. 219-421.000.
Science Research Center, Inc.: *See*—
Proctor, David R.; and Foster, Terry L., 4,498,782, Cl. 356-436.000.
Scifoni, Mario. Additive for Otto cycle engines and fuel mixture so obtained. 4,499,267, Cl. 44-51.000.
SCM Corporation: *See*—
Martino, Phillip C., 4,499,212, Cl. 523-201.000.
Scott, Burton W., to Mead Corporation, The. Driving circuit for radio frequency dryer. 4,499,358, Cl. 219-10.770.
Scott, Peter J. Apparatus for determining the position of a point on an object or the shape of a portion thereof. 4,498,777, Cl. 356-376.000.
Scott, Raymond G., to Champion International Corporation. Reclosable packaging system and method for forming same. 4,498,588, Cl. 206-526.000.
Scott, Raymond G.; and McNulty, Sherry M., to Champion International Corporation. Locking hinge for reclosable package. 4,498,589, Cl. 206-526.000.
SDS-Elektro G.m.b.H.: *See*—
Dietrich, Bernhard, 4,499,345, Cl. 200-67.00F.
SEB S.A.: *See*—
Schwob, Pierre, 4,499,367, Cl. 219-421.000.
Sebag, Henri; and Vanlerberghe, Guy, to L'Oreal. Tensio-active polypod compounds, process for preparing them and compositions containing them. 4,499,070, Cl. 424-70.000.
Sebestyen, Bela: *See*—
Gergo, Gyorgy; Nemeth, Jozsef; Sebestyen, Bela; and Solymossy, Bela, 4,498,391, Cl. 102-312.000.
Secom Co., Ltd.: *See*—
Sirai, Sirou, 4,499,564, Cl. 367-93.000.
Seddon, Duncan; Mole, Thomas; and Whiteside, Judy A., to Imperial Chemical Industries PLC. Methanol conversion to hydrocarbons with zeolites and cocatalysts. 4,499,314, Cl. 585-408.000.
Seel, Klaus: *See*—
Schafer, Walter; Meiners, Hans-Joachim; Seel, Klaus; Reichmann, Wolfgang; Wagner, Kuno; and Findeisen, Kurt, 4,499,038, Cl. 264-51.000.
Seeman, Thomas A. Method for producing a glass article. 4,498,918, Cl. 65-25.100.
Seese, Mark A.; and Chiang, Robert L., to W. R. Grace & Co. Co-gel catalyst manufacture. 4,499,197, Cl. 502-65.000.
Segawa, Hideo; Mori, Koji; Itagaki, Masanori; Sakurai, Kohichi; and Ishiwata, Tatsumi, to Ricoch Company, Ltd. Image sensing device. 4,499,384, Cl. 250-578.000.
Seidler, David, to Max Factor & Co. Adjustable product applicator. 4,498,490, Cl. 132-88.500.
Seifried, Walter: *See*—
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Seiko Instruments & Electronics Ltd.: *See*—
Itaya, Kingo; Shibayama, Kimio; Toshima, Shinobu; Ataka, Tatsuaki; and Iwasa, Koji, 4,498,739, Cl. 350-357.000.
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Kodama, Ikuo; Muramatsu, Shigeru; Terasaki, Kazunori; and Morita, Takayuki, 4,498,283, Cl. 57-261.000.
Selectiebedrijf Kooi Beheer B.V.: *See*—
Kooi, Hessel; and Meijer, Sjoerd, 4,498,837, Cl. 414-664.000.
Selflevel Covers (Jersey) Limited: *See*—
Ferns, Derek, 4,498,804, Cl. 404-25.000.
SEMIKRON Gesellschaft fur Gleichrichterbau und Elektronik mbH: *See*—
Schierz, Winfried; and Creutz, Helmut, 4,499,485, Cl. 357-74.000.
Senet, Jean-Pierre G.: *See*—
Burgard, Michel; Piteau, Marc D.; Rollat, Alain J.; and Senet, Jean-Pierre G., 4,499,057, Cl. 423-8.000.
Senuma, Akitaka; and Aizawa, Takao, to Union Carbide Corporation. Process and composition for producing open-cell cross linked polyolefin foam. 4,499,210, Cl. 521-91.000.
Sequeira, Joel A.; and Zupon, Michael A., to Schering Corporation. Stable pleasant-tasting albuterol sulfate pharmaceutical formulations. 4,499,108, Cl. 514-653.000.
Serafin, Orest M.: *See*—
Starostin, Alexandr M.; Malakhov, Alexei M.; Chertilina, Tamara A.; Ponomar, Vladislav I.; Postolaty, Nikolai I.; Kuchuk-Yatsenko, Sergei I.; Peretrukhin, Filipp I.; Gluschenko, Anatoly D.; Solodovnikov, Sergei A.; Shvets, Jury G.; and Serafin, Orest M., 4,499,364, Cl. 219-161.000.
Sericol Group Limited: *See*—
Curtis, John R.; and Renwick, John D., 4,499,175, Cl. 430-253.000.
Curtis, John R.; and Renwick, John D., 4,499,176, Cl. 430-253.000.
Serizawa, Hiroyuki: *See*—
Tanaka, Tsutomu; Tsujimoto, Yoshinobu; Serizawa, Hiroyuki; and Hattori, Katsuji, 4,498,730, Cl. 350-96.160.
Sestanj, Kazimir; Fung, Steven; Abraham, Nedumparambil A.; and Bellini, Francesco, to Ayerst, McKenna & Harrison, Inc. 5-Methyl-1-(trifluoromethyl)-2-naphthalenol, process for its preparation and ethers thereof. 4,499,310, Cl. 568-634.000.
Sexton, Robert W.; and Smith, Richard L., to Allis-Chalmers Corp. Evaporative gas treating system. 4,499,031, Cl. 261-66.000.
Seymour, Shaun A.; and Greiner, James G., to Sperry Corporation. Bale unrolling apparatus. 4,498,830, Cl. 414-24.600.
Shaldon, Stanley; Christopherson, Kjell H. I.; Falkvall, Thore E.; and Mattisson, Ulf K., to Gambro Lundia AB. Filtering device. 4,498,990, Cl. 210-637.000.
Shamenko, Stepan P.: *See*—
Toropov, Gennady A.; and Shamenko, Stepan P., 4,498,322, Cl. 72-118.000.
Sharpless, Charles H.: *See*—
Hudson, Robert C.; MacPherson, William F.; and Sharpless, Charles H., 4,499,532, Cl. 363-21.000.
Shaw, Wilfrid G.: *See*—
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Shea, Yale R.; and Zuege, Kevin C., to INRYCO, Inc. Preset block assembly for underfloor electrical distribution system. 4,499,332, Cl. 174-48.000.
Sheesley, Wilmer L.: *See*—
Bright, Edward J.; Marpoe, Gary R., Jr.; Schuemann, Klaus D.; and Sheesley, Wilmer L., 4,498,725, Cl. 339-176.00M.
Shell Oil Company: *See*—
Deal, Carl H.; and Flynn, A. John, 4,498,911, Cl. 55-32.000.
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Hoek, Arend; Post, Martin F. M.; Minderhoud, Johannes K.; and Lednor, Peter W., 4,499,209, Cl. 518-707.000.
Kruka, Vitold R., 4,498,932, Cl. 134-8.000.
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Shelton, Verma: *See*—
Knox, Frank A., 4,499,131, Cl. 428-68.000.
Shenvi, Ashokkumar B.; and Kettner, Charles A., to Du Pont de Nemours, E. I., and Company. α-Aminoboronic acid peptides. 4,499,082, Cl. 514-2.000.
Shepherd, Lawrence H., Jr., to Ethyl Corporation. Caged compounds and their synthesis. 4,499,290, Cl. 549-354.000.
Shibamoto, Takeshi: *See*—
Takahashi, Nobuaki; and Shibamoto, Takeshi, 4,499,506, Cl. 358-343.000.
Shibano, Kenji, to Fuji Jukogyo Kabushiki Kaisha. System for preventing the percolation of fuel in a carburetor. 4,499,032, Cl. 261-72.00R.
Shibata, Kenji: *See*—
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Shibata, Toshihiro: *See*—
Minagawa, Motonobu; Kubota, Naohiro; and Shibata, Toshihiro, 4,499,220, Cl. 524-102.000.
Shibayama, Kimio: *See*—
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Shibley, Paul W. M.: *See*—
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Shida, Masami: *See*—
Tabuchi, Kenji; Shida, Masami; and Ishii, Toshio, 4,498,444, Cl. 123-478.000.
Shieh, Shin-Shi. Safety diving backpack. 4,498,878, Cl. 441-80.000.
Shields, Thomas A., to USM Corporation. Blister package. 4,499,353, Cl. 206-470.000.
Shimada, Keizo: *See*—
Sasaki, Hideharu; and Shimada, Keizo, 4,498,957, Cl. 162-146.000.
Shimada, Kengo; Chiba, Yutaka; and Sanuki, Toshio, to Victor Company of Japan, Ltd. Just intonation electronic keyboard instrument. 4,498,363, Cl. 84-1.010.
Shimada, Takeshi: *See*—
Miyatake, Kimio; Ishida, Kozo; Ebi, Hiroyuki; and Shimada, Takeshi, 4,499,378, Cl. 250-343.000.
Shimada, Toshiyuki, to Sony Corporation. Method and apparatus for encoding a digital signal with a low DC component. 4,499,454, Cl. 340-347.0DD.
Shimamori, Toru; Hattori, Yoshinori; and Matsuo, Yasushi, to NGK Spark Plug Co., Ltd. Silicon nitride sintered products having high corrosion resistance and process for production thereof. 4,499,192, Cl. 501-97.000.
Shimamune, Takayuki: *See*—
Asano, Hiroshi; Shimamune, Takayuki; and Goto, Toshiki, 4,498,942, Cl. 156-151.000.
Shin-Shirasuna Electric Corp.: *See*—
Otala, Matti N., 4,499,431, Cl. 330-296.000.
Shin, Yoon K., to Mercury International Trading Corp. Shoe design. 4,498,251, Cl. 36-30.00R.
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Kasai, Junichi; Yanagishima, Takayuki; Ajimine, Akio; Murakami, Yoshiaki; Shino, Akimitsu; and Watanabe, Tatsuya, 4,499,340, Cl. 179-115.5DV.
Shinozaki, Nozomu; Dohi, Takashi; Yamazaki, Shinji; and Neki, Shigeo, to Matsushita Electric Industrial Company, Ltd. Speed setting device for a sewing machine. 4,499,449, Cl. 338-32.00R.
Shinryo Seikan Kabushiki Kaisha: *See*—
Tsuchiya, Toshiharu; and Iwata, Mamoru, 4,498,415, Cl. 118-712.000.
Shinto Paint Co., Ltd.: *See*—
Kubo, Akira; Ishii, Akihiko; Nishizaki, Ken; and Saito, Tomoharu, 4,499,225, Cl. 524-276.000.
Shioleno, Lewis J., to North American Philips Corporation. High value surface mounted capacitor. 4,499,524, Cl. 361-404.000.
Shiraki, Manabu; Nakajima, Akihiro; and Miyazawa, Takashi, to Sinano Denki Kabushiki Kaisha. Disk type motor speed detecting device. 4,499,420, Cl. 324-174.000.

Shiratori, Masayuki: *See*—
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Shiroi, Takashi: *See*—
Torii, Sigeru; Tanaka, Hideo; Nokami, Junzo; Shiroi, Takashi; Saito, Norio; and Sasaoka, Michio, 4,499,265, Cl. 544-16.000.
Shive, William, to Clayton Foundation for Research. Assessment of nutritional status of individuals. 4,499,064, Cl. 424-2.000.
Shoji, Akio: *See*—
Murakami, Yoichi; Shoji, Akio; Takezawa, Shoichiro; Ishikawa, Noboru; and Morita, Toshiaki, 4,499,239, Cl. 525-111.000.
Shonley, Ivan T.; and Rock, Orville J. Lifesaver trolling motor mount. 4,498,872, Cl. 440-63.000.
Shout, Robert S.: *See*—
Paparizos, Christos; Shout, Robert S.; and Shaw, Wilfrid G., 4,499,308, Cl. 568-465.000.
Shvets, Jury G.: *See*—
Starostin, Alexandr M.; Malakhov, Alexei M.; Chertilina, Tamara A.; Ponomar, Vladislav I.; Postolaty, Nikolai I.; Kuchuk-Yatsenko, Sergei I.; Peretrukhin, Filipp I.; Gluschenko, Anatoly D.; Solodovnikov, Sergei A.; Shvets, Jury G.; and Serafin, Orest M., 4,499,364, Cl. 219-161.000.
Sielaff, Ulrich, to United Steel Products Company. Junction plate. 4,498,800, Cl. 403-172.000.
Siemens Aktiengesellschaft: *See*—
Bruckhoff, Henning, 4,498,332, Cl. 73-40.000.
Eckert, Alfred; Heilmeir, Ernst; and Hempen, Klaus, 4,499,537, Cl. 364-200.000.
Ertl, Wilhelm, 4,498,232, Cl. 29-741.000.
Schneider, Alfred, 4,499,461, Cl. 340-825.030.
Schuss, Werner, 4,498,868, Cl. 433-29.000.
Winzer, Gerhard; and Tomkewitsch, Romuald V., 4,498,731, Cl. 350-96.160.
Sikonia, John G.; and Bennett, Richard W., to UOP Inc. Multiple-stage catalytic reforming with gravity-flowing dissimilar catalyst particles. 4,498,973, Cl. 208-63.000.
Silbering, Steven B.; and Sipos, Tibor, to Johnson & Johnson Products, Inc. Oral compositions comprising N^G-acyl derivatives of arginine. 4,499,067, Cl. 424-52.000.
Silbering, Steven B.; and Sipos, Tibor, to Johnson & Johnson Products, Inc. Oral compositions comprising N^G-alkyl derivatives of arginine. 4,499,068, Cl. 424-52.000.
Silicon Technology Corporation: *See*—
Kachajian, George S.; Steere, Robert E., Jr.; and Charles, Wesley, 4,498,449, Cl. 125-13.000.
Silver, William, to Thomson-Leeds Company Inc. Modular shelf structure. 4,498,593, Cl. 211-49.00D.
Simmonds, Oliver E. Self locking nut including an axially extending reinforcement. 4,498,826, Cl. 411-301.000.
Simms, Charles C., to United States of America, Navy. Retrieval tool for socket contacts. 4,498,233, Cl. 29-747.000.
Simon-Hartley Limited: *See*—
Atkinson, Bernard; Black, Geoffrey M.; Pinches, Anthony; and Lewis, Paul J. S., 4,498,985, Cl. 210-151.000.
Simonsen, Knud: *See*—
Norrie, Lyle W.; Snider, Robert W.; and Simonsen, Knud, 4,498,378, Cl. 99-472.000.
Simonsson, Berit I.: *See*—
Lundin, Claes O. A.; and Simonsson, Berit I., 4,499,250, Cl. 526-209.000.
Simpson Strong-Tie Company, Inc.: *See*—
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Sinano Denki Kabushiki Kaisha: *See*—
Shiraki, Manabu; Nakajima, Akihiro; and Miyazawa, Takashi, 4,499,420, Cl. 324-174.000.
Sinclair, Paul L., to Schlumberger Technology Corporation. Digital induction logging system including means for generating a plurality of transmitter frequencies. 4,499,421, Cl. 324-339.000.
Sinclair, Paul L., to Schlumberger Technology Corporation. Digital induction logging tool including means for compensating for phase shift errors. 4,499,422, Cl. 324-339.000.
Singer Company, The: *See*—
Glore, Thomas G., 4,498,682, Cl. 279-1.00K.
Schneider, George W., Jr, 4,498,346, Cl. 73-861.010.
Sipos, Tibor: *See*—
Silbering, Steven B.; and Sipos, Tibor, 4,499,067, Cl. 424-52.000.
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Sirai, Sirou, to Secom Co., Ltd. Pattern comparison ultrasonic surveillance system with noise suppression. 4,499,564, Cl. 367-93.000.
Sitzmann, Michael E.; and Gilligan, William H., to United States of America, Navy. Derivatives of energetic orthoformates. 4,499,309, Cl. 568-590.000.
Skinner, Christopher A., to Extracorporeal Medical Specialties, Inc. Reverse osmosis water purification system. 4,498,982, Cl. 210-96.200.
Skinner, James L., to Atlantic Richfield Company. Method for deactivating and controlling the dusting tendencies of dried particulate lower rank coal. 4,498,905, Cl. 44-1.00C.
Skjold, A. Christopher; Stover, Lonnie R.; and Trimmer, Robert W., to Miles Laboratories, Inc. Test for esterase activity in a liquid sample. 4,499,185, Cl. 435-19.000.
Skolnick, Saul; and Goodman, Albert, to Southwest Energy Group, Ltd. Energy transfer through a multi-layer liner for shaped charges. 4,498,367, Cl. 86-1.00R.
Skosey, John L.: *See*—
Teodorescu, Marius C.; Gaspar, Alexander M.; Spear, Gregory T.; Ganea, Doina; and Skosey, John L., 4,499,186, Cl. 435-23.000.
Slavik, William H., to Nuvatec, Inc. Recreational vehicle power control system. 4,499,385, Cl. 307-10.00R.
SMA Controls Inc.: *See*—
Brennan, Albert T., 4,498,820, Cl. 409-179.000.
Smith, Barry L.; Hoelscher, James R.; and Petit, William A., to General Signal Corporation. Microprocessor based track circuit for occupancy detection and bidirectional code communication. 4,498,650, Cl. 246-122.00R.
Smith, Earnest L. Gourmet hot tamale machine. 4,498,377, Cl. 99-450.700.
Smith, George B., II, to Drug Concentrates, Inc. Openable flexible packet. 4,498,591, Cl. 206-620.000.
Smith Kline & French Laboratories Limited: *See*—
Durant, Graham J.; and Ganellin, Charon R., 4,499,101, Cl. 514-374.000.
Smith, Lawrence N., to Sperry Corporation. Method of manufacturing super-conductive tunnel junction devices with precise junction area control. 4,499,119, Cl. 427-63.000.
Smith, Lawrence N.: *See*—
Jillie, Don W., Jr.; and Smith, Lawrence N., 4,498,228, Cl. 29-577.00C.
Smith, Paul R., to General Motors Corporation. Electro-optical method and apparatus for measuring the fit of adjacent surfaces. 4,498,776, Cl. 356-375.000.
Smith, Paul R.; and Froes, Francis H., to United States of America, Air Force. Titanium metal-matrix composites. 4,499,156, Cl. 428-614.000.
Smith, Richard L.: *See*—
Sexton, Robert W.; and Smith, Richard L., 4,499,031, Cl. 261-66.000.
Smith, Robert J., to Lucas Industries public limited Company. Dual brake valves. 4,498,710, Cl. 303-6.00R.
Smith, Robert L.: *See*—
Raba, Carl F., Jr.; Smith, Robert L.; and Huang, Francis Y., 4,498,993, Cl. 210-710.000.
Smith, Robert N., to Philip Morris Incorporated. Tobacco bale steam injection. 4,498,486, Cl. 131-300.000.
Smith, Stanley, to Rolls-Royce Limited. Fuel/oil heat exchange system for an engine. 4,498,525, Cl. 165-39.000.
Snap-on Tools Corporation: *See*—
Bendickson, Roy B.; and Wridt, Alfred A., 4,498,244, Cl. 33-203.130.
Snapper Power Equipment, Division of Fuqua Industries, Inc.: *See*—
Rouse, Russell V., 4,498,552, Cl. 180-70.100.
Snavely, Earl S., Jr.: *See*—
Jones, Timothy A.; and Snavely, Earl S., Jr., 4,499,059, Cl. 423-226.000.
Snider, Robert W.: *See*—
Norrie, Lyle W.; Snider, Robert W.; and Simonsen, Knud, 4,498,378, Cl. 99-472.000.
Snow, Craig A.: *See*—
Dickinson, Robert V.; Galie, Louis M.; and Snow, Craig A., 4,499,553, Cl. 364-900.000.
Soca, Serge: *See*—
Favreau, Michel; Bajon, Jean; and Soca, Serge, 4,499,486, Cl. 358-37.000.
Societa' Cavi Pirelli S.p.A.: *See*—
Lanfranconi, Gianmario; and Monti, Giuseppe, 4,498,812, Cl. 405-168.000.
Societe Anonyme Dite "Manufacture de Produits Chimiques Protex": *See*—
Tesson, Gerard; and Joseph, Christian, 4,499,246, Cl. 525-486.000.
Societe Cortial, S.A.: *See*—
Creuzet, Marie-Helene; Feniou, Claude; Jarry, Christian; Prat, Gisele; and Pontagnier, Henri, 4,499,090, Cl. 514-210.000.
Societe des Ateliers de Construction: *See*—
Haulotte, Georges, 4,498,596, Cl. 212-189.000.
Societe D'Etudes Scientifiques et Industrielles de l'Ile de France: *See*—
Thominet, Michel L.; and Perrot, Jacques J., 4,499,019, Cl. 514-428.000.
Societe d'Exploitation des Machines Dubuit: *See*—
Rouly, Eric; and Douville, Jean-Pierre, 4,498,386, Cl. 101-40.000.
Societe ECA: *See*—
Darche, Michel J. P.; and Carlqvist, Stig, 4,498,297, Cl. 60-525.000.
Societe Francaise des Produits pour Catalyse Pro-Catalyse: *See*—
Toulhoat, Herve ; Jacquin, Yves; and Dupin, Thierry, 4,499,203, Cl. 502-247.000.
Societe Nationale des Poudres et Explosifs: *See*—
Burgard, Michel; Piteau, Marc D.; Rollat, Alain J.; and Senet, Jean-Pierre G., 4,499,057, Cl. 423-8.000.
Societe S.O.M.A.V.I.: *See*—
Pera, Jean; and Pera, Didier, 4,498,382, Cl. 100-117.000.
Sodeco-Saia, AG: *See*—
Portmann, Albert, 4,499,346, Cl. 200-67.00D.
Soennichsen, Rolf. Splicing apparatus for cross-flute corrugated board. 4,498,949, Cl. 156-462.000.
Sofranko, John A.: *See*—
Jones, C. Andrew; and Sofranko, John A., 4,499,322, Cl. 585-500.000.
Solir Corporation: *See*—
Diba, Keyvan T., 4,498,822, Cl. 410-2.000.
Solmat Systems, Ltd.: *See*—
Assaf, Gad; and Doron, Benjamin, 4,498,300, Cl. 60-641.800.
Solodovnikov, Sergei A.: *See*—
Starostin, Alexandr M.; Malakhov, Alexei M.; Chertilina, Tamara A.; Ponomar, Vladislav I.; Postolaty, Nikolai I.; Kuchuk-Yatsenko, Sergei I.; Peretrukhin, Filipp I.; Gluschenko, Anatoly D.;

Solodovnikov, Sergei A.; Shvets, Jury G.; and Serafin, Orest M., 4,499,364, Cl. 219-161.000.

Solomon, Stephen R.: *See—*
Del Tufo, Mark J.; Lake, Ralph J., Jr.; and Solomon, Stephen R., 4,498,802, Cl. 403-300.000.

Solvay & Cie (Societe Anonyme): *See—*
Obsomer, Marc, 4,499,045, Cl. 264-532.000.

Solymossy, Bela: *See—*
Gergo, Gyorgy; Nemeth, Jozsef; Sebestyen, Bela; and Solymossy, Bela, 4,498,391, Cl. 102-312.000.

Somerikko, Aarni: *See—*
Peltonen, Eero; Somerikko, Aarni; and Viitanen, Timo, 4,498,338, Cl. 73-432.00R.

Somfy: *See—*
Jacquel, Dominique, 4,499,463, Cl. 340-825.520.

Sony Corporation: *See—*
Gohda, Seiichi; and Ishiguro, Mamoru, 4,499,509, Cl. 360-72.100.
Shimada, Toshiyuki, 4,499,454, Cl. 340-347.0DD.

Soper, Louis H. Solar heating panel. 4,498,458, Cl. 126-429.000.

Sorelec: *See—*
Djelouah, Salah, 4,498,302, Cl. 60-671.000.

Sortwell, Edwin T., to Diachem Industries, Inc. Method of rapidly dissolving polymers in water. 4,499,214, Cl. 523-336.000.

Sou, Teho. Bottom box for pet cage. 4,498,422, Cl. 119-17.000.

Southgate, Peter D.; Fairbanks, David W.; Davis, Richard B.; and Beltz, John P., to RCA Corporation. Automatic stripe width reader. 4,498,779, Cl. 356-384.000.

Southwest Energy Group, Ltd.: *See—*
Skolnick, Saul; and Goodman, Albert, 4,498,367, Cl. 86-1.00R.

Spain, Raymond G.; and Massie, James E., to Hitco. Method and resin solution for splicing carbonized polyacrylonitrile material. 4,499,216, Cl. 523-437.000.

Spear, Gregory T.: *See—*
Teodorescu, Marius C.; Gaspar, Alexander M.; Spear, Gregory T.; Ganea, Doina; and Skosey, John L., 4,499,186, Cl. 435-23.000.

Spearhead Industries, Inc.: *See—*
Margolis, Mark D., 4,498,199, Cl. 2-69.000.

Spector, George: *See—*
Turpin, Robert, Sr.; and Spector, George, 4,499,456, Cl. 340-576.000.

Speller, David J.: *See—*
Ross, Richard J.; and Speller, David J., 4,498,536, Cl. 166-250.000.

Sperry Corporation: *See—*
Duncan, Damon H., 4,498,340, Cl. 73-504.000.
Jillie, Don W., Jr.; and Smith, Lawrence N., 4,498,228, Cl. 29-577.00C.
Peterson, Thomas D., 4,498,546, Cl. 174-35.00R.
Rao, Basrur R., 4,499,473, Cl. 343-754.000.
Sadler, Loren G., 4,498,630, Cl. 239-677.000.
Seymour, Shaun A.; and Greiner, James G., 4,498,830, Cl. 414-24.600.
Smith, Lawrence N., 4,499,119, Cl. 427-63.000.

Spicer, Leonard D.; Bennett, Dennis W.; and Davis, Jon F., to United States of America, Energy. Method of detecting sulfur dioxide. 4,499,190, Cl. 436-122.000.

Spiertz, Elisabeth J.: *See—*
Vollenbroek, Franciscus A.; and Spiertz, Elisabeth J., 4,499,177, Cl. 430-311.000.

Spikes, Warren W. Big bale retriever and stacker. 4,498,829, Cl. 414-24.500.

Spiro, Clifford L.; and Lamby, Edward J., to General Electric Company. Water soluble resols and method for producing them. 4,499,311, Cl. 568-660.000.

Spohn, Ralph J.: *See—*
Liu, Huei-Cheng; and Spohn, Ralph J., 4,499,317, Cl. 585-438.000.

Sprague, Peter W.; and Heikes, James E., to E. R. Squibb & Sons, Inc. 7-Oxabicycloheptane prostaglandin intermediates and method for preparing same. 4,499,292, Cl. 549-459.000.

Springstead, Thomas H.: *See—*
Kent, Gary D.; Intorp, Norbert B.; and Springstead, Thomas H., 4,498,935, Cl. 148-6.15Z.

SRI International: *See—*
Rambo, William R., 4,499,606, Cl. 455-277.000.

Stacey, Joseph M., to United States of America, National Aeronautics and Space Administration. Method of measuring sea surface water temperature with a satellite including wideband passive synthetic-aperture multichannel receiver. 4,499,470, Cl. 343-352.000.

Stahly, Barbara C.; and Stahly, G. Patrick, to Ethyl Corporation. Nucleophilic substitution process. 4,499,026, Cl. 260-465.00R.

Stahly, G. Patrick: *See—*
Stahly, Barbara C.; and Stahly, G. Patrick, 4,499,026, Cl. 260-465.00R.

Stal-Laval Turbin AB: *See—*
Brannstrom, Roine; and Kreij, Sven-Erik, 4,498,286, Cl. 60-39.100.
Kreij, Sven-Erik, 4,498,285, Cl. 60-39.100.

Stallard, Paul: *See—*
Worwood, Bryan H.; and Stallard, Paul, 4,498,495, Cl. 137-557.000.

Stamicarbon B.V.: *See—*
Loontjens, Jacobus A., 4,499,242, Cl. 525-289.000.

Standard Oil Company, The: *See—*
Paparizos, Christos; Shout, Robert S.; and Shaw, Wilfrid G., 4,499,308, Cl. 568-465.000.

Standard Oil Company (Indiana): *See—*
Klotz, Marvin R.; and Peters, Edwin F., 4,499,325, Cl. 585-671.000.
Melquist, John L., 4,499,326, Cl. 585-671.000.

Stanland, Andrew J.: *See—*
Chamberland, Roger R.; and Stanland, Andrew J., 4,498,491, Cl. 137-72.000.

Stant Inc.: *See—*
Harris, Robert S., 4,498,493, Cl. 137-469.000.

Starostin, Alexandr M.; Malakhov, Alexei M.; Chertilina, Tamara A.; Ponomar, Vladislav I.; Postolaty, Nikolai I.; Kuchuk-Yatsenko, Sergei I.; Peretrukhin, Filipp I.; Gluschenko, Anatoly D.; Solodovnikov, Sergei A.; Shvets, Jury G.; and Serafin, Orest M. Resistance welding apparatus for joining pipes end to end. 4,499,364, Cl. 219-161.000.

Stearns Manufacturing Company: *See—*
Evert, Karla R., 4,498,882, Cl. 441-116.000.

Steelcase Inc.: *See—*
Raftery, William B., 4,498,702, Cl. 297-312.000.

Steenhoek, Larry E.: *See—*
Yeung, Edward E.; Steenhoek, Larry E.; Woodruff, Steven D.; and Kuo, Jeng-Chung, 4,498,774, Cl. 356-368.000.

Steere, Robert E., Jr.: *See—*
Kachajian, George S.; Steere, Robert E., Jr.; and Charles, Wesley, 4,498,449, Cl. 125-15.000.

Steiner, Alois, to Sulzer-Ruti Machinery Works Ltd. Multiple longitudinal traversing shed weaving machine containing a weaving rotor. 4,498,501, Cl. 139-28.000.

Steinke, Hermann O.; Steinke, Roland; and Vornfett, Karl-Ulrich, to Justus Technik GmbH Industrie-Anlagen. Apparatus for cutting through rod or strand-like products. 4,498,362, Cl. 83-304.000.

Steinke, Roland: *See—*
Steinke, Hermann O.; Steinke, Roland; and Vornfett, Karl-Ulrich, 4,498,362, Cl. 83-304.000.

Steinmetz, Anthony; Arnold, Jacobus J.; Verweg, Fransiscus G. C.; and Groeneboer, Hendrik, to U.S. Philips Corporation. Electric connecting means. 4,498,727, Cl. 339-278.00C.

Stephen, George, Jr.: *See—*
Schlosser, Erich J.; and Stephen, George, Jr., 4,498,452, Cl. 126-9.00R.

Sterling Drug Inc.: *See—*
Wentland, Mark P.; and Bailey, Denis M., 4,499,091, Cl. 514-254.000.

Stern, Max H.: *See—*
Gabrielsen, Rolf S.; Graham, Patricia A.; Klijanowicz, James E.; and Stern, Max H., 4,499,304, Cl. 564-92.000.

Steudle, Ernst W., to U.S. Properties Inc. Mounting bracket assembly for fishing reels. 4,498,641, Cl. 242-106.000.

Stevens, Aaron A.; and Lawrence, Randall K., to Murray Ohio Manufacturing Co., The. Variator drive system. 4,498,889, Cl. 474-133.000.

Stewart, Biven. Reversible housing for evaporative cooler. 4,499,030, Cl. 261-3.000.

Stewart, Raymond S.: *See—*
Dowbenko, Rostyslaw; Stewart, Raymond S.; Hartman, Marvis E.; Gorman, Barbara; and Thomas, Stephen J., 4,499,150, Cl. 428-447.000.
Dowbenko, Rostyslaw; Stewart, Raymond S.; Hartman, Marvis E.; Gorman, Barbara; and Thomas, Stephen J., 4,499,151, Cl. 428-447.000.

Still, David W.; and Economopoulos, Peter C., to Honeywell Information Systems Inc. Programmable logic array with dynamic test capability in the unprogrammed state. 4,499,579, Cl. 371-15.000.

Stirbis, James S., to Adolph Coors Company. Cam assembly for skip-print mandrel wheel assembly. 4,498,387, Cl. 101-40.000.

Stock, Hugh J., to Pacer Technology and Resources, Inc. Dropper for cyanoacrylate adhesives. 4,498,609, Cl. 222-420.000.

Stockel, Richard F.; and Jelling, Murray. Anti-microbial compositions and associated methods for preparing the same and for the disinfecting of various objects. 4,499,077, Cl. 424-149.000.

Stoesser, Klaus; and Vinson, Heinz, to Battelle Institut e.V. Circuit arrangement for the electronic code locking of locks. 4,499,462, Cl. 340-825.310.

Stokes, Robert B.; Yen, Kuo-Hsiung; Lau, Kei-Fung; Kagiwada, Reynold S.; and Delaney, Michael J., to TRW Inc. Surface acoustic wave spectrum analyzer. 4,499,393, Cl. 310-313.00A.

Stone, Anthony B.: *See—*
Turner, Robert C.; Stone, Anthony B.; and Holman, Rury R., 4,498,904, Cl. 604-211.000.

Stover, Johannes H.; and Van Leeuwen, Johannes A., to U.S. Philips Corporation. Method of manufacturing a display tube. 4,498,884, Cl. 445-45.000.

Stover, Lonnie R.: *See—*
Skjold, A. Christopher; Stover, Lonnie R.; and Trimmer, Robert W., 4,499,185, Cl. 435-19.000.

Strammello, Peter, to Zenith Electronics Corporation. Switching diplexer for single antenna input television receivers. 4,499,495, Cl. 358-188.000.

Stratoflex, Inc.: *See—*
Cooke, Horise M., 4,498,691, Cl. 285-12.000.

Strausheim, Myron A., to American Desk Mfg. Co. Adjustable divider strip mounting for plastic trays. 4,499,128, Cl. 428-35.000.

Stricklin, Douglas K.: *See—*
Young, Roy E.; Stricklin, Douglas K.; and Givens, Henry M. W., 4,498,554, Cl. 180-236.000.

Subrick, Joseph: *See—*
Korpela, Thomas; and Subrick, Joseph, 4,498,816, Cl. 405-259.000.

Sugaya, Toshihiro, to Tokyo Shibaura Denki Kabushiki Kaisha. System for detecting position of a read-write head in seek operation on a disk memory having data servo spectors. 4,499,511, Cl. 360-78.000.

Sugihara, Atsushi: *See—*
Suzuki, Masamichi; Sugihara, Atsushi; Sano, Tadaaki; and Suzuki, Toshihiro, 4,499,123, Cl. 427-282.000.

Sugimoto, Yasuhiro, to Tokyo Shibaura Denki Kabushiki Kaisha. Variable gain control circuit. 4,499,429, Cl. 330-254.000.

Suginaka, Shunji: *See—*
Watanabe, Kazumasa; Deguchi, Hidetaka; and Suginaka, Shunji, 4,499,181, Cl. 430-558.000.

Sugiyama, Hiroyuki; Abe, Ryozo; and Yoshihara, Kenji, to Victor Company of Japan, Ltd. Apparatus for playing back video signals recorded on a rotary recording medium on several quasi-slow motion reproduction modes. 4,499,505, Cl. 358-342.000.

Sugiyama, Takashi, to Minolta Camera Kabushiki Kaisha. Blade cleaning apparatus. 4,498,760, Cl. 355-15.000.

Sugiyama, Terumasa: *See—*
Takahashi, Izumi; Nakayama, Kenichiro; Sugiyama, Terumasa; and Suzuki, Takanobu, 4,499,580, Cl. 371-17.000.

Sujansky, Daniel J.; and Rancourt, Martha W., to Ortho Diagnostic Systems Inc. Detecting intracellular antigens in swelled and fixed cells with labeled antibody. 4,499,183, Cl. 435-6.000.

Sullair Technology AB: *See—*
Schibbye, (Lars) Lauritz B.; and Englund, Rolf A., 4,498,849, Cl. 417-299.000.

Sulzer-Ruti Machinery Works Ltd.: *See—*
Steiner, Alois, 4,498,501, Cl. 139-28.000.

Sumitomo Bakelite Company Limited: *See—*
Yanagida, Tomomi; Ajiki, Mitunori; and Suzuki, Shigeru, 4,499,145, Cl. 428-418.000.

Sumitomo Chemical Company, Limited: *See—*
Iwata, Nobutoshi; Fukushima, Kiyoshi; Fujino, Shinji; Yamada, Takeshiro; Hao, Hideyuki; Tanaka, Shigeo; and Mitsuno, Tatsuyuki, 4,499,238, Cl. 525-98.000.
Kadokura, Hidekimi; and Umezaki, Hiroshi, 4,498,931, Cl. 106-307.000.
Sato, Hiroshi; Ishii, Norio; and Nakamura, Shyuzo, 4,499,321, Cl. 585-486.000.

Sumner, John H.: *See—*
Allen, Danny H.; and Sumner, John H., 4,498,504, Cl. 139-302.000.

Sun Chemical Corporation: *See—*
Mattis, Donald J., 4,498,726, Cl. 339-182.00R.

Sunami, Hideo: *See—*
Tamura, Masao; Yoshihiro, Naotsugu; Natsuaki, Nobuyoshi; Miyao, Masanobu; Ohkura, Makoto; Sunami, Hideo; and Tokuyama, Takashi, 4,498,951, Cl. 156-612.000.

Sunkara, Sai P.; and Prakash, Nellikunja J., to Merrell Dow Pharmaceuticals Inc. Process for treating diseases with ODC inhibitors. 4,499,072, Cl. 424-85.000.

Sunkist Growers, Inc.: *See—*
Miller, Dennis H.; and Mutka, Jerry R., 4,499,112, Cl. 426-276.000.

Sutherland, George H., to General Electric Company. Fixed track chain drive. 4,498,890, Cl. 474-140.000.

Sutherland, Robert L., to Federal Paper Board Co., Inc. Lock arrangement between two carton closure panels. 4,498,618, Cl. 229-40.000.

Suzansky, Vasily G.: *See—*
Lyakhevich, Genrikh D.; Suzansky, Vasily G.; and Kovalerchik, Vulf P., 4,499,218, Cl. 524-79.000.

Suzuki, Masami: *See—*
Yamaguchi, Nobutaka; Fujiyama, Masaaki; Tada, Sugihiko; Tadokoro, Eiichi; Ryoke, Katsumi; Utsumi, Masahiro; and Suzuki, Masami, 4,499,121, Cl. 427-130.000.

Suzuki, Masamichi; Sugihara, Atsushi; Sano, Tadaaki; and Suzuki, Toshihiro, to Alcan International Limited. Process for coating aluminum with zinc. 4,499,123, Cl. 427-282.000.

Suzuki, Masayuki; Yamamichi, Masayoshi; and Ohara, Tsunemasa, to Canon Kabushiki Kaisha. Light shielding device in single lens reflex camera. 4,498,750, Cl. 354-154.000.

Suzuki, Norimoto; and Inoue, Shunji, to Dai Nippon Insatsu Kabushiki Kaisha. Plastic relief card having metallic luster. 4,499,126, Cl. 428-13.000.

Suzuki, Shigeru: *See—*
Yanagida, Tomomi; Ajiki, Mitunori; and Suzuki, Shigeru, 4,499,145, Cl. 428-418.000.

Suzuki, Takanobu: *See—*
Takahashi, Izumi; Nakayama, Kenichiro; Sugiyama, Terumasa; and Suzuki, Takanobu, 4,499,580, Cl. 371-17.000.

Suzuki, Tomio; and Morimoto, Kotaro, to Kobe Steel, Limited. Method for controlling combustion in industrial furnaces. 4,498,861, Cl. 431-12.000.

Suzuki, Toshihiro: *See—*
Suzuki, Masamichi; Sugihara, Atsushi; Sano, Tadaaki; and Suzuki, Toshihiro, 4,499,123, Cl. 427-282.000.

Suzuki, Tsutomu, to Pioneer Electronic Corporation. Video format signal recording and reproduction system. 4,499,503, Cl. 358-316.000.

Suzuki, Yasutoshi; Hara, Kunihiko; and Sato, Ryo, to Nippondenso Co., Ltd. Mirror. 4,499,451, Cl. 340-98.000.

Suzuki, Yoshihisa; Yasui, Yoshiharu; and Takasu, Shigeru, to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho. Drafting apparatus in a spinning frame. 4,498,216, Cl. 19-244.000.

Suzuki, Yuichi: *See—*
Watanabe, Yasushi; Suzuki, Yuichi; Nagata, Yukihiro; and Hoshino, Kiyotaka, 4,498,519, Cl. 164-417.000.

Suzuki, Yukio: *See—*
Sakamaki, Hiroshi; and Suzuki, Yukio, 4,498,853, Cl. 418-268.000.

Suzuno, Yoshiro: *See—*
Ohkoshi, Masayoshi; and Suzuno, Yoshiro, 4,498,437, Cl. 123-373.000.

Sveinsbo, Gunnar: *See—*
Gismervik, Jan E.; and Sveinsbo, Gunnar, 4,499,348, Cl. 200-84.00C.

Swanson, Arthur P. Golf club. 4,498,673, Cl. 273-172.000.

Swanson, Mervin D. Penetration seal. 4,498,692, Cl. 285-20.000.

Swanson, Roy T., to S&C Electric Company. Pressure-operated switch for a high-voltage interrupting module. 4,499,446, Cl. 337-30.000.

Swiss Aluminium Ltd.: *See—*
Bjarnason, Gudmundur; and Eggertsson, Thorsteinn, 4,498,818, Cl. 406-137.000.
Paulet, Jean-Francois; and Eisenlohr, Othmar, 4,498,967, Cl. 204-272.000.

Syntex (U.S.A.) Inc.: *See—*
Kluge, Arthur F.; and Clark, Robin D., 4,499,100, Cl. 514-321.000.

Szabo, Steve B.: *See—*
Wells, Calvin G.; and Szabo, Steve B., 4,498,709, Cl. 301-5.0VH.

Szolgyen, Csaba: *See—*
Kiss, Laszlo; Faludi, Arpad; Grof, Gyula; Bolyo, Laszlo; Szolgyen, Csaba; Mihadak, Istvan; and Varga, Imre, 4,498,789, Cl. 374-164.000.

Szonnell, Henry H. Beach erosion prevention jetty configuration. 4,498,806, Cl. 405-34.000.

T.A.D. Avanti, Inc.: *See—*
Lyle, Stephen V., 4,499,335, Cl. 179-6.030.

Tabereaux, Alton T., to Reynolds Metals Company. Alumina reduction cell. 4,498,966, Cl. 204-243.00R.

Taboola Pty. Ltd.: *See—*
Preddey, Brian F.; and Mills, Laurence P., 4,498,327, Cl. 72-341.000.

Tabuchi, Kenji; Shida, Masami; and Ishii, Toshio, to Hitachi, Ltd. Method of controlling engine. 4,498,444, Cl. 123-478.000.

Tachibana, Kunitaka: *See—*
Minowa, Nobuto; Fukatsu, Shunzo; Tachibana, Kunitaka; Niida, Taro; and Mase, Sadaaki, 4,499,027, Cl. 260-502.50G.

Tacke, Peter; Korber, Helmut; Merten, Josef; and Neuray, Dieter, to Bayer Aktiengesellschaft. Polycarbonate-polyolefin moulding compositions. 4,499,237, Cl. 525-67.000.

Tada, Sugihiko: *See—*
Yamaguchi, Nobutaka; Fujiyama, Masaaki; Tada, Sugihiko; Tadokoro, Eiichi; Ryoke, Katsumi; Utsumi, Masahiro; and Suzuki, Masami, 4,499,121, Cl. 427-130.000.

Tadokoro, Eiichi: *See—*
Yamaguchi, Nobutaka; Fujiyama, Masaaki; Tada, Sugihiko; Tadokoro, Eiichi; Ryoke, Katsumi; Utsumi, Masahiro; and Suzuki, Masami, 4,499,121, Cl. 427-130.000.

Takada, Juichiro. Drive device for passive vehicle occupant restraint belt system. 4,498,690, Cl. 280-804.000.

Takahashi, Izumi; Nakayama, Kenichiro; Sugiyama, Terumasa; and Suzuki, Takanobu, to Fuji Xerox Co., Ltd. Output check apparatus for electrophotographic copier. 4,499,580, Cl. 371-17.000.

Takahashi, Nobuaki; and Shibamoto, Takeshi, to Victor Company of Japan, Ltd. Video signal recording and/or reproducing system. 4,499,506, Cl. 358-343.000.

Takahashi, Yonosuke: *See—*
Wada, Minoru; Takahashi, Yonosuke; and Hasegawa, Eiichi, 4,499,178, Cl. 430-495.000.

Takami, Toru: *See—*
Ohashi, Hiroyuki; Ohara, Ikuo; and Takami, Toru, 4,499,076, Cl. 424-143.000.

Takasu, Shigeru: *See—*
Suzuki, Yoshihisa; Yasui, Yoshiharu; and Takasu, Shigeru, 4,498,216, Cl. 19-244.000.

Takasugi, Hisashi: *See—*
Takaya, Takao; Takasugi, Hisashi; and Yamanaka, Hideaki, 4,499,088, Cl. 514-202.000.

Takatori, Yasushi; Yano, Yasuhiro; and Hattori, Yoshifumi, to Canon Kabushiki Kaisha. Liquid jet recording device. 4,499,480, Cl. 346-140.00R.

Takaya, Takao; Takasugi, Hisashi; and Yamanaka, Hideaki, to Fujisawa Pharmaceutical Co., Ltd. Cephem compounds. 4,499,088, Cl. 514-202.000.

Takayama, Makoto; Muramoto, Tomotaka; and Nishimura, Akimasa, to Canon Kabushiki Kaisha. Camera operable with flash and in daylight and tungsten modes. 4,499,487, Cl. 358-41.000.

Takeda, Susumu; Mann, Allen W.; Goodrich, David G.; and Zinniger, Theodore C., to Kaiser Aluminum & Chemical Corporation. Molten metal level control in continuous casting. 4,498,521, Cl. 164-453.000.

Takekawa, Hiroshi: *See—*
Banno, Taiichi; Hijikata, Kazuo; and Takekawa, Hiroshi, 4,498,780, Cl. 356-414.000.

Takeya, Yasushi: *See—*
Yamanaka, Takashi; Takeya, Yasushi; Yorita, Mitsumasa; Horiuchi, Toshiaki; Inagaki, Kouichi; Naya, Eizo; Demizu, Michinosuke; and Okumura, Mitsuhiro, 4,499,009, Cl. 252-512.000.

Takezawa, Shoichiro: *See—*
Murakami, Yoichi; Shoji, Akio; Takezawa, Shoichiro; Ishikawa, Noboru; and Morita, Toshiaki, 4,499,239, Cl. 525-111.000.

Taki, Yoshihiro: *See—*
Miyakawa, Susumu; Fukuta, Toshiaki; Akado, Hajime; and Taki, Yoshihiro, 4,498,989, Cl. 210-450.000.

Takikawa, Osamu: *See—*
Katsura, Masaki; Harata, Mituo; Takikawa, Osamu; and Shiratori, Masayuki, 4,499,054, Cl. 422-98.000.

Talke, Frank E.: *See—*
Chee-Shuen Lee, Francis; Mills, Ross N.; and Talke, Frank E., 4,499,479, Cl. 346-140.00R.

Tamura, Koichi, to Tokico Ltd. Disc brake subassembly having friction pad retaining means. 4,498,564, Cl. 188-73.320.

Tamura, Masao; Yoshihiro, Naotsugu; Natsuaki, Nobuyoshi; Miyao, Masanobu; Ohkura, Makoto; Sunami, Hideo; and Tokuyama, Takashi, to Hitachi, Ltd. Method of manufacturing single-crystal film. 4,498,951, Cl. 156-612.000.

Tanaka, Hideo: *See*—
Torii, Sigeru; Tanaka, Hideo; Nokami, Junzo; Shiroi, Takashi; Saito, Norio; and Sassoka, Michio, 4,499,265, Cl. 544-16.000.

Tanaka, Hiroaki; and Akita, Shigeyuki, to Nippon Soken, Inc. Capacitive-type incremental and reference angular rotation detecting apparatus. 4,499,465, Cl. 340-870.370.

Tanaka, John S. Smoke mask. 4,498,472, Cl. 128-205.170.

Tanaka, Masayuki: *See*—
Mashimo, Satoshi; Tanaka, Masayuki; and Kinoshita, Takashi, 4,498,891, Cl. 474-205.000.

Tanaka, Megumu: *See*—
Akita, Shinji; and Tanaka, Megumu, 4,498,324, Cl. 72-208.000.

Tanaka, Munekazu: *See*—
Igarashi, Kazumasa; Yamaguchi, Katsuhiko; and Tanaka, Munekazu, 4,499,252, Cl. 528-38.000.

Tanaka, Naoki: *See*—
Imanishi, Masami; and Tanaka, Naoki, 4,498,310, Cl. 62-211.000.

Tanaka, Nobuyasu; Ohashi, Mitunari; and Iwamoto, Shohzoh, to Fuji Electric Co., Ltd. Commodity rack for automatic vending machines. 4,498,569, Cl. 193-27.000.

Tanaka, Nobuyoshi; and Kinoshita, Takao, to Canon Kabushiki Kaisha. Solid state image sensing device. 4,499,496, Cl. 358-213.000.

Tanaka, Norio: *See*—
Fujii, Takayuki; and Tanaka, Norio, 4,498,700, Cl. 296-78.100.

Tanaka, Shigeo: *See*—
Iwata, Nobutoshi; Fukushima, Kiyoshi; Fujino, Shinji; Yamada, Takeshiro; Hao, Hideyuki; Tanaka, Shigeo; and Mitsuno, Tatsuyuki, 4,499,238, Cl. 525-98.000.

Tanaka, Toshiaki; Fukai, Masao; Onuma, Tatsuro; and Kinoshita, Ryohei, to Fujitsu Limited. Item input device for a data processing system. 4,498,256, Cl. 40-475.000.

Tanaka, Toyomi: *See*—
Kojima, Katsuhiko; Tanaka, Toyomi; and Nakajima, Shigeo, 4,498,509, Cl. 141-10.000.

Tanaka, Tsuneo: *See*—
Nakamura, Yukio; and Tanaka, Tsuneo, 4,499,136, Cl. 428-206.000.

Tanaka, Tsutomu; Tsujimoto, Yoshinobu; Serizawa, Hiroyuki; and Hattori, Katsuji, to Matsushita Electric Industrial Co., Ltd. Optical switching device. 4,498,730, Cl. 350-96.160.

Tani, Katsuya: *See*—
Saitoh, Minoru; Arimatsu, Yoshikazu; Tani, Katsuya; and Mitamura, Hideyuki, 4,499,221, Cl. 524-109.000.

Tanikawa, Shoji: *See*—
Enomoto, Ryo; Yamauchi, Hidetoshi; and Tanikawa, Shoji, 4,499,147, Cl. 428-428.000.

Tanino, Katsumi; Fujiki, Satoshi; and Okamoto, Shinzi, to Toyama Prefecture; and Hokuriku Electric Industry Co., Ltd. Conductive paint. 4,499,010, Cl. 252-512.000.

Tanizawa, Tetsu; Omichi, Hitoshi; and Mitono, Yoshiharu, to Fujitsu Limited. Integrated circuit manufactured by master slice method. 4,499,484, Cl. 357-68.000.

Tank, Gene F.; Dawson, Samuel O.; and Barnett, Phillip R., to Nordson Corporation. Apparatus for filtering air for a powder spray booth. 4,498,913, Cl. 55-356.000.

Tarnay, Denes, to General Electric Company. Lamp unit having glass reflector member with recessed base end. 4,499,526, Cl. 362-263.000.

Tartar, Andre: *See*—
Duflot, Anabela; Gras, Helene; Tartar, Andre; Duflot, Edith; and Boquet, Patrice, 4,499,080, Cl. 514-12.000.

Tatara, Yoshikuni, to Ricoh Company, Ltd. Semiautomatic paper setting system. 4,498,795, Cl. 400-637.100.

Tauber, Richard J.; and Rosborg, Daniel J., to Cooper Industries, Inc. Airport runway/taxiway edge light fixture. 4,499,527, Cl. 362-267.000.

Tauschel, Horst-Dietmar: *See*—
Barth, Hubert; Hartenstein, Johannes; Satzinger, Gerhard; Fritschi, Edgar; Ganser, Volker; Tauschel, Horst-Dietmar; and Wolf, Gunter, 4,499,089, Cl. 514-222.000.

Tawada, Yoshihisa: *See*—
Hamakawa, Yoshihiro; and Tawada, Yoshihisa, 4,499,331, Cl. 136-258.000.

Taylor, Henry D.: *See*—
Breeden, Robert H.; and Taylor, Henry D., 4,498,370, Cl. 91-171.000.

Techmark Corporation: *See*—
Roth, Reinhold C.; and Terra, Richard F., 4,498,864, Cl. 432-8.000.

Techne Corporation: *See*—
de Bruyne, Norman A., 4,498,785, Cl. 366-274.000.

Technical Arts Corporation: *See*—
White, Steven J., 4,498,778, Cl. 356-376.000.

Teijin Limited: *See*—
Sasaki, Hideharu; and Shimada, Keizo, 4,498,957, Cl. 162-146.000.

Teijin Seiki Company, Limited: *See*—
Yamamoto, Shigeru; Miyake, Yuzuru; and Nohara, Isao, 4,498,637, Cl. 242-18.100.

Tektronix, Inc.: *See*—
Eriksen, Joern B.; and Radochonski, Pierre, 4,499,501, Cl. 358-302.000.
Schlotzhauer, Kenneth G.; and Metz, Arthur J., 4,499,386, Cl. 307-260.000.

Tel Aviv University: *See*—
Kosower, Edward M.; Pazhenchevsky, Barak; and Hershkowitz, Eli, 4,499,284, Cl. 548-359.000.

Teletype Corporation: *See*—
McGovern, William E.; and Tsao, Kuey Y., 4,498,767, Cl. 356-121.000.

Tellis, Cyril B.: *See*—
Garska, Daniel C.; and Tellis, Cyril B., 4,499,316, Cl. 585-415.000.

Temme, Karl; Beckschafer, Klaus; and Pruller, Helmut, to Carl Kurt Walther GmbH & Co. KG. Vibratory container for flocculation of the waste water obtained upon vibratory abrasive finishing. 4,498,986, Cl. 210-199.000.

TenBarge, John S.: *See*—
Mackal, Glenn H.; and TenBarge, John S., 4,498,605, Cl. 222-5.000.

Tendler, Robert K. Wall hanger. 4,498,655, Cl. 248-467.000.

Teng, Chuan C., to Dailey Petroleum Services Corp. Well jar incorporating elongate resilient vibration snubbers and mounting apparatus therefor. 4,498,548, Cl. 175-299.000.

Tenold, Robert A., to Cutter Laboratories, Inc. Intravenously injectable immune serum globulin. 4,499,073, Cl. 424-85.000.

Teodorescu, Marius C.; Gaspar, Alexander M.; Spear, Gregory T.; Ganea, Doina; and Skosey, John L., to University of Illinois, Board of Trustees. Diagnosing autoimmune rheumatoid arthritis by measuring proteolytic activity of α_2-macroglobulin. 4,499,186, Cl. 435-23.000.

Terasaki, Kazunori: *See*—
Kodama, Ikuo; Muramatsu, Shigeru; Terasaki, Kazunori; and Morita, Takayuki, 4,498,283, Cl. 57-261.000.

Terminal Data Corporation: *See*—
Therien, Robert D.; Langford, Forrest L.; Motamed, Armond; and Williams, Robert D., 4,498,761, Cl. 355-24.000.

Terra, Richard F.: *See*—
Roth, Reinhold C.; and Terra, Richard F., 4,498,864, Cl. 432-8.000.

Teschendorf, Hans-Juergen: *See*—
Treiber, Hans J.; Hofmann, Hans P.; Kreiskott, Horst; Teschendorf, Hans-Juergen; and Traut, Martin, 4,499,087, Cl. 514-211.000.

Tesson, Gerard; and Joseph, Christian, to Societe Anonyme Dite "Manufacture de Produits Chimiques Protex". Epoxy resins containing as a latent catalyst/accelerator halogenobisphenates of tertiary amines. 4,499,246, Cl. 525-486.000.

Testa, Raymond T.: *See*—
Lee, May D.; Martin, John H.; Borders, Donald B.; Yao, Raymond C.; and Testa, Raymond T., 4,499,075, Cl. 424-118.000.

Tetenbaum, Marvin T.; and Crowley, Burlon C., to NL Industries, Inc. Water dispersible, modified polyurethane and a thickened aqueous composition containing it. 4,499,233, Cl. 524-591.000.

Texaco Canada Resources Ltd.: *See*—
Bialek, Rene F., 4,498,958, Cl. 196-46.000.

Texaco Inc.: *See*—
Dominguez, Richard J. G.; McEntire, Edward E.; and Naylor, Carter G., 4,499,254, Cl. 528-49.000.
Helms, David A.; Hatton, Gregory J.; and Williams, Thomas M., 4,499,418, Cl. 324-58.50A.
McDaniel, Kenneth G., 4,499,264, Cl. 536-50.000.

Texas Instruments Incorporated: *See*—
Dyer, Lawrence D.; and McGregor, Anderson D., 4,498,345, Cl. 73-849.000.
Fischer, Georg, 4,498,574, Cl. 198-380.000.
Gilbert, Don M., 4,498,791, Cl. 400-124.000.
Lisauskas, Richard J., 4,499,517, Cl. 361-24.000.

Textron Inc.: *See*—
Chaplin, John B.; and Ganczak, Edward G., 4,498,873, Cl. 440-82.000.

Theodor Groz & Sohne & Ernst Beckert Nadelfabrik Commandit-Gesellschaft: *See*—
Wohlgemuth, Werner, 4,498,315, Cl. 66-121.000.

Therien, Robert D.; Langford, Forrest L.; Motamed, Armond; and Williams, Robert D., to Terminal Data Corporation. Cine-mode camera. 4,498,761, Cl. 355-24.000.

Thielen, Gerd: *See*—
Geraris, Wilhelm; Thielen, Gerd; and Derichs, Eberhard, 4,498,527, Cl. 165-89.000.

Thiokol Corporation: *See*—
White, C. Max, 4,498,292, Cl. 60-256.000.

Thom, Elmar: *See*—
Fischer, Willy G.; and Thom, Elmar, 4,498,842, Cl. 416-155.000.

Thoma, Peter, to Maag Gear-Wheel & Machine Company Limited. Control arrangement for a gear testing machine. 4,498,335, Cl. 73-162.000.

Thomas, John M.: *See*—
Ballantine, James A.; Purnell, John H.; and Thomas, John M., 4,499,319, Cl. 585-467.000.

Thomas, Robert T.: *See*—
Frost, Paul T.; and Thomas, Robert T., 4,499,376, Cl. 250-341.000.

Thomas, Stephen J.: *See*—
Dowbenko, Rostyslaw; Stewart, Raymond S.; Hartman, Marvis E.; Gorman, Barbara; and Thomas, Stephen J., 4,499,150, Cl. 428-447.000.
Dowbenko, Rostyslaw; Stewart, Raymond S.; Hartman, Marvis E.; Gorman, Barbara; and Thomas, Stephen J., 4,499,151, Cl. 428-447.000.

Thominet, Michel L.; and Perrot, Jacques J., to Societe D'Etudes Scientifiques et Industrielles de l'Ile de France. N-(1-allyl-2-pyrrolidylmethyl)-2,3-dimethoxy-5-sulfamoylbenzamide and derivatives thereof and method for treating hot flushes associated with natural or surgical menopause. 4,499,019, Cl. 514-428.000.

Thompson, Craig D., to Minnesota Mining and Manufacturing Company. Cable tie. 4,498,507, Cl. 140-93.200.

Thompson, William J., to Rockwell International Corporation. PLL Phase error alarm related to associated receiver. 4,499,434, Cl. 331-17.000.

Thomson-CSF: *See*—
Favreau, Michel; Bajon, Jean; and Soca, Serge, 4,499,486, Cl. 358-37.000.
Le Berre, Serge; and Hareng, Michel, 4,499,458, Cl. 340-713.000.

Thomson, David W.; and Trimble, Donald E., to Harris Corporation. System for linearizing sweep of voltage controlled oscillator. 4,499,435, Cl. 331-44.000.

Thomson-Leeds Company Inc.: *See*—
Silver, William, 4,498,593, Cl. 211-49.00D.

Thoni, Werner; Huber, Peter; and Hohenegger, Karl, to Balzers Aktiengesellschaft. Optical element. 4,498,728, Cl. 350-1.700.

Thut, Robert S.: *See*—
Cheshire, James O.; Lindgren, Douglas L.; Marinack, Robert J.; Janda, Bruce W.; Thut, Robert S.; Larkey, John T.; and Jostad, Ray E., 4,498,956, Cl. 162-101.000.

Thysen, Albert A. P.; and Timmermans, Gilbert L. J., to ITT Industries, Inc. Laundry handling machine, rotational speed reduction arrangement and rinsing device. 4,498,317, Cl. 68-12.00R.

Thyssen Industrie AG: *See*—
Piepenbreier, Ernst, 4,498,562, Cl. 188-58.000.

Timian, Steven S.: *See*—
Moody, Roy A.; Bulanda, John J.; Levin, Robert F.; Timian, Steven S.; and Waltasti, Stephen A., 4,498,506, Cl. 140-93.200.

Timmermans, Gilbert L. J.: *See*—
Thysen, Albert A. P.; and Timmermans, Gilbert L. J., 4,498,317, Cl. 68-12.00R.

Tissot, Raymond, to Robert Bosch GmbH. Fuel injection pump. 4,498,442, Cl. 123-447.000.

Toa Nenryo Kogyo Kabushiki Kaisha: *See*—
Okumura, Yoshiharu; Kamiyama, Setsuo; Hosokawa, Toshihiro; and Kaneko, Katsumi, 4,499,313, Cl. 568-897.000.

Todd, Bradley L., to Halliburton Company. Sludge lance with multiple nozzle jet head. 4,498,427, Cl. 122-379.000.

Togano, Shigeo: *See*—
Matsufuji, Yohji; Togano, Shigeo; and Ichihashi, Hiroo, 4,499,478, Cl. 346-140.00R.

Tokano, Motoharu; and Kushima, Keiichi, to Q. P. Corporation. Continuous sterilizing apparatus using hot water. 4,499,056, Cl. 422-299.000.

Tokico Ltd.: *See*—
Kiba, Hiroshi; Itoh, Yoshimasa; and Kiryu, Kiyuji, 4,498,414, Cl. 118-663.000.
Tamura, Koichi, 4,498,564, Cl. 188-73.320.

Tokuyama, Takashi: *See*—
Tamura, Masao; Yoshihiro, Naotsugu; Natsuaki, Nobuyoshi; Miyao, Masanobu; Ohkura, Makoto; Sunami, Hideo; and Tokuyama, Takashi, 4,498,951, Cl. 156-612.000.

Tokyo Shibaura Denki Kabushika Kaisha: *See*—
Hashizume, Kenichi, 4,498,456, Cl. 126-425.000.

Tokyo Shibaura Denki Kabushiki: *See*—
Yokota, Tsuneshi, 4,499,571, Cl. 369-54.000.

Tokyo Shibaura Denki Kabushiki Kaisha: *See*—
Hidaka, Yoshiharu, 4,499,350, Cl. 200-144.0AP.
Hosoya, Masshiro; and Ueno, Tsuyoshi, 4,498,756, Cl. 355-3.0DD.
Inoue, Tomoyasu; and Shibata, Kenji, 4,498,226, Cl. 29-576.00B.
Izume, Takatomo; and Okado, Chihiro, 4,499,363, Cl. 219-130.210.
Katsura, Masaki; Harata, Mituo; Takikawa, Osamu; and Shiratori, Masayuki, 4,499,054, Cl. 422-98.000.
Koike, Hideharu, 4,499,416, Cl. 323-303.000.
Konishi, Satoshi, 4,499,387, Cl. 307-443.000.
Maeguchi, Kenji, 4,498,224, Cl. 29-571.000.
Morinaga, Kaoru, 4,499,573, Cl. 369-270.000.
Sasaki, Minoru; and Kamiya, Toshiharu, 4,499,459, Cl. 340-752.000.
Sugaya, Toshihiro, 4,499,511, Cl. 360-78.000.
Sugimoto, Yasuhiro, 4,499,429, Cl. 330-254.000.
Watanabe, Junji, 4,498,665, Cl. 271-289.000.

Tokyo Yogyo Kabushiki Kaisha: *See*—
Yoshihara, Tetsuya, 4,498,611, Cl. 222-599.000.

Toll, Ian C., to Futaire Limited. Aircraft seating. 4,498,649, Cl. 244-118.600.

Tomar, Julius, to Home of Champions, S.A. Process for coating ball cores. 4,498,667, Cl. 273-60.00B.

Tomassi, Roberto; and Martin, Claude, to Mead Corporation, The. Article carrier. 4,498,582, Cl. 206-427.000.

Tomcufcik, Andrew S.; Meyer, Walter E.; and Eudy, Nancy H., to American Cyanamid Company. 2-(Pyridyl)imidazolyl ketones. 4,499,097, Cl. 514-341.000.

Tomita, Katsuhiko: *See*—
Miyatake, Kimio; and Tomita, Katsuhiko, 4,499,379, Cl. 250-343.000.

Tomkewitsch, Romuald V.: *See*—
Winzer, Gerhard; and Tomkewitsch, Romuald V., 4,498,731, Cl. 350-96.160.

Tomko, Bela; Marai, Geza; and Karacsonyi, Bela. Phosphorous-nitroferous solid fodder composition and process for its production. 4,499,110, Cl. 426-69.000.

Tomono, Makoto: *See*—
Haneda, Satoshi; Itaya, Masahiko; and Tomono, Makoto, 4,499,169, Cl. 430-102.000.

Tong, Hua S., to Revere Copper and Brass Incorporated. Aluminum-manganese-tin alloys with improved pitting corrosion resistance. 4,499,050, Cl. 420-528.000.

Tong, Hua S., to Revere Copper and Brass Incorporated. Pitting resistant aluminum alloys. 4,499,051, Cl. 420-540.000.

Topper, Robert J.: *See*—
Dischert, Robert A.; and Topper, Robert J., 4,499,494, Cl. 358-164.000.

Torii, Sigeru; Tanaka, Hideo; Nokami, Junzo; Shiroi, Takashi; Saito, Norio; and Sassoka, Michio, to Otsuka Kagaku Yakuhin Kabushiki Kaisha. Process for preparing 3-exo-methylenecepham derivatives. 4,499,265, Cl. 544-16.000.

Torino, Arthur J., Jr.; Bouchard, George A.; and Keane, Philip A., to Raytheon Company. Method of producing velocity-aided range gates. 4,499,466, Cl. 343-7.300.

Toropov, Gennady A.; and Shamenko, Stepan P. Thread-rolling tool. 4,498,322, Cl. 72-118.000.

Torrington Company, The: *See*—
Pastor, William, 4,498,888, Cl. 464-112.000.

Toshima, Shinobu: *See*—
Itaya, Kingo; Shibayama, Kimio; Toshima, Shinobu; Ataka, Tatsuaki; and Iwasa, Koji, 4,498,739, Cl. 350-357.000.

Toso Kabushiki Kaisha: *See*—
Mase, Ryoichi, 4,498,517, Cl. 160-294.000.

Toulhoat, Herve ; Plumail, Jean-Claude; Billon, Alain; and Quignard, Alain, to Institut Francais du Petrole. Hydrotreatment process for converting a heavy hydrocarbon fraction containing sulfur impurities and metal impurities to a lighter oil, in at least two steps. 4,498,972, Cl. 208-59.000.

Toulhoat, Herve ; Jacquin, Yves; and Dupin, Thierry, to Societe Francaise des Produits pour Catalyse Pro-Catalyse. Supported catalyst of increased resistance to poisons, useful for hydrotreating metal-containing oil fractions. 4,499,203, Cl. 502-247.000.

Tovalin, Jose L. L.: *See*—
Martinez-Vera, Enrique; Guerra-Garcia, Gilberto; and Tovalin, Jose L. L., 4,498,498, Cl. 137-613.000.

Towmotor Corporation: *See*—
Johannson, Richard J., 4,498,838, Cl. 414-664.000.

Toyama Prefecture: *See*—
Tanino, Katsumi; Fujiki, Satoshi; and Okamoto, Shinzi, 4,499,010, Cl. 252-512.000.

Toyo Boseki Kabushiki Kaisha: *See*—
Saitoh, Minoru; Arimatsu, Yoshikazu; Tani, Katsuya; and Mitamura, Hideyuki, 4,499,221, Cl. 524-109.000.

Toyoda Koki Kabushiki Kaisha: *See*—
Nomura, Kenji; Yamakage, Tetsuro; and Noro, Katsuyoshi, 4,498,571, Cl. 198-339.000.
Yamamoto, Katsumi; Komatsu, Yuichiro; and Hamada, Ikuro, 4,498,259, Cl. 51-165.710.

Toyohisa, Shirou: *See*—
Fujita, Kiyoshi; Toyohisa, Shirou; Katou, Osamu; and Ishimaru, Kenji, 4,498,988, Cl. 210-397.000.

Toyokoki Co., Ltd.: *See*—
Nagakura, Seiju, 4,498,328, Cl. 72-482.000.

Toyota Jidosha Kabushiki Kaisha: *See*—
Kashiwagi, Hiroo, 4,498,243, Cl. 33-203.120.
Nakamura, Norihiko; and Baika, Toyokazu, 4,498,431, Cl. 123-90.150.
Sato, Kunihiko, 4,498,438, Cl. 123-418.000.

Toyota Jidosha Kogyo Kabushiki Kaisha: *See*—
Katagiri, Masayoshi; and Kondo, Toshio, 4,498,559, Cl. 188-1.110.

Toyotomi Kogyo Co., Ltd.: *See*—
Nakamura, Kazuharu; and Nakanishi, Yutaka, 4,498,862, Cl. 431-88.000.

TP Laboratories, Inc.: *See*—
Kesling, Peter C., 4,498,867, Cl. 433-16.000.

Trahan, Wilson J. Wireline catcher. 4,498,563, Cl. 188-65.100.

Trane Company, The: *See*—
Fiegen, Donald S.; and Ware, Chester D., 4,498,220, Cl. 29-157.30C.

Traunecker, Werner; Frolke, Wilhelm; Kreuzer, Heinrich; and Kollmer, Hans P., to Boehringer Ingelheim KG. Lipolytic composition and method of treating obesity. 4,499,106, Cl. 514-603.000.

Traut, Martin: *See*—
Treiber, Hans J.; Hofmann, Hans P.; Kreiskott, Horst; Teschendorf, Hans-Juergen; and Traut, Martin, 4,499,087, Cl. 514-211.000.

Trautman, Robert D., to Boeing Company, The. Retractable vertical restraint mechanism for an aircraft cargo system. 4,498,823, Cl. 410-84.000.

Treiber, Hans J.; Hofmann, Hans P.; Kreiskott, Horst; Teschendorf, Hans-Juergen; and Traut, Martin, to BASF Aktiengesellschaft. 7-Phenyl-7-phenoxymethyl-hexahydro-1,4-oxazepines and their use. 4,499,087, Cl. 514-211.000.

Trenwyth Industris, Inc.: *See*—
Kingston, Alan C., 4,499,142, Cl. 428-331.000.

Treuner, Uwe D.: *See*—
Breuer, Hermann; Denzel, Theodor; and Treuner, Uwe D., 4,499,016, Cl. 260-239.00A.

Trimble, Donald E.: *See*—
Thomson, David W.; and Trimble, Donald E., 4,499,435, Cl. 331-44.000.

Trimmer, Robert W.: *See*—
Skjold, A. Christopher; Stover, Lonnie R.; and Trimmer, Robert W., 4,499,185, Cl. 435-19.000.

Tripp, Jeff; Allen, John; and Murphy, F. Merrick. Apparatus for providing extended versatility in a keyboard-controlled musical instrument in pitch variation, tone alteration characteristics and the like. 4,498,365, Cl. 84-1.240.

TRW Inc.: *See—*
Stokes, Robert B.; Yen, Kuo-Hsiung; Lau, Kei-Fung; Kagiwada, Reynold S.; and Delaney, Michael J., 4,499,393, Cl. 310-313.00A.
Wesson, Laurence N., 4,498,348, Cl. 73-862.050.

Tsao, Kuey Y.: *See—*
McGovern, William E.; and Tsao, Kuey Y., 4,498,767, Cl. 356-121.000.

Tsay, Yuh-Geng: *See—*
Calenoff, Emanuel; Jones, Ruth M.; Tsay, Yuh-Geng; and Beigler, Myron A., 4,499,065, Cl. 424-9.000.

Tsubata, Noritaka, to Yoshida Kogyo K. K. Apparatus for manufacturing a woven slide fastener stringer. 4,498,502, Cl. 139-35.000.

Tsubouchi, Kuniyoshi, to Hitachi, Ltd. Cooling device of steam turbine. 4,498,301, Cl. 60-657.000.

Tsuchikura, Akira: *See—*
Ogawa, Masaki; Hirata, Yasushi; and Tsuchikura, Akira, 4,499,228, Cl. 524-413.000.

Tsuchiya, Toshiharu; and Iwata, Mamoru, to Shinryo Seikan Kabushiki Kaisha. Detection of improper coating of sealing composition on can end disks. 4,498,415, Cl. 118-712.000.

Tsujimoto, Yoshinobu: *See—*
Tanaka, Tsutomu; Tsujimoto, Yoshinobu; Serizawa, Hiroyuki; and Hattori, Katsuji, 4,498,730, Cl. 350-96.160.

Tsukada, Katsushige: *See—*
Ishimaru, Toshiaki; Tsukada, Katsushige; Hayashi, Nobuyuki; Koibuchi, Shigeru; and Isobe, Asao, 4,499,163, Cl. 430-5.000.

Tsurukawa, Ikuya: *See—*
Ohno, Yoshimi; Tsurukawa, Ikuya; and Ishino, Tokio, 4,498,754, Cl. 354-479.000.

Tubular Specialties Mfg., Inc.: *See—*
Cooper, Leo, 4,498,654, Cl. 248-251.000.

Tuchman, Samuel: *See—*
Perlov, Gena; and Tuchman, Samuel, 4,498,850, Cl. 417-322.000.

Tucker, Alfred D., to RIS Irrigation Systems Pty Ltd. Butterfly sprinkler. 4,498,628, Cl. 239-381.000.

Turner, George F. A. M., to Ciba-Geigy A.G. Fixed focus enlarger. 4,498,763, Cl. 355-55.000.

Turner, Robert C.; Stone, Anthony B.; and Holman, Rury R. Dose metering plunger devices for use with syringes. 4,498,904, Cl. 604-211.000.

Turpin, Robert, Sr.; and Spector, George. Driver alert. 4,499,456, Cl. 340-576.000.

Tyree, Lewis, Jr. Refrigerated transport. 4,498,306, Cl. 62-119.000.

U.S.D. Corp.: *See—*
Kranz, Max L.; and Gadberry, Donald L., 4,498,471, Cl. 128-204.260.

Ubakata, Tadayoshi: *See—*
Sakano, Riichi; and Ubakata, Tadayoshi, 4,498,311, Cl. 62-227.000.

Ube Industries Ltd.: *See—*
Nakamura, Yukio; and Tanaka, Tsuneo, 4,499,136, Cl. 428-206.000.

Ueda, Katsuroh, to Matsushita Electric Industrial Co., Ltd. Cooking appliance. 4,498,453, Cl. 126-21.00A.

Uehara, Makoto, to Nippon Kogaku K.K. Illumination optical arrangement. 4,498,742, Cl. 350-523.000.

Uehara, Makoto; and Anzai, Satoru, to Nippon Kogaku K.K. Projection type exposure apparatus. 4,498,762, Cl. 355-53.000.

Uemura, Fumiko: *See—*
Omura, Ikuo; Yamauchi, Junichi; Nagase, Yoshinori; and Uemura, Fumiko, 4,499,251, Cl. 526-278.000.

Uemura, Takeshi: *See—*
Onda, Kenichi; Abe, Kojin; Yabuno, Kohei; and Uemura, Takeshi, 4,499,530, Cl. 363-17.000.

Ueno, Tsuyoshi: *See—*
Hosoya, Masahiro; and Ueno, Tsuyoshi, 4,498,756, Cl. 355-3.0DD.

Uhlin, Bernt E.; Nordstrom, Kurt; and Molin, Soeren, to A/S Alfred Benzon. Bacteria carrying plasmid having temperature dependent plasmid copy number. 4,499,189, Cl. 435-253.000.

Umeda, Hiroyuki, to Victor Company of Japan, Ltd. Recording and/or reproducing apparatus. 4,499,513, Cl. 360-96.300.

Umezaki, Hiroshi: *See—*
Kadokura, Hidekimi; and Umezaki, Hiroshi, 4,498,931, Cl. 106-307.000.

Umezawa, Hamao; Okami, Yoshiro; and Kondo, Shinichi, to Zaidan Hojin Biseibutsu Kagaku Kenkyu Kai. 3-O-Demethyl derivatives of the istamycin B series of compounds. 4,499,083, Cl. 514-36.000.

Ungar, Israel S.: *See—*
O'Dell, Robin D.; Ungar, Israel S.; and Scher, Herbert I., 4,499,137, Cl. 428-211.000.

Union Carbide Canada Limited: *See—*
Brema, Robert J.; Adamson, Gerald J.; Poissant, Philip L.; and Cleminson, John H., 4,498,660, Cl. 256-19.000.

Union Carbide Corporation: *See—*
Forte, Paulino, 4,498,980, Cl. 208-321.000.
Fuderer, Andrija, 4,499,208, Cl. 502-415.000.
Garska, Daniel C.; and Lok, Brent M., 4,499,315, Cl. 585-415.000.
Garska, Daniel C.; and Tellis, Cyril B., 4,499,316, Cl. 585-415.000.
Kaiser, Steven W., 4,499,327, Cl. 585-640.000.
Kirkpatrick, Robert D.; and Weiler, David W., 4,499,035, Cl. 261-114.0JP.
Koerwer, John F., 4,498,920, Cl. 71-66.000.
Maresca, Louis M., 4,499,257, Cl. 528-173.000.
Senuma, Akitaka; and Aizawa, Takao, 4,499,210, Cl. 521-91.000.

Union Oil Company of California: *See—*
Pye, David S.; Ash, Donald L.; and Rardin, Robert W., 4,498,543, Cl. 166-376.000.
Watkins, David R.; and Kalfayan, Leonard J., 4,498,538, Cl. 166-295.000.

Union Special G.m.b.H.: *See—*
Von Hagen, Wolf R., 4,498,406, Cl. 112-256.000.

Unisearch Limited: *See—*
Minh, Thi H.; Cole, Edward R.; and Crank, George, 4,499,115, Cl. 426-546.000.

U.S. Industrial Products Co.: *See—*
Hosoya, Toshiro, 4,498,330, Cl. 73-23.000.

United States of America
Air Force: *See—*
Kahan, Alfred, 4,499,395, Cl. 310-361.000.
Marvel, Carl S.; and Lin, See, 4,499,258, Cl. 528-173.000.
Merritt, Francis L.; and Ducati, Adriano C., 4,499,334, Cl. 174-111.000.
Montana, Donald M.; and Herd, Randy S., 4,499,468, Cl. 343-15.000.
Smith, Paul R.; and Froes, Francis H., 4,499,156, Cl. 428-614.000.

Army: *See—*
Gutierrez, William A.; and Wilson, Herbert L., 4,498,225, Cl. 29-572.000.
Holl, Herbert B., 4,498,768, Cl. 356-141.000.
Rittenbach, Otto, 4,499,467, Cl. 343-9.00R.

Energy: *See—*
Christiansen, David W., 4,498,834, Cl. 414-291.000.
Materna, Peter A., 4,499,443, Cl. 335-216.000.
McAllister, John E., Jr., 4,499,034, Cl. 261-109.000.
Spicer, Leonard D.; Bennett, Dennis W.; and Davis, Jon F., 4,499,190, Cl. 436-122.000.

Interior: *See—*
Oden, Laurance L.; and Dunning, John S., 4,498,928, Cl. 75-124.000.

National Aeronautics and Space Administration: *See—*
Achar, Bappalige N.; Fohlen, George M.; and Parker, John A., 4,499,260, Cl. 528-229.000.
Parthasarathy, Shakkottai P., 4,498,333, Cl. 73-40.50A.
Rand, James L., 4,498,231, Cl. 29-610.0SG.
Rowlette, John J., 4,499,424, Cl. 324-427.000.
Stacey, Joseph M., 4,499,470, Cl. 343-352.000.

Navy: *See—*
Abbott, Frank R., 4,499,566, Cl. 367-165.000.
Bloomer, James W., II; and Nunn, Robert H., 4,498,329, Cl. 73-9.000.
Chamberland, Roger R.; and Stanland, Andrew J., 4,498,491, Cl. 137-72.000.
Doane, William J., 4,498,368, Cl. 89-1.817.
Greene, Richard F., 4,499,481, Cl. 357-22.000.
Howarth, Robert F., 4,499,584, Cl. 375-58.000.
Simms, Charles C., 4,498,233, Cl. 29-747.000.
Sitzmann, Michael E.; and Gilligan, William H., 4,499,309, Cl. 568-590.000.

U.S. Philips Corporation: *See—*
Boonstra, Alexander H.; Mutsaers, Cornelis A. H. A.; and van der Kruijs, Franciscus N. G. R., 4,499,011, Cl. 252-518.000.
Braat, Josephus J. M., 4,499,574, Cl. 369-275.000.
Brettschneider, Horst; and Hartl, Walter, 4,499,592, Cl. 378-121.000.
Demmer, Walter; Gutsmann, Rolf D.; and Lenth, Jurgen, 4,499,427, Cl. 329-107.000.
Dijkstra, Kees; and Garenfeld, Andreas J., 4,498,296, Cl. 60-521.000.
Garskamp, Arnoldus, 4,499,605, Cl. 455-210.000.
Kowalski, Gunter, 4,499,540, Cl. 364-414.000.
Schouhamer Immink, Kornelis A.; and Aarts, Ronaldus M., 4,499,570, Cl. 369-48.000.
Steinmetz, Anthony; Arnold, Jacobus J.; Verweg, Fransiscus G. C.; and Groeneboer, Hendrik, 4,498,727, Cl. 339-278.00C.
Stover, Johannes H.; and Van Leeuwen, Johannes A., 4,498,884, Cl. 445-45.000.
van der Heijden, Antonius W. F., 4,499,402, Cl. 313-414.000.
Vollenbroek, Franciscus A.; and Spiertz, Elisabeth J., 4,499,177, Cl. 430-311.000.

U.S. Properties Inc.: *See—*
Steudle, Ernst W., 4,498,641, Cl. 242-106.000.

United States Steel Corporation: *See—*
Korpela, Thomas; and Subrick, Joseph, 4,498,816, Cl. 405-259.000.

United Steel Products Company: *See—*
Sielaff, Ulrich, 4,498,800, Cl. 403-172.000.

United Technologies Corporation: *See—*
Fisher, James E., 4,498,790, Cl. 384-428.000.
Grudkowski, Thomas W., 4,499,440, Cl. 333-151.000.
Guertin, Joseph J.; and Provencal, Earl J., 4,498,617, Cl. 228-119.000.
Holiday, Paul R., deceased; Holliday, Suzanne N., executrix; and Kear, Bernard H., 4,499,155, Cl. 428-586.000.

Universal Filters, Inc.: *See—*
Rosaen, Lars O., 4,498,497, Cl. 137-599.100.

Universite Paris X - Paris: *See—*
Herve, Philippe, 4,498,765, Cl. 356-43.000.

University of Illinois, Board of Trustees: *See—*
Teodorescu, Marius C.; Gaspar, Alexander M.; Spear, Gregory T.; Ganea, Doina; and Skosey, John L., 4,499,186, Cl. 435-23.000.

University of Manchester Institute of Science and Technology, The: *See—*
Atkinson, Bernard; Black, Geoffrey M.; Pinches, Anthony; and Lewis, Paul J. S., 4,498,985, Cl. 210-151.000.

University of Nottingham: *See—*
Wright, Arthur; and Christopoulos, Christos, 4,499,417, Cl. 324-52.000.

Unterleitner, Fred C., to Becton, Dickinson and Company. Light beam focal spot elongation in flow cytometry devices. 4,498,766, Cl. 356-73.000.

UOP Inc.: *See—*
Frame, Robert R., 4,498,977, Cl. 208-207.000.
Frame, Robert R., 4,498,978, Cl. 208-207.000.
Leyerle, Richard W., 4,499,201, Cl. 502-180.000.
Malloy, Thomas P.; and Engel, Dusan J., 4,499,300, Cl. 562-495.000.
Oroskar, Anil R., 4,498,991, Cl. 210-659.000.
Sikonia, John G.; and Bennett, Richard W., 4,498,973, Cl. 208-63.000.

Upjohn Company, The: *See—*
Johnson, Roy A.; Lincoln, Frank H.; and Pike, John E., 4,499,293, Cl. 549-465.000.

USM Corporation: *See—*
Shields, Thomas A., 4,499,353, Cl. 206-470.000.

Utsumi, Masahiro: *See—*
Yamaguchi, Nobutaka; Fujiyama, Masaaki; Tada, Sugihiko; Tadokoro, Eiichi; Ryoke, Katsumi; Utsumi, Masahiro; and Suzuki, Masami, 4,499,121, Cl. 427-130.000.

Vacuum Furnace System Corporation: *See—*
Gibb, Thomson B., 4,499,369, Cl. 219-552.000.

Valentine, Robert H., to Hercules Incorporated. Low density, polybutadiene based, wet filament winding resin. 4,499,240, Cl. 525-193.000.

Valeo: *See—*
Jacquet, Maurice, 4,498,528, Cl. 165-42.000.
Renaud, Pierre, 4,498,565, Cl. 192-98.000.
Renaud, Pierre, 4,498,566, Cl. 192-98.000.

Vallee, Robert G., to George P. Johnson Co. Display turntable. 4,498,398, Cl. 104-44.000.

Valone, Frederick W.; and Rutledge, Joseph. Corrosion inhibitors. 4,499,006, Cl. 252-392.000.

Vancil, Paul W.: *See—*
Marouf, Mohamed A.; and Vancil, Paul W., 4,499,578, Cl. 370-62.000.

van der Heijden, Antonius W. F., to U.S. Philips Corporation. Color display tube. 4,499,402, Cl. 313-414.000.

van der Kruijs, Franciscus N. G. R.: *See—*
Boonstra, Alexander H.; Mutsaers, Cornelis A. H. A.; and van der Kruijs, Franciscus N. G. R., 4,499,011, Cl. 252-518.000.

Vanderspurt, Thomas H.; Richard, Michael A.; and Montagna, Angelo A., to Exxon Research & Engineering Co. Leached catalyst for ammonia synthesis. 4,499,204, Cl. 502-301.000.

Van Dijk, Alfonsius A. J., to Johannes Menschner Maschinenfabrik GMBH & Co. KG. Seam-detecting device for interconnected sections of sheet material. 4,498,240, Cl. 33-147.00L.

van Dijk, Petrus R. M., to AMP Incorporated. Electrical connector for an electronic package. 4,498,721, Cl. 339-75.0MP.

Van Leeuwen, Johannes A.: *See—*
Stover, Johannes H.; and Van Leeuwen, Johannes A., 4,498,884, Cl. 445-45.000.

Vanlerberghe, Guy: *See—*
Sebag, Henri; and Vanlerberghe, Guy, 4,499,070, Cl. 424-70.000.

Van Noten, Lodewijk: *See—*
Moisson, Marc; Van Noten, Lodewijk; Overbergh, Noel; Franckx, Joris; and Buekers, Valere, 4,498,938, Cl. 156-49.000.

van Rijswijk, Jacob, to Jacotra A. G. Fluid containing string with opening to pass fluid from core. 4,499,144, Cl. 428-376.000.

Varco International, Inc.: *See—*
Zimmermann, Abraham, 4,498,698, Cl. 294-82.00R.

Varga, Imre: *See—*
Kiss, Laszlo; Faludi, Arpad; Grof, Gyula; Bolyo, Laszlo; Szolgyen, Csaba; Mihadak, Istvan; and Varga, Imre, 4,498,789, Cl. 374-164.000.

Varian Associates, Inc.: *See—*
Hertel, Richard J., 4,498,833, Cl. 414-217.000.

Varma, Ravi K., to E. R. Squibb & Sons, Inc. 17β(Substituted thio)-16-ketoandrostene-17α..-carboxylic acid derivatives. 4,499,021, Cl. 260-397.100.

Vater, George R.; and Melles, Harold W., to International Harvester Company. Motor vehicle transmission. 4,498,356, Cl. 74-745.000.

Vaughn, James N., to Caslin, Richard L. Transparent perspective tracing board. 4,498,238, Cl. 33-1.00K.

VEB Kombinat Textima: *See—*
Schadlich, Gotthard, 4,498,254, Cl. 38-14.000.

Veenhof, Willem D. Scraping devices for conveyor belt and pulley drum. 4,498,577, Cl. 198-499.000.

Verdier, Jean-Michel: *See—*
Grosbois, Jean; Jacubert, Serge; and Verdier, Jean-Michel, 4,499,063, Cl. 423-347.000.

Ver Planck, H. T.: *See—*
Botterman, D. L.; Wolff, N. A.; and Ver Planck, H. T., 4,498,420, Cl. 119-15.000.

Verweg, Fransiscus G. C.: *See—*
Steinmetz, Anthony; Arnold, Jacobus J.; Verweg, Fransiscus G. C.; and Groeneboer, Hendrik, 4,498,727, Cl. 339-278.00C.

Verwer, Andreas N. J.; and Evers, Johannes T. M., to DSM Resins B.V. Polyester in-mould coating powder. 4,499,235, Cl. 525-38.000.

Vestergaard, Alex D., to Ingeniorfirmaet Lytzen K.S. Shaft seal. 4,498,678, Cl. 277-3.000.

Vickers, Incorporated: *See—*
Breeden, Robert H.; and Taylor, Henry D., 4,498,370, Cl. 91-171.000.

Vickers PLC of Vickers House: *See—*
Brake, Arthur L., 4,498,814, Cl. 405-224.000.

Victor Company of Japan, Ltd.: *See—*
Shimada, Kengo; Chiba, Yutaka; and Sanuki, Toshio, 4,498,363, Cl. 84-1.010.
Sugiyama, Hiroyuki; Abe, Ryozo; and Yoshihara, Kenji, 4,499,505, Cl. 358-342.000.
Takahashi, Nobuaki; and Shibamoto, Takeshi, 4,499,506, Cl. 358-343.000.
Umeda, Hiroyuki, 4,499,513, Cl. 360-96.300.
Yamada, Yasuhiro; and Mori, Takaro, 4,499,507, Cl. 360-26.000.

Vierling, Karl-Heinz: *See—*
Karning, Heinrich; Prein, Franz; and Vierling, Karl-Heinz, 4,499,582, Cl. 372-93.000.

Viitanen, Timo: *See—*
Peltonen, Eero; Somerikko, Aarni; and Viitanen, Timo, 4,498,338, Cl. 73-432.00R.

Vincent, Kent D., to Hewlett-Packard Company. Infrared source element. 4,499,382, Cl. 250-493.100.

Vinson, Heinz: *See—*
Stoesser, Klaus; and Vinson, Heinz, 4,499,462, Cl. 340-825.310.

Visilox Systems, Inc.: *See—*
Goodale, Robert H.; and DuJack, James M., 4,499,148, Cl. 428-447.000.

Vitale, Carmela. Package saver. 4,498,586, Cl. 206-525.000.

Vogt, Robert L., to General Electric Company. Fuel injection staged sectoral combustor for burning low-BTU fuel gas. 4,498,288, Cl. 60-39.060.

Vojacek, Herbert: *See—*
Hentschel, Karl-Heinz; Dhein, Rolf; Winter, Hans; and Vojacek, Herbert, 4,499,000, Cl. 252-73.000.

Volkmann, Robert A.: *See—*
Pirie, Donald K.; Volkmann, Robert A.; and Kleinman, Edward F., 4,499,017, Cl. 260-245.20R.

Vollenbroek, Franciscus A.; and Spiertz, Elisabeth J., to U.S. Philips Corporation. Method of manufacturing a semiconductor device. 4,499,177, Cl. 430-311.000.

Volvo Penta AB: *See—*
Pichl, Heinz, 4,498,874, Cl. 440-83.000.

von Bieren, Karlheinz, to Rockwell International Corporation. Pencil beam interferometer. 4,498,773, Cl. 356-360.000.

von Bonin, Wulf; Mummenhoff, Peter; Beck, Ulrich; and Baumgen, Heinz, to Bayer Aktiengesellschaft. Sizes. 4,499,153, Cl. 428-479.600.

Von Hagen, Wolf R., to Union Special G.m.b.H. Sewing machine lubrication system. 4,498,406, Cl. 112-256.000.

von Laufenberg, Jurgen: *See—*
Christophliemk, Peter; Novotny, Rudolf; von Laufenberg, Jurgen; and Sadlowsky, Josef, 4,499,062, Cl. 423-332.000.

Vorhauer, Hans, to Maschinenfabrik Alfred Schmermund GmbH & Co. Device for supplying and for bringing together a web of packaging material and a tear strip web. 4,498,274, Cl. 53-412.000.

Vornfett, Karl-Ulrich: *See—*
Steinke, Hermann O.; Steinke, Roland; and Vornfett, Karl-Ulrich, 4,498,362, Cl. 83-304.000.

Vorwerk, Frederick E.; and Mundloch, James D., to ACF Industries, Incorporated. Hopper slope sheet support and connecting means. 4,498,400, Cl. 105-248.000.

Vosacek, Robert H., to International Business Machines Corporation. Method and apparatus for limiting allocated data-storage space in a data-storage unit. 4,499,539, Cl. 364-200.000.

Vrolyk, John J., to Rockwell International Corporation. Emission controller for indirect fired downhole steam generators. 4,498,531, Cl. 166-59.000.

Vyzkumny ustav zuslechtovaci: *See—*
Dvorsky, Drahomir; and Cerovsky, Karel, 4,499,282, Cl. 548-336.000.

W. F. Altenpohl, Inc.: *See—*
Altenpohl, Paul J., 4,498,578, Cl. 198-680.000.

W. R. Grace & Co.: *See—*
Hawkes, J. Barry, Jr., 4,499,036, Cl. 264-26.000.
Kim, Gwan; Pereira, Carmo J.; Hegedus, Louis; and Maselli, James M., 4,499,206, Cl. 502-304.000.
Seese, Mark A.; and Chiang, Robert L., 4,499,197, Cl. 502-65.000.

W. Schlafhorst & Co.: *See—*
Kupper, Wilhelm; and Koslowski, Gerhard, 4,498,644, Cl. 242-131.100.

Wada, Minoru; Takahashi, Yonosuke; and Hasegawa, Eiichi, to Fuji Photo Film Co., Ltd. Optical information recording material. 4,499,178, Cl. 430-495.000.

Wagner, Kuno: *See—*
Kerimis, Dimitrios; Muller, Hanns P.; and Wagner, Kuno, 4,499,253, Cl. 528-45.000.
Schafer, Walter; Meiners, Hans-Joachim; Seel, Klaus; Reichmann, Wolfgang; Wagner, Kuno; and Findeisen, Kurt, 4,499,038, Cl. 264-51.000.

Wagner, Theresia K. Sunscreen cover apparatus for an evaporative cooler. 4,498,912, Cl. 55-233.000.

Wagner, Wolfgang: *See—*
Kock, Wulf; Schmidberger, Rainer; and Wagner, Wolfgang, 4,498,395, Cl. 102-517.000.

Waibel, Helmut K., to Durango Systems, Inc. Printer feeder. 4,498,794, Cl. 400-629.000.

Wakabayashi, Takao, to Nakanishi Metal Works Co., Ltd. Free line switch arrangement for power-and-free trolley conveyor. 4,498,399, Cl. 104-96.000.

Wakamatsu, Kazutoshi: *See*—
Kamo, Yuichi; Mikami, Nobuo; Wakamatsu, Kazutoshi; and Naito, Kunio, 4,499,442, Cl. 335-79.000.

Walch, Axel; Seifried, Walter; Michel, Wolfgang; Kuhls, Jurgen; and Wildhardt, Jurgen, to Hoechst Aktiengesellschaft. Open-cell/microporous molded article. 4,499,211, Cl. 521-145.000.

Walker, Charles F.: *See*—
Leveille, Michael A.; and Walker, Charles F., 4,499,455, Cl. 340-531.000.

Walker, Michael L., to Halliburton Company. Method and composition for acidizing subterranean formations. 4,498,997, Cl. 252-8.55C.

Walker, Wellington J.; and Whitehouse, George M., deceased (by Whitehouse, Barbara J., executor), to LFE Corporation. Automatic lock for two mode piston pump. 4,498,354, Cl. 74-625.000.

Wall, Helmut: *See*—
Schmidhuber, Karl; Wall, Helmut; and Demovic, Vojtech, 4,498,703, Cl. 297-328.000.

Wallach, Steven J.: *See*—
Bachman, Brett L.; Belgard, Richard A.; Bernstein, David H.; Bratt, Richard G.; Clancy, Gerald F.; Gavrin, Edward S.; Gruner, Ronald H.; Jones, Thomas M.; Mundie, Craig J.; Nealon, James T.; Pilat, John F.; Schleimer, Stephen I.; and Wallach, Steven J., 4,499,535, Cl. 364-200.000.
Clancy, Gerald F.; Gruner, Ronald H.; Schleimer, Stephen I.; Mundie, Craig J.; Wallach, Steven J.; Wallach, Walter A., Jr.; Ahlstrom, John K.; Richmond, Michael S.; Bernstein, David H.; and Bratt, Richard G., 4,499,604, Cl. 364-200.000.

Wallach, Walter A., Jr.: *See*—
Clancy, Gerald F.; Gruner, Ronald H.; Schleimer, Stephen I.; Mundie, Craig J.; Wallach, Steven J.; Wallach, Walter A., Jr.; Ahlstrom, John K.; Richmond, Michael S.; Bernstein, David H.; and Bratt, Richard G., 4,499,604, Cl. 364-200.000.

Walsh, LaVerne E., to General Electric Company. Incandescent lamp with ceramic base. 4,499,404, Cl. 313-579.000.

Waltasti, Stephen A.: *See*—
Moody, Roy A.; Bulanda, John J.; Levin, Robert F.; Timian, Steven S.; and Waltasti, Stephen A., 4,498,506, Cl. 140-93.200.

Walter Eckold GmbH & Co. KG: *See*—
Reccius, Helmut; and Ponitzsch, Werner, 4,498,325, Cl. 72-302.000.

Walter, Henry J., to Clairol Incorporated. Heated personal care appliances. 4,499,355, Cl. 219-10.49R.

Walters, Donald N.; and Link, Theodore P. Shopping cart incorporating removable skid, runner or ski attachment. 4,498,688, Cl. 280-7.120.

Wamsley, Richard D.; and Polman, David J., to Harris Graphics Corporation. Signature handling apparatus for detection of short signature groups. 4,498,663, Cl. 270-54.000.

Wang, Chun S.; Pham, Ha Q.; and Bertram, James L., to Dow Chemical Company, The. Preparation of epoxy resins. 4,499,255, Cl. 528-95.000.

Warabi, Junichi: *See*—
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Ward, Irl E.; and Papoojian, Philip M., to J. T. Baker Chemical Company. Pellicle compositions and pellicles thereof for projection printing. 4,499,231, Cl. 524-506.000.

Ward, Marvin W. Data monitoring connector for testing transmission links. 4,498,716, Cl. 339-17.00R.

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Leflar, James A.; and Wardlow, William C., 4,498,265, Cl. 52-403.000.

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Warncke, Ernst, to Dragerwerk AG. Respirator having circulating breathing gas. 4,498,470, Cl. 128-202.260.

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Barth, Hubert; Hartenstein, Johannes; Satzinger, Gerhard; Fritschi, Edgar; Ganser, Volker; Tauschel, Horst-Dietmar; and Wolf, Gunter, 4,499,089, Cl. 514-222.000.
Cheng, Chia C.; and Zee-Cheng, Robert K., 4,499,266, Cl. 544-126.000.
Eoga, Anthony B. J., 4,499,001, Cl. 252-99.000.
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Warner, Stanley H. Adjustable position physical support system. 4,498,204, Cl. 4-559.000.

Wartelle, Claude; and Favey, Charles, to Centre Technique Des Industries Mecaniques. Ball and socket joint and method of forming it. 4,498,799, Cl. 403-140.000.

Warwick, David R. Door repair system. 4,498,694, Cl. 292-337.000.

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Langley, Keith W.; and Washbourn, Jack, 4,498,711, Cl. 303-13.000.

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Muhs, Harvey P., Jr.; and Watson, Charles K., 4,499,474, Cl. 343-771.000.

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Webb, Paul P.: *See*—
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Weber, Georg: *See*—
Haas, Gunther; and Weber, Georg, 4,499,004, Cl. 252-299.100.

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Schneider, Philip H.; Weber, J. William; and Massaro, Thomas A., 4,498,843, Cl. 417-22.000.

Weber S.P.A.: *See*—
Franchini, Mauro; Sarasso, Angelo; and Puccetti, Angelo, 4,498,439, Cl. 123-438.000.

Weber-Stephen Products Co.: *See*—
Schlosser, Erich J.; and Stephen, George, Jr., 4,498,452, Cl. 126-9.00R.

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DiNicolantonio, Arthur R.; and Wei, Victor K., 4,499,055, Cl. 422-197.000.

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Weinstein, Paul; and Kelmachter, Barry L., to Olin Corporation. Method and apparatus for laser sizing of optical fibers. 4,498,917, Cl. 65-2.000.

Weir, Frederick E. Breakwater module and means for protecting a shoreline therewith. 4,498,805, Cl. 405-31.000.

Weiss, Leslie. Twin dental brush. 4,498,209, Cl. 15-167.00A.

Wellendorf, Klaus: *See*—
Gall, Winrich; and Wellendorf, Klaus, 4,499,489, Cl. 358-75.000.

Weller, Harold N., III: *See*—
Gordon, Eric M.; and Weller, Harold N., III, 4,499,079, Cl. 514-2.000.

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Wells, Calvin G.; and Szabo, Steve B., to Rockwell International Corporation. Axle for use with a tire inflation system. 4,498,709, Cl. 301-5.0VH.

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Proksch, Hans-Jorg; Welte, Dieter; Zimmer, Herbert; and Lotz, Michael, deceased, 4,498,646, Cl. 244-35.00R.

Weltec Digital, Inc.: *See*—
Harding, Philip A.; and Schupak, Leonard, 4,499,510, Cl. 360-77.000.

Wentland, Mark P.; and Bailey, Denis M., to Sterling Drug Inc. 1-Amino (or substituted amino)-1,4-dihydro-4-oxo-6-fluoro-7-heteryl-quinoline-3-carboxylic acids and their use as antibacterial agents. 4,499,091, Cl. 514-254.000.

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Pav, Josef; Schmitz, Wimmar; and Wenzel, Reinhard, 4,498,383, Cl. 100-162.00B.

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Rudolph, Joachim, 4,498,783, Cl. 366-132.000.

Werner, William A., to Werner, William A. Sign standard for supporting and displaying a sign. 4,498,657, Cl. 248-623.000.

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Gunnewig, Hubert, 4,498,897, Cl. 494-27.000.

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Langley, Keith W.; and Washbourn, Jack, 4,498,711, Cl. 303-13.000.

Westinghouse Electric Corp.: *See*—
Bluzer, Nathan, 4,499,590, Cl. 377-60.000.

Wetzel, David L., to Northern Telecom, Ltd. Key telephone system signalling and control arrangement. 4,499,338, Cl. 179-99.00E.

Wheelock, Kenneth S., to Exxon Research & Engineering Co. Thermally stable mixed oxide gels. 4,499,195, Cl. 502-63.000.

Whirlpool Corporation: *See*—
Fellwock, Louis W.; Hortin, Kenneth L.; and Fellwock, Charles G., 4,498,713, Cl. 312-214.000.

White, C. Max, to Thiokol Corporation. Igniter for rocket motors. 4,498,292, Cl. 60-256.000.

White, Charles M.; and Cosgrove, William J., to Harris Corporation. Automatic registration control system for color television cameras. 4,499,488, Cl. 358-51.000.

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Zalewski, Gerald F., 4,498,213, Cl. 15-316.00R.

White, Cyril J.; and Joyce, Christopher, to Bicc Public Limited Company. Circuit board composite connector. 4,498,724, Cl. 339-97.00R.

White, Herbert V., to J. M. Huber Corporation. Folding pallet jig. 4,498,895, Cl. 493-476.000.

White, Lawrence K., to RCA Corporation. Method for detecting distance deviations to a photoresist surface in an optical printer. 4,498,775, Cl. 356-375.000.

White, Steven J., to Technical Arts Corporation. High speed scanning method and apparatus. 4,498,778, Cl. 356-376.000.

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Walker, Wellington J.; and Whitehouse, George M., deceased, 4,498,354, Cl. 74-625.000.

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Whitely, Elliot F.; Devoe, Richard A.; and Gadbois, Gerald W., to Lydall, Inc. Abrasion and high temperature resistant composite and method of making the same. 4,499,134, Cl. 428-102.000.

Whiteside, Judy A.: *See*—
Seddon, Duncan; Mole, Thomas; and Whiteside, Judy A., 4,499,314, Cl. 585-408.000.

Whitman Medical Corporation: *See*—
Gordon, Marvin; and Lichtenstein, Joseph, 4,498,796, Cl. 401-132.000.

Wickstrom, Claes G., to Riensch & Held (GmbH & Co.). Turnover device. 4,498,841, Cl. 414-778.000.

Wico Corporation: *See*—
Peters, Albin, 4,498,670, Cl. 273-129.00V.

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Wildhardt, Jurgen: *See*—
Walch, Axel; Seifried, Walter; Michel, Wolfgang; Kuhls, Jurgen; and Wildhardt, Jurgen, 4,499,211, Cl. 521-145.000.

Wilhelm, Fritz: *See*—
Heinze, Helmut; Wilhelm, Fritz; Mackensen, Klaus; and Finkeldei, Ferdinand, 4,499,261, Cl. 528-279.000.

Willard, Alvin K.: *See*—
Bernstein, Peter R.; and Willard, Alvin K., 4,499,299, Cl. 514-570.000.

Willett, Richard L. Sequentially steered receiver with timed recycle calibration. 4,499,472, Cl. 343-374.000.

Williams, Barry C.: *See*—
Kirkpatrick, Larry E.; and Williams, Barry C., 4,498,807, Cl. 405-43.000.

Williams, Frederick; and Coe, Anthony D., to David Brown Tractors Ltd. Tractor front loaders. 4,498,839, Cl. 414-686.000.

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Cantu, Terry S.; and Williams, Mark C., 4,498,246, Cl. 34-9.000.

Williams Patent Crusher and Pulverizer Company: *See*—
Williams, Robert M., 4,498,633, Cl. 241-48.000.

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Therien, Robert D.; Langford, Forrest L.; Motamed, Armond; and Williams, Robert D., 4,498,761, Cl. 355-24.000.

Williams, Robert M., to Williams Patent Crusher and Pulverizer Company. Apparatus for processing coal. 4,498,633, Cl. 241-48.000.

Williams, Terrell M., to Medtronic, Inc. Transvenous pacing lead having improved stylet. 4,498,482, Cl. 128-786.000.

Williams, Thomas M.: *See*—
Helms, David A.; Hatton, Gregory J.; and Williams, Thomas M., 4,499,418, Cl. 324-58.50A.

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Schnetzka, Harold R.; Wills, Frank E.; and Norbeck, Dean K., 4,499,534, Cl. 363-129.000.

Wilner, Leslie B., to Becton, Dickinson and Company. Piezoresistive transducer. 4,498,229, Cl. 29-580.000.

Wilson, Bryce H.; and Hansen, Franklin A., to Continental Disc Corporation. Low pressure venting panel. 4,498,261, Cl. 52-1.000.

Wilson, Herbert L.: *See*—
Gutierrez, William A.; and Wilson, Herbert L., 4,498,225, Cl. 29-572.000.

Wilson, Richard A.: *See*—
Luccarelli, Domenick, Jr.; Mookherjee, Braja D.; Wilson, Richard A.; Zampino, Michael J.; and Bowen, David R., 4,499,114, Cl. 426-534.000.

Wilson, Roland B. Ice block making and storage system. 4,498,595, Cl. 211-194.000.

Wink, Randall: *See*—
Fuchs, Gilbet; Crowley, Norman; and Wink, Randall, 4,498,397, Cl. 104-35.000.

Winnale, James A.: *See*—
Duffield, Thomas P.; and Winnale, James A., 4,498,689, Cl. 280-803.000.

Winter, Hans: *See*—
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Winzer, Gerhard; and Tomkewitsch, Romuald V., to Siemens Aktiengesellschaft. Optical waveguide branch coupler and method of manufacturing. 4,498,731, Cl. 350-96.160.

Wise, Paul H.: *See*—
Ferris, Michael J.; Wise, Paul H.; and Breslow, Jeffrey D., 4,498,674, Cl. 273-243.000.

Wissner, Adolf: *See*—
Mitrowsky, Alexander; Wissner, Adolf; and Hauser, Werner, 4,499,023, Cl. 260-453.0SP.

Witchell, Stanley P. Air filters. 4,498,915, Cl. 55-498.000.

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Longley, Kermit D., 4,499,028, Cl. 260-513.00R.

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Lynch, John T.; Anderson, Alfredo C.; Withers, Richard S.; and Wright, Peter V., 4,499,441, Cl. 333-161.000.

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Wittenborg, Poul E., 4,498,603, Cl. 221-76.000.

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Wnek, Gary E.: *See*—
Guiseppi-Elie, Anthony; and Wnek, Gary E., 4,499,007, Cl. 252-500.000.

Wohlgemuth, Werner, to Theodor Groz & Sohne & Ernst Beckert Nadelfabrik Commandit-Gesellschaft. Latch needle for machines for producing knitted goods. 4,498,315, Cl. 66-121.000.

Wohlgenannt, Horst: *See*—
Gageur, Fritz; and Wohlgenannt, Horst, 4,498,250, Cl. 34-155.000.

Wojtowicz, John A., to Olin Corporation. Trichloroisocyanuric acid composition. 4,498,921, Cl. 71-67.000.

Wolf, David: *See*—
Korin, Eliyaho; Rappaport, Elazar; Pasternak, Dov; Roy, Aharon S.; and Wolf, David, 4,498,459, Cl. 126-430.000.

Wolf, Gordon C.: *See*—
Ash, Stephen R.; Wolf, Gordon C.; and Bloch, Richard, 4,498,902, Cl. 604-164.000.

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Barth, Hubert; Hartenstein, Johannes; Satzinger, Gerhard; Fritschi, Edgar; Ganser, Volker; Tauschel, Horst-Dietmar; and Wolf, Gunter, 4,499,089, Cl. 514-222.000.

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Botterman, D. L.; Wolff, N. A.; and Ver Planck, H. T., 4,498,420, Cl. 119-15.000.

Womack, James A.: *See*—
Long, Jerry M.; and Womack, James A., 4,498,583, Cl. 206-444.000.

Wood, Ralph T.: *See*—
Dietz, Peter W.; and Wood, Ralph T., 4,499,118, Cl. 427-28.000.

Wooding: *See*—
Wooding, Patrick J., 4,498,610, Cl. 222-592.000.

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Woodruff, Steven D.: *See*—
Yeung, Edward E.; Steenhoek, Larry E.; Woodruff, Steven D.; and Kuo, Jeng-Chung, 4,498,774, Cl. 356-368.000.

Woodworth, Walker P.: *See*—
Bilstad, Arnold C.; Foley, John T.; and Woodworth, Walker P., 4,498,983, Cl. 210-97.000.

Worwood, Bryan H.; and Stallard, Paul, to Pall Corporation. Magnetic differential pressure valve with an indicator showing when valve has opened or closed. 4,498,495, Cl. 137-557.000.

Wraight, Frederick G., to Goodyear Tire & Rubber Company, The. Apparatus and method of making metallic cord. 4,498,281, Cl. 57-58.340.

Wridt, Alfred A.: *See*—
Bendickson, Roy B.; and Wridt, Alfred A., 4,498,244, Cl. 33-203.150.

Wright, Arthur; and Christopoulos, Christos, to University of Nottingham. Determining location of faults in power transmission lines. 4,499,417, Cl. 324-52.000.

Wright, John S. Extension platform to support transparencies for an overhead projector. 4,498,746, Cl. 353-120.000.

Wright, Peter V.: *See*—
Lynch, John T.; Anderson, Alfredo C.; Withers, Richard S.; and Wright, Peter V., 4,499,441, Cl. 333-161.000.

Wuerzer, Bruno: *See*—
Eicken, Karl; Rohr, Wolfgang; and Wuerzer, Bruno, 4,498,922, Cl. 71-111.000.

Wyrick, Steven D.; Hall, Iris H.; and Dubey, Agnes, to Research Corporation. Antihyperlipidemic N-benzoylsulfamates, N-benzylsulfamates and benzylsulfonamides. 4,499,303, Cl. 514-605.000.

Wysocki, Lawrence S.: *See*—
Dickert, James C.; Roccaforte, Harry I.; and Wysocki, Lawrence S., 4,498,620, Cl. 229-52.00A.

Xerox Corporation: *See*—
Miazga, Dennis E.; Nguyen, Tuan A.; and Dugan, Michael T., 4,499,581, Cl. 371-20.000.

Yabe, Masao; Naruo, Kyoichi; and Ono, Kazuhiro, to Fuji Photo Film Co., Ltd. Process for producing a cellulose ester support. 4,499,043, Cl. 264-207.000.

Yabuno, Kohei: *See*—
Onda, Kenichi; Abe, Kojin; Yabuno, Kohei; and Uemura, Takeshi, 4,499,530, Cl. 363-17.000.

Yamada, Takeshiro: *See*—
Iwata, Nobutoshi; Fukushima, Kiyoshi; Fujino, Shinji; Yamada, Takeshiro; Hao, Hideyuki; Tanaka, Shigeo; and Mitsuno, Tatsuyuki, 4,499,238, Cl. 525-98.000.

Yamada, Tetsuyo; and Nakayama, Yutaka, to NGK Spark Plug Co., Ltd. Oxygen sensor. 4,498,968, Cl. 204-412.000.

Yamada, Yasuhiro; and Mori, Takaro, to Victor Company of Japan, Ltd. Data reproducing apparatus for reproducing digital data recorded on multi-tracks. 4,499,507, Cl. 360-26.000.

Yamaguchi, Katsuhiko: *See*—
Igarashi, Kazumasa; Yamaguchi, Katsuhiko; and Tanaka, Munekazu, 4,499,252, Cl. 528-38.000.

Yamaguchi, Nobutaka; Fujiyama, Masaaki; Tada, Sugihiko; Tadokoro, Eiichi; Ryoke, Katsumi; Utsumi, Masahiro; and Suzuki, Masami, to Fuji Photo Film Co., Ltd. Method of preparing a magnetic recording medium with a calendering treatment. 4,499,121, Cl. 427-130.000.
Yamaguchi, Sadaatsu: *See*—
Nakagawa, Shinichi; Nakagawa, Tsuneo; Yamaguchi, Sadaatsu; Ihara, Kiyohiko; Amano, Toshihiko; Omori, Mitsugu; and Asano, Kohzoh, 4,499,249, Cl. 526-206.000.
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Nomura, Kenji; Yamakage, Tetsuro; and Noro, Katsuyoshi, 4,498,571, Cl. 198-339.000.
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Yamamiya, Kunio; Kodama, Hiroshi; Ohshima, Ken; Yoshikawa, Shoji; Kato, Kiichi; and Sakamoto, Masaharu, to Olympus Optical Co., Ltd. Disc drive apparatus. 4,499,514, Cl. 360-97.000.
Yamamiya, Kunio: *See*—
Yoshikawa, Shozi; Sakamoto, Masaharu; Kodama, Hiroshi; Yamamiya, Kunio; Kato, Kiichi; and Ohsima, Ken, 4,499,572, Cl. 369-111.000.
Yamamori, Naoki; Yokoi, Junji; and Yoshikawa, Motoyoshi, to Nippon Paint Co., Ltd. Hydrolyzable polyester resins and coating compositions containing the same. 4,499,223, Cl. 524-176.000.
Yamamoto, Katsumi; Komatsu, Yuichiro; and Hamada, Ikuro, to Toyoda Koki Kabushiki Kaisha. Numerical controller for a grinding machine. 4,498,259, Cl. 51-165.710.
Yamamoto Kogaku Co., Ltd.: *See*—
Yamamoto, Tamenobu, 4,498,202, Cl. 2-424.000.
Yamamoto, Kuniyuki: *See*—
Kurata, Noboru; Miyazaki, Kunio; and Yamamoto, Kuniyuki, 4,498,553, Cl. 180-230.000.
Yamamoto, Nobuyuki, to Fuji Photo Film Co., Ltd. Magnetic recording medium. 4,499,138, Cl. 428-216.000.
Yamamoto, Shigeru; Miyake, Yuzuru; and Nohara, Isao, to Teijin Seiki Company, Limited. Method of winding yarn on bobbin. 4,498,637, Cl. 242-18.100.
Yamamoto, Tamenobu, to Yamamoto Kogaku Co., Ltd. Helmet equipped with ventilator. 4,498,202, Cl. 2-424.000.
Yamamoto, Tomio: *See*—
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Yamanaka, Hideaki: *See*—
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Yamanaka, Takashi; Takeya, Yasushi; Yorita, Mitsumasa; Horiuchi, Toshiaki; Inagaki, Kouichi; Naya, Eizo; Demizu, Michinosuke; and Okumura, Mitsuhiro, to Mitsubishi Denki Kabushiki Kaisha. Electrode composition for vacuum switch. 4,499,009, Cl. 252-512.000.
Yamashita, Kiyotoshi: *See*—
Ota, Hideo; and Yamashita, Kiyotoshi, 4,499,179, Cl. 430-523.000.
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Yamazaki, Shinji: *See*—
Shinozaki, Nozomu; Dohi, Takashi; Yamazaki, Shinji; and Neki, Shigeo, 4,499,449, Cl. 338-32.00R.
Yamazaki, Tsuneo; Faltas, Mervat; and Webb, Paul P., to RCA, Inc. Silicon photodiode with n-type control layer. 4,499,483, Cl. 357-30.000.
Yanagi, Toshiaki; and Beasho, Yoshinori, to Brother Kogyo Kabushiki Kaisha. Programming device for an automatic sewing machine. 4,498,403, Cl. 112-121.120.
Yanagida, Tomomi; Ajiki, Mitunori; and Suzuki, Shigeru, to Sumitomo Bakelite Company Limited. Metal-clad laminate and process for producing the same. 4,499,145, Cl. 428-418.000.
Yanagishima, Takayuki: *See*—
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Yano, Yasuhiro: *See*—
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Yao, Raymond C.: *See*—
Lee, May D.; Martin, John H.; Borders, Donald B.; Yao, Raymond C.; and Testa, Raymond T., 4,499,075, Cl. 424-118.000.
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Yasui, Yoshiharu: *See*—
Suzuki, Yoshihisa; Yasui, Yoshiharu; and Takasu, Shigeru, 4,498,216, Cl. 19-244.000.
Yen, Kuo-Hsiung: *See*—
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Yeung, Edward E.; Steenhoek, Larry E.; Woodruff, Steven D.; and Kuo, Jeng-Chung, to Iowa State University Research Foundation, Inc. Micro-polarimeter for high performance liquid chromatography. 4,498,774, Cl. 356-368.000.
Yokoi, Junji: *See*—
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Yokota, Hajime: *See*—
Yoshida, Masashi; Katohno, Noboru; Yokota, Hajime; and Okayama, Masao, 4,499,512, Cl. 360-90.000.
Yokota, Tsuneshi, to Tokyo Shibaura Denki Kabushiki. Optical disk system with laser safety arrangement. 4,499,571, Cl. 369-54.000.
Yorita, Mitsumasa: *See*—
Yamanaka, Takashi; Takeya, Yasushi; Yorita, Mitsumasa; Horiuchi, Toshiaki; Inagaki, Kouichi; Naya, Eizo; Demizu, Michinosuke; and Okumura, Mitsuhiro, 4,499,009, Cl. 252-512.000.
Yoshida, Hitoshi; Atsumi, Morihiro; Ito, Nobuei; and Atsumi, Kinya, to Nippondenso Co., Ltd.; and Nippon Soken, Inc. Ceramic heater device. 4,499,366, Cl. 219-270.000.
Yoshida, Keiichiro. Method of and apparatus for forming long metal tubing stock to tapered shape. 4,498,321, Cl. 72-76.000.
Yoshida Kogyo K. K.: *See*—
Matsuda, Yoshio, 4,498,316, Cl. 66-196.000.
Ofusa, Masaatsu, 4,498,503, Cl. 139-116.000.
Tsubata, Noritaka, 4,498,502, Cl. 139-35.000.
Yoshida, Masashi; Katohno, Noboru; Yokota, Hajime; and Okayama, Masao, to Hitachi, Ltd. Reel drive system of magnetic recording and reproducing apparatus. 4,499,512, Cl. 360-90.000.
Yoshida, Susumu: *See*—
Yuki, Katsumi; Yoshida, Susumu; Ozeki, Mineo; Miyazaki, Yasuyuki; and Kawamata, Masaru, 4,499,541, Cl. 364-424.000.
Yoshihara, Kenji: *See*—
Sugiyama, Hiroyuki; Abe, Ryozo; and Yoshihara, Kenji, 4,499,505, Cl. 358-342.000.
Yoshihara, Tetsuya, to Nippon Kokan Kabushiki Kaisha; Nippon Rotary Nozzle Co., Ltd.; Kokan Kikai Kogyo Kabushiki Kaisha; and Tokyo Yogyo Kabushiki Kaisha. Dual door type rotary nozzle. 4,498,611, Cl. 222-599.000.
Yoshihiro, Naotsugu: *See*—
Tamura, Masao; Yoshihiro, Naotsugu; Natsuaki, Nobuyoshi; Miyao, Masanobu; Ohkura, Makoto; Sunami, Hideo; and Tokuyama, Takashi, 4,498,951, Cl. 156-612.000.
Yoshikawa, Motoyoshi: *See*—
Yamamori, Naoki; Yokoi, Junji; and Yoshikawa, Motoyoshi, 4,499,223, Cl. 524-176.000.
Yoshikawa, Shoji: *See*—
Yamamiya, Kunio; Kodama, Hiroshi; Ohshima, Ken; Yoshikawa, Shoji; Kato, Kiichi; and Sakamoto, Masaharu, 4,499,514, Cl. 360-97.000.
Yoshikawa, Shozi; Sakamoto, Masaharu; Kodama, Hiroshi; Yamamiya, Kunio; Kato, Kiichi; and Ohsima, Ken, to Olympus Optical Co., Ltd. Method for reading information or defect out of rotating disc. 4,499,572, Cl. 369-111.000.
Yoshimura, Isao; Hata, Hideo; and Kaneko, Takashi, to Asahi-Dow Limited. Composition for cold drawn film. 4,499,241, Cl. 525-211.000.
Yoshimura, Masaru; and Saitoh, Sumio, to Catalysts & Chemicals Industries, Co. Ltd. Thermo-setting resinous liquid compositions. 4,499,217, Cl. 523-456.000.
Young, Robert F.: *See*—
Hall, Charles B.; McBride, Edward D.; and Young, Robert F., 4,498,871, Cl. 440-61.000.
Young, Roy E.; Stricklin, Douglas K.; and Givens, Henry M. W. Highly maneuverable prime mover. 4,498,554, Cl. 180-236.000.
Yuki, Etsuji. Adsorbing deacidifier for oily substances. 4,499,196, Cl. 502-64.000.
Yuki, Katsumi; Yoshida, Susumu; Ozeki, Mineo; Miyazaki, Yasuyuki; and Kawamata, Masaru, to Kabushiki Kaisha Toyoda Jidoh Shokki Seisakusho. Input circuit of a fork lift truck control system for a fork lift truck. 4,499,541, Cl. 364-424.000.
Zachariades, Anagnostis E.: *See*—
Economy, James; and Zachariades, Anagnostis E., 4,499,122, Cl. 427-130.000.
Zaidan Hojin Biseibutsu Kagaku Kenkyu Kai: *See*—
Umezawa, Hamao; Okami, Yoshiro; and Kondo, Shinichi, 4,499,083, Cl. 514-36.000.
Zalewski, Gerald F., to White Consolidated Industries, Inc. Soot blower. 4,498,213, Cl. 15-316.00R.
Zampino, Michael J.: *See*—
Luccarelli, Domenick, Jr.; Mookherjee, Braja D.; Wilson, Richard A.; Zampino, Michael J.; and Bowen, David R., 4,499,114, Cl. 426-534.000.
Zee-Cheng, Robert K.: *See*—
Cheng, Chia C.; and Zee-Cheng, Robert K., 4,499,266, Cl. 544-126.000.
Zembayashi, Michio: *See*—
Pratt, Sandra L.; Lucas, Gary M.; and Zembayashi, Michio, 4,499,234, Cl. 524-783.000.
Zemlicka, Alvin R., to Brunswick Corporation. Water shutter. 4,498,876, Cl. 440-89.000.
Zenith Electronics Corporation: *See*—
Strammello, Peter, 4,499,495, Cl. 358-188.000.
Zils, James A.: *See*—
Pamer, Walter R.; Zils, James A.; and Capuano, Terry D., 4,498,825, Cl. 411-11.000.
Zimmer, Herbert: *See*—
Proksch, Hans-Jorg; Welte, Dieter; Zimmer, Herbert; and Lotz, Michael, deceased, 4,498,646, Cl. 244-35.00R.
Zimmermann, Abraham, to Varco International, Inc. Drill rig hook. 4,498,698, Cl. 294-82.00R.

Zinniger, Theodore C.: *See*—
Takeda, Susumu; Mann, Allen W.; Goodrich, David G.; and Zinniger, Theodore C., 4,498,521, Cl. 164-453.000.
Zlafop pri Ban: *See*—
Konstantinov, Ivan T.; Mednikarov, Borislav D.; Sahatchieva, Maria A.; and Burov, Atanas T., 4,499,173, Cl. 430-278.000.
Zoecon Corporation: *See*—
Kohn, Gustave K.; and Bamberg, Joe T., 4,499,271, Cl. 546-22.000.
Zondler, Helmut: *See*—
Lohse, Friedrich; and Zondler, Helmut, 4,499,268, Cl. 544-196.000.
Zoor, Reinhold, to Heinrich Wunder GmbH & Co. KG. Ski binding. 4,498,685, Cl. 280-605.000.
Zucker, Larry R.: *See*—
Pearson, Kenneth A.; and Zucker, Larry R., 4,499,460, Cl. 340-771.000.
Zuege, Kevin C.: *See*—
Shea, Yale R.; and Zuege, Kevin C., 4,499,332, Cl. 174-48.000.
Zupon, Michael A.: *See*—
Sequeira, Joel A.; and Zupon, Michael A., 4,499,108, Cl. 514-653.000.
Zwaskis, William J.: *See*—
Cerwin, Robert J.; Joshi, Madhusudan; Menges, John R.; Mericle, Robert W.; and Zwaskis, William J., 4,498,476, Cl. 128-346.000.
Zwiercan, Gary A.; Lacourse, Norman L.; and Lenchin, Julianne M., to National Starch and Chemical Corporation. Imitation cheese products containing modified starch as partial caseinate replacement and method of preparation. 4,499,116, Cl. 426-582.000.
501 Gateway Technology, Inc.: *See*—
Bray, William E., 4,499,531, Cl. 363-19.000.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 12TH DAY OF FEBRUARY, 1985

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Apontoweil, Peter; and Krasselt, Manfred M., to Gist-Brocades N.V
Infectious bronchitis vaccine for poultry. Re. 31,830, Cl. 424-89.000.

Gist-Brocades N.V.: *See*—
Apontoweil, Peter; and Krasselt, Manfred M., Re. 31,830, Cl. 424-89.000.

Krasselt, Manfred M.: *See*—
Apontoweil, Peter; and Krasselt, Manfred M., Re. 31,830, Cl. 424-89.000.

Rhone-Poulenc Agrochimie: *See*—
Theissen, Robert J.; Re. 31,831, Cl. 560-021.000.

Samulski, Thaddeus V. Temperature probe. Re. 31,832, Cl. 374-131.000.

Stearn, Leathem S. Two groove headstay. Re. 31,829, Cl. 114-105.000.

Theissen, Robert J., to Rhone-Poulenc Agrochimie. Substituted phenoxybenzoic acids and esters thereof. Re. 31,831, Cl. 560-021.000.

LIST OF DESIGN PATENTEES

Abbott Laboratories: *See*—
D'Alo, Herbert F.; and Case, Robert, 277,603, Cl. D24-8.000.

Aktiebolaget Bofors: *See*—
Wik, Torsten; Lagerstam, Christer; Pettersson, Kurt; and Mattsson, Kjell, 277,597, Cl. D22-10.000.

Altena Salotti S.n.c.: *See*—
Giudici, Gianbattista, 277,527, Cl. D6-379.000.

Annestedt, James W. Sign support stand. 277,584, 2-12-85, Cl. D20-43.000.

Arginsky, Richard C., to Master Juvenile Products. Spray hoop. 277,610, 2-12-85, Cl. D23-6.000.

Arnold, Don C.; and Wilcox, Thomas J., to Indiana Brass, Inc. Vacuum breaker assembly for bidet. 277,599, 2-12-85, Cl. D23-69.000.

Assouline, Maurice: *See*—
Merl, Milton J.; and Assouline, Maurice, 277,537, Cl. D7-301.000.

AT&T Bell Laboratories: *See*—
Genaro, Donald M.; Hall, Norris R.; McGarvey, John N.; and Skubiak, Michael T., 277,570, Cl. D14-59.000.

AT&T Technologies, Inc.: *See*—
Cooke, Kenneth R.; and Porcelli, Vito L., 277,571, Cl. D14-60.000.
McGarvey, John N.; and Tilley, Alvin R., 277,573, Cl. D14-53.000.

Baer, Albert, to Imperial Knife Associated Companies, Inc. Knife handle. 277,536, 2-12-85, Cl. D7-152.000.

Benson, James A.; and Jones, Paul W., to Physio-Control Corporation. Fluid dispensing pump. 277,602, 2-12-85, Cl. D24-8.000.

Boeing Company, The: *See*—
White, Thomas H., 277,526, Cl. D6-356.000.

Bondwell Electronics Ltd.: *See*—
Lee, Ping M., 277,574, Cl. D14-64.000.

Bridgestone Tire Company, Ltd.: *See*—
Kawajiri, Junichi; Hayakawa, Toshio; and Nishio, Hideaki, 277,562, Cl. D12-149.000.

Brown-Forman Distillers Corporation: *See*—
Kerr, Jayne K., 277,551, Cl. D9-367.000.

Buhk, Randall P.; Hozeski, Kenneth W.; and Karrip, Alex, to Steelcase Inc. Chair. 277,525, 2-12-85, Cl. D6-366.000.

Campbell, Paul R.; Dilgard, Robert E., Jr.; and O'Neil, William J., Jr., to Procter & Gamble Company, The. Jar. 277,550, 2-12-85, Cl. D9-349.000.

Carbajales Santa-Eulalia, Javier B.: *See*—
Carbajales Santa-Eulalia, Jesus A.; and Carbajales Santa-Eulalia, Javier B., 277,560, Cl. D11-158.000.

Carbajales Santa-Eulalia, Jesus A.; and Carbajales Santa-Eulalia, Javier B., to John J. Madison Company, Inc. Figurine of a spaniel dog. 277,560, 2-12-85, Cl. D11-158.000.

Case, Robert: *See*—
D'Alo, Herbert F.; and Case, Robert, 277,603, Cl. D24-8.000.

Cebula, Jerome J. Glass eye for taxidermy. 277,606, 2-12-85, Cl. D24-33.000.

Chabot, Jean-Marie, to Les Industries Provinciales Ltee. Bottle carrier. 277,554, 2-12-85, Cl. D9-434.000.

Channel-Kor Systems Inc.: *See*—
Miller, Melvin M., 277,533, Cl. D6-470.000.

Charlestein, Morton: *See*—
Werrin, Samuel R., 277,605, Cl. D24-16.000.

Ciba-Geigy AG.: *See*—
Kung, Eduard R., 277,552, Cl. D9-376.000.

Colgate-Palmolive Company: *See*—
Sanabria, Jose A., 277,611, Cl. D28-8.100.

Comus, Inc.: *See*—
Pappas, Chris J., 277,556, Cl. D10-2.000.

Conair Corporation: *See*—
Rittenhouse, James M., 277,613, Cl. D28-13.000.

Cooke, Kenneth R.; and Porcelli, Vito L., to AT&T Technologies, Inc. Telephone instrument base. 277,571, 2-12-85, Cl. D14-60.000.

Cotton, James D.: *See*—
Ito, John M.; and Cotton, James D., 277,553, Cl. D9-416.000.

D'Alo, Herbert F.; and Case, Robert, to Abbott Laboratories. I.V. flow control apparatus. 277,603, 2-12-85, Cl. D24-8.000.

Daugherty, Valerie, to Questor Corp. Toy saw. 277,589, 2-12-85, Cl. D21-120.000.

DeCarolis, Joseph P., to Stanley Works, The. Mitre box with corner clamps. 277,544, 2-12-85, Cl. D8-71.000.

Deimen, Michael L. Building block. 277,609, 2-12-85, Cl. D25-80.000.

Dilgard, Robert E., Jr.: *See*—
Campbell, Paul R.; Dilgard, Robert E., Jr.; and O'Neil, William J., Jr., 277,550, Cl. D9-349.000.

Diversified Products Corporation: *See*—
Silberman, Ira J., 277,519, Cl. D2-27.000.

Duhamel, Jean-Pierre. Mobile display counter. 277,532, 2-12-85, Cl. D34-17.000.

Dunbar, Keith E.: *See*—
Newmeyer, F. Craig; and Dunbar, Keith E., 277,545, Cl. D8-76.000.

Eastman Kodak Company: *See*—
McClare, Andrew V., 277,582, Cl. D16-5.000.

Ekbladh, Fred V. G.; and Tillander, Hans. Trocar. 277,608, 2-12-85, Cl. D24-51.000.

Elkerbout, Marten F., to U.S. Philips Corporation. Coffee maker. 277,539, 2-12-85, Cl. D7-309.000.

Erfurth, Ronald. Wheeled walker. 277,561, 2-12-85, Cl. D12-130.000.

Esaki, Akira: *See*—
Hazama, Shigetoshi; Sawa, Shuzo; Ikeda, Matafumi; and Esaki, Akira, 277,600, Cl. D23-123.000.

Espinda, Henry M. Charcoal barbecue grill. 277,541, 2-12-85, Cl. D13-3.000.

Etablissments Fernand Berchet: *See*—
Rivollet, Marc, 277,591, Cl. D21-130.000.

Feltman, Charles H.: *See*—
Langer, Dick G.; and Feltman, Charles H., 277,535, Cl. D7-9.000.

Freeman, Dannial R. Precooler for air conditioning unit. 277,601, 2-12-85, Cl. D23-139.000.

Frezel, Jerrold: *See*—
Werrin, Samuel R., 277,605, Cl. D24-16.000.

Genaro, Donald M.; Hall, Norris R.; McGarvey, John N.; and Skubiak, Michael T., to AT&T Bell Laboratories. Adjunct key to a telephone set or similar article. 277,570, 2-12-85, Cl. D14-59.000.

Georgopulos, Thomas, to GTE Automatic Electric Inc. Housing for a busy lamp display unit. 277,569, 2-12-85, Cl. D14-59.000.

Giudici, Gianbattista, to Altena Salotti S.n.c. Seat. 277,527, 2-12-85, Cl. D6-379.000.

Gnecchi and Company S.P.A.: *See*—
Offredi, Giovanni, 277,572, Cl. D14-61.000.

Goshi Kaisha Kanemitsu Doko Yosetsu-Sho: *See*—
Kanemitsu, Yukio, 277,547, Cl. D8-360.000.

Gregory, John R. Face guard. 277,520, 2-12-85, Cl. D2-233.000.

GTE Automatic Electric Inc.: *See*—
Georgopulos, Thomas, 277,569, Cl. D14-59.000.

Hakoda, Kouzou, to Ryobi Limited. Cutter. 277,581, 2-12-85, Cl. D15-125.000.

Hall, Norris R.: *See*—
Genaro, Donald M.; Hall, Norris R.; McGarvey, John N.; and Skubiak, Michael T., 277,570, Cl. D14-59.000.

Halsnes, Odd. Chain connector. 277,548, 2-12-85, Cl. D8-499.000.

Hamada, Masanori: *See*—
Ohno, Akio; and Hamada, Masanori, 277,564, Cl. D14-5.000.

Hashiba, Takeo: *See*—
Wada, Naoki; Saito, Tomitaro; and Hashiba, Takeo, 277,566, Cl. D14-6.000.

Hayakawa, Toshio: *See*—
Kawajiri, Junichi; Hayakawa, Toshio; and Nishio, Hideaki, 277,562, Cl. D12-149.000.

Hazama, Shigetoshi; Sawa, Shuzo; Ikeda, Matafumi; and Esaki, Akira, to Sharp Corporation. Oil heater. 277,600, 2-12-85, Cl. D23-123.000.

Hewi GmbH: *See*—
Scholl, Winfried, 277,529, Cl. D6-561.000.

Himeno, Shinkichi, to Yugen Kaisha Yushin Kaihatsu. Artificial acetabular cup or similar article. 277,607, 2-12-85, Cl. D24-33.000.

Hisano, Yoichi, to Matsushita Electrical Industrial Co., Ltd. Radio receiver. 277,575, 2-12-85, Cl. D14-68.000.

Hozeski, Kenneth W.: *See*—
Buhk, Randall P.; Hozeski, Kenneth W.; and Karrip, Alex, 277,525, Cl. D6-366.000.

Hutchinson, Danstan R. Wall mounted bar. 277,530, 2-12-85, Cl. D6-561.000.

Ichihara, Fumioki: *See*—
Sumino, Tadashi; Iyama, Toshihiro; Kono, Yutaka; Sai, Akishige; and Ichihara, Fumioki, 277,577, Cl. D14-83.000.

Ikeda, Matafumi: *See*—
Hazama, Shigetoshi; Sawa, Shuzo; Ikeda, Matafumi; and Esaki, Akira, 277,600, Cl. D23-123.000.

Imperial Knife Associated Companies, Inc.: *See*—
Baer, Albert, 277,536, Cl. D7-152.000.

Indiana Brass, Inc.: *See*—
Arnold, Don C.; and Wilcox, Thomas J., 277,599, Cl. D23-69.000.

Inoue, Shigefumi: *See*—
Nanbu, Taiji; Takebata, Akira; and Inoue, Shigefumi, 277,542, Cl. D7-351.000.

Interlego A.G.: *See*—
Tapdrup, Erik P., 277,585, Cl. D21-65.000.
Tapdrup, Erik P., 277,586, Cl. D21-65.000.

International Business Machines Corporation: *See*—
Wiseman, John A., 277,580, Cl. D14-114.000.

Isotec Industries Limited: *See*—
Mallory, John, 277,558, Cl. D10-106.000.

Ito, John M.; and Cotton, James D., to Kimberly-Clark Corporation. Dispensing carton for sheet material. 277,553, 2-12-85, Cl. D9-416.000.

Iyama, Toshihiro: *See*—
Sumino, Tadashi; Iyama, Toshihiro; Kono, Yutaka; Sai, Akishige; and Ichihara, Fumioki, 277,577, Cl. D14-83.000.

Jack, Alister, to U.S. Philips Corporation. Coffee maker. 277,538, 2-12-85, Cl. D7-309.000.

Jackson, Daniel T. Karate kick training target. 277,592, 2-12-85, Cl. D21-191.000.

John J. Madison Company, Inc.: *See*—
Carbajales Santa-Eulalia, Jesus A.; and Carbajales Santa-Eulalia, Javier B., 277,560, Cl. D11-158.000.

Jones Futura Foundation, Ltd.: *See*—
Nichols, James D., 277,578, Cl. D14-91.000.

Jones, Paul W.: *See*—
Benson, James A.; and Jones, Paul W., 277,602, Cl. D24-8.000.

Kanemitsu, Yukio, to Goshi Kaisha Kanemitsu Doko Yosetsu-Sho. Poly-V pulley. 277,547, 2-12-85, Cl. D8-360.000.

Karrip, Alex: *See*—
Buhk, Randall P.; Hozeski, Kenneth W.; and Karrip, Alex, 277,525, Cl. D6-366.000.

Kawajiri, Junichi; Hayakawa, Toshio; and Nishio, Hideaki, to Bridgestone Tire Company, Ltd. Vehicle tire. 277,562, 2-12-85, Cl. D12-149.000.

Kereszteš, Gerald W.; and Wade, Katherine D. Saliva evacuator. 277,604, 2-12-85, Cl. D24-10.000.

Kerr, Jayne K., to Brown-Forman Distillers Corporation. Bottle. 277,551, 2-12-85, Cl. D9-367.000.

Kido, Katsutoshi: *See*—
Murakami, Shinzo; Kido, Katsutoshi; and Mishiro, Benito, 277,563, Cl. D14-5.000.
Murakami, Shinzo; and Kido, Katsutoshi, 277,565, Cl. D14-5.000.

Kim, Joo H., to Samsung Electronics Co., Ltd. Label for a microwave oven control panel. 277,523, 2-12-85, Cl. D7-405.000.

Kimberly-Clark Corporation: *See*—
Ito, John M.; and Cotton, James D., 277,553, Cl. D9-416.000.

Kono, Ichiro, to Sumitomo Electric Industries, Ltd. Optical fiber connector. 277,583, 2-12-85, Cl. D16-130.000.

Kono, Yutaka: *See*—
Sumino, Tadashi; Iyama, Toshihiro; Kono, Yutaka; Sai, Akishige; and Ichihara, Fumioki, 277,577, Cl. D14-83.000.

Kubick, Matthew D., to Perfex Corporation. Floor brush. 277,524, 2-12-85, Cl. D4-134.000.

Kung, Eduard R., to Ciba-Geigy AG. Container for liquids. 277,552, 2-12-85, Cl. D9-376.000.

Lagerstam, Christer: *See*—
Wik, Torsten; Lagerstam, Christer; Pettersson, Kurt; and Mattsson, Kjell, 277,597, Cl. D22-10.000.

Langer, Dick G.; and Feltman, Charles H. Mug. 277,535, 2-12-85, Cl. D7-9.000.

Lee, Ping M., to Bondwell Electronics Ltd. Handset telephone. 277,574, 2-12-85, Cl. D14-64.000.

Lenceski, Joseph W., to Standard Locknut & Lockwasher Inc. Bore gauge. 277,557, 2-12-85, Cl. D10-73.000.

Les Industries Provinciales Ltee.: *See*—
Chabot, Jean-Marie, 277,554, Cl. D9-434.000.

Lever Brothers Co.: *See*—
Mansau, Serge, 277,543, Cl. D9-370.000.

Lievin, Robert, to Societe les Piles Wonder. Flashlight. 277,612, 2-12-85, Cl. D26-46.000.

Mackie, Laura J. Necklace or similar article. 277,559, 2-12-85, Cl. D11-6.000.

Mallory, John, to Isotec Industries Limited. Smoke detecting photoelectric sensing chamber. 277,558, 2-12-85, Cl. D10-106.000.

Mansau, Serge, to Lever Brothers Co. Bottle or similar article. 277,543, 2-12-85, Cl. D9-370.000.

Marlboro Marketing Incorporated: *See*—
Merl, Milton J.; and Assouline, Maurice, 277,537, Cl. D7-301.000.

Martinez, Carlos M., to Monturas Y Fornituras, S.A. Spray dispenser. 277,549, 2-12-85, Cl. D9-300.000.

Marusak, Stephen A. Fish hook holder. 277,598, 2-12-85, Cl. D22-22.000.

Master Juvenile Products: *See*—
Arginsky, Richard C., 277,610, Cl. D23-6.000.

Matsushita Electric Industrial Co., Ltd.: *See*—
Mishiro, Benito; Ohhashi, Kazuya; and Nishimoto, Teruyuki, 277,576, Cl. D14-73.000.
Murakami, Shinzo; Kido, Katsutoshi; and Mishiro, Benito, 277,563, Cl. D14-5.000.
Murakami, Shinzo; and Kido, Katsutoshi, 277,565, Cl. D14-5.000.
Nanbu, Taiji; Takebata, Akira; and Inoue, Shigefumi, 277,542, Cl. D7-351.000.
Ohno, Akio; and Hamada, Masanori, 277,564, Cl. D14-5.000.
Sumino, Tadashi; Iyama, Toshihiro; Kono, Yutaka; Sai, Akishige; and Ichihara, Fumioki, 277,577, Cl. D14-83.000.

Matsushita Electrical Industrial Co., Ltd.: *See*—
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Mattsson, Kjell: *See*—
Wik, Torsten; Lagerstam, Christer; Pettersson, Kurt; and Mattsson, Kjell, 277,597, Cl. D22-10.000.

McClare, Andrew V., to Eastman Kodak Company. Photographic camera with integral cover-handle. 277,582, 2-12-85, Cl. D16-5.000.

McGarvey, John N.; and Tilley, Alvin R., to AT&T Technologies, Inc. Housing for a handset telephone. 277,573, 2-12-85, Cl. D14-53.000.

McGarvey, John N.: *See*—
Genaro, Donald M.; Hall, Norris R.; McGarvey, John N.; and Skubiak, Michael T., 277,570, Cl. D14-59.000.

Mead Corporation, The: *See*—
Noonan, Daniel T., 277,579, Cl. D14-107.000.

Merl, Milton J.; and Assouline, Maurice, to Marlboro Marketing Incorporated. Pump dispenser for a beverage or the like. 277,537, 2-12-85, Cl. D7-301.000.

Midwest Marko, Inc.: *See*—
Trotta, Carmen, 277,546, Cl. D8-349.000.

Miller, Melvin M., to Channel-Kor Systems Inc. Display stand. 277,533, 2-12-85, Cl. D6-470.000.

Mishiro, Benito; Ohhashi, Kazuya; and Nishimoto, Teruyuki, to Matsushita Electric Industrial Co., Ltd. Clock radio. 277,576, 2-12-85, Cl. D14-73.000.

Mishiro, Benito: *See*—
Murakami, Shinzo; Kido, Katsutoshi; and Mishiro, Benito, 277,563, Cl. D14-5.000.

Monturas Y Fornituras, S.A.: *See*—
Martinez, Carlos M., 277,549, Cl. D9-300.000.

Moon, Kenneth R. Visual display unit desk. 277,531, 2-12-85, Cl. D6-420.000.

Mundt, Henry M. Golf putter. 277,594, 2-12-85, Cl. D21-218.000.

Murakami, Shinzo; Kido, Katsutoshi; and Mishiro, Benito, to Matsushita Electric Industrial Co., Ltd. Combined radio receiver and tape recorder. 277,563, 2-12-85, Cl. D14-5.000.

Murakami, Shinzo; and Kido, Katsutoshi, to Matsushita Electric Industrial Co., Ltd. Combined tape recorder and radio receiver. 277,565, 2-12-85, Cl. D14-5.000.

Nanbu, Taiji; Takebata, Akira; and Inoue, Shigefumi, to Matsushita Electric Industrial Co., Ltd. Microwave oven. 277,542, 2-12-85, Cl. D7-351.000.

Nasby, Victor B. Cap stretcher. 277,521, 2-12-85, Cl. D2-262.000.

Newmeyer, F. Craig; and Dunbar, Keith E., to Warren Tool Corporation. Wood-splitting axe. 277,545, 2-12-85, Cl. D8-76.000.

Nichols, James D., to Jones Futura Foundation, Ltd. Antenna base. 277,578, 2-12-85, Cl. D14-91.000.

Nishimoto, Teruyuki: *See*—
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525 4,498,586
4,498,587
526 4,498,588
4,498,589
581 4,498,590
620 4,498,591

CLASS 208

11 LE 4,498,971
59 4,498,972
63 4,498,973
96 4,498,974
114 4,498,975
120 4,498,976
207 4,498,977
4,498,978
216 R 4,498,979
321 4,498,980

CLASS 209

243 4,498,981

CLASS 210

96.2 4,498,982
97 4,498,983
122 4,498,984
151 4,498,985
199 4,498,986
222 4,498,987
397 4,498,988
430 4,498,989
637 4,498,990
659 4,498,991
664 4,498,992
710 4,498,993

CLASS 211

42 4,498,592
49 D 4,498,593
181 4,498,594
194 4,498,595

CLASS 212

189 4,498,596

CLASS 215

329 4,498,597

CLASS 219

10.49 R 4,499,354
4,499,355
10.55 B 4,499,357
10.55 E 4,499,356
10.77 4,499,358
69 W 4,499,359
85 H 4,499,360
121 LA 4,499,362
121 LK 4,499,361
130.21 4,499,363
161 4,499,364
205 4,499,365
270 4,499,366
421 4,499,367
452 4,499,368
552 4,499,369

CLASS 220

6 4,498,598
203 4,498,599
255 4,498,600
256 4,498,601
452 4,498,602

CLASS 221

76 4,498,603

CLASS 222

5 4,498,604
4,498,605
52 4,498,606
146.6 4,498,607
190 4,498,608
420 4,498,609
592 4,498,610
599 4,498,611

CLASS 224

163 4,498,612
251 4,498,613
273 4,498,614
274 4,498,615

CLASS 225

1 4,498,616

CLASS 228

119 4,498,617

CLASS 229

40 4,498,618
52 A 4,498,620
52 B 4,498,619

CLASS 232

35 4,498,621

CLASS 235

144 HC 4,499,370
492 4,499,371

CLASS 236

25 R 4,498,622

CLASS 237

8 R 4,498,623
53 4,498,624

CLASS 239

5 4,498,625
230 4,498,626
279 4,498,627
381 4,498,628
434.5 4,498,629
677 4,498,630
692 4,498,631

CLASS 241

18 4,498,632
48 4,498,633
72 4,498,634
94 4,498,635

CLASS 242

1.1 R 4,498,636
18.1 4,498,637
45 4,498,638
47.01 4,498,639
67.1 R 4,498,640
106 4,498,641
107.4 A 4,498,642
107.4 D 4,498,643
131.1 4,498,644

CLASS 244

12.6 4,498,645
35 R 4,498,646
75 R 4,498,647
118.3 4,498,648
118.6 4,498,649

CLASS 246

122 R 4,498,650

CLASS 248

65 4,498,651
99 4,498,652
225.2 4,498,653
251 4,498,654
467 4,498,655
608 4,498,656
623 4,498,657

CLASS 250

223 R 4,499,372
231 P 4,499,373
237 G 4,499,374
252.1 4,499,375
341 4,499,376
343 4,499,377
4,499,378
4,499,379
390 4,499,380
483.1 4,499,381
493.1 4,499,382
561 4,499,383
578 4,499,384

CLASS 251

149.6 4,498,658

CLASS 252

8.5 LC 4,498,995
8.5 M 4,498,994
8.55 C 4,498,997
8.6 4,498,996
52 R 4,498,998
67 4,498,999
73 4,499,000
99 4,499,001
180 4,499,002
192 4,499,003
299.1 4,499,004
301.6 S 4,499,005
392 4,499,006
500 4,499,007
4,499,008
512 4,499,009
4,499,010
518 4,499,011
522 A 4,499,012
567 4,499,013

CLASS 254

134.4 4,498,659

CLASS 256

19 4,498,660

CLASS 260

112 R 4,499,014
239 A 4,499,016
245.2 R 4,499,017
245.81 4,499,018
397.1 4,499,020
4,499,021
429.7 4,499,022
453 R 4,499,024
453 SP 4,499,023
465 R 4,499,025
4,499,026
502.5 G 4,499,027
513 R 4,499,028
544 A 4,499,029

CLASS 261

3 4,499,030
66 4,499,031
72 R 4,499,032
94 4,499,033
109 4,499,034
114 JP 4,499,035

CLASS 264

26 4,499,036
37 4,499,037
51 4,499,038
137 4,499,039
167 4,499,040
173 4,499,041
205 4,499,042
207 4,499,043
521 4,499,044
532 4,499,045

CLASS 266

239 4,498,661

CLASS 269

101 4,498,662

CLASS 270

54 4,498,663

CLASS 271

204 4,498,664
289 4,498,665

CLASS 272

5 4,498,666

CLASS 273

60 B 4,498,667
73 R 4,498,668
84 R 4,498,669
129 V 4,498,670
144 B 4,498,671
169 4,498,672
172 4,498,673
243 4,498,674
249 4,498,675
336 4,498,676
380 4,498,677

CLASS 277

3 4,498,678
92 4,498,679
112 4,498,680
215 4,498,681

CLASS 279

1 K 4,498,682

CLASS 280

7.12 4,498,688
16 4,498,683
234 4,498,684
605 4,498,685
610 4,498,686
615 4,498,687
803 4,498,689
804 4,498,690

CLASS 285

12 4,498,691
20 4,498,692
137 R 4,498,693

CLASS 292

260 4,498,695
337 4,498,694

CLASS 293

126 4,498,696
128 4,498,697

CLASS 294

82 R 4,498,698
101 4,498,699

CLASS 296

78.1 4,498,700
216 4,498,701

CLASS 297

312 4,498,702
328 4,498,703
397 4,498,704

CLASS 299

4 4,498,705
5 4,498,706
81 4,498,707

CLASS 300

2 4,498,708

CLASS 301

5 VH 4,498,709

CLASS 303

6 R 4,498,710
13 4,498,711
23 R 4,498,712

CLASS 307

10 R 4,499,385
260 4,499,386
443 4,499,387
474 4,499,388

CLASS 310

41 4,499,389
88 4,499,390
89 4,499,391
178 4,499,392
313 A 4,499,393
330 4,499,394
361 4,499,395

CLASS 312

214 4,498,713
312 4,498,714

CLASS 313

25 4,499,396
112 4,499,397
113 4,499,398
143 4,499,399
265 4,499,400
315 4,499,401
414 4,499,402
487 4,499,403
579 4,499,404

CLASS 315

13.1 4,499,405
57 4,499,406

CLASS 318

254 4,499,407
4,499,408
383 4,499,409
444 4,499,410
592 4,499,412
802 4,499,413
803 4,499,414

CLASS 320

5 4,499,415

CLASS 323

303 4,499,416

CLASS 324

52 4,499,417
58.5 A 4,499,418
102 4,499,419
174 4,499,420
339 4,499,421
4,499,422
425 4,499,423
427 4,499,424

CLASS 329

50 4,499,425
4,499,426
107 4,499,427

CLASS 330

10 4,499,428
254 4,499,429
279 4,499,430
296 4,499,431
4,499,432

CLASS 331

3 4,499,433
17 4,499,434
44 4,499,435
116 M 4,499,436

CLASS 332

7.51 4,499,437

CLASS 333

1 4,499,438
142 4,499,439
151 4,499,440
161 4,499,441

CLASS 335

79 4,499,442
216 4,499,443
284 4,499,444

CLASS 337

30 4,499,446
266 4,499,447
370 4,499,448

CLASS 338

32 R 4,499,449

CLASS 339

14 R 4,498,715
17 LM 4,498,717
17 R 4,498,716
59 M 4,498,718
60 R 4,498,719
75 MP 4,498,720
4,498,721
4,498,722
97 P 4,498,723
97 R 4,498,724
176 M 4,498,725
182 R 4,498,726
278 C 4,498,727

CLASS 340

52 R 4,499,450
98 4,499,451
310 A 4,499,452
326 4,499,453
347 DD 4,499,454
531 4,499,455
576 4,499,456
703 4,499,457
713 4,499,458
752 4,499,459
771 4,499,460
825.03 4,499,461
825.31 4,499,462
825.52 4,499,463
825.72 4,499,464
870.37 4,499,465

CLASS 343

7.3 4,499,466
9 R 4,499,467
15 4,499,468
17.7 4,499,469
352 4,499,470
373 4,499,471
374 4,499,472
754 4,499,473
771 4,499,474

CLASS 346

75 4,499,475
76 PH 4,499,476
137 4,499,477
140 R 4,499,478
4,499,479
4,499,480

CLASS 350

1.7 4,498,728
3.66 4,498,740
3.69 4,498,729
96.16 4,498,730
4,498,731
96.20 4,498,732
102 4,498,733
125 4,498,734
138 4,498,735
167 4,498,736
237 4,498,737
357 4,498,739
427 4,498,741
523 4,498,742
637 4,498,738

CLASS 351

45 4,498,743

CLASS 352

89 4,498,744
119 4,498,745
191 4,498,747

CLASS 353

120 4,498,746

CLASS 354

79 4,498,748
4,498,749
154 4,498,750
289.1 4,498,751
301 4,498,752
425 4,498,753
479 4,498,754

CLASS 355

3 DD 4,498,755
4,498,756
3 FU 4,498,757
3 TR 4,498,758
8 4,498,759
15 4,498,760

24 4,498,761
55 4,498,762
4,498,763

CLASS 356

5 4,498,764
43 4,498,765
73 4,498,766
121 4,498,767
141 4,498,768
244 4,498,769
349 4,498,770
351 4,498,771
357 4,498,772
360 4,498,773
368 4,498,774
375 4,498,775
4,498,776
376 4,498,777
4,498,778
384 4,498,779
414 4,498,780
435 4,498,781
436 4,498,782

CLASS 357

22 4,499,481
30 4,499,482
4,499,483
68 4,499,484
74 4,499,485

CLASS 358

37 4,499,486
41 4,499,487
51 4,499,488
75 4,499,489
87 4,499,490
102 4,499,491
107 4,499,492
111 4,499,493
164 4,499,494
188 4,499,495
213 4,499,496
4,499,497
261 4,499,498
263 4,499,499
296 4,499,500
302 4,499,501
310 4,499,502
316 4,499,503
335 4,499,504
342 4,499,505
343 4,499,506

CLASS 360

26 4,499,507
41 4,499,508
72.1 4,499,509
77 4,499,510
78 4,499,511
90 4,499,512
96.3 4,499,513
97 4,499,514
113 4,499,515
128 4,499,516

CLASS 361

24 4,499,517
306 4,499,518
4,499,519
311 4,499,520
321 4,499,521
331 4,499,522
383 4,499,523
404 4,499,524

CLASS 362

157 4,499,525
263 4,499,526
267 4,499,527
275 4,499,528
283 4,499,529

CLASS 363

17 4,499,530
19 4,499,531
21 4,499,532
126 4,499,533
129 4,499,534

CLASS 364

200 4,499,535
4,499,536
4,499,537
4,499,538
4,499,539
4,499,604
414 4,499,540
424 4,499,541
424.1 4,499,542
426 4,499,543
431.04 4,499,544
464 4,499,545
474 4,499,546
571 4,499,547
575 4,499,548
601 4,499,549
606 4,499,550
717 4,499,551
802 4,499,552
900 4,499,553
4,499,554
4,499,555
4,499,556

CLASS 365

163 4,499,557
182 4,499,558
190 4,499,559
228 4,499,560

CLASS 366

132 4,498,783
134 4,498,784
156 4,499,561
264 4,499,562
274 4,498,785
316 4,499,445
336 4,498,786

CLASS 367

49 4,499,565
84 4,499,563
93 4,499,564
165 4,499,566

CLASS 368

10 4,498,787
106 4,498,788

CLASS 369

7 4,499,567
30 4,499,568
45 4,499,569
48 4,499,570
54 4,499,571
111 4,499,572
270 4,499,573
275 4,499,574

CLASS 370

58 4,499,575
60 4,499,576
62 4,499,577
4,499,578

CLASS 371

15 4,499,579
17 4,499,580
20 4,499,581

CLASS 372

93 4,499,582

CLASS 373

161 4,499,583

CLASS 374

131 Re.31,832
164 4,498,789

CLASS 375

58 4,499,584
62 4,499,585
98 4,499,586

CLASS 376

245 4,499,046
434 4,499,047

CLASS 377

18 4,499,587
42 4,499,588
55 4,499,589
60 4,499,590

CLASS 378

062 4,499,591
121 4,499,592

CLASS 381

25 4,499,593
46 4,499,594

CLASS 382

9 4,499,595
37 4,499,596
41 4,499,597
54 4,499,598

CLASS 383

6 4,499,599

CLASS 384

428 4,498,790

CLASS 400

124 4,498,791
214 4,498,792
320 4,498,793
629 4,498,794
637.1 4,498,795

CLASS 401

132 4,498,796
141 4,498,797

CLASS 403

24 4,498,798
140 4,498,799
172 4,498,800
232.1 4,498,801
300 4,498,802

CLASS 404

6 4,498,803
25 4,498,804

CLASS 405

31 4,498,805
34 4,498,806
43 4,498,807
61 4,498,808
92 4,498,809
115 4,498,810
168 4,498,811
4,498,812
182 4,498,813
224 4,498,814
259 4,498,815
4,498,816
260 4,498,817

CLASS 406

137 4,498,818
181 4,498,819

CLASS 409

179 4,498,820
300 4,498,821

CLASS 410

2 4,498,822
84 4,498,823
121 4,498,824

CLASS 411

11 4,498,825
301 4,498,826
349 4,498,827

CLASS 412

4 4,498,828

CLASS 414

24.5 4,498,829
24.6 4,498,830
46 4,498,831
217 4,498,832
4,498,833
291 4,498,834
463 4,498,835
537 4,498,836
664 4,498,837
4,498,838
686 4,498,839
759 4,498,840
778 4,498,841

CLASS 416

155 4,498,842

CLASS 417

4,498,843
68 4,498,844
214 4,498,846
216 4,498,847
253 4,498,848
299 4,498,849
322 4,498,850
4,498,851
545 4,498,845

CLASS 418

55 4,498,852
268 4,498,853

CLASS 419

49 4,499,048
4,499,049

CLASS 420

528 4,499,050
540 4,499,051

CLASS 422

52 4,499,052
68 4,499,053
98 4,499,054
197 4,499,055
299 4,499,056

CLASS 423

8 4,499,057
70 4,499,058
226 4,499,059
232 4,499,060
277 4,499,061
332 4,499,062
347 4,499,063

CLASS 424

2 4,499,064
9 4,499,065
19 4,499,066
52 4,499,067
4,499,068
66 4,499,069
70 4,499,070
78 4,499,071
85 4,499,072
4,499,073
89 Re.31,830
94 4,499,074
118 4,499,075
143 4,499,076
149 4,499,077
153 4,499,078
195.1 4,499,086

CLASS 425

116 4,498,854
308 4,498,855
331 4,498,856
361 4,498,857
466 4,498,858
534 4,498,859
562 4,498,860

CLASS 426

36 4,499,109
69 4,499,110
231 4,499,111
276 4,499,112
291 4,499,113
534 4,499,114
546 4,499,115
582 4,499,116
592 4,499,117

CLASS 427

28 4,499,118
63 4,499,119
123 4,499,120
130 4,499,121
4,499,122
282 4,499,123
385.5 4,499,124

CLASS 428

13 4,499,126
14 4,499,127
35 4,499,128
36 4,499,129
42 4,499,130
68 4,499,131
77 4,499,132
81 4,499,133
102 4,499,134
137 4,499,135
206 4,499,136
211 4,499,137
216 4,499,138
245 4,499,139
308.4 4,499,140
318.8 4,499,141
331 4,499,142
336 4,499,143
376 4,499,144
418 4,499,145
422 4,499,146
428 4,499,147
447 4,499,148
4,499,149
4,499,150
4,499,151
448 4,499,152
479.6 4,499,153
494 4,499,154
503 4,499,125
586 4,499,155
614 4,499,156
624 4,499,157
682 4,499,158
691 4,499,159

CLASS 429

101 4,499,160
196 4,499,161

CLASS 430

5 4,499,162
4,499,163
4,499,164
4,499,165
33 4,499,166
83 4,499,167
99 4,499,168
102 4,499,169
169 4,499,170
192 4,499,171
203 4,499,172
215 4,499,174
253 4,499,175
4,499,176
278 4,499,173
311 4,499,177
495 4,499,178
523 4,499,179
558 4,499,181
559 4,499,180
621 4,499,182

CLASS 431

12 4,498,861
88 4,498,862
89 4,498,863

CLASS 432

8 4,498,864
18 4,498,865
239 4,498,866

CLASS 433

16 4,498,867
29 4,498,868

CLASS 434

184 4,498,869
335 4,498,870

CLASS 435

6 4,499,183
11 4,499,184
19 4,499,185
23 4,499,186
34 4,499,187
70 4,499,188
253 4,499,189

CLASS 436

122 4,499,190
160 4,499,191

CLASS 440

61 4,498,871
63 4,498,872
82 4,498,873
83 4,498,874
88 4,498,875
89 4,498,876

CLASS 441

23 4,498,877
80 4,498,878
4,498,879
81 4,498,880
93 4,498,881
116 4,498,882

CLASS 445

28 4,498,883
45 4,498,884

CLASS 446

202 4,498,886
462 4,498,887

CLASS 455

9 4,499,600
166 4,499,601
180 4,499,602
205 4,499,603
210 4,499,605
273 4,498,885
277 4,499,606
606 4,499,607
607 4,499,608
619 4,499,609
4,499,610

CLASS 464

112 4,498,888

CLASS 474

133 4,498,889
140 4,498,890
205 4,498,891
242 4,498,892

CLASS 493

12 4,498,893
234 4,498,894
476 4,498,895

CLASS 494

14 4,498,896
27 4,498,897
49 4,498,898

CLASS 501

97 4,499,192
98 4,499,193

CLASS 502

8 4,499,194
63 4,499,195
64 4,499,196
65 4,499,197
104 4,499,198
4,499,199
172 4,499,200
180 4,499,201
211 4,499,202
247 4,499,203
301 4,499,204
303 4,499,205
304 4,499,206
415 4,499,208

CLASS 514

2 4,499,079
4,499,082
12 4,499,080
17 4,499,081
36 4,499,083
46 4,499,084
58 4,499,085
202 4,499,088
210 4,499,090
211 4,499,087
214 4,499,096
222 4,499,089
254 4,499,091
4,499,092
258 4,499,093
299 4,499,095
4,499,099
301 4,499,094
321 4,499,100
341 4,499,097
364 4,499,098
365 4,499,102
4,499,103
374 4,499,101
396 4,499,104
428 4,499,019
570 4,499,299
575 4,499,107
603 4,499,106
605 4,499,303
631 4,499,105
653 4,499,108

CLASS 518

707 4,499,209

CLASS 521

91 4,499,210
145 4,499,211

CLASS 523

201 4,499,212
335 4,499,213
336 4,499,214
437 4,499,216
450 4,499,215
456 4,499,217

CLASS 524

79 4,499,218
94 4,499,219
102 4,499,220
109 4,499,221
123 4,499,222
176 4,499,223
261 4,499,224
276 4,499,225
382 4,499,226
399 4,499,227
413 4,499,228
450 4,499,229
4,499,230
506 4,499,231
548 4,499,232
591 4,499,233
783 4,499,234

CLASS 525

38 4,499,235
58 4,499,236
67 4,499,237
98 4,499,238
111 4,499,239
193 4,499,240
211 4,499,241
289 4,499,242
333.1 4,499,243
384 4,499,244
417 4,499,245
486 4,499,246

CLASS 526

142 4,499,247
173 4,499,248
206 4,499,249
209 4,499,250
278 4,499,251

CLASS 528

38 4,499,252
45 4,499,253
49 4,499,254
95 4,499,255
172 4,499,256
173 4,499,257
4,499,258
190 4,499,259
229 4,499,260
279 4,499,261
4,499,262
483 4,499,263

CLASS 534

697 4,499,015

CLASSIFICATION OF PATENTS

CLASS 536
50 4,499,264

CLASS 544
16 4,499,265
126 4,499,266
196 4,499,268
198 4,499,269
344 4,499,270

CLASS 546
22 4,499,271
172 4,499,272
188 4,499,273
229 4,499,274
298 4,499,275
346 4,499,276
4,499,277

CLASS 548
240 4,499,278
247 4,499,279
255 4,499,280
262 4,499,281
336 4,499,282
343 4,499,283
359 4,499,284
461 4,499,285
527 4,499,286
532 4,499,287

CLASS 549
266 4,499,288
292 4,499,289
354 4,499,290
429 4,499,291
459 4,499,292
465 4,499,293
519 4,499,294

CLASS 560
53 4,499,295
021 Re.31,831
118 4,499,296
231 4,499,297
241 4,499,298

CLASS 562
495 4,499,300
546 4,499,301
599 4,499,302

CLASS 564
92 4,499,304

CLASS 568
342 4,499,305
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PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty (PCT) Information

For information concerning the PCT member countries see the notice appearing in the *Official Gazette* at 1050 O.G. 330 on Jan. 15, 1985.

For use of the European Patent Office as a Searching Authority for PCT applications filed in the United States Receiving Office, see the notice appearing in the *Official Gazette* at 1022 O.G. 52 on Sept. 28, 1982.

Domestic PCT fees were increased on Oct. 1, 1982 by a rule change to 37 CFR 1.445 that was published in the *Official Gazette* at 1021 O.G. 11 on Aug. 10, 1982.

The Search fee for the European Patent Office was changed as of Jan. 3, 1985 and was announced in the *PCT Gazette* at No. 26/1984 page 3241 on Nov. 8, 1984.

International PCT fees were changed by the PCT Assembly effective Jan. 1, 1985 and were announced in the *Official Gazette* at 1050 O.G. 330 on Jan. 15, 1985.

The current schedule of PCT fees is as follows:

Transmittal fee	$ 125.00
Search fee	
U.S. Patent and Trademark Office as Searching Authority	
· No corresponding prior U.S. national application filed	500.00
· Corresponding prior U.S. national application filed	250.00
European Patent Office as Searching Authority	
· All cases	690.00
International fees	
Basic fee (first 30 pages)	265.00
Basic Supplemental fee (for each page over 30)	5.00
Designation fee (for each national or regional office)	64.00
Designation fee for 11th and subsequent designations	no charge

Dec. 24, 1984.

GERALD J. MOSSINGHOFF,
Commissioner of Patents and Trademarks.

Notice of Maintenance Fees Payable

Title 37, Code of Federal Regulations, Section 1.362(d), effective Nov. 1, 1984, provides that maintenance fees may be paid without surcharge for a six-month period beginning 3, 7, and 11 years after the date of issue of patents based on applications filed on or after Dec. 12, 1980. An additional six-month grace period is provided by 35 U.S.C. 41(b) and 37 CFR 1.362(e) for payment of the maintenance fee with the surcharge set forth in 37 CFR 1.20(k) or (l), effective Nov. 1, 1984. If the maintenance fee is not paid in a patent requiring such payment, the patent will expire on the 4th, 8th or 12th anniversary of the grant.

Attention is drawn to the patents which were issued on Feb. 16, 1982 for which maintenance fees due at 3 years and six months may now be paid. The patents have patent numbers within the following ranges:

Plant Patents	None
Utility Patents	4,315,334 through 4,316,285

Reissue Patents based on the above identified patents.

No maintenance fees are required for design patents.

Payments of maintenance fees in patents should be directed to "Commissioner of Patents and Trademarks, Box M. Fee, Washington, D.C. 20231."

The current amounts of the maintenance fees due at 3 years and six months are set forth in 37 CFR 1.20(e) and (h), which are reproduced below:

37 CFR §1.20 Post-issuance fees

"(e) For maintaining an original or reissue patent, except a design patent, based on an application filed on or after Dec. 12, 1980 and before Aug. 27, 1982, in force beyond 4 years; the fee is due by three years and six months after the original grant . . . $ 200.00"

"(h) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Aug. 27, 1982, in force beyond 4 years; the fee is due by three years and six months after the original grant:
By a small entity (§1.9(f)) . . . . . $ 200.00
By other than a small entity . . . . . $ 400.00"

The amounts of the surcharges, effective Nov. 1, 1984, are set forth in 37 CFR 1.20(k)-(m), which are reproduced below:

"(k) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Dec. 12, 1980 and before Aug. 27, 1982 . . . . . $ 100.00"

"(l) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Aug. 27, 1982:
By a small entity (§1.9(f)) . . . . . $ 50.00
By other than a small entity . . . . . $ 100.00"

"(m) Surcharge for accepting a maintenance fee after expiration of a patent for non-timely payment of a maintenance fee on a patent based on an application filed on or after Aug. 27, 1982, where the delay in payment is shown to the satisfaction of the Commissioner to have been unavoidable . . . . . $ 500.00"

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.19(a)).

4,376,551, Re. S.N. 674,220, Filed Nov. 23, 1984, Cl. 297/250, CHILD CARE SEAT AND RESTRAINING SYSTEM, Richard E. Cone, Owner of Record: *Spalding & Evenflo Cos., Inc., Tampa, Fla.,* Attorney or Agent: Donald R. Bahr, et al., Ex. Gp.: 357

4,381,335, Re. S.N. 674,160, Filed Nov. 23, 1984, Cl. 428/373, MULTI-COMPONENT COMPOSITE FILAMENT, Miyoshi Okamoto, Owner of Record: *Toray Industries, Inc., Tokyo, Japan,* Attorney or Agent: Austin R. Miller, et al., Ex. Gp.: 154

4,421,827, Re. S.N. 658,337, Filed Oct. 5, 1984, Cl. 428/418, COMPOSITES AND METHODS FOR PROVIDING METAL CLAD ARTICLES AND ARTICLES PRODUCED, Cecil L. Phillips, Owner of Record: *Scott Bader Co. Ltd., Northern, Ireland,* Attorney or Agent: J. Henry Seka, et al., Ex. Gp.: 164

4,459,933, Re. S.N. 675,598, Filed Nov. 28, 1984, Cl. 114/297, MARINE TETHER ANCHORING DEVICE, Clive J. Burchett, Owner of Record: *Vickers Ltd., London, England,* Attorney or Agent: Elliott I. Pollock, Ex. Gp.: 315

REQUESTS FOR REEXAMINATION FILED

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.19(a)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b)).

Des. 265,517, Reexam. No. 90/000,712, Requested: Jan. 23, 1985, Cl. D34/17, STORAGE CART, Richard S. Dunchock, Owner of Record: *SL Container Corp.,* Attorney or Agent: Andrew R. Basile, Ex. Gp.: 291, Requester: SL Container Corp., Troy, Mich.

3,982,383, Reexam. No. 90/000,715, Requested: Jan. 25, 1985, Cl. 56/11.6, HARVESTING PLATFORM FLOATING CUTTER BAR, Roger E. Mott, Owner of Record: *Deere & Co., Moline, Ill.,* Attorney or Agent: H. Vincent Harsha, Ex. Gp.: 330, Requester: International Harvester Co., Chicago, Ill.

4,352,740, Reexam. No. 90/000,711, Requested: Jan. 16, 1985, Cl. 210/760, WATER OZONATION METHOD, Ronald J. Grader, et al., Owner of Record: *Linde Aktiengesellschaft, Wiesbaden, Germany,* Attorney or Agent: Millen & White, Ex. Gp.: 130, Requester: Owner

4,389,393, Reexam. No. 90,000,713, Requested: Jan. 23, 1985, Cl. 424/96, SUBTAINED RELEASE THERAPEUTIC COMPOSITIONS BASED ON HIGH MOLECULAR WEIGHT HYDROXYPROPYLMETHYCELLULOSE, Joseph M. Schor, et al., Owner of Record: *Forest Laboratories, Inc., New York, N.Y.,* Attorney or Agent: Fish & Neave, Ex. Gp.: 120, Requester: The Dow Chemical Co., Midland, Mich.

PATENT NOTICES

Certificates of Correction for the Week of Feb. 19, 1985

D. 257,149	4,442,518	4,455,216	4,466,826
4,075,452	4,442,547	4,455,309	4,467,004
4,278,307	4,442,696	4,455,436	4,467,102
4,336,617	4,442,836	4,456,334	4,467,727
4,339,738	4,442,842	4,456,781	4,467,798
4,362,512	4,442,879	4,457,194	4,467,923
4,364,325	4,443,029	4,457,470	4,468,174
4,383,157	4,443,140	4,457,657	4,468,453
4,383,719	4,443,502	4,457,670	4,468,547
4,385,458	4,443,941	4,457,769	4,468,582
4,396,829	4,444,034	4,457,827	4,469,005
4,398,720	4,444,694	4,457,928	4,469,278
4,399,209	4,444,776	4,457,985	4,469,479
4,401,963	4,445,104	4,458,186	4,469,542
4,404,672	4,445,260	4,458,244	4,469,831
4,407,287	4,447,979	4,458,318	4,469,909
4,407,307	4,448,793	4,458,353	4,469,944
4,411,862	4,448,810	4,459,211	4,470,239
4,413,641	4,448,933	4,459,661	4,470,275
4,414,338	4,449,030	4,459,857	4,470,471
4,415,925	4,449,052	4,460,292	4,470,597
4,417,017	4,449,099	4,460,839	4,470,778
4,417,276	4,449,416	4,461,029	4,471,012
4,418,527	4,449,437	4,461,277	4,471,081
4,423,272	4,449,638	4,461,504	4,471,131
4,427,490	4,449,646	4,461,518	4,471,154
4,428,753	4,449,896	4,461,581	4,471,240
4,428,880	4,450,115	4,461,633	4,471,397
4,428,952	4,451,319	4,461,925	4,471,467
4,429,761	4,451,382	4,462,039	4,471,848
4,430,235	4,451,391	4,462,205	4,471,873
4,430,281	4,452,026	4,462,828	4,472,019
4,431,404	4,452,034	4,462,869	4,472,303
4,433,730	4,452,472	4,463,346	4,472,544
4,433,994	4,452,616	4,463,410	4,472,588
4,434,502	4,452,766	4,463,691	4,472,613
4,434,536	4,452,883	4,464,035	4,472,647
4,435,655	4,453,033	4,464,329	4,472,972
4,437,377	4,453,120	4,464,332	4,473,363
4,437,433	4,453,463	4,465,453	4,473,396
4,438,225	4,454,298	4,465,608	4,473,732
4,439,563	4,454,370	4,466,213	4,474,477
4,440,266	4,454,474	4,466,345	4,475,030
4,440,846	4,455,168	4,466,611	

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The following libraries, designated as Patent Depository Libraries, receive current issues of U.S: Patents and maintain collections of earlier issued patents. The scope of these collections varies from library to library, ranging from patents of only recent years to all or most of the patents issued since 1790.

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Arkansas	Little Rock: Arkansas State Library	(501) 371-2090
California	Los Angeles Public Library	(213) 612-3273
	Sacramento: California State Library	(916) 322-4572
	San Diego Public Library	(619) 236-5813
	Sunnyvale: Patent Information Clearinghouse*	(408) 738-5580
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Georgia	Atlanta: Price Gilbert Memorial Library, Georgia Institute of Technology	(404) 894-4508
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	Boston Public Library	(617) 536-5400 Ext. 265
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New Mexico	Albuquerque: University of New Mexico Library	(505) 277-5441
New York	Albany: New York State Library	(518) 474-5125
	Buffalo and Erie County Public Library	(716) 856-7525 Ext. 267
	New York Public Library (The Research Libraries)	(212) 930-0850
North Carolina	Raleigh: D. H. Hill Library, N.C. State University	(919) 737-3280
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	Cleveland Public Library	(216) 623-2870
	Columbus: Ohio State University Libraries	(614) 422-6286
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	Milwaukee Public Library	(414) 278-3043

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*Collection organized by subject matter.

PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner

JAMES E. DENNY, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF January 5, 1985

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL METALLURGICAL, INORGANIC, PETROLEUM AND ELECTRICAL CHEMISTRY, AND ENGINEERING, GROUP 110—D. E. TALBERT, Director	8-20-81
ORGANIC CHEMISTRY AND BIOTECHNOLOGY, GROUP 120—C. E. VAN HORN, Director	6-01-83
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 130—R. F. WHITE, Director	6-06-83
HIGH POLYMER CHEMISTRY, PLASTICS, COATING, PHOTOGRAPHY, STOCK MATERIALS AND COMPOSITIONS, GROUP 150—J. O. THOMAS, Director	4-21-83
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—B. R. GRAY, Director	3-28-83
SPECIAL LAWS ADMINISTRATION, GROUP 220—K. L. CAGE, Director	10-12-80
INFORMATION PROCESSING, STORAGE, AND RETRIEVAL, GROUP 230—E. LEVY, Director	3-17-82
RECEPTACLES, CLEANING, WINDING, AND MEASURING, GROUP 240—G. M. FORLENZA, Director	3-21-83
ELECTRONIC AND OPTICAL SYSTEMS AND DEVICES, GROUP 250—S. S. MATTHEWS, Director	10-01-80
COMMUNICATIONS, MEASURING, TESTING AND LAMP/DISCHARGE GROUP, GROUP 260—S. G. KUNIN, Director	5-07-82
DESIGN, GROUP 290—K. L. CAGE, Director	9-09-82
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—(Vacant)	3-04-83
MATERIAL SHAPING, ARTICLE MANUFACTURING AND TOOLS, GROUP 320—S. N. ZAHARNA, Director	12-13-82
MECHANICAL TECHNOLOGIES AND HUSBANDRY PERSONAL TREATMENT INFORMATION, GROUP 330—R. E. AEGERTER, Director	12-01-82
SOLAR, HEAT, POWER, AND FLUID ENGINEERING DEVICES, GROUP 340—D. J. STOCKING, Director	12-21-81
GENERAL CONSTRUCTIONS, PETROLEUM AND MINING ENGINEERING, GROUP 350—A. L. SMITH, Director	12-04-81

Expiration of patents: The patents within the range of numbers indicated below expire during January 1985, except those which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents ..... Numbers 3,360,800 to 3,366,969, inclusive

Plant Patents ..... Numbers 2,784 to 2,793 inclusive

REEXAMINATIONS

FEBRUARY 19, 1985

Matter enclosed in heavy brackets [ ] appears in the patent but forms no part of this reexamination specification; matter printed in italics indicates additions made by reexamination.

B1 3,920,075 (302nd)

METHOD FOR POSITIONING A LINER ON A TUBULAR MEMBER IN A WELL BORE WITH A RETRIEVABLE PACK OFF BUSHING THEREBETWEEN

Britt O. Braddick, Houston, and Hiram E. Lindsey, Midland, both of Tex., assignors to Texas Iron Works, Inc., Houston, Tex.

Reexamination Request No. 90/000,520, Mar. 2, 1984.
Reexamination Certificate for Patent No. 3,920,075, issued Nov. 18, 1975, Ser. No. 440,714, Feb. 8, 1974.
Int. Cl.³ E21B *33/13*
U.S. Cl. 166—290



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims **1–6** are determined to be patentable as amended.

1. A method of positioning a liner on a well string *for bonding* in a well bore comprising the steps of:

a. securing the liner on the well string;

b. *releasably* locking a seal bushing *to the liner* in position between the liner and the well string to seal off therebetween[;] *to accommodate axial movement of the well string relative to the seal bushing while avoiding communication between the inside and outside of the liner throughout the length of the liner below the seal bushing and above where bonding agent is discharged from the liner into the well bore;*

c. lowering the well string and liner to a desired position in the well bore;

d. rotating the well string relative to the liner to disengage the liner from the well string;

e. [discharing] *discharging* a bonding agent from the well string and into the well bore around the liner; [and]

f. thereafter moving the well string longitudinally of the liner *and the seal bushing* to unlock the seal bushing [,] ; and

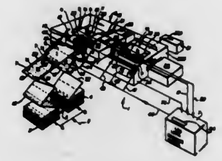
g. retrieving the well string and seal bushing from the well bore.

B1 4,194,685 (303rd)

VERIFYING INSERTION SYSTEM APPARATUS AND METHOD OF OPERATION

James E. Hill, Prospect Heights; Baesley I. Dahlstrom, Des Plaines, and Robert D. Fisher, Melrose Park, all of Ill., assignors to Dynetics Engineering Corp., Wheeling, Ill.

Continuation-in-part of Ser. No. 768,446, Feb. 14, 1977, abandoned, which is a division of Ser. No. 615,112, Sep. 19, 1975, Pat. No. 4,034,210.
Reexamination Request No. 90/000,268, Oct. 13, 1982.
Reexamination Certificate for Patent No. 4,194,685, issued Mar. 25, 1980, Ser. No. 832,001, Sep. 9, 1977.
Claims priority, application Canada, Sep. 17, 1976, 261445; United Kingdom, Sep. 20, 1976, 38812/76
Int. Cl.³ G06F *15/20*; B65B *1/00*; B41F *13/56*
U.S. Cl. 235—375



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1–17** and **43–58** is confirmed.

Claims **19, 31,** and **38–40** are cancelled.

Claims **18, 20–30, 32–37, 41** and **42** are determined to be patentable as amended.

New claims **59–61** are added and determined to be patentable.

1. Method of automatic verification and insertion of credit cards in carriers therefor comprising the steps of:

(a) providing carriers to a first station, said carriers having disposed thereon machine readable information relating to an individual cardholder account, said information being selected from information on the number of credit cards authorized for said account, and information uniquely identifying said cardholder or account,

(b) machine reading at least a portion of said information on said carriers in said first station,

(c) providing credit cards to a second station, said cards having thereon machine readable information relating to an individual cardholder or account,

(d) machine reading said information on said cards in said second station,

(e) sequentially comparing said card information with said carrier information until a condition of matched information is produced,

(f) inserting the correct number of properly matched cards into the appropriate carrier in response to said matched information condition.

18. Method of [automatic verification and] insertion of *correctly matching* credit cards *into releasable retentive engagement with the appropriate* carriers therefor *by an automated high-speed insertion machine* comprising the steps of:

(a) providing carriers *specially* adapted to retain credit cards in [association] *releasable retentive engagement* therewith[,] *with information in the form of indicia which uniquely identifies the cardholder or account cards inserted therein;*

(b) providing *said* credit cards [having thereon machine readable] *with* information *in the form of machine readable indicia which* uniquely identif[ying]*ies* a cardholder or account[,];

(c) comparing at least some of said uniquely identifying information provided said carrier with said uniquely identifying information provided said credit cards to determine whether said credit cards match said carriers, and

(d) [c] *machine* inserting the correct number of *said* credit cards *authorized for said cardholder or account* into *releasable retentive engagement with* each said carrier in accordance with *said match of said* information, *said steps in combination achieving automated high-speed machine insertion and verification of the appropriate number of correctly matched cards into releasable retentive engagement with their appropriate carriers.* [on the number of cards authorized for said cardholder or account,

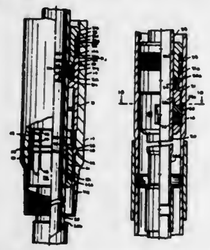
(d) identifying said carrier with information uniquely identifying the cardholder or account cards inserted therein.]

B1 4,281,711 (304th)

APPARATUS FOR POSITIONING A LINER ON A TUBULAR MEMBER IN A WELL BORE WITH A RETRIEVABLE PACK OFF BUSHING THEREBETWEEN

Britt O. Braddick, Houston, and Hiram E. Lindsey, Midland, both of Tex., assignors to Texas Iron Works, Inc., Houston, Tex.

Division of Ser. No. 440,714, Feb. 8, 1974, Pat. No. 3,920,075.
Reexamination Request No. 90/000,517, Mar. 2, 1984.
Reexamination Certificate for Patent No. 4,281,711, issued Aug. 4, 1981, Ser. No. 555,691, Mar. 5, 1975.
Int. Cl.³ E21B *33/14*
U.S. Cl. 166—118



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims **1, 14, 19, 20** and **25** are determined to be patentable as amended.

Claims **2–13, 15–18,** and **21–24,** dependent on an amended claim, are determined to be patentable.

1. A retrievable pack off bushing for sealing between a liner and tubular member in a well string during bonding operations in a well bore comprising:

(a) body means for fitting between the liner and tubular member;

(b) seal means on said body *means* for engaging the liner and tubular member for sealing therebetween [;], *said seal means positioned to avoid communication between the inside and the outside of the liner throughout the length of the liner below said body means and above where bonding agent is discharged from the liner into the well bore;*

(c) cooperating surface means on the liner, tubular member and said body means [engagable] *engageable* with each other to lock said body means to the liner for sealing between the liner and tubular member while accommodating axial movement of the tubular member; and

(d) means to unlock said cooperating surface means from each other upon a predetermined amount of further relative longitudinal movement between the tubular member and said body means whereby said body means may be retrieved with the tubular member and well string from the well bore.

B1 4,342,811 (305th)

OPEN-CELLED MICROPOROUS SORBENT-LOADED TEXTILE FIBERS AND FILMS AND METHODS OF FABRICATING SAME

George Lopatin, Newton; Myron J. Coplan, Natick, and James P. Walton, Jr., Newton, all of Mass., assignors to Albany International Corp., Albany, N.Y.

Reexamination Request No. 90/000,538, Apr. 9, 1984.
Reexamination Certificate for Patent No. 4,342,811, issued Aug. 3, 1982, Ser. No. 108,178, Dec. 28, 1979.
Int. Cl.³ B01D *39/04, 39/16;* B29D *27/00;* C08J *9/26*
U.S. Cl. 428—220

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

claim **20** is cancelled.

Claims **1, 17** and **21** are determined to be patentable as amended.

Claims **2–16, 18, 19** and **22,** dependent on an amended claim, are determined to be patentable.

New claims **23–31** are added and determined to be patentable.

1. An open cell microporous body *of a polymeric material and 10-50 percent by weight of sorbent particles dispersed throughout said polymeric material in a state of high sorbent activity, said body being capable of cold drawing at least 2X and having been* produced by

mixing *said* sorbent particles [in a uniform liquefied blend comprising], *said* polymeric material and a diluent material, [the blend being heated]

heating the mixture to a first temperature above the fusion temperature of *said* [the] polymeric material *to form a uniform molten blend,*

extruding *said molten blend* [the mixture] to form the body,

attenuating the body by draw-down from the melt,

cooling the body to a second temperature sufficiently below the first temperature to cause *said* [the] diluent material to undergo separation from *said* [the] polymeric material into *an interconnected* [a] fine distinct phase, and *then*

extracting the diluent material from said body to *leave mutually interconnected pores dispersed throughout the body of the polymer* [to create an open-cell polymeric matrix, the sorbent particles being dispersed throughout the maxtrix in a state of high sorbent activity and in an amount between 10 and 50 percent by weight of the body after said extraction].

17. A method of forming *an open-cell microporous body of a polymeric material and 10–50 percent by weight of sorbent particles dispersed throughout said polymeric material in a state of high sorbent activity* [a sorbent body] *, said method* including the steps of

mixing sorbent particles, a polymeric material and a diluent material and heating the mixture to a first temperature above the fusion temperature of the polymeric material, thereby forming a melt blend, the diluent material being chosen to be a liquid compatible and mixing uniformly with the polymeric material at said first temperature,

extruding the melt blend through an orifice to form *an extrudate* [said body],

attentuating the extrudate by draw-down from the melt,

cooling the *extrudate* [body] to a second temperature sufficiently below said first temperature to cause the diluent material to undergo separation from the polymeric material into *an interconnected* [a] fine distinct phase, and *then*

extracting the diluent material from said *extrudate* [body] to *leave mutually interconnected pores dispersed throughout the polymeric material* [create an], *thereby creating said* open-cell [polymeric matrix] *microporous body* with said particles dispersed throughout [said matrix] in a highly active sorbent state.

REISSUES

FEBRUARY 19, 1985

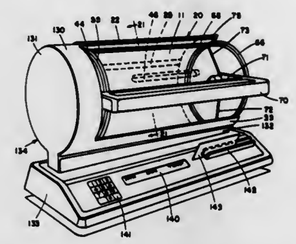
Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 31,833

FOOD COOKING APPARATUS

Herbert H. Loeffler, Arlington, and Samuel W. Tishler, Bolton, both of Mass., assignors to Arthur D. Little, Inc., Cambridge, Mass.

Original No. 4,304,177, dated Dec. 8, 1981, Ser. No. 124,091, Feb. 25, 1980. Application for reissue Oct. 21, 1983, Ser. No. 544,025
Int. Cl.³ A47J *27/00*
U.S. Cl. 99—332 **42 Claims**



38. In a cooker of the type having an open-mouthed, rotatable cooking vessel, drive means for rotating said vessel about its longitudinal axis, lid means for closing the open mouth of the vessel and containing an air vent, heating means adjacent and exterior to said vessel for applying heat to said vessel and its contents, and temperature sensing means for sensing the temperature of the gases in the vessel and generating a temperature signal indicative of said temperature, a control apparatus comprising:

(a) a microprocessor means having an internal clock for measuring elapsed time,

(b) power controller means responsive to said temperature sensing means and arranged to actuate and control said heating means,

(c) switch means responsive to said temperature sensing means to control said internal clock, and

(d) means to program said microprocessor means to perform through said power controller means a predetermined temperature/elapsed time cooking protocol, said means to program said microprocessor further comprising a magnetic stripe or bar code reader to read a magnetic stripe or bar code affixed to a card substrate, a hand or voice operable panel, or a combination of said reader and said panel.

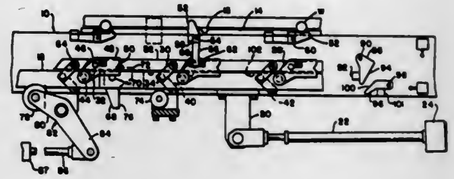
Re. 31,834

ACCUMULATING LIFT AND CARRY CONVEYOR

Peter J. Manetta, 35632 Saxony, Sterling Heights, Mich. 48077

Original No. 3,552,543, dated Jan. 5, 1971, Ser. No. 763,819, Sep. 30, 1968. Application for reissue Feb. 25, 1980, Ser. No. 124,041
The portion of the term of this patent subsequent to Dec. 15, 1987, has been disclaimed.
Int. Cl.³ B65G *25/00*
U.S. Cl. 198—751 **10 Claims**

14. A lift and carry conveyor comprising: an elongated stationary frame providing a series of equally spaced article supporting stations; a slide movable longitudinally of said frame between an initial return position and an advanced position; mechanical article sensing devices on said frame at each station; individually movable article carriers on said slide movable between idle and feed positions; actuating means including means bringing said carriers moved to feed position into contact with said articles and elevating articles from said supporting stations; said actuating means also including means moving said slide, carriers, and elevated articles forwardly to said advanced position to move articles supported on said carriers to the next succeeding stations, said actuating means further including means lowering said carriers to deposit said articles on the next succeeding stations, and said actuating means additionally including means moving said slide and carriers rearwardly to said initial position; one way positive acting mechanical means between each pair of adjacent carriers operable when any one carrier is shifted to feed position to move all carriers to the rear of said one carrier to feed position while not so moving carriers forward of said one carrier; an element on each carrier engageable by movement of said slide from said initial position with the article sensing device at the empty station to which said carrier can deliver an article and operable to move said carrier to feed position; said one-way positive acting mechanical means acting to move to feed position all carriers to the rear of the said carrier but not to so move carriers forward of said carrier; means for moving said carriers to idle position during motion of said slide from said advanced position.

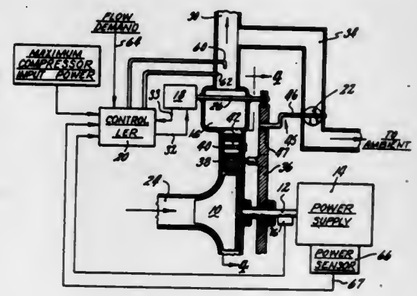


Re. 31,835

PNEUMATIC SUPPLY SYSTEM HAVING VARIABLE GEOMETRY COMPRESSOR

George C. Rannenberg, Canton, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Original No. 4,405,290, dated Sep. 20, 1983, Ser. No. 210,071, Nov. 24, 1980. Application for reissue Dec. 19, 1983, Ser. No. 562,793
Int. Cl.³ F04B *27/02*
U.S. Cl. 417—282 **5 Claims**



1. A pneumatic supply system characterized by:

a compressor including a variable geometry stator portion

included in an outlet portion of said compressor, for providing delivery by said compressor of an airflow of varying magnitude in accordance with demands of a load;

actuator means for operating said variable geometry stator portion;

a dump valve disposed in fluid communication with said compressor outlet and sequentially operated with said variable geometry stator portion by said actuator means; and

control means responsive to the flow demand of said load, the flow output of said compressor, the power input and maximum allowable power input to said compressor and the position of said variable geometry stator portion for controlling said actuator means, thereby controlling the actuation of said variable geometry stator portion and said dump valve.

Re. 31,836

PHARMACEUTICAL AND DIETARY COMPOSITION

David F. Horrobin, Montreal, Canada, assignor to Efamol Limited, London, England

Original No. 4,388,324, dated Jan. 14, 1983, Ser. No. 159,402, May 15, 1980. Application for reissue Feb. 16, 1984, Ser. No. 581,671

Int. Cl.[3] **A01N** *37/02, 37/00;* **A61K** *37/00;* **A01N** *59/26, 59/20*

U.S. Cl. 514—474 **9 Claims**

1. A pharmaceutical composition *in capsule or tablet or suppository form* for treating alcoholism or moderating the effect of taking alcohol consisting essentially of γ-linolenic acid and/or dihomo-γ-linolenic acid, optionally in association with linoleic acid or other fat acids, said acids being present as such or as physiologically functional ester or other derivative thereof, in combination with ascorbic acid.

PLANT PATENTS

GRANTED FEBRUARY 19, 1985

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

5,406

APPLE TREE 'MERAN'

Karl Zanon, Via Sibilla 11, Merano, Italy (39012), and Franz Waldner, Via Roma 109, Merano, Italy

Filed Jul. 26, 1982, Ser. No. 402,133

Claims priority, application Italy, May 17, 1982, 1001NV/82

Int. Cl.[3] **A01H** *5/00*

U.S. Cl. Plt.—34 **1 Claim**

1. A new and distinct variety of apple created by crossing of the varieties Golden Delicious and Morgenduft, as shown and described herein.

PATENTS

GRANTED FEB. 19, 1985

ERRATA

For CLASS	See PATENT NO.
361–056	4,499,673
043–042	4,499,682
172–068	4,499,747
101–152	4,499,831
126–247	4,499,913
384–467	4,450,143
384–463	4,450,144
350–574	4,450,181
404–006	4,450,225
425–511	4,450,284
433–215	4,450,294
433–225	4,450,296
084–001	4,450,317
534–635	4,450,455
514–002	4,450,467
514–002	4,450,518
514–056	4,450,519
514–063	4,450,520
514–081	4,450,521
514–173	4,450,522
514–178	4,450,523
514–250	4,450,524
514–210	4,450,525
514–226	4,450,526
514–223	4,450,527
514–228	4,450,528
514–235	4,450,529
514–255	4,450,530
514–255	4,450,531
514–256	4,450,532
514–256	4,450,533
514–301	4,450,534
514–277	4,450,535
514–397	4,450,536
514–383	4,450,537
514–367	4,450,538
514–364	4,450,539
514–397	4,450,540
514–466	4,450,541
514–465	4,450,542
514–469	4,450,543
514–543	4,450,544
514–619	4,450,545
514–781	4,450,546
252–058	4,450,678
524–533	4,450,683
523–400	4,450,703
514–452	4,450,731

PATENTS

GRANTED FEBRUARY 19, 1985

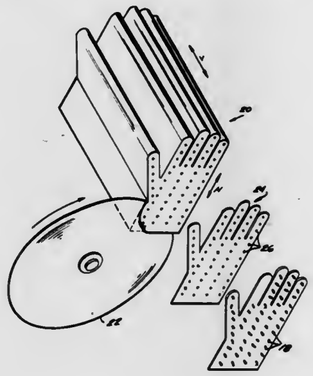
GENERAL AND MECHANICAL

4,499,611

PRODUCTION OF BREATHING MATERIALS

Murray A. Davis, 4874 Cote des Neiges Rd., Apt. 1001, Montreal, Quebec, Canada H3V 1H4

Filed Jan. 5, 1983, Ser. No. 455,824
Int. Cl.³ A41D *19/02*; B29D *7/18*
U.S. Cl. 2—169 **14 Claims**



1. A method of forming a porous flexible sheet material utilizing a mold elongated in a first dimension, comprising the steps of:

(a) disposing a plurality of strands of porous fibrous material in said mold extending substantially along said first dimension;

(b) substantially filling the mold with a liquid thermoplastic material to provide a slab having a thickness at least several times the thickness of the desired sheet to be formed therefrom;

(c) cooling the thermoplastic material to provide a slab having a plurality of strands of porous fibrous mterial extending therein; and

(d) slicing the slab in a dimension substantially perpendicular to said first dimension to provide flexible sheets having the desired thickness and having a plurality of spaced breathing apertures extending through the thickness thereof, the apertures filled with porous fibrous material.

4,499,612

POCKET FOR GARMENTS

Shunji Koike, 14-90 3-Ban 5 Chome, Ohmiya, Asahiku Osaka, Japan

Filed Apr. 7, 1983, Ser. No. 482,807
Int. Cl.³ A41D *27/20*
U.S. Cl. 2—250 **6 Claims**

1. A pocket construction for garments, comprising:

a. a first pocket and a second pocket,

b. said first pocket being secured to said second pocket, and both pockets being secured to a garment,

c. the bottom of the second pocket extending a spaced distance below the bottom of the first pocket and forming a pouch portion for both pockets,

d. a relatively small opening formed in the bottom of the first pocket and providing a passage from the first pocket into said pouch portion,

e. said opening being of a size which would allow small articles such as coins to pass therethough, but would prevent larger articles from passing therethrough,

f. whereby small articles deposited in the first pocket pass through said opening and are collected in said pouch portion from which they are retrievable through the second pocket, and



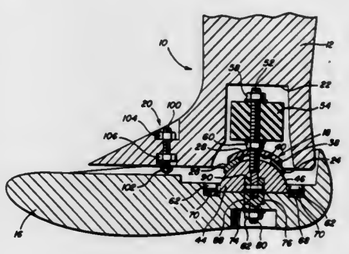
g. whereby larger articles deposited in the first pocket are prevented from passing through said opening and are collected in said first pocket from which they are retrievable.

4,499,613

ANKLE JOINT AND COUPLING FOR ARTIFICIAL LIMBS

Harry A. Yarrow, 135 S. Sparks St., Burbank, Calif. 91506

Filed Mar. 1, 1983, Ser. No. 471,274
Int. Cl.³ A61F *1/04*
U.S. Cl. 3—31 **9 Claims**



1. An ankle joint for connecting an artificial foot member to an artificial leg member comprising an inverted cup-shaped member attached to the lower end of the leg member and including a longitudinally extending arcuately curved, downwardly facing lower surface, said arcuately curved surface being transversely straight, and a correspondingly-shaped upwardly facing upper surface, a rocker member connected to the foot member and having an arcuate longitudinal surface facing upwardly, said upwardly facing arcuate surface being transversely straight and engaging the correspondingly-shaped downwardly facing surface on the inverted cup-shaped member and bolt means extending through the rocker member and inverted cup-shaped member for connecting said members together, at least one of said inverted cup-shaped member and rocker member having a longitudinally extending slot therein to enable relative pivotal movement between the rocker member and cup-shaped member and between the foot member and leg member about a transverse axis paralleling the transverse straight surfaces and disposed below the transverse straight surface, said leg member including a cavity communicating

with the lower end thereof, said bolt means extending upwardly in said cavity above said inverted cup-shaped member, a resilient member mounted on the upper end portion of the bolt means within the cavity for engaging the peripheral walls of the cavity to limit and cushion relative movement between the foot member and the leg member, said arcuate slot being formed in said inverted cup-shaped member, and an overlying cup-shaped member having a downwardly facing longitudinal arcuate surface which is transversely straight corresponding with and slidingly engaging the upwardly facing longitudinally arcuate, transversely straight upwardly facing surface on the inverted cup-shaped member, said inverted cup-shaped member having parallel sidewalls perpendicular with respect to the longitudinally arcuate surface, said rocker member including parallel sidewalls perpendicular to the arcuate longitudinal surface with the sidewalls of the inverted cup-shaped member telescoping downwardly over the sidewalls of the rocker member in close relation to prevent relative pivotal movement of the rocker member and inverted cup-shaped member about a vertical axis defined by the bolt means thereby retaining the foot member properly oriented in a front to rear aspect with respect to the leg member.

4,499,614

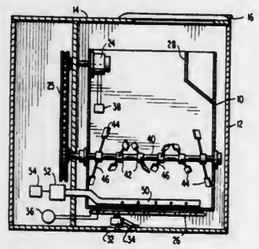
ORGANIC WASTE BIOCONVERTER AND METHOD

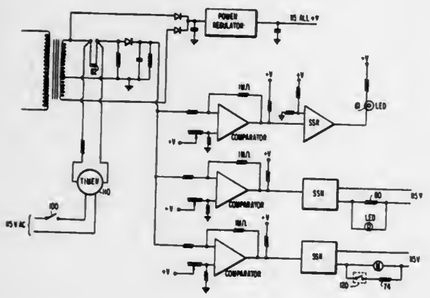
Henry L. Yeagley, 133 Wilson St., Carlisle, Pa. 17013

Continuation-in-part of Ser. No. 940,233, Sep. 7, 1978, abandoned. This application Jun. 30, 1983, Ser. No. 509,506

Int. Cl.³ A47K *11/02*

U.S. Cl. 4—111.1 **8 Claims**





1. A bioconverter comprised of a collecting vessel adapted to contain a bed of material suitable for aerobically converting organic waste matter substantially completely into carbon dioxide and water, mechanical means for stirring the contents of said collecting vessel, electric motor means for driving said mechanical means, first electric heating means associated with said vessel for controlling the temperature of the bed of material within the vessel, fan means for moving a supply of air over the surface of the material within the vessel, manually operable switch means for initiating operation of said electric motor means, said first electric heating means and said fan means, second heating means associated with said fan means for heating the air passing over the mixture, and moisture responsive means mounted in said vessel in a position so as to be located beneath the surface of said mixture for sensing the percentage moisture content thereof for energizing and deenergizing said second heating means when said percentage moisture content exceeds and drops below a first pre-determined value, respectively, and for de-energizing said electric motor means, said first electric heating means and said fan means when said percentage moisture content of the mixture drops below a second pre-determined value lower than said first pre-determined value.

4,499,615

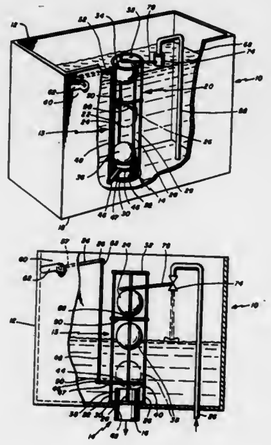
FLUSH AND REFILL DEVICE

Everett S. Radovsky, 4700 N. Main St., Apartment #4J, Fall River, Mass. 02720

Filed Jul. 14, 1980, Ser. No. 168,533

Int. Cl.³ E03D *1/36*

U.S. Cl. 4—366 **6 Claims**



1. A device for flushing and refilling a tank, the tank having an outlet and means for refilling the tank with liquid, said refilling means having an actuator, said device comprising:

a pair of substantially identical floats including an upper float and a lower float;

guide means located within the tank for guiding the floats for movement in a substantially vertical direction, one end of the guide means being disposed in proximity to the outlet and in a manner which guides the lower of the floats into alignment with the outlet, said floats being freely floatable within the guide;

the other end of the guide means being located in the tank with respect to the refilling means so as to guide the upper float toward and away from the actuator of the refill means;

the upper float having a buoyancy sufficient to operate the actuator of the refill means to shut the refill means off when the liquid level in the tank reaches a predetermined upper limit;

the weight and shape of the lower float being such that when the lower float is in seating engagement with respect to the tank outlet, the maximum buoyant effect of the liquid in the tank will be insufficient to dislodge the lower float from said seating engagement; and

means, independent of the buoyant effect of the liquid in the tank, for dislodging the lower float from its seat on the tank outlet.

4,499,616

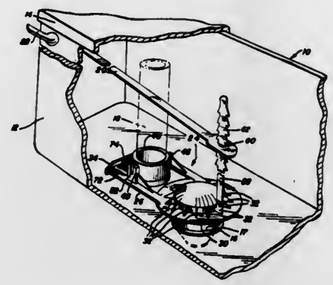
FLUSH VALVE

Dwight N. Johnson, El Toro, Calif., assignor to Filipro Products, Inc., San Marcos, Calif.

Continuation of Ser. No. 927,151, Jul. 21, 1978, abandoned, which is a continuation of Ser. No. 718,048, Aug. 26, 1976, abandoned. This application Jul. 9, 1979, Ser. No. 55,768

Int. Cl.³ E03D *1/34*

U.S. Cl. 4—393 **4 Claims**



1. A one-piece flush valve for use with a toilet tank assembly including a flush outlet surrounded by a valve seat; an overflow pipe, and a lift arm movable to initiate flow through said valve seat; said flush valve comprising:

a one-piece, integral body of molded vinyl or similar thermoplastic material; said body including a float member defined adjacent one end thereof;

a planar portion of said body extending laterally from said float member;

a mounting structure formed integrally with said body and including means for mounting said body on the overflow pipe with said float member aligned with the valve seat;

strap means for lifting said body consisting of an elongated graduated lift strap formed integrally at one end with said body adjacent said float member such that said body and strap define a one-piece valve, said strap adapted to extend from said float member to the region of the lift arm, said strap being sufficiently non-stretchy so that when in operation under tension by said lift arm in lifting said float member, it will properly lift said float member, and said strap being sufficiently supple so as not to intefere with the floating of said float, but being sufficiently stiff that no portion of it can fall into said valve seat or otherwise interfere with the valve operation when said float member is floating and the lift arm has been released to its non-lifting position;

attaching means formed adjacent the free end of said lift strap for interconnecting said lift strap and said lift arm and flexure means defined adjacent a second end of said body for allowing said float to flex relative to said second end of said body without undue stress on said body material;

said flexure means including a torque beam defined adjacent a second end of said body laterally spaced from said float, said beam formed integrally with said planar portion;

said planar portion of said body extending from said float being integrally formed with a first portion of said beam, and said mounting structure including a planar portion formed with said mounting structure and integrally formed with a second portion of said beam; and

said flexure means further including a first hinge fabricated adjacent said beam on said planar portion of said body extending from said float and a second hinge fabricated adjacent said beam on said planar portion formed with said mounting structure.

4,499,617

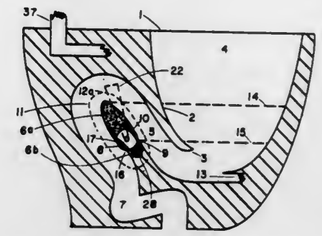
WATER CLOSET MODIFICATIONS

John R. Wilhelm, 11605 Split Rail Ct., Rockville, Md. 20852

Continuation of Ser. No. 267,713, May 28, 1981, abandoned. This application Oct. 19, 1983, Ser. No. 542,571

Int. Cl.³ E03D *11/10*

U.S. Cl. 4—441 **10 Claims**



1. In a water closet having a bowl, a sewer access volume and a water trap interconnecting the bowl and sewer access volume, the water trap being defined by two side walls, the bowl rear wall and a trap wall extending between the two side walls intermediate the bowl rear wall and the sewer access volume, the improvement wherein:

(a) said trap wall includes a lower portion integral with said water closet and a separate upper portion constructed for insertion as a unit into said water closet for attachment to said integral lower portion;

(b) said water closet includes opening means in one of said side walls disposed relative to said lower portion of the trap wall so that said upper portion of said trap wall may be inserted through said opening means for attachment to said lower portion of said trap wall, means for sealing said opening means, means for providing a seal between said upper portion of said trap wall and said lower portion of said trap wall and means for providing a seal between said upper portion of said trap wall and the respective side walls of said water trap;

(c) said upper portion of said trap wall includes a first partition member and a second partition member supported in spaced relation between a pair of side plates attached to the respective opposite sides of the partition members and affixed to said lower portion of said trap wall, said partition members thereby defining, respectively, the upper and lower extremities of a passageway through said upper portion of said trap wall; and

(d) said upper portion of the trap wall further includes valve means supported by said side plates intermediate said partition members for opening and closing said passageway, whereby the contents of said bowl are constrained to flow over the top of said upper portion of said trap wall for passage to said sewer access volume when said valve means is closed and permitted to flow through said passageway for passage to said sewer access volume when said valve means is open.

4,499,618

ADJUSTABLE BED WITH SINGLE CRANK AND PUSH-BUTTON CONTROL ASSEMBLY

Lester W. Werner, 4768 Tonga Dr., St. Louis, Mo. 63128

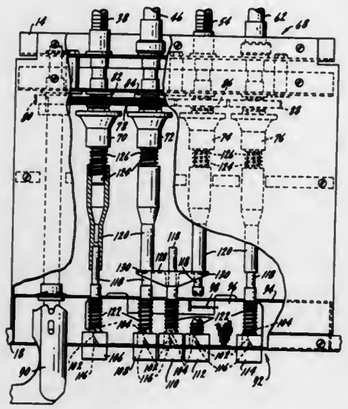
Filed Dec. 1, 1980, Ser. No. 211,540

Int. Cl.³ A61G *7/10*

U.S. Cl. 5—68 **10 Claims**

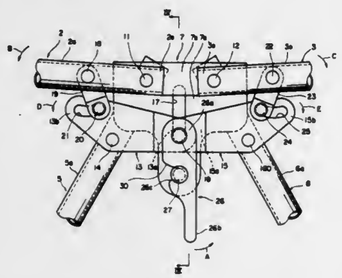
1. An adjustable bed including a relatively fixed frame, a movable frame, a mattress support structure, head and foot lift mechanisms for raising and lowering the head and foot ends respectively of said movable frame, back and knee lift mechanisms for raising and lowering the back and knee sections respectively of said mattress support structure, transmission means engageable for directing torque to said lift mechanisms

for actuation thereof, said transmission means including head, foot, back and knee lift screws respectively in driving relationship with said lift mechanisms, a gear train including a drive gear, and head, foot, back and knee driven gears in meshing relationship with said drive gear, head, foot, back and knee clutches selectively engageable for respectively establishing engagement of said driven gears with said lift screws, a manual crank engaged with said drive gear for rotation of said drive



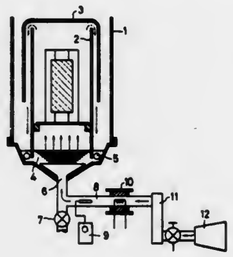
train, means associated with each of the lift mechanisms and its transmission means for stopping movement of the said lift mechanism when the limits of its travel are reached while permitting continued movement of another lift mechanism, manual control means for selectively engaging said transmission means with any number of said lift mechanisms for individual or simultaneous actuation thereof, and means for locking said control means in engaged position.

4,499,619
BABY BED
Kenzou Kassai, Osaka, Japan, assignor to Kassai Kabushikikaisha, Osaka, Japan
Filed Mar. 24, 1983, Ser. No. 478,336
Claims priority, application Japan, Apr. 9, 1982, 57-60124
Int. Cl.³ A47C *29/00*; A47D *7/00*
U.S. Cl. 5—99 A **9 Claims**



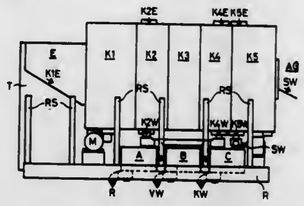
1. A baby bed comprising:
a front frame (**2**) having left and right longitudinal rod portions (**2***a*, **2***b*) and a lateral rod portion (**2***d*) for connecting the outer ends (**2***c*) of both said longitudinal rod portions (**2***a*, **2***b*),
a rear frame (**3**) having left and right longitudinal rod portions (**3***a*, **3***b*) and a lateral rod portion (**3***d*) for connecting the outer ends (**3***c*) of both said longitudinal rod portions (**3***a*, **3***b*) and having the inner ends (**3***e*) of both said longitudinal rod portions (**3***a*, **3***b*) disposed in opposed relation with the inner ends (**2***e*) of both said longitudinal rod portions (**2***a*, **2***b*) of said front frame (**2**),
a hammock (**4**) made of a flexible material and suspended from said front and rear frames (**2**, **3**),
front and rear legs (**5**, **6**) adapted to support said front and rear frames (**2**, **3**) and said hammock (**4**) and having left and right side rod portions (**5***a*, **5***b*, **6***a*, **6***b*) and lower rod portions (**5***d*, **6***d*) for connecting the lower ends (**5***c*, **6***c*) of both said side rod portions (**5***a*, **5***b*, **6***a*, **6***b*),
a left base block (**7**) for rotatably supporting an inner end (**2***e*) of the left longitudinal rod portion (**2***a*) of said front frame (**2**), an inner end (**3***e*) of the left longitudinal rod portion (**3***a*) of said rear frame (**3**), an upper end of the left side rod portion (**5***a*) of said front leg (**5**), and an upper end of said left side rod portion (**6***a*) of said rear leg (**6**), respectively,
a right base block (**8**) for rotatably supporting an inner end (**2***e*) of the right longitudinal rod portion (**2***b*) of said front frame (**2**), an inner end (**3***e*) of the right longitudinal rod portion (**3***b*) of said rear frame (**3**), an upper end of the right side rod portion (**5***b*) of said front leg (**5**), and an upper end of the right side rod portion (**6***b*) of said rear leg (**6**), respectively;
at least one of said base blocks (**7**, **8**) comprising a vertically extending elongated guide slot (**17**), a front bracket (**13**) rotatably connected to at least one side portion (**5***a* or **5***b*) of said front leg (**5**), a rear bracket (**15**) rotatably connected to at least one side portion (**6***a* or **6***b*) of said rear leg (**6**),
a vertically movable guide pin (**16**) rotatably interconnecting one end portion (**13***a*) of said front bracket (**13**) and one end portion (**15***a*) of said rear bracket (**15**), said vertically movable guide pin (**16**) being guided for vertical up and down movement in said elongated guide slot,
a front link (**19**) rotatably attached to said longitudinal rod portion (**2***a*) of said front frame (**2**) and rotatably connected to another end portion (**13***b*) of said front bracket,
a rear link (**23**) rotatably attached to the longitudinal rod portion (**3***a*) of said rear frame (**3**) and rotatably connected to another end portion (**15***b*) of said rear bracket (**15**), and
locking means (**26***c*, **27**) operatively arranged for cooperation with said guide pin (**16**) for preventing an upward and downward movement of said guide pin (**16**) when said baby bed is open.

4,499,620
FOAM WASHING METHOD
Motoi Minagawa, Ashiya, Japan, assignor to Takasago Perfumery Co., Ltd., Tokyo, Japan
Filed Dec. 28, 1982, Ser. No. 453,906
Claims priority, application Japan, Feb. 23, 1982, 57-27797
Int. Cl.³ D06F *17/12*
U.S. Cl. 8—158 **8 Claims**



1. A foam washing method which comprises forming a large amount of foam by blowing a gas through a concentrated aqueous solution of a detergent, and thereafter bringing only said foam into contact with soiled textile goods without mechanical working of said soiled textile goods to separate and remove dirt adhered to fibers of said textile goods.

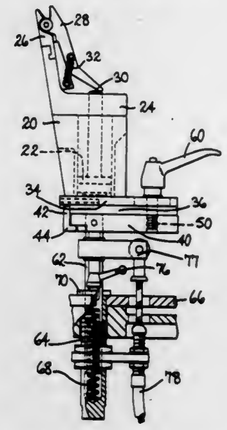
4,499,621
METHOD FOR WASHING LAUNDRY IN A PASS-THROUGH WASHING MACHINE
René Gasser, Wolfhausen, Switzerland, assignor to Maschinenfabrik AD. Schulthess & Co. AG, Zurich, Switzerland
Filed Mar. 1, 1983, Ser. No. 471,044
Claims priority, application Switzerland, Mar. 1, 1982, 1244/82
Int. Cl.³ D06F *31/00*
U.S. Cl. 8—158 **9 Claims**



1. A method for washing laundry in a pass-through washing machine of the type having a tube divided into a plurality of chambers by separating walls provided with transfer openings, wherein at least one of the chambers contains wash liquid and at least another one of the chambers contains rinse liquid, the laundry in each of the chambers being treated with liquid during a single cycle, and wherein after completion of said single cycle, the laundry in each chamber is transferred through a transfer opening into a succeeding chamber for treatment with liquid during a succeeding cycle or onto a discharge chute succeeding a final chamber of said plurality of chambers, with the improvements comprising; controlling the treatment time of the laundry in at least one of the chambers, so that the time of a first treatment in that chamber is one-half the cycle time, and after said one-half of the cycle time draining the liquid in that chamber and feeding a second liquid into that chamber for a second treatment of the laundry in that chamber for the remaining time of the cycle, and prior to transferring said laundry into a succeeding chamber or onto said discharge chute.

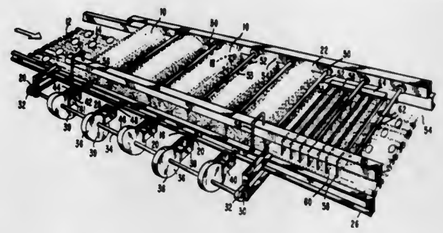
4,499,622
GRIPPER ASSEMBLY
Derek H. Garner, Leicester, England, assignor to USM Corporation, Farmington, Conn.
Filed Jan. 31, 1983, Ser. No. 462,667
Claims priority, application United Kingdom, Feb. 6, 1982, 8203472
Int. Cl.³ A43D *21/16*
U.S. Cl. 12—14.5 **13 Claims**

1. A gripper assembly for use in a machine for pulling over and lasting toe portions of shoes comprising:
(i) a housing supporting two gripper jaws,
(ii) means supported by the housing for effecting relative movement of approach and separation between said jaws,
(iii) first support plate means supporting said housing,
(iv) second support plate means connected by a pin-and-slot connection to the first support plate means, whereby the position of the latter in relation to the former can be adjusted so as to enable the position of the gripper jaws to be set in relation to shoe support means of a machine of which the assembly forms part, both towards and away from such support means and also along an arcuate path generally lengthwise of said means,
(v) first clamp means for clamping the first support plate means in adjusted position on the second support plate means, said clamp means being manually operable.
(vi) a support shaft on which the second support plate means is supported for adjusting movement about the axis of said shaft whereby also to enable the position of the gripper jaws to be set, generally lengthwise of said shoe support means, in relation to said means, and



(vii) second clamp means for clamping the second support plate means in adjusted position in relation to the support shaft.

4,499,623
EGG CLEANING APPARATUS
Jeffrey B. Kuhl, Flemington, N.J., assignor to Henry Y. Kuhl, Flemington, N.J.
Filed Jan. 20, 1984, Ser. No. 572,715
Int. Cl.³ A01K *43/00*
U.S. Cl. 15—3.13 **13 Claims**



1. An egg cleaning apparatus comprising:
(a) an egg conveying means for carrying eggs longitudinally through a processing station;
(b) a plurality of cylindrical brushes extending laterally across said egg conveying means and positioned immediately thereabove with the lower portions thereof being in contact with the eggs located therebelow;
(c) a plurality of brush rods each one extending longitudinally through one of said cylindrical brushes and allowing free rotational movement of said cylindrical brushes with respect to said brush rods, said brush rods including a first rod end and a second rod end thereof;
(d) a first mounting means extending longitudinally along one side of said egg conveying means and defining a plurality of first rod apertures therein through which said first rod ends extend for suspending said cylindrical brushes in a position above said egg conveying means, said brush rods being mounted within said first rod apertures with laterally axial freedom of movement;
(e) a second mounting means extending longitudinally along the other side of said egg conveying means and defining a

plurality of second rod apertures therein through which the second rod end of each of said brush rods extend for suspending said cylindrical brushes in a position above said egg conveying means, said brush rods being mounted within said second rod aperture with laterally axial freedom of movement;

(f) a cam support means fixedly secured with respect to said second mounting means and defining cam apertures therethrough;

(g) a camshaft means rotatably mounted extending through said cam apertures of said cam support means to extend longitudinally along said second mounting means;

(h) a plurality of cam means positioned on said camshaft means adjacent to each of said second rod ends extending through said second rod apertures;

(i) a cam follower means secured to said second rod end and preventing rotational movement of said brush rods, said follower means including:

(1) a yoke member including outwardly extending leg members positioned around both sides of said cam means adjacent to said second rod end;

(2) a roller rod extending between said leg members;

(3) a roller means mounted on said roller rod to allow rotational movement of said roller means, said roller means being in contact with the face of the adjacent cam with the profile of said cam means determining lateral movement of said cylindrical brush extending about said brush rod responsive to rotation of said cam means;

(j) a follower spring extending about said second rod end between said yoke member and said second mounting means to urge said roller into continuous contact with respect to the face of said cam means;

(k) a plurality of fluid conduits extending laterally across said egg conveying means at a location above said cylindrical brushes and being adapted to carry cleaning fluids therethrough; and

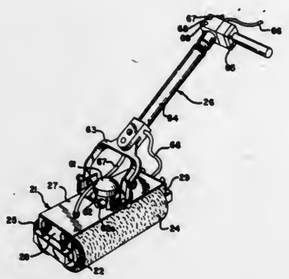
(l) a plurality of outlets defined within said fluid conduits to facilitate dispensing of cleaning fluids onto the cylindrical brushes positioned therebelow.

4,499,624

PORTABLE POLISHER

James A. Bloome, Blue Grass; Rick A. Meeker, Davenport; Jerry T. Whicker, Bettendorf, and Frederick J. Foreman, Davenport, all of Iowa, assignors to The Kartridg Pak Company, Davenport, Iowa

Filed Feb. 25, 1983, Ser. No. 469,756
Int. Cl.³ B64F *5/00*; A47L *11/03*
U.S. Cl. 15—97 R **14 Claims**



1. A portable polishing apparatus for surface preparation of substrates comprising:

a frame assembly having handle means mounted thereonto for operator grasping and controlling of the apparatus;

two elongated drive arbors depending from and rotatably mounted with respect to said frame assembly, each said elongated drive arbor having a peripheral surface and an elongated longitudinal axis, each said elongated longitudinal axis being generally parallel to the surface of the substrate being prepared by the apparatus;

an elongated polishing roll securely mounted over the peripheral surface of each of said elongated drive arbors;

motor means for imparting rotational movement, said motor means being in operative interengagement with each of said elongated drive arbors;

drive means operatively engaging said motor means and said elongated drive arbors for transmitting rotational movement from said motor means to one of the elongated drive arbors and its polishing roll in a clockwise direction and to the other of said elongated drive arbors and its polishing roll in a counterclockwise direction, whereby said polishing rolls counter-rotate with respect to each other; and

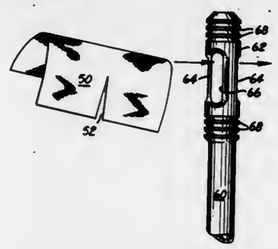
said elongated polishing roll includes an elongated, disposable cylinder having an internal diameter greater than the external diameter of the drive arbors, and a supply of buffing material including a plurality of rotary buffing wheels assembled onto said elongated, disposable cylinder, said buffing wheels being positioned adjacent to each other in an end-to-end orientation assembled onto said elongated, disposable cylinder.

4,499,625

TWO-WAY GUN CLEANER TIP AND BUTTERFLY PATH FOR USE THEREWITH

C. Edward Bottomley, 130 Griffin Rd., West Suffield, Conn. 06093

Filed Oct. 24, 1983, Ser. No. 544,958
Int. Cl.³ F41C *31/00*
U.S. Cl. 15—104.165 **2 Claims**



1. In combination, a gun cleaner reciprocable in forward and retrograde wiping strokes through a gun barrel comprising:

a manually-engageable rod and a flexible planar gun cleaning patch cooperant therewith,

the rod having an elongated longitudinal axis and having a certain diameter with a top at its outboard extremity of a diameter in excess of said certain diameter,

the tip having at the midsection of its length a pair of diametrically-opposed indentations defining a central thinned portion having an axis coincident with the rod axis and a through patch-receiving slot extended centrally of the thinned portion and coaxial with the thinned portion axis and further defining outboard and inboard peripheral bearing surfaces adjacent the opposite extremities of the indentations,

the patch being divisible into four quadrants by a first imaginary central fold line for folding the patch upon itself into a pair of confronting half-parts with each said half-part being divided into a pair of quadrants by a slit extending partially inwardly from its outer free side edge along a second imaginary central fold line intersecting the first fold line at right angles,

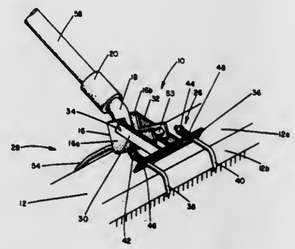
the patch being extendable into the slot for the disposition of one of the quadrants of each pair outwardly of one side of the slot and the other of the quadrants of each pair outwardly of the other side of the slot for the draping of the inboard face of the patch for support by the inboard enlargement with the outboard face being exposed for the wiping function on the forward wiping stroke and for the draping of the outboard face of the patch for support by the outboard enlargement with the inboard face being exposed for the wiping function on the retrograde wiping stroke.

4,499,626

BROOM HANDLE HOLDING ATTACHMENT FOR AN INDUSTRIAL BROOM

Earl L. Schneider, Rte. 6, Box 506, Henderson, N.C. 27536

Filed Oct. 21, 1983, Ser. No. 544,254
Int. Cl.³ B25G *3/24, 3/38*
U.S. Cl. 15—146 **7 Claims**



1. A broom handle receiver and holder adapted to be readily attached transversely across an elongated bristle holder of a broom, said broom handle receiver and holder comprising: an over-center latching broom handle receiving and holding clamp having first and second arm means for engaging opposite side portions of an elongated bristle holder of a broom; at least one of said arm means being extensible from a contracted position to an extended position and including biasing means for biasing said extensible arm means towards said contracted position; said extensible arm means further including a pair of hook members with each hook member including a hook shaped terminal end portion for engaging and grasping said bristle holder; said biasing means including a spring disposed about a portion of each hook member and is confined by a first stop means fixed to the respective hook member and a second stop means disposed adjacent said hook member but not constrained to move with said hook member in order that said hook member may move relative to said second stop means; an over-center latch pivotly mounted to said first and second arm means and operatively interconnected therebetween, said over-center latch being movable relative to said first and second arm means between a first open position where said arm means assume an expanded non-attached position and a second over-center latch position where said arm means assumes a contracted position and grip the sides of said bristle holder so as to secure said broom handle receiving means secured on said broom handle receiving and holding clamp for receiving a broom handle.

4,499,627

FLEXIBLE SURFACE CLEANING AND COATINGS APPLICATOR TOOL

James H. Gruns, 5080 Woodson Dr., Mission, Kans. 66202

Filed Mar. 17, 1983, Ser. No. 467,300
Int. Cl.³ A46B *9/10*
U.S. Cl. 15—210 R **1 Claim**

1. A surface preparation and coatings tool comprised of a handle assembly made of a deformable and reformable thin, flat metal core member encapsulated in a thin plastic sheathing material such that said handle retains a deformed shape when bent into said deformed shape, said core member being uniform in cross-section for its entire length;

said material completely encapsulates said core member through the application of an adhesive and/or sufficient heat so as to bond or fuse said plastic sheathing material to the core members in a manner that completely protects said core members from the corrosive effects of the chemicals contained in common surface preparation and/or surface coating compounds said plastic sheathing material protecting the surfaces adjacent the surfaces coated from being scratched or abraided by the metal core member;

said compounds being absorbed by a resilient, absorbent and/or adsorbent



said absorbent member is mountable to and demountable from the handle assembly so as to be reuseable by affixing to said handle assembly a new and/or clean absorbent member;

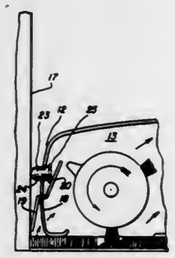
said member is capable of releasing said compounds in a controlled manner; as the compound bearing absorbent member is placed with a sliding motion in contact with the surface to be prepared and/or coated.

4,499,628

VACUUM CLEANING APPARATUS

Clark I. Platt, St. Joseph Township, Berrien County, Mich., assignor to Whirlpool Corporation, Benton Harbor, Mich.

Filed Jun. 9, 1983, Ser. No. 502,700
Int. Cl.³ A47L *9/02*
U.S. Cl. 15—419 **8 Claims**



1. In a vacuum cleaner having a nozzle defining a front wall, means defining a downwardly opening suction chamber rearwardly of the front wall, and means for applying suction to said chamber for picking up dirt from subjacent said chamber, the improvement comprising:

means for providing an opening to said chamber through said front wall;

closure means moveably mounted to said front wall to move forwardly thereof for selectively closing said opening; and

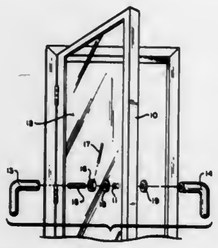
means for sensing the proximity of said front wall to an upright wall surface and for causing said closure means to move forwardly of said front wall to discontinue closing said opening when said nozzle front wall is closely juxtaposed to said upright wall surface.

4,499,629

DOOR PULL MOUNTING AND LOCKING ASSEMBLY

Harvey L. Groesman, Santa Barbara, Calif., assignor to Forms & Surfaces, Santa Barbara, Calif.

Filed May 6, 1983, Ser. No. 492,337
Int. Cl.³ B25G 1/06
U.S. Cl. 16—111 R 3 Claims



1. A door pull mounting and locking assembly for securing first and second door pulls to opposite sides of an opening in a door including, in combination:

(a) a shaft having its opposite ends threaded respectively with left and right hand threads, said threads including thread lock means, a lateral side portion of said shaft being relieved to define a longitudinal channel of given depth;

(b) a disc having a central aperture dimensioned to receive said shaft and a radial bore having a first portion passing from a point on the periphery of said disc into said aperture and a second portion passing into said disc from across said aperture a distance beyond the center of the disc, said second portion of said bore terminating short of the diametrically opposite peripheral point on said disc from said first mentioned point;

(c) a pin secured in said second portion of said bore to extend radially into said aperture a given distance less then the depth of said channel and dimensioned to ride in said channel when said shaft is passed through said aperture and thereby rotatably lock said shaft to said disc while permitting longitudinal movement of said disc along said shaft;

(d) first means in said first door pull defining a threaded opening for receiving in threaded engagement one end of said shaft;

(e) second means in said second door pull defining an oppositely threaded opening for threadedly receiving the opposite end of said shaft, said first and second door pulls being larger than said opening whereby said opposite end can be passed through said opening and said second door pull threaded thereto, said disc being received over said one end of said shaft and said first door pull then being threaded onto said one end; and

(f) an engaging means receivable in said first portion of said bore in said disc for rotating said disc and thereby said shaft in a direction to draw said first and second door pulls towards each other to thereby sandwich the periphery of the door opening therebetween and lock the door pulls to the door, said engaging means then being removed from said first portion of said bore to leave a finished appearance.

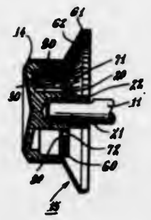
4,499,630

MANUAL CONTROL KNOB WITH ADJUSTABLE POINTER ASSEMBLY

Stephen K. Harris, and Wiley W. Miller, both of Mansfield, Ohio, assignors to The Tappan Company

Filed Sep. 27, 1982, Ser. No. 423,646
Int. Cl.³ G05G 1/10
U.S. Cl. 16—121 9 Claims

1. In a knob assembly for a rotatable shaft of an appliance, the knob assembly having a manually rotatable knob adapted to be affixed to the shaft, and a pointer means angularly displaceably affixed to the knob, the improvement wherein said knob has a rearwardly extending hub with a generally circular cross section and a central aperture for receiving said shaft, an axially extending ridge having its longitudinal extent along and unitary with the outer circumference of said hub, said pointer means comprising an annular element having an outer diameter



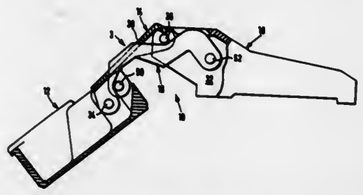
greater than that of said knob and a central aperture for receiving said hub, the central aperture of the pointer means having two groups of a plurality of circumferentially spaced axially extending recesses, said recesses each being adapted to selectively engage said ridge to inhibit relative rotation of the knob and pointer means, and means releasably holding said pointer means on said hub with said ridge extending into a selected one of said recesses.

4,499,631

FURNITURE HINGE PERMITTING DOOR OPENING ANGLE OF 110 DEGREE OR MORE

Gerhard W. Lautenschläger, Brensbach, Fed. Rep. of Germany, assignor to Karl Lautenschläger KG, Möbelbeschlagfabrik, Reinheim, Fed. Rep. of Germany

Continuation of Ser. No. 337,086, Jan. 4, 1982, abandoned. This application Jul. 17, 1984, Ser. No. 631,016
Claims priority, application Fed. Rep. of Germany, Mar. 5, 1981, 3108224
Int. Cl.³ E05D 3/06
U.S. Cl. 16—370 1 Claim



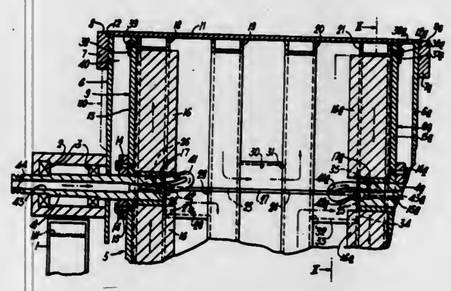
1. A hinge having a door-related part in the form of a cup having a bottom and to be sunk in a recess in a door leaf, and a carcass-related part to be fastened to a carcass of a cabinet, said hinge being movable through an angle of at least 110° from a closed position to an open position and vice versa, first and second hinge links coupling said carcass-related part to said door-related part without said hinge links being pivotally connected to each other, each hinge link having one end journalled at the cup and another end journalled at the carcass-related part, said first hinge link being closer to said bottom than said second hinge link when said hinge is in said closed position and having between its ends an opening of a certain width, said one end of said second hinge link being narrower than the width of said opening in said first hinge link, whereby part of said one end of said second hinge link passes through said opening when said hinge is moved from said closed position to said open position, wherein all the journalled ends of the hinge links remain on the same side of the opening in all positions of the hinge links, wherein said first hinge link is stamped out of sheet metal and is in the form of a substantially planar elongated metal stamping having at least at its ends lug-like projections bent at right angles from lateral edges of the hinge link, and pivot bores being provided for hinge pins journaling said first hinge link at the cup and at the carcass-related hinge part, respectively, wherein said second hinge link is composed of two sheet metal stampings of substantially equal form and disposed parallel to the lug-like projections of the first hinge link, said stampings being provided at end portions with aligned pivot bores for hinge pins journaling said second hinge link at the cup and at the carcass-related hinge part, respectively, wherein said metal stampings of the second hinge link lie directly against one another at said one end and only said two sheet metal stampings enter into and partially pass through said opening in the first hinge link.

4,499,632

CARDING ENGINE

John M. Varga, 2 Lawrence Rd., Skircoat Green, Halifax, W. Yorkshire, England HX3 OLH

Filed Oct. 12, 1982, Ser. No. 433,791
Claims priority, application United Kingdom, Oct. 10, 1981, 8130666
Int. Cl.³ D01G 15/02, 15/16
U.S. Cl. 19—98 14 Claims



1. A carding engine having a hollow carding cylinder, means mounting said cylinder for rotation about a substantially horizontal axis, and bends at each side of the cylinder, in which a fluid-conveying pathway is formed on the inner surface of the cylinder in a pattern such that fluid circulated through the pathway will maintain the surface temperature of the cylinder substantially uniform, the pathway forming at least one continuous fluid path having a discrete inlet and a discrete outlet at opposite extremities thereof.

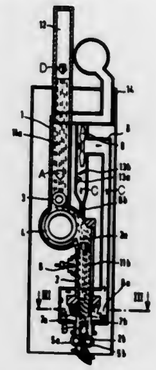
4,499,633

APPARATUS FOR SEPARATING FIBER TUFTS FROM AN AIRSTREAM

Hermann Trützschler, Mönchen-Gladbach, Fed. Rep. of Germany, assignor to Trützschler GmbH & Co. KG, Monchen-Gladbach, Fed. Rep. of Germany

Filed Feb. 10, 1984, Ser. No. 578,807
Claims priority, application Fed. Rep. of Germany, Feb. 10, 1983, 3304571
Int. Cl.³ D01G 15/40
U.S. Cl. 19—105 13 Claims

1. In an apparatus for forming a lap from fiber tufts, including a generally vertically oriented feed chute having upper and lower ends; means disposed at said upper end for introducing fiber tufts into said feed chute; means disposed at said lower end for discharging a lap from said feed chute; means for maintaining, in said feed chute, an air stream flowing downwardly in the direction of said lower end; and apertured wall means bounding said feed chute along a vertical length portion thereof for providing an exit for the air stream from said feed chute; the improvement wherein said apertured wall means includes first and second separating walls each having a plurality of parallel-spaced, vertically extending slots and webs in an alternating sequence; said slots and webs having a vertical length and a horizontal width; said first and second separating walls being in a parallel, face-to-face relationship and being



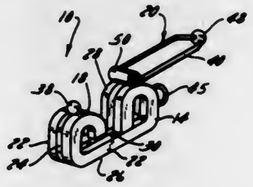
spaced from one another by a distance less than the expected smallest size of the tufts; the slots in said first separating wall being staggered in a horizontal direction with respect to the slots in said second separating wall and the width of said slots being greater than the expected largest size of the tufts.

4,499,634

JEWELRY CLASP

Francesco P. Zimmardi, 4137 N. Murray Ave., Milwaukee, Wis. 53211

Filed Apr. 18, 1983, Ser. No. 485,967
Int. Cl.³ F16G 15/00; A44B 13/00
U.S. Cl. 24—116 A 8 Claims



1. A jewelry clasp comprising

a main body having a loop at each end, one of said loops being open for detachable connection to a chain, and

a latch assembly mounted on said main body for locking the chain on the open loop, said assembly including

a ball mounted on said open loop, and

a spring detent member mounted for pivotal movement on said other loop, said detent member being pivotal into engagement with said ball.

4,499,635

SHADECLOTH FIXING PIN

Coanie T. Ward, Lot No. 1699, McKinnis Rd., Darwin, Northern Territory, Australia

Filed Mar. 9, 1983, Ser. No. 473,455
Claims priority, application Australia, Aug. 24, 1982, 525606
Int. Cl.³ A44B 9/00
U.S. Cl. 24—150 R 4 Claims

1. A shade cloth stitch pin for joining overlapped portions of tension shade cloth, the pin having an elongate body portion, a

tapered or pointed end on one end of the body portion, gripping means on the body portion adjacent the pointed end to grip and retain the shade cloth, and an abutment member to engage the cloth on the body toward the opposite end of the pin, the abutment member facing the pointed end and being positioned on the same side of the pin as the gripping means and having a portion spaced from the pin and extending



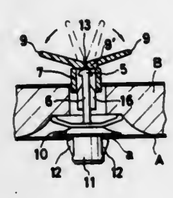
towards said one end, whereby when the pin is inserted through the overlapped portions of shade cloth, and the point again reinserted to be on the same side of the overlapped portions as the abutment member, that the overlapped portions are retained on the pin by the gripping means and the abutment member engaging on the shade cloth, said portion of the abutment member overlying the shade cloth to prevent rotation of the pin.

4,499,636

REMOVABLE TWO-PIECE RETAINING MEANS

Toshie Tanaka, Tokyo, Japan, assignor to Nifco Inc., Yokohama, Japan

Filed May 6, 1983, Ser. No. 492,273
Int. Cl.³ A44B *17/00*; F16B *13/04*
U.S. Cl. 24—289 **8 Claims**



1. A fastener, comprising

a male member formed integrally of a flat base, a clipping shank extended downwardly from the lower side of said base, and a pillar raised upwardly from said base and provided at the upper end thereof with a head extended outwardly from the periphery of said pillar, and

a female member formed integrally of a tubular part adapted to be lowered around said pillar of said male member, a pair of elongated depressing blades opposed diametrically to each other and each connected intermediate their length by thin-walled hinges which extend from the upper end of said tubular part, and each of said blades having a short portion thereof extended from said depressing blades below said thin-walled hinges,

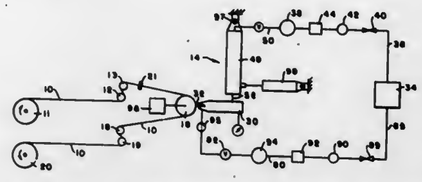
said short portion of said blades being formed in a length such that when said tubular part, while in a state having said depressing blades erected in an upright position, is set around said pillar of said male member and subsequently said depressing blades are rotated down to a substantially level position, said short portion of each blade will be brought into mutual surface contact under opposite sides of said pillar head.

4,499,637

METHOD FOR THE PRODUCTION OF MATERIALS HAVING VISUAL SURFACE EFFECTS

John M. Greenway, Spartanburg, S.C., assignor to Milliken Research Corporation, Spartanburg, S.C.

Filed Dec. 14, 1979, Ser. No. 103,329
Int. Cl.³ D06C *23/00*
U.S. Cl. 26—2 R **20 Claims**



1. A method for treating a moving substrate traveling in a well defined path by application of pressurized heated gas to the surface of said substrate to modify the surface appearance of said substrate and impart a visual pattern thereto, comprising the steps of:

(a) generating an elongate reservoir of uniformly heated pressurized gas extending across the path of said substrate;

(b) fixing the relative position of said substrate path in spaced but closely adjacent relation to said reservoir;

(c) forming, within said reservoir, a thin, elongate, precisely defined gas stream, said stream extending along the length of said reservoir;

(d) projecting said stream directly from said reservoir in the direction of said substrate surface;

(e) blocking, within said reservoir, a precisely defined portion of said elongate stream at at least one location along its length, thereby dividing said stream into at least two thin, precisely defined heated gas streams which collectively are spaced across the path of said substrate, which streams individually contact corresponding thin, precisely defined areas of said substrate surface, and thereby preventing other areas of said substrate surface opposite said blocked portion of said elongate stream from being contacted by said heated gas stream, said blocking being accomplished by directing a pressurized stream of cooler gas into the path of said elongate stream at said location;

(f) maintaining the temperature of said heated gas stream at a uniform level along the length of said reservoir, said level being sufficient to modify the surface appearance of said substrate; and

(g) moving said substrate on said path and into said projecting streams from said reservoir.

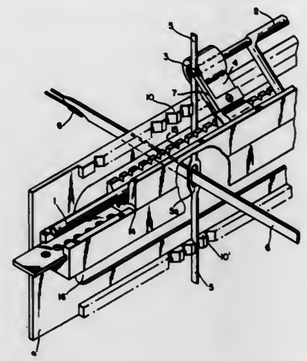
4,499,638

DEVICE FOR INDIVIDUALLY SEPARATING AND ALIGNING HEDDLES FOR THREADING

Heinz John, deceased, late of Berneck, Switzerland, and by Friedlinde John née Rüffler, heir, Gams, Switzerland, assignors to Lindauer Dornier Gesellschaft mbH, Lindau, Fed. Rep. of Germany

Filed Sep. 30, 1982, Ser. No. 430,288
Claims priority, application Fed. Rep. of Germany, Nov. 3, 1981, 3143484
Int. Cl.³ D03J *1/14*
U.S. Cl. 28—207 **4 Claims**

1. In a device for individually separating drop wires or heddles bunched into a pack on heddle slide rails of a heddle frame, where the particular foremost heddle of a pack is lifted from the pack by a separator associated with the pack and moved by holding means on the heddle slide rail into a position for drawing the warp thread into the heddle eye, and where the holding means of the individual separator is displaceable in the direction of advance of the heddles and can be pivoted from a rest position outside the plane of the pack into an operational position toward the plane of the pack and toward the plane of advance of the heddles, the improvement comprising rest means (10, 10') mounted in the draw-in area of the heddles (5) laterally next to the plane of advance, said rest means (10, 10') being equipped with a serrated profile, and a projecting part (7), mounted on holding means (3, 4), which upon pivoting of said holding means (3, 4) displaces the heddle (5) into a gap of the serrated profile and upon further pivoting presses the heddle (5) with rotation flatly against a ramp (12) of the sawtooth profile, whereby the heddle eye assumes a substantially transverse position with respect to the path of threading of a warp thread therein.



4,499,639

PROCESS FOR BROADENING THE WIDTH OF A BUNDLE OF PARALLEL FILAMENTS HAVING A BAND FORM

Tokio Okada; Haruhisa Tani; Shigezo Kojima; Setsuya Tsuyama; Kazuhiko Kurihara, and Hiroshi Yazawa, all of Tokyo, Japan, assignors to Polymer Processing Research Institute Ltd., Tokyo, Japan

Filed Apr. 27, 1982, Ser. No. 372,132
Claims priority, application Japan, May 1, 1981, 56-66491
Int. Cl.³ D01D *11/02*; D02J *1/18*
U.S. Cl. 28—282 **2 Claims**



1. In a process for broadening the width of an advancing bundle of substantially parallel filaments by holding the bundle so as to form a holding line which is straight and oblique to the advancing direction of the bundle, turning the direction of the bundle having passed through the holding line to a direction at an optional angle against the holding line and taking up the resulting broadened bundle, the improvement which comprises

(a) placing a bundle of parallel filaments as a tow between two upper and lower belts that are circulating at the same speed about spaced apart pairs of pulleys,

(b) passing the bundle of parallel filaments through a press-holding line located intermediate said pairs of pulleys;

(1) which is straight and oblique to the advancing direction of the bundle,

(2) which consists of one non-rotatable elongated cylindrical bar that is disposed oblique to the advancing direction of the belts, and

(3) which is formed by pressing the bundle sandwiched between belts straightly and obliquely to the advancing direction of the bundle along said bar, by tension of the belts which is originated from running the belts around the bar in contact with the periphery of the bar at a definite angle,

(c) after passing through the press-holding line, opening the two belts by deviating one of the belts at the holding line after passing therethrough,

(d) turning the advancing direction of the bundle to a direction at an optional angle against the press-holding line; and

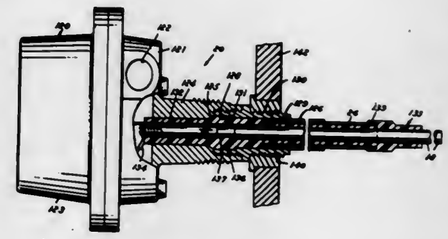
(e) taking up the resulting bundle having the desired broadened width.

4,499,640

METHOD OF MANUFACTURING CAPACITANCE-TYPE MATERIAL LEVEL INDICATOR PROBE

Ronald G. Brenton, Marysville, Mich., and Robin B. Runck, Sherman Oaks, Calif., assignors to Berwind Corporation, Philadelphia, Pa.

Filed Aug. 25, 1982, Ser. No. 411,524
Int. Cl.³ H01G *5/00*
U.S. Cl. 29—25.41 **2 Claims**



1. A method of constructing a capacitance probe for a level indicating system comprising the steps of: (a) providing a solid probe rod, (b) fixturing a hollow tubular guard telescopically surrounding and radially spaced from said probe rod intermediate and spaced from opposing ends of said probe rod, (c) connecting an insulated electrical wire to said guard and affixing said wire to said probe rod so as to extend at least to one end of said rod, (d) injection molding insulation material in a one-piece unitary construction surrounding said probe rod and between said probe rod and said guard and radially surrounding one end of said guard, a portion of said probe rod and at least a portion of said guard remote from said one end being exposed, and (e) mounting the molded assembly within a nipple adapted for mounting the assembly to a material vessel.

4,499,641

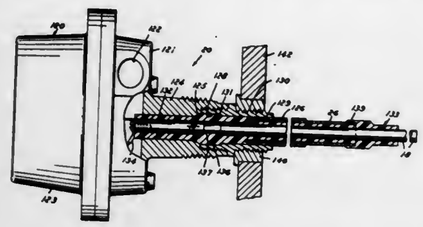
METHOD OF MANUFACTURING CAPACITANCE-TYPE MATERIAL LEVEL INDICATOR PROBE

Phillip P. Fleckenstein, Port Huron, Mich., assignor to Berwind Corporation, Philadelphia, Pa.

Filed Sep. 20, 1982, Ser. No. 419,776
Int. Cl.³ H01G *5/00*
U.S. Cl. 29—25.41 **1 Claim**

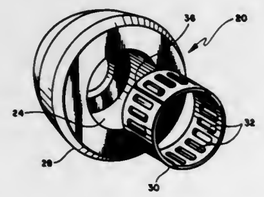
1. A method of constructing a capacitance probe for a level indicating system comprising the steps of: (a) providing a solid probe rod, (b) fixturing a hollow tubular guard telescopically surrounding and radially spaced from said probe rod and axially spaced from at least one end of said probe rod, (c) injection

molding insulation material in a one-piece unitary construction surrounding said probe rod between said probe rod and said guard and radially surrounding axially spaced ends of said guard, said one end of said probe rod and a portion of said



guard intermediate said spaced ends being radially exposed through said insulation material, and (d) mounting the molded assembly within a nipple adapted for assembly to a material vessel.

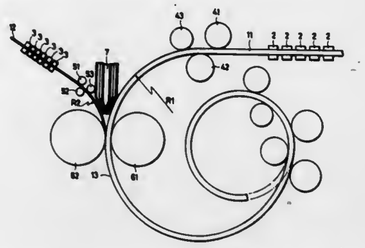
4,499,642
COMPOSITE BEARING
Edward Vezirian, Irvine; Richard J. Quinones, Garden Grove, and Alan W. Lockstedt, Westminister, all of Calif., assignors to Smith International, Inc., Newport Beach, Calif.
Filed Dec. 28, 1981, Ser. No. 334,499
Int. Cl.³ B21D *53/10*
U.S. Cl. 29—149.5 R **3 Claims**



1. A method of producing a composite radial friction bearing comprising the steps of:
forming a right-cylindrical bearing tube of a first metal,
forming a multiplicity of fenestrations in said tube in a predetermined pattern,
placing a second metal which metallurgically wets said tube in said fenestrations and filling said fenestrations to a depth approximately equal to one-half a thickness of said tube,
placing a third metal which metallurgically wets said second metal and said tube in said fenestrations and completely filling said fenestrations, and
machining cylindrical surfaces of said right-cylindrical composite bearing tube to predetermined dimensions, forming thereby a first composite bearing surface presenting areas of said first metal and said second metal, and a second bearing surface presenting areas of said first metal and said third metal, said third metal being generally similar to said second metal.

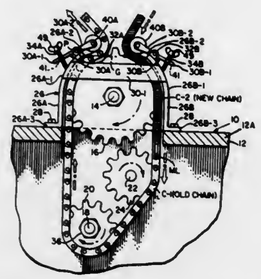
4,499,643
PROCESS FOR MANUFACTURING A PISTON RING
Hiroshi Ikutake, Saitama, Japan, assignor to Nippon Piston Ring Co., Ltd., Tokyo, Japan
Filed Jul. 1, 1983, Ser. No. 510,119
Claims priority, application Japan, Jul. 1, 1982, 57-112592
Int. Cl.³ B23P *15/08*
U.S. Cl. 29—156.6 **5 Claims**

1. In a process for manufacturing a piston ring by forming a piston ring material in the shape of a wire rod into a ring by plastic deformation with a predetermined radius of curvature, and applying a different material to the outer periphery of said piston ring material, the improvement which comprises:
the first step of preparing a base piston ring material in the form of a wire rod and a second member in the form of a wire rod, and then feeding said base material and said second member from different directions;
the second step of melting by heat those portions of said base material and said second member which are to be joined;



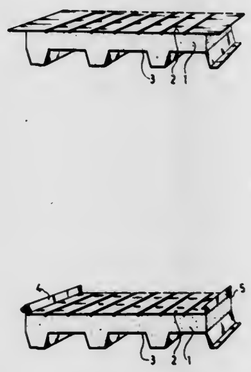
the third step of bringing said base material and said second member into intimate contact with each other and bonding to form a composite piston ring stock;
the fourth step of bending said stock into a helix with a predetermined radius of curvature and with said second member positioned on the outer peripheral surface of said helix;
the fifth stop of severing said helix to form a split piston ring having spaced ends; and
the sixth step of heat treating said piston ring.

4,499,644
APPARATUS FOR REPLACING A CHAIN
George M. Goldsby, Rte. 1, Ripley, Tenn. 38063
Filed Jul. 26, 1983, Ser. No. 517,399
Int. Cl.³ B25B *27/14*
U.S. Cl. 29—281.6 **10 Claims**



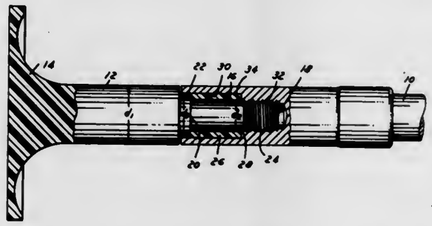
1. A fixture for use in removing a worn chain and for replacing said worn chain with a replacement chain, said fixture comprising a shroud member adapted to be detachably mounted outwardly of and in closely spaced chain guiding relation to at least an accessible portion of the chain path so as to provide an outer bounding and retaining means for a chain moving along said portion of said path, said chain path extending about at least two sprockets, and in which said shroud includes a first shroud portion mounted contiguous the chain path about a first portion of one of said sprockets, and a second shroud portion mounted contiguous said chain path about another portion of said one sprocket, an access opening in said shroud member to permit connection of said replacement chain in series with said worn chain, to permit inward feeding through said access opening of the series connected replacement chain, and to permit discharge through said access opening of said worn chain, said access opening being located between said first and said second shroud portions, and means connecting said first and said second shroud portions to each other.

4,499,645
PROCEDURE FOR MANUFACTURING A ROOF ELEMENT
Asko Luomanen, Karvia, Finland, assignor to Kone OY, Helsinki, Finland
Filed May 16, 1983, Ser. No. 495,110
Int. Cl.³ B23P *9/00*
U.S. Cl. 29—445 **1 Claim**



1. A manufacturing procedure for a roof element, comprising foaming or affixing by gluing a thermal lagging such as polyurethane in the space between two spaced upper and lower metal sheets located between moulds, said top sheet having co-planar longitudinal edges that extend outwardly beyond said lagging that are to be formed into a folded profile for machine joining to an adjacent roof element, and, wherein subsequent to foaming or affixing the lagging material, deforming by roller forming techniques said free longitudinal edges of the top sheet to profile the joining folds required for joining to adjacent roof elements by machine.

4,499,646
METHOD OF ATTACHING A METAL SHAFT TO A CERAMIC SHAFT AND PRODUCT PRODUCED THEREBY
Richard L. Allor, Livonia, and John C. Caverly, Dearborn, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.
Filed Jul. 7, 1983, Ser. No. 511,438
Int. Cl.³ B23P *16/02*; **F16D** *1/00*; **F16B** *4/00*
U.S. Cl. 29—447 **2 Claims**



1. A method of attaching a metal shaft to a ceramic shaft having a first diameter, characterized by the steps of:
forming on the ceramic shaft a shaft portion having a second diameter less than the first diameter of the ceramic shaft, said shaft portion extending from a free end of the ceramic shaft along a portion of the length of the ceramic shaft to a terminal end thereof where the ceramic shaft has a raised portion formed thereon having a third diameter less than the first diameter but greater than said second diameter, said free end of said shaft portion having threads formed thereon;
placing on said shaft portion of the ceramic shaft in an encircling relationship therewith a circular shaped expansion sleeve which has an internal diameter slightly greater than said second diameter of said shaft portion of the ceramic shaft, said expansion sleeve extending along said shaft portion from a location adjacent a termination of said threads on said shaft portion of the ceramic shaft to said raised portion of the ceramic shaft;
cooling the ceramic shaft and said expansion sleeve to contract said mentioned members;
assembling with said cooled members a metal shaft formed so as to have both an axially hollow interior portion having a diameter slightly greater than said third diameter of said raised portion of the ceramic shaft and an internally threaded hollow portion formed coaxially with said hollow interior portion of the metal shaft, said internally threaded hollow portion being mateable with said threads formed on said free end of said shaft portion, said assembly being carried in a manner such that (A) said threads on said free end of said shaft portion are engaged with said threads formed on said internally threaded portion of said metal shaft, and (B) said expansion sleeve is trapped in a volume defined by said shaft portion of the ceramic shaft, said hollow interior portion of said metal shaft, said raised portion of the ceramic shaft, and a closed end of said hollow interior portion of said metal shaft.

4,499,647
BLIND NUT FASTENING METHOD
Yoshikazu Sakamura, 6-24, Uehonmachi Nishi 2-chome, and Mitsue Majima, 2-1, Tanimachi 7-chome, both of Minami-ku, Osaka, Japan
Filed Sep. 7, 1982, Ser. No. 415,282
Claims priority, application Japan, May 11, 1982, 57-79438
Int. Cl.³ B21D *39/00*; **B23P** *11/00*
U.S. Cl. 29—509 **2 Claims**



1. A blind nut fastening method comprising:
using: a blind nut including a tubular body having a uniform outer diameter, a flanged head portion extending outwardly at an upper end of said tubular body, an inner bore through said tubular body having an unthreaded thinner neck portion at an upper section of the bore end and a female threaded portion at a lower section of said bore with a smaller diameter than said unthreaded neck portion; a separate cylindrically-shaped sleeve having a lower frusto-conical-formed inwardly-beveled end whose maximum outer diameter at the outer surface of said sleeve is substantially larger than the inner diameter of the bore of the neck portion of said blind nut, and the minimum outer diameter approximately at a bore through said sleeve is

smaller than said inner diameter of said bore, said beveled end being longer in the axial direction than the thickness of an object to which said blind nut is to be fastened; said beveled end being free to slide into said bore of said blind nut at said neck portion for expanding said neck portion; and, an elongated shaft-shaped spindle having male threads at one end thereof engagable with the female threads of said blind nut;

inserting said blind nut into an aperture of an object article;

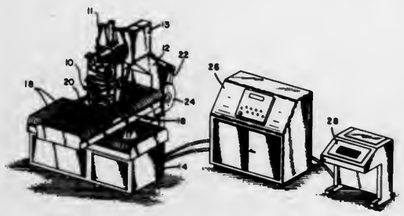
inserting said spindle through said sleeve and into said blind nut and thereafter rotating said spindle so that said male threads of said spindle mesh with said female threads of said nut to thereby pull said lower section of said inner bore toward said head portion for expanding and deforming the part not provided with said female thread portion of said tubular body in the radial and external direction and for simultaneously driving said conical beveled end of said cylindrically-shaped sleeve down between said neck portion of said nut and the elongated shaft-shaped spindle to expand and deform said neck portion of said tubular body disposed adjacent to said aperture for the entire length of said aperture, thereby butting the resulting expanding portion against the inner peripheral side of said object article.

4,499,648

AUTOMATIC WIRING APPARATUS WITH ROTATABLE INSERTION TOOLING

Christopher K. Brown, Camp Hill; Lex D. Kensinger, Annville; William R. Over, and Donald A. Wion, both of Harrisburg, all of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Sep. 29, 1982, Ser. No. 426,455
Int. Cl.³ B23P *23/00*
U.S. Cl. 29—564.2 **10 Claims**



1. Apparatus for electrically connecting first and second spaced apart terminals which are fixed relative to a planar substrate, each terminal comprising a plate-like member having a wire receiving slot extending toward said substrate, said slots in said plate-like members being substantially linear, substantially parallel to each other, and substantially perpendicular to the plane of said substrate, said apparatus comprising:

an X-Y table on which said substrate is fixed, said X-Y table having independently operable X-axis and Y-axis moving means for moving said substrate in the plane thereof,

wire feed means for feeding wire from a substantially endless source toward said substrate,

insertion means for inserting a portion of said wire into said slot, said insertion means comprising a wire inserter located adjacent said substrate, said inserter being movable perpendicularly relative to said substrate, said insertion means being rotatable about an axis perpendicular to the plane of said substrate,

said insertion means further comprising a rotation housing having a circular cam track thereon which is concentric to the axis of rotation, said track having a follower therein which moves perpendicularly relative to said board, said housing moving perpendicularly relative to said board to effect like movement of said inserter regardless of the angular position of the insertion means,

control means for coordinating the feeding of wire toward said substrate, the rotation of said insertion means, and the movement of said X-Y table, whereby,

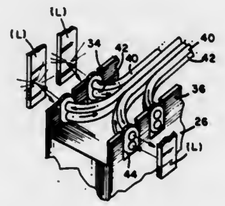
first and second terminals having plate-like members at an angle relative to each other may be electrically connected by positioning a first portion of said wire against said slot in said plate-like member of said first terminal transverse to said plate-like member and inserting said first portion therein, subsequently moving said X-Y table, rotating said insertion means through a like angle, and feeding said wire so that a second portion thereof is against said slot in said plate-like member of said second terminal transverse to said plate-like member, then inserting said second portion therein.

4,499,649

ALL LEAD SENSOR

Richard B. Maxner, Danvers, Mass., assignor to USM Corporation, Farmington, Conn.

Filed Aug. 11, 1982, Ser. No. 407,293
Int. Cl.³ H05K *3/30*; B21F *11/00*
U.S. Cl. 29—566.3 **3 Claims**



1. In a component inserting machine, a sensor for indicating that leads of the component are located down through their proper opening in the printed circuit board, comprising:

a. a cut-clinch mechanism carried by the machine and located below the printed circuit board and adapted to cut and clinch the component leads to attach the component to the board;

b. said cut-clinch mechanism comprising a block carrying opposed fixed knives angularly disposed below the board and movable knives coacting with the fixed knives to cut and clinch the component leads extending down through the board;

c. a fiber optics sensor associated with the cut-clinch mechanism and adapted to sense whether the component leads are in position down through the board prior to the operation of the cut-clinch mechanism;

d. said sensor comprising a housing carried on said block between said fixed knives, said housing having a plurality of openings spaced the approximate spacing of the component leads with fiber optic input and output filaments positioned in said openings to sense the presence of the component leads wherein the fiber optic sensor is located within the cut-clinch mechanism and said input and output filaments transfer light to reflect off the component leads and coact with a machine control for proper functioning of the machine.

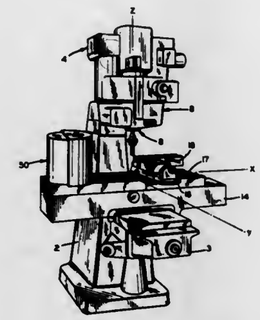
4,499,650

AUTOMATIC TOOL CHANGER

Lee E. Cannon, Bozeman, Mont., and Kentner B. Wilson, 801 Villard Rd., Bozeman, Mont. 59715, assignors to Kentner B. Wilson, Los Alamos, N. Mex.

Filed Jun. 24, 1982, Ser. No. 391,636
Int. Cl.³ B23Q *3/157*
U.S. Cl. 29—568 **10 Claims**

4. In a machine tool comprising a spindle for holding a tool, a laterally movable machine tool table for supporting a workpiece, X-axis and Y-axis motors for operatively positioning said table and said workpiece relative to said tool, and a carousel supported by said machine tool table having a plurality of tool



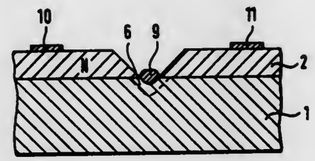
stations, an improvement comprising means for selectively rotating said carousel, wherein said means comprises said X-axis and Y-axis motors.

4,499,651

METHOD OF MANUFACTURING A FIELD-EFFECT TRANSISTOR

Erhard Kohn, Leingarten, Fed. Rep. of Germany, assignor to Telefunken Electronic GmbH, Heilbronn, Fed. Rep. of Germany

Filed Aug. 10, 1983, Ser. No. 521,938
Claims priority, application Fed. Rep. of Germany, Aug. 20, 1982, 3230945
Int. Cl.³ H01L *21/467, 29/76*
U.S. Cl. 29—571 **20 Claims**



1. A method of manufacturing a field-effect transistor comprising a substrate and an epitaxial layer thereon, wherein a V-shaped trench which extends from the surface of the epitaxial layer into the substrate is created, and a zone is formed by means of implantation in at least the area of the substrate located in front of and bordering the V-shaped trench.

4,499,652

METHOD OF FORMING A MOSFET WITH BOTH IMPROVED BREAKDOWN RESISTANCE AND LESS HOT-ELECTRON EFFECTS

Rituparna Shrivastava, Denton, Tex., assignor to Mostek Corporation, Carrollton, Tex.

Filed Sep. 15, 1983, Ser. No. 532,259
Int. Cl.³ H01L *21/265*
U.S. Cl. 29—571 **3 Claims**

1. A method of forming a field-effect transistor comprising the steps of:

forming a gate oxide layer on a substrate;

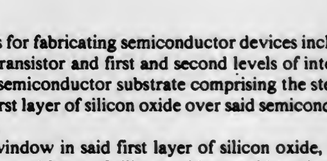
forming an active region of predetermined channel width along a first axis by implanting a threshold ion dose of one conductivity type, having a threshold dose magnitude, through said oxide layer for the purpose of producing a predetermined transistor threshold voltage;

forming a subsurface doped region, having a subsurface length and of a subsurface conductivity type, by implanting a predetermined dose of ions of said subsurface conductivity type, and having a maximum ion density at a predetermined subsurface depth;

forming a gate above said channel region, having a gate length along a second axis in said channel region perpendicular to said first axis; and

forming source and drain regions in said substrate on either side of said gate length and across said channel width, whereby a channel region is defined in said substrate below said gate, having a channel length substantially equal to said gate length and being bounded by said source and drain regions; characterized in that:

said subsurface doped region is implanted through a single



blocking-implant aperture having said subsurface length along said second axis and less than said gate length, lying wholly within said gate length and being substantially centered with respect to said gate;

said subsurface conductivity type is said one conductivity type, so that the conductivity type of said active region within said subsurface length is the same as the conductivity type of said active region outside said subsurface length; and

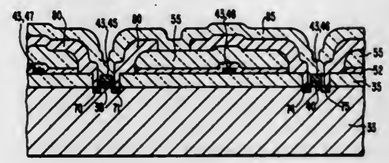
said blocking ion concentration has a substantial predetermined tail magnitude within said channel region, whereby said transistor threshold voltage is determined by the combination of said threshold dose magnitude and said tail magnitude.

4,499,653

SMALL DIMENSION FIELD EFFECT TRANSISTOR USING PHOSPHOROUS DOPED SILICON GLASS REFLOW PROCESS

Francis J. Kub, Pasadena, and William M. Evey, Baltimore, both of Md., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Nov. 3, 1983, Ser. No. 548,547
Int. Cl.³ H01L *21/94*
U.S. Cl. 29—571 **19 Claims**



1. A process for fabricating semiconductor devices including a field effect transistor and first and second levels of interconnections on a semiconductor substrate comprising the steps of:

forming a first layer of silicon oxide over said semiconductor substrate,

forming a window in said first layer of silicon oxide,

forming a second layer of silicon oxide on said semiconductor substrate in said window,

forming a layer of polycrystalline silicon over said first and second layers of silicon oxide,

defining said layer of polycrystalline silicon to form the gate electrode of said field effect transistor in said window and

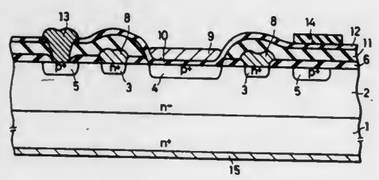
to form conductive paths to provide said first level of interconnections,
forming a layer of silicon nitride over said first and second layers of silicon oxide, said gate electrode, and said first level of interconnections,
forming a third layer of silicon oxide doped with phosphorus over said layer of silicon nitride,
defining said third layer of silicon oxide including removing said third layer of silicon oxide over said window and outside said window by a predetermined distance,
reflowing said third layer of silicon oxide whereby the upper surface of said third layer of silicon oxide is smoothed and its edges rounded,
removing selected portions of said silicon nitride layer and of said second layer of silicon oxide to expose first and second areas of said semiconductor substrate in said window on each side of said gate electrode,
forming first and second impurity regions below said first and second areas, respectively, to form the source and drain of said field effect transistor,
forming a layer of metal over said third layer of silicon oxide, and said first and second impurity regions, and
defining said layer of metal to form conductive paths to said first and second impurity regions and to form conductive paths to provide said second level of interconnections.

4,499,654

METHOD FOR FABRICATING SEMICONDUCTOR PHOTODETECTOR

Junichi Nishizawa, No. 6-16, Komegafukuro 1-chome, Sendai-shi, Miyagi, Japan; Soubei Suzuki, and Takashige Tamamushi, both of Miyagi, Japan, assignors to Kimocjo Nishazawa, Japan

Filed Dec. 13, 1983, Ser. No. 561,120
Int. Cl.³ H01L *21/22, 21/265*
U.S. Cl. 29—571 **4 Claims**



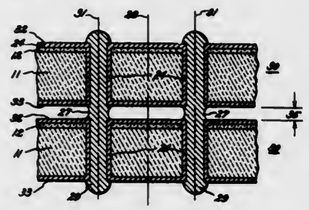
1. A method for fabricating a photodetector comprising at least one vertical-type induction transistor, comprising the steps of:
a. forming a field oxide layer on a first main surface of a silicon wafer;
b. forming a control gate region and a shielding gate region in said predetermined regions of said first main surface, said control gate region being surrounded by said shielding gate region, and said control gate region and said shielding gate region having oxide layers formed thereon;
c. removing at least a portion of said field oxide layer in a region between said control gate region and said shielding gate region to partially expose said first main surface of said silicon wafer;
d. forming a first main electrode region in the exposed portion of said first main surface of said silicon wafer;
e. forming an electrode of a first conductive material on said first main electrode region;
f. covering the entirety of said first main surface of said silicon wafer with a first insulating layer;
g. removing portions of said first insulating layer from said control gate region;
h. covering the entirety of said first main surface of said silicon wafer with a second insulating layer;
i. forming an electrode of a second conductive material on said second insulating layer on said control gate region;
j. removing portions of said second insulating layer, said first insulating layer and said oxide layer on said shielding gate region to form a contact hole;
k. covering the entirety of said first main surface of said silicon wafer with a metal layer;
l. removing at least a portion of said metal layer on said control gate region; and
m. forming an electrode for a second main electrode region on a second main surface of said silicon wafer.

4,499,655

METHOD FOR MAKING ALIGNMENT-ENHANCING FEED-THROUGH CONDUCTORS FOR STACKABLE SILICON-ON-SAPPHIRE

Thomas R. Anthony, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Division of Ser. No. 244,854, Mar. 18, 1981, Pat. No. 4,394,712.
This application Nov. 29, 1982, Ser. No. 445,350
Int. Cl.³ H01L *21/28*
U.S. Cl. 29—576 J **15 Claims**



1. A process for making alignment-enhancing electrically conductive feed-through conductors in a body comprising the steps of:
(a) providing a stackable semiconductor body, said body having top and bottom major opposed surfaces substantially parallel to each other and an outer peripheral edge area interconnecting said major surfaces;
(b) providing a plurality of holes through said body, each of said holes having apertures lying in said major opposed surfaces and an inner surface interconnecting said apertures;
(c) depositing a first thin layer of a first metal onto each of said inner surfaces;
(d) applying a second thin layer of a second metal over each of said first thin layers; and
(e) filling the remaining hole volume with a third metal forming thereby an alignment-enhancing electrically conductive feedthrough in a stackable semiconductor body.

4,499,656

DEEP MESA PROCESS FOR FABRICATING MONOLITHIC INTEGRATED SCHOTTKY BARRIER DIODE FOR MILLIMETER WAVE MIXERS

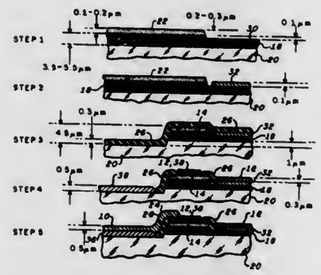
Walter Fabian, Burlington, and Frank H. Spooner, Concord, both of Mass., assignors to Sperry Corporation, New York, N.Y.

Filed Aug. 15, 1983, Ser. No. 523,232
Int. Cl.³ H01L *21/20, 21/302*
U.S. Cl. 29—576 E **37 Claims**

1. A method for fabricating semiconductor devices on a non-centrosymmetric semi-insulating substrate, comprising:
disposing a heavily doped contact layer on said substrate,
disposing a lightly doped active layer on said contact layer,
orienting said substrate in a predetermined crystallographic direction,
selectively removing a first region of said active layer and a portion of said contact layer underlying said first region,

metallizing said contact layer in said first region to form an ohmic contact,
preferentially removing a second region of said active layer, a portion of said contact layer underlying said active layer in said region, and a portion of said substrate underlying said contact layer in said region, said second region longitudinally disposed proximate to and spaced apart from said metallized region, a portion between said first and second regions defining a third intermediate region, the boundary between said second and third regions defining a step region disposed in said predetermined crystallographic direction,
depositing an insulating layer over said metallized first region, said second region, said third region, and said step region,
depositing a layer of photoresist over said insulating layer,





exposing said photoresist through mask means in said second and third regions, said exposure selectively focused to pattern said second and third regions excluding said step region,
exposing said photoresist through further mask means focused to pattern said step region,
developing said photoresist,
selectively removing regions of said insulating layer to expose said second patterned region, said step patterned region, and said third patterned region,
metallizing said first, second, and third patterned regions, and
further metallizing by means of an overlay disposed thereupon said second patterned region, a portion of said third patterned region, and said step patterned region, whereby said regions are integrally electrically contiguous.

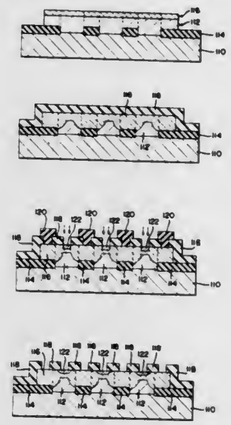
4,499,657

METHOD OF MAKING A SEMICONDUCTOR DEVICE HAVING PROTECTED EDGES

Hirotomo Ooga, and Hiromi Sakurai, both of Itami, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 125,866, Feb. 29, 1980, abandoned.
This application Aug. 2, 1982, Ser. No. 404,051
Claims priority, application Japan, Mar. 26, 1979, 54-37472
Int. Cl.³ H01L *21/20, 29/04*
U.S. Cl. 29—578 **4 Claims**

1. A process of manufacturing a semiconductor device having protected edges, said process comprising the steps of providing a semiconductor substrate of a first conductivity type having a relatively high impurity concentration and having a pair of opposite main faces, forming an electrically insulating film on one of the pair of main faces of said semiconductor substrate so as to include a plurality of openings in a predetermined pattern thereon, epitaxially growing a semiconductor layer with a relatively low impurity concentration on said electrically insulating film including said openings to form a single crystalline grown layer portion on each of said openings and polycrystalline grown layer portions on portions of said electrically insulating film including no opening respectively, doping said epitaxial grown layer with a second conductivity type imparting impurity so as to form an external base region of said second conductivity type in each of said polycrystalline grown layer portions to reach said electrically insulating film and so as to also form an internal base region of said second type conductivity in each of said single crystalline grown layer



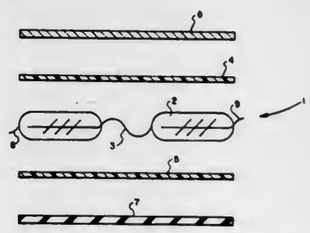
portions to be electrically connected to adjacent ones of said external base regions and so as to form a pn junction therebetween, wherein said internal base regions and said external base regions are formed through the utilization of a difference in their diffusion rates forming an emitter region of said first conductivity type on each of said internal base regions so as to be shallower than the associated internal base region, and forming a base electrode, an emitter electrode and a collector electrode in ohmic contact with each of said external base regions, each of said emitter regions and the other of the pair of main faces of said semiconductor substrate respectively, wherein said insulating film is formed so as to cover the edges of said internal base region or said external base region.

4,499,658

SOLAR CELL LAMINATES

Kathrine J. Lewis, Canoga Park, Calif., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed Sep. 6, 1983, Ser. No. 529,456
Int. Cl.³ H01L *31/18, 21/56;* C09J *5/06*
U.S. Cl. 29—588 **9 Claims**



1. In a method for forming a photovoltaic cell module lami-

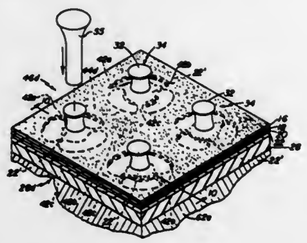
nate composed of at least one photovoltaic cell circuit sealed in a polymer, a solid superstrate, bonded to said polymer on the upperside of said cell and a solid substrate bonded to said polymer on the bottom side of said cell circuit, the improvement comprising providing upper and lower layers of uncrosslinked ethylene/vinylacetate copolymer adjacent the top and bottom of said cell circuit, said ethylene/vinylacetate copolymer layers having dispersed therein at least one peroxide initiator to crosslink said ethylene/vinylacetate copolymer and at least one organosilane monomer primer to promote bonding of said ethylene/vinylacetate copolymer to said cell circuit, superstrate and substrate, said initiator being present in an amount of no more than 1 weight percent based on the total weight of said ethylene/vinylacetate copolymer, said primer being present in an amount of no more than 0.5 weight percent based on the total weight of said ethylene/vinylacetate copolymer, and subjecting said laminate to an elevated temperature for a time sufficient to crosslink said ethylene/vinylacetate copolymer and seal said crosslinked ethylene/vinylacetate copolymer layers to one another around said cells thereby completely encapsulating said cells in crosslinked ethylene/vinylacetate copolymer and bonding said crosslinked ethylene/-vinylacetate copolymer to said cell circuit, substrate and superstrate without separately coating said cell circuit, substrate and superstrate with primer prior to said crosslinking and bonding step.

4,499,659

SEMICONDUCTOR STRUCTURES AND MANUFACTURING METHODS

Michael G. Varteresian, Watertown, and S. Robert Steele, Sudbury, both of Mass., assignors to Raytheon Company, Lexington, Mass.

Filed Oct. 18, 1982, Ser. No. 435,004
Int. Cl.³ H01L *21/461, 21/78*
U.S. Cl. 29—589 **7 Claims**



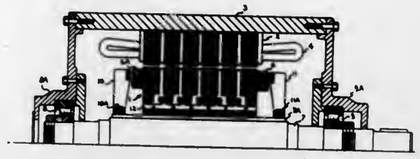
5. A method comprising the steps of:
forming a semiconductor device disposed over a first surface of a plated conductive layer, said device and a second opposite surface of said conductive layer being supported by a plated apertured support layer;
masking portions of the plated conductive layer and the support layer;
etching unmasked portions of the conductive layer to provide at least one finger portion from such conductive layer said finger portion being disposed between masked portions of the conductive layer and such support layer; and
removing the apertured support layer and portions of the unetched portions of the conductive layer.

4,499,660

METHOD OF MAKING A LAMINATED ROTOR FOR A DYNAMOELECTRIC MACHINE

Henry G. Lenz, Scotia, N.Y., assignor to General Electric Company, Fort Wayne, Ind.

Division of Ser. No. 95,024, Nov. 16, 1979, Pat. No. 4,286,182. This application Jul. 6, 1981, Ser. No. 280,574
Int. Cl.³ H02K *15/02*
U.S. Cl. 29—598 **4 Claims**



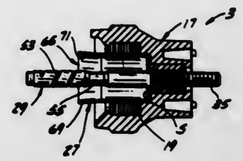
1. A method of manufacturing a laminated rotor having cast conductor bars, axially extending coolant passageways and radial coolant ducts comprising the steps of:
(a) providing a first set of a plurality of main rotor laminae each having a plurality of arcuately spaced conductor slots of a first predetermined configuration therein and a plurality of arcuately spaced coolant passageways positioned radially inward from the conductor slots,
(b) providing a plurality of vent laminae each having a plurality of arcuately spaced conductor slots of a first predetermined configuration, and a plurality of arcuately spaced vent apertures positioned radially inward from the conductor slots,
(c) providing a plurality of transition laminae each having a plurality of arcuately spaced conductor slots of a selected configuration, and a plurality of arcuately spaced vent apertures positioned radially inward from the conductor slots,
(d) providing a plurality of duct laminae each having a plurality of arcuately spaced conductor slots of a selected configuration, a plurality of arcuately spaced coolant passageways positioned radially inward from the conductor slots, and a plurality of radial ducts, each of said ducts being positioned between a pair of said conductor slots,
(e) stacking all of said laminae to form sets of laminae, each set comprising a group of main rotor laminae stacked next to a group of vent laminae and at least one transition lamina stacked between said group of vent laminae and a group of duct laminae, and
(e-1) stacking a plurality of said sets on one another, with a transition lamina stacked between each of said sets,
(e-2) aligning all of the stacked sets of laminae, and all of the transition laminae between said sets, so each conductor slot therein is in general alignment with conductor slots in the next adjacent laminae in the stack, and so the conductor slots in said transition laminae do not overlap any part of the ducts in adjacent duct laminae, and
(f) casting conductors in said conductor slots to form continuous conductors extending axially the full length of said stacked sets of laminae,
(g) making said first predetermined conductor slot configuration in the main rotor laminae wider at its widest part than the distance between adjacent ducts in said duct laminae, and
(h) making said selected conductor slot configuration in said transition laminae narrower at its widest part than the distance between adjacent ducts in said duct laminae, whereby the transition laminae block casting metal from the ducts when conductors are cast in the conductor slots.

4,499,661

METHOD OF FABRICATING DIE CAST ROTOR WITH ONE PIECE OIL RETURN/ROTOR SHAFT SECUREMENT MEMBER

C. Theodore Peachee, Jr., St. Louis County, Mo., assignor to Emerson Electric Co., St. Louis, Mo.

Continuation of Ser. No. 416,233, Sep. 9, 1982, abandoned, which is a division of Ser. No. 358,477, Mar. 15, 1982, abandoned. This application Jan. 13, 1984, Ser. No. 570,669
Int. Cl.³ H02K *15/02*
U.S. Cl. 29—598 **2 Claims**



1. A method of fabricating a rotor assembly for an electric motor, said rotor assembly having a central longitudinal axis about which it is rotated when installed in said motor, said rotor assembly comprising a die cast rotor body, a core comprising a stack of laminations of suitable ferromagnetic material, said core having a central opening therethrough, an oil return tube coaxial with said longitudinal central axis, a rotor shaft coaxial with said central longitudinal axis, and a rotor shaft mounting member fixed with respect to said rotor body and fixedly receiving said rotor shaft so that said rotor shaft is rotatable with said rotor body, said method comprising the steps of:
forming a one-piece oil tube and rotor shaft mounting member so that said oil tube and said rotor shaft mounting member are integral and so that the one piece member has a shoulder between said oil tube and said rotor shaft mounting member;
inserting said one-piece member into the central opening of said core so that the core is positioned on the outer surface of said oil return tube at a predetermined position therealong;
placing said core and said one-piece member in the die cavity of a die casting machine so that at least portions of said oil tube, said rotor shaft mounting member, and said shoulder of said one-piece member form die casting mold surfaces;
die casting molten metal around said one-piece member and around said core so as to die cast said one-piece member and said core in place within said die cast rotor body; and
fixedly securing said rotor shaft to said rotor shaft mounting member of said one-piece member.

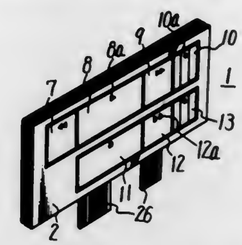
4,499,662

INJECTION MOLDING METHOD FOR MAKING A SWITCH

Tetsuo Takeuchi, Ohmiya, Japan, assignor to Sony Corporation, Tokyo, Japan

Continuation of Ser. No. 335,152, Dec. 28, 1981, abandoned. This application Dec. 12, 1983, Ser. No. 560,260
Claims priority, application Japan, Dec. 27, 1980, 55-186668
Int. Cl.³ B29C *17/00*; H01H *11/00*; B29F *1/10*
U.S. Cl. 29—622 **6 Claims**

1. In the method of producing a planar, push-type switching device by providing a front panel with a predetermined pattern projecting from one surface of the panel and having post-shaped parts, interposing a plurality of insulating sheets between a back-up plate and said front panel with said one surface confronting the adjacent one of said sheets and said post-shaped parts extending through respective openings in said sheets and back-up plate, and upsetting the ends of said post-shaped parts for assembling together said front panel, sheets and back-up plate; the improvement comprising providing said pattern projecting from said surface of the front panel by the steps of coating said surface of the front panel with a thermoplastic film;
disposing said surface coated with the thermoplastic film against a mold plate having a cavity in the form of said predetermined pattern opening toward said thermoplastic film and which includes a plurality of effective portions connected by relatively shallow runner portions with at least some of said effective portions being relatively deep and corresponding to said post-shaped parts of the pattern;



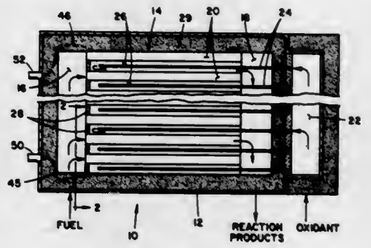
injecting material into said cavity through gates having restricted openings into said cavity only at regions of said relatively deep effective portions of the cavity corresponding to ends of said post-shaped parts so as to bond to said surface of the front panel through said thermoplastic film a molded body having said predetermined pattern; and
displacing said mold plate and said molded body away from each other to effect clean separation, at said ends of the post-shaped parts, of said molded body from solidified material remaining in said gates.

4,499,663

METHOD OF FABRICATING A MONOLITHIC CORE FOR A SOLID OXIDE FUEL CELL

Stanley A. Zwick, Woodridge, and John P. Ackerman, Downers Grove, both of Ill., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Oct. 12, 1983, Ser. No. 541,184
Int. Cl.³ H01M *8/10*
U.S. Cl. 29—623.1 **19 Claims**



1. A method of making a fuel cell core for electrochemically combining fuel and oxidant for generation of galvanic output, the core having an array of electrolyte and interconnect walls, each electrolyte wall consisting of thin layers of cathode and anode materials respectively, sandwiching a thin layer of electrolyte material therebetween, each interconnect wall consisting of thin layers of the cathode and anode, respectively sandwiching a thin layer of interconnect material therebetween, whereby separate sections of said electrolyte wall are arranged between separate sections of adjacent interconnect walls oper-

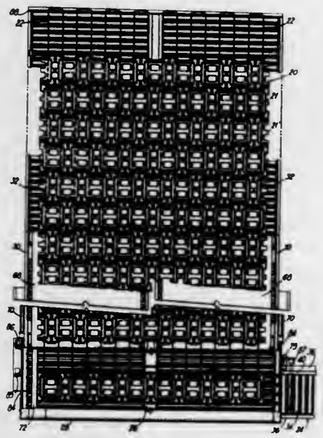
able to define a plurality of core passageways alternately arranged respectively where the inside faces thereof are formed either of only the anode material or of only the cathode material, each core passageway having the anode material on the inside being for the passage of fuel and each core passageway having the cathode material on the inside being for the passage of oxidant, the method being to build up the core electrolyte and interconnect walls simultaneously in a direction endwise of the walls and axially of the defined core passageways by applying the separate anode, cathode, electrolyte and interconnect materials onto itself as fine deposits or buildups according to the pattern of material as required in the core, the material applications for the respective materials being made separately and sequentially and repetitively to buildup the wall structure endwise of itself or axially of the core passageways, and heat curing the composite core to fuse the material layers and deposits together and make the core monolithic and dimensionally stable.

4,499,664

ARTICULATED MAT REVETMENT ASSEMBLY MACHINE

Michael J. Scales, Doraville, Ga., assignor to Nicolon Corporation, Norcross, Ga.

Filed Nov. 30, 1981, Ser. No. 325,677
Int. Cl.³ B23P *21/00*; B23Q *15/00*
U.S. Cl. 29—714 **12 Claims**



9. A machine for assembling cables and grids into articulated revetment mats comprising:

a transfer conveyor for supporting the grids and positioning a course of the grids for assembly;

a grid receiving conveyor adjacent to the transfer conveyor for receiving successive courses of grids from the transfer conveyor and for supporting cables and the grids as they are assembled into a mat; and

a means for transferring a course of the grids from the transfer conveyor to the receiving conveyor and to advance the grids on the cables.

4,499,665

COURSE CORRECTION CALCULATOR

Randall C. Davis, 115 N. Lawson Rd., Poquoson, Va. 23662

Filed Jan. 27, 1983, Ser. No. 449,605
Int. Cl.³ G01C *21/20*
U.S. Cl. 33—1 SB **5 Claims**

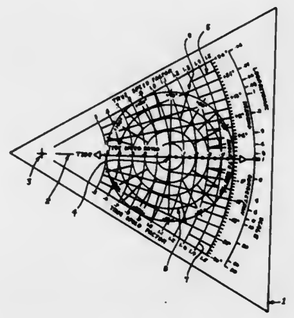
1. A course correction calculator for calculating a craft heading correction to account for craft drift due to movement with respect to the ground of a fluid medium in which said craft is moving, said fluid medium having a speed and direction of movement over the ground, said course correction calculator comprising:

an at least partially transparent substrate;

first means, associated with said substrate, for pivotally orienting said substrate with respect to a first point;

second means, associated with said substrate, for pivotally orienting said substrate with respect to a second point, wherein said first means and said second means are separated by a first line segment of a length representative of a ratio of fluid medium speed to craft speed of 1.00;

first arc segment means, associated with said substrate and having a center of curvature coincident with said first orienting means, for indicating varying ratios of fluid medium speed to craft speed where a fluid medium speed to craft speed ratio of 1.00 is indicated by a distance equal to said first line segment length;



second arc segment means, associated with said substrate and having a center of curvature coincident with said second orienting means, for indicating varying ratios of craft speed over the ground to craft speed in said fluid medium where a craft speed over the ground to craft speed in said fluid medium ratio of 1.00 is indicated by a distance equal to said first line segment length;

first angular scale means for indicating an angular relationship between said first line segment and a line between said first orienting means and a point not located on said first line segment; and

second angular scale means for indicating an angular relationship between said first line segment and a line between said second orienting means and a point not located on said first line segment.

4,499,666

UNIVERSAL FRAMING LAYOUT TOOL

Kenneth M. Smith, 1621 Belgrade Dr., Plano, Tex. 75023

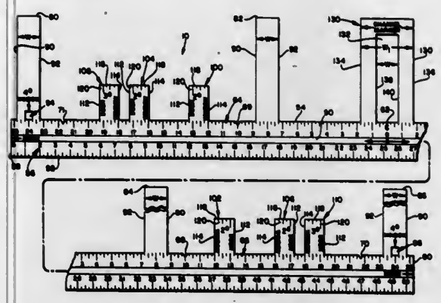
Filed Jul. 6, 1982, Ser. No. 395,787
Int. Cl.³ G01B *3/04*
U.S. Cl. 33—174 B **8 Claims**

1. A framing layout tool for use in laying out the location of framing elements along a base plate and overhead plate from achitectural plan drawings for a building, comprising:

a planar, rectangular-shaped main bar having a straight edge as a first elongated side of said bar;

at least one pair of window and door marking guides extending from and coplanar with a second elongated side, said pair of window and door marking guides being spaced equidistantly from the centerpoint of said main bar a predetermined distance for marking window and door locations, said marking guides having a first straight marking edge normal to said bar for marking a window and a second straight marking edge normal to said bar for marking a door location;

at least one pair of elongated stud marking guides extending normal from and coplanar with said second elongated side of said main bar, said pair of stud marking guides being spaced a predetermined distance apart for marking stud locations; and



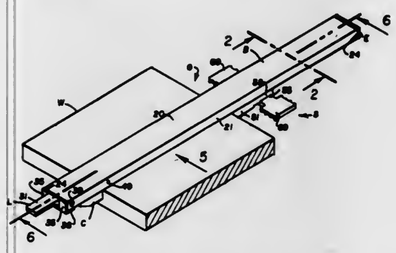
a channel marking guide extending normal from said second elongated side, said channel marking guide being rectangular and having a predetermined width and further including a central rectangular opening of a predetermined width corresponding to the width of a stud.

4,499,667

GUIDE CLAMP

Norman Griset, 380 Jennifer La., Orange, Calif. 92669

Continuation-in-part of Ser. No. 326,840, Dec. 3, 1981, Pat. No. 4,394,800. This application Jul. 19, 1983, Ser. No. 515,174
Int. Cl.³ A47B *27/00*; B43C *5/00*
U.S. Cl. 33—446 **20 Claims**



1. A guide clamp comprising a bar adapted to be placed upon surface of a workpiece and a jaw means having an abutment depending from the bar with a jaw face to engage the edge of the workpiece and wherein:

(a) the bar is channel-shaped with a top surface and a leg depending from each side thereof to define a cavity between the legs and provide an open undersurface at the base of the legs;

(b) the jaw means includes a block shiftably mounted within the cavity with the abutment being extended therefrom through the open undersurface; and

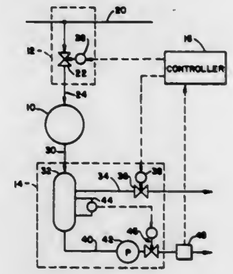
(c) a holding means is associated with the block to hold the jaw means at a selected position on the bar as when the jaw face engages the edge of a workpiece, said holding means including a clamp means carried by said block and being adapted to engage the inner surface of the bar, within the channel cavity, and lock the jaw means to the bar responsive to pressure of the jaw face as against an edge of a workpiece.

4,499,668

AUTOMATIC MINIMUM DIFFERENTIAL PRESSURE CONTROL FOR DRYER CYLINDERS

Alex Jumpeter, Lithonia, Ga., assignor to Midland-Ross Corporation, Cleveland, Ohio

Filed Nov. 25, 1983, Ser. No. 554,936
Int. Cl.³ F26B *3/28*
U.S. Cl. 34—41 **9 Claims**



1. A method of minimizing a differential steam pressure across a drying cylinder without measuring steam flow rate, there being steam feed means for feeding steam to the drying cylinder at a controllable feed pressure, fluid removal means for removing condensate and steam from the drying cylinder at a controllable removal pressure, control means for controlling the steam feed means and fluid removal means to control the differential steam pressure across the drying cylinder, and condensate monitoring means for monitoring the quantity of removed condensate, the method comprising:

(a) monitoring a rate of change of removed condensate;

(b) determining whether the condensate removal rate is substantially constant;

(c) if the condensate removal rate is substantially constant, decreasing the pressure differential is preselected, differential pressure increments until a pressure which is insufficient to maintain the condensate removal rate constant is attained, and increasing the pressure differential substantially by one of the preselected pressure differential increments, whereby the pressure differential is decreased in the preselected incremental steps to the first incremental step which fails to maintain a constant condensate removal rate and then is increased to the preceding incremental step which is the lowest first incremental step that maintains the constant condensate removal rate; and,

(d) periodically checking whether the obtained pressure differential is just maintaining the condensate flow rate constant, whereby the steam pressure differential is minimized without measuring steam flow rates.

4,499,669

COMBINATION DRYER AND SURGE BIN

Paul J. Haeck, Indianapolis, Ind., assignor to Miller Hofft, Inc., Indianapolis, Ind.

Filed Sep. 30, 1982, Ser. No. 430,940
Int. Cl.³ F26B *17/20*
U.S. Cl. 34—102 **12 Claims**

1. A combination surge and drying apparatus for use in handling a bulk material, which comprises:

first and second bins, said second bin being located above said first bin;

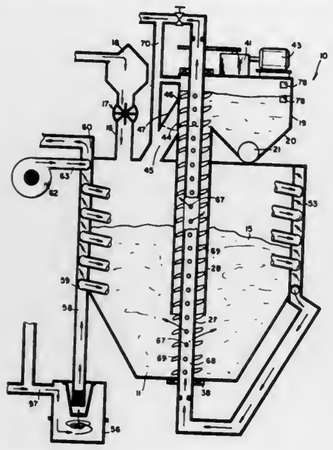
heat transfer means, surrounding at least a portion of said bin, for providing heat transfer from a hot fluid within said heat transfer means to the material received within said first bin;

discharge means for receiving and discharging material from within said first bin into said second bin;

gas introduction means for directing a drying gas into the

material within sid first bin prior to discharge of the material from said first bin;

overflow means for returning excess material in said second bin to said first bin, said overflow means including a passageway communicating between said first bin and said second bin separately from said discharge means; and



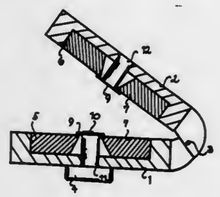
control means for controlling the passage of material through said overflow means, whereby material is selectively maintained within said second bin or is allowed to pass through said overflow means back to said lower, first bin.

4,499,670

DEVICE FOR HANDLING THIN SECTIONS, IN PARTICULAR CRYOSECTIONS, AND PROCESS FOR FREEZE-DRYING THIN SECTIONS

Kare E. Tvedt, Trondheim; Guennar Kopstad, Tiller, and Olav A. Haugen, Trondheim, all of Norway, assignors to C. Reichert Optische Werke, AG, Vienna, Austria

Filed Jun. 13, 1983, Ser. No. 504,011
Int. Cl.³ F26B *9/04*; B30B *7/00*
U.S. Cl. 34—143 **7 Claims**



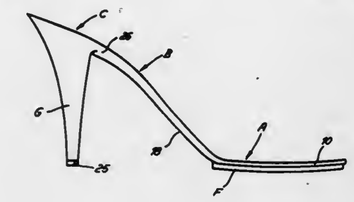
1. A device for handling thin sections, having a carrier grid for receiving a thin section, and a holder for the carrier grid, said holder comprising a baseplate, a holder-plate detachably located in a recess in said baseplate, said carrier grid being fastened above an opening which extends through said holder-plate, a pressure element located in the recess in said baseplate, said pressure element projecting into said opening into contact with the undersurface of the carrier grid, a guided cover plate which can be moved onto said baseplate, and means for clamping the cover plate against the baseplate and hence against a thin section which is present on the carrier grid.

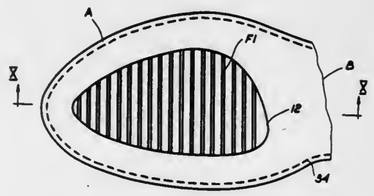
4,499,671

SHOE BOTTOM FOR GENERAL FOOTWEAR INCLUDING HEEL, INSTEP, PLANTAR, SUPPORT AND INSOLE

Giulio Sottolana, Via Mascheroni 15, Milan, Italy

Continuation-in-part of Ser. No. 206,226, Nov. 12, 1980, abandoned. This application Jul. 23, 1982, Ser. No. 401,172
Claims priority, application Italy, Nov. 16, 1979, 27373 A/79
Int. Cl.³ A43B *13/28, 13/36*
U.S. Cl. 36—24.5 **10 Claims**





1. A shoe bottom unit comprising:

a shoe bottom made of a single piece of material, said shoe bottom having an upper side, a lower side, a rear part for supporting a heel, a flexible forepart and a stiff waist part joining together said forepart and said rear part

said forepart having an opening going therethrough from said upper side to said lower side, said opening adapted to receive a top portion of a wearing member;

said wearing member having a top portion and a bottom portion, said top portion having an outside contour substantially complementary in shape to the shape of said opening and having a height substantially equal to the thickness of said flexible forepart, said top portion of the wearing member having transversal ribs;

said bottom portion of said wearing member having an outside contour substantially complementary in shape to the shape of an outside contour of said forepart;

whereby in an assembled condition of said shoe bottom unit said wearing member is fixedly attached to said flexible forepart in such manner that the entire lower side of said forepart is covered by said wearing member and whereby said wearing member having said transversal ribs on the top portion thereof and said forepart define one flexible unit.

4,499,672

SHOES SOLE FOR VENTILATION AND SHOCK ABSORPTION

Sang Do Kim, 433-63, Youl Jun-Dong, Su Won-City, Kyung Ki-Do, Rep. of Korea

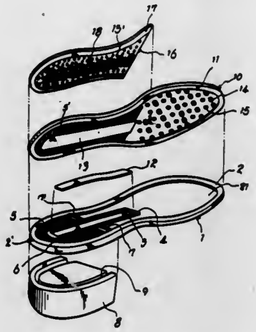
Filed Dec. 20, 1982, Ser. No. 451,427
Int. Cl.³ A43B *7/06, 13/20*
U.S. Cl. 36—3 B **5 Claims**

1. A shoe sole comprising:

an outersole having an upper surface and lower surface forming a forward portion and a heel portion and having at least one ventilating hole extending between said upper and lower surface in said heel portion and at least one

waterproof key having portions projecting from said upper and lower surface between said heel and forward portions; and

a heel coupled to the lower surface of said heel portion of said outersole having a channel extending through said heel which communicates with said at least one ventilat-



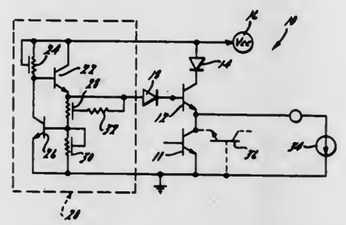
ing hole, said channel having at least one portion which opens external to said heel and being positioned such that one portion of said at least one waterproof key projects into said at least one portion to close said channel from opening external to said heel in response to weight on said heel portion.

4,499,673

REVERSE VOLTAGE CLAMP CIRCUIT

William G. Garrett, Canton, and Karl W. Overberg, Dearborn, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Mar. 7, 1983, Ser. No. 472,502
Int. Cl.³ H02H *9/04*
U.S. Cl. 361—56 **10 Claims**



1. A reverse voltage clamp circuit for preventing the collector voltage of an output transistor from substantially crossing a voltage reference near ground potential, said reverse voltage clamp circuit being adapted to be coupled to a voltage source and including:

a first clamping transistor having an emitter coupled to the collector of said output transistor; ;p1 a first diode coupled to the base of said clamping transistor; and

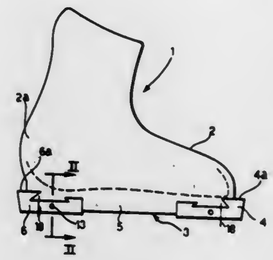
a reference voltage means coupled to the voltage source and to said first diode for establishing a reference voltage at the input to said first diode so as to keep the collector potential of said output transistor from substantially crossing the voltage reference near ground potential.

4,499,674

SKI BOOT WITH A DEVICE FOR REGISTERING ITS AXIAL ORIENTATION IN REGARD TO THE SKI

Icaro Olivieri, Montebelluna, Italy, assignor to Icaro Olivieri & C. S.p.A., Montebelluna, Italy

Filed Jul. 19, 1982, Ser. No. 399,248
Claims priority, application Italy, Jul. 20, 1981, 23023 A/81
Int. Cl.³ A43B *5/04*; A63C *9/00*
U.S. Cl. 36—117 **6 Claims**



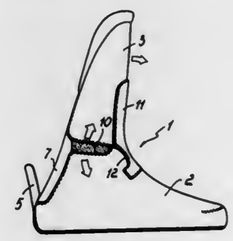
1. A ski boot comprising a body, a sole, and means for allowing said body to move in a direction transverse to the longitudinal axis of the sole, in such a way that the movement may be registered, wherein said sole includes a tip section and prismatic connection means, said tip section being independent of the rest of the sole and of the body of the boot, a corresponding tip section of said body being connected along a sliding path with said tip section of the sole through said prismatic connection means extending in a transverse direction in relation to the sole, and further comprising means for detachably locking said body to said tip section of said sole.

4,499,675

SKI BOOT INNER SHOE

Riccardo Perotto, Volpago, Italy, assignor to Nordica S.p.A., Montebelluna, Italy

Filed Jan. 17, 1983, Ser. No. 458,677
Claims priority, application Italy, Jan. 22, 1982, 20612/82[U]
Int. Cl.³ A43B *5/04*
U.S. Cl. 36—119 **6 Claims**



1. A ski boot inner shoe comprising:

a lower portion enclosing skier's foot

an upper portion connected to said lower portion and spanning skier's leg front

at least one flexible section arranged in a connection area between said lower portion and said upper portion

said flexible section allowing flexure between said upper portion and said lower portion.

4,499,676

SKI BOOT

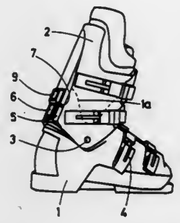
Edward L. Chalmers, II, Boulder, Colo., assignor to Lange International S.A., Fribourg, Switzerland

Filed Dec. 2, 1982, Ser. No. 446,371

Claims priority, application Switzerland, Feb. 18, 1982, 1018/82

Int. Cl.³ A43B *5/04, 5/16*

U.S. Cl. 36—120 **8 Claims**



1. A ski boot comprising a boot lower, a boot upper pivotally mounted on the boot lower, a rocker pivotally mounted in a recess in the rear of the boot upper and adapted to be rotated between two positions, spring means urging rotation of said rocker on its pivot to the first of the two positions, a stop provided on the boot lower for engaging the rocker when it has been rotated to its first position, the rocker and stop cooperating to lock the boot upper against rearward movement of the boot lower when the boot upper is pivoted to a forward position, the rocker adapted to be manually urged against action of the spring means to the second position at which the stop is disengaged from the rocker, thereby unlocking the boot upper and permitting it to pivot rearwardly on the boot lower to facilitate standing and walking with the boot, and the rocker automatically being rotated to its first position by the spring means when the boot upper is pivoted forwardly in preparation for skiing to lock the boot upper in said forward position.

4,499,677

MACHINE FOR IRONING COLLARS AND CUFFS

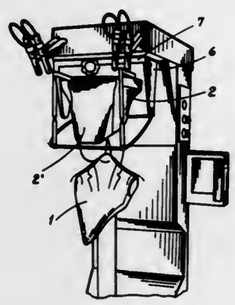
Giovanni Cartabbia, Palazzolo Sull'Oglio, Italy, assignor to Bordogna O. & C., Macpi S.p.A., Palazzolo Sull'Oglio, Italy

Filed Dec. 2, 1982, Ser. No. 446,361

Claims priority, application Italy, Dec. 21, 1981, 25723 A/81

Int. Cl.³ D06F *71/22*

U.S. Cl. 38—28 **3 Claims**



1. A machine for ironing collars and lapels on articles of clothing, comprising a fixed dummy having a configuration substantially corresponding to the configuration of a part of the upper portion of a human body for fitting an article of clothing having a collar and lapels, an upper mold having a lug-shaped downwardly extending portion and a configuration for substantially matching said dummy on a top and a front portion thereof, a support means for pivotally supporting said upper mold about a horizontal axis substantially parallel to said front portion, means for vertically displacing said support means between a rest position in which said upper mold is spaced from said dummy and an operative position in which said upper mold contacts said top portion of said dummy and is pressed against said top portion onto said collar, and means for selectively pivoting said upper mold about said horizontal axis and for pressing said lug-shaped portion against said front portion of said dummy onto said lapels when said upper mold as been brought into said operative position, wherein said upper mold is supported by a horizontal support plate having downwardly extending arms at opposite ends thereof, and wherein said support means comprises a fork structure having respective vertically extending arms pivotally supporting said downwardly extending arms, said fork structure being rigid with a piston of a vertically extending fluid-operated cylinder for vertically displacing said support means and said upper mold between said rest and operative positions.

4,499,678

MECHANICAL DEVICE FOR CONCEALING OR DISPLAYING PRINTED MATTER

Claude Moreau, 8506 60th Ave., Elmhurst, N.Y. 11373

Filed Jun. 20, 1983, Ser. No. 505,825

Int. Cl.³ A44C *3/00*

U.S. Cl. 40—1.6 **9 Claims**



1. A mechanical device for selectively concealing or displaying printed material comprising:

first and second separable body portions, said first body portion having first and second openings;

a ribbon on which said material to be selectively concealed or displayed is printed and connected between said first and second body portions, said ribbon extending outward from inside said first body portion through said first opening to said second body portion; and

ribbon winding and unwinding means for enabling the display of said printed material when said ribbon is unwound and for enabling said printed material to be concealed when said ribbon is wound, said ribbon winding and unwinding means comprising:

a rotatable reel on said first body portion and having first and second winding zones, said ribbon being connected at one end thereof to said reel and being windable from said first winding zone of said reel, and

means extending outward from said first body portion through said second opening and windable onto and unwindable from said second winding zone of said reel for causing said ribbon to wind onto said reel when said means is being unwound from said reel, and said means being wound onto said reel when said ribbon is being unwound from said reel.

4,499,679

ANTI-THEFT FRAME HANGING SYSTEM

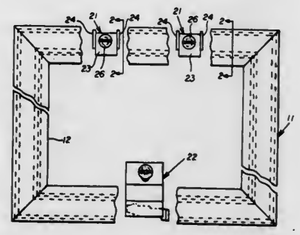
Charles F. Sherman, Townsend, Mass., assignor to Nielsen Moulding Design Corporation, Townsend, Mass.

Filed Apr. 13, 1983, Ser. No. 484,493

The portion of the term of this patent subsequent to May 31, 2000, has been disclaimed.

Int. Cl.³ F16M *13/00*

U.S. Cl. 40—152.1 **18 Claims**



1. A frame apparatus comprising:

a frame body adapted to retain a display article and having a rear surface for attachment to a support surface, the perimeter of said rear surface defined by rearwardly facing channels terminated with inwardly extending lips;

releaseable latch means for attaching said rear surface to the support surface and movable between a locked position preventing removal of said frame body from the support surface and a release position allowing removal thereof, said latch means comprising release means disposed between and substantially concealed by said frame body and the support surface and operable to move said latch means into said release position to allow removal of said frame body; and

a plurality of spaced apart catch bracket means for mounting on the support surface; each said catch bracket means comprising a base portion projecting away from the support surface, a hook portion extending substantially parallel to the support surface and engaged by one of said lips, and bracket securing means comprising one portion engaging said base portion and another portion engaging the support surface, and wherein said base portions, said hook portions and said one portions of said securing means are substantially completely retained by said channels.

4,499,680

IDENTIFICATION BAND

James A. Coburn, 2 Coburn La., Whitewater, Wis. 53190

Continuation of Ser. No. 344,184, Jan. 29, 1982,. This application May 21, 1984, Ser. No. 612,251

Int. Cl.³ G09F *3/00*

U.S. Cl. 40—304 **3 Claims**



1. An identification band device formed of a suitable flexible material and having a width adapted to receive identifying indicia and a length adapted to permit looping of the band about an object, comprising an elongated band including a flexible strap having a longitudinally extended connecting portion and an interconnected flexible buckle secured to the strap in spaced relation to said connecting portion, said buckle having a bottom wall essentially coplanar with said strap and a pair of side walls spaced laterally of the buckle and the strap to define a lateral opening to the top side of the strap at least as wide as the width of the outer end of the strap, said buckle including an upper wall integrally connected to said side walls and adapted to define an opening of a depth less than the thickness of the connecting portion of the said strap, said bottom wall of said buckle including a plurality of teeth extending longitudinally of the buckle, said strap having a plurality of similar teeth on the underside of the strap and adapted to mate with said buckle teeth and having a top side which is essentially a smooth, flat surface, a centrally located ridge integrally formed on the interior of said upper wall and of a width substantially less than the width of said buckle teeth, said ridge projecting inwardly within the buckle toward said buckle teeth to define said opening having a depth less than the thickness of the connecting strap portion, and said ridge engaging said smooth, flat surface of the strap with the strap connecting portion in said buckle to hold said teeth of said strap in firm interengagement with the bottom wall teeth of said buckle.

4,499,681

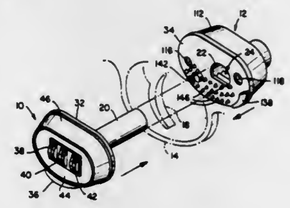
SECURITY DEVICE FOR FIREARMS

Lazlo Bako, Woodcliff Lake, and Stephen S. Scelba, Clifton, both of N.J., assignors to Presto Lock, Inc., Garfield, N.J.

Filed Mar. 7, 1983, Ser. No. 472,766

Int. Cl.³ F41C *27/10*

U.S. Cl. 42—1 Y **19 Claims**



1. A security device for preventing unauthorized use of a firearm, the device comprising a pair of covers adapted to be disposed on opposite sides of a firearm trigger guard, respectively, a latch member associated with one of the covers, the latch member having an elongate latching portion protruding from said one cover, and the other cover being formed with an opening in which is disposed a catch member adapted to engage and retain the latching portion when the covers are pressed together with the trigger guard therebetween and with the latching portion being projected longitudinally through the trigger guard into said opening, the covers when mutually engaged being adapted to embrace the trigger guard and prevent operation of the trigger, wherein the latching portion is supported for translational movement transversely of its length between latching and unlatching positions with respect to the catch member, and said one cover has a manual actuator for moving the latch member from the latching to the unlatching position and a lock with exposed operating means for preventing movement of the latch member from the latching position to the unlatching position except when the operating means is set to open the lock.

4,499,682

FISHING LURE

Lester M. Davis, deceased, late of Gig Harbor, Wash., and Ruth L. Davis, executrix, 10805-36th St. NW., Gig Harbor, Wash. 98335

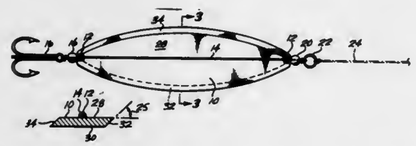
Filed Sep. 20, 1982, Ser. No. 420,036

Int. Cl.³ A01K *85/00*

U.S. Cl. 43—42.19 **7 Claims**

1. A fishing lure tending to turn on its longitudinal axis when not under tension from its connecting fishing line comprising a heavier-than-water body portion having a length a plurality of times greater than its width and having two parallel, spaced

apart, side face portions and two spaced apart end surface portions, said side face portions being a plurality of times greater than the end surface portions, each side face portion forming spaced apart acute and obtuse angles with the spaced



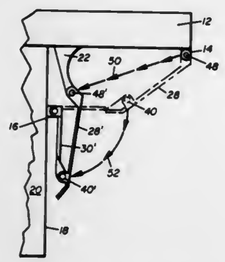
apart end surface portions, the obtuse angles being disposed alternately during turning of the lure about its longitudinal axis; and bearing means carried by the body portion for rotatively mounting the body relatively to a fishing line.

4,499,683

AUXILIARY TRIGGER FOR FIREARM

Giulio V. Savioli, Andover, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Sep. 26, 1983, Ser. No. 535,499
Int. Cl.³ F41C *19/00*
U.S. Cl. 42—69 R **4 Claims**



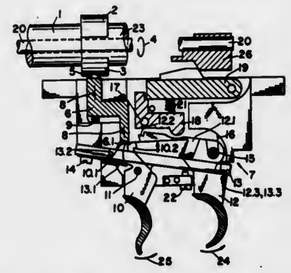
1. An auxiliary trigger for a firearm which comprises:
a biased trigger having a trigger pin hole in one end thereof;
a first holed pivot support member operatively positioned on a lower side of the muzzle end of said firearm;
a second holed pivot support member operatively disposed and fixedly attached to an inside surface of the handle of said firearm;
convertible trigger guard means detachably connected to said first holed pivot support member by removeable pin means on a front end and hingedly connected to said second holed pivot support member, said guard means acting as a conventional trigger guard to prevent accidental firing then said front end is pin connected to said first support member, and for acting as an auxiliary extended trigger for gloved operation when said trigger guard front end is pivotally connected to said end of said biased trigger by means of insertion of a pin through said trigger pin hole.

4,499,684

TRIGGER MECHANISM

Otto Repa, Oberndorf, Fed. Rep. of Germany, assignor to Mauser-Werke Oberndorf GmbH, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 302,467, Sep. 15, 1981, abandoned, which is a continuation-in-part of Ser. No. 53,803, Jul. 2, 1979, abandoned. This application Mar. 7, 1984, Ser. No. 587,186
Claims priority, application Fed. Rep. of Germany, Jul. 12, 1978, 7820914[U]
Int. Cl.³ F41C *19/02, 17/08*
U.S. Cl. 42—69 A **4 Claims**



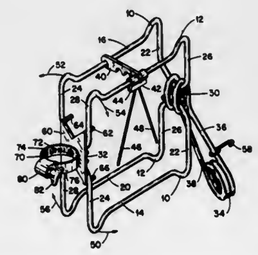
1. In a firearm, particularly a sporting gun of the type having a rotatable bolt and a trigger mechanism accomodated in a trigger housing, a first trigger pivotally mounted to the housing, a hair trigger engaged with said first trigger in a cocked position of the trigger mechanism, and means for mechanically releasing the first trigger from engagement with the hair trigger, the combination comprising:
a locking projection on the bolt;
a reset member mounted in the trigger housing for linear motion;
said locking projection being engagable with said reset member during the rotary motion of the bolt to actuate the linear motion of the reset member in one direction; and
the first trigger being pivotally mounted on a pivot axis for pivoting movement responsive to the motion of the reset member in said one direction, thereby releasing the hair trigger from engagement with the first trigger.

4,499,685

SUPPORT MEANS FOR A ROTATING FRAME ANIMAL BODY TRAP

James N. Sibley, Taylor Ford La., Rte. 28, Knoxville, Tenn. 37920

Filed Aug. 16, 1982, Ser. No. 408,467
Int. Cl.³ A01M *23/26*
U.S. Cl. 43—96 **6 Claims**



1. In combination, a single spring rotating frame trap with a stabilizing clamp comprising:
a rotating frame animal trap including;

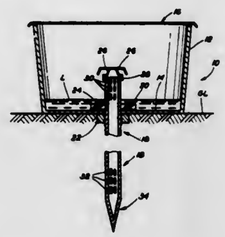
pivotally mounted jaws formed of a pair of frames, each one of said pair having two parallel side members and two parallel jaw members substantially perpendicular to said side members, said pair of frames being pivotally mounted with respect to each other at a first and further pivot point located at each of said side members such that said parallel jaws of one of said frames rotates to a closed position proximate said parallel jaws of said other frame;
means adjacent said first pivot point for biasing said jaws in said closed position,
releasable catch means for holding said jaws in an open position against said biasing means, and
a trigger means for releasing said catch means; and
a stabilizing support clamp located adjacent said further pivot point and comprising,
a support plate pivotally mounted at said further pivot point and parallel to said side member,
clamp means non-rotatably attached to said support plate away from said rotating frames for gripping a support stake to maintain said trap in a selected location prior to the firing of said trap and maintain said trap secured to said stake subsequent to said trap fixing,
at least three extensions fixedly mounted to said support plate and extending in a manner for contacting said side members of said pair of frames to prevent rotation of said frames with respect to said support stake when said frame is held in said open position, while at the same time allowing said frames to rotate with respect to each other to said closed position when said release catch is triggered.

4,499,686

PLANT WATERING DEVICE

Edgar P. Scragg, Florida, South Africa, assignor to Prima Valves International (Proprietary) Limited, Bedfordview, South Africa

Filed Jul. 29, 1982, Ser. No. 403,268
Claims priority, application South Africa, Aug. 5, 1981, 81/5382
Int. Cl.³ A01G *29/00*
U.S. Cl. 47—48.5 **1 Claim**



1. A plant watering device comprising a receptacle for containing water and an outlet tube the interior of which communicates with the interior of said receptacle and which extends downwardly to below a base wall of said receptacle, said tube being open at the lower end thereof and there being a hollow cover of pointed shape secured to the lower end portion of the tube, the cover extending above and below the lower end of the tube and there being a gap between the tube and that part of the cover which is above said lower end of the tube, the space within the tube being packed with a medium through which, in use, water contained in said receptacle percolates before emerging from said tube through said gap which forms a water flow path from the lower end of the tube to an outlet between the upper end of said cover and the tube.

4,499,687

HYBRID BRASSICA SEED PRODUCTION

Robert H. Lawrence, Jr., Boulder, Colo., and Phillip E. Hill, Gilroy, Calif., assignors to Agrigenetics Research Associates Limited, Boulder, Colo.

Continuation-in-part of Ser. No. 435,333, Oct. 19, 1982, abandoned, which is a continuation of Ser. No. 169,874, Jul. 17, 1980, abandoned. This application Jan. 31, 1983, Ser. No. 462,416
Int. Cl.³ A01G *1/00*
U.S. Cl. 47—58 **9 Claims**

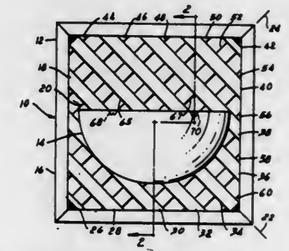
1. A process for the production of high purity hybrid Brassica seed, comprising:
(a) selecting a heterozygous maximally self-incompatible parent plant;
(b) cloning said selected heterozygous maximally self-incompatible parent plant to produce a first cloned parental line, the plants of which are both maximally self-incompatible and maximally clonal-incompatible;
(c) crossing plants of said first cloned parental line with plants of a second parental line; and
(d) collecting high purity hybrid seed from said first cloned parental line.

4,499,688

WALL HANGING

Frances Droll, 7930 E. Camelback Rd., Apt. #108, Scottsdale, Ariz. 85251

Filed Jan. 4, 1982, Ser. No. 336,517
Int. Cl.³ A01G *9/02*
U.S. Cl. 47—83 **3 Claims**



1. A wall hanging comprising a square lattice specifically adapted to be secured to a wall and to support a planter secured thereto including a plurality of separate groups of linear lattice members extending at 90° to each other in spaced apart relation a distance not greater than half the dimension of the planter in the same directions and substantially equal to the width of the linear lattice members in the same direction and parallel to the diagonals of the square lattice, said planter including separate spaced apart means cooperative with the square lattice member for securing the planter to the square lattice member with the planter in different relative angular positions with respect to the square lattice member oriented at 45° with respect to each other which spaced apart means for securing the planter to the square lattice includes at least two spaced apart separate right angle hooks on the planter which hooks are separated by a dimension in the plane of the lattice approximately three quarters of the dimension of the edge of the square lattice in the plane of the lattice and include portions extending through the front of the lattice mounted on a wall and down behind the lattice through separate openings in the lattice with the lattice and planter in either of two angularly related positions with the hook portions extending over the individual members of the lattice and which hooks have a triangular cross section complimentary to the angle formed by the intersection of adjacent linear lattice members with the sides of the square lattice parallel and perpendicular to a horizontal plane and which hooks are spaced apart horizontally

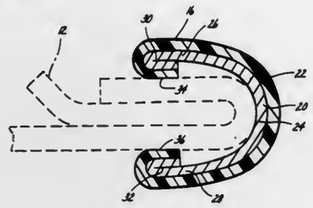
with the planter positioned on a wall with the sides of the lattice parallel and perpendicular to the horizontal a dimension exactly equal to the distance between next adjacent openings in the lattice.

4,499,689

DOOR EDGE GUARD

Robert Adell, Sunnyvale, Tex., assignor to U.S. Product Development Company, Sunnyvale, Tex.

Filed Sep. 19, 1983, Ser. No. 533,690
Int. Cl.³ E05F *7/00*
U.S. Cl. 49—462 **3 Claims**



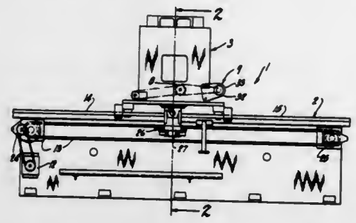
1. A self-retaining insulated metal edge guard comprising a metallic channel having a U-shaped cross section, a non-metallic covering extending around the exterior of the U-shaped cross section, inwardly turned beads at the ends of the U-shaped cross section, said covering extending around said beads so as to cover the inwardly facing surfaces of said beads, and in which the material of said metal is 5052 H-33 aluminum, said metallic channel adapted to apply the self-retention force via said beads through said covering on the inwardly facing surfaces of said beads.

4,499,690

SPLIT STATIONS SURFACE GRINDING APPARATUS

Donald A. Kilb, Brookfield, and Richard A. Diercksmeier, Milwaukee, both of Wis., assignors to E. D. Coddington Manufacturing Company, Milwaukee, Wis.

Filed Mar. 10, 1983, Ser. No. 474,021
Int. Cl.³ B24B *7/02*
U.S. Cl. 51—56 R **15 Claims**



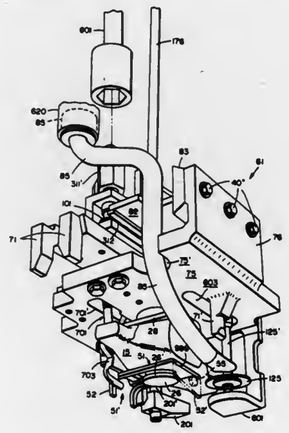
1. A grinding machine, comprising an elongated supporting bed and including first and second work stationary holder means for holding of work parts, said holder means being mounted in longitudinal alignment to opposite sides of an intermediate location of the bed and arranged to define a single elongated work support, a grinding head assembly having a carriage means movably mounted to traverse the entire length of both said holder means and having an annular grinding wheel with an end grinding face, sensing means coupled to the head assembly to monitor the movement to the opposite ends of each holder means, vertical sensing means coupled to the head assembly to monitor the vertical position of the grinding wheel, drive means for vertically positioning of said grinding wheel, and logic control means for selectively actuating said head assembly in a mode in which the carriage means alternately and cyclically reciprocates over the first work holder means in a plurality of passes and then over the second work holder means in a plurality of passes in response to enabling the corresponding first and second holder means and having means to reposition said grinding wheel in said successive passes.

4,499,691

JET PUMP BEAM BOLT RETAINER CUTTER

Michael P. Karazim; Bob Y. Okashima, both of San Jose, and John J. Ashburn, Livermore, all of Calif., assignors to General Electric Company, San Jose, Calif.

Filed Aug. 25, 1982, Ser. No. 411,307
Int. Cl.³ B24B *19/00*
U.S. Cl. 51—241 S **26 Claims**



1. A cutting apparatus for mounting onto a jet pump assembly in a nuclear reactor system including a transition piece and an inlet mixer, said transition piece effective for receiving water from an inlet riser and for routing at least a portion of said water to a single inlet mixer of said jet pump assembly, said inlet mixer being effective for engaging a jet pump beam including trunions and a beam bolt defining a laterally flanged lower circumference effective for securing said inlet mixer, said transition piece including arms joined at their upper ends by beam means for joining said arms and defining notches for engaging in holding action with the ends of said jet pump beam, said inlet mixer defining a surface against which the beam bolt is bearable near its lower circumference and including vertical sides straddlingly adjacent said surface, said inlet mixer being coupled together at initial assembly with a retaining piece including vertical and horizontal portions, one of said vertical portions being fixedly mounted on one of said vertical sides and including other arms for holding engagement with said beam bolt, said cutting apparatus being seatable on said inlet mixer and transition piece with said jet pump beam rotated 90 degrees out of normal installed position to permit cutting operation, said cutting apparatus comprising a baseplate including mounting extensions for respectively being supported upon said inlet mixer and by the arms of said transition piece, further comprising a first latch means mounted on said baseplate for securing said cutting apparatus onto said jet pump beam and said retaining piece, and horizontal means for horizontally translating on said baseplate, said horizontal means including cutting means for cutting including wheel means for cutting through said retaining piece along a horizontal line, and vertical means for positioning said cutting means vertically at said horizontal line, said horizontal means being effective for horizontally translating said wheel means along said horizontal line for cutting through said retaining piece, whereby the portion of said retaining piece being fixedly

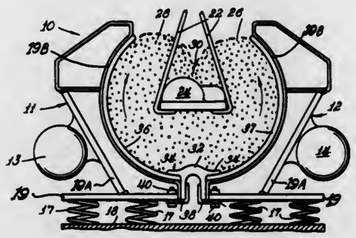
mounted onto said transition piece is separated from the remainder thereof.

4,499,692

DUAL MOTION VIBRATORY FINISHING MACHINE AND METHOD

Gunther W. Balz, Kalamazoo, Mich., assignor to Roto-Finish Company, Inc., Kalamazoo, Mich.

Filed Jun. 16, 1982, Ser. No. 389,005
Int. Cl.³ B24B *1/00*
U.S. Cl. 51—313 **33 Claims**



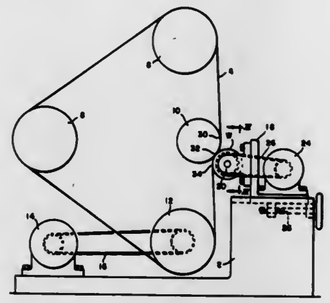
1. A method for the surface finishing of a part or workpiece with loose particulate finishing material or media comprising the steps of providing a first body of finishing media, providing a second body of finishing media, said first body and said second body being in side-by-side or lateral juxtaposition with respect to each other, independently applying vibratory action to each of said first and second bodies of finishing media to impart relative motion thereto and to cause portions of said first and second bodies to impinge upon each other, and subjecting the part or workpiece to said finishing media for the surface finishing of said part or workpiece by the action of said finishing media.

4,499,693

METHOD OF GRINDING NON-UNIFORM WORKPIECES

James J. Fatula, Sr., Ellwood City, Pa., and Martin J. Carroll, Sun City Center, Fla., assignors to Ryman Engineering Company, Ellwood City, Pa.

Filed Sep. 15, 1982, Ser. No. 418,440
Int. Cl.³ E05D *17/00*
U.S. Cl. 51—322 **6 Claims**



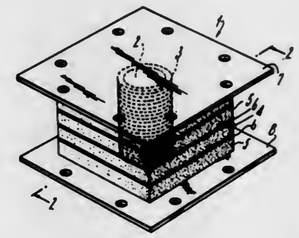
1. A method of grinding a non-uniform workpiece to substantially remove its non-uniformity by means of an endless abrasive belt which comprises rotating the workpiece about a longitudinal axis, passing the inside of said belt in contact with a belt contact surface at a tangent point, moving said workpiece against the outside of said belt substantially at said tangent point on said contact surface and holding it in positive contact with said belt, wrapping said belt around an arc of said workpiece in firm contact therewith a distance sufficient to heat the workpiece substantially uniformly, and moving said belt continuously to grind said substantially uniformly heated workpiece.

4,499,694

CYCLIC SHEAR ENERGY ABSORBER

Ian G. Buckle, and Steven M. Built, both of Auckland, New Zealand, assignors to Development Finance Corporation of New Zealand, Wellington, New Zealand

Filed Jun. 16, 1983, Ser. No. 504,725
Claims priority, application New Zealand, Jun. 18, 1982, 201015
Int. Cl.³ E04B *1/98*
U.S. Cl. 52—167 **21 Claims**



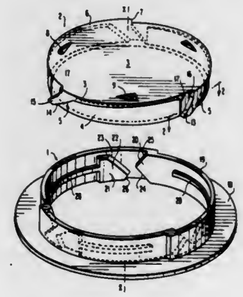
1. In a cyclic shear energy absorber adapted to be interposed between two members for absorbing energy due to induced motion between said two members, said energy absorber including a first end portion engageable to one of said two members, a second end portion engageable to the other one of said two members, and plastically cyclically deformable energy absorber means extending between said first and second end portions, the improvement comprising restraining means disposed about said energy absorber means in the region between said first and second portions, said restraining means having a flexible wall surface for confining said energy absorber means during induced motion between said two members while permitting said energy absorber means to deform.

4,499,695

MANHOLE

Jacques Oger, Pont-à-Mousson; Jean-Claude Hauer, Saulxures lès Nancy, and Jean-Louis Freis, Saint Nicolas de Port, all of France, assignors to Pont-A-Mousson S.A., Nancy, France

Filed Mar. 11, 1982, Ser. No. 357,122
Claims priority, application France, Mar. 18, 1981, 81 05400
Int. Cl.³ E02D *29/14*
U.S. Cl. 52—19 **6 Claims**



1. A manhole cover assembly of the type comprising a frame intended to be sealed in a highway covering and a removable

cover or plug engaging said frame, said plug comprising on its periphery facing said frame three helical ribs in the shape of screw threads and said frame comprising on its periphery facing said plug three helical grooves, said grooves receiving said ribs, and wherein each rib (5A) in transverse cross-section is comprised of two lateral rounded parts (11A, 12A) and wherein the corresponding grooves in cross-section have corresponding parts (23A, 24A) for engagement with said lateral rounded rib parts (11A, 12A), of concave shape with a radius of curvature (R) greater than the radius of curvature (r) of said rib lateral parts (11A, 12A), and wherein the area of the transverse cross-section of the ribs (5A) decreases from top to bottom.

4,499,696

DWELLING STRUCTURE

Robert F. Freeauf, 4487 Mt. Troy Road Extension, Pittsburgh, Pa. 15214

Continuation-in-part of Ser. No. 944,788, Sep. 22, 1978, Pat. No. 4,250,669. This application Feb. 9, 1981, Ser. No. 232,995
The portion of the term of this patent subsequent to Feb. 17, 1998, has been disclaimed.
Int. Cl.³ E04H *1/12*
U.S. Cl. 52—79.8 **10 Claims**



1. A dwelling adapted to releasably receive a portable towable trailer housing unit adjacent thereto, said dwelling being devoid of plumbing and utilizing the bathroom and kitchen facilties of such portable trailer housing unit when the two are joined together, said dwelling comprising:
a general living area;
a sleeping area;
portal means for permitting egress and ingress to the dwelling;
means, positioned proximate one of said portal means, for joining the portable trailer housing unit to said dwelling for making connection between the two when the two are joined; and
means, stationarily mounted proximate said dwelling for engaging the tires of the portable trailer housing for facilitating the movement of the portable trailer toward and away from said dwelling.

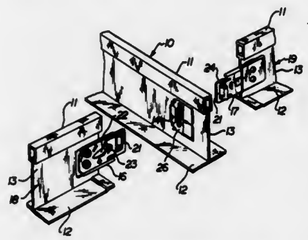
4,499,697

SUSPENDED CEILING WITH REMOVABLE TEE SECTIONS

Paul D. LaLonde, Lorain, Ohio, assignor to Donn Incorporated, Westlake, Ohio

Filed Feb. 9, 1981, Ser. No. 232,584
Int. Cl.³ E04B *1/00, 5/52*
U.S. Cl. 52—98 **9 Claims**

1. A connector system for grid systems comprising a first elongated member having a substantially planar web formed with an opening therein, said web providing release means movable from a first position substantially in said plane of said web to a second position out of the plane of said web, said release means when in said first position defining at least part of said opening, a second elongated member having a first end connector operable to be inserted lengthwise into said opening while said release means is in said first position, and providing laterally extending deflectable first lock means which deflect during said insertion and interlock said members when inserted, said opening being of a size to allow the end connector to pass fully therethrough with said lock means deflected, movement of said release means to said second position enlarging said opening and permitting release of said lock means for withdrawal of said first end connector from said opening.

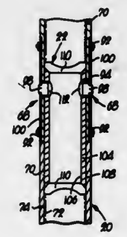


4,499,698

METHOD AND APPARATUS FOR ANCHORING RETAINING WALLS AND THE LIKE, AND INSTALLATION THEREFOR

Robert M. Hoyt; Donald E. Bobbitt; Gary E. Bartee; Stanley C. Garton, all of Centralia, and J. Paul Pilliard, Columbia, all of Mo., assignors to A. B. Chance Company, Centralia, Mo.

Filed Jan. 31, 1983, Ser. No. 462,361
Int. Cl.³ E02D *5/74*
U.S. Cl. 52—157 **8 Claims**



1. In combination:
an elongated rod;
an anchor member including an elongated shaft and means affixed to said shaft for securing said shaft in the earth;
an elongated adapter separable from, and interconnecting said rod and said anchor member comprising
a first end having means fixedly securing said rod to said adapter;
a second end having a cavity releasably receiving said shaft, and means fixedly securing said shaft in said cavity,
a third section, polygonally-shaped in cross-section, intermediate said first and second ends,
a tubular wrench shank telescoped over said rod and said third section, said shank being of complemental polygonal cross-sectional shape and dimensions relative to said third section for a mating fit driving engagement with said third section, such that axial rotation of said shank effects corresponding axial rotation of said adapter and anchor member.

4,499,699

MOLDING DEVICE FOR SUB-SOIL CURTAIN WALL SECTIONS

Theodor Baumann, Ismaning, and Otmar Schreyegg, Geretsried, both of Fed. Rep. of Germany, assignors to Philipp Holzmann Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Mar. 30, 1983, Ser. No. 480,400
Claims priority, application Fed. Rep. of Germany, May 17, 1982, 3218516
Int. Cl.³ E04B *1/00;* E04G *21/00*
U.S. Cl. 52—169.1 **12 Claims**

1. Molding device for the fabrication of sub-oil curtain wall sections in the construction of the walls of sub-soil structures, characterized in that the moulding device is a precast concrete structural part which remains in the wall of the structure and which has at least one injection pipe passing vertically therethrough and provided with injection valves for injecting leakage points with sealing compound.

4,499,700

ROOFING SHEET

Erik Gustafsson, Luleå , Sweden, assignor to Plannja AB, Luleå , Sweden

PCT No. PCT/SE81/00128, § 371 Date Dec. 7, 1981, § 102(e) Date Dec. 7, 1981, PCT Pub. No. WO81/03196, PCT Pub. Date Nov. 12, 1981
PCT Filed Apr. 27, 1981, Ser. No. 329,279
Claims priority, application Sweden, Apr. 28, 1980, 8003210
Int. Cl.³ E04B *7/02;* E04D *1/34*
U.S. Cl. 52—478 **2 Claims**

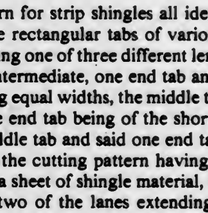
1. Roof construction comprising:
a plurality of spaced rafters;
and a plurality of self-supporting roofing sheets each comprising;
an upper edge which extends substantially horizontally parallel to the plane of the pitch of the roof when installed,
a lower edge extending substantially parallel to said upper edge,
a sheet portion between said upper and lower edges and integral therewith;
said upper edge having a substantially open cross-sectional shape to form a self-supporting beam integral with said sheet portion comprising,
a first flange portion fixedly attached to and spanning the spaces between a plurality of said rafters,
a second flange portion spaced upwardly from said first flange portion,
and a web portion between said flange portions extending at an angle to the plane of the pitch,
stiffening grooves in said sheet portion extending between said upper and lower edges, and
said lower edge having a shape to overlap said upper edge of an adjacent identical roofing sheet formed by a flange projecting downwardly from said sheet portion and a tongue extending outwardly from the lower edge of said flange substantially parallel to said sheet portion and grooves, so that when said lower edge overlaps said upper edge the lower surface of said tongue substantially conforms with and closely engages the upper surfaces of said sheet portion and grooves adjacent said upper edge;
so that said beams serve as the sole structural supporting members for the roof between said rafters and each roofing sheet is a one piece self-supporting roofing sheet in that said beam is in contact with the rafters and forms a part of the roof structure itself and no additional structural elements are required to support the beam or the sheet portion in a direction substantially perpendicular to the plane of the roof.

4,499,701

RABBETED SHINGLE BUTT JOINT SIDEWALL PANEL AND SHINGLE COMPONENT

Joe L. Bockwinkel, Winlock, and Willis G. Pehl, Chehalis, both of Wash., assignors to Shakertown Corporation, Winlock, Wash.

Division of Ser. No. 143,301, Apr. 24, 1980. This application Sep. 15, 1981, Ser. No. 302,339
Int. Cl.³ E04D *1/00*
U.S. Cl. 52—555 **2 Claims**



1. In a sidewall shingle panel including a face layer of high quality random width wood shingles, having their lengths extending generally lengthwise of their grain, tapered in thickness from butt to tip and disposed in edge-abutting relationship arranged in a row transversely of their lengths, and an elongated backing sheet bonded to the face shingles in such row with the grain of the shingles extending transversely of the length of the backing sheet, the improvement comprising the exposed face side only of each random width face shingle having a rabbeted longitudinal edge extending generally parallel to the grain of the wood of such face shingle, the rabbet being of substantially uniform depth over the major portion of the length of such face shingle and terminating adjacent to but short of the tip of the face shingle, the opposite longitudinal edge of each face shingle being unrabbeted, the underside of each face shingle being ungrooved, and the rabbeted edges of face shingles abutting unrabbeted edges of adjoining shingles in such row without obscuring the rabbets of such rabbeted edges.

4,499,702

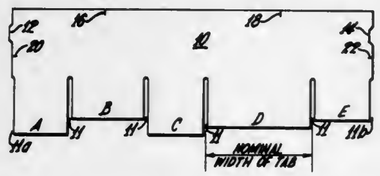
FIVE-TAB STRIP SHINGLES

Larry S. Turner, Newark, Ohio, assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Continuation-in-part of Ser. No. 185,032, Sep. 8, 1980, abandoned. This application Dec. 28, 1981, Ser. No. 334,716
Int. Cl.³ E04D *1/26, 1/36*
U.S. Cl. 52—555 **7 Claims**

1. A cutting pattern for strip shingles all identical in shape and each having five rectangular tabs of various lengths and widths, each tab having one of three different lengths definable as short, long, and intermediate, one end tab and a middle tab of the five tabs having equal widths, the middle tab being of the long length, said one end tab being of the short length, and a tab between said middle tab and said one end tab being of the intermediate length, the cutting pattern having three lanes of the strip shingles on a sheet of shingle material, the tabs on the shingles in each of two of the lanes extending into abutting relationship with the tabs on the shingles in the other of the two lanes, and the equal-width tabs on each shingle in one of

the two lanes respectively abutting the equal-width tabs on a shingle in the other of the two lanes with the middle tab on



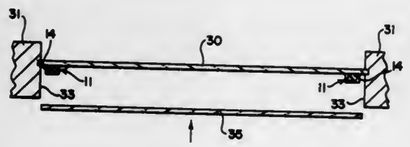
each shingle abutting the equal-width end tab on the other shingle along the full widths of the tabs.

4,499,703

METHOD OF RETRO-FITTING WINDOWS

John R. Rundo, Strongsville, Ohio, assignor to The BF Goodrich Company, New York, N.Y.

Filed Feb. 16, 1982, Ser. No. 348,907
Int. Cl.³ E04B *21/00*
U.S. Cl. 52—746 **1 Claim**



1. The method of retro-fitting a single windowpane mounted in a frame to a double windowpane comprising the steps of applying a deformable tacky adhesive sealant strip containing a desiccant with an embedded spacer therein to the glass surface of said single windowpane along the entire perimeter of said single windowpane, said embedded spacer is a corrugated ribbon with spacer side edges, said deformable strip is applied to said glass surface with one of said side edges adjacent to said glass surface to resist any compressive forces thereon, cutting a glass pane to the measured dimensions of the said single windowpane, placing said cut glass pane onto the sealant strip to abuttingly engage said strip around said perimeter wherein said strip of sealant is applied to said glass surface of said windowpane and into abutting contact with sash frame of said single windowpane as pressure is applied to said cut glass as said glass abuts said sealant strip, and locating a stop around the entire perimeter of said cut glass wherein said stop is secured to said frame of said windowpane and abuttingly engages said cut glass.

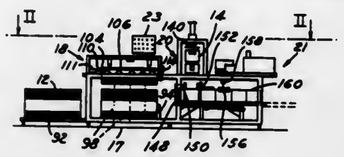
4,499,704

CORRUGATED BOX FORMING, LOADING AND SEALING MACHINE

Forrest C. Bacon, Invergrove Heights, and Keith W. Nord, Stillwater, both of Minn., assignors to Ex-Cell-O Corporation, Troy, Mich.

Filed Oct. 13, 1983, Ser. No. 542,921
Int. Cl.³ B65B *35/54, 47/10, 49/08*
U.S. Cl. 53—156 **5 Claims**

2. For forming a corrugated box from a body blank including bottom, front, back, two top half panels, and edge panels on opposite side edges of each of said bottom, front, back and two top half panels, and two side panel blanks, loading the box with a container-type product, and sealing the box, a machine comprising a first magazine for storing a stack of said body blanks in a horizontal flat attitude; a loading station; oppositely disposed, spaced apart second and third magazines for storing side panel blanks in a vertical attitude on opposite sides of said loading station; an opening in said loading station; means for conveying one body blank at a time from said stack in said first magazine into said loading station such that said bottom panel of said body blank is above said opening; a first set of glue guns for applying glue to said opposite edge portions of said body blank; means for feeding a designated number of rows of a selected number of products and a side panel blank from opposite sides of said loading station onto said bottom panel; supporting and lowering means for lowering said loaded bottom panel and said side panels, thereby causing said front and back panels to bend upwardly while entering said opening against said products and said glued edge panels to bend inwardly so



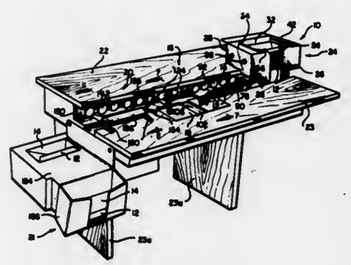
as to become sealed to said side panels to form a filled open-topped box; fourth pusher means for bending the rear top half panel forward onto the products and for pushing said box forward; stationary rail means for engaging and bending the front top half panel rearward onto the products; and a second set of glue guns for applying glue to the upper edge portions of said side panel blanks intermediate said sealed front and back edge panels; means for urging said edge panels on said two top half panels downwardly into contact with said glued edge portions of said side panel blanks to complete the sealing of said box.

4,499,705

SEMI-AUTOMATIC INSERTION MACHINE FOR ENVELOPES

Robert J. Russell, Skokie, Ill., assignor to Mail-Ex Corporation, Skokie, Ill.

Continuation-in-part of Ser. No. 337,835, Jan. 7, 1982, , which is a continuation of Ser. No. 106,239, Dec. 21, 1979, abandoned, and Ser. No. 940,728, Sep. 7, 1978, abandoned. This application Mar. 17, 1982, Ser. No. 359,038
Int. Cl.³ B65B *7/00*
U.S. Cl. 53—266 A **18 Claims**



1. A machine for facilitating the manual insertion of materials by an operator into envelopes of the type having a body and an adjacent seal flap provided with exposed self-sealing adhesive, said machine comprising: a hopper for receiving a quantity of envelopes and including means normally supporting the envelopes in stacked relation with the envelope seal flaps in superposed extended position, means for withdrawing envelopes in one by one relationship from the hopper, means independent of said normal stack supporting means and separately engageable with the envelope stack as additional support

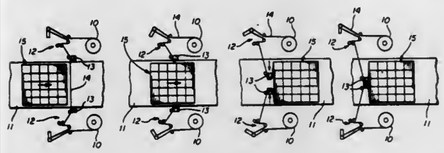
therefor for inhibiting removal of remaining envelopes in the hopper as each envelope is withdrawn, an inserter station, means for translating each envelope withdrawn from the hopper to the inserter station, means at the inserter station for separating the envelope side walls to facilitate the introduction of materials into the envelope, a guide plate at the inserter station for guiding materials into the envelope, translating means for removing a filled envelope from the inserter station, and flap closing means operable upoh the filled envelope for sealing the flap onto the adjacent envelope side wall.

4,499,706

PASS THROUGH STRETCH WRAPPING PROCESS

Andor Scheller, Baytown, Tex., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Filed May 19, 1983, Ser. No. 496,168
Int. Cl.³ B65B *11/08, 11/58*
U.S. Cl. 53—399 **10 Claims**



1. A method of bundling a body of goods which comprise stretching under tension a dual layer film of a thermoplastic circumferentially around the body, and joining the film together at a line where the film meets to encircle the body; said film having sufficient elongation to permit at least 10% stretching under tension and sufficient slip between the layers of the film to permit relative slippage, and wherein the molecules of one layer of the film are aligned generally crosswise of the molecules of the second layer of film thereby increasing tear resistance of the dual layer film.

4,499,707

METHOD AND APPARATUS FOR BALING A TOW OF TEXTILE FILAMENTS

Gilles Desjobert, Brignais, and André Jaillet, Geneuille, both of France, assignors to Rhone-Poulenc-Textile, Paris, France

Filed Mar. 10, 1980, Ser. No. 128,804
Claims priority, application France, Mar. 9, 1979, 79 06312
The portion of the term of this patent subsequent to Aug. 13, 1999, has been disclaimed.
Int. Cl.³ B65B *63/04*
U.S. Cl. 53—429 **8 Claims**

1. In a process for baling a tow of continuous textile filaments in a baling cycle in which a tow is fed to a container having a sidewall by a laying means driven with an oscillating movement between maximum oscillating positions about a median position, the improvement comprising,

filling said container while constantly gripping a beginning end of the tow while the tow is being fed to said container by said laying means;

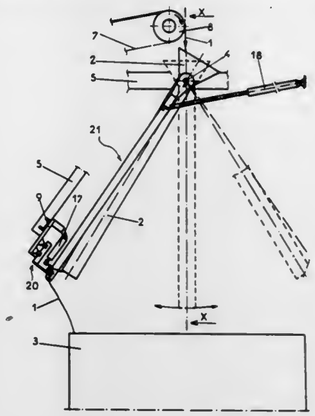
releasing the gripped beginning end of the tow when the filling of the container is completed;

displacing the tow downstream of the oscillating laying means by means of a member driven with a pendular movement, to bring the tow to a fixed means for gripping the tow, the fixed gripping means being located at a position which is beyond the maximum oscillating position of the oscillating laying means;

stopping the feed of the tow and the oscillating movement of the laying means;

automatically cutting the continuous tow originating from outside the container by means of a blade adjacent to the fixed gripping means, to form a beginning end of tow for a new container, that end of the cut tow formed by said automatic cutting, which is integral with the tow located in the container, falling over the sidewall of the container and the newly formed beginning end of tow, integral with the tow fed in through the laying means, being gripped until a new container is filled;

replacing the filled container with a new container; and



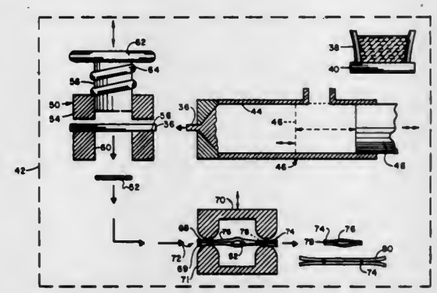
restarting the feed of the tow and returning the member driven with a pendular movement to a rest position which is essentially symmetrical to the fixed gripping means, relative to the median position in the oscillating movement of the laying means, and filling the new container.

4,499,708

METHOD OF EXTRUDING AND PACKAGING A THIN SAMPLE OF REACTIVE MATERIAL INCLUDING FORMING THE EXTRUSION DIE

Edward F. Lewandowski, Westmont, and Leroy L. Peterson, Joliet, both of Ill., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

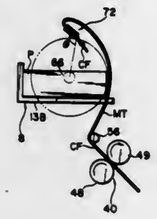
Filed Nov. 30, 1981, Ser. No. 326,087
Int. Cl.³ G21K *1/10*
U.S. Cl. 53—432 **7 Claims**



1. In a method of using an electric discharge machine for forming a very narrow slot in a work piece with an electrode of thin cross section even narrower than the slot, comprising the steps of forming in the work piece typically by drilling two openings significantly large in diameter than the slot width at the opposite ends of where the slot will be, imposing a large potential between the electrode and the work piece, advancing the electrode toward the work piece to cause arcing under a bath of oil, whereby the slot is cut from the work piece and the slot as being cut is flushed by oil in the openings, and plugging

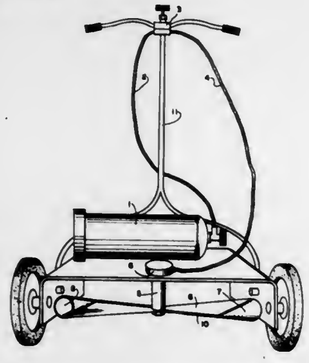
the through openings with a durable solid material to leave only the slot.

4,499,709
BUNDLING APPARATUS
Toshiyuki Miyano, Yokohama, and Hideo Ohmura, Tokyo, both of Japan, assignors to Tokyo Shibuara Denki Kabushiki Kaisha, Kawasaki, Japan
Filed Mar. 31, 1983, Ser. No. 480,901
Claims priority, application Japan, Mar. 31, 1982, 57-52912
Int. Cl.³ B65B *13/10*
U.S. Cl. 53—589 **9 Claims**



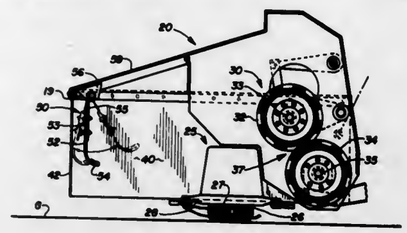
1. A bundling apparatus comprising:
winding means for winding a band coated on one side with a thermally fusible material around objects to be bundled so that one end of the band is joined with another portion of the band;
turning means for turning up the one end of the band so that both end portions of the coated side of the band face each other, thereby forming a turnup portion; and
heating means for heating either of the turnup portion and that portion of the band on the objects to be bundled which is joined with the turnup portion to fuse the fusible material between the two portions, thereby thermally bonding the portions together.

4,499,710
JET POWER LAWN MOWER
John D. Bolton, 5 Shiloh Cir., Irvine, Calif. 92714
Filed Feb. 9, 1984, Ser. No. 578,498
Int. Cl.³ A01D *35/262*
U.S. Cl. 56—11.9 **1 Claim**



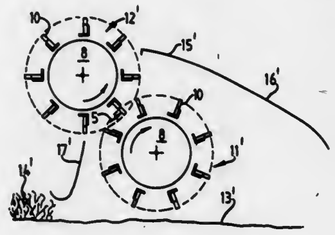
1. A lawn mower comprising a wheel-supported mower deck, a blade rotatively supported within said deck, said blade including a forward cutting portion and jet cones at each end, a reservoir of compressed gas mounted on said deck, conducting tubes extending between said reservoir and said jet cones for directing gas from said reservoir to said cones, and control means for actuating the release of gas from said reservoir to said cones with the gas release through said cones causing said blade to rotate and cut grass.

4,499,711
DEFLECTOR PANEL FOR DISC MOWER-CONDITIONER
Kenneth W. McLean, New Holland, Pa., assignor to Sperry Corporation, New Holland, Pa.
Filed Mar. 2, 1984, Ser. No. 585,674
Int. Cl.³ A01D *35/26*
U.S. Cl. 56—13.6 **14 Claims**



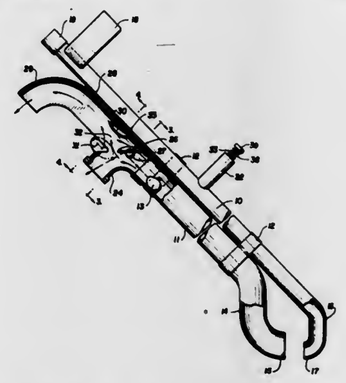
1. In a rotary mowing mechanism adapted for movement in a forward direction over the ground and having a transverse cutterbar mounting transversely spaced rotatable cutter units having knives connected thereto to sever standing crop by impact therewith upon rotation of said cutter units, said cutterbar housing drive transmission means operably connected with said cutter units to transfer rotational power thereto; a flexible curtain supported from a frame member and extending around the front and transverse sides of said cutterbar, said curtain including a transversely extending portion spaced forwardly of said cutterbar; and drive means operably connected to said drive transmission means to deliver rotational power thereto, the improvement comprising:
a transverse deflector supported from said frame member between the transverse portion of said curtain and said cutterbar to restrict the movement of the transverse portion of said curtain toward said cutterbar.

4,499,712
CROP ENGAGING APPARATUS AND METHODS
Wilfred E. Klinner, Milton Keynes, England, assignor to National Research Development Corporation, London, England
Continuation-in-part of Ser. No. 173,136, Nov. 30, 1979, Pat. No. 4,398,384. This application May 14, 1982, Ser. No. 378,492
Claims priority, application United Kingdom, May 15, 1981, 8114981
The portion of the term of this patent subsequent to Aug. 16, 2000, has been disclaimed.
Int. Cl.³ A01D *14/02*
U.S. Cl. 56—16.4 **35 Claims**



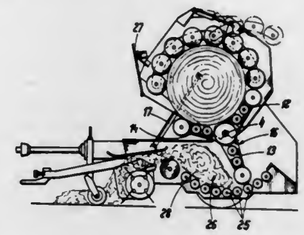
1. Apparatus for treating crop comprising
two cooperating rotors mounted for counter rotation about parallel axes for passage of crop between the rotors,
at least one rotor comprising a crop treating rotor having a plurality of stiff, resilient, outwardly directed crop engaging elements having sharp tips on the outer ends thereof for treating crop, and the other rotor having a plurality of stiff, resilient, outwardly directed crop engaging elements, the arrangement being such that in operation the rotors rotate with the outer perimeters of the rotors overlapping and with regular inter-meshing of crop engaging elements on one rotor with crop engaging elements on the other rotor in such a manner that the crop engaging elements of the said other rotor tend to press crop into gaps between the crop treating elements on the said one rotor which has the sharp tips so that the crop is laid across the outer ends of the elements on the said one rotor for treating the crop at least predominantly by a spiking action.

4,499,713
NUT HARVESTER
Emory B. Stone, P.O. Box 121, Whigham, Ga. 31797
Continuation-in-part of Ser. No. 384,595, Jun. 3, 1982, abandoned. This application Jul. 18, 1983, Ser. No. 514,602
Int. Cl.³ A01D *51/00*
U.S. Cl. 56—328 R **9 Claims**



1. A portable nut harvester adapted to be bodily carried by a user comprising an air stream delivery tube having a lower terminal adapted to direct an air stream substantially horizontally at ground level, a coating conveyor tube having a ground level entrance spaced from and substantially coaxial with said terminal of the air stream delivery tube, a separator unit on the rearward end of the conveyor tube including a lateral outlet sleeve adapted for connection with a harvested nut collection receptacle, a nut deflector near said outlet sleeve in the path of travel of harvested nuts through the conveyor tube and deflecting the nuts through the outlet sleeve, means on the separator unit forming a venturi-like throat near the mouth of the outlet sleeve and causing debris entrained within the air stream of the conveyor tube to be carried beyond the outlet sleeve and deflector to an exit point on the separator unit substantially rearwardly of said outlet sleeve, said means on the separator unit comprising a first spoon-like element attached to the top wall of the separator unit somewhat rearwardly of the deflector and having its convex side disposed lowermost, and a pair of opposite side spoon-like elements on the separator unit below the first spoon-like element and having laterally opposing concave faces, the three spoon-like elements forming within the separator unit a region of reduced pressure near the entrance to the lateral outlet sleeve whereby entrained debris is prevented from entering the outlet sleeve and is accelerated through a throat of the separator unit and expelled from the rear of the separator unit.

4,499,714
METHOD OF BALING, AND BALING PRESS
Bernd Hollmann, Bielefeld, Fed. Rep. of Germany, assignor to Claas Ohg, Harsewinkel, Fed. Rep. of Germany
Filed Dec. 16, 1982, Ser. No. 450,542
Claims priority, application Fed. Rep. of Germany, Dec. 28, 1981, 3151580
Int. Cl.³ A01D *39/00*
U.S. Cl. 56—341 **15 Claims**

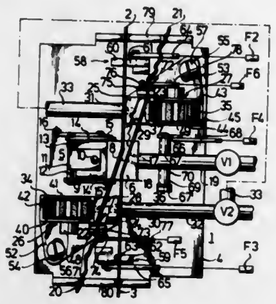


1. A baling press for stalk products, comprising
a displaceable pressure chamber for winding a product and forming a round bale therein;
a storage chamber arranged for storing a product and supplying it to said pressure chamber;
transport elements peripherally limiting said chambers and arranged so that when said pressure chamber displaces to block a further product supply into said pressure chamber and to release a product supply into said storage chamber said transport elements deflect a product flow and peripherally limit said storage chamber, when an outer contour of the round bale is fixed and said storage chamber is opened said transport elements are displaced so that they discharge the bale from the storage chamber, transfer the stored product from said storage chamber to said pressure chamber and guide a new product flow into the latter, and thereupon said transport elements peripherally close a bottom part of said pressure chamber to form a next bale; and further comprising a turnable star having three legs which support said transport elements, said turnable star having a part which forms a partition between said pressure chamber and said storage chamber.

4,499,715
METHOD AND DEVICE FOR THE KNOT-FREE CONNECTION OF TWO THREADS
Manfred Chardon; Reinhard Maurles; Joachim Rohner, and Heinz Zumfeld, all of Mönchen-Gladbach, Fed. Rep. of Germany, assignors to W. Schlafhorst & Co., Mönchen-Gladbach, Fed. Rep. of Germany
Filed Dec. 27, 1982, Ser. No. 453,879
Claims priority, application Fed. Rep. of Germany, Dec. 24, 1981, 3151270
Int. Cl.³ D01H *15/00*
U.S. Cl. 57—22 **15 Claims**

1. Method for the knot-free connection of two threads formed of textile fibers of limited length having at least one twisted fiber strand, including a splicing device for mutually tangling, intermixing and intertwining individual fibers of the two threads, which comprises inserting the two threads coming from opposite sides into the splicing device, trimming the end of each thread to a predetermined distance from the splicing device, vibrating, loosening, combing and separating the thread ends into individual fibers, cleaning and spreading apart each thread end by blowing compressed air into the splicing device obliquely to the longitudinal direction of the individual fibers and by beating, pulling and tearing with mechanical and pneumatic stresses in direction toward the thread ends, withdrawing the prepared thread ends from opposite sides up to the splicing device, tangling, mixing and hooking the individual

fibers of the two thread ends to each other to form a splice connecting the threads after setting the splicing device in



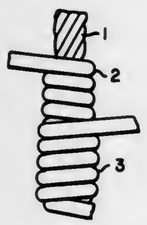
operation, introducing a thread twist into the splice, and removing the connected threads from the splicing device.

4,499,716

REINFORCEMENT STRUCTURE

Paul S. Antal, and Manfred Katz, both of Wilmington, Del., assignors to E. I. Du Pont De Nemours and Company, Wilmington, Del.

Filed Jun. 13, 1983, Ser. No. 503,656
Int. Cl.³ D02G *3/36, 3/38, 3/40, 3/48*
U.S. Cl. 57—234 **9 Claims**



1. A reinforcement structure consisting of a core surrounded by a sheath, said core being under at least 0.1% radial compression and comprising longitudinally aligned yarn and said sheath comprising a helical wrapping of yarn with adjacent turns of the helical wrapping abutting and being positioned at an angle to the core of between 80 and 90 degrees, the ratio of sheath thickness to the radius of the reinforcement structure being from 0.01 to 0.25, and the yarn of both sheath and core having a tenacity greater than 10 dN/tex, and an initial modulus greater than 200 dN/tex.

4,499,717

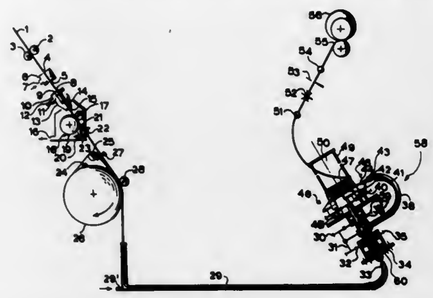
METHOD OF AND APPARATUS FOR PRODUCING TWISTLESS YARNS FROM GLUED SEPARATE FIBERS FITTED TOGETHER

Milko D. Dimitrov, Sofia, Bulgaria, assignor to N P S P "Novotex", Sofia, Bulgaria

Filed Jul. 22, 1982, Ser. No. 400,977
Claims priority, application Bulgaria, Jul. 22, 1981, 53025
Int. Cl.³ D02G *3/40;* D01H *5/28, 13/28, 13/30*
U.S. Cl. 57—297 **40 Claims**

1. In a method of producing twistless yarns from glued together separate fibers, wherein continuously fed tape is impregnated with a glue solution, a part of the glue solution is removed from the tape, and then the tape is dried and wound onto a package, the improvement wherein the continuously fed tape is first fed in a straight line, during such straight line initial travel the tape is gyrated in a span thereof and is false twisted, a glue solution is then laid upon the false twisted tape by immersing the false twisted tape and causing it to travel downwardly through a pool of glue solution, then part of the glue solution is removed from the tape by the simultaneously calendering of the tape, and thereafter deviating the tape from the straight line of its initial travel, drying the tape, winding the dried tape into a tape reserve, and withdrawing the tape from such tape reserve and winding it into a package.

12. Apparatus for producing twistless yarns from glued-together fibers, comprising pairs of rollers for feeding a tape formed from fibers, a device downstream of the feeding rollers



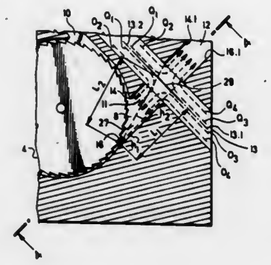
for impregnating the tape with a glue solution, means downstream of the device for impregnating the tape with glue solution for removing a part of the glue solution from the tape, followed by a drying cylinder and a winder, along the mutual tangent of the feeding pair of rollers and downstream therefrom there are located consecutively a jet for false twisting the tape by air, a second jet comprising said means for impregnating the tape by a glue solution, said second jet having a tube containing glue and through which the tape enters at the upper surface of the glue solution, a pair of calender rollers, and said drying cylinder following said second jet.

4,499,718

APPARATUS FOR SEPARATING IMPURITIES FROM OPEN-END SPINNING UNITS

Jan Junek; Josef Skarka; Frantisek Jaros; Frantisek Hortlik; Kveta Hacova, all of Usti n/Orl.; Vaclav Vobornik, Letohrad; Vladimi Ohlidal, and Ludmila Lihtarova, both of Usti n/Orl., all of Czechoslovakia, assignors to Vyzkumny ustav bavlnarsky, Usti n/Orl., Czechoslovakia

Filed Jun. 29, 1983, Ser. No. 509,244
Claims priority, application Czechoslovakia, Jul. 12, 1982, 5306-82
Int. Cl.³ D01H *7/888, 7/892*
U.S. Cl. 57—301 **8 Claims**



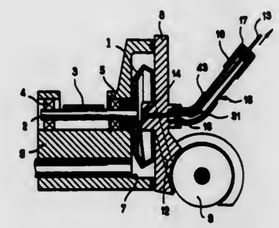
1. In an apparatus for separating impurities from an open-end spinning unit having a driven spinning rotor, said apparatus having a housing, a cylindrical recess in the housing, a fiber separating cylinder accommodated in the cylindrical recess of the housing, a cleaning aperture in the cylindrical surface of said recess, said cleaning aperture merging into an impurity separating duct through which air flows to the fiber separating cylinder and to the spinning rotor of the unit in counter-direction relative to the flying-off of the impurities, the impurity separating duct being followed by an impurity withdrawing duct communicating with a sub-atmospheric pressure source, an atmospheric air supply aperture being provided in the outlet of said impurity separating duct and at the inlet of said impurity withdrawing duct, the improvement wherein the apparatus has at least one atmospheric air supply aperture which is symmetrical with respect to a plane passing substantially through the axis of the impurity separating duct and disposed perpendicular to the axis of the fiber separating cylinder, the axis of the atmospheric air aperture forming the same angle with the opposite walls of said impurity separating duct and with the walls of the impurity withdrawing duct.

4,499,719

FREED-FIBER SPINNING DEVICES

René Faessler, Mulhouse, France, assignor to Societe Alsacienne de Construction de Materiel Textile, Mulhouse, France

Filed Aug. 30, 1983, Ser. No. 527,867
Claims priority, application France, Sep. 8, 1982, 82 15213
Int. Cl.³ D01H *7/882*
U.S. Cl. 57—417 **7 Claims**



1. In a freed-fiber spinning device having a hollow rotor mounted for high speed rotation and being subjected to a partial vacuum in its hollow interior, means for delivering textile yarn from the interior of said rotor along the geometrical axis of the rotor, a yarn exit tube having an entrance end communicating with said yarn delivering means and the partial vacuum in said rotor for receiving the yarn therein, take-up means for drawing the yarn through the exit tube, and an elbowed portion in said yarn exit tube for modifying the direction of the path of the yarn as it passes through the exit tube, the improvement comprising;

a recess penetrating through the elbowed portion of the yarn exit tube in the zone of the generator-line having the shortest radius of curvature of said elbowed portion;

a detachable member having a configuration identical with the configuration of the portion of the tube removed to form said recess so that the detachable member fits in position against the periphery of said recess and has inner and outer surfaces ensuring respectively the continuity of the inner and outer surfaces of said exit tube interrupted by said recess;

a false-twist rib integrally formed in one piece with said detachable member and extending thereon across the geometrical plane formed by a length of yarn upstream and a length of yarn downstream of said rib so that said rib is disposed within said yarn exit tube and said yarn passes against said rib as it is drawn through the exit tube by said take-up means;

said false-twist rib having a rounded cross-section against which said yarn passes; and

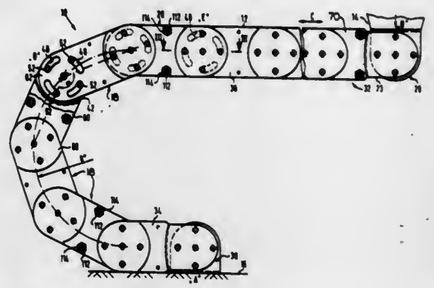
a removable retaining means for stationarily fixing said detachable member in said recess.

4,499,720

CABLE CARRIER

Ernst Klein, Dusseldorf, Fed. Rep. of Germany, assignor to A&A Manufacturing Co., Inc., New Berlin, Wis.

Filed Jan. 19, 1983, Ser. No. 459,043
Int. Cl.³ F16G *13/00*
U.S. Cl. 59—78.1 **4 Claims**



1. In a conductor guiding support formed of two chains retained in parallel spaced-apart relationship for receiving the conductors between them, each of said chains being formed of a plurality of links coupled to each other successively for limited pivotal movement relative to each other; each of said links being formed of two plates joined together in face-to-face, matching relationship; one end portion of said plates being offset from the other portion so that when said plates are joined together to form a link the offset portions are in surface contact with each other; a central boss extending from the offset portions of both matching plates so that the central boss of one plate abuts the central boss of the matching plate when the link is assembled; an off-center boss extending from the surfaces of said offset portions of both matching plates so that the offset boss of one plate abut the offset boss of the matching plate when the link is assembled; a central bore in each of said plates at the portion opposite said offset portion so that the contacting portions of said plates of a succeeding link can be inserted into the space between said offset portions of the preceding link with the central bore of said contacting portions in engagement with the central bosses of said offset portions to produce a pivotal connection; an arcuate slot in each of said plates at the contacting portion opposite said offset portion for receiving the offset bosses of the succeeding link when the links are coupled together to limit the pivotal movement of the links relative to each other; and means welding the abutting surfaces of each of said bosses together for securing the two plates together with the succeeding link coupled thereto by the engagement of said bosses with the central bore and arcuate slot of the succeeding link.

4,499,721

CONTROL SYSTEM FOR CHENG DUAL-FLUID CYCLE ENGINE SYSTEM

Dah Y. Cheng, Los Altos Hills, Calif., assignor to International Power Technology, Inc., Palo Alto, Calif.

Division of Ser. No. 273,269, Jun. 12, 1981, Pat. No. 4,417,438.
This application Mar. 21, 1983, Ser. No. 477,693
The portion of the term of this patent subsequent to Dec. 12, 1995, has been disclaimed.
Int. Cl.³ F02C *7/00, 7/10*
U.S. Cl. 60—39.05 **3 Claims**

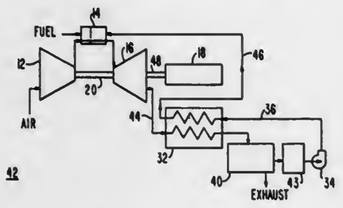
1. The method of operating a dual-fluid heat engine at partial load conditions, which engine conprises:

a chamber;

compressor means for introducing a first gaseous working fluid into said chamber, said compressor means having a predetermined pressure ratio (CPR);

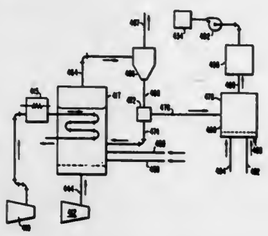
means for introducing a second liquid-vapor working fluid

in the form of a vapor within said chamber at a defined second/first working fluid ratio (XMIX);
means for heating said first gaseous working fluid and said second working fluid in the vapor form in said chamber at a defined specific heat input rate (SHIR);
turbine means responsive to the mixture of said first and second working fluids for converting the energy associated with the mixture to mechanical energy, the temperature of said mixture entering said turbine means defining the turbine inlet temperature (TIT);
counterflow heat exchanger means for transfering residual thermal energy from said exhausted mixture of first and second working fluids to said incoming second working fluid,



said method comprising the steps of:
preheating the second working fluid in the heat exchanger to a superheated vapor state prior to its introduction within the chamber; and
selecting XMIX and SHIR so that:
(a) for a given value of TIT, XMIX is substantially equal to or is greater than $XMIX_{peak}$, where $XMIX_{peak}$ occurs by both
(i) maximizing the temperature of the superheated second working fluid vapor; and
(ii) minimizing the effective temperature of the exhausted mixture of the first and second working fluids; and
(b) TIT decreases as engine load decreases.

4,499,722
HIGH TEMPERATURE GAS TURBINE SYSTEMS
James R. Hamm, Murrysville, and William E. Young, Churchill, both of Pa., assignors to KRW Energy Systems Inc., Houston, Tex.
Division of Ser. No. 222,093, Jan. 2, 1981, Pat. No. 4,369,624. This application Sep. 21, 1982, Ser. No. 420,668
Int. Cl.³ F02C *3/28*
U.S. Cl. 60—39.12 **1 Claim**

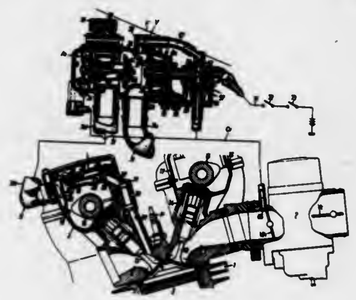


1. A high temperature gas turbine generation system comprising:
a compressor;
means for conducting a gaseous oxidant to said compressor;
a first reactor housing a fluidized bed wherein particulate coal is reacted with a discharge gas to produce heat, char and other reaction products;
means for conducting compressed gaseous oxidant from said compressor to and through said first reactor, in heat exchange relation with said fluidized bed so as to heat said oxidant;
a second fluidized bed reactor wherein said char is reacted with oxygen and steam to provide a fuel gas and product ash;
means for conducting said char from said first reactor to said second reactor;
a combustor producing a high temperature gaseous product from said heated oxidant and said fuel gas;
means for conducting said heated oxidant to said combustor;
means for conducting said fuel gas to said combustor;
an expander having an inlet for receiving said high temperature gaseous product and an outlet for discharging said discharge gas;
means for conducting said high temperature gaseous product to said expander inlet; and
means for conducting said discharge gas from said expander outlet to said first fluidized bed reactor.

4,499,723
TRIS(2-AZIDOETHYL)AMINE AND METHOD OF PREPARATION THEREOF
Milton B. Frankel, Tarzana, and Edgar R. Wilson, Simi Valley, both of Calif., assignors to Rockwell International Corporation, El Segundo, Calif.
Filed Jul. 26, 1982, Ser. No. 401,476
Int. Cl.³ C06D *5/08*; C07C *117/00*
U.S. Cl. 60—211 **3 Claims**

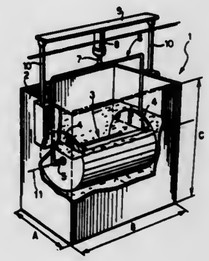
1. A compound of the formula $N—(CH_2CH_2N_3)_3$.
2. A method of propulsion comprising reacting a tris(2-azidoethyl) amine fuel with a liquid oxidizer.

4,499,724
EXHAUST GAS CLEANING DEVICE FOR INTERNAL COMBUSTION ENGINE OF MOTORCYCLE
Yasuo Ikenoya, Kawagoe; Shuso Ueda, Asaka, and Masafumi Araki, Kawagoe, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Sep. 22, 1982, Ser. No. 421,427
Claims priority, application Japan, Dec. 18, 1981, 56-204709
Int. Cl.³ F01N *3/22*
U.S. Cl. 60—290 **4 Claims**



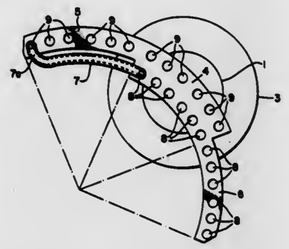
1. An internal combustion engine for use with motorcycles comprising:
an intake system;
an exhaust system;
a carburetor disposed in said intake system;
a starting aid for expediting the engine starting; and
an exhaust gas cleaning means for supplying secondary air to said exhaust system to clean the exhaust gas flowing therethrough, said exhaust gas cleaning means comprising
(a) a secondary-air supply passage communicated with said exhaust system, and
(b) a secondary-air control valve device disposed in an intermediate portion of said secondary-air supply passage to regulate the flow rate of the secondary air flowing through said secondary-air supply passage, said secondary-air control valve device including first and second control valves disposed in said secondary-air supply passage, said first and second valve operation mechanisms associated with said second control valve, wherein said first control valve is closed at the time of deceleration of the engine by detecting intake vacuum in said intake system downstream of said carburetor whereas said second control valve is closed by said first valve operation mechanism on detecting the actuation of said starting aid and a vehicle speed below a set value; said second control valve is also closeable by said second valve operation mechanism in acceleration and high-speed operation ranges by detecting the intake vacuum in the intake system downstream of said carburetor.

4,499,725
HYDRAULIC MACHINE
Marino Sbrizzai, Via Parenzo 95, Torino, Italy
Filed Jun. 29, 1983, Ser. No. 509,191
Int. Cl.³ F03B *13/00*
U.S. Cl. 60—506 **7 Claims**



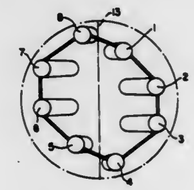
1. A hydraulic machine, comprising
a reservoir filled with a fluid,
a rotor freely rotatably supported about a horizontal axis within the reservoir, the rotor being so shaped that the centre of buoyancy and resultant force to which the rotor is subject when it is completely immersed in the fluid is not located on the axis of rotation of the rotor, and
means for causing a variation in the volume of the fluid within the reservoir.

4,499,726
HEATER HEAD FOR A MULTI-CYLINDER HOT GAS ENGINE
Christer Bratt, Malmö , Sweden, assignor to United Stirling AB, Malmö , Sweden
Filed Dec. 6, 1983, Ser. No. 558,478
Int. Cl.³ F02G *1/04*
U.S. Cl. 60—517 **3 Claims**



1. In a heater for a multi-cylinder hot gas engine of the type having regenerator housings of annular cross section surrounding the cylinders of the engine, said heater head comprising arcuately shaped primary manifolds connected to the cylinder tops, arcuately shaped secondary manifolds connected to the regenerator housing tops, and a plurality of equally shaped heater tubes connecting said primary and secondary manifolds which when mounted together form two coaxially disposed, circular tube connections, the improvement comprising each of said primary manifolds extending arcuately through 360/2·n degrees where n is the number of engine cylinders, each of said primary manifolds including two coaxially disposed segments of tube connections, and each regenerator housing being provided with two secondary manifold segments, each of which being of the same angular size as said primary manifold and extending at each side thereof, one of said secondary segments forming a part of the outer one of said circular tube connections and the other forming a part of the inner one of said circular tube connections.

4,499,727
HOT GAS ENGINE
Stefan Lorant, Oxie, Sweden, assignor to United Stirling AB, Sweden
Filed Mar. 28, 1983, Ser. No. 479,469
Int. Cl.³ F02G *1/04*
U.S. Cl. 60—525 **4 Claims**

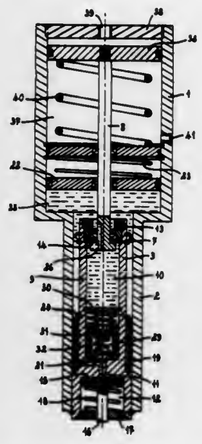


1. A hot gas engine of the type having a plurality of cylinders each of which contains a piston separating two working gas charges and being connected to a common crank shaft and in which each of the plurality of working gas charges is oscillated between variable volume chambers defined by the pistons and cylinders and of different temperatures so as to perform working cycles each of which consists of a compression in a low temperature variable volume chamber, a displacement to a high temperature variable volume chamber, an expansion in said high temperature chamber and a displacement back to said low temperature chamber, said engine further comprising
said plurality of cylinders being greater than six;
all of said cylinders being series interconnected to form a single loop,
a cold gas connecting duct, a cooler, a regenerator and a heater connecting each low temperature variable volume chamber to the high temperature variable volume chamber of a neighboring cylinder;
the cylinders and respective pistons being associated in pairs of two, the respective cranks of which on said common crankshaft being angularly displaced relative to one another to constrain the two pistons of each associated pair to perform identical simultaneous movement in their respective cylinders
the pistons in each of said associated cylinder pair being at the same point in the working gas cycle of the respective cylinder.

4,499,728
HYDRAULIC PRESS MECHANISM

Marcel P. Therond, 8c, Chemin de Balme Baron, 69140 Rillieux-La-Pape, France

PCT No. PCT/FR81/00034, § 371 Date Oct. 30, 1981, § 102(e) Date Oct. 30, 1981, PCT Pub. No. WO81/02543, PCT Pub. Date Sep. 17, 1981
PCT Filed Mar. 11, 1981, Ser. No. 317,902
Claims priority, application France, Mar. 12, 1980, 80 05955
Int. Cl.³ F15B 7/00
U.S. Cl. 60—570 8 Claims



1. A hydraulic press mechanism for applying in succession a fast approach stroke to a tool juxtaposed with a workpiece and then a work stroke with substantial stress application to the workpiece, said mechanism comprising:

a housing formed with a bore axially aligned with said tool;

a main body centered on the axis of said bore and received in and axially movable along said bore, said body being formed at an end proximal to said tool with a cylindrical chamber centered on said axis and at an end remote from said tool with a compartment centered on said axis receiving a substantially incompressible fluid, said compartment being connected to said chamber through a passage in said body extending along said axis;

a secondary piston centered on said axis received in said chamber and operatively connected with said tool for displacing said tool axially toward said workpiece upon hydraulic pressurization of said chamber;

a primary piston centered on said axis and axially shiftable in said housing and extending into said compartment of said body for displacement of fluid from said compartment through said passage to said chamber;

coupling means for releasably coupling said body to said primary piston whereby displacement of said primary piston and said body towards said workpiece displaces said secondary piston with said fast approach stroke until said tool contacts said workpiece;

an expansible casing on said body centered on said axis and exposed to said fluid for expansion by fluid pressure upon engagement of said tool with said workpiece for blocking said body against said housing whereby further displacement of said primary piston into said compartment displaces fluid therein to displace said secondary piston with said work stroke;

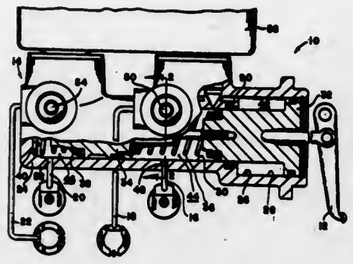
control means including a stem extending along said axis and operatively connected with said primary piston for displacing same, and an actuator displaceable in opposite directions for said stem, said secondary piston being biased by a return spring in said body away from said workpiece; and

sealing means for isolating said actuator from said fluid.

4,499,729
FAST-FILL MASTER CYLINDER

Robert F. Gaiser, Stevensville, Mich., assignor to The Bendix Corporation, Southfield, Mich.

Filed Jun. 2, 1983, Ser. No. 500,515
Int. Cl.³ B60T 11/08
U.S. Cl. 60—578 11 Claims

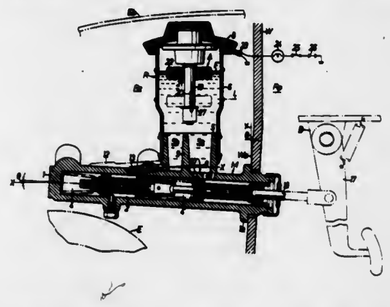


1. A fast-fill master cylinder comprising a housing with a stepped bore therein defining a large diameter and a small diameter, a piston disposed within the bore in order to define a fast-fill chamber in the large diameter and a pressure chamber in the small diameter, the pressure chamber communicating with an outlet port to communicate fluid from the pressure chamber to a brake circuit during braking when the piston moves within the stepped bore, characterized in that said housing defines passage means extending from said fast-fill chamber to said outlet port independently of said pressure chamber whereby fluid from the fast-fill chamber communicates directly with said outlet port to bypass said pressure chamber during braking, and said outlet port receives a proportioning valve assembly which is operable during braking to communicate said passage means and said fast-fill chamber with a reservoir formed by said housing after an initial brake application, said proportioning valve assembly initially communicating fluid pressure freely from said pressure chamber to said brake circuit during braking, and thereafter said proportioning valve assembly being operable to reduce the communication between said pressure chamber and said brake circuit in response to increasing fluid pressure in said pressure chamber.

4,499,730
AUTOMOTIVE TANDEM TYPE MASTER CYLINDER

Hiroshi Kasahara, Ueda, Japan, assignor to Nissin Kogyo Kabushiki Kaisha, Ueda, Japan

Filed May 6, 1981, Ser. No. 261,267
Claims priority, application Japan, May 26, 1980, 55-69778
Int. Cl.³ B60T 11/26
U.S. Cl. 60—585 6 Claims



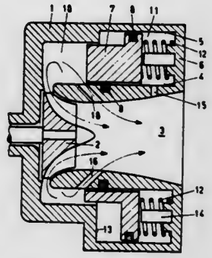
1. An automotive tandem type master cylinder comprising a cylinder body provided with mutually independent front and rear oil pressure chambers and mounted on a front wall of a passenger compartment in a forwardly upwardly inclined manner relative to a horizontal plane, an auxiliary oil reservoir having first and second reservoir chambers defined by a partition wall on the opposite sides thereof and integrally formed on an upper portion of said cylinder body adjacent to said rear oil pressure chamber, a relief port and a supply port for said rear oil pressure chamber open at a bottom wall of said first reservoir chamber,

an oil passage in a side wall of said cylinder body at a rearwardly upwards inclination to the horizontal plane for connecting a relief port and a supply port for said front oil pressure chamber with said second reservoir chamber, and a main oil reservoir adjacent said auxiliary oil reservoir and communicating with said first and second reservoir chambers, said oil passage being provided in a longitudinal projection integrally formed on the outer periphery of said cylinder body, said longitudinal projection extending from the front base of said auxiliary oil reservoir in a direction forwardly and somewhat sidewardly of said cylinder body, said longitudinal projection being formed at its front face with an opening for said oil passage, said opening being plugged with a blank plug.

4,499,731
CONTROLLABLE EXHAUST GAS TURBOCHARGER

Peter Moser, Boppelsen, Switzerland, assignor to BBC Brown, Boveri & Company, Limited, Baden, Switzerland

Filed Sep. 29, 1982, Ser. No. 427,004
Claims priority, application Switzerland, Dec. 9, 1981, 7858/81
Int. Cl.³ F02B 37/00; F01D 17/12
U.S. Cl. 60—602 10 Claims



1. An exhaust gas turbine for an exhaust gas turbocharger, comprising:

a turbine casing surrounding the turbine wheel that is mounted on the rotor shaft and having an inlet volute space;

wall element means movable along the rotor shaft axis in a cylindrical part of said inlet volute space, said wall element means being arranged for altering the volume and the flow cross section of the inlet volute space for the exhaust gases of the engine, said wall element means including a control piston having:

a circular cylindrical body, which is guided in at least one circular cylindrical bore of the turbine casing, and

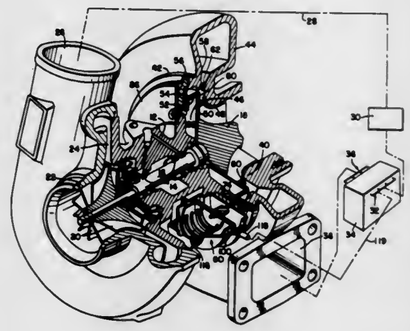
a cylindrical volute body, whose cross section substantially corresponds to the cross section in the cylindrical part of the inlet volute space normal to the rotor shaft axis and is guided in this cylindrical part; and

spring means for biasing the control piston in the direction towards the inlet volute space.

4,499,732
TURBOCHARGER HAVING A VARIABLE INLET AREA TURBINE

David T. Szczupak, Huddersfield; Brian E. Walsham, Holmfirth; Desmond J. Hooley, Marsden; David Flaxington, Bradford; Peter S. McKean, Huddersfield, and John D. Wescott, Skelmanthorpe, all of England, assignors to Holset Engineering Company Limited, Huddersfield, England

Filed Nov. 15, 1982, Ser. No. 441,461
Claims priority, application United Kingdom, Nov. 14, 1981, 8134368
Int. Cl.³ F01D 17/14; F02B 37/12
U.S. Cl. 60—602 7 Claims



1. A turbocharger for use with an internal combustion engine and comprising a compressor having a rotatable air pressurizing impeller and a turbine comprising a turbine housing, a radial inward flow turbine wheel mounted for rotation about a central axis within the housing and connected to the compressor impeller, said housing having an annular inlet passage defined by two generally radially extending opposed side walls adjacent the periphery of the turbine wheel through which passage heated engine exhaust flows for driving the wheel, means for controlling the flow area of said passage, said control means comprising an axially displaceable ring element including a thin sheet metal stamping comprising an axially extending sleeve portion, an integral radially extending flange portion at one end of said sleeve portion extending radially inward between said sleeve portion and the periphery of said turbine wheel and a radially outwardly directed flange portion at the other end of said sleeve portion, and means connected to the radially outwardly directed flange portion for displacing the axially displaceable ring element so as to vary the flow area of the inlet passage.

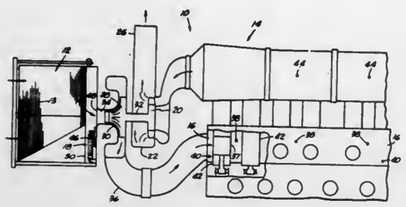
4,499,733
EMERGENCY SHUTDOWN MECHANISM FOR A TURBOCHARGED DIESEL ENGINE

Richard S. Farr, Los Angeles, and John J. Dorn, Redondo Beach, both of Calif., assignors to Farr Company, El Segundo, Calif.

Filed Jun. 16, 1980, Ser. No. 160,139
Int. Cl.³ F02B 37/00, 77/00
U.S. Cl. 60—611 10 Claims

4. An emergency shutdown mechanism for a turbocharged two-cycle diesel engine in a locomotive for preventing overspeed of the turbocharger in the event of a fire in the engine air box disposed about the crankcase, engine cylinders and a portion of the piston liner, or in the exhaust manifold, said mechanism comprising an air flow shutdown plate slidably mounted at the clean air inlet end of the turbocharger; means for moving said plate over said clear air inlet and preventing fluid flow therethrough; a plurality of temperature responsive sensors disposed within said air box between said cylinders for detecting an overheating condition within said air box; a pressure

responsive sensor disposed within said air box for detecting fires in said air box and in said exhaust manifold; means operatively connected between said means for moving said plate and said temperature and pressure responsive sensors for activating said moving means upon detection of said overheating condi-



tion by said temperature responsive sensors or a fire by said pressure responsive sensor whereby said air flow shutdown plate is rapidly moved over said clean air inlet by said moving means shutting off the clean air flow to the turbocharger and shutting down said turbocharger and said diesel engine.

4,499,734

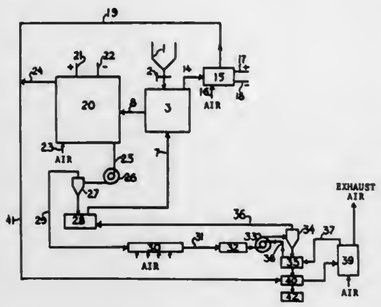
POWER GENERATION APPARATUS AND METHODS

Solomon Zaromb, 9 S. 706 William Dr., Hinsdale, Ill. 60521

Division of Ser. No. 179,274, Aug. 18, 1980, Pat. No. 4,416,954, which is a continuation-in-part of Ser. No. 704,452, Jul. 12, 1976, Pat. No. 4,305,999, Ser. No. 20,967, Mar. 16, 1979, Pat. No. 4,218,520, and Ser. No. 080,185, Oct. 1, 1979, Pat. No. 4,254,190. This application Sep. 7, 1982, Ser. No. 415,186

Int. Cl.³ H01M *8/06*

U.S. Cl. 60—673 **11 Claims**



1. Apparatus for the generation of energy from the oxidation of aluminum or its alloys which comprises:

(a) means for breaking up the continuity of the passivating oxide layer on the aluminum surface by exposing said surface to a mercury-, indium-, or gallium-containing substance;

(b) a reaction chamber wherein the surface-treated aluminum is exposed to a gaseous fluid engaging in an oxidation reaction therewith; and

(c) means for withdrawing useful energy from said oxidation reaction, wherein said energy withdrawing means is a thermal engine.

4,499,735

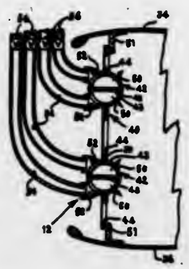
SEGMENTED ZONED FUEL INJECTION SYSTEM FOR USE WITH A COMBUSTOR

George W. Moore, Palm Beach Gardens, and Robert G. Carroll, Jupiter, both of Fla., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Continuation of Ser. No. 361,015, Mar. 23, 1982,. This application Feb. 9, 1984, Ser. No. 578,304

Int. Cl.³ F02C *7/22*

U.S. Cl. 60—739 **3 Claims**



1. A removable fuel injection system for use in conjuction with a combustor, said fuel injection system comprising:

a plurality of circumferentially spaced-apart segments, each of said segments being in the form of a wedge-shaped plate;

means for mounting each of said circumferentially spaced-apart plates adjacent one another and adjacent the entrance of said combustor so as to form an annular-shaped body;

each of said plates including means for injecting fuel into said combustor and means for permitting gas to flow into said combustor;

said fuel injecting means being in the form of a plurality of radially spaced-apart tubular-shaped, circumferential spray bars, all of said spray bars lying in substantially the same radial plane;

each of said spray bars having a plurality of sets of fuel injecting orifices therein, said orifices of each of said sets of orifices being disposed in a circumferential, spaced-apart relationship with respect to one another, and a plate located within the interior of each of said tubular-shaped spray bars for dividing each of said spray bars into a pair of separate fuel injecting zones;

said gas flow permitting means being in the form of a plurality of sets of openings of preselected size, said openings of each of said sets of openings being disposed in a circumferential, spaced-apart relationship with respect to one another, and each of said sets of said openings and spray bars being alternately spaced-apart in the radial direction; and

means operably connected to each of fuel injecting zones for providing a regulated amount of fuel to each of said zones, whereby the amount and location of said fuel being injected into said combustor can be controlled.

4,499,736

DEHUMIDIFIER APPARATUS FOR DISK DRIVES

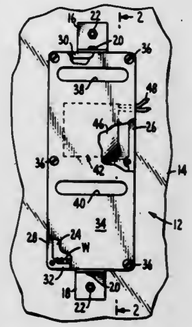
Dennis K. Lieu, and Larry Cooper, both of San Jose, Calif., assignors to Sperry Corporation, New York, N.Y.

Filed Dec. 8, 1983, Ser. No. 559,547

Int. Cl.³ F25B *21/02*

U.S. Cl. 62—3 **8 Claims**

1. Dehumidifying apparatus for a disk drive system having an enclosure including an enclosure wall and a head-disk assembly within the enclosure comprising a substantially impervious housing disposed within said enclosure, said housing defining a chamber and having an inlet port and an outlet port communicating between said enclosure and said chamber to establish an air passage, means for mounting said housing to said enclosure wall interior of said enclosure so that said inlet port is disposed above said outlet port, and a Peltier effect device mounted in said chamber and having power input conductors, said Peltier effect device has a substantially right parallelepiped shape, first and second planar surfaces on said parallelepiped shape, said first surface being a hot surface and said second surface being a cold surface in response to applica-



tion of power to said conductors, said housing having a rear wall defining an excision substantially similar in shape to Peltier effect device, said Peltier effect device being disposed in said excision for affording contact between said hot surface and said enclosure wall, and said cold surface being exposed to said chamber between said inlet port and said outlet port, so that air traversing said chamber from said inlet port flows past said cold surface and water vapor in the air condenses on said cold surface.

4,499,737

METHOD AND DILUTION REFRIGERATOR FOR COOLING AT TEMPERATURES BELOW 1° K.

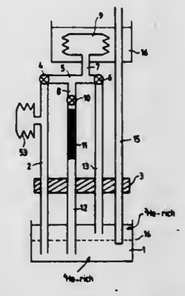
Gerd K. Binnig, Richterswil, and Christoph E. Gerber, Adliswil, both of Switzerland, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 7, 1983, Ser. No. 472,707

Claims priority, application European Pat. Off., Mar. 23, 1982, 82102407.2

Int. Cl.³ F25D *1/00*

U.S. Cl. 62—56 **12 Claims**



1. Method for cooling at temperatures below 1° K. by adiabatically diluting liquid ^3He in liquid ^4He and re-circulating the reconcentrated ^3He into the dilution chamber, characterized by pumping the liquid ^4He rich mixture of ^3He-^4He from the dilution chamber (1), separating the ^4He from the ^3He-^4He rich mixture by placing it in communication with a filter (11) permeable only for ^4He II atoms and returning the resultant reconcentrated ^3He rich mixture of ^3He-^4He to the dilution chamber (1), the filtering generating cold at the lower end of said filter (11) and consuming heat by re-mixing ^3He with ^4He in the dilution chamber, the cold being used in a heat exchanger (3) to pre-cool the returning ^3He stream.

4,499,738

CONTROL DEVICE FOR A REFRIGERATOR

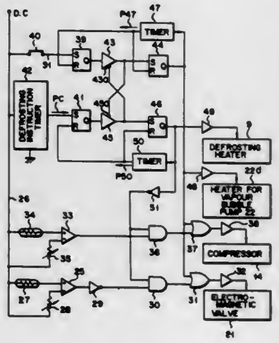
Takeshi Motoyama; Toshiyuki Onishi, and Kunio Yokoyama, all of Oosaka, Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Jun. 27, 1983, Ser. No. 508,236

Claims priority, application Japan, Jun. 30, 1982, 57-99044[U]; Jun. 30, 1982, 57-99045[U]

Int. Cl.³ F25D *21/06*; G05D *23/19*; F25B *41/00*

U.S. Cl. 62—155 **4 Claims**



1. A control device for a refrigerator provided with a closed refrigerating cycle system including, in series in the following order, a compressor, a condenser, capillary tubes, an evaporator for a storage compartment, and an evaporator for a freezing compartment, comprising:

forced cooling means, including by-pass means for by-passing a coolant passage for said storage compartment evaporator, for cooling only said freezing compartment evaporator, said by-pass means comprising an electromagnetic valve having an inlet connected to a node between first and second capillary tubes and a third capillary tube whose outlet is connected to a node between said storage compartment evaporator and said freezing compartment evaporator;

forced defrosting means, positioned near a frost deposition portion in said freezing compartment on which frost is concentratedly deposited, for removing frost settled on said frost depositing position;

first control means for driving said forced cooling means in response to a first instruction signal supplied thereto and which comprises a first flip-flop circuit which is set upon receipt of said first instruction signal, a third flip-flop circuit which is set upon receipt of an output signal from said first flip-flop circuit, a timer which is actuated by an output signal from said third flip-flop circuit and produces a timer pulse after a prescribed length of time, causing said first and third flip-flop circuits to be reset, and circuit means for, upon receipt of the output signal from said third flip-flop circuit, opening said electromagnetic valve and actuating said compressor;

second control means for driving said forced defrosting means when supplied with a second instruction signal and which comprises a second flip-flop circuit which is set upon receipt of said second instruction signal, a fourth flip-flop circuit which is set upon receipt of an output signal from said second flip-flop circuit, a timer which is actuated upon receipt of an output signal from said fourth flip-flop circuit, and issues a timer pulse after a prescribed length of time, causing said second and fourth flip-flop circuits to be reset, and circuit means for, upon receipt of

the output signal from said fourth flip-flop circuit, energizing a heater for said forced defrosting means and preventing said compressor from being operated; and

preferential control means, comprising a first transfer gate connected between the output of said first flip-flop circuit and the set input of said third flip-flop circuit, and a second transfer gate connected between the output of said second flip-flop circuit and the set input of said fourth flip-flop circuit, said first transfer gate being rendered conductive only when a gate terminal of said first transfer gate receives a low level signal from an output terminal of said second transfer gate, said second transfer gate being rendered conductive only when a gate terminal of said second transfer gate receives a low level signal from the output terminal of said first transfer gate, for controlling defrosting and forced cooling.

4,499,739

CONTROL DEVICE FOR REFRIGERATION CYCLE

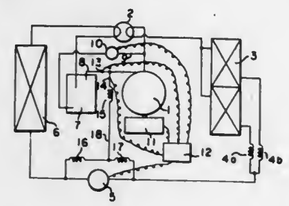
Fumio Matsuoka, Kamakura; Hitoshi Iijima, Chigasaki; Kisuke Yamazaki, Kamakura; Hiroshi Kasagi, Chigasaki; Yasuo Nakashima, Shizuoka; Kiyoshi Sakuma, Fujieda, and Mitsuo Umehara, Toride, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 24, 1983, Ser. No. 526,383

Claims priority, application Japan, Nov. 22, 1982, 57-204976

Int. Cl.³ F25B *41/04, 13/00*

U.S. Cl. 62—212 **5 Claims**



1. A control device for a refrigeration cycle constructed with a compressor, a four-way valve for change-over of a cooling medium, a condenser, an electrically operated expansion valve, an evaporator and an accumulator, all being serially connected, said control device further comprising a by-pass extending at least one terminal of said expansion valve to an inlet of said compressor through a capillary tube; a first temperature sensor to detect temperature of the cooling medium at an open end to the inlet side of said compressor in said by-pass; a second temperature sensor to detect temperature of the cooling medium within an intake tubing, through which the cooling medium is taken into said compressor through the inlet thereof; and a control device which calculates a super-heat quantity of the cooling medium taken into said compressor on the basis of a difference between detected outputs of said first and second temperature sensors, and performs control of a degree of opening of said electrically operated expansion valve, wherein a separate by-pass from the compressor outlet to the accumulator having an electromagnetic valve controlled by said control device which causes a high temperature and high pressure cooling medium from the discharge side of said compressor to be by-passed into the accumulator at the time of defrosting operation by said air conditioning device utilizing refrigeration cycle for increasing the pressure of the low pressure cooling medium from said evaporator.

4,499,740

FREEZER

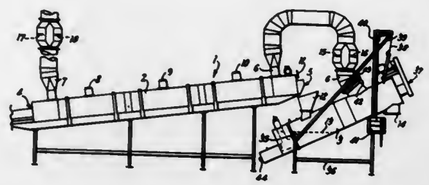
Geoffrey I. Older, Basingstoke, and Leigh S. Webb, Winchester, both of England, assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Oct. 28, 1983, Ser. No. 546,678

Claims priority, application United Kingdom, Oct. 29, 1982, 8230972

Int. Cl.³ F25D *17/02*

U.S. Cl. 62—374 **12 Claims**



1. A freezer which comprises a cooling tunnel for precooling foodstuff, and a freezing tunnel which has (1) a product immersion section in which precooled foodstuff from said cooling tunnel can be immersed in a liquid cryogen, (2) an equalization section in which foodstuff which has been immersed in said liquid cryogen can be maintained in contact with vapour from said liquid cryogen; and (3) means to convey said foodstuff from said liquid cryogen and through said equalization section, characterized in that said means comprises a ribbon auger which, in use, lifts the foodstuff out of the liquid nitrogen and conveys it through the equalization section wherein the ribbon auger comprises a portion having a relatively large pitch and a portion having a relatively small pitch, the arrangement being such that, in use, foodstuff is moved relatively rapidly out of said liquid cryogen and transported relatively slowly through said equalization section said portion of the ribbon auger which, in use, rotates in liquid nitrogen, comprises two flights.

4,499,741

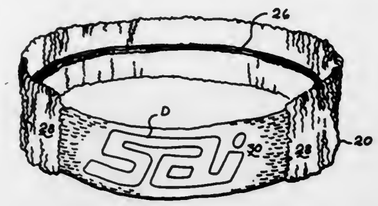
STRETCHABLE KNITTED ARTICLE WITH PRINTED DESIGN

Ronald R. Harris, Lincolnton, N.C., assignor to Kemfast Textiles, Inc., Granite Falls, N.C.

Filed May 19, 1982, Ser. No. 379,642

Int. Cl.³ D04B *1/02*

U.S. Cl. 66—171 **4 Claims**



1. A stretchable knitted article comprising a knitted fabric including yarn formed in loops extending in courses and wales on the outward surface of said fabric, a predominant region of said outward surface being formed with terry knit loops and said terry knit region being integrally knit with a smaller plain knit region of said outward surface, said plain knit region being of a reverse-side single jersey loop construction arranged for coursewise stretching in ordinary use of said article such that the portions of said yarn of said plain knit region which are outwardly visible in the unstretched condition of said article are substantially the only portions of said yarn of said plain knit region which are outwardly visible in the coursewise stretched

condition of said article, and a design printed on said outwardly visible portions of said yarn of said plain knit region, whereby said design maintains its definition and continuity of appearance in both said unstretched and stretched conditions of said article.

4,499,742

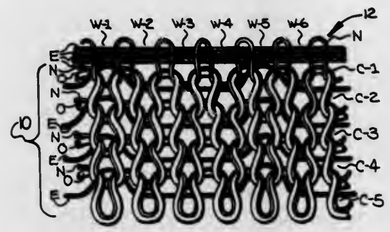
CREW SOCK WITH NONROLL SELVAGE TOP

William H. Burn, Niota, Tenn., assignor to Crescent Hosiery Mills, Niota, Tenn.

Filed Mar. 4, 1982, Ser. No. 354,661

Int. Cl.³ D04B *9/24, 9/46*

U.S. Cl. 66—172 E **6 Claims**



1. In a sock of the crew or athletic type including a leg and wherein said leg includes successive courses knit with a nonstretchable body yarn and a textured stretchable auxiliary yarn in plated relationship to form double yarn stitch loops, and a polyurethane elastic yarn incorporated in certain courses of said double yarn stitch loops, the combination therewith of a nonroll selvage comprising a plurality of rounds of polyurethane elastic yarn, and a single course of plain stitch loops knit solely of said textured stretchable yarn to form single yarn stretchable plain jersey stitch loops in every wale, the lower ends of the single yarn stretchable plain jersey stitch loops of said single course being joined to the upper ends of the double yarn stitch loops of the first course of the portion of said leg adjacent said nonroll selvage, and single yarn stretchable plain jersey stitch loops of said single course being alternately positioned in front of and behind said rounds of polyurethane elastic yarn with said textured stretchable yarn connecting the upper ends of adjacent stitch loops surrounding and passing over said rounds of polyurethane elastic yarn in contracted condition so that said rounds of polyurethane elastic yarn are drawn together and held closely against the double yarn stitch loops of the first course of the portion of said leg adjacent said nonroll selvage to provide a small upstanding bead extending around the upper end of said sock.

4,499,743

CLOTHING DRYCLEANING MACHINE

Gino Maestrelli, Milan, Italy, assignor to Maestrelli S.P.A., Milan, Italy

Filed Sep. 29, 1983, Ser. No. 537,044

Claims priority, application Italy, Oct. 8, 1982, 23683 A/82

Int. Cl.³ D06F *43/08*

U.S. Cl. 68—18 C **6 Claims**

1. A clothing drycleaning machine of a closed circuit type comprising:

a permanently closed pneumatic circuit for drying and solvent removing (or recovery) air,

a drum wherein clothes are contained, said drum having an inlet and being provided in said circuit;

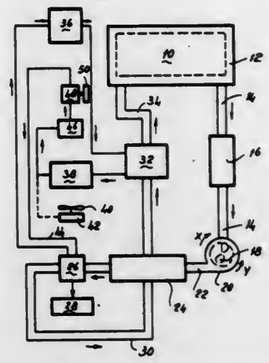
at least one air circulation fan arranged in said circuit;

refrigerating fluid equipment connected in said circuit;

at least one evaporator in the refrigerating equipment for cooling the air coming from the drum and for condensing the solvent therein contained;

at least a first condenser in said refrigerating equipment arranged downstream from said evaporator for heating the air to be recirculated in the drum;

at least one heat exchanger arranged in said circuit to carry-out a heat exchange between the air flows upstream and respectively downstream said evaporator of the refrigerating equipment; and



means, provided in said refrigerating equipment, for controlling heating efficiency of the condenser and/or cooling efficiency of the evaporator, depending on the required air temperatures and flow rates during the drying and solvent removing phases.

4,499,744

DRY-CLEANING APPARATUS

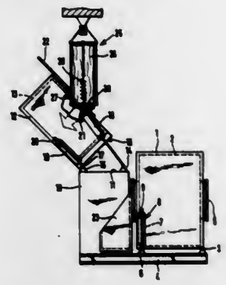
Gustav Kötter, and Peter Mutschiknaus, both of Melle, Fed. Rep. of Germany, assignors to Multimatic Maschinen GmbH & Co., Melle, Fed. Rep. of Germany

Filed Jun. 28, 1983, Ser. No. 508,465

Claims priority, application Fed. Rep. of Germany, Jun. 28, 1982, 3224043

Int. Cl.³ D06F *39/00*

U.S. Cl. 68—210 **4 Claims**



1. A dry-cleaning apparatus comprising:

frame means, a drying housing pivotably mounted on the frame means, a drying drum mounted in the drying housing, a washing housing pivotably mounted on the frame means above the drying housing, a washing drum mounted in the washing housing, the drying housing and washing housing being pivotable about parallel axes extending transversely to an axis of the drying drum and an axis of the washing drum, the washing drum being positioned above the drying drum so that the axis of the washing drum and the axis of the drying drum are substantially aligned after both housings have been pivoted from the frame means through an acute angle, the drying housing defining a loading opening for loading the drying drum, a door for closing the loading opening, the washing housing

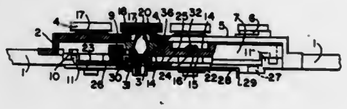
being oppositely pivotable about a second axis parallel and spaced from its first mentioned axis to pivot between a loading position and a discharge position, the washing housing defining an opening for use in filling the washing drum when the washing housing is pivoted in one direction to the loading position and for use in emptying the washing drum when the washing housing is pivoted in the opposite direction to the discharge position, a door for closing the washing drum opening, a conveying means communicating with the loading opening of the drying housing when the washing housing is pivoted to the discharge position to effect the said alignment of the axes of the washing and drying drums, the drying housing defining a discharge opening for discharging the drying drum, a door for closing the discharge opening, the discharge opening being located opposite to the loading opening of the dryer housing, two piston-cylinder units for pivoting the washing housing to the loading position and the discharge position, each unit being pivotably connected at one end to the washing housing and pivotably connected at the other end to the frame means, the ends connected to the frame means being spaced from each other and form pivotable points through which the parallel spaced pivot axes of the washing housing extend, and a piston-cylinder unit for pivoting the drying housing being pivotably connected at one end to the drying housing and pivotably connected at the other end to the frame means to pivot the drying housing for filling and discharge of the drying drum.

4,499,745

COMBINATION CYLINDER LOCK

Jacques Ricouard, Sancoins, and Jean-Pierre Quillet, Charenton-du-Cher, both of France, assignors to L.A.S. Ricouard S.A., Courbevoie, France

Filed Jan. 29, 1981, Ser. No. 229,499
Claims priority, application France, Jan. 31, 1980, 80 02068
Int. Cl.³ E05B *37/00*
U.S. Cl. 70—285 **2 Claims**



1. A lock comprising:

(a) an elongate casing (2) having an outer surface (5) which is outermost when in use and having an inner surface (23) which is inside the container when in use,

(b) at least one locking member (1) movably connected with the casing,

(c) a rocker (7) movably mounted in the casing on an axis disposed parallel to the length of the casing, said rocker being engageable (11) with said locking member (1) to lock it when required,

(d) first elastic means (9) for moving the rocker on its axis in one direction which is for locking,

(e) a key-operable lock cylinder (6) mounted rotatably on the casing,

(f) a plurality of wheels (3) mounted rotatably in the casing, said wheels having finger engageable means (4) on their outer ends, said wheels having their axes parallel to each other and in a plane that is parallel to the length of the casing and which also contains the axis of said lock cylinder,

(g) projections (16) on the rocker so arranged that when the wheels are rotated to their unlocking positions said elastic means (9) moves the rocker to engage the projections in recesses (15),

(h) a slide (22) slidably mounted against said inner surface (23), said slide being engageable with the cylinder (6,27) and with said wheels (3,33,35) to lock the cylinder and wheels against rotation,

(i) counter-wheels (14) mounted one on each of said wheels (3),

(j) recesses (15) within the casing, one by each of said counter-wheels,

(k) second elastic means (20) holding each counter-wheel (14) to its wheel (3) in a rotatably adjustable manner,

(l) projection means (30) on said slide engageable with said counter-wheels to hold them, when required, against rotation, and

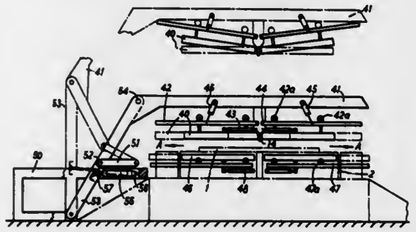
(m) cam means (12,13) on the cylinder (6) and rocker (7) whereby rotation of the cylinder can rock the rocker to its position where it locks (11) the movable member (1) and disengages from the wheels (3).

4,499,746

HEAT SHIELD ARRANGEMENTS FOR A ROLLING MILL

William R. Laws, Worcester Park, and Geoffrey R. Reed, Tadworth, both of England, assignors to Encomech Engineering Services Limited, Hounslow, England

Division of Ser. No. 351,148, Feb. 22, 1982, Pat. No. 4,463,585, which is a division of Ser. No. 091,752, Nov. 6, 1979, Pat. No. 4,343,168, which is a continuation-in-part of Ser. No. 902,560, May 3, 1978, abandoned. This application Feb. 2, 1984, Ser. No. 576,473
Claims priority, application United Kingdom, May 4, 1977, 18760/77; Apr. 27, 1978, 16704/78; Nov. 7, 1978, 43506/78
Int. Cl.³ B21B *37/10, 43/00, 45/02*
U.S. Cl. 72—13 **8 Claims**



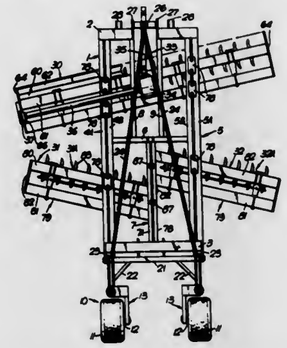
1. An arrangement for use with hot strip material being processed in a hot-rolling mill, the arrangement comprising heat-insulating panels, support means mounting said panels in respective series above and below a path for said hot material through said mill, said panels each having a heat-insulating core and a cover plate forming an overlying main face for each of said panels, said cover plate facing said hot material and forming a hot face of said panel to radiate back heat from said hot material, said panels being operated with the temperature of said cover plates close to that of the adjacent surface of said hot material, at least some of said panels being disposed with individual panels side-by-side across the lateral extent of the arrangement, and adjustment means being connected to said individual panels for adjustably displacing said panels in opposite lateral directions relative to each other to vary their heat-insulating effect on a central region of said hot material relative to said effect on outer lateral margins of said hot material, and at least one array of temperature sensors being laterally spaced across said material path for actuation of said adjustment means in order to selectively control the temperature profile of said hot material in accordance with predetermined values.

4,499,747

POWER DRIVEN DISC CULTIVATOR APPARATUS

Frederick H. Ewers, The White House, Badby Lodge Farm, Daventry, Northamptonshire, N11 6OD, England

Filed Jan. 12, 1983, Ser. No. 457,287
Claims priority, application United Kingdom, Jan. 14, 1982, 8201054; Jul. 5, 1982, 8219334
Int. Cl.³ A01B *9/00*
U.S. Cl. 172—68 **3 Claims**



1. Disc cultivator apparatus comprising an elongate main frame having a leading end and a trailing end; means at the leading end for enabling connection of the main frame to a towing vehicle;

a main sub-frame assembly including a first shaft, a first plurality of cultivator disc elements mountable in spaced relationship on the shaft and constrained to rotate therewith; a first elongate sub-frame adapted rotatably to mount the first shaft, and a first connection means for enabling the main sub-frame assembly to be mountable to the elongate main frame such that its position lengthwise of the main frame and its angular setting relative to the main frame may be separately and selectively set;

a drive transmission means for transmitting drive from a power source of the towing vehicle to the shaft to enable rotation of the shaft at a speed and direction independent of the rate of advance of the apparatus;

and a second sub-frame assembly including at least one-second shaft, a second plurality of cultivator disc elements mountable in spaced relationship on each second shaft a second elongate sub-frame for each said second shaft, each second elongate sub-frame being adapted rotatably to mount an associated second shaft, and second connection means for each second sub-frame assembly for enabling the associated assembly to be mountable to the main frame at a location to the rear of the main sub-frame assembly such that the associated assembly may be positioned lengthwise of the main frame and angularly set relative to the main frame independently of each other.

4,499,748

ROLLING MILL

Mitsuo Nihei, and Hidetoshi Nishi, both of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jan. 6, 1983, Ser. No. 456,106
Claims priority, application Japan, Jan. 6, 1982, 57-265; Jan. 22, 1982, 57-7645
Int. Cl.³ B21B *31/08, 31/18, 29/00*
U.S. Cl. 72—238 **15 Claims**

1. A rolling mill, comprising:

a roll housing;

a pair of work rolls having parallel axes and being mounted within said roll housing;

work roll chocks mounted within said roll housing and supporting respective opposite ends of said work rolls;

a pair of intermediate rolls mounted on parallel axes within said roll housing for engaging and supporting said work rolls;

intermediate roll chocks mounted within said roll housing and supporting respective opposite ends of said intermediate rolls;

a pair of backup rolls mounted within said roll housing for contacting and supporting said intermediate rolls;

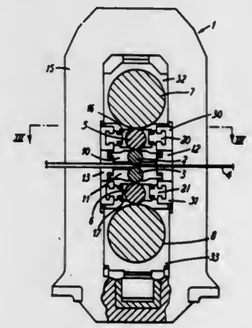
intermediate roll benders for bending said intermediate rolls;

work roll benders in said roll housing and engaging said work roll chocks for bending said work rolls;

said intermediate roll chocks and said work roll chocks having laterally, with respect to said roll axes, outermost faces;

said intermediate roll chock outermost faces and roll benders being closer to the centre plane of the rolling mill than said work roll chock outermost faces and work roll benders;

drive means having two drive shafts respectively axially connected to and to rotate each intermediate roll, and said drive means being located on only one axial side of said roll housing;



means for causing relative axial displacement of the intermediate rolls relative to each other and said roll housing, comprising movable blocks separately mounted within said roll housing on opposite sides of each intermediate roll to be displaceable in the axial direction of the intermediate rolls inside the roll housing, and said movable blocks supporting said intermediate roll chocks while permitting them to move vertically;

disconnectable means connecting the movable blocks and the intermediate roll chocks to move together in the axial direction during said axial displacement and to disconnect for permitting roll change on the opposite axial side of said roll housing;

said means for moving the movable blocks being on said one axial side of said roll housing with said drive means and further comprising, for each intermediate roll, a pair of cylinders operatively connected to said movable blocks for reciprocating them in the axial direction and said pair of cylinders being located on opposite sides of the associated one of said drive shafts; and

said intermediate roll benders being provided operatively between said movable blocks and said intermediate roll chocks.

4,499,749

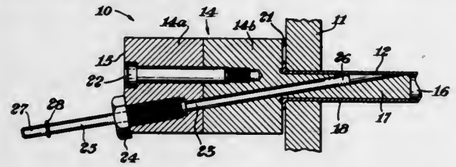
TUBING PERFORATOR

Robert A. Hay, II, and Brian W. Krause, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Jun. 11, 1979, Ser. No. 47,422
Int. Cl.³ B21D *28/28, 31/02*
U.S. Cl. 72—325 **12 Claims**

1. A tubing perforator body, the body having a first end and

a second end, the second end of the body defining a generally cylindrical mandrel having a longitudinal axis of generation, the mandrel generally being a sliding fit within a tube which it is desired to perforate, the mandrel being disposed adjacent a generally radially extending shoulder defined by the body, the shoulder adapted to be disposed adjacent a tube sheet when the



mandrel is positioned within a tube to be perforated, a generally axially extending passageway extending from the first end of the body, through the body and terminating adjacent the second end of the generally cylindrical surface of the mandrel, the axis of the pressure being angularly disposed relative to the axis of the mandrel, the passageway being generally linear and adapted to slideably receive a rigid punch.

4,499,750

DRAWING DEVICE FOR PRESSES WITH MECHANICALLY DRIVEN DRAWING RAM

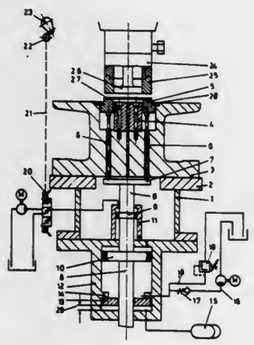
Heinz Gerber, Göpp.-Jebenhausen; Klaus Adam, Waghäusel, and Heinz Horn, Oberhausen, all of Fed. Rep. of Germany, assignors to L. Schuler GmbH, Fed. Rep. of Germany

PCT No. PCT/DE82/00181, § 371 Date May 9, 1983, § 102(e) Date May 9, 1983, PCT Pub. No. WO83/00821, PCT Pub. Date Mar. 17, 1983

PCT Filed Sep. 7, 1982, Ser. No. 525,906

Int. Cl.³ B21D *22/00*

U.S. Cl. 72—351 **4 Claims**



1. A drawing device for a press for a metal sheet, the press having a mechanically driven drawing ram and with a sheet metal holder means exerting its holding force, acting on the metal sheet and counteracting the drawing direction, by way of a pressure plate by means of a die cushion piston, supporting the pressure plate and being under the effect of a pressure medium, in a fixed die cushion cylinder, comprising

a piston means having a working surface acted upon in the drawing direction and attached to the pressure plate, and

a control means operating in dependence on the ram stroke for exposing the working surface to a pressure medium to accelerate the sheet metal holder means in the drawing direction before placing the drawing ram on the metal sheet and sheet metal holder means.

4,499,751

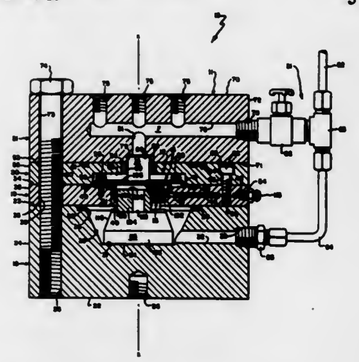
DYNAMIC PRESSURE GENERATOR

Michael T. Riggs, Batavia, N.Y., assignor to PCB Piezotronics, Inc., Depew, N.Y.

Filed Apr. 1, 1983, Ser. No. 481,148

Int. Cl.³ G01L *27/00*

U.S. Cl. 73—4 R **5 Claims**



1. A dynamic pressure generator, comprising:

a body having a chamber therewithin;

a fluid filling said chamber;

pressurizing means for statically pressurizing the fluid in said chamber;

a piston mounted in said chamber for movement relative to said body;

a suspension member flexibly holding said piston to said body, said suspension member having a plurality of openings therethrough to allow the pressure of said fluid to equalize on opposite sides of said suspension member; and

electromagnetic means acting between said body and piston and exposed to said fluid and operatively arranged to cause said piston to move relative to said body;

whereby, when said piston moves, a dynamic pressure may be superimposed on such statically-pressurized fluid.

4,499,752

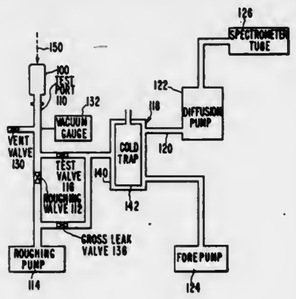
COUNTERFLOW LEAK DETECTOR WITH COLD TRAP

Paul R. Fruzzetti, N. Easton; Philip J. Leavitt, Billerica, and Frank J. Nuzzi, Methuen, all of Mass., assignors to Varian Associates, Inc., Palo Alto, Calif.

Filed Jun. 22, 1983, Ser. No. 506,737

Int. Cl.³ G01M *3/20*

U.S. Cl. 73—40.7 **15 Claims**



15. Apparatus for leak detection comprising:

a test port adapted for receiving a test sample including a trace gas;

a gas analysis instrument tuned to detect said trace gas and having an inlet for receiving said trace gas;

first vacuum pumping means characterized by a relatively high reverse diffusion rate for light gases in said test sample and a relatively low reverse diffusion rate for heavy gases in said test sample, said first vacuum pumping means including a pump inlet and a foreline, said pump inlet being coupled to said inlet of said gas analysis instrument;

a cold trap;

conduit means for conducting said test sample from said test port, to said cold trap and then to said foreline of said first vacuum pumping means;

said cold trap being isolated from communication with said gas analysis instrument except in the sense that the cold trap is connected to the foreline of said first pumping means and the inlet of said first pumping means is connected to said gas analysis instrument;

second vacuum pumping means for evacuation of said apparatus in preparation for a leak test; and

said second pumping means having its inlet connected to said conduit means between said test port and said cold trap.

4,499,753

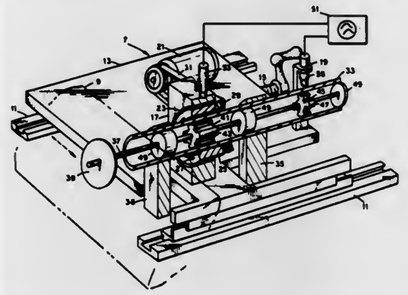
ROTATIONAL VISCOMETER FOR HIGH-PRESSURE HIGH-TEMPERATURE FLUIDS

Kenneth R. Carr, Knoxville, Tenn., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jun. 6, 1983, Ser. No. 501,313

Int. Cl.³ G01N *11/14*

U.S. Cl. 73—59 **8 Claims**



1. Apparatus for generating an output indicative of the viscosity of a fluid comprising:

a tube;

a rotatable shaft having a section thereof encompassed and supported by said tube;

a rotor affixed to said shaft, for contacting said fluid;

a first magnet encompassing said tube and mounted for rotation about and reciprocation along the same;

a second magnet affixed to said shaft in magnetically attracting relation with the first magnet;

a lobed ferromagnetic member affixed to said shaft in spaced apart relation with the second magnet;

means for rotating the first magnet to effect rotation of said shaft;

means for responding to rotation of the first magnet by generating a first electrical waveform whose phase is a function of the angular position of the first magnet;

means for responding to rotation of said member by generating a second electrical waveform whose phase is a function of the angular position of said member; and

means for generating an output indicative of the phase relationship of the first and second waveforms.

4,499,754

ELECTROMAGNETIC FLOWMETER

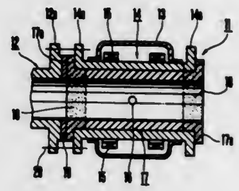
Shinichi Akano, Honmachi; Tsutomu Goto, Tokyo; Hiroshi Watanabe, Ayase; Masato Kuroda, Fuzisawa; Sakae Ishikawa, Yokohama, and Ryoichiro Matsumoto, Yokosuka, all of Japan, assignors to Yamatake-Honeywell Co., Ltd., Tokyo, Japan

Filed Jun. 2, 1983, Ser. No. 500,277

Claims priority, application Japan, Jun. 4, 1982, 57-83254[U]

Int. Cl.³ G01F *1/58*

U.S. Cl. 73—861.12 **4 Claims**



1. An electromagnetic flowmeter for electrically measuring a flow rate of a fluid flowing through a measuring pipe coupled to a main pipe in a first direction through flanges of said measuring and main pipes, comprising:

a pair of exciting coils for generating a magnetic flux in a second direction perpendicular to the first direction in response to a flow of the fluid;

a pair of electrodes for generating an electromotive force in response to the magnetic flux generated by said pair of excitation coils, the electromotive force being generated in a third direction perpendicular to both the first and second directions;

a housing mounted on said measuring pipe so as to house said pair of exciting coils;

an insulating lining which lines said measuring pipe and which has conductive portions, said insulating lining also having flanges which are respectively joined to outer surfaces of the flanges of said measuring pipe;

a conductive powder mixed in an insulating material to constitute said conductive portions of said insulating lining; and

a gasket sandwiched between each of the flanges of said insulating lining which respectively serve as said conductive portions and a corresponding one of the flanges of said main pipe;

wherein said measuring pipe and said housing are short-circuited with the fluid, thereby providing a reference potential of a detected current corresponding to the flow rate of the fluid.

4,499,755

EMITTED ION SURGE/STALL DETECTION

Robert H. Bullis, Avon, Conn., and Robert P. Couch, Palm Beach Gardens, Fla., assignors to United Technologies Corporation, Hartford, Conn.

Filed Dec. 28, 1982, Ser. No. 454,122

Int. Cl.³ G01M *15/00*

U.S. Cl. 73—116 **2 Claims**

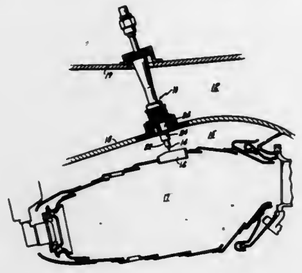
1. Apparatus for detecting surge and/or stall in a gas turbine engine comprising:

means for emitting ions into the gas stream of the engine; and

electrostatic probe means, for providing a signal indicative of impingement of the ions on the electrostatic probe means, said probe means disposed at a point in the gas stream of the engine selected such that:

the ions migrate predominantly away from the electrostatic probe means, resulting in a signal indicative of few ions migrating to and impinging on the electrostatic probe means when the gas stream is flowing in a direction indicative of normal engine operation; and

a significant number of ions flow in the direction of the electrostatic probe means, resulting in a signal indicative of a significant number of ions flowing in the direction of



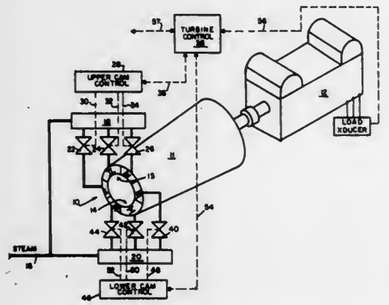
and impinging on the electrostatic probe means when there is a reverse gas stream flow in the engine indicative of a significant surge in the engine.

4,499,756

CONTROL VALVE TEST IN CAM CONTROLLED VALVE SYSTEM

Charles W. Medeiros, North Reading, and James B. Wagner, Peabody, both of Mass., assignors to General Electric Company, Lynn, Mass.

Filed May 26, 1983, Ser. No. 498,353
Int. Cl.³ G01M *15/00*
U.S. Cl. 73—118 **23 Claims**



1. Apparatus for testing main control valves in a steam turbine of the type having at least first and second sets of main control valves for admitting steam to said steam turbine and at least first and second cam controls for respectively controlling said first and second sets of main control valves in an actuation sequence, comprising:

first means for driving said first cam control in first a direction which performs one of opening and closing said first set of main control valves and for maintaining said second cam control stationary until a first change in a first predetermined amount in a first direction is achieved in an output of said steam turbine;

second means for driving said second cam control in a second direction which performs the other of opening and closing said second set of main control valves and for maintaining said first cam control stationary until a second change in a second predetermined amount in a second direction opposite to said first direction is achieved in said output of said steam turbine;

said first and second means being effective for alternate actuation until the one of said first and second cam controls performing closing of its respective set of main control valves attains a condition in which its related set of main control valves should be in a predetermined condition; and

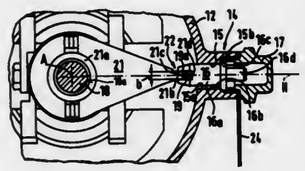
means for determining whether said related set is, in fact, in said predetermined condition.

4,499,757

DEVICE AND METHOD FOR LOCKING A DRIVE SHAFT DISPOSED IN A FUEL INJECTION PUMP FOR INTERNAL COMBUSTION ENGINES AND HOLDING BOLT THEREFOR

Egbert Backe, August-Lammle-Str. 7, 7145 Markgröningen; Rolf Müller, Adalbert-Stifter-Str. 8, 7000 Stuttgart 40; Dieter Otto, Breslauer Str. 3, 7141 Schwieberdingen; Cornelio Leonardi, Jägerhalde 108A, 7000 Stuttgart 60; Heinrich Kochendörfer, Schumannstr. 12, 7053 Kernen; Paul Füssner, Sommerhofenstr. 167, 7032 Sindelfingen; Ewald Walker, Im Wiesengrund 30, 7014 Kornwestheim, and Rudi Rommel, Westendstr. 18, 7120 Bietigheim, all of Fed. Rep. of Germany

Filed Nov. 1, 1982, Ser. No. 438,226
Claims priority, application Fed. Rep. of Germany, Jul. 8, 1982, 3225553
Int. Cl.³ F04B *21/00*
U.S. Cl. 73—119 A **12 Claims**



1. A device for locking a drive shaft (**18**) disposed in a fuel injection pump for internal combustion engines in a predetermined rotary position corresponding to supply onset, having a locking device (**14**) which is positionally fixed with respect to the pump housing (**12**) and provided with a fastening means (**17**) the locking device (**14**) having a holding bolt (**16, 16'**) inserted into a reception bore (**15, 15'**) pointing radially toward the center of the axis of the drive shaft, the holding bolt having a transverse groove (**19**) located on its end face in a cylindrical section (**16*a*, 16*a'***), wherein a form-locking connection holding the drive shaft in the predetermined rotary position is arranged with a protrusion (**22, 22'**) of an element (**21, 21'**) firmly connected with the drive shaft comprising:

(a) a holding collar (**16*c***) adjoining the cylindrical section (**16*a*, 16*a'***) of the holding bolt;

(b) the fastening means (**17, 17', 31**) firmly clamping the holding collar against a step (**15*b***) within the reception bore (**15, 15'**);

(c) the transverse groove (**19**) comprises an open slit having two flanks **19*a*** parallel with the longitudinal axis (H) of the holding bolt and with the longitudinal axis (A) of the drive shaft;

(d) the protrusion (**22, 22'**) having a width (b) corresponding to the distance between the parallel flanks (**19*a***) of the transverse groove, and

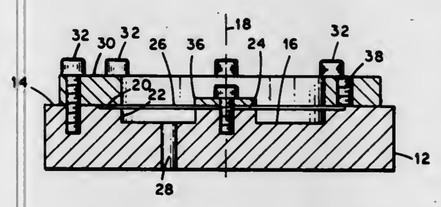
(e) wherein the holding bolt, in a first mounting position serving to lock the drive shaft, engages the protrusion via the transverse groove and, in a second mounting position, in which the protrusion is released, the holding bolt is reversed from its first position and disengaged from the protrusion, the transverse groove pointing radially away from the drive shaft.

4,499,758

ASSEMBLY FOR TESTING WELDABILITY OF SHEET METAL

Stan A. David, Knoxville, and John J. Woodhouse, Crossville, both of Tenn., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Dec. 7, 1982, Ser. No. 447,577
Int. Cl.³ G01L *5/04*; B21J *13/08*; B23Q *3/00*
U.S. Cl. 73—159 **5 Claims**



1. A test assembly for determining weldability of sheet metal, comprising:

a base having a flat side surface, an annular groove having inner and outer walls formed in said side surface, and a counterbore having a bottom surface parallel to said side surface and an outer side wall extending between said bottom surface of said counterbore and said side surface of said base formed in the outer wall of said groove, the surface of said base circumscribed by the inner wall of said groove being substantially coplanar with the bottom surface of said counterbore;

a sheet metal test disk having an edge portion which is positioned in said counterbore and an outer surface which is substantially coplanar with said side surface of said base;

a clamp ring overlying said side surface of said base and the edge portion of said test disk; and

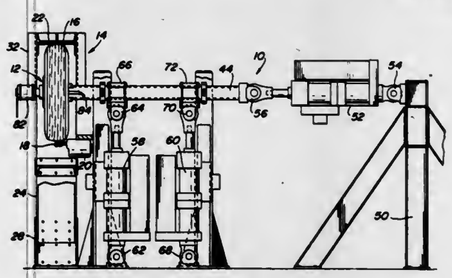
means for urging said clamp ring toward said side surface of said base to thereby fix the edge portion of said test disk in said counterbore.

4,499,759

ROAD SIMULATOR TESTING AUTOMOTIVE AND TRUCK WHEELS AND HUBS

Frederick H. Hull, Ft. Washington, Pa., assignor to The Budd Company, Troy, Mich.

Filed Dec. 5, 1980, Ser. No. 213,206
Int. Cl.³ G01M *17/02*
U.S. Cl. 73—146 **10 Claims**



1. Apparatus for testing a component which is normally rotated during operation comprising:

(a) a fixture for receiving said component to be tested and maintaining it relatively free from rotation during said testing;

(b) first actuator means to apply programmed lateral dynamic forces and moments to said component under test;

(c) second actuator means to apply programmed vertical dynamic forces and moments to said component under test;

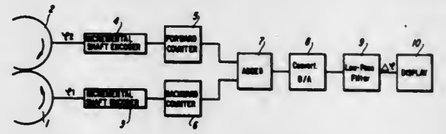
whereby said component under test is tested without rotating said component by simulated forces representative of dynamic forces encountered under actual dynamic road conditions.

4,499,760

DEVICE AND PROCESS FOR HIGH-PRECISION MEASUREMENT OF THE PHASE RELATIONSHIP AND PHASE DISPLACEMENT, RESPECTIVELY, OF TWO PULSE TRAINS

Rudolf Fischer, Darmstadt, and Nikolaus Spiegel, Georgenhausen Reinheim, both of Fed. Rep. of Germany, assignors to Heidelberger Druckmaschinen AG, Heidelberg, Fed. Rep. of Germany

Filed Feb. 15, 1983, Ser. No. 466,724
Claims priority, application Fed. Rep. of Germany, Feb. 15, 1982, 3205240
Int. Cl.³ G01M *13/02*; G01P *3/56*
U.S. Cl. 73—159 **38 Claims**



1. Process for high-precision, rotational speed-independent measurement of the phase relationship and phase displacement, respectively, of two pulse trains up to a given high frequency wherein rotational angles of two rotating bodies are quantized and converted by incremental shaft encoders into pulse trains, and the pulse trains are applicable for calculating the respective phase relationship and phase displacement, which comprise the steps of:

a. counting the pulse trains generated by the two rotational bodies in at least two different counters;

b. forming a digital difference of the two counts;

c. converting the digital difference into an analog signal;

d. decoding the analog signal; and

e. displaying the decoded analog signal.

4,499,761

SNOW SCALE/RATE METER

Vernon G. Plank, Mansfield; Anthony J. Matthews, Salisbury, both of Mass.; Robert O. Berthel, Windham, N.H., and Dennis L. LaGross, Bedford, Mass., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Nov. 18, 1982, Ser. No. 442,494
Int. Cl.³ G01W *1/14*
U.S. Cl. 73—170 R **10 Claims**

1. A snow scale/rate meter comprising:

means for collecting snowfall and providing a visual indication of the amount of said snowfall collected;

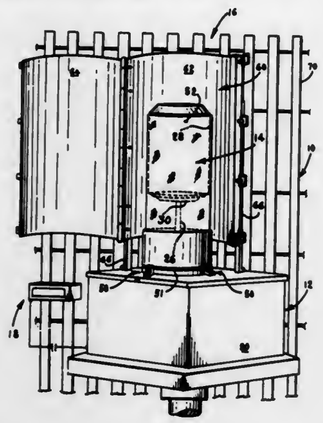
means operably connected to said snowfall collection means for accurately ascertaining the weight of said collected snowfall, said weighing means including means substantially spaced-apart from said snowfall collection means for sensing said weight of said snowfall, and means for enclosing said weight sensing means in a thermally controlled environment;

said snowfall collection means including means for dissipating heat emanating from said thermally controlled environment of said weight sensing means in order to prevent said heat from adversely affecting said collected snowfall;

means operably associated with said snowfall collection

means for substantially protecting said snowfall collection means from the adverse effects of wind; and

means for monitoring and recording said weight of snowfall over preselected intervals of time;



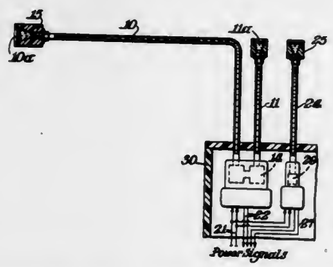
whereby accurate determinations of snowfall weight and rate can be ascertained over short intervals of time.

4,499,762

WATER WAVE MONITOR

Kevin R. Bodge, and Robert G. Dean, both of Gainesville, Fla., assignors to University of Delaware, Newark, Del.

Filed Jul. 15, 1983, Ser. No. 514,374
Int. Cl.³ G01L 9/00
U.S. Cl. 73—170 A **5 Claims**



1. A submerged service water wave monitoring apparatus comprising a device provided with a point sensor responsive to water surface displacement fitted with a pressure-to-electric transducer, and at least two differential pressure gages each having a first sensor disposed in a generally common horizontal plane in proximity with said point sensor and each having a second sensor disposed in said generally common horizontal plane spaced apart from said first sensor a distance preselected to generally conform with the length scales of the overlying waves and sufficient to permit measurement of pressure gradients therein, the angular separation of said gage sensor-to-sensor linear spacing being about 20° to about 90° with respect to each other, each said differential pressure gage being provided with a pressure-to-electric transducer, and means responsive to the output signals of said point sensor transducer and said differential pressure gage transducers developing measures of wave height, direction and frequency.

4,499,763

MEANS FOR ATTACHING A SOUNDING BALLOON

Esa Varkia, Espoo, Finland, assignor to Vaisala Oy, Finland

Filed Sep. 30, 1983, Ser. No. 537,936
Claims priority, application Finland, Jun. 13, 1983, 832316
Int. Cl.³ G01W 1/00
U.S. Cl. 73—170 R **15 Claims**



1. In a combination including a sounding balloon having a filling tube, a payload, such as a radiosonde, to be carried by the sounding balloon, a flexible connecting element having one end connected to the payload, and means for attaching the other end of the flexible connecting element to the sounding baloon, the improvement wherein the attaching means comprises:

an attachment member having an aperture formed therethrough, said aperture being defined by a marginal edge; and

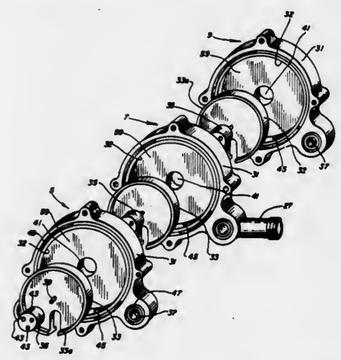
a fixing member adapted to be fitted in locking position on said attachment member with at least a portion thereof extending through said aperture, said fixing member including means for urging the filling tube of the sounding balloon against a region of said marginal edge of said aperture when said fixing member is fitted on said attachment member to fix the filling tube to said attachment member.

4,499,764

MODULAR METERING APPARATUS

Mark A. Fiorina, Milwaukee, and Todd N. Roberts, Germantown, both of Wis., assignors to Badger Meter, Inc., Milwaukee, Wis.

Filed Sep. 10, 1982, Ser. No. 416,698
Int. Cl.³ G01F 3/08
U.S. Cl. 73—253 **21 Claims**



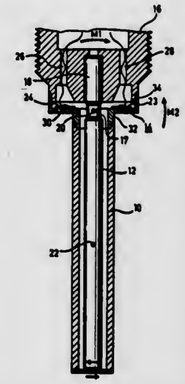
18. Apparatus for metering the flow of fluid, said apparatus comprising: a plurality of three or more oscillating piston measuring modules in stacked relationship to each other, each of said measuring modules having a chamber through which said fluid flows, an oscillatable piston in each of said chambers which oscillates in response to the flow of fluid; and means for operatively connecting said pistons of said measuring modules for synchronous, conjoint rotation with one another, wherein the conjoint rotation of said pistons is a measure of the total fluid flow through said measuring modules.

4,499,765

DEVICE FOR THE DETERMINATION AND/OR CONTROL OF A CERTAIN CHARGING LEVEL IN A CONTAINER

Karl Benz, Schiltach, and Gunter Kech, Wolfach-Kirnbach, both of Fed. Rep. of Germany, assignors to VEGA Grieshaber GmbH & Co. KG, Schiltach, Fed. Rep. of Germany

PCT No. PCT/DE81/00158, § 371 Date Jan. 11, 1983, § 102(e) Date Jan. 11, 1983, PCT Pub. No. WO83/01307, PCT Pub. Date Apr. 14, 1983
PCT Filed Sep. 30, 1981, Ser. No. 459,544
Int. Cl.³ G01F 23/28
U.S. Cl. 73—290 V **6 Claims**



1. An apparatus for determining the filling level of a material in a container, comprising;

a vibration structure including inner and outer vibration elements which vibrate at the same resonant frequency in opposing directions, said elements being arranged coaxially to each other, at least one of said elements being set in the center of a membrane which acts as a return spring,

the vibrations of the outer one of said elements being muffled when the material in the container touches the same, said outer vibration element surrounding the inner vibration element,

said vibration elements (10, 12) having a common pivotal point (20),

said pivotal point (20) being situated in the center of said membrane (14) which serves as the return spring for the outer vibration element,

said inner vibration element being rod-shaped (12) and having, in the region of the pivotal point (20), a tapered area (17) that serves as a return spring therefor.

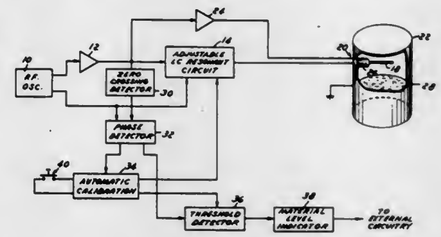
4,499,766

CAPACITANCE-TYPE MATERIAL LEVEL INDICATOR

George H. Fathauer, and Charles F. Hood, both of Mesa, Ariz., assignors to Berwind Corporation, Philadelphia, Pa.

Filed Aug. 25, 1982, Ser. No. 411,527
Int. Cl.³ G01F 23/26; G01R 27/26, 35/00
U.S. Cl. 73—304 C **30 Claims**

1. A system for indicating the level of material in a vessel as a function of material capacitance comprising a parallel resonant circuit including a capacitance probe adapted to be disposed in a vessel so as to be responsive to variations in capacitance as a function of material level in said vessel, oscillator means having an output coupled to said resonant circuit including said capacitance probe, phase detection means responsive to variations in phase angle at said oscillator means as a function or probe capacitance and substantially independent of amplitude of said oscillator output coupled to said resonant circuit, calibration means for identifying a reference capacitance indicative of a predetermined level of material in said vessel, comparison means having a first input responsive to said phase detection means, a second input and an output



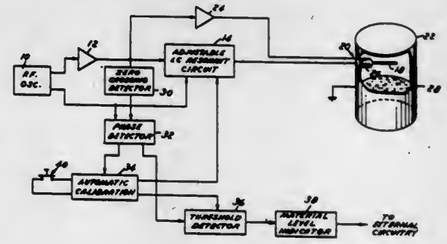
responsive to a comparison between said first and second inputs, said calibration means including reference means connected to said second input and indicative of said reference capacitance, and means responsive to said comparison means for indicating material level in said vessel as a function of a difference between capacitance at said probe and said reference capacitance.

4,499,767

CAPACITANCE-TYPE MATERIAL LEVEL INDICATOR

George H. Fathauer; Charles F. Hood, both of Mesa, Ariz., and Robin B. Runck, Sherman Oaks, Calif., assignors to Berwind Corporation, Philadelphia, Pa.

Filed Aug. 25, 1982, Ser. No. 411,525
Int. Cl.³ G01F 23/26; G01R 35/00
U.S. Cl. 73—304 C **5 Claims**



1. A system for indicating the level of material in a vessel as a function of material capacitance comprising a resonant circuit including a capacitance probe adapted to be disposed in a vessel so as to be responsive to variations in capacitance as a function of material level in said vessel, an oscillator having an output coupled to said resonant circuit including said capacitance probe, phase detection means responsive to variations in phase angle of said oscillator output as a function of probe capacitance, calibration means for identifying a reference capacitance indicative of a predetermined level of material in said vessel, and means responsive to said phase detection means and to said calibration means for indicating material level in said vessel as a function of a difference between capacitance at said probe and said reference capacitance, said calibration means comprising comparison means having a first input responsive to said phase detection means, a second input and an output responsive to a comparison between said first and second inputs, reference means connected to said second input and indicative of said reference capacitance, means for initiating a calibration operation, counter means including means responsive to said initiating means for resetting said counter means, means responsive to said comparison means for enabling opera-

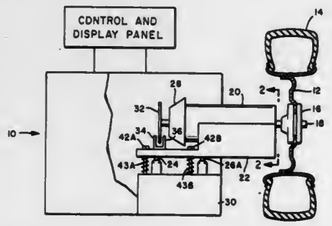
tion of said counter means during said calibration operation, and means for varying the count in said counter means during said calibration operation, means responsive to the count in said counter means for varying said reference means connected to said second input of said comparison means as a function of said count, and means responsive to said output of said comparison means for terminating said calibration operation when said output indicates a predetermined comparison between said first input from said phase detection means and said second input from said reference means.

4,499,768

CANTILEVER SUPPORT FOR AN APPARATUS TO DETERMINE THE IMBALANCE IN A ROTATING OBJECT

Allan C. Madden, Woodside; Robert Cellucci, San Jose; Robert A. Hoshida, and Duncan MacKay, both of Mountain View, all of Calif., assignors to Coats Wheel Balancer Corp., Santa Clara, Calif.

Filed Sep. 8, 1982, Ser. No. 415,898
Int. Cl.³ G01M *1/22*
U.S. Cl. 73—462 **5 Claims**



1. In an apparatus for determining the position and force of imbalance in a rotating tire mounted on the rim of a wheel with a central hub, said apparatus having a frame containing sensor means for determining the velocity of said tire, force transducer means for determining the magnitude of the force of imbalance, and calculating means for determining the position and magnitude of said imbalance on said tire, wherein the improvement comprising:

motor means having a shaft means directly coupled to said tire for rotating said tire, said motor means positioned with a portion thereof protruding from said frame in a direction towards the wheel; and

cantilever support means, for supporting said portion of said motor means protruding from said frame, said support means having a substantially planar surface for supporting said motor means on said force transducer means in said frame.

4,499,769

ACOUSTIC EMISSION MONITORING

Gregory J. Conway, Schenectady, N.Y., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

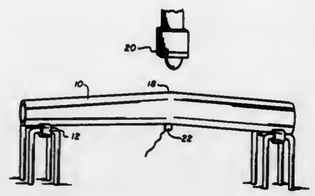
Filed Apr. 4, 1983, Ser. No. 481,973
Int. Cl.³ G01N *29/00*; B21D *3/10*
U.S. Cl. 73—587 **4 Claims**

1. Acoustic emission monitoring of straightening gun tubes comprising the steps of:

a. placing the high side of a bent gun tube upwardly as the gun tube is positioned in a horizontal position,

b. placing an acoustic emission detection device on said tube,

c. exerting a downward pressure on said high side until a plastic deformation state of said gun tube is reached as



evidenced by said detection device sensing a hissing noise emission from said tube, and

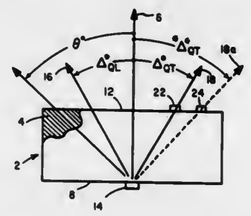
d. repeating the above steps until said gun tube is straight.

4,499,770

SYSTEMS FOR MONITORING CHANGES IN ELASTIC STIFFNESS IN COMPOSITE MATERIALS

Ronald D. Kriz, Boulder, Colo., assignor to The United States of America as represented by the Secretary of Commerce, Washington, D.C.

Filed Jul. 22, 1982, Ser. No. 400,571
Int. Cl.³ G01N *29/00*
U.S. Cl. 73—599 **13 Claims**



1. A non-destructive, non-invasive method for monitoring, measuring and/or detecting changes in elastic stiffness in a fiber/matrix composite structure composed of an isotropic matrix including fiber material distributed unidirectionally within said matrix, including the steps of:

locating an energy flux producing transducer to transmit energy flux into said composite structure; energizing said transducer so that said composite structure is subjected to traversing energy flux from said transducer; and

determining the direction which said energy flux takes through said composite structure; and

wherein the direction of said energy flux through said composite structure is determined by determining the location from which energy flux exits the composite structure.

4,499,771

ULTRASOUND VISUALIZATION SYSTEMS

Michael K. Roberts, Arvaada; Richard A. Ottosen, Denver, and Matthew L. McConnell, Boulder, all of Colo., assignors to Bion Corporation, Westminster, Colo.

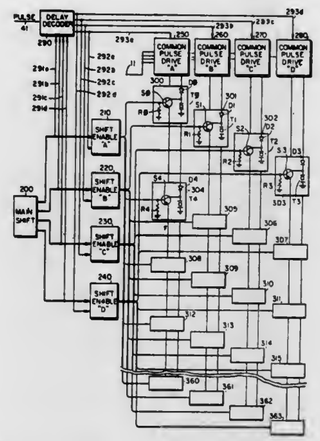
Division of Ser. No. 204,589, Nov. 6, 1980, Pat. No. 4,381,675.
This application Apr. 4, 1983, Ser. No. 481,810
Int. Cl.³ G01N *29/04*
U.S. Cl. 73—632 **2 Claims**

1. A method of selectively exciting an array of transducers in an ultrasound visualization and receiving echo signals therefrom, said method comprising the steps of:

(a) applying a voltage differential to a parallel array of series combinations, each combination containing a transducer and a diode;

(b) selectively discharging the voltage differential to one transducer of the array of transducers by closing a switch in parallel with that transducer, whereby said one transducer is excited to generate an ultrasound signal;

(c) applying a current pulse to the discharged transducer to reapply a voltage differential to the discharged transducer;



(d) applying a constant current to the recharged transducer through the diode corresponding to the recharged transducer to maintain that diode in a forward biased state while the recharged transducer receives echo signals; and

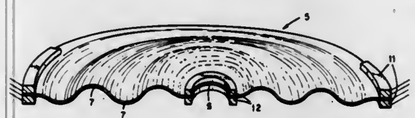
(e) sequentially repeating steps b through d with other transducers in the array.

4,499,772

FLEXURAL SUPPORT MEMBER HAVING A HIGH RATIO OF LATERAL-TO-AXIAL STIFFNESS

Wendall M. B. Haas, Covina, Calif., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jun. 23, 1983, Ser. No. 507,189
Int. Cl.³ F16F *1/32, 1/34*; G01M *7/00*; B06B *1/04*
U.S. Cl. 73—666 **3 Claims**



1. A flexible support member for controlling reciprocating motion of a device along an axis perpendicular to the plane of said flexible support member, comprising:

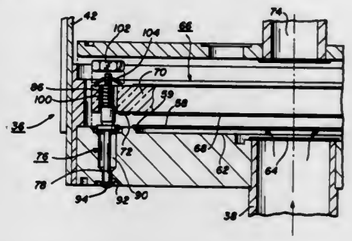
a disc formed of a metal having the properties of high tensile and fatigue strength, a thickness in the range of from about 0.01 to 0.025 inch and a plurality of concentric convolutions each having a radius in the range of from about 1 to 2.5 inches to provide a lateral-to-axial stiffness ratio greater than 1,000 to 1, said disc being mounted about its periphery and attached to said device at its center along an axis of motion perpendicular to the plane of said disc to provide free reciprocal motion of said device along said axis while substantially restraining motion of said device perpendicular to said axis.

4,499,773

VARIABLE CAPACITANCE PRESSURE TRANSDUCER

Arthur W. Crampton, Concord; Hollis L. Gray, Jr., Wayland, and Seymour Mermelstein, Newton, all of Mass., assignors to Dresser Industries, Inc., Dallas, Tex.

Filed Apr. 28, 1983, Ser. No. 489,659
Int. Cl.³ G01L *9/12*; H01G *7/00*
U.S. Cl. 73—718 **9 Claims**



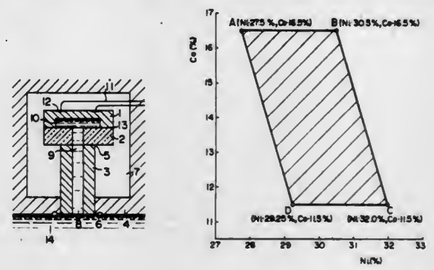
1. In a capacitor type pressure transducer including a pressure sensor comprised of a tensioned membrane, a tension plate supporting said membrane secured thereto, a removable capacitor plate positioned in a controlled superposed relation spaced from said membrane, and at least one pressure inlet in communication with said membrane and adapted to receive a source of pressurized fluid, the improvement for supporting said capacitor plate in said position relative to said membrane and comprising a plurality of flexible pins extending in a secured connection between said capacitor plate and said tension plate, each of said pins being characterized by deflection properties at least matched to absorb the potential force anticipated to be induced by an encountered temperature differential and imposed between said membrane and said capacitor plate.

4,499,774

SEMICONDUCTOR PRESSURE TRANSDUCER

Masatoshi Tsuchiya; Ko Soeno, both of Hitachi, and Tomomasa Yoshida, Mito, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 17, 1981, Ser. No. 284,340
Claims priority, application Japan, Jul. 18, 1980, 55-97537
Int. Cl.³ G01L *9/06*
U.S. Cl. 73—727 **8 Claims**



1. A semiconductor pressure transducer comprising: a piezoresistive semiconductor diaphragm; a cylindrical stem made of a glass having a thermal expansion coefficient approximating that of said diaphragm, said diaphragm being hermetically bonded by anodic bonding to one side of said cylindrical stem; and a cylindrical holder for introducing a pressurized fluid to said diaphragm through said cylindrical glass stem, said cylindrical holder being hermetically bonded by anodic bonding at one end to the other side of said glass stem to support said glass stem; wherein said holder is made of a ferromagnetic alloy material having an austenitic structure and consisting essen-

tially of Ni and Co, of which contents being within the range defined by a point A (Ni: 27.5%, Co: 16.5%), point B (Ni: 30.5%, Co: 16.5%), point C (Ni: 32.0%, Co: 11.5%) and a point D (Ni: 29.25%, Co: 11.5%) in FIG. 2, and the balance Fe, with at most small amounts of Si, Mn and C, said alloy material having been subjected to 30–90% cold working and stress relief annealing at 200°–600° C., and exhibiting a mean thermal expansion coefficient of 35×10^{-7}/°C. or less over a temperature range between 30° C. and 350° C., whereby anodic bonding up to a temperature of 350° C. can be provided for bonding said cylindrical stem and cylindrical holder without breaking of the stem.

4,499,775

TRACTOR DRAFT SENSING APPARATUS WITH SENSING UNIT POSITIONED OUTBOARD OF EACH LINK

Jean J. Lasoen, Ville Preux, France, assignor to Massey-Ferguson Services N.V., Curacao, Netherlands Antilles

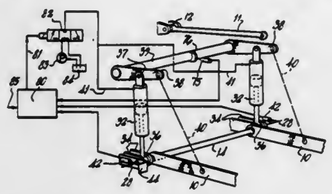
PCT No. PCT/EP82/00020, § 371 Date Oct. 4, 1982, § 102(e) Date Oct. 4, 1982, PCT Pub. No. WO82/02815, PCT Pub. Date Sep. 2, 1982

PCT Filed Feb. 5, 1982, Ser. No. 440,210

Claims priority, application United Kingdom, Feb. 23, 1981, 8105861

Int. Cl.³ A01B *63/112*

U.S. Cl. 73—862.57 **8 Claims**



1. A draft sensing apparatus for use on a tractor comprising:
an elongate sensing shaft having end portions whose deflection by draft forces is to be monitored;
a pair of fulcrum supports for the shaft, the supports being arranged to support the shaft at laterally spaced locations on a tractor;
a pair of lower draft links carried on the shaft at locations outboard of the fulcrum supports and inboard of the end portions so that the imposition of a draft force on the links bends the shaft and deflects the end portions, and
a sensing unit positioned outboard of each draft link to monitor the deflection of the associated end portion of the shaft to provide separate signals indicative of the draft force imposed on each draft link.

4,499,776

VACUUM SAMPLE INTRODUCTION UNIT

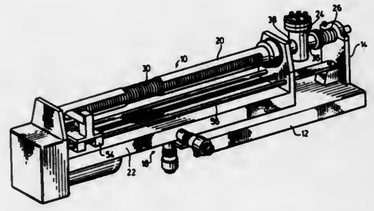
James E. Robinson, Burlington, Canada, assignor to UHV Instruments Ltd., Burlington, Canada

Filed Mar. 4, 1983, Ser. No. 472,130

Int. Cl.³ G01N *1/00*

U.S. Cl. 73—863.85 **6 Claims**

1. A sample loading device for loading samples into and unloading samples from an ultra high vacuum environment, which comprises:
an elongate rigid frame member,
an elongate housing assembly mounted to said frame member for pivotal movement relative thereto about a vertical axis and relative thereto about a horizontal axis,
means for effecting said pivotal movement about said horizontal axis and about said vertical axis,
elongate smooth-surfaced cylindrical probe rod means located in said elongate housing assembly and mounted for forward movement through an opening at one end of said housing from a retracted position to an extended position and rearward movement from said extended position to said retracted position, whereby said probe rod means may be used to effect said sample loading and unloading,
said elongate housing assembly including compressible bellows means supported within an elongate hollow tube, said probe rod means being located within, surrounded by and mounted to said compressible bellow means, roller bearing means located in said housing close to said end opening therefrom and rigidly supporting said probe rod means from movement other than longitudinally thereof, and



means for effecting said forward and rearward movement of said probe rod means while being supported by said roller bearing means, said movement effecting means comprising said compressible bellows means whereby compression of said bellows means towards said end opening by said movement effecting means effects forward movement of said probe rod means from said retracted position and expansion of compressed bellows means away from said end opening effects rearward movement of said probe rod means to said retracted position.

4,499,777

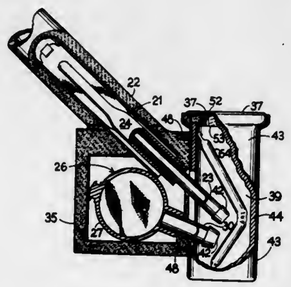
MOLTEN METAL SAMPLERS

Robert J. Hackett, Brookfield, Conn., assignor to Haly, Inc., Brookfield, Conn.

Filed Mar. 3, 1983, Ser. No. 471,769

Int. Cl.³ G01N *1/12*

U.S. Cl. 73—864.56 **15 Claims**



1. A chill mold assembly for collecting, chilling and withdrawing a flat cylindrical sample from a body of molten metal, comprising:
A. a ceramic portal tube,
B. two juxtaposable facing mold havles, each having a ring-shaped outer wall terminated by
1. a substantially flat proximal rim incorporating raised land means,
2. a distal rim,
3. and means forming a portal flange extending radially outwardly from the outer wall and having a concave trough formed therein extending through the outer wall and the flange and opening toward the proximal rim,
C. a cover disc positioned spanning the outer wall of each mold half near the distal rim
1. with protruding land means positioned between the cover disc and the mold half, maintaining a vent slot of predetermined width around the periphery of the cover disc,
D. and clamping means cooperating with the facing chill mold halves to secure them together with the raised land means of the proximal rims spacing the proximal rims apart to provide a peripheral equatorial vent slot therebetween, and with their concave troughs facingly embracing the ceramic portal tube about an inner end thereof,
whereby a chill mold for flat cylindrical samples of solidified metal is achieved having three vent slots of predetermined minimum width encircling its periphery.

4,499,778

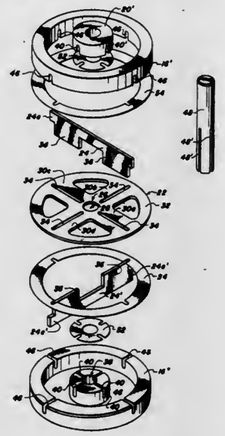
FLEXURE MOUNT ASSEMBLY FOR A DYNAMICALLY TUNED GYROSCOPE AND METHOD OF MANUFACTURING SAME

Robert O. Westhaver, Westwood; Gary Walker, and Menno G. Koning, both of Dover, all of Mass., assignors to Northrop Corporation, Los Angeles, Calif.

Filed Feb. 3, 1981, Ser. No. 231,242

Int. Cl.³ G01C *19/22*

U.S. Cl. 74—5 F **21 Claims**



1. A two degree of freedom flexure mount that couples a drive shaft to an outer inertial element connected to an outer ring that is rotating about a spin axis through an inner ring that is surrounded by and substantially coaxial with said outer ring, comprising a plurality of equiangularly spaced flexure arms each extending between and secured to said inner ring and said outer ring, said flexure arms each having a horizontal web portion aligned substantially transverse to said spin axis and a vertical flexure member oriented substantially perpendicular to said horizontal web portion and having upper and lower portions disposed on opposite sides of said web portion, said web portion and flexure member being formed from a resilient structural sheet material having a substantially uniform thickness, and said web and vertical portions of each of said flexure arms being substantially continuous from said inner ring to said outer ring to provide uniform and reliably known axial, radial and torsional spring rates for each of said flexure arms said horizontal webs each extending from a central portion which together with said webs forms a substantially planar spider member that is symmetrical about the spin axis.

16. A method of manufacturing a flexure assembly comprising,
forming from a structural sheet material of substantially uniform thickness a spider member including a central hub portion and a plurality of equiangulary spaced webs each extending radially from said central hub portion with a central radial slot extending substantially the length of said web,
forming from a structural sheet material of substantially uniform thickness a plurality of cross flexure members each having generally rectangular configuration with a pair of generally rectangular key portions extending from one of its longitudinal edges,
providing upper and lower halves of an inner ring,
providing upper and lower halves of an outer ring,
interlocking said cross flexure members with said spider member by inserting said key portions in said radial slots,
positioning said inner ring halves on opposite sides of said central spider portion,
positioning said outer ring halves in opposite sides of said outer ends of said spider webs, and
simultaneously brazing said inner ring halves to said spider, said outer ring halves to said spider and said cross flexure members to said inner and outer ring halves.

4,499,779

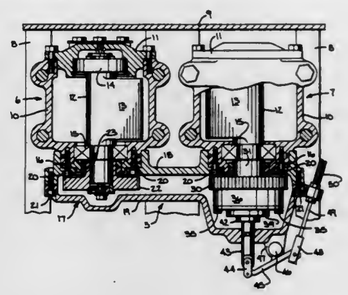
VIBRATORY COMPACTOR

Helmut Maass, West Bend, Wis., assignor to M-B-W Inc., Slinger, Wis.

Filed Jun. 7, 1982, Ser. No. 385,527

Int. Cl.³ F16H *33/20*

U.S. Cl. 74—61 **5 Claims**



1. In a vibration generating mechanism, a lease, a vibrating member, a pair of vibration generating units connected to the vibrating member and disposed in side-by-side relation in said base, each unit having an enclosed fixed housing and having an eccentric shaft journalled within the housing, said eccentric shafts being generally parallel and corresponding ends of said shafts projecting from the respective housings, gear train means operably connecting a power source to the projecting ends of said shafts to rotate said shafts in opposite directions, said gear train means including a pair of first gears connected to the projecting ends of the respective shafts and a pair of second gears interconnecting said first gears, a gear casing connected to said housing and containing said gear train means, a shift mechanism disposed within the gear casing and outside said fixed housings and operable to effect angular displacement of a first of said shafts relative to the other of said shafts to thereby provide an adjustment in the angularity of forces generated and reverse movement for said vibrating member, and operating means connected to the shift mechanism and disposed on the outside of said gear casing for manually operating said shift mechanism.

4,499,780

ADJUSTABLE CONTROL LINKAGE

James C. Boda, Winneconne, Wis., assignor to Brunswick Corporation, Skokie, Ill.

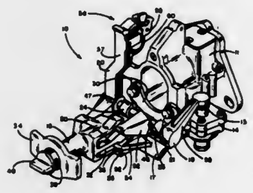
Filed Sep. 2, 1982, Ser. No. 414,117

Int. Cl.³ G05G *9/00*; F02N *17/00*

U.S. Cl. 74—107 **12 Claims**

1. An adjustable linkage for controlling engine function, said linkage including:

(a) a bracket;
(b) a first link having a first end pivotally connected to said bracket and having a second end including a pivot means;
(c) a second link pivotally attached to said pivot means; and
(d) an adjustment means formed integrally with said first link for adjusting the position of said pivot means on said



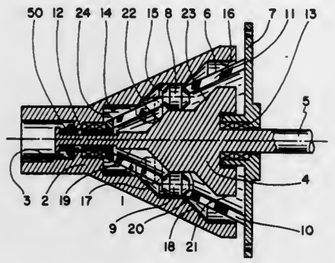
first link, said adjustment means including a first set of ratchet teeth on said first link and an arm extending from said first link with said pivot means located near an end of said arm, said arm including a second set of ratchet teeth for engaging said first set of ratchet teeth, said arm including a relatively thin section to permit bending and bias said second set of teeth toward said first set of teeth.

4,499,781

CHAMFERED ROLLER MECHANICAL TRANSMISSION

Hyok S. Lew, 7890 Oak St., Arvada, Colo. 80005

Filed Jun. 1, 1982, Ser. No. 384,049
Int. Cl.³ F16H *15/16, 15/56*
U.S. Cl. 74—193 **9 Claims**



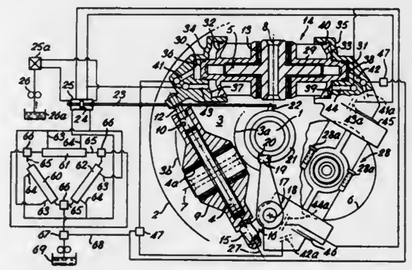
1. A chamfered roller mechanical transmission comprising in combination:
(a) an outer conical rotating member with an inner surface including a plurality of circular cylindrical surfaces of progressively varying diameters and a plurality of circular frustum surfaces disposed coaxially in an alternating fashion wherein each adjacent pair of said plurality of circular cylindrical surfaces are interconnected by each of said circular frustum surfaces in a continuous configuration;
(b) an inner conical rotating member with an outer surface including a plurality of circular cylindrical surfaces of progressively varying diameters and a plurality of circular frustum surfaces disposed coaxially in an alternating fashion wherein each adjacent pair of said plurality of circular cylindrical surfaces are interconnected by each of said circular frustum surfaces in a continuous configuration, said inner conical rotating member rotatably disposed inside of said outer conical rotating member in a coaxial relationship providing a series of circular cylindrical shell voids of a constant gap dimension and of progressively varying mean diameters and a series of circular frustum shell voids of another constant gap dimension interconnecting each adjacent pair of said series of circular cylindrical shell voids;
(c) a plurality of chamfered rollers rotatably disposed in said shell void intermediate said outer and inner conical rotating members on a common hypothetical plane perpendicular to the central axis of said outer and inner conical rotating members in a substantially axisymmetric pattern with respect to the central axis of said outer and inner conical rotating members, said plurality of chamfered rollers with the central axis disposed parallel to the central axis of said outer and inner conical rotating members including a circular cylindrical mid-section having a constant diameter matched to said a constant gap distance of said circular cylindrical shell voids and further including two chamfered extremities on opposite sides of the cylindrical mid-section wherein the diagonal distance between two diametrically opposite chamfered faces of said two chamfered extremities is matched to said another constant gap distance of said circular frustum shell voids; whereby, a rotating motion of one of said outer and inner conical rotating members is transmitted to another rotating motion of the other of said outer and inner conical rotating members by means of pressurized frictional contact provided by either said circular cylindrical mid-section of said plurality of chamfered rollers in line-contact with said circular cylindrical surfaces of said outer and inner conical rotating members or said two chamfered extremities of said chamfered rollers respectively in contact with said circular frustum surfaces of said outer and inner conical rotating members;
(d) means for preventing said plurality of chamfered rollers from orbiting about the central axis of said outer and inner conical rotating members;
(e) means for maintaining said plurality of chamfered rollers on said common hypothetical plane perpendicular to the central axis of said outer and inner conical rotating members in said substantially axisymmetric pattern and for shifting said plurality of chamfered rollers in unison in a direction parallel to the central axis of said outer and inner conical rotating members; and
(f) means for connecting a power-input shaft to one of said outer and inner conical rotating members and a power-output shaft to another of said outer and inner conical rotating members.

4,499,782

TRANSMISSION UNITS OF THE TOROIDAL RACE ROLLING FRICTION TYPE

Forbes G. D. Perry, Charlbury, England, assignor to National Research Development Corporation, London, England

Filed Sep. 28, 1982, Ser. No. 426,127
Claims priority, application United Kingdom, Oct. 5, 1981, 8130049
Int. Cl.³ F16H *15/00, 15/16, 15/08*
U.S. Cl. 74—200 **7 Claims**



1. A toroidal race rolling friction transmission unit comprising:
at least one input disc;
at least one output disc;

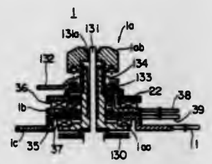
a first roller, and a plurality of further rollers, providing a driving connection between said input and output discs;
first ratio-changing means including a mechanical linkage exhibiting mechanical advantage, connected to said first roller to impart precise increments of tangential shift to said first roller to cause said first roller to change ratio angle;
a member to sense the reaction force to which said first roller is subjected in the course of transmitting torque from said input disc to said output disc;
second ratio-changing means including first fluid-pressure-operated linear actuators connected to at least some of said further rollers, each line of action of a said actuator being aligned with the direction of tangential shift of its connected said roller, whereby to impart tangential shift to said further rollers so that they also change ratio angle, and operative connections between said fluid-pressure-operated actuators and said reaction force sensing member, whereby said actuators act upon said further rollers with a force matching said reaction force of said first roller.

4,499,783

TAPE RECORDING MACHINE

Kaoru Takemasa, Saitama, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

Filed Jan. 4, 1982, Ser. No. 336,994
Claims priority, application Japan, Jan. 7, 1981, 56-716[U]; Jan. 7, 1981, 56-891
Int. Cl.³ H04N *9/16*; F16H *57/00, 37/06*
U.S. Cl. 74—411 **13 Claims**



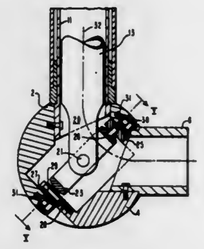
1. In a tape machine including at least one reel shaft unit having an upper portion for engaging a cassette reel and drive means for providing a rotational force to said shaft unit, the improvement characterized in that said shaft unit comprises:
a first pinion gear connected to said driving means;
a second pinion gear connected to said driving means;
a first flange member;
a second flange member coaxial with said first flange member;
a first rotational torque transmission gear for receiving said rotational force from said first or said second pinion gear and coaxial with respect to said flange units and disposed therebetween;
a second rotational torque transmission gear, for receiving said rotational force from said first pinion gear, coaxial with said flange units and disposed between said first gear and said second flange unit, said second gear being rotatable relative to said first gear;
spring means between said first and second gears for urging said first and second gears into frictional engagement with said first and second flange members, respectively; and
means for selecting whether said first or said second pinion gear is connected to said first and second transmission gears.

4,499,784

SPLIT-BALL TYPE WRIST AND MANIPULATING ASSEMBLY FOR ROBOT

Lanson Y. Shum, Salem Twp., Westmoreland County, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Nov. 20, 1981, Ser. No. 323,640
Int. Cl.³ G05G *11/00*
U.S. Cl. 74—479 **2 Claims**



1. In a split-ball type wrist and manipulator assembly at one end of an arm, the assembly including at least a first ball portion and a second ball portion rotatably carried by the first ball portion, and an end effector carried by said second ball portion, the improvement comprising:
first hollow means fixedly connected to said first ball portion for rotation thereof;
second means disposed interiorly of said first hollow means and including means connecting it to said second ball portion to rotate said second ball portion relative to and independently of rotation of said first ball portion;
physically solid, flexible line means to power said end effector;
said first hollow means and split-ball wrist both defining interior hollow spaces adequate to accommodate both said second means and said connecting means thereof;
said line means extending through said hollow spaces to said end effector so that all of said powering line means are interiorly of said arm and wrist;
said second means comprises a hollow tubular member extending through said first hollow means and having said line means extending in said hollow tubular member; and
said connecting means of said second means includes an inner and an outer ring attached to each other along one diametral axis, the outer ring being attached to said second ball portion to effect rotation thereof in accordance with rotation of said outer ring, and said tubular member includes an end in said wrist and pivotally connected to said inner ring along another diametral axis perpendicular to said one diametral axis so that said rings are in gimballed relation.

4,499,785

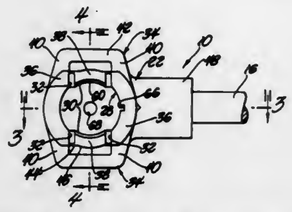
MOLDED BALL SOCKET TERMINAL (CONNECTING BELTS)

William G. Bennett, Troy, and Arthur L. Spease, Livonia, both of Mich., assignors to Teleflex Incorporated, Limerick, Pa.

Filed Jun. 28, 1982, Ser. No. 392,516
Int. Cl.³ F16C *1/14*
U.S. Cl. 74—501 R **11 Claims**

1. A motion transmitting remote control assembly (10) for transmitting motion in a curved path, said assembly (10) comprising: guide means (11); core means (16) movably supported by said guide means (11) and extending therefrom to provide a variable extending length of said core means (16) between said guide means (11) and one end (18) of said core means (16); and an integral terminal member (22) disposed on said extended length for operatively interconnecting said core means (16) and a control member (24), said terminal member (22) including a pocket (28) defining an axis and retaining means (30) for

retaining a portion of the control member (24) within said pocket (28) and a plurality of slots (32) extending from said pocket (28) substantially to the outer surface of said terminal member (22) and being parallel to said axis so as to divide said terminal member (22) into a plurality of portions (36,38) and characterized by said terminal member (22) including integral belt means (34) connecting at least two of said portions (36,38) for restraining the outward flexure of said connected portion (36,38), said terminal member including two outward portions (36) and two intermediate portions (38) therebetween, said belt



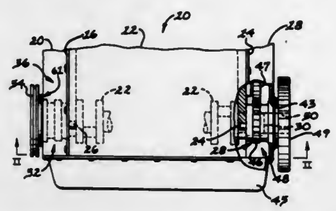
means (34) including at least one belt (34) extending between and interconnecting said outward portions (36) disposed on oppposite sides of one of said intermediate portions (38) said belt means (34) extending across said slots (32) on either side of said intermediate portion (38), said intermediate portion (38) having an outer surface and said belt means including first sections (40) extending from said outward portions (36) and an elongated second section (42) extending therebetween and spaced from said outer surface of said intermediate portion (38).

4,499,786

COUPLING OF DRIVING MEMBER TO DRIVEN MEMBER

Benny Ballheimer, Peoria, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Jun. 7, 1982, Ser. No. 385,364
Int. Cl.³ F02F *7/00*
U.S. Cl. 74—606 R **5 Claims**



1. An apparatus including a prime mover (10) having a housing (12) with an end portion (14), an end cover (18) defining an opening (43) and being connected to the end portion (14) of the housing (12), a driving shaft (22) mounted in the housing (12) for providing output power from the prime mover (10) and having an end (30) terminating inside the end cover (18), a driven member (49) mounted outside the end cover (18), and means (48) for coupling the driven member (49) to the driving shaft (22) through the opening (43) and for selectively releasing the driving shaft (22) from the driven member (49) to enable removal of the driving shaft (22) without removing the end cover (18), comprising:

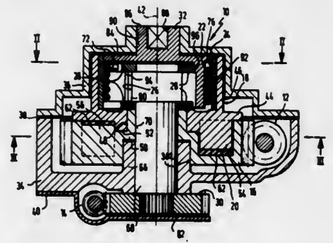
the driving shaft (22) having a flange and an outer cylindrical surface (34) adjacent the end, the diameter of said outer cylindrical surface (34) being smaller than the diameter of the flange (32), said coupling means (48) including a pilot member (62) having a bore (66) slideably mounted on the outer cylindrical surface (34) of the driving shaft (22) and a concentric outer cylindrical surface (68) extending through the opening (43) of the end cover (18), and including means (51) for drivingly securing the driven member (49) and the pilot member (62) to the flange (32) of the driving shaft (22).

4,499,787

ROTARY DRIVE TRANSMISSION MECHANISM ESPECIALLY FOR MOTOR VEHICLES

Rolf Leistner, Munich, and Herbert Becker, Coburg, both of Fed. Rep. of Germany, assignors to Brose Fahrzeugteile GmbH und Co., Munich, Fed. Rep. of Germany

Filed Apr. 29, 1982, Ser. No. 373,271
Claims priority, application Fed. Rep. of Germany, May 11, 1981, 3118634
Int. Cl.³ F16H *35/00*; E05F *15/00*; F16D *21/02*
U.S. Cl. 74—625 **14 Claims**



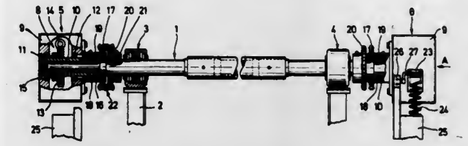
1. Drive transmission apparatus especially suitable for use in motor vehicles comprising: a rotatably supported driving member; a rotatably supported driven member coaxial with said driving member; a hollow cylindrical element defining an inner circumferential surface arranged coaxially with said driving and driven members; a helical spring braced against said inner circumferential surface within said hollow cylindrical element; a first claw member affixed on one of said driving and driven members for rotation therewith; said first claw member operating to engage with said helical spring to effect expansion of said spring when said first claw member is rotated relative to said spring; said hollow cylindrical element being rigidly connected for rotation with the other of said driving and driven members; a disengaging element adapted to be connected with an auxiliary drive apparatus rotatably supported coaxially with said driving and driven members and having a second claw member formed thereon; said second claw member being operative upon corresponding mutual rotation between said helical spring and said disengaging element to engage said helical spring to effect reduction of the diameter thereof; said helical spring comprising a pair of radially extending ends with said first claw member engaging one of said ends depending upon the relative direction of rotation between said helical spring and said first claw member in order to effect expansion of said helical spring; said second claw member engaging against the other of said ends of said helical spring depending upon the direction of relative rotation between said second claw member and said helical spring in order to operate to reduce the diameter of said helical spring; said disengaging element being constructed with a partial cylindrical member extending therefrom which forms said second claw member and which is radially disposed between said helical spring and said driven member; said partial cylindrical member extending into said helical spring and having edges thereon which extend in an axial direction and which interact with said ends of said helical spring.

4,499,788

FEEDING DEVICE HAVING ALTERNATIVELY CONNECTABLE SLIP-ON GEAR UNITS

Gerhard Obenland, Ilsfeld, Fed. Rep. of Germany, assignor to Dürr Automation + Fördertechnik GmbH, Fed. Rep. of Germany

Filed Jul. 27, 1982, Ser. No. 402,297
Claims priority, application Fed. Rep. of Germany, Jul. 31, 1981, 3130300
Int. Cl.³ F16H *37/00*
U.S. Cl. 74—661 **7 Claims**



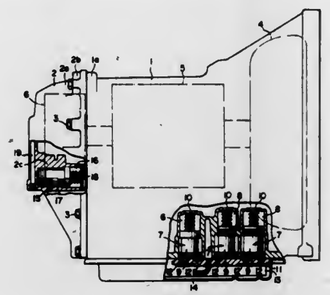
1. Feeding device comprising a frame, a drive shaft (1) having two ends and two gear units (8) each drivable by a motor, which gear units are able to be connected alternately to the drive shaft such that each may rotate with said drive shaft independently of the other, characterized in that the two gear units are designed as slip-on gear units each having a driven hollow shaft (10), the two ends of the drive shaft (1) each have the hollow shaft (10) of one of the two slip-on gear units mounted around them in a manner permitting relative rotation, the gear units are secured against rotation about the axis of rotation defined by the drive shaft (1), and a rotary couple (17, 20, 22) is provided, such that one of the hollow shafts (10) at a time is connected to the drive shaft (1) whereby the hollow shaft may rotate therewith.

4,499,789

AUTOMATIC TRANSMISSION WITH OVERDRIVE HOUSING INCLUDING ITS OWN ACCUMULATOR

Koujiro Kuramochi, and Tokuyuki Takahashi, both of Toyota, Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Sep. 28, 1982, Ser. No. 425,260
Claims priority, application Japan, Jun. 3, 1982, 57-95736
Int. Cl.³ F16H *37/04, 57/02*
U.S. Cl. 74—740 **2 Claims**



1. An automatic transmission, comprising:

(a) a transaxle casing;

(b) an overdrive casing constructed separately and assembled together with said transaxle casing;

(c) a gear transmission mechanism housed within said transaxle casing, comprising a first hydraulic fluid pressure actuated friction engaging mechanism, and selectable between a plurality of speed stages according to selective supply of hydraulic fluid pressure to said first hydraulic fluid pressure actuated friction engaging mechanism; said gear transmission mechanism receiving a supply of rotational power, modifying said rotational power according to its selected speed stage, and then outputting modified rotational power;

(d) an overdrive mechanism housed within said overdrive casing and drivingly interconnected with said transmission mechanism, comprising a second hydraulic fluid pressure actuated friction engaging mechanism, and selectable between a plurality of speed stages according to selective supply of hydraulic fluid pressure to said second hydraulic fluid pressure actuated friction engaging mechanism; said overdrive mechanism receiving supply of rotational power, modifying said rotational power according to its selected speed stage, and then outputting modified rotational power;

(e) a first control mechanism for said gear transmission mechanism, which selectively supplies hydraulic fluid pressure for actuating said first hydraulic fluid pressure actuated friction engaging mechanism for selecting said gear transmission mechanism to various ones of its speed stages, comprising a first hydraulic fluid accumulator for moderating sudden pressure changes within a part of said first control mechanism, said first hydraulic fluid accumulator being incorporated in said transaxle casing; and

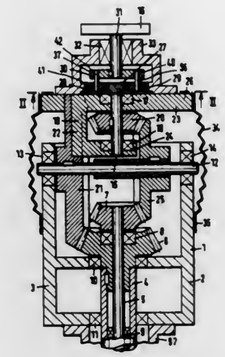
(f) a second control mechanism for said overdrive mechanism, which selectively supplies hydraulic fluid pressure for actuating said second hydraulic fluid pressure actuated friction engaging mechanism for selecting said overdrive mechanism to various ones of its speed stages, comprising a second hydraulic fluid accumulator separate from said first hydraulic fluid accumulator for moderating sudden pressure changes within a part of said second control mechanism, said second hydraulic fluid accumulator being incorporated in said overdrive casing.

4,499,790

SWIVEL HEAD FOR INDUSTRIAL ROBOTS

Dirk Helms, Ahrensburg, Fed. Rep. of Germany, assignor to Fa.Jungheinrich Unternehmensverwaltung KG, Hamburg, Fed. Rep. of Germany

Filed Jul. 7, 1982, Ser. No. 396,035
Claims priority, application Fed. Rep. of Germany, May 22, 1982, 3219292
Int. Cl.³ F16H *37/06, 1/14*; G05G *11/00*; B25H *9/00*
U.S. Cl. 74—665 C **22 Claims**



1. A swivel head for industrial robots, which swivel head has two degrees of freedom, comprising

a rigid housing having a rear end portion, a front end portion, and a side wall portion extending between said rear end portion and said front end portion,

first bearing means mounted in said housing adjacent to said rear end portion,

second bearing means which are mounted in said side wall

portion of said housing spaced from said first bearing means closer to said front end portion and comprise spaced apart bearings centered on an axis which intersects and traverses the axis of said first bearing means at right angles thereto,

a first shaft extending centrally into said housing through said rear end portion and rotatably mounted in said first bearing means,

a second shaft extending into said housing through said rear end portion,

third bearing means disposed between said first and second shafts,

a first spindle, which is rotatably mounted in said second bearing means,

first transmitting means operatively connecting said first shaft and said first spindle and comprising a swiveling bevel gear, which is non-rotatably connected to said first spindle, said swiveling bevel gear located at least in part within said rigid housing,

a bearing bracket carried by said swiveling bevel gear and located spaced outwardly from the front end portion of said rigid housing,

a second spindle, which is rotatably mounted in said bearing bracket and extends out of said front end portion of said housing,

second transmitting means which operatively connect said second shaft to said second spindle and are operable to rotate the latter,

a bearing carrier mounted on said bearing bracket spaced outwardly from the front end portion of said housing,

fourth bearing means which are coaxial to said second spindle and mounted in said bearing carrier,

a tool carrier shaft, which is rotatably mounted in said fourth bearing means, and

a speed-reducing transmission which has a high reduction ratio and operatively connects said second spindle to said tool carrier shaft to drive the latter.

4,499,791

AUTOMOTIVE VEHICLE DRIVE TRAIN

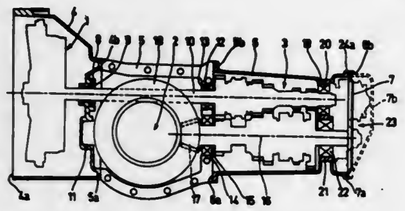
Roger Brisabois, Clamart, France, assignor to Regie Nationale des Usines Renault, Boulogne-Billancourt, France

Division of Ser. No. 939,316, Sep. 5, 1978, Pat. No. 4,308,763, which is a continuation-in-part of Ser. No. 873,575, Jan. 30, 1978, Pat. No. 4,289,045. This application Apr. 15, 1981, Ser. No. 254,340

Claims priority, application France, Jan. 31, 1977, 77 02560; Sep. 14, 1977, 77 27809; Sep. 14, 1977, 77 27811; Sep. 14, 1977, 77 27810

Int. Cl.³ F16H *37/08, 57/02*

U.S. Cl. 74—700 **12 Claims**



1. A housing assembly for a transmission unit in an automotive vehicle, said housing assembly including a first housing and a second housing, said first housing having first and second faces located at its opposite ends, said first face being connectible to an engine housing, said first housing having space between said faces capable of receiving a power transmitting means comprising a manual clutch, said space also being capable of receiving a power transmitting means comprising a hydrokinetic torque converter,

a partition wall which is located near said second face and is provided with a hole which permits a transmission input shaft from a power transmitting means to pass therethrough,

first bearing support means on the partition wall for supporting a shaft which passes through the hole, and

second bearing support means on the partition wall for supporting an output shaft of a manual shift gearbox.

4,499,792

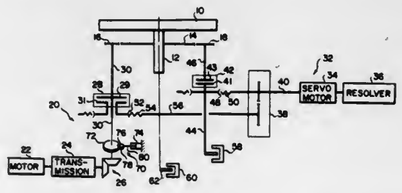
APPARATUS FOR ANGULARLY POSITIONING A ROTARY MEMBER

Toshiyuki Tanabe, Komatsu, Japan, assignor to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

Filed Jun. 22, 1982, Ser. No. 390,846

Int. Cl.³ B23B *29/24*

U.S. Cl. 74—825 **6 Claims**



1. An apparatus for angularly positioning a rotary member, comprising:

first drive means connectible to rotate said rotary member in a work operation;

power transmission means operable to connect said first drive means with said rotary member for rotating said rotary member in a work operation;

second drive means connectible to rotate said rotary member in an angular positioning movement;

coupling means actuatable to connect said second drive means to said rotary member for rotating said rotary member while said first drive means is disconnected from said rotary member, said coupling means including a pair of complementary clutch members adapted to be engageable at any position and normally biased to a disengaged position relative to each other;

first detector means for detecting a predetermined angular reference position of one of said clutch members which is positioned to the side of said second drive means and generating a first signal upon detection;

a controller responsive to the first signal of said first detector means for controlling the movement of said second drive means so as to stop said one clutch member at said predetermined angular reference position;

second detector means for detecting a predetermined angular reference position of said rotary member, said second detector means being operated by the rotary movement of said rotary member when said rotary member approches to said predetermined angular reference position thereof and generating a second signal upon detection; and

means responsive to the second signal of said second detector means for stopping said rotary member at said predetermined angular reference position thereof;

said controller sequentially rendering said coupling means engaged after effecting stoppage of said rotary member at said predetermined angular reference position thereof.

4,499,793

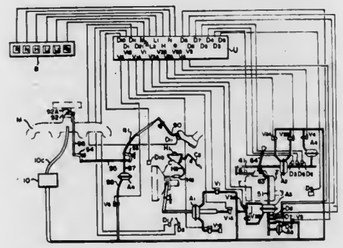
AUTOMATIC GEAR SHIFTING DEVICE

Long S. Jow, and Long J. Jow, both of Taipei, Taiwan, assignors to Transtech Industrial Corporation, Taipei, Taiwan

Filed Nov. 4, 1981, Ser. No. 318,210

Int. Cl.³ B60K *41/18, 41/04*

U.S. Cl. 74—866 **9 Claims**



1. An automatic gear shifting device for use in an automobile, comprising:

a transmission having gears assembled to be selectively shifted by a shift rod to transmit power from an engine to a drive axle of an automobile at a predetermined gear ratio and having a plurality of transmission gear positions each achieving a specific gear ratio, said shift rod having a longitudinal axis and being capable of moving longitudinally to perform the shifting of the gears and rotating with respect to the longitudinal axis to perform gear selection;

a clutch device operable with a release collar and capable of engaging to transmit and disengaging to interrupt power from the engine to said transmission;

detectors for detecting engine speed, automobile road speed, transmission gear position, clutch position, and for delivering electrical control signals responsive to engine speed, road speed, transmission gear position and clutch position;

a trigger switch operable by an accelerator pedal;

actuators operable by a working means for operating said shift rod of said transmission, engaging and disengaging of said clutch device, and opening and closing of a throttle valve of the automobile, said actuators comprising:

a first actuator operatively connected to said release collar;

a second actuator operatively connected to said shift rod to cause said shift rod to move longitudinally;

a third actuator operatively connected to said shift rod to cause said shift rod to rotate with respect to its longitudinal axis;

a fourth actuator for selectively preventing said shift rod from moving longitudinally;

a fifth actuator for selectively preventing said shift rod from rotating with respect to its longitudinal axis; and

a sixth actuator operatively connected to the throttle valve;

valve means operable by electrical operation signals for admitting and interrupting said working means to said actuators; and

a control unit adapted to receive said electrical control signals and produce electrical operation signals in response to said electrical control signals in accordance with a program to cause said valve means to operate so that the actuators and consequently the throttle valve, clutch device and transmission operate in association with each other to change the gear ratio to meet the driving speed and load condition of the automobile.

4,499,794

MACHINE FOR MACHINING CIRCULAR SAW BLADES

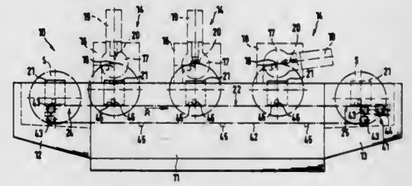
Ernst Beck, Maselheim; Peter Lenard, Biberach an der Riss, and Erich Pokorny, Schemmerhofen, all of Fed. Rep. of Germany, assignors to Vollmer Werke Maschinenfabrik GmbH, Fed. Rep. of Germany

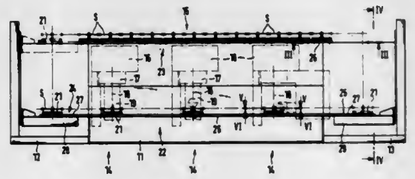
Division of Ser. No. 331,210, Dec. 16, 1981, Pat. No. 4,449,427. This application Mar. 19, 1984, Ser. No. 590,985

Claims priority, application Fed. Rep. of Germany, Dec. 23, 1980, 3048738; Dec. 23, 1980, 3048739

Int. Cl.³ B23D *63/14*

U.S. Cl. 76—75 **8 Claims**





1. In a transport device for workpieces which have to pass a plurality of machining stations (14) arranged in a row, comprising

a number of workpiece carriages (21) which exceeds the number of stations (14),

a work path (22) extending through the machining stations (14),

an endless conveyor (41) which moves the workpiece carriages (21) along said work path (22), step by step, from station to station, and which has attachments (45) located at equal distances, to which, at each workpiece carriage (21), there is a member (46) mating with the attachments,

a return path (23), and

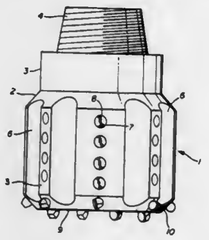
two transverse carriages (28, 29), by which the workpiece carriages (21) can be transferred between said work path (22) and said return path (23), the improvement wherein that one branch path (24 and 25, respectively), each, is arranged on the transverse carriages (28, 29), said branch path following alternately the work path (22) and the return path (23), according to the position of the respective transverse carriage, that the endless conveyor (41) extends beyond the work path (22) along the branch paths (24, 25) following said work path, that one branch path (25) is adapted to be reciprocated between the end of the work path (22) and the start of the return path (23) and has a shifting means (51) by which, in each case, one workpiece carriage (21) can be shifted from said branch path (25) to the return path (23), and that the workpiece carriages (21) have stops (47, 48) with which they abut against each other on the return path (23) and maintain spacings between each other that are smaller than the distances between the attachments (45) of the endless conveyor (41).

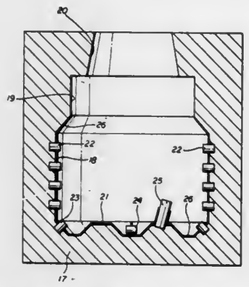
4,499,795

METHOD OF DRILL BIT MANUFACTURE

Robert P. Radtke, Kingwood, Tex., assignor to Strata Bit Corporation, Houston, Tex.

Filed Sep. 23, 1983, Ser. No. 535,321
Int. Cl.³ E21B 9/36; B22D 19/02
U.S. Cl. 76—108 A 22 Claims





1. A method of producing a drill bit component adapted to receive a plurality of hardmetal inserts positioned in recesses therein, which comprises

providing a refractory mold having an internal surface corresponding closely to the external shape of a finished drill bit component and having a plurality of relatively soft metal plugs protruding from the walls thereof in locations corresponding to the recesses in the bit component in which said inserts are to be positioned,

supporting a coating of sintered refractory metal particles on selected portions of the inner surface of said mold including the locations where said soft metal plugs are positioned,

melting a metal and heating the same above the melting point of the matrix metal of said refractory metal particles,

casting said molten metal into said mold in contact with said refractory metal particles to produce some desintering of said particles and produce a casting having a composite structure with selected portions of the surface being coated with said particles for a substantial depth and with said soft metal plugs extending through said coating,

removing said casting from said mold,

drilling out said metal plugs from said casting to produce recesses in said bit component sized to receive said inserts, and

placing said inserts in said drilled recesses.

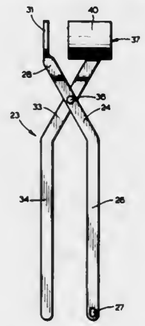
4,499,796

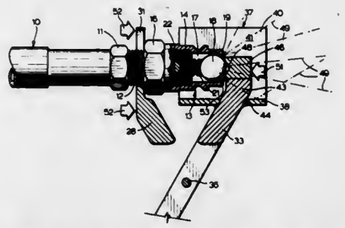
FLUID PRESSURE RELEASING TOOL

Jon L. Miller, Star Rte. B, Rosseau, Minn. 56751

Filed Aug. 29, 1983, Ser. No. 527,249
Int. Cl.³ B25B 7/00
U.S. Cl. 81—5.1 R 34 Claims

1. A tool for releasing fluid pressure in a means for accommodating fluid under pressure, said means having a normally closed check valve, said check valve being movable to an open position to allow fluid under pressure to flow from said means thereby reducing the fluid pressure therein, comprising: first lever means having a yoke adapted to engage a portion of the means for accommodating fluid under pressure, second lever means having a projection adapted to engage the check valve, pivot means connecting the first and second lever means to allow the yoke and projection to selectively have relative movement toward and away from each other, said yoke and





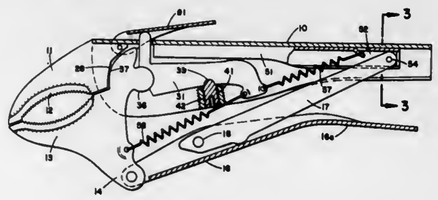
projection, when moved toward each other, causes the check valve to move to the open position thereby allowing the fluid under pressure in the means accommodating fluid under pressure to flow therefrom, and shield means mounted on the second lever means adjacent the projection for controlling the direction of flow of fluid discharged from the means accommodating fluid under pressure when the check valve is moved to the open position.

4,499,797

SELF-ADJUSTING LOCKING WRENCH

Neill R. Wilson, P.O. Box 538, Berryville, Va. 22611

Filed Nov. 19, 1982, Ser. No. 443,135
Int. Cl.³ B25B 7/12
U.S. Cl. 81—367 14 Claims



2. A locking type wrench comprising:

an elongated first handle provided with an integral fixed upper jaw at a forward end thereof;

a cam member pivotally mounted on said first handle;

a movable bar adapted to slide against a surface of said first handle and positioned rearwardly of said upper jaw;

a movable lower jaw cooperable with said upper jaw and pivotable against said cam member, said upper and lower jaws having opposed gripping faces adapted to grip an associated object;

resilient means adapted to urge said lower jaw away from said upper jaw;

a second handle pivotally secured to said lower jaw and forming a first toggle link in a toggle joint;

a second toggle link pivotally engaged at a first end with said second handle and at a second end with said movable bar, said two handles being movable toward each other in order to bring said two jaws into a gripping engagement with said associated object, continued movement of said handles toward each other causing said second toggle link to slide said movable bar along said first handle surface away from said upper jaw; and,

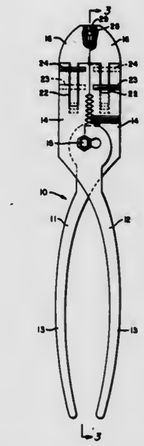
cam actuating means for rotating said cam member with respect to said first handle while said handles are being moved toward each other until said cam member contacts said movable bar to prevent it from sliding further, continued movement of said handles actuating said toggle joint to an over-center condition to lock the wrench on said associated object.

4,499,798

REMOVABLE CAP MEMBERS FOR PLIERS

Leonard A. Miskiewicz, 219 Sprucewood St., Pittsburgh, Pa. 15210

Filed May 9, 1983, Ser. No. 492,649
Int. Cl.³ B25B 7/02
U.S. Cl. 81—423 2 Claims



1. In combination with pliers having a pair of plier elements pivotally connected at a pivot axis adjacent their mid-regions and each having a jaw at one end and a handle at the other end, said jaws being opposed and arranged to provide for clamping of an interposed workpiece, said handles being opposed and arranged to be closed together to close said jaws together, each said jaw having opposed sides and a cap-receiving portion which includes a slot extending in the direction which is parallel to the pivot axis of the pliers and which extends from an open end adjacent a forward end of said jaws to a base spaced from said open end; a pair of rods secured to each jaw one on each side thereof, said rods extending across said respective slot, the rods on each jaw being parallel and being spaced at different distances from the said pivot axis;

an arcuate recess extending in each jaw from said base of said slot along a circular arc centered on one of said rods;

a pair of cap members, each having a working face at its forward end and a tongue which extends away from said working face and generally parallel thereto, each said tongue having a thickness corresponding to the width of a respective said slot and having an arcuate finger-like projection adapted to enter the respective said arcuate recess; each said tongue having opposed sides and a pair of spaced-apart parallel grooves are on each side thereof, each grooves being adapted to engage a respective one of the said rods when the said finger-like projection is engaged in said arcuate recess

whereby a pair of said cap members are cooperable with said cap-receiving portions to be selectively assembled on said pliers jaws with said working faces opposed to cooperate in carrying out a work function.

4,499,799

INTERNAL GRIPPING PIPE WRENCH

John W. Bordages, Lakeshore, Miss., assignor to Texaco Inc., White Plains, N.Y.

Filed Nov. 25, 1983, Ser. No. 555,233
Int. Cl.³ B25B 15/00
U.S. Cl. 81—446 2 Claims



1. Inside gripping pipe wrench, comprising

a flat cylindrical unit adapted for insertion into a pipe to apply torque thereto by contact with its inside surface,

said unit being symmetrical whereby it can torque said pipe either way depending upon which face is inserted first,

said unit comprising a rotor having an axially concentric flat sided socket extending therethrough,

concentric annular means surrounding said rotor,

a plurality of toothed gripping means spaced circumferentially about said annular means

each said gripping mens comprising an arcuate arm pivotally mounted on said annular means and having teeth at the free end relative to said annular means,

a plurality of links for interconnecting said free ends of said arcuate arms with said rotor, and

means for mounting said links pivotally at both ends,

said links being longer than the radial distance from said rotor to said annular means whereby relative rotation of said rotor inside said annular means will extend said gripping means to make said contact with the pipe.

4,499,800

TOOL HOLDER CLAMPING MEANS

Gunther R. Stahl, Canoga Park, Calif., assignor to General Electric Company, Detroit, Mich.

Filed Apr. 4, 1983, Ser. No. 481,548
Int. Cl.³ B23B 29/00, 31/00, 5/22, 5/34
U.S. Cl. 82—36 R 3 Claims

1. A tool holder locking means comprising in combination:

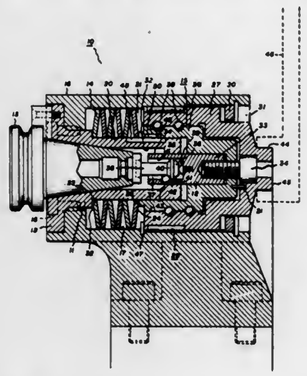
(a) a housing adapted to be securely fixed to a machine tool and having a bore therein;

(b) a hollow tapered tool holder insert in said bore for receiving a tool holder, said insert having a face end abut-

ting said housing and having a hollow cylindrical projection positioned concentrically in said bore and defining an annular space therebetween;

(c) a ball thread device comprising inner and outer nesting cup shaped races positioned concentrically in said bore adjacent said insert and with the outer race constrained from axial motion, said inner and outer races having complementary thread grooves on their adjacent surfaces having a plurality of drive balls therein whereby rotation of said outer race drives said inner race axially;

(d) a hollow cylindrical coupling member affixed to said inner race and extending into the hollow cylindrical projection of said insert in coaxial relationship, said coupling member having means for axial reciprocating motion therein, said coupling member having a transverse aperture therein adjacent its inner end, a ball means loosely fitting in said aperture and adapted to occupy a first low position where the ball means rests on the bore of the



insert while remaining in said aperture, and to occupy a second elevated position by means of a step shoulder on the end of said insert which underlies said aperture when the coupler is moved axially in one position;

(e) a detent member affixed to said insert and coaxially projecting into said coupling member and engaging said ball means to be retained thereby;

(f) spring means in said housing bore and coaxially positioned in said annular space between said insert projection and said housing bore, said spring means engaging said insert at one end and engaging said inner race at the outer end; and (g) drive means on said outer race and adapted to rotate said outer race so that said inner race moves axially to compress said spring means while at the same time moving said coupling member axially so that said detent ball drops in its aperture to permit withdrawal of said detent from said coupling means and said tool holder from said insert.

4,499,801

WEB SLITTING AND GROOVING METHOD

Imants Reba, Vancouver, Wash.; Rudolph W. Schutz, Walnut Creek, and Nestor Kozbur, Antioch, both of Calif., assignors to Crown Zellerbach Corporation, San Francisco, Calif.

Division of Ser. No. 422,319, Sep. 23, 1982, Pat. No. 4,484,500. This application Apr. 23, 1984, Ser. No. 602,886

Int. Cl.³ B26D *3/08*

U.S. Cl. 83—24 **3 Claims**

1. In a method of making a spirally wound paper roll product having a bearing wall formed by the convolutions of the roll product, the steps of:

transporting a parent web along a predetermined path of movement;

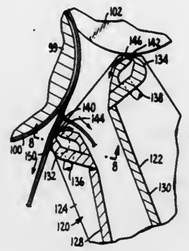
at a first location along said path of movement, performing a first slitting operation on said parent web to form lines of cut therein and divide said parent web into separate web segments;

at a second location downstream from said first location, performing a second slitting operation on said parent web segments along lines of cut;

periodically moving at least one of said slitting operations transversely relative to said parent web so that portions of at least some lines of (f) cut are of set and out of registry periodically so that trim segments are formed;

inducing a fluid flow closely adjacent to said second location;

removing said trim segments from the remainder of said parent web at said second location by entraining said trim segments in said fluid; and



exerting forces on said parent web to manipulate said parent web and facilitate removal of said trim segments from the remainder of said parent web by providing pressure against said parent web at oppositely disposed positions across said trim segments and spaced therefrom while said trim segments are entrained in said fluid flow, said fluid flow being induced by passing a high speed fluid flow through a restricted opening generally located between said pressure positions, attaching said high speed fluid flow to a Coanda surface leading from said restricted opening, and entraining ambient air in the direction of said Coanda surface.

4,499,802

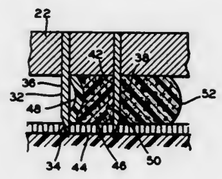
ROTARY CUTTING DIE WITH SCRAP EJECTION

Jack R. Simpson, Toledo, Ohio, assignor to Container Graphics Corporation, Toledo, Ohio

Filed Sep. 29, 1982, Ser. No. 426,866

Int. Cl.³ B26D *7/18*

U.S. Cl. 83—117 **16 Claims**



1. In a cutting die, a die plate, a first cutting rule portion extending upwardly from said die plate and having a first cutting edge spaced a uniform distance above said die plate over the length of said cutting rule portion, a second cutting rule portion extending upwardly from said die plate, having a second cutting edge spaced a uniform distance above said die plate over the length of said second cutting rule portion, and spaced from said first cutting rule portion, a first resilient ejection strip between said cutting rule portions, located adjacent said first cutting rule portion, and extending upwardly at least to the height of the first cutting edge, and a second resilient ejection strip between said cutting rule portions, located adjacent said second cutting rule portion, and extending upwardly to a height not exceeding the height of said first ejection strip, said second ejection strip being softer than said first ejection strip to apply an asymmetrical ejection force to material between said first and said second cutting rule portions.

4,499,803

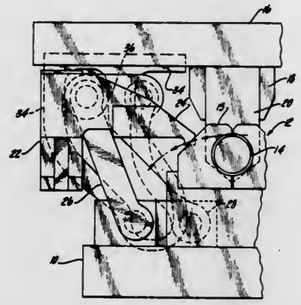
DOUBLE CUT DIE SET WITH IMPROVED PULL-ACROSS NOTCHING FEATURE

John J. Borzym, Birmingham, and Alexander Borzym, West Bloomfield Township, Ingham County, both of Mich., assignors to Alpha Industries, Inc., Novi, Mich.

Filed Oct. 7, 1983, Ser. No. 539,807

Int. Cl.³ B23D *21/00*; B26D *3/16*

U.S. Cl. 83—319 **11 Claims**



1. A tube shearing apparatus of the type wherein a first blade is drawn across the tube to notch a wall section and a second blade is thereinafter driven through the tube using the notched section as an entry point, wherein the improvement comprises:

a base;

an upper platen assembly reciprocally movable relative to the base and adapted to carry the second blade;

a support carriage for the first blade;

a pair of parallelogram links interconnecting the base and the blade support carriage to control the relative motion therebetween so as to define an arcuate path of travel for the first blade which extends across the tube section and thereafter arcuately away from the tube section and toward the base; and

drive means interconnecting the upper platen assembly and the blade support carriage for driving the blade support carriage along said arcuate path of travel as the upper platen assembly moves toward the base.

4,499,804

SAFETY DEVICE FOR A MEAT SLICER

Mutsumi Takeda, Fukushima, Japan, assignor to Hitachi Koki Haramachi Works, Ltd., Ibaraki, Japan

Filed Mar. 15, 1983, Ser. No. 475,654

Claims priority, application Japan, Mar. 16, 1982, 57-37597[U]

Int. Cl.³ B26D *7/24*

U.S. Cl. 83—399 **6 Claims**

1. In a meat slicer including a circular blade supported rotatably at one end of a table, a meat box for carrying a lump of meat therein, and reciprocally movable to and away from said blade along rails provided on said table, and a holding plate supported removably on said table adjacent to said blade, and movably in the direction in which said meat box is reciprocally movable, a safety device, comprising:

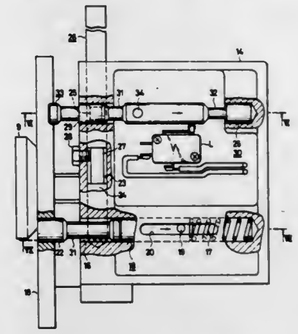
a lock pin slidably fitted in a first blind hole formed horizontally in said table;

a spring disposed in said first blind hole between a bottom of said first blind hole and said lock pin for urging said lock pin toward an open end of said first blind hole so that said lock pin may extend flush with said open end;

a guide bar secured to said holding plate and having a portion received in said first blind hole;

said table having a second blind hole which is connected with said first blind hole;

a lock bar slidably received in said second hole and having an engaging portion at its inner end which confronts said



first blind hole for selectively engaging said portion of said guide bar, said lock bar further having a first reducing diameter portion adjacent to its outer end;

an actuator slidably received in a third blind hole which is connected to said second hole, said actuator having a reduced diameter portion engageable with said first reduced diameter portion of said lock bar, and a first switch L engaged with said actuator and controlled thereby for controlling a driving circuit for said slicer.

4,499,805

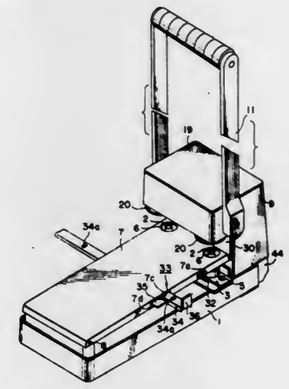
PUNCH FOR OFFICE USE

Chuzo Mori, Katsushika, Japan, assignor to Carl Manufacturing Co., Ltd., Tokyo, Japan

Filed Jul. 1, 1982, Ser. No. 393,890

Int. Cl.³ B26F *1/02*

U.S. Cl. 83—468 **12 Claims**



1. A punch for office use comprising:

a base, having a tip end side and a rear end side,

a hollow upstanding structural member provided at the tip end side of the base and having a gap portion from the base at its side corresponding to the side of the rear end of the base,

a pair of stationary cylindrical piercing blades upstandingly

provided on and fixedly secured to the base forming the gap portion,

a base plate for placing a thick stack of sheets of paper to be pierced thereon having one end pivoted at the rear end side of the base, the other end having holes for receiving the pair of piercing blades,

spring means connected to the other end of the base plate and the hollow upstanding structural member to upwardly bias the base plate,

a handle supported on the upstanding structural member by a shaft which penetrates the upstanding structural member and is rotatably supported thereto, said handle rotatably movable with respect to the base,

gear means attached to the shaft supporting the handle, said gear means located within the upstanding structural member,

vertically movable gear means movable within a portion of the upstanding structural member above the gap portion, and engageable with the gear means attached to the shaft, said vertically movable gear means reciprocating with respect to the pair of piercing blades through the gear means attached to the shaft as the handle is moved, and

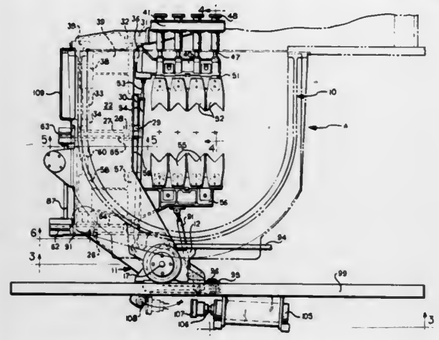
a pair of paper holding plates provided on the bottom of the vertically movable gear means, corresponding to the pair of piercing blades so as to thrust against the ends of the piercing blades.

4,499,806

MULTIPLE GOB SHEARING MECHANISM OPERATING IN A STRAIGHT LINE

Eustace H. Mumford, Ottawa Lake, Mich., assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Oct. 13, 1983, Ser. No. 541,815
Int. Cl.³ C03B *5/38*
U.S. Cl. 83—527 **13 Claims**



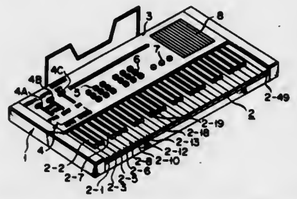
1. Apparatus for shearing multiple streams of molten glass into gobs, comprising a feeder bowl having a plurality of inline orifices in the bottom thereof, a vertical support shaft, means for mounting said support shaft to the side of said feeder bowl, a shear blade supporting carriage cantilevered from said vertical support shaft, said carriage extending normal to the line of said orifices, at one side thereof, a first pair of parallel, horizontal shafts extending in the direction of said carriage, a first shear blade arm movably supported for reciprocation on said first pair of shafts, a second pair of parallel, horizontal shafts in generally coaxial alignment with said first pair of shafts, a second shear blade arm movably supported for reciprocation on said second pair of shafts, means connected to said second pair of shafts for raising or lowering the axes of said second pair of shafts in unison, and drive means connected to said arms for moving said arms toward and away from each other to affect the shearing of the glass streams.

4,499,807

KEY DATA ENTRY SYSTEM FOR AN ELECTRONIC MUSICAL INSTRUMENT

Hideaki Ishida, Tokyo, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 297,790, Aug. 31, 1981, abandoned. This application Jul. 22, 1983, Ser. No. 516,421
Claims priority, application Japan, Sep. 5, 1980, 55-123323; Sep. 5, 1980, 55-123324
Int. Cl.³ G10F *1/00*
U.S. Cl. 84—1.03 **16 Claims**



1. A key data entry system for an electronic musical instrument, comprising:

a keyboard including a plurality of user operable chord specification keys;

detecting means coupled to said keyboard for detecting the key operation state of said chord specification keys;

first means coupled to said detecting means for generating a first signal representing, when only one of said chord specification keys is operated, said one operated key as a particular key, and for generating a second signal representing the higher or highest note key as said particular key when plural chord specification keys are operated;

second means coupled to said detecting means for generating a third signal representing the number of chord specification keys operated at a time by the operator; and

chord designating means coupled to said first and second means and being responsive to one of said first and second signals for generating a signal representing the root note of a chord to be produced which is a function of said particular key, and being responsive to said third signal for generating a signal representing the type of the chord to be produced as a function of the number of said chord specification keys operated simultaneously, irregardless of which of said plurality of chord specification keys are operated.

4,499,808

ELECTRONIC MUSICAL INSTRUMENTS HAVING AUTOMATIC ENSEMBLE FUNCTION

Eiichiro Aoki, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan

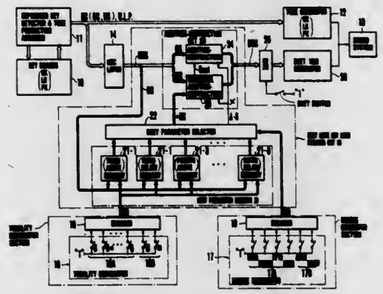
Continuation of Ser. No. 469,956, Dec. 24, 1980, abandoned. This application Feb. 25, 1983, Ser. No. 469,956
Claims priority, application Japan, Dec. 28, 1979, 54-170939
Int. Cl.³ G10F *1/00*
U.S. Cl. 84—1.03 **27 Claims**

1. An electronic musical instrument of the type including a keyboard, and musical tone generating means for generating a musical tone corresponding to a depressed key of said keyboard, said depressed key being represented by certain depressed key information, said electronic musical instrument further comprising:

tonality designating means that designate the tonality of a musical piece to be performed independent of said depressed key information;

ensemble interval designating means for providing an ensemble interval designating information which determines an interval between the note of said depressed key and a note to be provided as an ensemble note;

ensemble tone data forming means for forming pitch data of an ensemble note in accordance with the designated tonality, the ensemble interval designating information and said depressed key information, said pitch data representing a scale tone of the designated tonality which is spaced from the depressed key tone by an interval of a degree number



as is determined according to said ensemble interval designating information; and

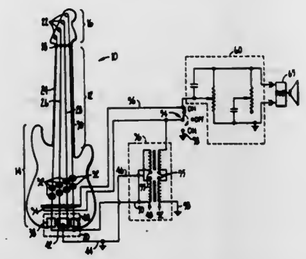
ensemble musical tone generating means for generating a musical tone signal in accordance with the ensemble pitch data thus formed.

4,499,809

DUAL SIGNAL MAGNETIC PICKUP WITH EVEN RESPONSE OF STRINGS OF DIFFERENT DIAMETERS

Martin R. Clevinger, 5410 Telegraph Ave., Oakland, Calif. 94609

Continuation-in-part of Ser. No. 360,181, Mar. 22, 1982, Pat. No. 4,408,513. This application Jul. 11, 1983, Ser. No. 512,219
Int. Cl.³ G10H *3/18*
U.S. Cl. 84—1.15 **12 Claims**



1. Apparatus for use in a stringed musical instrument having a plurality of strings generally parallel to one another and lying within a string plane for converting string motion to electrical signals, comprising

step-up transformer means having a low impedance primary winding and a substantially higher impedance secondary winding;

a first combination of the strings from the plurality of strings connected in parallel and having a set of equivalent parameters including resistance, mass, permeability, reluctance and inductive reactance;

a second combination of the strings from the plurality of strings connected in parallel and having equivalent parameters including resistance, mass, permeability, reluctance and coercivity, the first and second combination of strings being each extended between a first node and a second node, the first and second combination of strings being electrically connected to one another at the first node so that the first combination is connected in series with the second combination, wherein the series connection of the first and second combinations is electrically connected at the second node across the primary winding of the step-up transformer, and further wherein the equivalent parameters of the first string combination are substantially the same as that for the second string combination; and

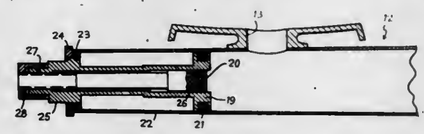
a plurality of means for supplying a magnetic field, each of which is associated with a different one of the plurality of strings, wherein each magnetic field supplying means include a first magnetic pole and a second opposite magnetic pole, and further wherein each of the magnetic field supplying means is positioned in close proximity to its associated string and so that the first magnetic pole and second magnetic pole thereof are positioned on opposite sides of the associated string.

4,499,810

OBTURATOR FOR FLUTE DESIGNED TO IMPROVE THE EMISSION OF CERTAIN NOTES

Ernest J. Ferron, 14, rue Massacre, 76000 Rouen, France

Filed Jun. 21, 1983, Ser. No. 506,218
Claims priority, application France, Jun. 23, 1982, 82 11000
Int. Cl.³ G10D *7/02*
U.S. Cl. 84—384 **16 Claims**



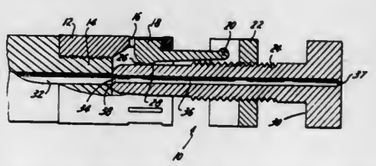
1. A flute having a cavity next to a mouthpiece hole, and an obturator for closing said cavity, said obturator defining a resonator chamber communicating with said cavity and including means for adjusting the size of said resonator chamber, to improve the emission of at least one particular note produced by the instrument.

4,499,811

BANK FIRING ATTACHMENT INCLUDING PIVOTAL LOCKING LUGS

Robert P. Kaste, Bel Air, Md., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Oct. 11, 1983, Ser. No. 540,237
Int. Cl.³ F41F *17/12*
U.S. Cl. 89—14.5 **4 Claims**



1. A blank firing attachment for gun tubes of automatic or semi-automatic weapons which comprises:

a flash suppressor having circumferentially disposed axial slots threadably attached to the gun tube end;

a shaft containing a passage for restricting gas flow from said gun tube;

a collar threadably attached to said shaft;

a plurality of locking lugs, each being pivotally connected at one end to said collar and having a lug for engagement to said axial slots;

a slidable cam means connected to each of said locking lugs and arranged to slide along said shaft to force said lugs to engage said slots,

whereby rotation of said shaft in said collar effects axial movement of said shaft to cause said lugs to engage said axial slots

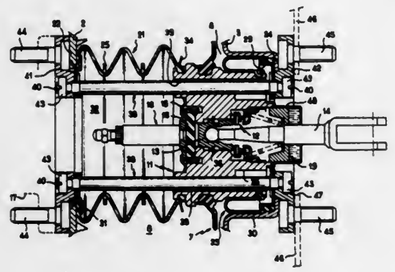
and said shaft to engage said gun tube end, thereby restricting gas flow from said gun tube to provide sufficient back pressure to permit automatic and semi-automatic firing of the weapon when using blank ammunition.

4,499,812

SERVO-MOTOR FOR POWER-ASSISTED BRAKING

Pierre Pressaco, La Courneuve, and Jean-Jacques Carré , Le Raincy, both of France, assignors to Societe Anonyme D.B.A., Paris, France

Filed Oct. 7, 1983, Ser. No. 540,076
Claims priority, application France, Oct. 29, 1982, 82 18184
Int. Cl.³ F15B *9/10*
U.S. Cl. 91—376 R **13 Claims**



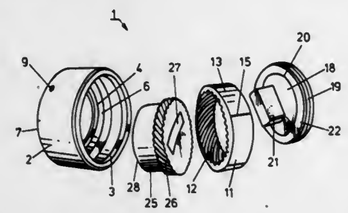
1. A servo-motor for power-assisted braking, comprising a housing (1) having opposite end walls, a wall structure movable axially in said housing and dividing the latter into a first chamber and a second chamber, and a control valve located in a central hub part displaceable in unison with the movable wall structure, so as to establish, under the action of an input member, selective communication between said two chambers, characterized in that said chambers of said housing are sealingly delimited internally by a first flexible wall and a second flexible wall, respectively, which connect said central hub part to the corresponding said end wall of the housing, and in that said central hub part includes at least one transversing passage interconnecting permanently the central zones delimited externally by said first and second flexible walls.

4,499,813

PISTON-CYLINDER DEVICE

Heinz Lampert, Buchs, Switzerland, assignor to Werner Looser Maschinenbau + Hydraulik, Riedern, Switzerland

Filed Oct. 28, 1982, Ser. No. 437,448
Claims priority, application Switzerland, Nov. 10, 1981, 7228/81
Int. Cl.³ F01B *3/00*
U.S. Cl. 92—31 **7 Claims**



1. A device for exerting thrust forces, comprising a cylinder having a bore that is closed at an inner end of the cylinder and open at an outer end thereof, and a piston axially slidable in the cylinder and having an inner end cooperable with the inner end portion of the cylinder to define an expansible and contractable fluid chamber into which fluid can be delivered under pressure to force the piston through an extension stroke which is limited to a predetermined length that is small in relation to the diameter of the piston, said piston having a coaxial load supporting element fixed thereto which projects outward therefrom through the outer end of the cylinder and which moves outward relative to the cylinder in said stroke, said device being characterized by:

A. a guide ring inside the cylinder, surrounding the piston adjacent to its inner end, said guide ring having a concentric substantially cylindrical radially outer surface that is closely received within the cylinder and is substantially smooth to be rotatable in the cylinder;

B. axially oppositely facing circumferential abutment means on the guide ring and on the cylinder, confining the guide ring against axial motion relative to the cylinder and thereby confining the guide ring to rotation relative to the cylinder; and

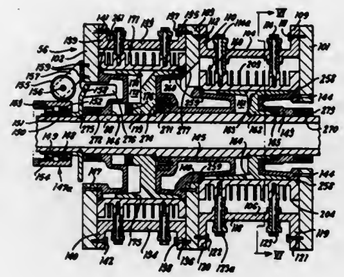
C. said guide ring and the piston having interengaged helical flutings on their radially opposed surfaces, there being on each of those surfaces a plurality of said flutings at circumferentially spaced intervals therearound, said flutings being oriented to translate axial movement of the piston in its said extension stroke and in an opposite retraction stroke relative to the cylinder into relative rotation between the guide ring and the piston and serving to distribute non-coaxial load forces on the piston circumferentially around said radially opposed surfaces to prevent tilting of the piston relative to the cylinder.

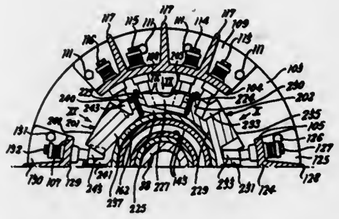
4,499,814

GAS COMPRESSOR OR BLOWER

John M. J. Varga, 2 Lawrence Rd., Skircoat Green, Halifax, West Yorkshire, England

Continuation of Ser. No. 112,116, Jan. 14, 1980, abandoned. This application Dec. 9, 1982, Ser. No. 448,414
Claims priority, application United Kingdom, Jan. 15, 1979, 7901415
Int. Cl.³ F04B *7/06, 34/10*
U.S. Cl. 92—169 **7 Claims**





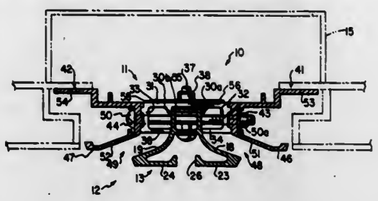
1. A gas compressor or blower comprising a cylinder defining at least one compression chamber, a piston reciprocable in the cylinder to compress gas in said chamber, and ports allowing alternate induction of gas into said chamber and after compression, exhaust of gas from said chamber as said piston reciprocates characterized in that said cylinder comprises a plurality of circumferentially adjoining sealing segments, each segment having an inner surface region of arcuate cross-section, the inner surface regions of all the segments combining to form a substantially cylindrical surface of given axial length which the outer surface of the piston confronts during reciprocation, segments having been adjusted relative to support means and secured on said support means so that the clearance between the inner surface region of each segment and the confronting surface of the piston is sufficiently low to limit axial leakage between the piston surface and that surface region without the need for any piston ring; said piston being also rotatable in the cylinder and the ports comprise intake and exhaust ports spaced around the circumference of the cylinder and valving ports spaced around the circumference of the piston for cooperating with the cylinder ports, characterized in that two of the segments each have a respective one of the inlet ports formed through its radial thickness and opening into its inner surface region and a different two of the segments each have a respective one of the outlet ports formed through its radial thickness and opening into its inner surface region, the clearance between the inner surface region of each such segment and the confronting surface of the piston being sufficiently low to limit leakage to or from the respective port both axially and circumferentially of the piston when that port is fully confronted by the piston.

4,499,815

AIR DIFFUSER

Jack L. Burkarth, Dallas, Tex., assignor to Gulton Industries, Inc., Plano, Tex.

Continuation of Ser. No. 175,639, Aug. 6, 1980, Pat. No. 4,352,323, which is a continuation of Ser. No. 934,907, Aug. 18, 1978, abandoned. This application Jul. 1, 1982, Ser. No. 394,259
The portion of the term of this patent subsequent to Oct. 5, 1999, has been disclaimed.
Int. Cl.³ F24F *13/06*
U.S. Cl. 98—40.14 **5 Claims**



1. A linear air diffuser for distributing a volume of air under pressure in a uniform output flow of controlled velocity and direction comprising:

a frame structure having a longitudinal air carrying channel with an upper air inlet having at least one longitudinally directed orifice and a lower air outlet;

means for controlling the flow of air into said channel through said upper inlet to be substantially constant along the length of said channel;

said frame structure comprising:

a side rail, extending longitudinally parallel to and defining one side of said channel, said rail having a side wall directed downwardly from said upper inlet and a lower flange beginning at the lower end of the side wall and extending laterally outwardly from said upper inlet to define the upper side of said outlet, and

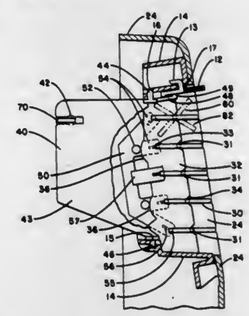
a deflector vane, extending longitudinally parallel to and defining another side of said channel, said vane having a curved air turning surface which includes a downwardly directed portion merging into a lower section defining the lower side of said outlet, said section extending laterally outwardly beyond and below the beginning of the flange of the side rail to overlap at least a portion of the flange so as to define with the flange said lower outlet, said curved air turning surface situated to intercept air entering said channel from said upper inlet such that the velocity of air flow adjacent to said curved surface is greater than the velocity of the air flowing adjacent to at least a porton of said side rail, thereby inducing upwardly directed eddy current in the output flow pattern generated by said channel, for delivery from the diffuser in a substantially lateral direction.

4,499,816

DISCHARGE AIR ASSEMBLY FOR A ROOM AIR CONDITIONER

Theodore S. Bolton, Liverpool; Brad G. Leech, Fayetteville, and Richard D. Lang, Chittenango, all of N.Y., assignors to Carrier Corporation, Syracuse, N.Y.

Filed Mar. 21, 1983, Ser. No. 477,547
Int. Cl.³ F24F *13/15*
U.S. Cl. 98—40.26 **8 Claims**



6. An air directing assembly for covering an opening which comprises:

a circumferentially extending frame, defining a discharge area;

at least one vertical support member extending vertically across the discharge area from the frame at the bottom to the frame at the top, said support member defining spaced V-shaped slots on one edge and arcuate guide surfaces on the opposite edge;

horizontally extending rotatable louvers located to extend across at least a portion of the discharge opening, said louvers defining a louver slot extending from an edge of the louver inwardly to a slot base, the slot base of each louver mating with the narrow end of the V-shaped slot in the vertical support to serve as a pivot point; and

a louver retainer including means connecting the louver retainer to each louver, said means having a series of fingers engaged one to each of the louvers, said fingers extending on opposing sides of the vertical support in frictional engagement therewith, and a guide boss for engaging the arcuate guide surface of the vertical support, said louver retainer securing the louvers to the vertical support and translating rotational movement of one louver to the other louvers.

4,499,817

DISPOSABLE COOKING BAGS

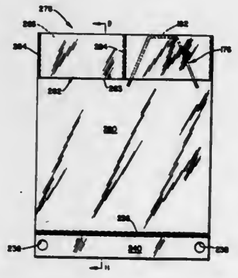
Alexander P. Janssen, 28 Old Farm Rd., Bellair, Charlottesville, Va. 22903

Division of Ser. No. 139,742, Apr. 14, 1980, Pat. No. 4,412,482, which is a continuation of Ser. No. 702,090, Jul. 2, 1976, abandoned, which is a continuation-in-part of Ser. No. 637,966, Dec. 5, 1975, Pat. No. 4,005,645, which is a continuation-in-part of Ser. No. 327,658, Jan. 29, 1973, Pat. No. 3,946,654. This application Mar. 8, 1983, Ser. No. 473,347

The portion of the term of this patent subsequent to Nov. 1, 2000, has been disclaimed.

Int. Cl.³ A47G *27/10*

U.S. Cl. 99—403 14 Claims



1. The combination of a disposable bag for cooking comestibles and a cooking utensil or accessory, said utensil or accessory having a vertically extending bag-supporting means and said bag being made of a flexible material and having side walls and closable open and closed ends at the opposite ends of the side walls; said bag being disposed in said bag-supporting means with the open end uppermost and having means at the closed end thereof for effecting connections between the bag and the bag-supporting means, the means at the closed end of the bag being spaced at intervals around said bag and being so constructed as to be capable of producing mechanical connections between the closed end of the bag and the lower part of the bag-supporting means.

4,499,818

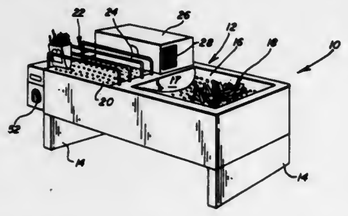
METHOD AND APPARATUS FOR HOLDING FRESHLY PREPARED FRIED FOOD PRODUCTS

William K. Strong, Solvang, Calif., assignor to Restaurant Technology, Inc., Oak Brook, Ill.

Filed Sep. 30, 1982, Ser. No. 431,812

Int. Cl.³ A47J *36/24*

U.S. Cl. 99—483 15 Claims



1. An apparatus for holding and maintaining the crispness of freshly fried food products, comprising;

an upright, closed housing having an upwardly facing foraminous serving surface exposed to the surrounding atmosphere which provides an open product holding means adjacent the upper portion of the housing and adapted to receive food products such that said food products are exposed to the atmosphere, and from which the food products are to be served to customers;

air circulation means associated with said housing for forcibly circulating air through said housing and outwardly of the housing through said foraminous surface and about and through the food products which are exposed to the atmosphere in said product holding means; and

heater means associated with said air circulation means for selectively heating the circulating air so that said heated air is forcibly circulated about and through the food products in said product holding means, said air circulation means being disposed in said housing and with said heater means being disposed within said housing in full communication with said air circulation means.

4,499,819

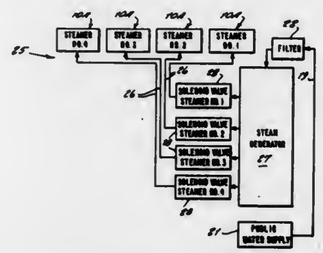
STEAMER

Julian C. Bailey, 107 S. Cecil St., Lexington, N.C. 27292

Filed Jun. 9, 1983, Ser. No. 502,738

Int. Cl.³ A47J *36/24*

U.S. Cl. 99—483 1 Claim



1. An improved steamer assembly, comprising, in combination, a plurality of individual steamers, each one of which comprises a case and a cover mounted upon the top of said case by means of a hinge, so as to receive food or other articles for being steamed, and a means for steam admitted into said steamer; a steam source therefor comprising a water supply line, said water supply line being intercepted by a filter and being connected to a single steam generator; and said means comprising a plurality of steam lines from said steam generator being connected to said plurality of steamers, each of said steam lines being intercepted by a solenoid valve in an electrical circuit with an electrical power source and a manually operated push button means on each of said steamers for selectively controlling the steam from said steam generator to said steamers.

4,499,820

BREATHER BAG CONSTRUCTION FOR A SEALED STORAGE STRUCTURE

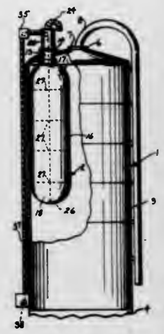
Delmer R. Nelson, Cordova, Ill., assignor to A. O. Smith Harvestore Products, Inc., Arlington Heights, Ill.

Filed Apr. 27, 1983, Ser. No. 489,035

Int. Cl.³ A01F *25/00*

U.S. Cl. 99—646 S 12 Claims

1. A breathing system for a sealed storage structure, comprising a sealed storage structure having an opening in the upper end, a flexible breather bag disposed within said structure and having a main body portion and a neck of reduced cross section, means for sealing said neck within said opening, a cable connected to the inside surface of said bag at the lower end of said bag and extending upwardly through said neck to the exterior of said storage structure, and means connected to said cable and located on the exterior of the structure for pulling the cable upwardly to draw the bag upwardly toward the upper end of said structure to a location where it will not interfere with the loading of a stored material into said structure, the interior of said bag being exposed to the atmosphere and the exterior of the bag being exposed to the pressure of said storage structure and said bag expanding and contracting to thereby compensate for pressure differentials between the atmosphere and the interior of the structure.



4,499,821

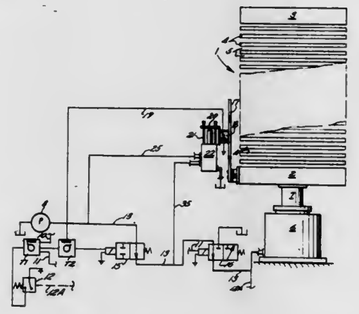
SYSTEM FOR IMMOBILIZING A PLYWOOD PRESS PLATEN DURING A PRESS CYCLE

John L. Clouston, 92966 Highway 99 South, Junction City, Oreg. 97448

Filed Feb. 23, 1984, Ser. No. 582,942

Int. Cl.³ B30B *15/16*

U.S. Cl. 100—51 7 Claims



1. A system for immobilizing the hydraulic cylinder and thrust platen of a plywood press powered thereby during a panel pressing cycle to avoid excessive panel compression, said system comprising,

a fluid pressure source,

valve means in communication with said pressure source and the platen powering cylinder to control fluid pressure to the platen powering cylinder during a first stage of press operation,

a valve assembly also in communication with said pressure source and the platen powering cylinder to control fluid pressure to said cylinder during a second stage of press operation,

timing means controlling said valve means to close same upon timing out to simultaneously terminate the first stage of press operation and initiate the second stage of press operation, and

feedback means for sensing thrust platen movement during said second stage from a preselected platen position and mechanically actuating said valve assembly upon sensing platen movement whereby the valve assembly will control fluid flow to said cylinder to return the platen to said preselected position.

4,499,822

CONTINUOUS PRESS

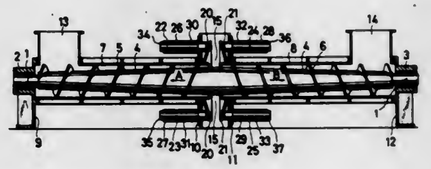
Hachiro Sato, Tokyo, Japan, assignor to Fukoku Kogyo Company Limited, Tokyo, Japan

Filed Aug. 24, 1983, Ser. No. 526,150

Claims priority, application Japan, Sep. 10, 1982, 57-157744

Int. Cl.³ B30B *9/16*

U.S. Cl. 100—117 2 Claims



1. A continuous press comprising:

a frame;

a driving shaft journaled to the frame at its both ends by means of thrust bearings;

a screw drum disposed around the driving shaft to rotate therewith, said screw having a varying diameter which is gradually larger towards the center;

first and second screw blades symmetrically disposed around the outer surface of said screw drum, turning directions of the first and second screw blades being opposite to each other, said first and second screw blades having a constant pitch;

an outer drum arranged around the screw blades and having a number of small filtering holes;

first and second inlets provided in said outer drum for introducing raw materials into first and second spaces formed by the screw drum, first and second screw blades and outer drum, said spaces being gradually made smaller towards a center of the screw drum, said first inlet being provided in an end of said outer drum and said second inlet being provided in another end of said outer drum;

an outlet provided in said outer drum at its center for discharging the pressed raw material as cakes;

a pair of cone-shaped plates arranged in said outlet movably in a direction of the driving shaft; and

a means for resiliently pressing the cone-shaped plates towards each other.

4,499,823

CONTINUOUS PRESS, IN PARTICULAR FOR PRESSING BEET PULP AND OTHER JUICE-CONTAINING MATERIALS

Jean-Luc Berry, Compiegne, France, assignor to S.I.C.A. Pulposec de Chevrieres, Compiegne, France

Filed May 18, 1983, Ser. No. 495,778

Claims priority, application France, May 24, 1982, 82 08962

Int. Cl.³ B30B *9/20*

U.S. Cl. 100—121 13 Claims

1. A continuous press, in particular for pressing beet pulp and other juice-containing materials, the press comprising:

a rotatable rimmed wheel;

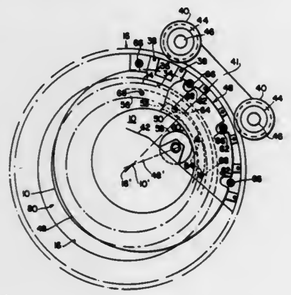
a rotatable ring having an inside diameter which is greater than the outside diameter of the rimmed wheel, the ring surrounding the wheel and being eccentrically mounted relative thereto, said ring having axial end faces;

thrust means for urging the wheel rim against the inside surface of the ring in a pressing region, said pressing region having axial ends;

means for inserting material to be pressed between the wheel rim and the surrounding ring upstream from the pressing

region, and means for removing pressed material downstream therefrom;

wherein the axial ends of the pressing region are closed by respective cheek plates, with each cheek plate being circular, and pressed in a substantially material-tight manner against a corresponding one of the axial end faces of the ring, said cheek plates being mounted in such a manner as



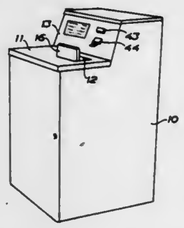
to leave axial access to the space between the wheel rim and the surrounding ring at points distant from the pressing region whereby material to be pressed may be inserted, and pressed material may be removed, said cheek plates being rotatably mounted separately from said wheel and said ring about an axis which is parallel to the wheel's axis of rotation and which is fixed relative thereto, such that said cheek plates may rotate with said wheel.

4,499,824

MACHINE FOR CRUSHING CYLINDRICAL ALUMINIUM CANS FOR BEER, SOFT DRINKS ETC.

Ben Elwing, Gislaved; Peter Földi, Forsheda, and Göte Holmberg, Anderstorp, all of Sweden, assignors to Broderna Holmbergs Fabriks AB, Anderstorp, Sweden

Filed Sep. 9, 1983, Ser. No. 531,150
Claims priority, application Sweden, Sep. 9, 1982, 8205122
Int. Cl.³ B30B *9/32*
U.S. Cl. 100—48 **8 Claims**



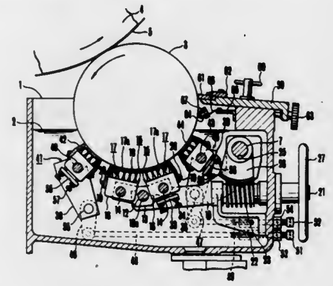
1. Machine for crushing cylindrical aluminium cans for beer, soft drinks, etc, comprising a can intake, a press device for squeezing the cans axially between the end walls thereof, a craddle for receiving the can in a substantially horizontal position, a closure member for the can intake, said craddle being placable between a receiving position in the can intake and a crushing position in the press device by displacement of the closure member between opened and closed positions, a collecting container, and a perforated sloping plane arranged below the press device for receiving the crushed can falling down from the press device at the return thereof after crushing and for diverting the crushed can to the collecting container.

4,499,825

INK WIPING DEVICE FOR INTAGLIO ROTARY PRINTING MACHINES

Chiyomatsu Uno, Saitama, Japan, assignor to Komori Printing Machinery Co., Ltd., Tokyo, Japan

Filed Dec. 8, 1982, Ser. No. 447,880
Claims priority, application Japan, Dec. 12, 1981, 56-200564
Int. Cl.³ B41F *9/08*
U.S. Cl. 101—167 **3 Claims**



1. An ink wiping device for an intaglio rotary printing machine having a plate cylinder supporting an intaglio printing plate wrapped therearound, comprising:

a tank for containing a cleaning solution therein;

an ink wiping roller rotatably supported in said tank and having a circumferential surface positioned for rolling contact with the printing plate, said ink wiping roller having a portion of said circumferential surface immersed in the cleaning solution; and

a cleaning assembly for cleaning said circumferential surface, said cleaning assembly being entirely immersed in the cleaning solution and including at least one brush unit adjustably supported in said tank, said brush unit having multiple rows of bristles arranged such that their distal ends confront an arcuate sector of the immersed portion of said circumferential surface, and a cleaning sheet of synthetic nonwoven cloth secured to and fixed relative to said brush unit, said sheet being supported on and resiliently pressed by said bristles against and into conformity with said arcuate sector.

4,499,826

CENTRAL GEAR DRIVEN FLEXOGRAPHIC PRINTING PRESS ACCOMMODATING DIFFERENT DIAMETER PLATE CYLINDERS

Dieter Regge, Lengerich, Fed. Rep. of Germany, assignor to Windmoller & Holscher, Lengerich, Fed. Rep. of Germany

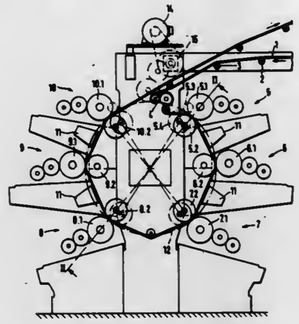
Filed Dec. 20, 1982, Ser. No. 451,346
Claims priority, application Fed. Rep. of Germany, Dec. 22, 1981, 3150833
Int. Cl.³ B41F *5/16*
U.S. Cl. 101—181 **7 Claims**

2. A flexographic printing press comprising:

a frame;

a plurality of plate cylinders each having a cooperating backing cylinder, each of the plate and backing cylinders mounted on rotatable shafts having gears and rotatably supported on said frame;

a central gear; the shafts of the backing cylinders are rotatably carried in annular segment supporting members, means mounting said supporting members for circumferential displacement along a circular path concentric with the central gear; and



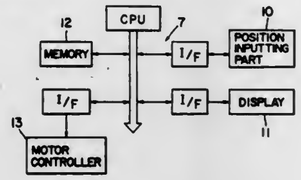
clamping means to clamp said supporting members against said frame.

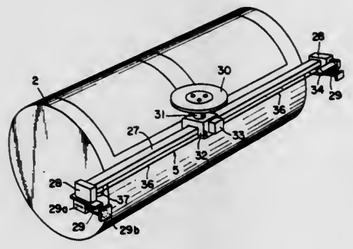
4,499,827

SYSTEM FOR AUTOMATICALLY REMOVING DUST FROM PLATE CYLINDERS OF PRINTING PRESS

Hideo Takeuchi, Shiroi; Toshihisa Kaneko, and Satoshi Ikeda, both of Tokyo, all of Japan, assignors to Dai Nippon Insatsu Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 15, 1984, Ser. No. 590,205
Claims priority, application Japan, Mar. 22, 1983, 58-40884; Mar. 22, 1983, 58-47687
Int. Cl.³ B41F *35/02*; B41L *41/02*
U.S. Cl. 101—425 **8 Claims**





1. A system for automatically removing dust from a plate cylinder of a printing press comprising:

a dust removing head mounted for displacement relative to and along the surface of a plate cylinder in the axial direction thereof of the printing press;

means for causing the dust removing head to advance toward and retract from the plate cylinder;

head moving means for causing the dust removing head to undergo said displacement to a position confronting any position on the plate cylinder surface;

dust removal position inputting means having a surface on which a printed matter is laid and having means which operates, when the position of a printing defect on the printed matter due to dust on the plate cylinder is pressed against said surface, to generate and transmit a position data signal corresponding to the position thus pressed with respect to the direction of the printed matter corresponding to the axial direction of the plate cylinder; and

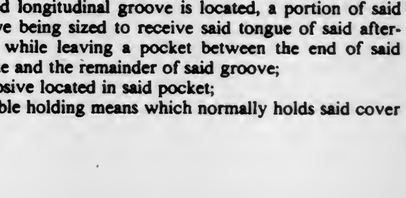
operationally processing means for converting said position data signal from the dust removal position inputting means into data for so controlling the head moving means that it moves the dust removing head to the position along the plate cylinder corresponding to said portion of the printing defect pressed against said surface.

4,499,828

BARRIER BREACHING DEVICE

Charles A. Honodel, Tracy, Calif., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jun. 1, 1983, Ser. No. 500,112
Int. Cl.³ F42B *3/00*
U.S. Cl. 102—301 **14 Claims**



1. A barrier breaching device comprising:

a hub;

a relatively flexible conical member affixed at its apex to said hub;

a plurality of relatively rigid spokes having explosive qualities, each spoke affixed at one end to said hub and extending therefrom to the base of said cone, said relatively flexible cone member affixed to said spokes in an umbrella-like fashion;

said explosive spokes having an explosive extension distal of said hub end, said extensions forming with said conical member a generally circular base;

said conical member and said spokes collapsible in a generally cylindrical manner for storage and transport; and

fuse means for detonating said explosive spokes and extensions.

4,499,829

EXPLOSIVELY SEPARABLE CASING

Albin K. Jacobson, Albuquerque, N. Mex.; Raymond E. Rychnovsky, and Cornelius N. Visbeck, both of Livermore, Calif., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Mar. 8, 1983, Ser. No. 473,177
Int. Cl.³ F42B *13/38, 4/12*
U.S. Cl. 102—378 **11 Claims**

1. An explosively separable casing comprising:

a cylindrical afterbody having a cylindrical tongue extending longitudinally from one end thereof;

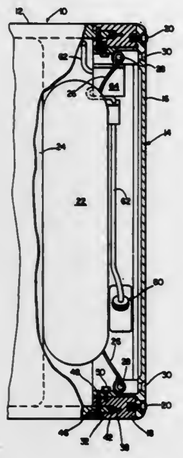
an end cover for said one end of said afterbody, said end cover having a cylindrical side wall in which a cylindrical shaped longitudinal groove is located, a portion of said groove being sized to receive said tongue of said afterbody while leaving a pocket between the end of said tongue and the remainder of said groove;

an explosive located in said pocket;

a frangible holding means which normally holds said cover

to said afterbody and which fails responsive to an increase in pressure in said pocket to release said cover;

means for igniting said explosive to cause said increase in pressure in said pocket to cause failure of said frangible holding means; and



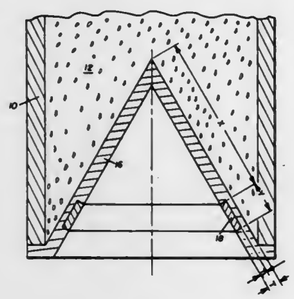
a seal means located between said tongue and said groove for sealing said pocket so as to maintain said increase in pressure within said pocket.

4,499,830

HIGH LETHALITY WARHEADS

John N. Majerus, Rising Sun, Md., and William P. Walters, Newark, Del., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jun. 29, 1981, Ser. No. 280,585
Int. Cl.³ F42B *13/12*
U.S. Cl. 102—476 **9 Claims**



1. A lethal warhead for use against a target protected by vehicle outer armor which comprises:

a cylindrical body member having an explosive holding cavity therein and a forward end;

explosive means disposed in the holding cavity of said body member;

liner means fixedly disposed in said forward end of said body member for generating jet means and slug means for penetrating said armor which includes;

a conically-shaped metal liner having an annular groove disposed in an exterior wall of said liner means further including:

an arcuate-shaped metal liner; and

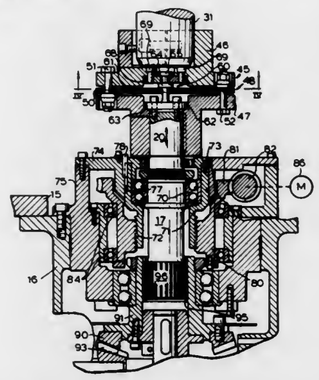
lethal means which includes an annular strip of lethal material fixedly disposed in said annular groove of said liner means, for providing a plurality of "follow-through" particles to violently interact with said target.

4,499,831

FLEXIBLE COUPLING FOR A GRAVURE CYLINDER

Frank J. Anastasio, Paramus, and Thomas Byro, Ringwood, both of N.J., assignors to Bobst SA, Lausanne, Switzerland

Filed Sep. 29, 1982, Ser. No. 428,240
Int. Cl.³ B41F *9/02, 13/14*
U.S. Cl. 101—152 **6 Claims**



1. In a printing press having a plurality of printing units, each printing unit including a unit frame having a housing supporting a drive shaft connected to a source of rotational motion, a printing cylinder mounted for rotation in a printing carriage having means for applying ink to the cylinder, said printing carriage being mounted in the unit frame for pivoting on a point on the axis of the drive shaft for changing the angle of the axis of the cylinder relative to the axis of the drive shaft, coupling means for connecting the drive shaft to the cylinder, means for shifting the cylinder axially in the frame of the unit and means for pivoting the carriage on said pivot point, the improvements comprising said means for shifting the cylinder along the axis of the cylinder including means for shifting the drive shaft along its axis in the housing and said coupling means including a pair of hubs with one hub secured to a shaft of the cylinder and the second hub secured to the drive shaft, at least one flexible plate member disposed between said hubs, means securing said plate members to each of the hubs to transfer rotation therebetween and means for preventing axial backlash between the hubs and for transmitting an axial force from the second hub secured to the drive shaft to the one hub secured to the printing cylinder so that the axial interval between the hubs at the axes of the hubs remains constant even during shifting of the drive shaft and cylinder, said means for preventing axial backlash and for transmitting an axial force comprising a cylindrical member extending between the hubs, and each hub and cylindrical member having means for securing each end of the cylindrical member to the respective hub on the axis thereof for rotation therewith.

4,499,832

APPARATUS AND METHOD FOR MATERIAL DISPOSAL

Roderick J. McNeil, 395 N. Candlewood Lake Rd., New Milford, Conn. 06776

Filed Dec. 23, 1983, Ser. No. 565,222
Int. Cl.³ F23G *7/04*
U.S. Cl. 110—238 **15 Claims**

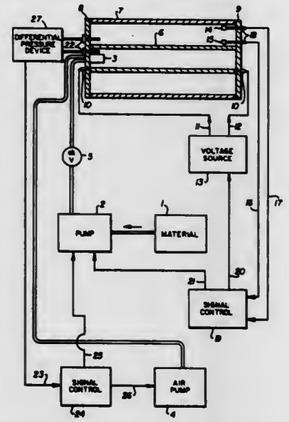
1. An apparatus for the environmentally safe disposal of material, comprising:

means for producing an aerosol of the material;

a first enclosure surrounding the aerosol and having a first porous portion including a first plurality of open pores;

the first porous portion being capable of being maintained at a predetermined temperature to combust said aerosol;

a second enclosure surrounding the first enclosure having a second porous portion including a second plurality of open pores;



means for supplying an oxidizing atmosphere to said first enclosure for the combustion of said aerosol; and

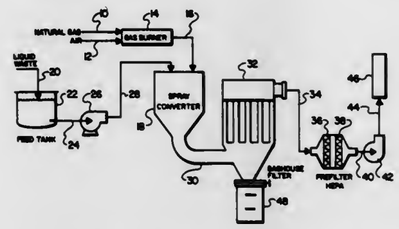
means to raise the temperature of the first porous portion to said predetermined temperature; whereby said aerosol is combusted near and within said first porous portion, and a flow of gases occurs from the interior of said first enclosure out through said first and second porous portions.

4,499,833

THERMAL CONVERSION OF WASTES

LeRoy F. Grantham, Calabasas, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Dec. 20, 1982, Ser. No. 451,516
Int. Cl.³ F23G *5/12*
U.S. Cl. 110—342 **4 Claims**



1. A process for converting a strong cation exchange resin contaminated with a radioactive substance into a non-radioactive gas substantially free of oxides of sulfur and a radioactive inorganic ash which comprises:

introducing an aqueous slurry comprising said strong cation exchange resin and an alkaline material selected from the group consisting of alkali and alkaline earth metal hydroxides and carbonates, in the form of a finely atomized spray, into the top of a zone heated, by means of a hot gas produced externally of said zone and introduced into the top of said zone, to a temperature sufficient to convert said strong cation exchange resin, by contact with said hot gas, into a mixture of products comprising a non-radioactive gas substantially free of oxides of sulfur and a radioactive inorganic ash;

removing said mixture of products from the bottom of said zone; and

separating said radioactive inorganic ash from said mixture of products, the ratio of the volume of said strong cation exchange resin to the volume of said radioactive inorganic ash being in the range of about 20:1 to 70:1.

3. A process for converting a strong anion exchange resin contaminated with a radioactive substance into a non-radioactive gas substantially free of oxides of nitrogen and a radioactive inorganic ash which comprises:

introducing an aqueous slurry of said strong anion exchange resin in the form of a finely atomized spray into the top of a zone heated, by means of a hot gas produced externally of said zone and introduced into the top of said zone, to a temperature sufficient to convert said strong anion exchange resin, by contact with said hot gas, into a mixture of products comprising a non-radioactive gas containing oxides of nirogen and a radioactive inorganic ash;

removing said mixture of products from the bottom of said zone;

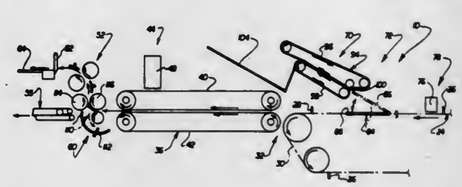
injecting a base selected from the group consisting of NH_3, CH_3NH_2 and $(CH_3)_2NH$ into said non-radioactive gas downstream of said zone to produce a non-radioactive gas substantially free of oxides of nitrogen and separating said radioactive inorganic ash, the ratio of the volume of said strong anion exchange resin to the volume of said radioactive inorganic ash being in the range of about 20:1 to 70:1.

4,499,834

REJECT ASSEMBLY FOR SHEET MATERIAL HANDLING APPARATUS

Rudolph H. Ruetschle, and John W. Raker, both of Elyria, Ohio, assignors to Harris Graphics Corporation, Melbourne, Fla.

Filed Dec. 10, 1982, Ser. No. 448,432
Int. Cl.³ D05B *23/00*
U.S. Cl. 112—2 **17 Claims**



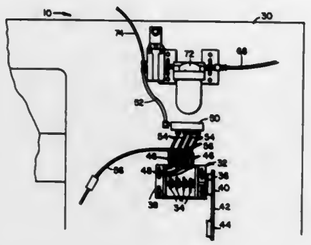
1. An apparatus comprising supply means for supplying sheets of material, support means extending along a path past said supply means to a stitching location, stitching means at said stitching location, means for feeding sheets from said supply means to form groups of sheets on said support means, reject means disposed along said path at a location between said supply means and said stitching location and operative to reject groups of sheets, said reject means including a reject ramp movable between a retracted position and an extended position wherein said reject ramp projects upwardly from said support means, and pusher means for normally sequentially pushing groups of sheets toward said stitching location when said reject ramp is in the retracted position and alternatively pushing groups of sheets onto said reject ramp when said reject ramp is in the extended position.

4,499,835

TUFTING MACHINES

Gary L. Ingram, Ooltewah, Tenn., assignor to Spencer Wright Industries, Inc., Chattanooga, Tenn.

Filed May 12, 1983, Ser. No. 493,989
Int. Cl.³ D05C *15/00*
U.S. Cl. 112—79 R **4 Claims**



1. In a tufting machine having a plurality of oscillating gauge parts divided into a number of sections extending transversely across the machine, a lint removal apparatus for blowing air from a high pressure supply onto said gauge parts to remove the lint from the gauge parts in each section, said apparatus comprising pipe means communicating with said supply for receiving air therefrom and having a portion extending transversely across said machine, a bleed air manifold, means for bleeding a small amount of the supply air from said pipe means to said manifold, a plurality of first valves corresponding in number to said number of sections, each of said valves having an inlet, an outlet and control means for communicating said inlet with said outlet, conduit means communicating said manifold with the inlet of each first valve, programmer means for driving the control means of the first valves in seriatim such that air from the manifold flows through the outlets of all the first valves in seriatim, a plurality of pilot air operated valves corresponding in number to said number of sections, each valve having an inlet communicating with said pipe means, an outlet and a control air port, means communicating the outlet of each first valve with the control air port of a corresponding pilot air operated valve, a plurality of air spraying manifolds corresponding in number to said number of sections, each spraying manifold being disposed adjacent to a corresponding section of gauge parts and having a plurality of spraying openings for directing air therein onto the gauge parts in that section, and conduit means communicating the outlet of each pilot air operated valve with a respective air spraying manifold, whereby when bleed air flows through the outlet of the first valve the corresponding pilot air operated valve permits the air from said pipe means to be sprayed onto a corresponding section of gauge parts.

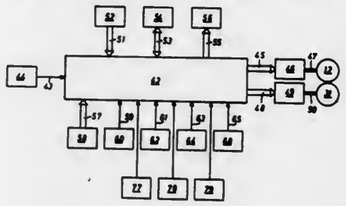
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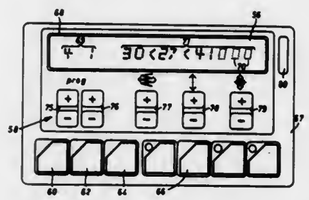
SEWING MACHINE HAVING AN ELECTRONIC CONTROL

Günter Meier; Willi Meier, and Jürgen Hartwig, all of Karlsruhe-Durlach, Fed. Rep. of Germany, assignors to Dorina Nähmaschinen GmbH, Fed. Rep. of Germany

Filed Sep. 16, 1983, Ser. No. 533,007
Claims priority, application Fed. Rep. of Germany, Sep. 22, 1982, 3235121
Int. Cl.³ D05B *3/02*
U.S. Cl. 112—158 E **9 Claims**

1. A sewing machine comprising: an electronic fixed storage containing a plurality of data of sewing patterns, each pattern including stitch position and feed reference data and at least a single individual stitch; means for selecting one at a time of the sewing patterns contained in the fixed storage; manual setting means for varying the stitch position and feed reference data for selected sewing patterns; a microcomputer having a display unit which can be actuated by control means; a program storage; a program entering key for consecutively storing in the program storage the specific reference data of a respective selected single sewing pattern; a device for controlling the sewing machine parts responsible for the stitch formation in accordance with the data stored in the fixed storage and associated with the reference data; said display unit comprising a plurality of alphanumeric display elements arranged in a row, side by side; and means for switching the display unit into a





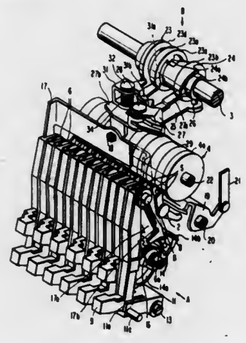
first operating state in which one selected sewing pattern and its associated reference data is indicated by a plurality of predetermined groups of said display elements, and into a second operating state in which a plurality of the selected sewing patterns stored in said program storage are indicated by a plurality of predetermined groups of display elements, in the sequence in which the selected sewing patterns are stored in said program storage.

4,499,837

STITCH PATTERN SELECTOR IN SEWING MACHINES

Kimihiko Yamamoto, Nagoya, and Hitoshi Ishikawa, Nishio, both of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed May 20, 1983, Ser. No. 496,683
Claims priority, application Japan, May 20, 1982, 57-085223
Int. Cl.³ D05B *3/02*
U.S. Cl. 112—158 A **5 Claims**



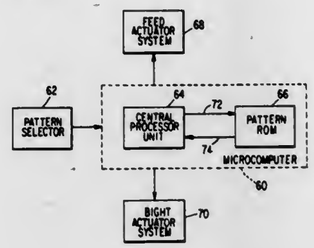
1. A stitch pattern selector in a sewing machine, comprising: (a) a plurality of depressable stitch pattern selector buttons; (b) a plurality of pawl locks actuatable respectively by said stitch pattern selector buttons to move to a locking position in response to the latter's being depressed; (c) a plurality of drivable stitch pattern cams; (d) a pivotable plate operatively connected to a needle-bar assembly of the sewing machine; (e) a plurality of pivotably movable pawl supports; (f) a plurality of pawls swingably mounted respectively on said pivotable pawl supports and movable with said pivotably movable pawl supports into a first position in which said pawls are pressed against said stitch pattern cams and said pivotable plate and a second position in which said pawls are disengaged from said stitch pattern cams and said pivotable plate; (g) a drive shaft; (h) means operatively connected to said pawl supports and operable for moving all of said pawls to said first position; (i) a clutch mechanism operatively connected between said drive shaft and said means and actuatable in response to depression of one of said stitch pattern selector buttons and rotation of said drive shaft for operating said means to move said pawls to said first position, said clutch mechanism being disconnectable in response to continued rotation of said drive shaft for allowing said means to return said pawls except one corresponding to said one of the stitch pattern selector buttons to said second position, whereby one of said pawl supports supporting said one of the pawls can be locked by one of said pawl locks actuated into said locking position by said one of the stitch pattern selector buttons.

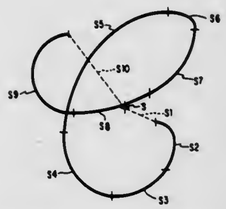
4,499,838

PATTERN DATA STORAGE BY EQUATIONS IN AN ELECTRONICALLY CONTROLLED SEWING MACHINE

Alfonse N. Voza, Jersey City, N.J., assignor to The Singer Company, Stamford, Conn.

Filed Sep. 4, 1984, Ser. No. 646,889
Int. Cl.³ D05B *3/02*
U.S. Cl. 112—266.1 **2 Claims**





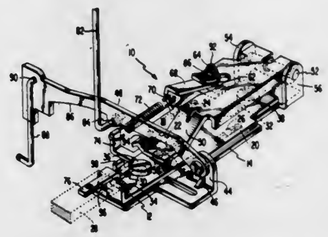
1. In an electronically controlled sewing machine capable of stitching along a continuous path to form a sewn pattern, said sewing machine including a memory and means for selectively retrieving information from said memory for controlling the stitch forming instrumentalities of the sewing machine, a method for storing in said memory information sufficient to cause said sewing machine to stitch along said continuous path comprising the steps of: (a) dividing said continuous path into a plurality of contiguous segments; (b) providing for each of said segments in terms of two angularly related axes a second order equation defining said each segment; and (c) storing for each of said segments representations of the length of said each segment and its slope and rate of change of slope at the start of said each segment.

4,499,839

REVERSE FEED CONTROLLING MECHANISM FOR A SEWING MACHINE

John Blackwood, Union; Thomas G. Graham, Ocean, and Robert B. Brauch, Wayne, all of N.J., assignors to The Singer Company, Stamford, Conn.

Filed Dec. 3, 1983, Ser. No. 558,082
Int. Cl.³ D05B *27/00, 3/04*
U.S. Cl. 112—317 **11 Claims**



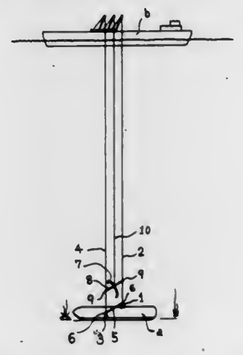
1. In a sewing machine, an input control member mounted for a linear and pivotal movement by a machine operator, a pivoted feed regulating lever, a pivoted member extending under a portion of the feed regulating lever, a ramp on one of the said members, and a foot on the other member positionable along the ramp during linear movement of the control member for causing the member extending under the pivoted lever to tilt upwardly and by engagement with said lever pivotally move the lever into a reverse feed controlling position.

4,499,840

METHOD FOR THE SALVAGE OF A SUNKEN VESSEL

Chao Lung-Tung, No. 32, Chung Cheng 4th Rd., Kaohsing City, Taiwan

Filed Nov. 18, 1982, Ser. No. 442,744
Int. Cl.³ B63C *7/08*
U.S. Cl. 114—51 **1 Claim**



1. A method for the salvage of a sunken vessel comprising the steps of detecting the location and depth of said sunken

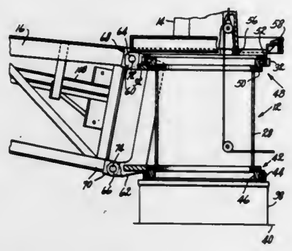
vessel, lowering successively two electromagnets with respective guide ropes from a salvage station together with a first retaining rod interconnected between said ropes, said first retaining rod having a length greater than the width of said vessel, thereby to attach said electromagnets on said vessel along opposite sides thereof at an angle other than 90° with respect to a longitudinal axis of said vessel, lowering a clamping apparatus together with a second retaining rod with a tailing rope utilizing said respective guide ropes, said clamping apparatus and said second retaining rod being substantially connected perpendicular to each other and said second retaining rod having a length substantially equal to that of said first retaining rod and parallel thereto, whereby said clamping apparatus reaches and clamps said vessel at an angle complementary to said first mentioned angle, and lifting said vessel by means of said electromagnets and said clamping apparatus with a conventional winding machine for lifting up said tailing rope and said respective guide ropes so that said vessel is supported at four points.

4,499,841

SAIL RIGGING AND CONTROL SYSTEM

John G. Lord, Tighlman Island, Md., assignor to Lloyd Bergeson, Norwell, Mass.

Filed Aug. 5, 1981, Ser. No. 290,234
Int. Cl.³ B63H *9/04*
U.S. Cl. 114—98 **8 Claims**



7. A sail support system for a ship, comprising a support fixed to the ship so as to be non-rotatable in relation thereto, a boom support rotatably mounted on the fixed support, a mast rotatably mounted on the boom support, mast rotating means acting between the boom support and the mast to cause rotation of the mast in relation to the boom support, and boom rotating means acting between the ship and the boom support to cause rotation of the boom support in relation to the ship, whereby said mast rotating means also causes rotation of the mast with the boom when the boom is rotated.

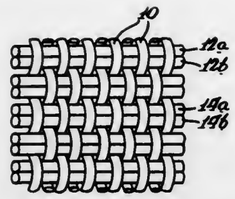
4,499,842

SAIL CLOTH AND SAIL MADE THEREFROM

Peter F. Mahr, Fairfield, Conn., assignor to North Sails, Inc., Pewaukee, Wis.

Filed Apr. 11, 1983, Ser. No. 483,913
Int. Cl.³ B63H *9/06*
U.S. Cl. 114—103 **5 Claims**

1. A sail which is subject to a maximum load in a given direction, said sail comprising a woven cloth having warp yarns intersecting fill yarns, said warp yarns being arranged in adjacent sectors of a repeating pattern designated by the letters (r)-(t)-(v), wherein the letters represent the number of yarns in each respective sector, and hyphens represent a number of fill yarns at each intersection corresponding to (n), and wherein (r), (t), (v) and (n) are equal to the following numbers of yarns and combinations of said numbers in each designation as follows:
(r) is one, two or three,
(t) is two, or three,
(v) is zero, one or two,
(n) is one or two,



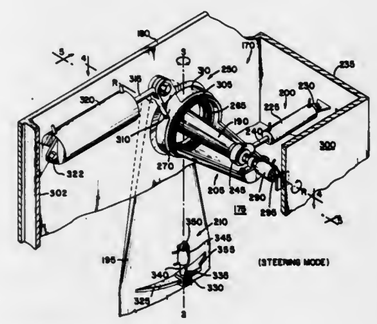
said cloth being oriented in said sail such that said warp yarns are substantially aligned in said direction of maximum load whereby to improve stretch resistance in said direction.

4,499,843

STRUT STEERING AND RETRACTING APPARATUS

John W. Williams, Bellevue, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Aug. 31, 1981, Ser. No. 298,133
Int. Cl.³ B63B *1/28*
U.S. Cl. 114—280 **23 Claims**



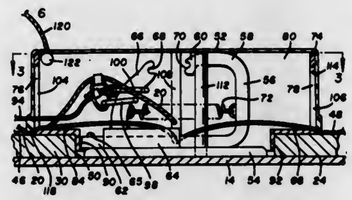
1. A lock assembly, comprising:
a first arm having a bearing surface,
a second arm having a bearing surface, said second arm being pivotably mounted to said first arm;
means for pivotably mounting said arms,
clamping means capable of holding each of said arm bearing surfaces, said clamping means comprising a first latch member capable of clamping said first arm bearing surface, a second latch member capable of clamping said second arm bearing surface, and means for supporting said latch members;
means forcing said arms into contact with said clamping means, said forcing means comprising a first lockable link pivotably mounted to said first arm, a second lockable link pivotably mounted at one of its ends to said first link and at its other end to said second arm, and means capable of applying a force along a single direction at the point where said second link is pivotably mounted to said first link, and
means releasing said arm bearing surfaces from the hold of said clamping means.

4,499,844

METHOD AND APPARATUS FOR RELEASING A SUBMERGED LIFE RAFT

James M. Parish, Wadsworth, Ohio, assignor to The B. F. Goodrich Company, New York, N.Y.

Filed Oct. 24, 1983, Ser. No. 544,344
Int. Cl.³ B63B *23/00*
U.S. Cl. 114—367 **15 Claims**



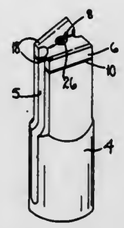
13. A method for releasing a raft from a deck submerged beneath a water surface to a predetermined depth wherein a latch means holds the raft to the deck and wherein the raft is usually launched by a davit launch including a davit and fall connectable to said raft by a davit hook having a release lanyard comprising:
(a) releasably fastening a painter line connectable to the raft to a retaining member mounted on the deck at least prior to submersion,
(b) releasably fastening the release lanyard to the retaining member at least prior to submersion,
(c) actuating said latch means to release the raft from the deck in response to a submerging of the deck to the predetermined depth,
(d) actuating the retaining member to secure the painter line to the retaining member in response to a lifting movement of the raft off the deck to limit movement of the raft on the water surface to an area generally above the retaining member,
(e) securing the release lanyard to the retaining member upon actuation of the retaining member at the predetermined depth, and
(f) releasing the raft from the davit hook in response to lifting of the raft off the deck and tensioning of the release lanyard to open the davit hook.

4,499,845

HORN FOR USE IN TRANSMITTING ULTRASONIC VIBRATIONS

John R. Pope, Lutterworth, England, assignor to USM Corporation, Farmington, Conn.

Filed Nov. 16, 1981, Ser. No. 321,532
Claims priority, application United Kingdom, Nov. 18, 1980, 8036963
Int. Cl.³ B06B *3/00*; B23K *1/06, 5/20*
U.S. Cl. 116—137 A **11 Claims**



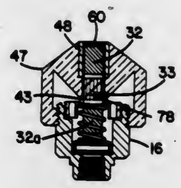
1. A horn for use in transmitting ultrasonic vibrations to a workpiece comprising:
a body portion
a detachable workpiece-engaging non-circular end portion; and a securing member arranged to detachably secure the non-circular end portion to the body portion, the securing member comprising a first threaded portion received in a tapped hole in the body portion and rotatable therein to alter the orientation of the securing member relative to the body portion, and a second threaded portion of different pitch and/or handedness to the first threaded portion on to which the non-circular end portion has been rotated while the securing member was held against rotation relative to the body portion to bring the non-circular end portion into tight contact with the body portion with the second threaded portion being received into a hole tapped completely through the non-circular end portion, the arrangement being such that the orientation reached by the non-circular end portion, relative to the body portion, when the non-circular end portion is in tight contact with the body portion, can be corrected by rotation of the securing member relative to the body portion.

4,499,846

PLUNGER AND TRANSPARENT INDICATOR

Ned Bergeron, and Theodore A. Stollberg, both of Houma, La., assignors to B.W.B. Controls, Inc., Houma, La.

Filed Dec. 15, 1982, Ser. No. 450,119
Int. Cl.³ G01L *7/16, 19/08*
U.S. Cl. 116—272 **17 Claims**



1. An indicating apparatus which comprises:
a. a unitary transparent lens housing having an axial bore therethrough and a counter bore in the uppermost portion of said bore, said counter bore having a sleeve member therein;
b. a single information-containing member at least partially positioned and linearly movable in response to fluid changing conditions in said apparatus within said bore in said housing, said member having at least two visually distinctive information portions viewable from a top view and side view through said housing; and
c. means for displaying and refracting ambient light reflected by said information portions, comprising a double truncated prismatic lens intregral with said housing which slidably receives said information containing member in said axial bore and is substantially perpendicular to said information containing member.

4,499,847

APPARATUS FOR COATING GRANULES SUCH AS DRAGéE PELLETS WITH A HARDENABLE SUBSTANCE

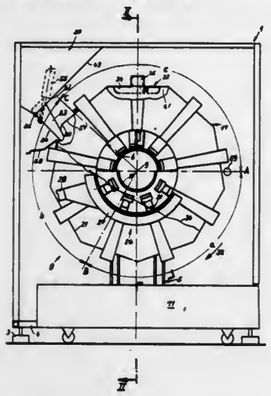
Rudolf Dunaitschik, Bodolz, Fed. Rep. of Germany, assignor to Driam Metallprodukt GmbH & Co. KG, Eriskirch, Fed. Rep. of Germany

Filed May 11, 1982, Ser. No. 377,033
Claims priority, application Fed. Rep. of Germany, Aug. 12, 1981, 3131808
Int. Cl.³ B05C *5/00, 3/08*
U.S. Cl. 118—19 **20 Claims**

1. An apparatus for coating granules with layers of a hardenable substance and drying said layers, comprising:
a drum rotatable about a substantially horizontal axis and provided with a closable access aperture enabling its

loading and unloading, said drum having a peripheral wall in the shape of a hollow regular prism formed from a multiplicity of flat panels adjoining one another at obtuse angles along parting edges parallel to said axis and defining respective inner prism faces, each panel having an axially extending perforated midzone;

a set of hollow elongated baffles on each of said prism faces extending across the respective midzone and projecting in a lower region of the drum into an overlying granule bed for agitating the granules thereof, each baffle having perforated extremities laterally offset from the perforated midzone of the respective panel; and



conduit means communicating with an external source of pressurized drying fluid and forming supply channels on the outer surfaces of said panels aligned with the midzones thereof for feeding drying fluid from said source through the perforations of panels underlying the granule bed to the interior of the drum, part of the drying fluid passing from said supply channels directly into the granule bed via said midzones while another part enters the baffles on the underlying panels and reaches the granule bed through the perforated extremities thereof.

4,499,848

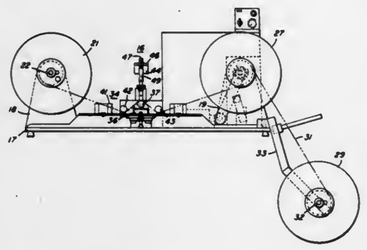
COATING APPARATUS FOR BODIES OF ELECTRICAL COMPONENTS HAVING AXIAL LEADS

John Maiocchi, Pelham, N.H., assignor to GTE Communications Products Corporation, Stamford, Conn.

Filed Dec. 19, 1983, Ser. No. 562,935

Int. Cl.³ B05C *1/02, 3/09, 9/04*

U.S. Cl. 118—45 **11 Claims**



1. Apparatus for applying film coatings of material to bodies of electrical components having axial leads, the ends of the axial leads supported in spaced relationship by a parallelly arranged pair of tapes, comprising:

a reservoir for supporting said material in a liquid state;

means for transporting said component and tape;

a sprocket adapted to rotate about its principal axis between said parallelly arranged pair of tapes, having a circumferential row of transversely oriented pockets for receiving said bodies of electrical components whereby said axial leads of received components are oriented parallel to said principal axis, said sprocket being oriented with respect to said reservoir so that, as said sprocket rotates about said principal axis, sequential ones of said pockets pass through said liquid state material, retaining menisci of said liquid state material therein, and, as said bodies are received by said menisci retained pockets on said sprocket, underside portions of said received bodies are coated with said liquid material; and

brushing means arranged over said sprocket for applying said material in said liquid state to upper portions of said received bodies, whereby said received bodies have said liquid state material applied over their entire external portions, and for smoothing said upper portions to avoid the formation of globs or blobs of said liquid state material.

4,499,849

APPARATUS FOR CLEANING A RECORDING MEDIUM

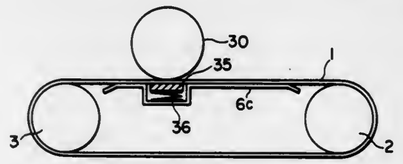
Satoru Tomita; Akira Shimura, both of Kawasaki, and Takashi Yokota, Tokyo, all of Japan, assignors to Ricoh Company, Ltd., Japan

Filed Apr. 5, 1982, Ser. No. 365,469

Claims priority, application Japan, Apr. 6, 1981, 56-51578; Apr. 10, 1981, 56-53909

Int. Cl.³ G03G *21/00*

U.S. Cl. 118—652 **21 Claims**



1. An apparatus for cleaning a recording medium in the form of an endless belt extended between at least a pair of rollers, having a recording surface on which a developed image is formed and a back surface which is on the opposite side of said recording surface, after transferring a developed image comprised of color particles and formed on said recording surface to a transfer medium thereby preparing said recording medium for use in the next cycle of operation, comprising:

means for removing residual color particles remaining on the recording surface of said recording medium after image transfer, said means for removing being disposed on the recording surface side of said recording medium;

supporting means for rotatably supporting said pair of rollers such that one of said rollers is spring-biased against said endless belt-like recording medium to keep it in tension, said supporting means including a supporting surface which faces the back side of said recording medium and which is provided with a recess;

a bar-like counter member movably disposed inside of said recess;

means for urging at least either one of said means for removing and said bar-like counter member against the other thereby bringing said means for removing and said bar-like counter member in an intended pressure contact with said recording medium from both sides such that said intended pressure contact is maintained substantially constant during the entire cleaning operation; and

means for causing a relative motion between said means for removing and said recording medium thereby allowing said means for removing to remove the residual color particles from the recording surface of said recording medium.

4,499,850

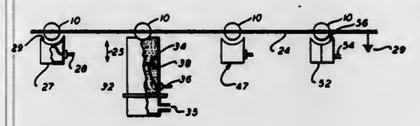
APPARATUS FOR COATING THE GLASS ENVELOPE AND PREDETERMINED PORTIONS OF THE END CAPS OF A FLUORESCENT LAMP

James D. Nolan, 623 Little Silver Point Rd., Little Silver, N.J. 07739

Division of Ser. No. 404,499, Aug. 2, 1982, which is a continuation-in-part of Ser. No. 196,077, Oct. 10, 1981, abandoned, which is a continuation of Ser. No. 44,473, Jun. 1, 1979, abandoned, which is a continuation of Ser. No. 940,292, Sep. 7, 1978, abandoned, which is a continuation of Ser. No. 759,823, Jan. 17, 1977, abandoned. This application Jul. 25, 1983, Ser. No. 516,654

Int. Cl.³ H01J *61/35*

U.S. Cl. 118—406 **4 Claims**



1. Apparatus for coating the glass envelope of a fluorescent lamp and a predetermined portion of the end caps of said lamp with a coating of polymeric material and wherein said lamp is provided with at least one electrical connecting pin on each end cap and wherein said end caps are secured to said glass envelope at radial positions with respect thereto, comprising:

(a) means for engaging said end caps of said lamp to secure said end caps against radial displacement with respect to said glass envelope;

(b) means for preheating said glass envelope and at least said predetermined portion of said end caps to a first predetermined temperature above the melting point of said polymeric material for a first predetermined period of time;

(c) means for rotating said fluorescent lamp during said preheating to insure uniform preheating of said glass envelope and said at least predetermined portion of said end caps;

(d) means for masking said pins and all of said end caps except said predetermined portion thereof;

(e) means providing a fluidized bed of powder of said polymeric material;

(f) said means for rotating sad fluorescent lamp for rotating said fluorescent lamp over said fluidized bed for a second predetermined period of time to apply a coating of said powder to said glass envelope and to said predetermined portion of said end caps;

(g) means for reheating said glass envelope and said at least predetermined portion of said end caps to a second predetermined temperature above said melting point of said polymeric material for a third predetermined amount of time to melt and fuse said powder applied to said glass envelope and said predetermined portion of said end caps to form said applied powder into said coating of polymeric material;

(h) said means for rotating said fluorescent lamp for rotating said fluorescent lamp during said reheating to assure that said applied powder is melted and fused into a substantially uniformly thick coating of said polymeric material; and

(i) means for unmasking said end caps and said pins and for disengaging said end caps.

4,499,851

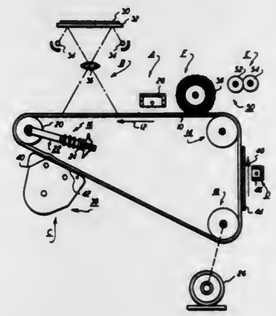
SELF-SPACED DEVELOPMENT SYSTEM

John J. Kopko, Macedon, and Dan A. Hays, Fairport, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Continuation of Ser. No. 111,450, Jan. 11, 1980, abandoned. This application Nov. 25, 1983, Ser. No. 555,258

Int. Cl.³ G03G *15/09*

U.S. Cl. 118—658 **16 Claims**



1. An apparatus for developing a latent image recorded on a flexible member, including:

a tubular member journaled for rotary movement;

means for rotating said tubular member to transport developer material into contact with the latent image in a development zone;

a magnetic member disposed interiorly of and spaced from said tubular member for attracting the developer material to said tubular member, said magnetic member being oriented so that the magnetic poles thereon generate a strong magnetic field in the development zone entrance and a weak magnetic field in the development zone; and

means for maintaining the flexible member, in at least the region of the development zone, at a pre-selected tension of sufficient magnitude so that the developer material being transported into contact with the flexible member by said tubular member is compressed between said tubular member and the flexible member in the development zone with the flexible member wrapping about at least a portion of said tubular member forming an extended development zone.

4,499,852

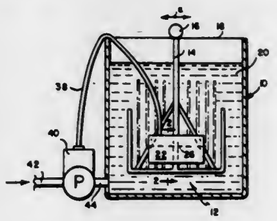
APPARATUS FOR REGULATING PLATING SOLUTION IN A PLATING BATH

B. Christian Castner, Westford, Mass., assignor to Shipley Company Inc., Newton, Mass.

Filed Jul. 15, 1980, Ser. No. 169,129

Int. Cl.³ B05C *11/10*

U.S. Cl. 118—690 **10 Claims**



1. Apparatus for regulating the concentration of dissolved metal in an electroless plating bath comprising a sensor sus-

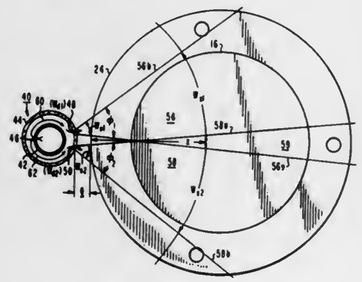
pended in the bath responsive to the concentration of said dissolved metal and capable of generating a signal, means for oscillating the sensor in the bath, a pump for supplying replenisher solution to the bath, said pump being connected a supply of replenisher solution for said dissolved metal and to the sensor operable in response to the signal from the sensor to supply replenisher solution from said source to the path in sufficient quantity to compensate for the depletion of the dissolved metal removed during the plating operation.

4,499,853

DISTRIBUTOR TUBE FOR CVD REACTOR

Edward A. Miller, Yardley, Pa., assignor to RCA Corporation, New York, N.Y.

Filed Dec. 9, 1983, Ser. No. 559,720
Int. Cl.³ C23C *13/08*
U.S. Cl. 118—725 **4 Claims**



1. An apparatus for chemically vapor-depositing a material onto surfaces of a plurality of substrates spaced apart in a stacked parallel array within a reaction chamber, wherein said substrates are heated while contacting said surfaces with a gaseous compound of said material to be deposited, said apparatus having means for rotating said substrates about an axis perpendicular to said substrates, and coaxial tubular means extending parallel to said substrate axis for providing a flow of gas carrying said material, the improvement wherein:

said coaxial tubular means comprises a first inner tube fixed coaxially within a second outer tube in fixed position within said chamber;

said first tube having a plurality of openings located along a path extending longitudinally along the surface of the first tube to direct gas in a plurality of gas streams to the inner wall of said second tube;

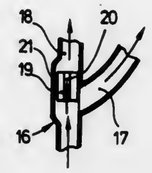
said second tube having at least two slots parallel to each other and extending longitudinally along the surface of the second tube facing said substrates to provide at least two overlapping gas streams directed towards said stack of substrates such as to pass through the spacing between the substrates and pass over the surfaces of said rotating substrates, the width of each slot being selected so that the velocity of the gas streams flowing through said slots onto said substrates is substantially free of turbulence, whereby the thickness of the deposited material on each substrate surface is substantially uniform and the deposition rate can be significantly high.

4,499,854

APPARATUS FOR CONVEYING MILK USING AN UNDERPRESSURE

Tilman Hoefelmayr, Niederteufen, Switzerland, and Jakob Maier, Tuerkheim, Fed. Rep. of Germany, assignors to Biomelktechnik Hoefelmayr & Co., Niederteufen, Switzerland

Filed Sep. 8, 1982, Ser. No. 415,869
Claims priority, application Fed. Rep. of Germany, Sep. 16, 1981, 3136841
Int. Cl.³ A01J *7/00*
U.S. Cl. 119—14.32 **17 Claims**



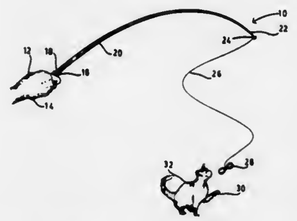
1. An apparatus for conveying milk, comprising: a milk supply device; a milk discharge pipe provided at a location spaced above said milk supply device; means for producing a vacuum in said milk discharge pipe; and means for conveying milk upwardly from said milk supply device to said milk discharge pipe, including valve means, a first milk pipe providing fluid communication between said valve means and one of said milk supply device and said milk discharge pipe, and second and third milk pipes which each provide fluid communication between said valve means and the other of said milk supply device and said milk discharge pipe; wherein said valve means is responsive to the rate of fluid flow through said conveying means for permitting and substantially obstructing fluid flow through said third milk pipe when the rate of fluid flow through said conveying means is respectively above and below a predetermined milk flow rate.

4,499,855

KITTY TEASE

John Galkiewicz, P.O. Box 120, Harrogate, Tenn. 37752

Filed Aug. 18, 1983, Ser. No. 524,420
Int. Cl.³ A01K *29/00*
U.S. Cl. 119—29 **16 Claims**



1. An entertaining and exercising toy manipulated by a human operator for a small animal such as a kitten or cat comprising:

an elongated handle member having a first end and a further end, said handle member suitable for gripping and manipulation by such human operator;

a flexible rod member having a base end and an attaching end, said base end fixedly secured to said further end of said handle member, said rod member being substantially longer than said elongated handle and having a flexibility which varies in a selected manner between said base end and said attaching end;

an attaching means fixedly secured to said attaching end of said rod member;

a substantially non-stretchable length of cord having one end secured to said attaching means; and

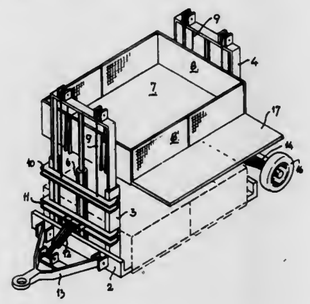
a target member attached to a further end of said length of cord, said target member being of a size and weight suitable for batting, said target member further having a cover material suitable for snagging or holding with the claws of such animal such that such animal can snag said target member and pull thereon causing said flexible rod to bend and thereby create resistance to movement of said target member by such animal for entertainment and exercise of such animal.

4,499,856

MEANS FOR LOADING FOWL ONTO A TRANSPORTING VEHICLE

Betsalel Hecht, and Silviu Hecht, both of P.O.B. 231, Ashqelon 78101, Israel

Filed Aug. 22, 1983, Ser. No. 525,546
Claims priority, application Israel, Aug. 23, 1982, 66627
Int. Cl.³ B60P *3/04*; A01K *29/00*
U.S. Cl. 119—82 **5 Claims**



1. A means for loading fowl into a transporting vehicle comprising a structure including a four-sided generally horizontally arranged chassis having a pair of opposite first sides and a pair of opposite second sides extending between said first sides with said second sides being elongated relative to said first sides, a pair of wheels located adjacent and outwardly from one of said first sides, a first hydraulic cylinder connected to said one of said first sides and to said pair of wheels for pivoting said pair of wheels in the vertical direction relative to said chassis between a first position spaced below said chassis and a second position spaced vertically upwardly from the first position relative to said chassis, coupling means located at and extending outwardly from the other said first side for attaching said structure to a prime mover, a second hydraulic cylinder connected to said coupling means and to said other first side for moving said coupling means vertically relative to said chassis between a lower position comparable to said first position of said pair of wheels and an upper position comparable to said second position to said pair of wheels, a collector cage mounted on on said chassis, said collector cage having a horizontally arranged floor, and means mounted on said chassis and connected to said collector cage for moving said collector cage upwardly and downwardly relative to said chassis so that said floor thereof is at a selected level.

4,499,857

FLUIDIZED BED FUEL BURNING

Alex F. Wormser, Marblehead, Mass., assignor to Wormser Engineering, Inc., Woburn, Mass.

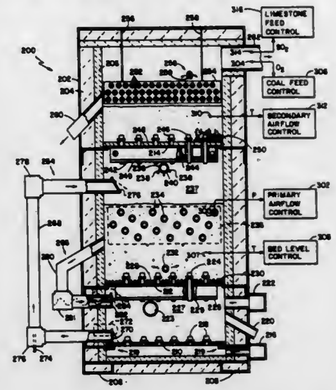
Filed Oct. 17, 1983, Ser. No. 542,646
Int. Cl.³ F22B *1/02*
U.S. Cl. 122—4 D **4 Claims**

1. A method of burning coal comprising

burning coal in a first fluidized bed chamber having tubes carrying steam heated therein, said tubes not being covered when said bed is not fluidized and being covered when said bed is fully fluidized,

treating the gaseous products of combustion from said first fluidized bed in a second fluidized bed to provide a treated stack gas,

controlling the rate of airflow into said first fluidized bed based upon the pressure of steam in said tubes,



controlling the ratio of the rate of airflow to the rate of feeding coal based upon the concentration of oxygen in said stack gas, and

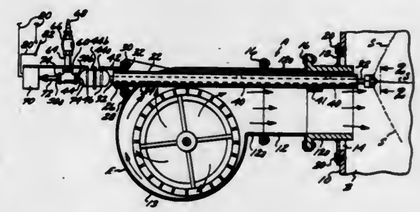
controlling the level of solids in said first fluidized bed based upon the combustion bed temperature in said first fluidized bed.

4,499,858

FUEL BURNING ASSEMBLY

Graham D. Councell, 8242 Brookgreen Rd., Downey, Calif. 90240

Filed Feb. 2, 1984, Ser. No. 576,522
Int. Cl.³ F22B *5/00*
U.S. Cl. 122—14 **4 Claims**



1. In a boiler that includes a fire box having a rearward wall that has an opening therein; a plurality of boiler tubes disposed above said fire box; a power driven blower that includes a housing that has a pressurized air discharge opening from which a tube extends to said opening in said rearward wall to discharge a current of air into said fire box; a source of pressurized flowable fuel, the combination with said boiler of a burner assembly that substantially blankets all of said boiler tubes with a sheet of flame when said fuel is burned, said burner assembly including:

a. a low speed rotational power source that includes a drive shaft, said rotational power source situated rearwardly of said housing;

b. a tubular tee that has first, second and third legs, said tee situated between said drive shaft and housing, said first and second legs axially aligned with said drive shaft;

c. an elongate tubular member that is sealingly connected to said drive shaft and rotated thereby, said tubular member

extending through said first and second legs, an opening in said housing, and longitudinally through said tube to terminate in a forward end in said fire box, with said tubular member having an apertured section within said tubular tee;

d. first means for conducting said pressurized flowable fuel from said source to said third leg, with said fuel entering said tubular member through said apertured section; and

e. second means on said forward end of said tubular member that rotate therewith for discharging said pressurized fuel therefrom as a plurality of longitudinally and laterally moving rotating streams that intermix with said current of air, with the mixture of fuel and air when burning providing said shaft of flame.

4,499,859

VAPOR GENERATOR

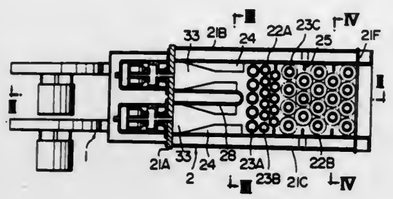
Akira Nishiguchi; Sanpei Usui; Tomihisa Oouchi, all of Ibaraki, and Kazumi Iwai, Mito, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed May 18, 1983, Ser. No. 495,584

Claims priority, application Japan, May 21, 1982, 57/84740

Int. Cl.³ F22B *5/02*

U.S. Cl. 122—18 **14 Claims**



1. A vapor generator having a burner section and a boiler section, said boiler section including an outer casing, an inner casing disposed in said outer casing, and a plurality of solution tubes attached in rows to inner surfaces of walls of said inner casing so as to extend substantially vertically, an interior of said tubes being in communication with a space accommodating a medium to be heated and defined between said inner casing and outer casing, a plurality of fins are attached to the inner surfaces of the walls of said inner casing in an area around a flame formed by said burner section, an axis of each of said solution tubes in a second row is offset from a line which extends in parallel with a flow of gas from a center of a gap between two adjacent solution pipes in a first row located upstream from said second row, as viewed in a direction of flow of the gas, a distance between the axis of each solution tube in said second row and the center of the gap between two adjacent solution tubes in said first row is greater than S/2 but not greater than (D−S)/2, where:

S represents the gap between two adjacent solution tubes in said first row, and

D represents an outside diameter of a solution tube in said second row.

4,499,860

FURNACE BUCKSTAY DESIGN

Robert W. Loomis, Tariffville, and Carl W. Lawton, West Hartford, both of Conn., assignors to Combustion Engineering, Inc., Windsor, Conn.

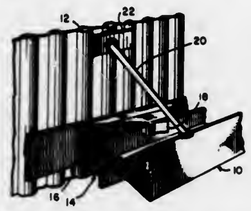
Filed Sep. 6, 1983, Ser. No. 529,308

Int. Cl.³ F22B *37/24*

U.S. Cl. 122—510 **2 Claims**

1. A rectangular furnace comprised of vertical walls formed by a series of laterally adjacent upright water-cooled tubes, and a furnace wall support system formed of a plurality of horizontally disposed buckstays extending transversely around the vertical walls of the furnace in vertically spaced arrangement from which the furnace walls are supported, characterized in that each of said plurality of buckstay beams comprises:

a. an elongated channel beam having a horizontally disposed central member and first and second vertically disposed end members extending along the lateral edges of the central member so as to form an I-beam cross-section having an upwardly facing channel and a downwardly facing channel on opposite sides of the central member, the second vertically disposed end member spaced further away from the furnace wall than the first vertically disposed end member is spaced away from the furnace wall; and



b. an anti-bucking member means associated with said channel beam for forming therewith a box-like section having a high polar moment of intertia, said anti buckling member means comprising a first elongated plate member mounted to said elongated channel beam so as to extend transversely from the second vertically disposed end member across one of the upwardly facing or the downwardly facing channels so as to form a first box-like section within the I-beam cross-section of said elongated channel beam.

4,499,861

METHOD AND APPARATUS FOR THE INJECTION OF ALCOHOL FUELS, MORE PARTICULARLY FOR DIRECT INJECTION DIESEL ENGINES

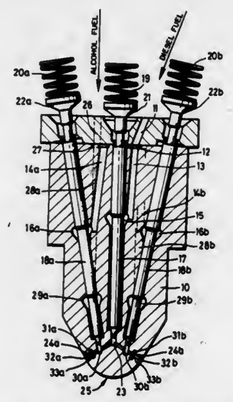
Herbert Wiegand, Cologne, and Klaus Bäumer, Bonn, both of Fed. Rep. of Germany, assignors to Deutsche Forschungs- und Versuchsanstalt fur Luft- und Raumfahrt e.V., Cologne, Fed. Rep. of Germany

Filed Nov. 14, 1983, Ser. No. 551,264

Claims priority, application Fed. Rep. of Germany, Nov. 23, 1982, 3243175

Int. Cl.³ F02B *75/12, 23/06*

U.S. Cl. 123—1 A **18 Claims**



1. A method for the injection of fuel for direct injection diesel engines, said engines having an injection pump and using alternative alcohol fuels and diesel fuel, in which at the end of the compression cycle during an injection process diesel fuel and alcohol fuel are injected from a multihole nozzle, said method comprising:

in the first phase injecting the diesel fuel having ignition qualities for the purpose of starting the combustion and raising the temperature level in the cylinder room;

in the second phase injecting a two-fuel mixture consisting of diesel and alcohol fuel for the purpose of achieving gentle ignition with continuous combustion; and

in the third phase injecting diesel fuel so that at the end of the injection process no more alcohol fuel having poor ignition qualities reaches the combustion chamber, and wherein the first and third phases are very short compared with the second phase.

4,499,862

INJECTION DEVICE FOR DIRECT INJECTION DIESEL ENGINES USING ALCOHOL AND DIESEL FUEL

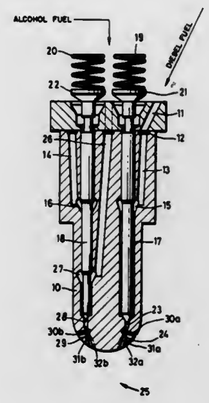
Klaus Bäumer, Bonn, and Herbert Wiegand, Cologne, both of Fed. Rep. of Germany, assignors to Deutsche Forschungs- und Versuchsanstalt fur Luft- und Raumfahrt e.V., Cologne, Fed. Rep. of Germany

Filed Nov. 14, 1983, Ser. No. 551,265

Claims priority, application Fed. Rep. of Germany, Nov. 23, 1982, 3243176

Int. Cl.³ F02B *75/12, 23/06*

U.S. Cl. 123—1 A **12 Claims**



1. In an injection device for direct injection diesel enginer using an injection ppump, wherein at the end of the compression stroke diesel fuel is injected from a spray aperture and alcohol fuel is injected from one or more spray apertures into the combustion chamber, the improvement comprising:

means for injecting the diesel fuel, which has good ignition qualities, chronologically before and chronologically after the start and end of injection for the alcohol fuel, which does not have good ignition qualities, so that during the entire injection process the diesel fuel is available as an ignition aid for the alcohol fuel.

4,499,863

METHOD OF OPERATING AN INTERNAL COMBUSTION ENGINE ON A METHANOL FUEL

Haren S. Gandhi, Farmington Hills, Mich., and William L. H. Watkins, Toledo, Ohio, assignors to Ford Motor Company, Dearborn, Mich.

Filed Nov. 4, 1982, Ser. No. 439,154

Int. Cl.³ F02M *27/02*

U.S. Cl. 123—3 **6 Claims**

1. A method of operating an internal combustion engine having combustion chambers on a methanol fuel which is characterized by the steps of:

heating at least a portion of the methanol fuel to a temperature at which at least a portion of said heated methanol fuel is vaporized;

heating at least a portion of said vaporized methanol fuel to a decomposition temperature;

passing at least a portion of said vaporized methanol fuel at said decomposition temperature over a catalyst selected from the group consisting essentially of a palladium catalyst, a platinum/palladium catalyst, and a palladium/-rhodium catalyst, thereby to decompose at least part of said vaporized methanol fuel into hydrogen and carbon monoxide;

TEMPERATURE FOR METHANOL DECOMPOSITION

CATALYST DESCRIPTION	T°(C) FOR METHANOL DECOMPOSITION				
	25%	50%	75%	90%	95%
Ni:O (Ni: 1 wt %)	340	388	625	N.R.	N.R.
3% CuO+1.5% ZnO+0.2% Cr_2O_3	290	450	625	N.R.	N.R.
Ag (0.5 wt %)	285	600	N.R.	N.R.	N.R.
Pt+Ni+0.1 wt %, (Pt/Al_2O_3 + 5%)	280	325	400	475	N.R.
Pt+Rh+0.2 wt %, (Pt/Al_2O_3 + 5%)	250	280	330	380	410
Pt+Rh+0.1 wt %, (Pt/Al_2O_3 + 5%)	266	295	320	370	N.R.
Ni+0.2 wt %	275	300	340	405	490

N.R.: NOT REACHED

injecting said vaporized methanol fuel along with said hydrogen and carbon monoxide which are the decomposition products thereof into the combustion chambers of the internal combustion engine along with oxygen and, if desired, additional methanol fuel to be burned in the combustion chambers;

burning the fuel and decomposition products thereof confined within the combustion chambers; and

exhausting from the combustion chambers exhaust gases generated by said burning of said fuel and decomposition products thereof.

4,499,864

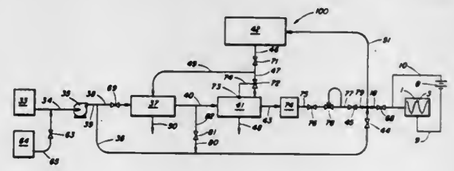
HYDRIDE COLD START CONTAINER IN FUEL TREATMENT AND DISTRIBUTION APPARATUS AND METHOD

Dale R. Lovercheck, and George P. Curran, both of Pittsburgh, Pa., assignors to Conoco Inc., Wilmington, Del.

Filed Feb. 10, 1983, Ser. No. 465,397

Int. Cl.³ F02B *43/08*

U.S. Cl. 123—3 **10 Claims**



1. A method for starting and operating an internal combustion engine comprising the steps as follows:

(a) providing a fuel distribution means in fluid communication with said engine,

(b) providing a hydride containing means in fluid communication with said distribution means, and an electrical resistance heating means adapted to heat said containing means,

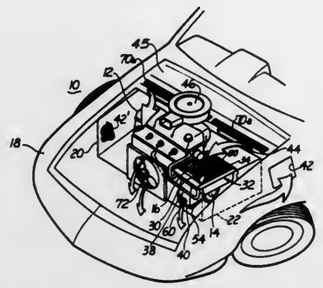
(c) providing electrical current source means,

(d) passing electrical current to said electrical resistance heating means from said electrical current source means whereby hydrogen is liberated in said containing means,

(e) passing the thus-liberated hydrogen through said fuel distribution means to said internal combustion engine,

(f) starting said internal combustion engine using said hydrogen as fuel, and
(g) operating said engine on an alternate fuel other than said hydrogen subsequent to said step of starting.

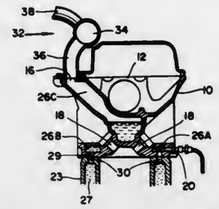
4,499,865
INTEGRAL ENGINE COOLING SYSTEM
Herbert N. Charles, Chatham, Canada, assignor to Canadian Fram Limited, Chatham, Canada
Filed Jan. 24, 1983, Ser. No. 460,105
Int. Cl.³ F01P *3/18*
U.S. Cl. 123—41.05 **3 Claims**



1. A cooling system for use with an automotive engine and an associated engine driven flywheel, said engine and flywheel positioned forwardly of a passenger compartment, comprising:
centrifugal blower means fitted to and rotatable with the flywheel for developing a pressure differential thereacross;
a housing enclosing said flywheel and said blower means for defining an air passage having a housing inlet for communicating air to said blower means and an output passage for permitting the discharge of air therethrough;
air cooled heat exchange means connected to and positioned relative to said housing to permit air to flow therethrough by virtue of the operation of said blower means;
damper means positioned within said output passage responsive to at least one engine operating parameter, for controlling the air flow therethrough; and
compartment means for enclosing said blower means and housing and oriented to prohibit the entrance of ram air thereto and including inlet means for receiving non-ram air comprising the fender walls and firewall of an automotive vehicle, a belly pan joining the lower portions of said fender walls and firewall and a hood of the automotive vehicle joining the upper portions of said fender walls and firewall, said fender walls, firewall and belly pan prohibiting the ram entry of air into said compartment means.

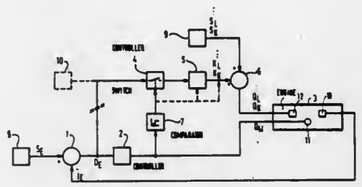
4,499,866
CYLINDER HEAD FOR INTERNAL COMBUSTION ENGINE
Yoshinori Hirano, Yokohama, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan
Filed Feb. 15, 1984, Ser. No. 580,424
Claims priority, application Japan, Feb. 17, 1983, 58-21990[U]
Int. Cl.³ F01P *3/02, 3/22*
U.S. Cl. 123—41.21 **5 Claims**

1. In an internal combustion engine
a cylinder block including a first coolant jacket into which coolant is introduced in liquid form and discharged in gaseous form;
a cylinder head removably attached to said cylinder block, said cylinder head including a structure which defines one or more combustion chambers and a second coolant jacket, said second coolant jacket including:
a first port which fluidly communicates with said first coolant jacket;
a chamber defined above the structure defining said one or more combustion chambers and said first port, said chamber being arranged to be filled with liquid coolant to a level which immerses said one or more combustion chamber defining structure;
a plurality of second ports which fluidly communicate with said chamber and through which gaseous coolant is discharged, said second ports being arranged at a level above said chamber and arranged to have a cross section which limits the discharge of liquid coolant from said chamber; and



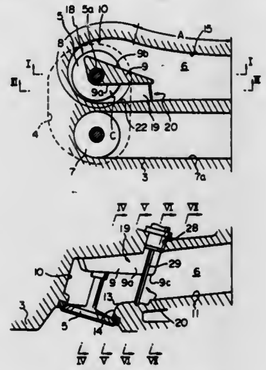
a vapor manifold mounted on said cylinder head and in fluid communication with said second ports, said vapor manifold including branch runners which each lead from a second port to a reservoir section which has an internal volume larger than said branch runners and which is located at a level above that of said second ports, said branch runners and reservoir section being arranged to cause the fluid flowing from said second ports into said manifold to reduce speed and undergo at least one sharp change in flow direction before reaching the outlet of said manifold, said outlet being arranged to have a cross sectional area less than that of said reservoir section.

4,499,867
ARRANGEMENT FOR CONTROLLING A INTERNAL COMBUSTION ENGINE EQUIPPED WITH GLOW PLUGS
Ernst Linder, Mühlacker; Winfried Moser, Ludwigsburg, and Franz Rieger, Aalen, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany
Filed May 14, 1984, Ser. No. 610,109
Claims priority, application Fed. Rep. of Germany, May 31, 1983, 3319652
Int. Cl.³ F02D *19/02*
U.S. Cl. 123—145 A **6 Claims**



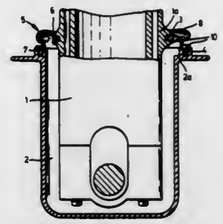
1. A control arrangement for an internal combustion engine equipped with glow-plug means, the control arrangement comprising:
desired-value generator means for generating a generator signal indicative of the desired ignition time point of combustion in a combustion chamber of the engine;
sensor means for detecting the actual ignition time point of said combustion and providing a sensor signal indicative thereof;
first circuit means responsive to said generator signal and said sensor signal for generating and adjusting a signal indicative of the heat quantity delivered to said glow-plug means;
comparator means for monitoring said heat-quantity signal and for providing an output signal when said heat-quantity signal falls beneath a predetermined value; and,
second circuit means responsive to said output signal for adjusting a control quantity of the engine.

4,499,868
INTAKE DEVICE OF AN INTERNAL COMBUSTION ENGINE
Mutsumi Kanda; Kiyoshi Nakanishi, both of Susono; Tokuta Inoue, Mishima, and Mikio Nakajima, Okazaki, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Aichi, Japan
Filed Aug. 2, 1982, Ser. No. 404,145
Claims priority, application Japan, Aug. 3, 1981, 56-120634
Int. Cl.³ F02M *35/10*
U.S. Cl. 123—188 M **23 Claims**



1. An intake device of an internal combustion engine comprising:
an intake valve having a valve stem;
an axially extending intake port passage having an inlet opening at one end thereof and having an outlet opening at the other end thereof, said intake port passage having a substantially cylindrically extending circumferential wall which circumferentially extends about said valve stem, a first side wall which extends between said inlet opening and said circumferential wall along an axis of said intake port passage, a second side wall which extends between said inlet opening and said circumferential wall along the axis of said intake port passage and is arranged to face said first side wall, an upper wall which extends between said inlet opening and said circumferential wall along the axis of said intake port passage, and a bottom wall which extends between said inlet opening and said circumferential wall along the axis of said intake port passage;
a separating wall projecting downwardly from said upper wall and spaced from said bottom wall, said separating wall extending along the axis of said intake port passage and being spaced from said circumferential wall for defining a helical portion having a helix terminating portion between said separating wall and said circumferential wall, said separating wall being spaced from said first side wall for defining therebetween an inlet passage portion tangentially connected to said helical portion, said separating wall being spaced from said second side wall for defining therebetween a bypass passage which interconnects said inlet passage portion to said helix terminating portion;
normally closed valve means arranged in said bypass passage for controlling the flow area of said bypass passage; and
actuating means for actuating said valve means in response to the change in the operating condition of the engine to open said valve means when the engine is operating at a high speed under a heavy load.

4,499,869
RECIPROCATING INTERNAL COMBUSTION ENGINE
Tomas Visek, Steyr, Austria, assignor to Steyr-Daimler-Puch Aktiengesellschaft, Vienna, Austria
Filed Feb. 8, 1984, Ser. No. 578,202
Claims priority, application Austria, Feb. 10, 1983, 454/83
Int. Cl.³ F02F *7/00*
U.S. Cl. 123—195 C **6 Claims**

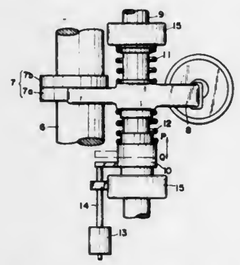


1. In a reciprocating internal combustion engine comprising
an outer pan having a peripherally extending, annular top edge portion formed with a peripherally extending first annular groove having confronting side faces,
an engine block mounted in said outer pan and formed in its outside peripheral surface with a peripherally extending second annular groove having confronting side faces, and
a flexible frame-shaped oil seal surrounding said engine block and extending into said first and second annular grooves in sealing contact with said side faces,
the improvement residing in that
said oil seal comprises first and second fins extending into said first and second grooves, respectively, throughout the length thereof and a frame-shaped flexible profiled connecting portion, which connects said fins throughout the length thereof and has in cross-section an outwardly convex portion, which protrudes laterally outwardly above said top edge portion,
each of said fins has side faces formed with a plurality of transversely deflectable, longitudinal ribs in sealing contact with said side faces of the associated one of said grooves,
the thickness of each of said fins, inclusive of said ribs, in an unstressed condition exceeds the width of the associated groove, and
the thickness of said flexible connecting portion is smaller than the thickness of each of said fins.

4,499,870
MULTI-CYLINDER INTERNAL COMBUSTION ENGINE
Shunichi Aoyama, Yokosuka, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan
Filed Apr. 26, 1983, Ser. No. 488,688
Int. Cl.³ F02D *13/06*
U.S. Cl. 123—198 F **6 Claims**

1. A multi-cylinder internal combustion engine comprising at least one cylinder having an intake valve and an exhaust valve and being adapted to operate under partially and fully loaded conditions, at least one cylinder having an intake valve and an exhaust valve and being adapted to be inoperative under said partially loaded condition, an axially fixed camshaft, and controlling means which, under said partially loaded condition, continuously closes the intake valve of the inoperative cylinder and periodically opens the exhaust valve of the inoperative cylinder on the exhaust stroke and on the intake stroke of the inoperative cylinder, said controlling means comprising at least four cams having different profiles and fixed to said

camshaft and at least two rocker arms each of which is displaceable for selectively contacting one of said cams to control



the intake and exhaust valves of the inoperative cylinder, respectively.

4,499,871

FUEL INJECTION METHOD AND ARRANGEMENT FOR DIRECT-INJECTION INTERNAL COMBUSTION ENGINES

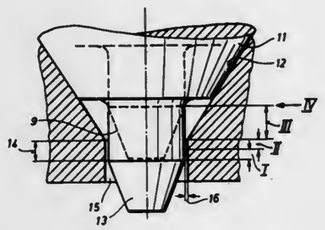
Alfred Neitz, Röthenbach; Nunzio D'Alfonso, and Hans Pickel, both of Nuremberg, all of Fed. Rep. of Germany, assignors to M.A.N. Maschinenfabrik Ausburg-Nürnberg AG, Nuremberg, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 334,003, Dec. 23, 1981, abandoned, which is a continuation of Ser. No. 154,107, May 28, 1980, abandoned. This application Aug. 4, 1983, Ser. No. 520,147

Claims priority, application Fed. Rep. of Germany, Jun. 12, 1979, 2923670

Int. Cl.³ F02B *3/04;* F02D *5/06*

U.S. Cl. 123—276 **30 Claims**



1. An air-compression, direct-injection internal combustion engine with compression-ignition or spark-ignition comprising:

(a) a cylinder;

(b) a piston reciprocable in said cylinder and having a crown, said crown being provided with a combustion chamber having the shape of a body of rotation, and said crown defining a wall which surrounds said combustion chamber;

(c) admitting means for admitting air into said combustion chamber, said admitting means being arranged to generate an air swirl in said combustion chamber which circulates about the axis of the latter;

(d) fuel injection means for injecting fuel into said combustion chamber, said injection means being provided with a fuel discharge passage and including a member movable between a closed position of said passage and a plurality of open positions of said passage, and said injection means being designed such that the effective cross-sectional area of said passage varies during movement of said member between said positions; and

(e) control means for controlling said member so as to regulate the quantity of fuel which is injected into said combustion chamber as a function of at least one of the parameters load and speed of said engine, said control means being designed to move said member in such a manner that at least the predominant part of the fuel impinges upon said wall within the upper range of said one parameter to subsequently evaporate from said wall and mix with the air while at least the predominant part of the fuel mixes directly with the air during idling as well as in the lower range of said one parameter, and said control means also being designed so that the effective cross-sectional area of said passage in the lower range of said one parameter is maintained between 3 and 15% of the effective cross-sectional area of said passage at maximum output, said injection means and said control means further being designed in such a manner that the maximum injection pressure at said passage at nominal rating is 2 to 3 times the pressure required to open said passage.

4,499,872

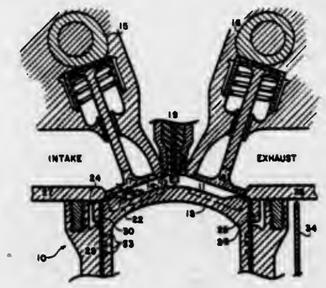
ULTRA LEAN BURN CARBURETTED ADIABATIC ENGINE

Michael A. V. Ward, Lexington, Mass., and Robert P. Lefevre, Dover, N.H., assignors to Combustion Electromagnetics, Inc., Arlington, Mass.

Filed Jan. 10, 1983, Ser. No. 456,612

Int. Cl.³ F02D *13/02;* F02P *15/02*

U.S. Cl. 123—344 **31 Claims**



1. Internal combustion engine apparatus comprising:

(a) means defining at least one compression/expansion chamber,

(b) a movable compression/expansion element moveable within such chamber,

said parts (a) and (b) being constructed and arranged to provide cyclic compression and expansion of a combustion space within such chamber through regular cyclic movement of such members,

(c) means for providing a very lean air and fuel mixture with an average precombustion equivalence ratio Φ of less than 0.75 in all but high load/acceleration conditions

(d) means for admitting air and fuel to such space,

(e) electrical means for igniting, combined with means for stimulating combustion of, said very lean mixture, such that on the average the real fuel ideal otto cycle mean gas ranking temperature T_g for this engine is within two thirds and four fifths that of the "conventional standard" engine ($T_g \simeq \frac{3}{4} T_g$),

(f) means for exhausting combustion gas from such chamber space,

(g) means for extracting work from the expansion driven movement of said moveable member and returning work for compression movement thereof, and

(h) means for limiting cooling of the chamber walls adjacent to the combustion space,

the apparatus as a whole being constructed and arranged to enable essentially adiabatic operation of the engine.

18. A method for operation of an internal combustion power system of the type utilizing a multi-cylinder engine housing with pistons movable in cylinders and connected to a work-

extracting drive system arranged for extracting work from the pistons in cyclic alteration on expansion strokes thereof, caused by combustion of an air/fuel mixture; and returning work to the pistons to drive them in, cyclic alternation, in compression strokes comprising the steps of:

(a) controlling the air/fuel mixture to a lean condition of equivalence ratio Φ of less than 0.75 except under engine high load/acceleration,

(b) limiting the burn time of said mixture by a factor of at least two compared to the burn time of that mixture with conventional single point spark ignition and no microwave stimulation in a similar chamber with liquid cooling,

(c) retaining heat left in the combustion zone after expansion and imparting such heat from a previous expansion to air/fuel mixture admitted in a next compression step, to preheat mixture in such compression step to aid in the reduction of the burn time, except under high load/acceleration conditions.

4,499,873

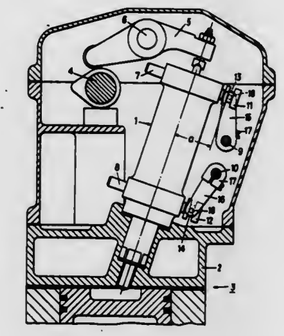
CONTROL ROD SYSTEM FOR FUEL INJECTION DEVICES FOR DIESEL ENGINES

Gerhard Lehner, Hallein, Austria, assignor to Friedmann & Maier Aktiengesellschaft, Friedmannstrasse, Austria

Filed Jan. 12, 1981, Ser. No. 224,449

Int. Cl.³ F02M *59/20*

U.S. Cl. 123—372 **4 Claims**



1. Control rod system for fuel injection devices for Diesel engines having cylinders arranged in at least one row having a longitudinal axis, of the type in which fuel injection pump and fuel injection nozzle are combined in one pump-nozzle-unit associated with one engine cylinder each, the unit including a housing and two axially shiftable control rods integrated with the pump-nozzle-unit and influencing different operational parameters, the integrated control rods being adapted to be coupled with control members arranged on the engine, characterized in that, the control members arranged on the engine are designed as control shafts rotatably supported in parallel relation to the longitudinal axis of the engine, in that the control rods are guided within the housing of the pump-nozzle-unit for being shifted in approximately perpendicular direction to the longitudinal axis of the engine, in that lever arms are arranged on the control shafts and designed for engaging slide pieces arranged on the control rods in that the control rods are, as seen in axial direction of the pump-nozzle-unit, laterally offset one with respect to the other and in that, as seen in axial direction of the pump-nozzle-unit at least the slide piece of the control rod located less remote from the nozzle is with the control rod retracted not overlapping at least the control shaft located more remote from the nozzle.

4,499,874

SYSTEM FOR CONTROLLING THE IGNITION TIMING OF AN ENGINE

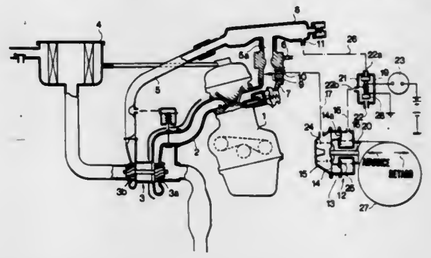
Katsuhiko Sugiura, Tama, Japan, assignor to Fuji Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 5, 1984, Ser. No. 586,573

Claims priority, application Japan, Mar. 7, 1983, 58-37185

Int. Cl.³ F02P *5/04*

U.S. Cl. 123—407 **3 Claims**



1. A system for controlling the ignition timing of an engine provided with a distributor, a throttle valve, and a supercharger having a compressor provided in an intake passage of the engine, comprising;

a vacuum advance device comprising two chambers defined by at least one diaphragm and a rod connecting said diaphragm to an advance mechanism of said distributor;

a signal port provided in the wall of said intake passage at a position the pressure at which varies with the variation of the opening degree of said throttle valve;

a first passage communicating one of said chambers with said signal port;

three-way valve means having three ports,

said three-way valve means having a first port communicated with the other chamber of said vacuum advance device, a second port communicated with said intake passage at the upstream side of the throttle valve, and a third port communicated with the atmosphere;

means responsive to temperature for operating said three-way valve means so as to open said third port and to close said second port at temperature higher than a predetermined temperature and to close said third port and to open said second port at temperature lower than said predetermined temperature where knocking hardly occurs,

said vacuum advance device being so arranged that said diaphragm is deflected by the pressure in the intake passage in the advance direction at said lower temperature conditions.

4,499,875

CONTROL UNIT MODIFIABLE ENGINE IGNITION CONTROL APPARATUS

Hiroomi Katayama, Machida; Yoshiaki Hirosawa, Sbiki, and Masahiko Fujii, Yokohama, all of Japan, assignors to New Nippon Electric Co., Ltd., Osaka and Honda Giken Kogyo Kabushiki Kaisha, Tokyo, both of, Japan

Filed Oct. 12, 1982, Ser. No. 433,911

Claims priority, application Japan, Oct. 12, 1981, 56-160914

Int. Cl.³ F02P *5/00*

U.S. Cl. 123—416 **10 Claims**

1. An engine ignition control apparatus for an engine with a crank, comprising:

N reference position sensors, positionable next to the engine, for sensing the position of the engine and for generating reference position signals therefrom, where N is greater than or equal to 1;

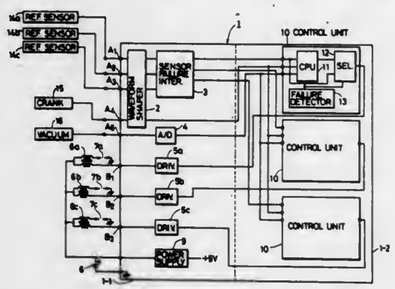
a crank angle sensor, positionable next to the engine crank, for sensing the angle of the engine crank and for generating crank angle signals therefrom;

a vacuum sensor, operatively connectable to the engine, for generating a vacuum signal;

waveform shaping means, operatively connected to said crank angle sensor and said N reference position sensors, for shaping the crank angle and reference position signals;

interpolation means, operatively connected to said waveform shaping means, for interpolating the reference position signals when one or more of the N reference position sensors fail; and

a single ignition control module comprising N interchange-



able control means, operatively connected to said waveform shaping means, said interpolation mans and said vaccum sensor and each corresponding to a respective one of said N reference position sensors, for generating ignition control signals, each of said N control means generating respective ignition control signals in dependence upon the crank angle signal, the respective reference position signal and the vacuum signal; and

N ignition assemblies, each operatively connected to the respective one of said N control means, for providing engine ignition.

4,499,876

FUEL INJECTION CONTROL FOR INTERNAL COMBUSTION ENGINES

Yoshihisa Yamamoto, Kariya, Japan, assignor to Nippondenso Co., Ltd., Kariya, Japan

Filed Sep. 30, 1982, Ser. No. 428,619

Claims priority, application Japan, Oct. 30, 1981, 56-173833; Jan. 20, 1982, 57-7199

Int. Cl.³ F02B *77/00*

U.S. Cl. 123—446 **9 Claims**

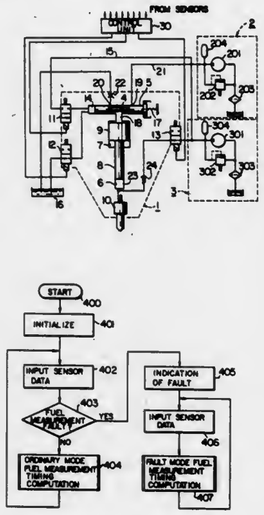
1. A method of controlling the injection of fuel into an internal combustion engine having a plurality of unit injectors provided one for each cylinder of the engine and each responsive to electric signals to control the injection of fuel therefrom, said method comprising the steps of:

detecting an operating condition of said engine by sensor means;

discriminating the presence or absence of a malfunction in the injection of fuel from each said injector in accordance with said engine operating condition detected by said sensor means; and

supplying, upon discrimination of a malfunction in the injector of any one of said cylinders, to said malfunctioning injector electric control signals which are required for continued operation of said engine but different from those required for a normal operation of said engine,

wherein said control signal supplying step supplies electric control signals for cutting off the injection of fuel to said malfunctioning injector and the injector of at least one of said cylinders has a particular order of arrangement relation with the order of arrangement of the other one of said cylinders associated with said malfunctioning injector



from the standpoint of balance in the generation of power output.

4,499,877

IGNITION TIMING CONTROL DEVICE FOR AN INTERNAL COMBUSTION ENGINE

Toshio Iwata, Himeji, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

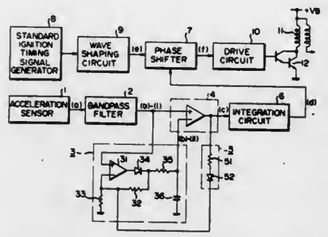
PCT No. PCT/JP81/00096, § 371 Date Dec. 8, 1981, § 102(e) Date Dec. 8, 1981, PCT Pub. No. WO81/03049, PCT Pub. Date Oct. 29, 1981

PCT Filed Apr. 23, 1981, Ser. No. 329,352

Claims priority, application Japan, Apr. 23, 1980, 55-55682

Int. Cl.³ F02P *5/14*

U.S. Cl. 123—425 **10 Claims**



1. An ignition timing control device for an internal combustion engine of a vehicle, which comprises:

a signal generating means for generating a standard ignition timing signal;

a vibration detecting means for generating a signal having a noise signal component and a knocking signal component, said signal being generated in response to the vibrations of said engine;

a noise level detecting means for generating a comparative signal in response to said noise signal component, said comparative signal normally being larger in value than said noise signal component;

a comparator, having one input which is connected to an output of said vibration detecting means and having another input which is connected to an output of said noise level detecting means, for comparing said signal from said vibration detection means with said comparative signal from said noise level detecting means, and for preventing said noise signal component from passing therethrough, thereby allowing only said knocking signal component to appear at its output;

an integration circuit whose input is connected to said output of said comparator for integrating said knocking signal component on said output of said comparator;

a phase shifting means for controlling a phase retard angle of said standard ignition timing signal in response to said integrated knocking signal component on an output of said integrator; and

a switching means connected to an output of said phase shifting means, for intermittently interrupting a power supply which is connected to an ignition coil of said vehicle in response to a phase retarded ignition timing signal from said phase shifting means, so as to thereby eliminate knocking in said engine;

further comprising:

a feedback means for preventing said noise signal component from erroneously appearing on said output of said comparator when said noise signal component continues to appear on said output of said comparator for a predetermined time.

4,499,878

FUEL INJECTION SYSTEM FOR AN INTERNAL COMBUSTION ENGINE

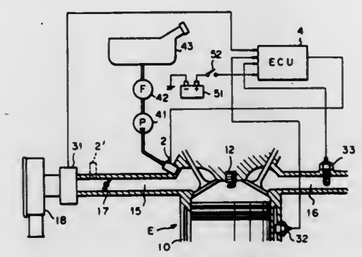
Toshihiko Igashira, Toyokawa; Taro Tanaka, Nagoya, and Yasuyuki Sakakibara, Nishio, all of Japan, assignors to Nippon Soken, Inc., Nishio, Japan

Filed Oct. 21, 1983, Ser. No. 544,417

Claims priority, application Japan, Oct. 25, 1982, 57-187157; Jul. 2, 1983, 58-119489; Jul. 11, 1983, 58-124823; Aug. 12, 1983, 58-146731; Aug. 20, 1983, 58-152059

Int. Cl.³ F02M *51/04, 51/02, 39/02*

U.S. Cl. 123—478 **10 Claims**



1. A fuel injection system for an internal combustion engine comprising:

a unit injector for compressing the fuel and injecting a predetermined amount of the fuel, said unit injector including an actuator adapted to be expanded or compressed with a predetermined stroke in response to a supplied voltage, a piston for taking in fuel to a pump chamber and compressing said taken-in fuel, and an injection valve for injecting said compressed fuel; and

electronic control means for controlling, independently of the rotation of the engine, the frequency of the voltage supplied to said actuator and controlling accordingly the amount of fuel injection in accordance with the frequency of the voltage supplied to said actuator.

4,499,879

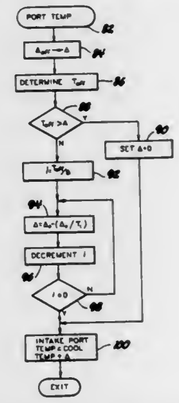
FUEL SUPPLY SYSTEM FOR AN INTERNAL COMBUSTION ENGINE

Donald D. Stoltman, Henrietta, and Gary A. Nichols, Rochester, both of N.Y., assignors to General Motors Corporation, Detroit, Mich.

Filed Apr. 28, 1983, Ser. No. 489,696

Int. Cl.³ F02B *3/00*

U.S. Cl. 123—480 **3 Claims**



1. A system for providing the fuel requirements of an internal combustion engine cooled by a liquid coolant circulated therethrough and having an air-fuel intake region whose temperature increases to a value above the coolant temperature during engine operation, the system comprising:

means effective to sense the coolant temperature;

means effective to generate an estimated temperature signal having a value representing an estimated temperature of the air-fuel intake region, the last mentioned means (A) determining the value of the estimated temperature signal in accord with a predetermined engine operation schedule based on the elapsed time of engine operation and the sensed coolant temperature and (B) determining the value of the estimated temperature signal in accord with a predetermined engine shut down schedule based on the elapsed time of engine shut down and the sensed coolant temperature; and

means effective to supply fuel to the air-fuel intake region in accord with the value of the estimated temperature of the air-fuel intake region.

4,499,880

AIR-FUEL RATIO CONTROLLING APPARATUS FOR INTERNAL COMBUSTION ENGINE

Masayuki Miki, Katsuta; Seikou Suzuki, Hitachiota, and Takao Sasayama, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Nov. 8, 1982, Ser. No. 439,878

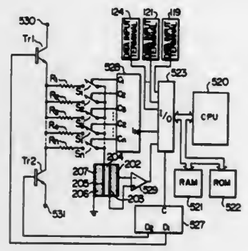
Int. Cl.³ F02M *7/18*

Claims priority, application Japan, Nov. 11, 1981, 56-179772

U.S. Cl. 123—489 **3 Claims**

1. In an air-fuel ratio controlling apparatus for internal combustion engines, comprising means for supplying fuel in accordance with the operation parameters of the internal combustion engine, an exhaust gas sensor including a pump cell, a sensor cell and a reference gas layer formed hermetically between said sensor cell and said pump cell for producing an electrical output in accordance with the oxygen in the exhaust gas, and control means for controlling at least selected one of the fuel and the air supplied to the internal combustion engine in accordance with the output of said exhaust gas sensor, so that the mixture gas supplied to the internal combustion engine is controlled to a predetermined air-fuel ratio; the improve-

ment further comprising operating mode detector means for detecting the operating mode of the internal combustion engine, and setting means for setting the oxygen concentration of said reference gas layer to a predetermined concentration in accordance with the output of said operating mode detector means, wherein said setting means includes pump cell drive means for controlling the electric charges supplied to said pump cell, said pump cell drive means including a current



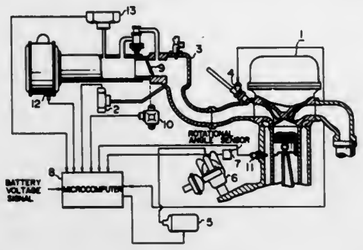
source and current source drive means for determining the drive time of said current source, and wherein said current source drive means includes integrator means for integrating the output of said current source, comparator means for comparing the output of said integrator means with an integration target value corresponding to a setting of the oxygen concentration of the reference gas layer, and means for cutting off said current source in accordance with the output of said comparator means.

4,499,881

METHOD AND APPARATUS FOR CONTROLLING INTERNAL COMBUSTION ENGINES

Mitsunori Takao, Kariya, Japan, assignor to Nippondenso Co., Ltd., Kariya, Japan

Filed May 14, 1982, Ser. No. 378,394
Claims priority, application Japan, May 18, 1981, 56-74626
Int. Cl.³ F02B *3/00*
U.S. Cl. 123—492 **8 Claims**



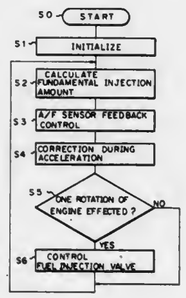
1. A method of controlling a quantity of fuel supply to an internal combustion engine comprising the steps of:
(a) sampling at least one of controlling factors indicative of load conditions of said engine at intervals of a given period to obtain an incremental or decremental amount of change of said controlling factors;
(b) obtaining a change in the amount of change of said controlling factors at predetermined sampling intervals; and
(c) obtaining data for correcting said controlling factors for controlling the quantity of fuel supply to said engine in accordance with the amount of change of said controlling factors and the change in the amount of change of said controlling factors.

4,499,882

SYSTEM FOR CONTROLLING AIR-FUEL RATIO IN INTERNAL COMBUSTION ENGINE

Kimitaka Saito, Okazaki; Tokio Kohama, Nishio; Tsuneyuki Egami, Aichi; Tsutomu Saito, Okazaki; Susumu Nogami, and Yukio Suzuki, both of Toyota, all of Japan, assignors to Nippon Soken, Inc., Nishio and Toyota Jidosha Kabushiki Kaisha, Toyota, both of, Japan

Filed Dec. 29, 1983, Ser. No. 566,815
Claims priority, application Japan, Jan. 14, 1983, 58-3288
Int. Cl.³ F02B *3/00*
U.S. Cl. 123—492 **9 Claims**



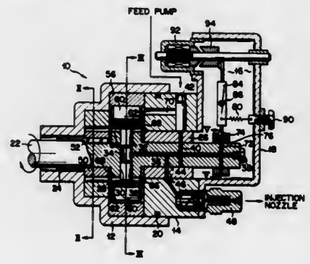
1. A system for controlling the air-fuel ratio in an internal combustion engine comprising:
a transient fuel amount increasing means for regulating the supply fuel amount in the transient state of the engine on the basis of the detection of the transient state of the engine;
an air-fuel ratio deviation detecting means for detecting the deviation of the air-fuel ratio in the transient state of the engine from the optimum air-fuel ratio; and
a transient fuel increase amount correcting means for correcting the fuel increase amount in the transient state of the engine in accordance with the air-fuel ratio deviation detected by said air-fuel ratio deviation detecting means.

4,499,883

DISTRIBUTOR TYPE FUEL-INJECTION PUMP FOR DISTRIBUTING FUEL TO CYLINDERS OF AN INTERNAL COMBUSTION ENGINE

Masahiko Miyaki, Oobu; Akira Masuda, and Toshimi Matsumura, both of Aichi, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Dec. 22, 1983, Ser. No. 564,408
Claims priority, application Japan, Dec. 26, 1982, 57-228567
Int. Cl.³ F04B *19/00*
U.S. Cl. 123—503 **8 Claims**



1. A distributor type fuel-injection pump for distributing fuel to individual cylinders of an internal combustion engine, comprising:

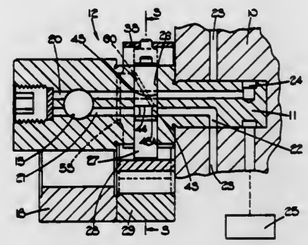
a housing;
a rotor disposed in the housing and rotated by the engine, said rotor having therein a cylindrical bore extending at right angles to the axis of said rotor, a fuel passage opening into the cylindrical bore and extending along the axis of said rotor, and spill holes as many as the engine cylinders, opening into the fuel passage and having ports circumferentially arranged at regular intervals on the outer peripheral surface of said rotor;
a pair of plungers slidably fitted in the cylindrical bore of said rotor, opposed end faces of said plungers defining a fuel pumping chamber in the cylindrical bore;
fuel supply means for supplying fuel to said fuel pumping chamber;
cam means engaging the two plungers in said housing, said cam means being adapted to reciprocate both said plungers in the cylindrical bore as said rotor rotates, whereby a fuel pressurization process is repeated at a frequency equivalent to the number of the engine cylinders for each revolution of said rotor;
distribution/delivery means for distributing and delivering the fuel pressurized in the fuel pumping chamber to the individual engine cylinders through the fuel passage;
a control sleeve fitted on the outer peripheral surface of said rotor so as to be able to slide along the axis of said rotor, said control sleeve having on the inner peripheral surface thereof first and second spill grooves capable of communicating with each of the spill holes, at least one end of each the spill groove opening to the outer side face of said control sleeve, the circumferential distance between the first and second spill grooves varying along the axis of said rotor, whereby the opening and closing of the spill holes in each fuel pressurization process are controlled by the first and second spill grooves, so that the timing for the start of fuel delivery and the timing for the end of fuel delivery, which define the amount of fuel delivery, are determined in each fuel pressurization process; and
adjusting means for moving said control sleeve along the axis of said rotor to adjust the amount of fuel delivery.

4,499,884

FUEL INJECTION PUMPS

Robert T. J. Skinner, High Wycombe, England, assignor to Lucas Industries Public Limited Company, Birmingham, England

Filed Nov. 14, 1983, Ser. No. 551,161
Claims priority, application United Kingdom, Dec. 8, 1982, 8235049
Int. Cl.³ F02M *41/08, 37/04*
U.S. Cl. 123—506 **12 Claims**



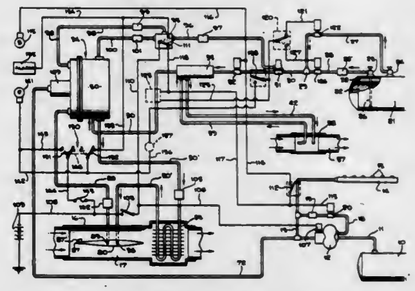
1. A rotary distributor type fuel injection pump for supplying fuel to internal combustion engines more particularly of the compression ignition type, the pump comprising a rotary distributor member mounted in a pump body and arranged in use to be driven in timed relationship with the associated engine, a pump bore formed in the distributor member, a reciprocable pumping plunger slidable in the pump bore, cam means including a cam lobe for effecting inward movement of the pumping plunger as the distributor member rotates, a delivery passage in the distributor member and an outlet port in the body, said delivery passage communicating with said pump bore and being positioned to register with said outlet when fuel is displaced from said pump bore, means for supplying fuel to said pump bore and fuel control means for controlling the amount of fuel supplied to said outlet, said fuel control means including a valve member carried by the distributor member and further cam means for actuating said valve member, said valve member when in an operative position causing fuel to spill from said pump bore, said valve member being slidable in a radial bore in the distributor member, a pair of ports opening into said bore at axially spaced positions, one of said ports communicating with said delivery passage and the other port with a low pressure, said valve member being of cylindrical form having a groove intermediate its ends, said groove communicating with said pump bore, the arrangement being such that when the valve member is in its inoperative position said one port will be open to said groove and the pump bore but in the operative position of the valve member, said other port will be open to said groove to allow fuel to spill from the bore, the one port during movement of the valve member to its operative position being progressively covered to control the rate at which fuel can flow from said outlet.

4,499,885

SUPPLEMENTAL SYSTEM FOR FUEL AGENCY

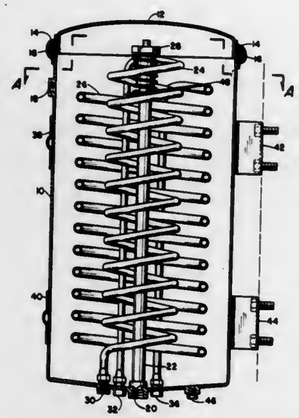
Joseph Weissenbach, deceased, late of Los Angeles, Calif., and by Jane A. Shahrokh-Khani, executor, 1472½ Morton Pl., Los Angeles, Calif. 90026

Continuation of Ser. No. 441,808, Nov. 2, 1982, abandoned, and a continuation-in-part of Ser. No. 36,496, May 7, 1979, abandoned, Continuation-in-part of Ser. No. 664,479, Mar. 8, 1976, abandoned, and Ser. No. 263,708, May 14, 1981, abandoned. This application Aug. 30, 1983, Ser. No. 527,874
Int. Cl.³ F02M *13/08*
U.S. Cl. 123—525 **63 Claims**



1. A supplemental fuel system for an engine which has a combustion chamber, a conduit thereto for a flowing combustion air supply, a primary source for primary fuel, primary delivery means between said primary source and said combustion chamber, and primary fuel pressure means for said primary delivery means, a supplemental source for a supplemental fuel agency including a supplemental delivery means between said supplemental source and said air supply, and an automatic flow control means in said supplemental delivery means for establishing an initial open flow condition therein, a temperature moderator for said supplemental delivery means responsive to temperature of said air supply for moderating the temperature of said supplemental fuel agency, a main electrical circuit for said primary fuel pressure means having an ignition switch therein, adjusting means in said electrical circuit for establishing flow conditions in said primary delivery means and automatic compensating means for regulating the flow condition in said supplemental delivery means reponsive to the flow condition in said primary delivery means.

4,499,886
DIESEL FUEL HEATER
Kenneth W. Hinds, Rte. 4, Box 474, Springdale, Ark. 72764
Filed Jun. 10, 1982, Ser. No. 386,887
Int. Cl.³ F02M *31/00*
U.S. Cl. 123—557 **4 Claims**



1. In a diesel engine containing a fuel tank with diesel fuel and crankcase with oil, the specific improvement consisting of an apparatus to heat fuel comprising:

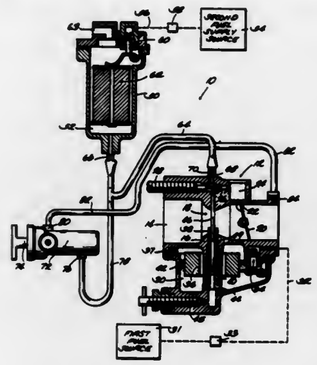
(a) a closed container equipped with an oil inlet and oil outlet and adapted to circulate hot crankcase oil from the engine through the interior of said closed container wherein said closed container is an essentially vertical cannister with removable lid;

(b) a first heat exchanger means comprising essentially vertical concentric coils of a first tubing wherein said first heat exchanger means is within said closed container attached to a separate inlet and outlet and adapted to circulate diesel fuel coming from the fuel tank and going to the engine in indirect liquid/liquid contact with said hot crankcase oil within said closed container thus heating said fuel before combustion; and

(c) a second heat exchanger means comprising essentially vertical concentric coils of a second tubing within said closed container attached to another separate inlet and outlet and adapted to circulate excess diesel fuel, recycled from the engine and going to the fuel tank, in indirect liquid/liquid contact with said hot crancase oil within said closed container thus heating said fuel being returned to the fuel tank and wherein said oil outlet further comprises a vertical tube within said container which rises within said container to a level above the top of said coils and terminates in a means to control the rate of oil flow through the container during operation of the engine.

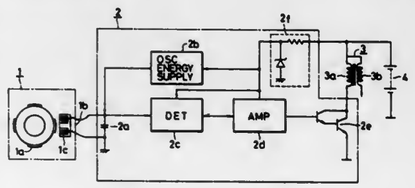
4,499,887
DUAL FUEL SUPPLY SYSTEM
Henry C. Billingsley, Waukegan, Ill., and Amos M. Clark, Kenosha, Wis., assignors to Outboard Marine Corporation, Waukegan, Ill.
Filed Jan. 28, 1983, Ser. No. 461,866
Int. Cl.³ F02M *13/04*
U.S. Cl. 123—575 **10 Claims**

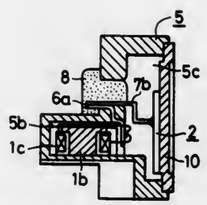
1. A fuel supply system comprising a carburetor including an fuel/air induction passage having means defining a low pressure zone, a secondary orifice communicating with said induction passage downstream of said low pressure zone, a cavity communicating with said secondary orifice, first fuel supply means including a source of a first fuel and means operable to simultaneously supply the first fuel to said low pressure zone and to said cavity, and second fuel supply means including a



source of a second fuel and means operable to supply the second fuel to said cavity simultaneously with the first fuel.

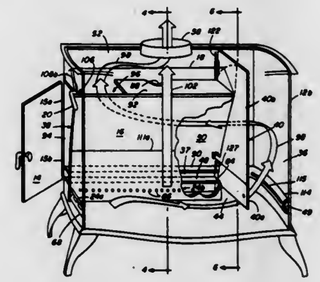
4,499,888
IGNITION SYSTEM FOR INTERNAL COMBUSTION ENGINE
Toshiyuki Hino, and Katsuyoshi Masuno, both of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Filed Sep. 29, 1982, Ser. No. 427,099
Claims priority, application Japan, Oct. 1, 1981, 56-146935[U]
Int. Cl.³ F02D *7/00*
U.S. Cl. 123—615 **6 Claims**





1. An ignition system for an internal combustion engine, comprising: a signal rotor (*1a*) driven in synchronism with an internal combustion engine, a core (*1b*) disposed in confronting relation to said rotor and having a coil (*1c*) wound thereabout, a capacitor (*2a*) connected to said coil to form a resonant circuit therewith, a supply circuit (*2b*) for supplying said resonant circuit with oscillation energy, a threshold detector circuit (*2c*) for detecting the condition of oscillation of said resonant circuit, an amplifier (*2d*) for amplifying an output signal from said detector circuit, a switching element (*2e*) driven by an output signal from said amplifier, an ignition coil (*3*) for generating a high voltage in response to intermittent operation of said switching element, and a single casing having an open end, said casing including a first housing portion (*5a*) accommodating said core and coil, and a second housing portion (*5c*) communicating with said first housing portion and accommodating an electronic circuit unit (*2*) including said capacitor, oscillation energy supply circuit, oscillation detector circuit, amplifier and switching element.

4,499,889
METHOD AND APPARATUS FOR IMPROVED CONSTRUCTION OF FUEL BURNING HEATING ASSEMBLIES
Duncan C. Syme, Chelsea, Vt., assignor to Vermont Castings, Inc., Randolph, Vt.
Filed Jun. 18, 1980, Ser. No. 160,548
Int. Cl.³ F24C *1/08*
U.S. Cl. 126—75 **17 Claims**



1. A fuel burning heating apparatus comprising

a heat conducting frame having a door,

a baffle assembly,

said frame enclosing said baffle assembly, and said baffle assembly in combination with said frame defining

a front primary combustion chamber further defined in part by said door and accessible therethrough,

a rear secondary combustion chamber behind and in gaseous communication with said primary combustion chamber,

an opening at a bottom portion of said apparatus connecting said primary and secondary combustion chambers for said gaseous communication therebetween, and

a flue gas exit path from said secondary combustion chamber to an exit aperture in said frame,

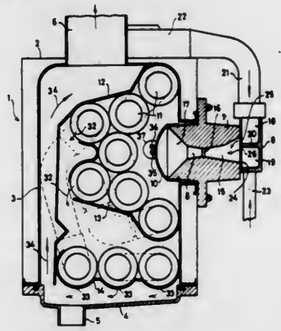
said baffle assembly having at least one vertically oriented fireback assembly exposed to said primary chamber from a combustion region of said chamber to a region of said chamber spaced from said combustion region,

said fireback assembly having at least two abutting elements, a first of said elements being adjacent said combustion region and a second of said elements being spaced from said combustion region, said elements being in a substantially sealing relationship with each other along adjacent touching surfaces, and said elements having a mechanical interrelationship which allows said first element to exapnd, as a result of thermal heating, independently of said second element,

tab means for holding said elements together while allowing relative rotation therebetween about the line along which said elements meet, and

said exit aperture being at a top portion of said frame and in gaseous communication with said flue gas exit path for providing an exit port for combustion products.

4,499,890
HEATER AND A METHOD OF CONTROLLING THE COMBUSTION IN SUCH A HEATER
Gerard C. Meulenbrug, Deventer, Netherlands, assignor to Nederlandse Industriële Maatschapplj NEFIT N.V., Deventer, Netherlands
Filed Oct. 16, 1981, Ser. No. 311,949
Claims priority, application Netherlands, Oct. 16, 1980, 8005717
Int. Cl.³ F24H *3/00*
U.S. Cl. 126—116 R **9 Claims**



1. A heater comprising:

a combustion chamber;

a burner disposed within said combustion chamber for burning fuel;

a heat exchanger arranged within said combustion chamber for heating a heat exchange fluid;

a mixing chamber operatively associated with said burner, said mixing chamber having a converging asymmetrical inlet portion, a throat portion and a diverging outlet portion communicating with said inlet portion via said throat portion;

means for feeding fuel to said burner, said means for feeding fuel connected to said mixing chamber;

means for forcing air into said mixing chamber;

a burner plate provided on said outlet portion of said mixing chamber, said burner plate having a plurality of evenly divided ports formed therein;

a restriction plate having a plurality of calibrated openings formed therein for forming jets of air and fuel and provided on said inlet portion of said mixing chamber;

a feeding device for feeding air and fuel into said inlet portion of said mixing chamber through said restriction plate, said feeding device having a first chamber formed therein connected to said means for forcing air into said mixing chamber and having a separate second chamber formed therein connected to said means for feeding fuel to said burner; and

means for deflecting said jets of air and fuel comprising a whirling space defined by wall portions of said inlet portion of said mixing chamber, a first one of said wall portions extending from said restriction plate and converging more rapidly toward said throat portion than on opposing second one of said wall portions, such that a small flame is produced by said burner.

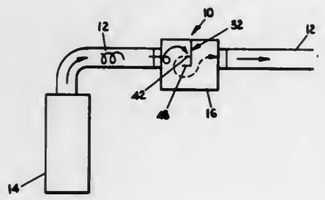
4,499,891
FLUE CONTROL DEVICE
John W. Seppamaki, 3768 Socorro, Grandville, Mich. 49418
Filed Aug. 29, 1983, Ser. No. 527,329
Int. Cl.³ F23L *3/00*
U.S. Cl. 126—292 **11 Claims**

10. A non-restrictive flue control device for slowing the rate

at which furnace exhaust gases are conveyed through an exhaust stack comprising:

a closed housing having an inlet and outlet at opposite ends thereof, the interior of the housing forming a baffle chamber, the inlet and outlet being formed such that the flue control device can be inserted in a section of the furnace exhaust flue; and

baffle means mounted in the baffle chamber for diverting the exhaust gases into a non-linear path around the baffle means in the housing while at the same time disrupting any circular, swirling movement of the gases and rendering such gas flow turbulent, the baffle means comprising a baffle plate positioned between the inlet and outlet in a position generally transverse to a straight line between the inlet and outlet, at least one prominent flange extending in a generally perpendicular direction from the baffle plate in an upstream direction relative to the gas flow direction through the flue control device, the flange being about one-half inch (1.27 cm) wide or wider and extending the



width of the baffle plate, the flange being positioned such that the flange is generally transverse to the circular, swirling direction of the gases so as to disrupt such circular, swirling movement as the gases are diverted around the baffle plate, the housing being sufficiently large and the baffle means being sufficiently small that the baffle means does not restrict the internal cross-sectional area of the housing to a size smaller than the internal cross-sectional area of the exhaust flue, the baffle means further comprising a second plate at least partially overlapping the baffle plate and attached thereto by fasteners that are at least forcibly removable, the second plate having a prominent flange thereon extending in the same direction as the flange on the baffle plate, the position of the second plate on the baffle plate being adjustable by removing the fasteners, adjusting the relative plate positions and attaching the plates together with fasteners, the adjustment of plate positions making it possible to modify the amount of restriction provided by the baffle means.

4,499,892

ARRANGEMENT FOR SLAT SCREENS FOR SOLAR PROTECTION

Aldo Gasparini, Kungsportsavenyen 34, 411 36 Gothenburg, and Nils-Erik Wimnell, Karl Gustavsgatan 59, 411 31 Gothenburg, both of Sweden

PCT No. PCT/SE82/00217, § 371 Date Feb. 22, 1983, § 102(e) Date Feb. 22, 1983, PCT Pub. No. WO83/00055, PCT Pub. Date Jan. 6, 1983

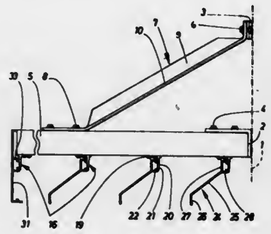
PCT Filed Jun. 16, 1982, Ser. No. 485,130

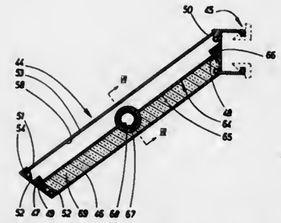
Claims priority, application Denmark, Jun. 23, 1981, 2762/81

Int. Cl.³ F24J *3/02*

U.S. Cl. 126—446 **5 Claims**

1. An arrangement of slat screens for solar protection, comprising: a plurality of elongated slats mounted in spaced relationship to each other on a support and together forming a screen for intercepting the rays of the sun over a predetermined angular zone, each slat being an extruded light metal piece comprising a wide portion forming a plate, side edge portions extending upwardly from said wide portion on opposite sides thereof so as to form a trough, said edge portions having an outer ends thereof away from said wide portion first grooves, a transparent disc accommodated in said grooves so that a closed space is formed in the slat into which the rays of the sun may penetrate through the disc, said side edge portions having second grooves closer to said wide portion than said first grooves, thermally-insulating strips in said second grooves, a plate-shaped unit accommodated in said strips and of extruded light metal, and having a tubular portion for flow of fluid for dissipating the heat formed by solar radiation on the slat to a pipe system for the fluid, said unit dividing the space between the transparent disc and said wide portion into a first space located between the disc and the unit, and a second space located between the unit and said wide portion, and a plate-shaped insulating body in said second space, said support has





slat holders with projections having surfaces which face away from each other and which slope in such a way in relation to each other that together they form an entry portion which opens out from ends of the projections, said entry portion terminating inwardly in a groove in each projection, each slat including a fixture which has two flanges facing each other and having outer hook-shaped projections facing each other, the distance between the flanges being such that the hook-shaped projections offer a widened out entry portion so that upon bending of the flanges they may pass the widest section of the entry portion, which is wider than the distance between the hook-shaped projections, so that after passing the entry portion the hook-shaped projections can snap downwards into said groove to hold the slat.

4,499,893

SOLAR HEAT RECEIVER

Arlon J. Hunt, Oakland; Leif J. Hansen, Berkeley, and David B. Evans, Orinda, all of Calif., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Sep. 29, 1982, Ser. No. 426,370

Int. Cl.³ F24J *3/02*

U.S. Cl. 126—449 **16 Claims**

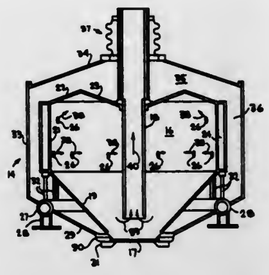
1. A receiver for heating a gas by solar energy which minimizes impingement of radiation on the walls of the receiver and provides maximum heating at and near the entry of a passageway into which a gas to be heated passes, said receiver comprising:

a housing constructed to allow for expansion and defining a chamber therein, said housing having a lower section in

the shape of an inverted frusto-conical surface having an opening therein, a generally cylindrical wall section, and a roof section composed of frusto-conical members;

a gas manifold postitioned around at least said cylindrical wall section of said housing;

means for directing gas to be heated from said manifold into said cylindrical wall section of said housing defining said chamber in a cyclone fashion;



a gas exhaust means positioned in said housing and having a gas entry located in said lower section of said housing and in open communication with said chamber; and

window means positioned in said lower section of said housing for admitting solar energy thereinto and at least onto said gas entry of said gas exhaust means;

whereby maximum heating is at and near said gas entry.

4,499,894

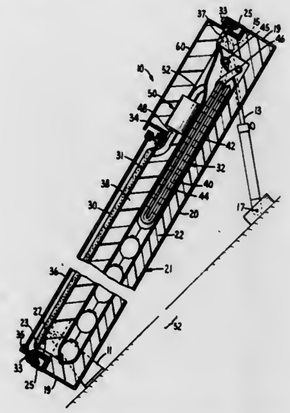
PASSIVE SOLAR WATER HEATER SUPPORT BOX

Bruce S. Buckley, 7067 Via Blanca, San Jose, Calif. 95139, assignor to B. Shawn Buckley, San Jose, Calif.

Filed Aug. 9, 1982, Ser. No. 406,504

Int. Cl.³ F24J *3/00*

U.S. Cl. 126—450 **17 Claims**



1. A method of forming a solar water heating tank support box of a single sheet of plastic material which

comprises securing each of the edges of said plastic sheet to an open rectangular reinforcing bar member to form therewith the integral upper edges of said box,

extending the surface of said plastic sheet continuously and transversely from each of the inner edges from of said bar member to form side wall surfaces and laterally between the other ends of said side wall surfaces to form a unitary side wall and bottom surface of an open top box, and

insulating the interior surface of said plastic sheet forming said open top box to assure that the tensile strength of said plastic sheet is not exceeded by the weight of heated liquid in a tank supported by said unitary bottom and said side wall surfaces and that the compressive forces of said weight are thereby transferred to said reinforcing bar member whereby said box may be tilted to a desired angle at a plurality of support points around the periphery of said reinforcing bar member.

4,499,895

ENDOSCOPE SYSTEM WITH AN ELECTRIC BENDING MECHANISM

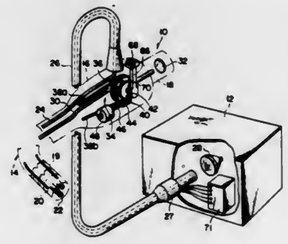
Syuichi Takayama, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Oct. 14, 1982, Ser. No. 434,233

Claims priority, application Japan, Oct. 15, 1981, 56-164678; Oct. 20, 1981, 56-167594; Nov. 2, 1981, 56-176236

Int. Cl.³ A61B *1/06*

U.S. Cl. 128—6 **11 Claims**



1. An endoscope apparatus comprising:

(a) an insertion section bendable in a body cavity upon insertion thereinto;

(b) an endoscope body mechanically coupled to said insertion section;

(c) motor means in said endoscope body for generating rotating torque for bending said insertion section;

(d) an operation lever member provided in and protruding at least partially from said endoscope body so as to be manually operable by an operator;

(e) bending mechanism means in said insertion section and said endoscope body and coupled to said motor means, to said insertion section and to said operation lever member, for bending said insertion section and rotating said operation lever member by the torque from said motor means;

(f) lever operating amount detecting means mounted to said operation lever member, for changing the resistance value thereof in response to elastic deformation in said lever member when an operator operates said lever member and external pressure is applied and, for detecting an operating amount of said lever member; and

(g) control circuit means, electrically connected to said motor means and said lever operating amount detecting means, for supplying electricity to said motor means in response to changes in the resistance of said operation lever member, thereby causing said bending mechanism means to bend said insertion section and to rotate the lever member in substantially the same direction as the direction of lever operation to decrease the elastic deformation of said operation lever member and, for shutting off said motor means when the change in resistance of said lever operating amount detecting means reaches substantially zero in response to the elastic deformation of said lever member reaching substantially zero, to thereby control the bending of said insertion section such that the bending is automatically stopped when the insertion section is bent by an amount corresponding to said lever operation amount; said control circuit means including switching transistor means electrically connected to said lever operating amount detecting means, for controlling the power supply to said motor means, in response to a change in the

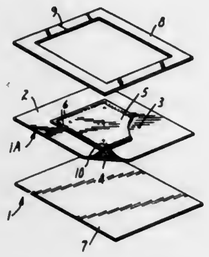
resistance value of said lever operating amount detecting means, in such a manner that said motor means is rotated forward or backward in response to the change in the resistance value of said lever operating amount detecting means.

4,499,896

RESERVOIR WOUND DRESSING

Steven B. Heinecke, New Richmond, Wis., assignor to Minnesota Mining and Manufacturing Co., St. Paul, Minn.

Filed Mar. 30, 1982, Ser. No. 363,609
Int. Cl.³ A61F *13/00*
U.S. Cl. 128—156 **10 Claims**



1. A wound dressing comprising at least two films, each of which is conformable to anatomical surfaces,

the first of said films adapted to be placed over a wound surface having a moisture vapor permeability of at least 300 grams per square meter per 24 hours at an 80 percent relative humidity differential at 40° C., being impermeable to liquid water throughout substantially its entire imperforate area, and containing at least one perforation therein positioned for passing wound exudate therethrough; said first film having a pressure sensitive adhesive on the wound contacting surface thereof for attaching said dressing to anatomical surfaces;

the second of said films being imperforate, impermeable to liquid water, and having a moisture vapor permeability of at least 600 grams per square meter per 24 hours at an 80 percent relative humidity differential at 40° C., said second film overlying said first film and being attached at its periphery to said first film on the side opposite to that having said pressure-sensitive adhesive thereon, and extending over an area surrounding said at least one perforation;

said dressing providing a reservoir between said first and second films into which excess exudate can pass and be evaporated to the ambient environment.

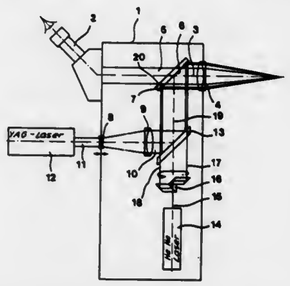
4,499,897

OPTICAL HEAD OF AN INSTALLATION FOR OBSERVATION AND TREATMENT OF THE EYE BY LASER RADIATION

Philippe Roussel, NL-Wassenaar, Netherlands, assignor to Lasag AG, Switzerland

Filed Mar. 7, 1983, Ser. No. 472,934
Claims priority, application Switzerland, Mar. 11, 1982, 1495/82
Int. Cl.³ A61B *17/36;* A61N *3/00;* G02B *27/14*
U.S. Cl. 128—303.1 **9 Claims**

1. The optical head of an installation for observation and treatment by a laser beam of an eye, comprising observing means for observing the zone of the eye to be treated, means for producing a treatment laser radiation beam, means for producing a marking laser radiation beam forming a visible envelope of the treatment beam, a focusing lens, the axis of which is coincident with the optical axis of the observing means for focusing the treatment and the marking beams on the zone of the eye to be treated, and a first mirror disposed on said treatment and marking beams between said observing means and said focusing lens for reflecting said treatment and marking beams towards said focusing lens, said first mirror having an outer portion intersecting only said marking beam, the reflection coefficient of said outer portion being maximum for the wavelength of said marking beam and an inner portion intersecting only said treatment beam, the reflection coefficient of



said inner portion being maximum for the wavelength of said treatment beam and minimum for the wavelength of said marking beam, whereby said treatment beam is prevented from reaching said observing means after reflecting on the zone of the eye to be treated and said marking beam is able to reach said observing means after reflection on the zone of the eye to be treated.

4,499,898

SURGICAL KNIFE WITH CONTROLLABLY EXTENDABLE BLADE AND GAUGE THEREFOR

William R. Knepshield; David D. Ogletree, both of Malvern, and Nat Sander, Broomall, all of Pa., assignors to KOI Associates, Frazer, Pa.

Filed Aug. 23, 1982, Ser. No. 410,476
Int. Cl.³ A61B *17/32;* B26B *1/08*
U.S. Cl. 128—305 **16 Claims**



1. Surgical knife with controllably extendable blade comprising:

(a) a generally cylindrical body with a front end, a rear end, axially displaced therefrom, and a centrally disposed axial opening along the length thereof;

(b) a blade disposed at the front end of said body in a plane which includes the axis of said body;

(c) a blade holder having said knife blade secured at the front end thereof, said holder extending rearwardly from said front end along the axis of said body to a distal end disposed within said body, said holder being freely movable along said axis, said holder further including, at its distal end, a cam surface perpendicular to said axis;

(d) a foot, having a frontal surface fixed with respect to said body, and a central axial opening being aligned and in communication with said central axial opening of said body;

(e) means for restraining said holder from angular movement about said axis;

(f) means for urging said holder rearwardly along said axis;

(g) a generally cylindrical adjustment knob, a section of which overlaps a section of said body and is rotatable thereabout and slidable therealong

(h) a cam member having a front cam projection in contact

with said distal end cam surface of said blade holder, said cam member extending rearwardly thereof along said axis and being urged rearwardly by said urging means while permitting relative rotational movement between said cam projection and said cam surface;

(i) means for fastening said cam member to said knob;

(j) holder positioning means threadedly secured within said body for longitudinal adjustment of said holder positioning means relative to said body along said axis by rotational adjustment of said positioning means; and

(k) selective means for permitting limited axial movement of said holder, cam member and knob relative to said holder positioning means at either one of two fixed axially spaced positions;

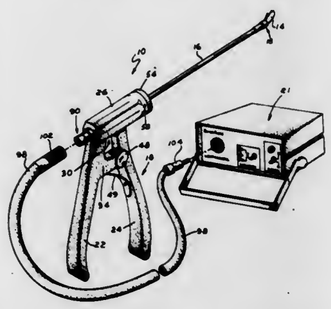
(l) means for coupling rotational movement of said knob to cause corresponding rotational movement of said holder positioning means so that when said holder, cam member and knob are at one of said fixed axially spaced positions, relative to said holder positioning means, the longitudinal position of said blade, relative to said body, is adjusted by rotational movement of said knob.

4,499,899

FIBER-OPTIC ILLUMINATED MICROSURGICAL SCISSORS

William G. Lyons, III, Wilbraham, Mass., assignor to Brimfield Precision, Inc., Brimfield, Mass.

Continuation-in-part of Ser. No. 459,949, Jan. 21, 1983,. This application Jun. 30, 1983, Ser. No. 509,780
Int. Cl.³ A61B *17/32*
U.S. Cl. 128—305 **4 Claims**



3. A rotary cutting scissors for surgery, said scissors comprising:

(a) a pair of scissor blades mounted on an end of a shaft assembly for snipping away tissue during the surgery;

(b) said shaft assembly having an outer tube and a concentric inner rod telescopically mounted for rotation therein while remaining axially stationary relative to the outer tube, wherein one of the scissor blades is mounted in a fixed, angularly offset position on an end of the inner rod while the other blade is fixedly mounted in an opposed, angularly offset position on an adjacent end of the outer tube;

(c) said shaft assembly and said outer tube and said inner rod each having an opposite end mounted within a longitudinally-extending bore of a spring-loaded rongeur handle that is adapted to be grasped by the cupped hand of a user, said handle having a rear body with an upper portion that contains the bore and the front trigger pivotally attached to the rear body, wherein the trigger has a finger that extends through a longitudinally-extending slot in the upper portion and into the bore where the finger moves relative to the bore as the trigger is squeezed and released by the user;

(d) wherein said outer tube is fixed relative to the handle;

(e) a helical drive means housed in the bore of the rear body to rotate the inner rod relative to the outer tube and cause the scissor blade attached to the inner rod to rotate against the other scissor blade attached to the fixed outer tube, while the inner rod and outer tube remain substantially axially stationary relative to each other, so that a cutting surface on one of the blades mates with a complementary cutting surface on the other blade to produce a snipping action, said drive means including a gear fixedly attached to the inner rod wherein the gear includes a helical groove on its periphery that engages the finger of the trigger so that the groove cooperates with the finger, as the trigger is being squeezed and released, and the finger moves in the slot to rotate the inner rod and thereby rotate its attached scissor blade relative to the scissor blade of the outer tube, and wherein the entire the drive means housed is said bore, except for the finger, remains axially stationary relative to the members while the blades are being rotated;

(f) means for emitting a fiber-optic light near the scissor blades during surgery to brightly illuminate the line of cut produced by the blades, wherein the lighting means moves in tandem with the longitudinal axis of the shaft assembly to constantly illuminate the line of cut during shifting of the axis in the surgery; and,

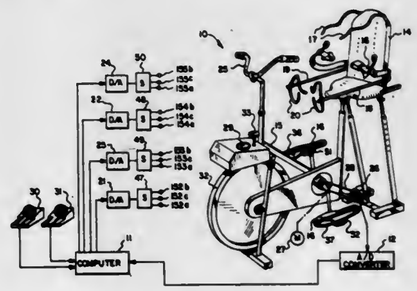
(g) wherein the inner rod is hollow with a central through bore and the lighting means comprises a fiber-optic bundle that substantially fills the bore and is secured to both ends of it.

4,499,900

SYSTEM AND METHOD FOR TREATING PARALYZED PERSONS

Jerrold S. Petrofsky, Beavercreek; Chandler A. Phillips, Tipp City; Roger M. Glaser, Dayton, and Harry H. Heaton, III, Beavercreek, all of Ohio, assignors to Wright State University, Dayton, Ohio

Filed Nov. 26, 1982, Ser. No. 444,647
Int. Cl.³ A61N *1/36*
U.S. Cl. 128—423 W **35 Claims**



1. A treatment system for a paralyzed person comprising:

a pair of oppositely disposed pedals mounted for rotation about an axis,

load means responsive to rotation of said pedals for generating a rotation resisting torque,

sensing means for sensing the position of said pedals,

computing means responsive to said sensing means for generating first, second, third and fourth control signals,

stimulation means responsive to said first, second, third and fourth control signals for cooperatively stimulating the right quadriceps, left quadriceps, right iliac and left iliac muscles respectively of said person to cause rotation of said pedals against said resisting torque, and

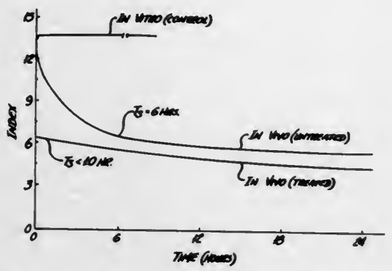
amplitude control means connected to said computing means for adjusting the amplitude of said control signals.

4,499,901

RETREATED SENSING ELECTRODE

Joseph J. Chang, and Maynard Ramsey, III, both of Tampa, Fla., assignors to Critikon, Inc., Tampa, Fla.

Filed Jun. 30, 1983, Ser. No. 509,500
Int. Cl.³ G01N 27/30
U.S. Cl. 128—635 **15 Claims**



1. In an electrode assembly for insertion into a living animal to continuously monitor blood gas concentration, which assembly includes an electrode and a hydrophilic polymer membrane covering said electrode, wherein said membrane is hydrophilic substantially throughout its thickness, the improvement which comprises:

said covering membrane being pretreated by having applied thereto a liquid solution comprising blood derived albumin, said pretreated membrane than being sterilized; and

said electrode assembly exhibiting a lower T_S than an assembly having an untreated membrane.

10. A method for decreasing the T_S of an electrode assembly for insertion in a living animal to continuously monitor blood gas concentration, which assembly includes an electrode and a hydrophilic polymer membrane covering said electrode, wherein said membrane is hydrophilic substantially throughout its thickness, comprising the steps:

pretreating said electrode by applying to said membrane a liquid solution comprising blood derived albumin and then sterilizing said electrode, whereby the T_S of said electrode assembly is substantially lower than an assembly having an untreated membrane.

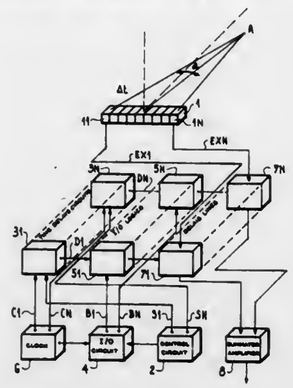
4,499,902

RECEIVER DEVICE FOR A MULTI-ELEMENT ULTRASONIC PROBE ECHOGRAPH AND ECHOGRAPH EQUIPPED IN THIS WAY

Dietmar Demuth, Schwerte, Fed. Rep. of Germany, assignor to Thomson-CSF, Paris, France

PCT No. PCT/FR81/00082, § 371 Date Feb. 22, 1982, § 102(e) Date Feb. 22, 1982, PCT Pub. No. WO82/00061, PCT Pub. Date Jan. 7, 1982
PCT Filed Jun. 23, 1981, Ser. No. 355,576
Claims priority, application Fed. Rep. of Germany, Jun. 23, 1980, 3023386
Int. Cl.³ A61B 10/00
U.S. Cl. 128—660 **3 Claims**

1. A receiver device for a multielement ultrasonic probe echograph comprising a probe having a plurality of transducer elements (11, IN), a corresponding number of CCD units (71, 7N) respectively interconnected between the transducer elements and a summator means (8), one clock means (9) and, for each CCD unit, a delay time counter means (111) connected between said clock means and a respective gate means connected to a control input of said CCD unit and furthermore a corresponding line length counter (131) downstream of said gate means, outputs of all said line length counters being connected to validation means of read control means (4) of the CCD devices previously operated in record mode.

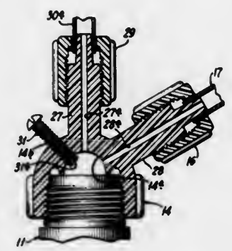


4,499,903

METHODS AND APPARATUS FOR TESTING A BLOOD PRESSURE MONITORING SYSTEM OF THE HYDRAULIC TYPE

Emanuel F. Furst; Louis F. Lampe, and William L. Woods, all of Tucson, Ariz., assignors to University of Arizona Foundation, Tucson, Ariz.

Filed May 3, 1979, Ser. No. 35,609
Int. Cl.³ A61B 5/02
U.S. Cl. 128—675 **8 Claims**



1. Apparatus for monitoring a blood pressure of a patient comprising:

a pressure transducer having a pressure sensitive element;

means for containing hydraulic liquid disposed in fluid communication with said pressure sensitive element of said transducer and disposed between said pressure sensitive element and a catheter means;

hydraulic liquid filling said containing means for transmitting blood pressure variations of the patient to the pressure sensitive element of said transducer;

catheter means establishing fluid communication between a circulatory system of said patient and said hydraulic liquid;

a solid member disposed in communication with said hydraulic liquid, insertable into said containing means and capable of being withdrawn from said containing means in a predetermined amount to cause a predetermined volumetric change in said hydraulic liquid containing means thereby to change the pressure exerted by said hydraulic liquid on said pressure sensitive element of said transducer; and

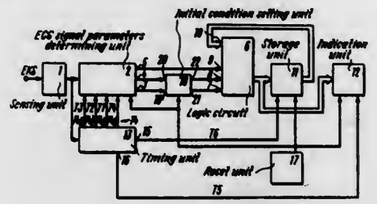
means for sensing changes in pressure on said pressure sensitive element.

4,499,904

HEART MONITORING DEVICE

Georgy I. Sidorenko; Georgy P. Lopato; Vladimir M. Yakubovich; Yaroslav G. Nikitin; Oleg I. Usachev, and Anatoly P. Vorobiev, all of Minsk, U.S.S.R., assignors to Belorussky Nauchnoissledovatelsky Institut Kardiologii, Minsk, U.S.S.R.

Filed Feb. 23, 1983, Ser. No. 469,036
Int. Cl.³ A61B 5/04
U.S. Cl. 128—703 **5 Claims**



1. A heart monitoring device for monitoring the heart activity of a person by using an ECG (electrocardiograph) signal comprising:

a sensing unit for detecting R-waves of said ECG signal characterizing the heart activity of the person, said sensing unit having an input supplied with said ECG signal, and an output;

an ECG signal parameters determining unit responsive to variation in relation between the durations of intervals between the R-waves of said ECG signal and having a data input connected to said output of said sensing unit, a plurality of control inputs, a reset input, a first output, a second output, and a third output, said ECG signal parameters determining unit being arranged to produce at said first output a first signal when the magnitude of the difference between the duration of the last occurring interval between the R-waves of said ECG signal and the duration of the interval between the R-waves immediately preceding the last occurring interval is smaller than a first predetermined percentage of the duration of the last occurring interval, and to produce at said first output a second signal when the magnitude of the difference between the last occurring interval between the R-waves of said ECG signal and the duration of the interval between the R-waves immediately preceding the last occurring interval is greater than, or equal to, said first predetermined percentage of the last occurring interval, said ECG signal parameters determining unit being arranged to produce at said second output a first signal when the duration of the last occurring interval between the R-waves of said ECG signal is smaller than the duration of the interval between the R-waves immediately preceding the last occurring interval, and to produce at said second output a second signal when the duration of the last occurring interval between the R-waves of said ECG signal is greater than, or equal to, the duration of the interval between the R-waves immediately preceding the last occurring interval, said ECG signal parameters determining unit being arranged to produce at said third output a first signal when the difference between the duration of the last occurring interval between the R-waves of said ECG signal and the duration of the interval between the R-waves immediately preceding the interval which immediately preceeds the last occurring interval is smaller than a second predetermined value, and to produce at said third output a second signal when the difference between the duration of the last occurring interval between the R-waves of said ECG signal and the duration of the interval between the R-waves immediately preceding the interval which immediately preceeds the last occurring interval is greater than, or equal to, said second predetermined value;

a logic circuit having a plurality of inputs and a plurality of outputs, a first input of said plurality of inputs being connected to said first output of said ECG signal parameters determining unit, a second input of said plurality of inputs being connected to said second output of said ECG signal parameters determining unit, and a third input of said plurality of inputs being connected to said third output of said ECG signal parameters determining unit;

a storage unit having a plurality of inputs respectively connected to corresponding outputs of said plurality of outputs of said logic circuit, a control input, a reset input, and a plurality of outputs respectively connected to corresponding remaining inputs of said plurality of inputs of said logic circuit;

an indication unit having a plurality of data inputs respectively connected to corresponding outputs of said plurality of outputs of said logic circuit, a reset input, and a control input;

a timing unit having an input connected to said output of said sensing unit, a first output connected to said control input of said storage unit, a second output connected to said control input of said indication unit, and a plurality of outputs respectively connected to corresponding control inputs of said ECG signal parameters determining unit, to supply said control inputs of said ECG signal parameters determining unit, said storage unit and said indication unit with signals during each interval between the R-waves of said ECG signal; and

a reset unit having an output connected to said reset inputs of said ECG signal parameters determining unit, said indication unit and said storage unit;

said logic circuit being arranged to produce at said outputs thereof a first, second, third, fourth, fifth, sixth, seventh or eighth combination of signals, said logic circuit being arranged to produce at said outputs thereof said first combination of signals when said first input of said logic circuit is supplied with said second signal from said first output of said ECG signal parameters determining unit, said second input of said logic circuit is supplied with said first signal from said second output of said ECG signal parameters determining unit and said storage unit is stored with a code corresponding to said first, third or eighth combination of signals at said outputs of said logic circuit, said logic circuit being arranged to produce at said outputs thereof said first combination of signals when said first input of said logic circuit is supplied with said first signal from said first output of said ECG signal parameters determining unit and said storage unit is stored with a code corresponding to said first, third or eighth combination of signals at said outputs of said logic circuit, said logic circuit being arranged to produce at said outputs thereof said second combination of signals when said first input of said logic circuit is supplied with said second signal from said first output of said ECG signal parameters determining unit, said second input of said logic circuit is supplied with said second signal from said second output of said ECG signal parameters determining unit and said storage unit is stored with a code corresponding to said first, third or eighth combination of signals at said outputs of said logic circuit, said logic circuit being arranged to produce at said outputs thereof said third combination of signals when said first input of said logic circuit is supplied with said second signal from said first output of said ECG signal parameters determining unit, said second input of said logic circuit is supplied with said first signal from said second output of said ECG signal parameters determining unit and said storage unit is stored with a code corresponding to said seventh combination of signals at said outputs of said logic circuit, said logic circuit being arranged to produce at said outputs thereof said fourth combination of signals when said first input of said logic circuit is supplied with said second signal from said first

output of said ECG signal parameters determining unit, said second input of said logic circuit is supplied with said second signal from said second output of said ECG signal parameters determining unit and said storage unit is stored with a code corresponding to said seventh combination of signals at said outputs of said logic circuit, said logic circuit being arranged to produce at said outputs thereof said fourth combination of signals when said first input of said logic circuit is supplied with said second signal from said first output of said ECG signal parameters determining unit, said second input of said logic circuit is supplied with said second signal from said second output of said ECG signal parameters determining unit and said storage unit is stored with a code corresponding to said sixth combination of signals at said outputs of said logic circuit, said logic circuit being arranged to produce at said outputs thereof said fifth combination of signals when said first input of said logic circuit is supplied with said second signal from said first output of said ECG signal parameters determining unit, said second input of said logic circuit is supplied with said second signal from said second output of said ECG signal parameters determining unit and said storage unit is stored with a code corresponding to said fourth or fifth combination of signals at said outputs of said logic circuit, said logic circuit being arranged to produce at said outputs thereof said fifth combination of signals when said first input of said logic circuit is supplied with said first signal from said first output of said ECG signal parameters determining unit and said storage unit is stored with a code corresponding to said fourth or fifth combination of signals at said outputs of said logic circuit, said logic circuit being arranged to produce at said outputs thereof said sixth combination of signals when said first input of said logic circuit is supplied with said second signal from said first output of said ECG signal parameters determining unit, said second input of said logic circuit is supplied with said first signal from said second output of said ECG signal parameters determining unit and said storage unit is stored with a code corresponding to said fourth or fifth combination of signals at said outputs of said logic circuit, said logic circuit being arranged to produce at said outputs thereof said seventh combination of signals when said first input of said logic circuit is supplied with said second signal from said first output of said ECG signal parameters determining unit, said second input of said logic circuit is supplied with said second signal from said second output of said ECG signal parameters determining unit and said storage unit is stored with a code corresponding to said fourth or fifth combination of signals at said outputs of said logic circuit, said logic circuit being arranged to produce at said outputs thereof said seventh combination of signals when said first input of said logic circuit is supplied with said second signal from said first output of said ECG signal parameters determining unit, said second input of said logic circuit is supplied with said second signal from said second output of said ECG signal parameters determining unit and said storage unit is stored with a code corresponding to said seventh combination of signals at said outputs of said logic circuit, said logic circuit being arranged to produce at said outputs thereof said fourth combination of signals when said first input of said logic circuit is supplied with said second signal from said first output of said ECG signal parameters determining unit, said second input of said logic circuit is supplied with said second signal from said second output of said ECG signal parameters determining unit and said storage unit is stored with a code corresponding to said sixth combination of signals at said outputs of said logic circuit, said logic circuit being arranged to produce at said outputs thereof said fifth combination of signals when said first input of said logic circuit is supplied with said second signal from said first output of said ECG signal parameters determining unit, said second input of said logic circuit is supplied with said second signal from said second output of said ECG signal parameters determining unit and said storage unit is stored with a code corresponding to said sixth combination of signals at said outputs of said logic circuit, said logic circuit being arranged to produce at said outputs thereof said seventh combination of signals when said first input of said logic circuit is supplied with said first signal from said first output of said ECG signal parameters determining unit and said storage unit is stored with a code corresponding to said sixth combination of signals at said outputs of said logic circuit, said logic circuit being arranged to produce at said outputs thereof said eighth combination of signals when said first input of said logic circuit is supplied with said second signal from said first output of said ECG signal parameters determining unit, said second input of said logic circuit is supplied with said first signal from said second output of said ECG signal parameters determining unit, said third input of said logic circuit is supplied with said first signal from said third output of said ECG signal parameters determining unit and said storage unit is stored with a code corresponding to said second combination of signals at said outputs of said logic circuit; and

said indication unit being arranged to indicate a grouped extrasystole when said logic circuit produces at said outputs thereof said first combination of signals, to indicate a single extrasystole when said logic circuit produces at said outputs thereof said third combination of signals, to indicate a block when said logic circuit produces at said outputs thereof said fourth combination of signals, to indicate a dangerous block when said logic circuit produces at said outputs thereof said fifth combination of signals, to indicate a bigeminal extrasystole when said logic circuit produces at said outputs thereof said eighth combination of signals, and to indicate a normal cardiac rhythm when said logic circuit produces at said outputs thereof said seventh combination of signals.

4,499,905

APPARATUS FOR MEASURING HUMAN RESPIRATION

Mishel Greenberg, New Hyde Park, N.Y.; William H. Smyers, Jr., Wethersfield, Conn., and Milton Chernack, New York, N.Y., assignors to Chesebrough-Pond's Inc., Greenwich, Conn.

Filed May 5, 1982, Ser. No. 375,298
Int. Cl.³ A61B *5/08*
U.S. Cl. 128—727 **20 Claims**

1. An inhalation device for use in inhalation of air into human lungs comprising:

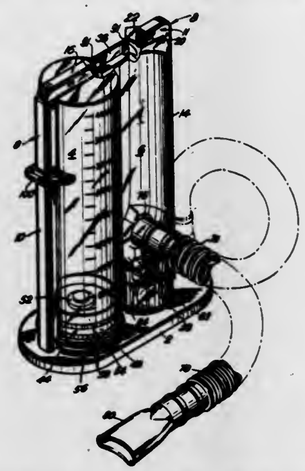
(a) a first hollow cylindrical chamber for slidably receiving a piston, the chamber being vented to the atmosphere;

(b) a movable piston assembly slidably mounted within said first cylindrical chamber;

(c) at least a second hollow chamber sealed from fluid communication with the first chamber, said second chamber communicating with the atmosphere;

(d) sealing means assembly for preventing fluid communication between said first and second chambers, said sealing means assembly including a first opening means communicating with said first chamber and a second opening means communicating with said second chamber;

(e) a breathing tube assembly connected in cooperative relationship to said sealing means assembly and in fluid



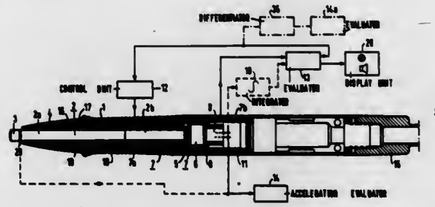
communication with said first and second chambers through said first and second opening means.

4,499,906

PERCUSSION INSTRUMENT

Jürgen Wohlgemuth, Darmstadt, and Eugen Hohmann, Bensheim, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Apr. 11, 1983, Ser. No. 483,881
Claims priority, application Fed. Rep. of Germany, Apr. 26, 1982, 3215530
Int. Cl.³ A61B *5/00*
U.S. Cl. 128—776 **18 Claims**



1. A percussion instrument comprising:

a housing;

a ram displacably seated in said housing consisting of at least a section of non-magnetic material and a section of low magnetic retentive material;

a drive means for accelerating said ram from an initial position to free flight at a constant velocity toward an object to be tested by the reactive rebound of said ram there against and for returning said ram to said initial position, said drive means including at least one drive coil surrounding a portion of said ram and into which said low magnetic retentive section of said ram extends up to approximately one-half of the length of said coil when said ram is in said initial position;

a control means connected through a switch to said drive means for supplying periodic current pulses to said drive coil; and

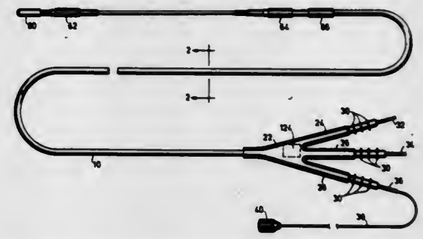
an evaluator means including a measuring means for measuring the velocity of said ram, a comparator for comparing the actual value of said ram with a rated velocity value, and a switch control means for interrupting the connection between said drive means and said control means when said actual velocity equals said rated velocity during acceleration of said ram.

4,499,907

ENERGY LIMITING CARDIOVERSION LEAD

Michael J. Kallok, New Brighton, and Gene A. Bornzin, Coon Rapids, both of Minn., assignors to Medtronic, Inc., Minneapolis, Minn.

Filed Nov. 15, 1982, Ser. No. 441,887
Int. Cl.³ A61N *1/04*
U.S. Cl. 128—786 **12 Claims**



1. A transvenous cardioversion lead for implant in the human heart, comprising:

an elongated insulative lead body;

a first conductor, having a proximal end and a distal end, mounted within said lead body;

a second conductor, having a proximal and a distal end, mounted within said lead body, insulated from said first conductor;

a first connector, coupled to the proximal end of said first conductor;

a second connector, coupled to the proximal end of said second conductor;

a first electrode, exposed to the exterior of said lead body and coupled to the distal end of said first conductor, for applying electrical energy to heart tissue;

a second electrode, exposed to the exterior of said lead body and coupled to the distal end of said second conductor, for applying electrical energy to heart tissue; and

energy-reducing means coupled to said first and second conductors for reducing the electrical energy of a cardioversion pulse applied to said first and second connectors from a first energy as applied to said first and second connectors to a reduced second energy as applied to said heart tissue by said first and second electrodes.

4,499,908

COMBINE CONCAVE STRUCTURE

Frederick D. Niehaus, Rte. 1, Martelle, Iowa 52305

Continuation of Ser. No. 364,502, Apr. 1, 1982,. This application Feb. 7, 1984, Ser. No. 577,866
Int. Cl.³ A01F *12/26, 12/28*
U.S. Cl. 130—27 K **1 Claim**



1. An improvement in a combine having a combine frame, a rotor mounted to said frame for rotation about a horizontal

axis, said rotor having an outer radial surface, a cylindrical housing assembly surrounding and enclosing said cylindrical surface of said rotor, said housing assembly comprising an upper housing portion and a concave portion connected to said upper housing portion and forming a lower cylindrical wall for said housing assembly; said concave portion having first and second opposite lateral edges, said first lateral edge being hinged to said frame for hinged movement about a hinge axis running parallel to said horizontal axis of said rotor, said second lateral edge being adjustably attached to said upper housing to permit selective adjustment of the concave portion about said hinge axis so as to move said concave toward and away from said rotor; said concave comprising a grid work mesh formed by a plurality of spaced apart axially extending members and a plurality of spaced apart circumferentially extending members; said improvement comprising:

said circumferentially extending members and said axially extending members each having an interior flat surface presented radially inwardly toward said rotor, all of said inwardly interior flat surfaces of said circumferentially extending members and said axially extending members lying in a single cylindrical surface so that they are free from projections extending radially inwardly therefrom;

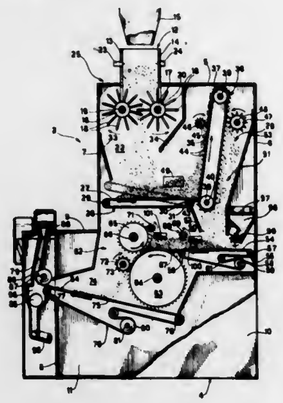
said upper housing portion forming a part of the circular cylinder and including first and second opposite lateral side edges, said first side edge of said upper housing portion being adjacent said first lateral edge of said concave portion, a rectangular cover plate having a first elongated edge attached to said upper housing along a line extending parallel to and being spaced above said first side edge of said upper housing portion, said cover plate having a second elongated edge which engages the interior surface of said concave portion along a line adjacent and spaced below said first edge of said concave portion, whereby said cover plate spans and covers the junction between said first edge of said upper housing portion and said first edge of said concave portion.

4,499,909

CIGARETTE MANUFACTURING MACHINE

Enzo Seragnoli, Bologna, Italy, assignor to G.D Societa' per Azioni, Bologna, Italy

Filed Mar. 12, 1981, Ser. No. 243,137
Claims priority, application Italy, Apr. 8, 1980, 48353 A/80
Int. Cl.³ A24C 5/18
U.S. Cl. 131—84 R **10 Claims**



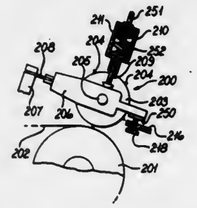
1. A cigarette manufacturing machine of the continuous rod type comprising at least one manufacturing unit (1) which itself comprises a suction conveyor (88) for the formation of a continuous tobacco filler, the tobacco being fed to said suction conveyor (88) by means of a distributor (2), characterized in that said distributor (2) comprises, in combination, a first chamber (22), an inlet duct (12) connected to said first chamber (22), a second chamber (50), a feed channel (51) connecting said first chamber (22) and second chamber (50) together, a feed unit (26) extending along said feed channel (51), a third chamber (74), a carding unit (62) disposed between said second chamber (50) and third chamber (74), and an ascending outlet duct (79) closed upperly by said suction conveyor (88) and communicating with said third chamber (74) and with feed means (85) for a stream of compressed air, said carding unit (62) comprising a first carding roller (63) and a second carding roller (65), the first disposed below the second and substantially tangential to each other, and said second chamber (50) comprising a base wall disposed substantially tangential to an upper generating line of said first carding roller (63) and defined, at least partly, by a belt (54) constituted by the upper run of a conveyor belt (55) movable towards said carding unit (62); control means (49, 100–101) being provided for controlling the tobacco level in at least one of said first chamber (22) and second chamber (50), and first, second and third operating means (41, 60, 82) being mounted on said distributor for operating said feed unit (26), said conveyor belt (55) and said carding unit (62) respectively.

4,499,910

CUTTING HEAD FOR A CIGARETTE FILTER ATTACHMENT MACHINE

Derek H. Dyett; Godfrey A. Wood, both of High Wycombe, England, and Albert D. Seim, II, Richmond, Va., assignors to Molins, Ltd., London, England

Filed Nov. 23, 1981, Ser. No. 324,031
Claims priority, application United Kingdom, Nov. 21, 1980, 8037441
Int. Cl.³ A24C 5/56
U.S. Cl. 131—95 **20 Claims**



20. A cutting head for a cigarette filter attachment machine, for cutting a filter attachment web at regular intervals in cooperation with a cutting drum, comprising a rotary member which carries one or more knives, each end of said rotary member being supported by a separately-movable carrier member pivotally mounted on a fixed member by means of a leaf spring, means for urging the rotary member towards the cutting drum with a predetermined force, and a damping member for each carrier member arranged to resist movement of the rotary member towards the cutting drum at least along part of the range of such movement.

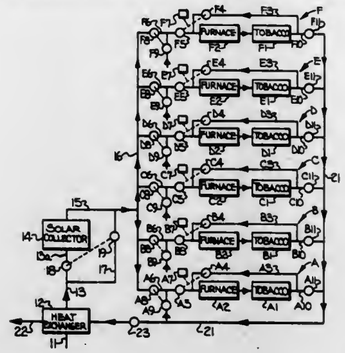
4,499,911

ENERGY EFFICIENT CURING AND DRYING SYSTEM

William H. Johnson, 4000 Brothwell Ct., Raleigh, N.C. 27606

Filed Dec. 9, 1980, Ser. No. 214,772
Int. Cl.³ A24B 3/10, 3/12
U.S. Cl. 131—302 **30 Claims**

10. In a method for curing tobacco in which air, under controlled conditions of temperature and humidity, is directed in a recirculating flow path through a batch of tobacco leaves disposed in a curing chamber, with the air being heated as necessary by a furnace, and with the humidity conditions in the curing chamber being controlled by selectively admitting fresh air to the recirculating flow of air through the curing chamber while discharging exhaust air, said curing method following an established curing schedule in which the tobacco first undergoes a yellowing phase wherein the air is maintained at a temperature of about 95°–105° F. with high air recirculation and relative humidity to promote yellowing of the tobacco leaves, the tobacco thereafter undergoing a drying phase in which the relative humidity is reduced by admitting fresh air and discharging humid exhaust air and while gradually increasing the temperature of the air to about 165° F. to promote drying of the tobacco, the combination therewith of an improvement characterized by substantially reducing the fuel costs for curing the tobacco, said improvement comprising carrying out said curing method concurrently for a series of batches of tobacco in respective individual curing chambers, each being provided with its own furnace, while beginning the



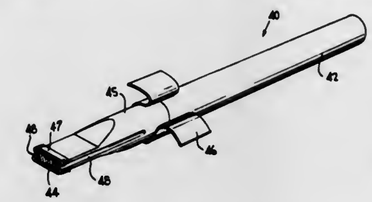
curing schedule for each respective batch in the series at a different time so that the batches of tobacco are at different phases of cure and at different conditions of temperature and humidity at any given time, with at least one batch being in the yellowing phase while at least one other batch is in the drying phase, collecting and combining the flows of heated exhaust air discharged from the respective curing chambers and directing the combined flows through a heat exchanger while also directing a stream of incoming fresh air through the heat exchanger for being preheated by the heat of the exhaust air, and supplying the thus preheated stream of fresh air to at least one of the respective curing chambers to thereby reduce the fuel requirements of the individual furnaces.

4,499,912

FREE AIR DILUTION SMOKE FILTER AND METHOD AND APPARATUS FOR FABRICATING SAME

Richard M. Berger, Midlothian, Va., assignor to American Filtrona Corporation, Richmond, Va.

Filed Dec. 23, 1981, Ser. No. 333,815
Int. Cl.³ A24D 3/04
U.S. Cl. 131—336 **14 Claims**



1. A smoke filter comprising:

a smoker-pervious filter rod having a smoke receiving end and a smoke discharging end; and

smoke-impervious wrap means wrapped about and circumscribing said rod along its entire length;

wherein at least one groove is defined in said rod and said wrap means, said groove having a depth dimension extending radially inward of said rod and a length dimension which extends a predetermined distance along said rod from said smoke discharging end of said rod, said groove being open to ambient air along its entire length;

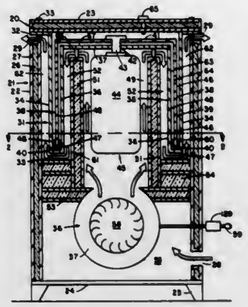
wherein said filter is contoured in the form of a cigarette holder with a raised lip in said smoke discharging end.

4,499,913

METHOD AND APPARATUS FOR PRODUCING FRICTION HEAT

Eugene J. Frenette, Derry, N.H., assignor to Albert Frenette, Derry, N.H.

Filed Mar. 20, 1980, Ser. No. 132,316
Int. Cl.³ F24C 9/00
U.S. Cl. 126—247 **1 Claim**



1. Heat generating apparatus, comprising:

(a) a housing formed with an air inlet opening and an air outlet opening spaced from one another;

(b) a relatively fixed cylindrical casing mounted upright in said housing and formed with spaced cylindrical concentric inner and outer walls open at the upper end thereof, and closed at the lower end thereof to define at least one relatively deep annular well at the lower portion thereof for containing a quantity of lubricating liquid therein;

(c) a cylindrical rotor mounted in said casing for rotation about a vertical axis;

(d) said rotor being formed with a cylindrical tubular lower skirt extending concentrically into said well and defining a pair of relatively small annular inner and outer clearances with said inner and outer walls of said casing;

(e) said rotor including a transverse wall;

(f) power means drivingly connected to said transverse wall for rotating said rotor about said vertical axis whereby said liquid will move upwardly in both of said clearances and cause said walls to be heated; and

(g) air moving means operatively associated with said apparatus for flowing air against the outer surface of said walls between said inlet and outlet openings.

4,499,914

SELECTOR VALVE FOR AN AIRCRAFT ON BOARD OXYGEN GENERATION SYSTEM WITH HIGH PRESSURE OXYGEN BACKUP

Bernard J. Schebler, Davenport, Iowa, assignor to Litton Systems, Inc., Davenport, Iowa

Filed Apr. 14, 1983, Ser. No. 484,964
Int. Cl.³ A61M 15/00
U.S. Cl. 137—81.1 **5 Claims**

1. A selector valve for controlling the flow of oxygen from a primary, or a secondary, backup source, singly or in combination, either selected manually or automatically to suit environmental condition, said selector valve comprising:

a three-position manual switch including a cam surface;

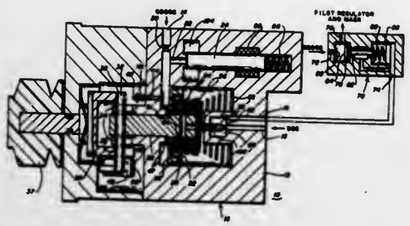
a slidable stem controlled by said cam surface;

a piston surface mounted on said stem and exposed on one

side to a control pressure derived from the primary source;

a poppet valve for controlling the flow of oxygen from the secondary source, said poppet valve being coupled to said stem;

control pressure vent means for venting said control pressure to atmosphere, whereby,



(1) in the first position of the switch the poppet valve is mechanically closed by said stem to prevent the flow of oxygen from the secondary source,

(2) in the second position said control pressure maintains the poppet valve mechanically closed, and

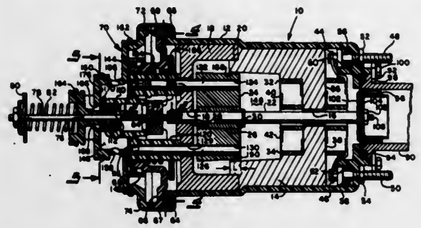
(3) in the third position said control pressure is vented to atmosphere, allowing the poppet valve to open to allow the flow of oxygen from the secondary source.

4,499,915

FLUID PRESSURE SIGNAL TRANSDUCER

Kirk B. Peloza, Wheaton, Ill., assignor to Eaton Corporation, Cleveland, Ohio

Filed Oct. 21, 1983, Ser. No. 544,164
Int. Cl.³ G05D *16/00*
U.S. Cl. 137—85 **13 Claims**



1. An electrically controlled fluid pressure modulator valve comprising:

(a) housing means defining a fluid pressure signal chamber having an inlet port for connection to a source of fluid pressure, an exhaust port and a signal output port;

(b) pressure responsive means operably sensing the pressure differential between said signal chamber and the atmosphere external to said housing means;

(c) valve means, operable upon movement to control fluid communication between said inlet port and said chamber and between said chamber and said exhaust port;

(d) magnetomotive force means including electromagnetic means defining opposite magnetic poles received on said housing means and adapted for connection to receive an electrical control signal;

(e) rotor means formed of ferromagnetic material received said housing means and defining an axial overlap and radial air gap with said poles, said rotor means rotatable with respect to said poles for effecting rotation of said valve means upon experiencing a torque applied by said magnetomotive force means, said rotor means being disposed for axial movement for varying said axial pole overlap; and,

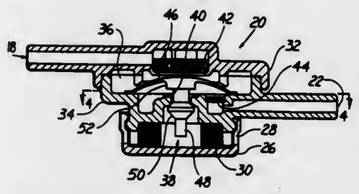
(f) means connecting said pressure responsive means and said rotor means and operable to effect changes in said axial overlap in response to changes in said pressure differential.

4,499,916

VACUUM CHECK VALVE

John D. Hanson, Mississauga, and John E. Cook, Chatham, both of Canada, assignors to Allied Corporation, Morristown, N.J.

Filed Jan. 31, 1983, Ser. No. 462,180
Int. Cl.³ F02P *5/10*
U.S. Cl. 137—103 **3 Claims**



1. A vacuum check valve for use in a vacuum operated system for preventing the flow of air contaminates and vapors from a vacuum source to vacuum operated devices, the check valve comprising:

a housing with a first and second chamber therein;

an orifice interconnecting said first and second chamber;

an input port connected to said first chamber and adapted to receive the vacuum source;

an output port from said first chamber and adapted to be connected to the vacuum operated devices, said output port spaced from said input port;

a reference pressure source input connected to said second chamber;

a unitary umbrella valve in said orifice having

an umbrella-shaped top surface overlying both said orifice and said output port,

an elongated stem axially aligned from the underside of said umbrella-shaped top surface and extending through said orifice and into said second chamber;

an orifice closing member positioned on said stem and spaced from said umbrella-shaped top surface and being operable when the vacuum at said output port is equal to or less than the vacuum at said input port for closing said orifice from said reference pressure source allowing the flow of air only from said output port to said input port, and

a circular member connected on the underside of said umbrella-shaped top surface for sealing said orifice only when the vacuum at said output port is greater than the vacuum at said input port; and

at least one bleed passage under said circular member and extending from said orifice for allowing the flow of air only between said output port and said reference pressure source input when the vacuum at said output port is greater than the vacuum at said input port.

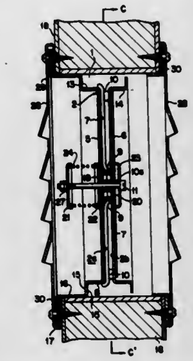
4,499,917

VENTILATOR FOR COLDROOM WITH PRESSURE RESPONSIVE VALVES

Toshimichi Fujiya, No. 4-22, Kounandai 6-chome, Kounan-ku, Yokohama-shi, Kanagawa-ken, Japan

Filed Mar. 2, 1983, Ser. No. 471,257
Int. Cl.³ F16K *17/194*
U.S. Cl. 137—341 **7 Claims**

1. In a ventilator for a coldroom with pressure responsive valves wherein a first valve port and a second valve port are formed independently from each other in a partition wall having supporting rib portions extending to cross a ventilation path, said first valve port is closed by a first valve plate disposed on the outer side of said partition wall, said second valve port is closed by a second valve plate disposed on the inner side of said partition wall, said first valve plate becomes free from said partition wall so as to open said first valve port when



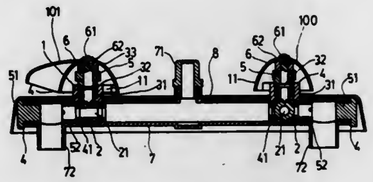
internal pressure is increased, and said second valve plate becomes free from said partition wall so as to open said second valve port when internal pressure is reduced, an improvement in that electric heaters are disposed at said supporting rib portions between said respective valve ports of said partition wall and at outer peripheral portions of said valve ports or in the vicinity of those portions, thereby to heat contact portions of said valve plates with said heated partition wall.

4,499,918

MIXING FAUCET

Jang T. Jong, 4th Fl./1, 47, Sec. 2, Shuang Shih Rd., Taichung, Taiwan

Filed Apr. 4, 1983, Ser. No. 482,134
Int. Cl.³ F16K *5/06, 19/00*
U.S. Cl. 137—606 **1 Claim**



1. A globe mixing faucet comprising:

a water pipe;

a main body portion housing said water pipe, said main body portion being provided at the middle with a spigot communicating with said water pipe;

two globe valves provided in said water pipe, each of said globe valve comprising

a valve case formed on said water pipe and communicating therewith, said valve case being formed at the top with two protuberances set apart at an angle of 90°,

a globe plug disposed within said valve case, said globe plug having a groove thereon and a hole therethrough,

two wearing rings disposed at two sides of said globe plug respectively,

an adjusting collar threadedly engaged with said water pipe and capable of being turned in or out to adjust the engagement between said wearing rings and said globe plug,

a fixing screw threadedly engaged with said water pipe,

a sealing ring placed on said fixing screw for preventing leakage of water,

a transmission rod located in said casing, said transmission rod being provided at the lower end with a protuberance adapted to engage said groove of said globe plug,

two sealing rings surrounding said transmission rod,

a screw sleeve threadedly engaged with the top of said casing, said screw sleeve having a center hole through which the upper part of said transmission rod extends, and

a faucet handle threadedly engaged with the upper part of said transmission rod, said faucet handle having two projections which associate with said protuberances of said valve case to limit the movement of said faucet within 90°; and

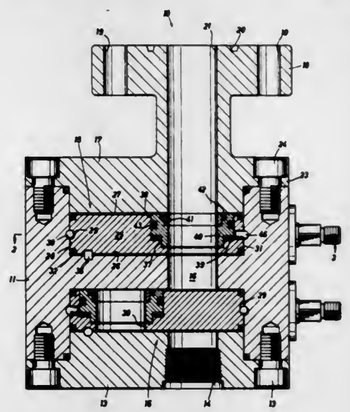
two inlet pipes mounted at two sides of said water pipe.

4,499,919

VALVE

Buford G. Forester, #9 Cumberland Trail, Conroe, Tex. 77302

Division of Ser. No. 101,424, Dec. 10, 1979, Pat. No. 4,304,261.
This application Jul. 1, 1981, Ser. No. 279,430
Int. Cl.³ F16K *5/10*; F16H *1/04*
U.S. Cl. 137—613 **10 Claims**



1. A rotary disk valve which comprises:

(a) a hollow valve body having a at least one cavity therein with a smooth planar wall;

(b) at least one flat circular valve disk supported in said cavity for rotary movement therein and in operative sealing engagement with said smooth planar wall, said flat valve disk having a pair of smooth parallel faces and having an opening therethrough asymmetrically positioned for rotation about the center of said disk;

(c) said valve body having an inlet and an outlet with a passage therebetween passing through said cavity interrupted by said flat valve disk;

(d) said valve disk being rotatable between a first position having the wall of said disk interrupting said passage and a second position having said disk opening aligned with said passage,

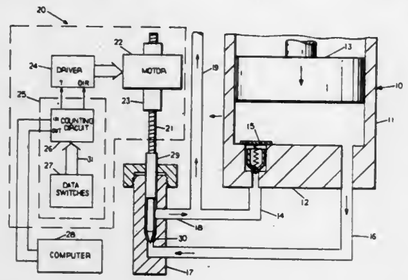
(e) a removable valve sleeve insert slidably positioned in said flat valve disk opening adapted to be removed therefrom; and

(f) spring means biasing said valve sleeve insert into operative sealing engagement with the smooth planar wall of said cavity, whereby said disk closes said passageway in said first position and opens said passageway in said second position.

4,499,920
APPARATUS FOR CONTROLLING A VALVE

Leonard D. Steffan, Perrysburg, Ohio, and Robert D. Kohler, Temperance, Mich., assignors to Owens-Illinois, Inc., Toledo, Ohio

Filed May 17, 1982, Ser. No. 378,563
Int. Cl.³ F15B 9/09
U.S. Cl. 137—624.15 1 Claim



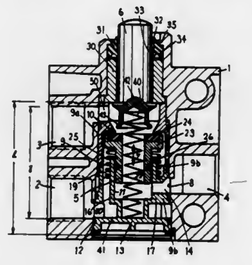
1. In apparatus for controlling the aperture size of a valve in a fluid exhaust line from a reciprocable fluid motor in an individual section of a glass forming machine wherein a stepper motor is connected to the valve, a driver is electronically connected to said motor for stepping said motor both clockwise and counterclockwise, said driver having a toggle input responsive to a series of pulses and a direction input responsive to a signal, and a control means having outputs electrically connected to said driver for applying a predetermined number of pulses to the toggle input of said driver and a first signal to the direction input thereof, said control means having a first input responsive to a first control signal which causes said control means to enter an extend toggling mode in which said control means applies the predetermined number of pulses to the toggle input of said driver and applies a signal to the direction input of said driver whereupon said motor steps in one direction to decrease the aperture of the valve from a preset size to a restricted size, and a second input responsive after the extend toggling mode to a second control signal which causes said control means to enter a retract toggling mode in which said control means applies the predetermined number of pulses to the toggle input of said driver and applies a second signal to the direction input of said driver whereupon said motor steps in the other direction to increase the aperture of the valve back to the preset size, the improvement in said control means comprising a first manual override switch for applying clock pulses directly to the toggle input of said driver and a second manual override switch which when open applies a high, valve opening signal to the direction input to said driver and when closed applies a low, valve closing signal to the direction input to said driver for adjusting the initial aperture size of said valve.

4,499,921
THREE-WAY AIR VALVE

Kurt Stoll, Lenzhalde 72, D-7300 Esslingen a.N., Fed. Rep. of Germany

Filed Dec. 4, 1981, Ser. No. 327,646
Claims priority, application Fed. Rep. of Germany, Dec. 24, 1980, 3049110
Int. Cl.³ F16K 11/10
U.S. Cl. 137—627.5 10 Claims

1. A valve, comprising a housing having means defining an elongate chamber therein and means defining first, second and third ports in said housing which are each in fluid communication with said chamber; sleevelike insert means which is disposed in said chamber and includes first and second axially offset insert members, said first insert member having means defining a valve seat thereon which faces generally in a first axial direction and having means for providing fluid communication between said first port and the region within said first insert member on the side of said valve seat remote from said second insert member; a closure member supported in said sleevelike insert means for axial movement between first and second positions, movement of said closure member from said first to said second position taking place in said first axial direction, said closure member having sealing surface means thereon which faces in a second axial direction generally opposite said first axial direction and which includes first and second surface portions, said first surface portion sealingly engaging said valve seat when said closure member is in said first position; first resilient means for yieldably urging said closure member toward said first position; a ram supported in said chamber for axial movement between third and fourth positions, movement of said ram from said third to said fourth position taking place in said first axial direction, said ram having a surface which faces generally in said first axial direction and which is spaced from said closure member when said ram is in said third position, said surface on said ram sealingly



engaging said second surface portion on said closure member when said ram has moved from said third position to a fifth position which is located between said third and fourth positions, movement of said ram from said fifth position to said fourth position effecting movement of said closure member from said first to said second position against the urging of said first resilient means; second resilient means for yieldably urging said ram toward said third position; and means defining first and second passageways which each provide fluid communication between opposite sides of said closure member, fluid flow through said first passageway being obstructed when said first surface portion on said closure member is sealingly engaging said valve seat on said first insert member, and fluid flow through said second passageway being obstructed when said surface on said ram is sealingly engaging said second surface portion on said closure member; and wherein said second insert member includes means defining third and fourth passageways therein which respectively communicate with said first and second passageways and which each communicate with a respective one of said second and third ports.

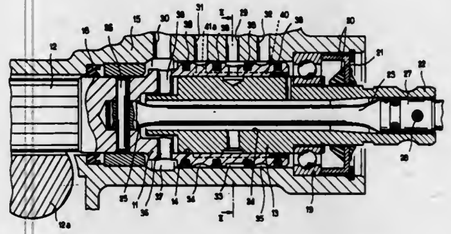
4,499,922
ROTARY DISTRIBUTOR FOR A HYDRAULIC SERVO-MECHANISM

Christian Tanguy, Frepillon, France, assignor to Societe Anonyme D.B.A., Paris, France

Filed Dec. 27, 1982, Ser. No. 453,015
Claims priority, application France, Jun. 1, 1982, 82 00090
Int. Cl.³ B26D 5/06
U.S. Cl. 137—625.24 7 Claims

1. A rotary hydraulic distributor for a servo-mechanism, especially for the assisted steering system of a motor vehicle, of the type comprising two distributor elements provided with co-axial cylindrical portions, respectively an outer distributor element having a cylindrical inner surface and an inner distributor element having a cylindrical outer surface and rotatably mounted in an axial bore of said outer distributor element forming said inner surface and capable of a limited relative

rotation with respect to the latter, to and fro about a relative neutral position, wherein said distributor elements are provided with cavities which define a fluid circulation circuit connectable to a fluid source and a fluid reservoir and selectively to at least one chamber of an assistance cylinder, said fluid circulation circuit including variable restrictions defined by cooperating portions of said cavities opening in said inner and outer surfaces of said distributor elements, respectively, and variable as a result of a relative rotation between said distributor elements, characterized in that said cooperating portions of said cavities consist of:



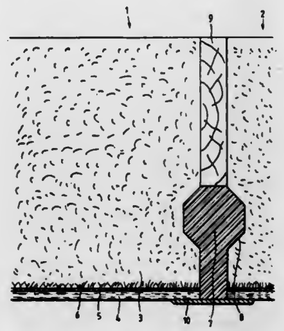
an even number of evenly angularly spaced axially extending grooves closed at their axial ends formed in said inner surface of said outer distributor element, and

radially extending bores formed at regular angular intervals in said outer surface of said inner distributor element and positioned facing smooth inner areas of said inner surface of said outer distributor element between adjacent edges of two neighboring grooves thereof, when said distributor is in said neutral position.

4,499,923
CONCRETE PIPE WITH AN INNER LINING

Heiner I. Hammer, Seevetal, Fed. Rep. of Germany, assignor to Schlegel Lining Technology GmbH, Hamburg, Fed. Rep. of Germany

Continuation of Ser. No. 362,077, Mar. 26, 1982, abandoned. This application Mar. 22, 1984, Ser. No. 592,217
Claims priority, application Fed. Rep. of Germany, Apr. 7, 1981, 3114003
Int. Cl.³ F46L 9/08
U.S. Cl. 138—109 13 Claims

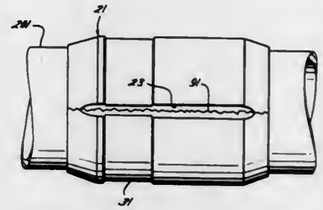


1. In a concrete pipe of the type including an elongated concrete wall having an inner surface and first and second ends, the improvement comprising; an inner lining sheet of flexible polymeric material disposed adjacent said inner surface, said sheet characterized by a first modulus of elasticity; a plurality of monofilamentary projections having one end attached to said lining sheet and the other end extending into said wall, said projections characterized by a modulus of elasticity greater than that of said sheet, and spaced apart a mean distance no greater than approximately three times the thickness of said sheet.

4,499,924
METHOD OF MAKING A DRILL PIPE WEAR SLEEVE ASSEMBLY AND PRODUCT THEREOF

William R. Garrett, Houston, Tex., assignor to Smith International, Inc., Newport Beach, Calif.

Continuation-in-part of Ser. No. 197,057, Oct. 14, 1980, abandoned, which is a continuation of Ser. No. 010,235, Feb. 8, 1979, abandoned, which is a continuation-in-part of Ser. No. 818,672, Jul. 25, 1977, Pat. No. 4,146,060. This application Mar. 12, 1982, Ser. No. 357,783
Int. Cl.³ E21B 17/10; B26F 3/00; B23K 28/00; B23P 17/00
U.S. Cl. 138—110 15 Claims



1. Drill pipe comprising a tube, a tool joint at each end of the tube, a fractured sleeve welded together about the tube, said sleeve having an inner diameter smaller than the outer diameters of the tool joints, and adhesive cement between the sleeve and tube affixing the sleeve against axial and circumferential motion relative to the tube, said sleeve being fractured longitudinally at intervals not greater than one hundred and eighty degrees measured in both directions about the sleeve circumference.

5. Method of manufacturing belted drill pipe which drill pipe includes a tube and a wear belt about the tube in between the ends of the tube, said method comprising the steps of:

providing a tube and a wear belt, said belt including a circumferentially homogeneously integral metal sleeve,

forming a plurality of grooves in the sleeve extending from adjacent one end to adjacent the other end thereof, and not in excess of 180 degrees apart circumferentially,

cooling the entire sleeve to at least the ductile—brittle transition temperature,

extending the sleeve radially while at a temperature at least as low as said transition temperature to cause the sleeve to fracture along said grooves into a plurality of segments,

setting said segments with the fracture surfaces aligned and in engagement to reform the sleeve about said tube in the desired axial position therealong,

welding said segments together along said grooves, and

affixing said sleeve to said tube against both rotatinal and axial movement relative to said tube.

4,499,925
HOSE-LIKE SEAL DEVICE FOR CONCRETE JOINTS

Peter Kaufmann, Immensee, Switzerland, assignor to Aquarius für Dichte Bauten AG, Kirchberg, Switzerland

Continuation-in-part of Ser. No. 232,515, Feb. 9, 1981, abandoned. This application Nov. 18, 1982, Ser. No. 442,751
Claims priority, application Switzerland, Mar. 5, 1980, 1738/80
Int. Cl.³ F16L 11/12
U.S. Cl. 138—125 6 Claims

1. A hose-like sealing device for concrete joints, essentially consisting of:

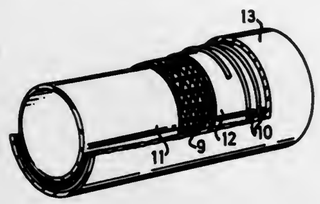
an inner liquid pervious support body;

a first liquid pervious meshed hose member surrounding said support body;
a second liquid pervious meshed hose member surrounding said first hose member; and
sealant throughpassing means for passing a liquid sealing agent therethrough;



said sealant throughpassing means comprising a member formed of a paper-like structure arranged in a hose-like fashion between both of said first and second hose members and adapted to be penetrated from the interior towards the outside by said liquid sealing agent.

4,499,926
CABLE JACKET
Gunnar S. Friberg, Kungälv, Sweden, assignor to AB Volvo, Goetborg, Sweden
Filed Nov. 8, 1983, Ser. No. 549,729
Int. Cl.³ F16L *11/08*
U.S. Cl. 138—126 **3 Claims**



1. Cable jacket, in particular a rubber jacket for a welding cable and adapted to enclose groups of electrical conductors and coolant ducts for conducting pressurized medium for cooling the cable, comprising a first inner rubber layer, at least one reinforcement layer of warp-knit type radially outwardly of said first layer, a second intermediate rubber layer located radially outwardly of said reinforcement layer, at least one cord helically wound radially outward said reinforcement layer, said cord consisting of a twined string, the spacing between adjacent cord windings measuring in the longitudinal direction of the jacket about 2–8 mm, and an outer rubber layer radially outwardly of said cord, the reinforcement warp-knit layer and the cord being vulcanized into their respective adjacent rubber layers such that in the finished jacket a radial distance is maintained between the warp-knit layer and the cord.

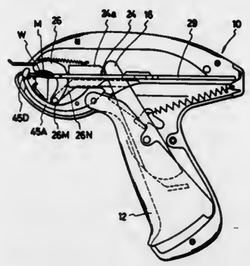
4,499,927
TWO-PLY SCREEN FOR THE SHEET FORMING ZONE OF A PAPERMAKING MACHINE
Georg Borel, Reutlingen, Fed. Rep. of Germany, assignor to Hermann Wangner GmbH & Co KG, Fed. Rep. of Germany
Continuation of Ser. No. 303,331, Sep. 18, 1981, abandoned. This application Dec. 8, 1983, Ser. No. 559,015
Claims priority, application Fed. Rep. of Germany, Sep. 26, 1980, 3036409
Int. Cl.³ D03D *15/00, 15/02;* B21F *1/10;* B10D *39/08*
U.S. Cl. 139—425 A **2 Claims**

1. A two-ply fabric for the sheet forming zone of a papermaking machine comprising a plurality of weft filaments arranged in pairs one over the other and a plurality of warp filaments wherein all of said warp filaments are woven into the top ply to reduce marking and increase retention, a first portion of the warp filaments are woven into the top ply as well as



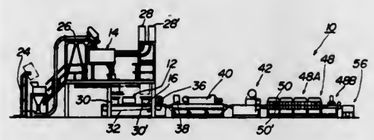
into the bottom ply of said fabric and a second portion of the warp filaments are woven only into the top ply of said fabric with the number of warp filaments in the top ply being at least twice that contained in the bottom ply.

4,499,928
CABLE BANDING MACHINE
Akira Furutsu, Tokyo, Japan, assignor to Japan Bano'k Co. Ltd., Tokyo, Japan and Ben Clements & Sons, Inc., South Hackensack, N.J.
Filed Mar. 27, 1984, Ser. No. 593,994
Claims priority, application Japan, Apr. 6, 1983, 58-59316
Int. Cl.³ B21F *9/02, 45/00;* B29C *17/00*
U.S. Cl. 140—93.2 **9 Claims**



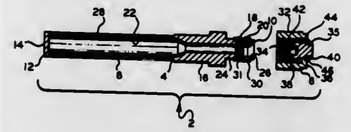
1. A cable banding machine of the type with which a machine body broadly resembling a pistol receives supply of strap-type banding elements individually comprising a strap body having interlockable male and female members at one and the other ends thereof respectively and, when an operation lever provided to a grip handle is triggered, the banding elements are fed one at a time toward a nose end portion of the machine body and applied about a plurality of cables or the like to be banded altogether and received on a front end portion of the machine body, and then fastened with the male and female members interlocked to accomplish banding, the machine comprising a pusher member driven through triggering of the operation lever to move in a guide path in the machine body from a rear end portion to a nose end portion of the machine body while pushing a banding element, a stopper for fixing an end portion of the banding element at a front end portion in the guide path during a banding operation, and a pusher lever pivotally supported at a front end portion of the pusher member and having a bending face along its front edge by which, after the movement of the banding element is stopped by the stopper, the male and the female members of the banding element are interlocked by the pivoting movement of the pusher lever.

4,499,929
PROCESS OF PRODUCING A PLATE FOR A LEAD STORAGE BATTERY
Toshiaki Shima, Osaka; Naozi Hamamuro, Nabari; Shinichi Ikari, Kumagaya, and Tuneo Fuzishiro, Nabari, all of Japan, assignors to Shin-Kobe Electric Machinery Co., Ltd., Tokyo, Japan
Filed Oct. 9, 1981, Ser. No. 310,049
Claims priority, application Japan, Oct. 13, 1980, 55/141974
Int. Cl.³ B65B *3/04*
U.S. Cl. 141—1.1 **14 Claims**



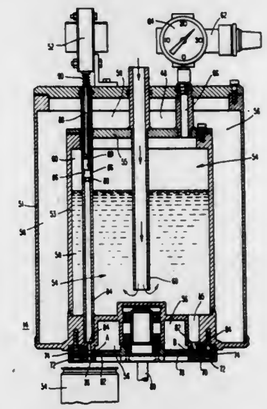
1. A process of producing a plate for a lead storage battery comprising the steps of casting a plate grid of lead material; molding a frame of acid-resisting plastic material which is to surround said plate grid; placing said plate grid into said frame to form a plate substrate; preparing a paste of lead oxide which is to be active material; filling said plate substrate with said paste on both sides of said plate substrate; partly drying said paste filled in said plate substrate; placing an acid-resisting fiber mat onto both sides of said plate substrate so that said plate substrate filled with said plate is covered with said fiber mat; and thermally adhering said fiber mat to both sides of said frame of said plate substrate whereby said plate is completed.

4,499,930
METHOD FOR STORING GAS SAMPLES
John P. Walters, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.
Division of Ser. No. 286,311, Jul. 24, 1981, Pat. No. 4,402,911.
This application Feb. 28, 1983, Ser. No. 470,800
Int. Cl.³ B67C *5/00*
U.S. Cl. 141—8 **2 Claims**



1. A method for storing a soil gas sample comprising:
(a) providing an apparatus comprising a tubular member having a closed end, an open end, an interior surface and an exterior surface, the interior surface having a generally annular shoulder facing the open end and positioned near the open end and a generally frustoconical surface diverging toward the open end positioned between the shoulder and the end, the exterior surface of the tubular member being provided with threads adjacent its open end; and a resiliently pierceable septum positioned against the annular shoulder and forming a partition across the interior surface of the tubular member, an interior volume being defined by the septum and tubular member which is in the range of from about 1/10 to about 100 cubic centimeters, said interior volume being evacuated to a pressure of less than about 10 torr;
(b) injecting a sufficient amount of soil gas sample into the interior volume of the apparatus to provide a pressure of from about 800 to about 4000 torr of soil gas;
(c) positioning a plug having a frustoconical surface with its frustoconical surface against the frustoconical surface of the tubular member, the plug further having an annular flange facing oppositely from the frustoconical surface;
(d) connecting a drawdown nut to the open end of the tubular member, said drawdown nut having a threaded interior surface and a flange extending at least partially across its interior surface connecting the flange of the plug; and
(e) after said injecting, tightening the drawdown nut to contact the annular flange of the plug with the annular flange of the drawdown nut to urge the frustoconical surface of the plug against the frustoconical surface of the tubular member to seal the inside of the tubular member from the outside.

4,499,931
NITROGEN INJECTOR SYSTEM
Joseph Urban, Pleasantville, N.Y., assignor to Crown Cork & Seal Company, Inc., Philadelphia, Pa.
Filed Nov. 15, 1982, Ser. No. 441,636
Int. Cl.³ B65B *3/10*
U.S. Cl. 141—67 **18 Claims**



1. A liquid nitrogen injector system for dispensing liquid nitrogen to a series of moving containers of the type having:
a liquid nitrogen storage unit;
a liquid nitrogen injector unit;
a container conveyor for transporting containers in said series to said injector unit;
a means for transferring liquid nitrogen from said storage unit to said injector unit;
said injector unit comprising:
a nitrogen receptacle having
a first portion for nitrogen in the liquid phase; and
a second portion for nitrogen in the gaseous phase, said gaseous phase nitrogen being at a pressure exceeding atmospheric pressure;
an injector orifice;
a distributing disk having metering apertures radially disposed therein, said disk being rotatable with respect to said injector orifice, said distributing disk normally blocking said injector orifice, said apertures receiving a metered amount of liquid nitrogen from said first portion of said receptacle;
means for rotating said disk and for transporting said metered amount to a position adjacent said orifice, said orifice being unblocked when said metered amount is in said position; and
ejecting means pneumatically connected to said second portion of said receptacle for ejecting said metered amount from said unblocked orifice by the pressure of said gaseous nitrogen.

4,499,932

SEPARABLE COUPLINGS FOR CONTAINERS

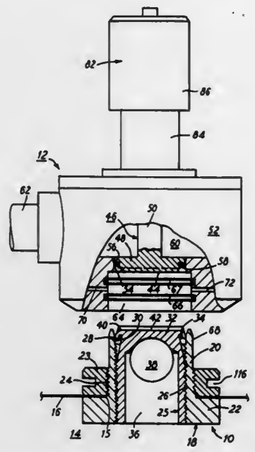
John A. Perigo, Hailey, and John E. Divall, Grove, both of England, assignors to Metal Box p.l.c., Berkshire, England

Filed Feb. 2, 1983, Ser. No. 463,238

Claims priority, application United Kingdom, Feb. 2, 1982, 8202969

Int. Cl.³ B65B *3/04*

U.S. Cl. 141—91 **10 Claims**



1. In combination, a container and a coupling member removably engageable therewith for conducting a product to or from said container,

said container comprising a container closure having a container passage and a container valve for opening and closing said container passage,

said coupling member comprising a valved passage means and being removably engageable with said container closure when said passage means and said container passage are both closed,

said coupling member including valve actuating means,

said valve actuating means being inoperable to open said valved passage means when said coupling member and said container closure are out of interengagement,

said valve actuating means being operably connectible with said container valve, when said coupling member and said container closure are interengaged, for moving said container valve from a closed position to an open position,

said container valve including means for opening said valved passage means in response to said container valve being opened.

4,499,933

MANUAL WORK-FEEDING DEVICE AND GUARD BODY FOR SHAPING MACHINES

Monty R. Thompson, 1015 E. Hyman, Aspen, Colo. 81611

Filed Jul. 21, 1982, Ser. No. 400,278

Int. Cl.³ B27C *5/04*

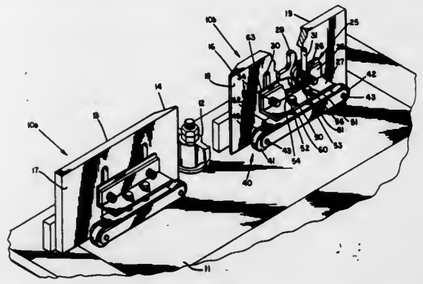
U.S. Cl. 144—134 A **7 Claims**

1. A manual work feeding device and guard body for a shaping machine including a work table and a cutting tool mounted on said work table, comprising:

a supporting fence having a pair of substantially parallel, substantially vertical slots;

a mounting frame secured to said supporting fence by two interconnecting members extending through said pair of vertical slots in said supporting fence so as to position said mounting frame over a workpiece on said work table, said mounting frame being vertically adjustable within the limits of said pair of vertical slots in said supporting fence, said mounting frame further comprising a horizontal portion having a pair of substantially parallel, substantially horizontal slots, said pair of horizontal slots being aligned so as to be substantially perpendicular to said supporting fence;

a roller assembly comprising a pair of rollers, said roller assembly being mounted upon said mounting frame by a first pair of threaded members extending through said pair of horizontal slots in said horizontal portion of said mounting frame so that said rollers extend therebelow and come into contact with said workpiece on said work table, said roller assembly being horizontally adjustable within the limits of said pair of horizontal slots in said horizontal portion of said mounting frame so as to direct said workpiece against said supporting fence; and



resilient means for urging each of said rollers against the worpiece, so as to depress the workpiece to the work table as the workpiece is simultaneously directed against said supporting fence.

4,499,934

CUTTER FOR SQUARE TIMBER HEWING MACHINE

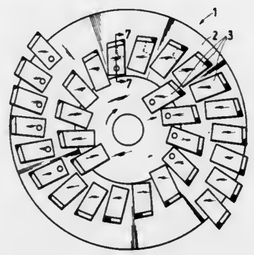
Kauko Rautio, 52700 Mäntyharju, Finland

Continuation of Ser. No. 290,316, Aug. 5, 1981, abandoned. This application Dec. 27, 1983, Ser. No. 565,830

Claims priority, application Finland, Aug. 6, 1980, 802468

Int. Cl.³ B27C *9/00*

U.S. Cl. 144—176 **4 Claims**



1. A cutter for square timber hewing, comprising: a cutter disk shaped like a truncated cone and having a mantle surface; multiple cutter bits affixed to said cutter disk on said mantle surface and arranged in consecutive succession after each other in a helical configuration, so that cutting takes place by each said cutter bit in turn starting at the outer periphery of said cutter disk and proceeding inwardly, each of said cutter bits having two cutting edges which lie on each other's extension and define an obtuse angle therebetween, said cutter bits arranged so that a first bit cutting edge moves parallel with the grain of a timber being cut and the other cutting edge moves obliquely with reference to the grain of the timber, wherein each cutter bit is affixed to the cutter disk so that the cutter bit first edge cutting parallel with the direction of the timber grain extends towards the center of the cutter disk, and an extension of said cutter bit first edge is used to affix said cutter bit to the cutter disk, the mantle surface of the cutter disk being provided with a recess adjacent to the bit cutting edges for chip accommodation and whereby, hewing of the timber is effected by feeding the timber trunk in between two opposing rotating cutters and chips produced from the hewing are flung outwardly without accumulating on any surface of the cutter disk.

4,499,935

VENEER LATHE

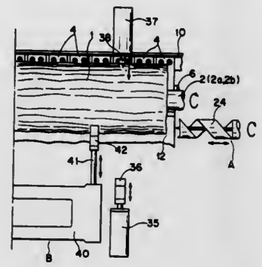
Katsuji Hasegawa, Nagoya, and Yasuhiro Ibuki, Ohbu, both of Japan, assignors to Meinan Machinery Works, Inc., Japan

Filed Dec. 21, 1982, Ser. No. 451,749

Claims priority, application Japan, Dec. 28, 1981, 56-211649

Int. Cl.³ B27L *5/02*

U.S. Cl. 144—209 R **5 Claims**



1. A veneer lathe for turning a log to cut off a veneer sheet therefrom comprising means for supporting and centering a log on said lathe, a boring mechanism having a retractable boring tool disposed on at least one side of a supported and centered log in facing relation to a butt end thereof operable to axially form a center bore in the log, means for feeding the log having the center bore therein to a predetermined position, spindle means at said predetermined position adapted to extend into the center bore axially formed in the log for rotatably supporting said log on the lathe at said predetermined position, a cutting tool adapted to move toward and away from said rotatably supported log, a rotary roller having a plurality of annular driving members each having a plurality of piercing members arranged therearound, said annular driving members being disposed around said roller at intervals along an axial direction of said rotary roller, said rotary roller being disposed substantially in parallel to an edge of the cutting tool and so as to enable said piercing members to thrust into the circumference of the log at a position near the edge of the cutting tool, a driving unit for driving said rotary roller, and a pressure member disposed on at least one side of each driving member to press the log slightly ahead of the tool edge.

4,499,936

COLLAPSIBLE BOW SAW

Göran A. Nilsson, P.O. Box 61, 82022 Sandarne, Sweden

Filed Sep. 27, 1983, Ser. No. 536,254

Claims priority, application Sweden, Oct. 13, 1982, 8205812

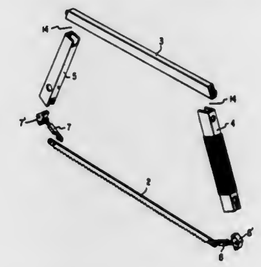
Int. Cl.³ B27B *21/00*

U.S. Cl. 145—33 E **2 Claims**

1. In a collapsible bow saw having an elongated saw blade, having a hollow main element with an axis and ends, having two hollow end elements with ends and with cross sectional dimensions that are different from the cross sectional dimensions of the main element so as to allow the elements to be telescoped into each other and to allow the blade to be telescoped into a sheltered position within the elements when the saw is not assembled for use, and having connecting means for connecting the end elements to the ends of the main element when the saw is assembled for use, the blade being tightly stretched between the end elements at a position spaced apart from the main element when the saw is assembled for use so as to form a rigid frame as long as tensile stress is maintained in the blade, the improvement comprising:

said hollow main element and hollow end elements have internal internal cavities and have box profiles with closed cross sections, the cavity in the main element being wider than the maximum width of the blade and the exterior of the main element having cross sectional dimensions that are smaller than the cross sectional dimensions of the cavities in the end elements so that the main element is telescopically movable into the end elements when the saw is not assembled for use; and

said connecting means includes a chamfered extremity having a protrusion provided on the main element at each end thereof and first and second transverse flanges provided on the main element at each end thereof, the chamfered extremity being disposed between the first and second transverse flanges and the protrusion being closer to the first transverse flange than the second, the chamfered



extremity being disposed at an angle with respect to the axis of the main element, and further includes two side flanges provided on each end element adjacent an end thereof and third and fourth transverse flanges provided on each end element adjacent an end thereof, the side flanges being spaced apart and the third and fourth flanges being spaced apart between the side flanges, the third transverse flange terminating in an end edge and the fourth transverse flange having a hole which is spaced apart from the end of the end element, when the saw is assembled for use each end element being disposed at an obtuse angle with respect to the axis of the main element, said obtuse angle being substantially the same as the angle between the axis of the main element and the chamfered extremity that is closest to the end element, and when the saw is assembled for use each end of the main element being disposed between the side flanges of a respective end element with the first transverse flange abutting the end edge of the respective end element, with the protrusion extending into the hole of the respective end element, and with the chamfered extremity fitting tightly against the fourth transverse flange of the respective end element.

4,499,937

WINDOW SHADE SYSTEM FOR REDUCING HEAT TRANSPORT THROUGH WINDOWS

Martin Waine, Riverside; Edward T. Rude, Fairfield, and Jules Nisenson, Stamford, all of Conn., assignors to General Clutch Corp., New York, N.Y.

Filed Jan. 21, 1982, Ser. No. 341,302

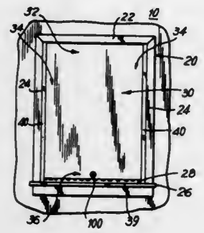
Int. Cl.³ E06B *7/16*

U.S. Cl. 160—41 **5 Claims**

1. A window shade system for a window housed within a frame including a top end, generally planar side surfaces, and a sill having a top surface, which comprises:

a shade configured to substantially overlie a window, said shade including a top end, side edge sections, and a bottom longitudinal edge section;

said bottom longitudinal edge section including a first depending longitudinal pocket, and a second longitudinal pocket configured to substantially enclose said first longitudinal pocket, said enclosing pocket being spaced from



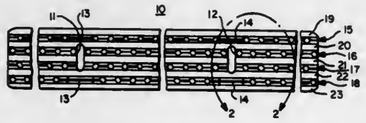
said first longitudinal pocket to define a longitudinal void between said pockets, so that when said shade is positioned adjacent the sill, said enclosing pocket conforms to the contour of the top surface of the window sill to frictionally seal the shade within the window frame, thereby preventing the passage of air beneath the window shade between the bottom longitudinal edge section of the shade and the sill enhancing the insulating capacity of the shade.

4,499,938

PATTERNED METAL BLIND SLAT AND METHOD AND APPARATUS FOR PRODUCING THE SAME

Andrew J. Toti, 311 W. River Rd., Modesto, Calif. 95351

Filed Jan. 13, 1983, Ser. No. 457,682
Int. Cl.³ B21D *53/00*
U.S. Cl. 160—236 **30 Claims**



1. In a metal slat for use in a venetian-type blind and having a pair of cord receiving transverse slots formed therethrough at respective end sections thereof, said slots defining narrowed slat material regions between each end of each slot and an associated adjacent marginal edge of said slat, the improvement comprising an embossed rib formed in said slat at each of said narrowed slat material regions, each said rib extending longitudinally on said slat and having an overall length substantially greater than the width of said slots, and a plurality of separated longitudinal rows of embossed ribs formed on said slat in a continuous in-and-out pattern of successive ribs in each row and having a substantial depth relative to the thickness of the slat.

4,499,939

PRODUCTION OF MACHINE ELEMENTS WITH PROTECTION CAGES CONNECTED THEREWITH BY MEANS OF A SINGLE CASTING OPERATION

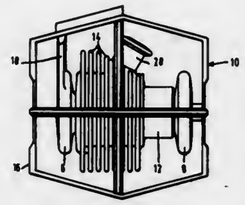
Giulio Marton, Pavia, Italy, assignor to Necchi, Societa per Azioni, Pavia, Italy

Continuation of Ser. No. 267,919, May 28, 1981, abandoned. This application Dec. 7, 1983, Ser. No. 558,705
Claims priority, application Italy, Jun. 3, 1980, 42915 A/80
Int. Cl.³ B22C *9/00, 9/02*
U.S. Cl. 164—23 **1 Claim**

1. Process for the mass production of elements with protective cages connected therewith from a single casting operation comprising:

(a) creating a hardened shell containing a casting impression of the outer surface of the casting to be reproduced;

(b) forming by a pattern in a green sand casting mold a shell impression corresponding to the print of said shell, said pattern having raised portions for creating impressions of



a cage to form communicating conduits with said casting impression;

(c) removing the pattern from the green sand casting mold;

(d) placing said shell in said shell impression in the green sand casting mold;

(e) pouring molten metal into said mold to create said casting and then said cage; and

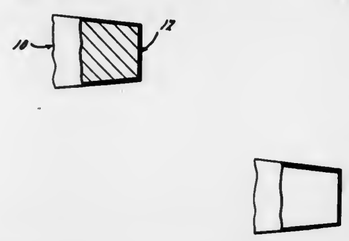
(f) shaking out said unitary casting and cage.

4,499,940

CASTING PROCESS INCLUDING MAKING AND USING AN ELASTOMERIC PATTERN

Robert T. Hall, Milford, Mich., assignor to Williams International Corporation, Walled Lake, Mich.

Filed Aug. 1, 1983, Ser. No. 518,849
Int. Cl.³ B22C *7/02, 9/04*
U.S. Cl. 164—36 **10 Claims**



1. A casting process comprising the steps of

fabricating a master pattern from an electrically conductive material,

plating said master pattern with a metal,

chemically dissolving said master pattern to leave a metallic shell mold,

reinforcing said metallic shell mold exteriorly thereof,

pouring an elastomeric compound into said metallic shell mold to form an elastomeric pattern,

stripping the elastomeric pattern from said metallic shell mold,

coating said elastomeric pattern with a non-metallic material to form a non-metallic shell mold,

removing said elastomeric pattern from said non-metallic shell mold,

pouring a metal into said non-metallic shell mold to form a metallic casting, and

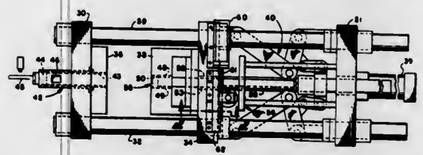
retrieving said metallic casting from said non-metallic shell mold by destroying said non-metallic shell mold.

4,499,941

MODIFIED PRESSURE CASTING PROCESS AND MACHINE

Walter M. Goldhamer, 23300 Shaker Blvd., Cleveland, Ohio 44122

Division of Ser. No. 150,596, May 16, 1980, Pat. No. 4,354,545. This application Jun. 30, 1982, Ser. No. 393,686
Int. Cl.³ B22D *17/10*
U.S. Cl. 164—313 **26 Claims**



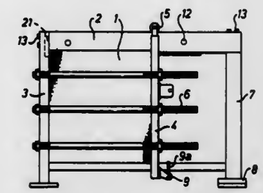
1. A die casting machine comprising a fixed platen and a movable platen adapted to support mating die halves, surface means defining a cold chamber extending through said fixed platen, a shot piston in said chamber, a plunger extending through said movable platen, said surface means including an end face of said piston, an end face of said plunger, and axially extending side walls between said end faces, drive means for initially relatively moving said piston and plunger axially toward each other after said chamber is partially filled with a molten metal charge to reduce the volume of said chamber and thereby to compact and shape the charge and for thereafter moving said piston and plunger spaced from each other in tandem to move the shaped and compacted change, and means for controlling the spacing.

4,499,942

PLATE HEAT EXCHANGER

John Allison, Crawley, England, assignor to The A.P.V. Company Limited, Crawley, England

Continuation of Ser. No. 165,342, Jul. 2, 1980, abandoned. This application May 25, 1983, Ser. No. 496,676
Claims priority, application United Kingdom, Jul. 6, 1979, 7923605; May 1, 1980, 8014541
Int. Cl.³ F28F *3/08*
U.S. Cl. 165—78 **17 Claims**



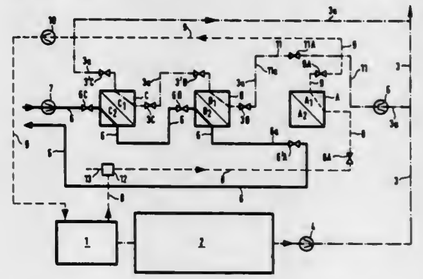
1. In a plate heat exchanger comprising a frame including a fixed head and a fixed supporting pillar, and a top rail extending between said head and said supporting pillar, and a pack of plates carried by said top rail and compressed between said fixed head and a movable follower mounted for movement on the top rail; the improvement comprising means for attaching the top rail to the fixed head and fixed supporting pillar in a readily releasable manner so that the top rail and pack of plates can be lifted bodily and together from the head and supporting pillar, the follower being releasably mounted on the top rail, and means for temporarily accommodating the follower on the support pillar when the top rail is removed to position the follower clear of the top rail and pack of plates so that the rail and pack of plates can be lifted as a unit.

4,499,943

APPARATUS HAVING A DRYER FOR ORGANIC SUBSTANCES

Otmar U. Schäfer, Pienzenauerstrasse 9, 8000 Munich 80, Fed. Rep. of Germany

Filed Jun. 14, 1983, Ser. No. 504,178
Claims priority, application Fed. Rep. of Germany, Jun. 16, 1982, 3222700
Int. Cl.³ F23L *15/02*; F23D *17/00*; F24D *23/02*
U.S. Cl. 165—95 **6 Claims**



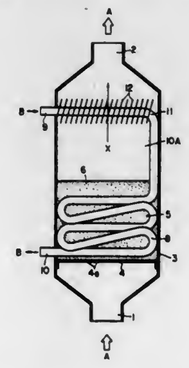
1. A plant for drying organic substances, especially wood chips or the like, comprising, a combustion chamber for generating hot gas and connected to a dryer for said substances, at least one indirect heater exchanger having primary and secondary sides, first duct means for passing contaminated exhaust gases from said dryer through the primary side of said heat exchanger during a normal operation phase, second duct means connectable to said dryer for bypassing said heat exchanger during a cleaning phase, third duct means connectable to said combustion chamber and the primary side of said heat exchanger to direct a portion of the hot gas thereto during the cleaning phase and return the same to said combustion chamber, and valve means to close said second and third duct means during the normal operation phase and to open said second and third duct means and close said first duct means during the cleaning phase for the heat exchanger.

4,499,944

HEAT EXCHANGERS INSTALLED IN FLUIDIZED BEDS

Takashi Komakine, Kawaguchi, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kanagawa, Japan

Filed Feb. 16, 1983, Ser. No. 466,945
Claims priority, application Japan, Feb. 18, 1982, 57-24929; Jun. 29, 1982, 57-110797; Aug. 11, 1982, 57-138570
Int. Cl.³ F28C *3/16*; F28D *13/00*
U.S. Cl. 165—104.16 **5 Claims**



1. A heat exchanger comprising

a vertical casing having a lower fluid inlet port and an upper fluid exit port,

a fluidized bed formed on a perforated distribution plate positioned in said casing above said inlet port, and

a serpentine heat transfer pipe means embedded in said fluidized bed, and traversed by another fluid to be heated or cooled by said first mentioned fluid,

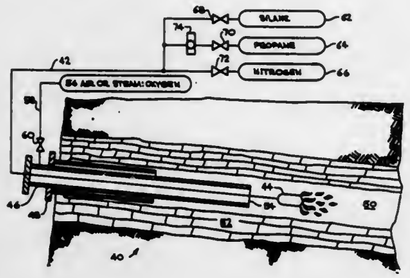
said heat transfer pipe means having a construction such that said first mentioned fluid and particles of said fluidized bed do not move straightforwardly from said inlet port toward said exit port, and said heat transfer pipe means comprising a horizontal portion connected in series with a portion thereof embedded in said fluidized bed and extending through a vacant space in said vertical casing above said fluidized bed, said horizontal portion being provided with a plurality of spaced inclined fins which overlap with each other when viewed from above.

4,499,945

SILANE-PROPANE IGNITOR/BURNER

Richard W. Hill; Dewey F. Skinner, and Charles B. Thorsness, all of Livermore, Calif., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed May 26, 1983, Ser. No. 498,438
Int. Cl.³ E21B *29/02, 36/02*
U.S. Cl. 166—50 **8 Claims**



1. Apparatus for producing a controlled burn in an injection pipe in a horizontal borehole in an underground coal gasification process, comprising:

a small diameter retractable tube which is insertable into the borehole;

a burner tip on the tube which is positioned at the point where the controlled burn is desired to ignite coal or cut the pipe; and

gas supply means operatively connected to the tube including a first gas supply means to provide a charge of pyrophoric gas through the tube to the burner tip to contact oxygen containing combustion supporting gas in the pipe and thereby ignite, and a second gas supply means to provide a flow of combustible fuel gas through the tube following the charge of pyrophoric gas to be ignited by the burning pyrophoric gas.

4,499,946

ENHANCED OIL RECOVERY PROCESS AND APPARATUS

Alan B. Martin, Beattyville, and Ernest V. Jackson, Lexington, both of Ky., assignors to Mason & Hanger-Silas Mason Co., Inc., Lexington, Ky.

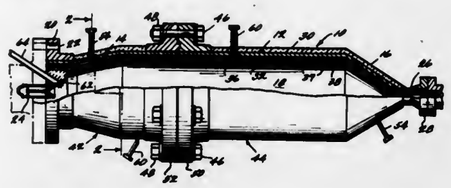
Filed Mar. 10, 1981, Ser. No. 242,372
Int. Cl.³ E21B *36/02, 43/24*
U.S. Cl. 166—57 **8 Claims**

1. Apparatus for generating combustion gases at high pressures and high temperatures and steam for selective injection into subterranean formations to enhance recovery of hydrocarbons and other fluids therefrom, comprising:

means defining a pressure-tight elongated combustion reactor having a restricted outlet at one end thereof for the discharge of combustion gases under high pressure;

refractory material lining the wall of said reactor substantially throughout the interior thereof;

burner means at the other end of said reactor for the supply of fuel and air thereto under high pressure to generate combustion gases in said reactor at high pressures and high temperatures;



means for introducing water into the combustion flame in an amount sufficient only for reducing the temperature of the flame to a level non-destructive of said refractory material;

means defining a steam boiler detachably connectable to said reactor outlet for the passage therethrough of, and the heating thereof by, the combustion gases created in said reactor to generate steam; and

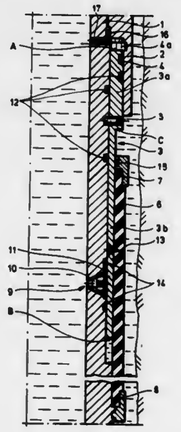
means for selectively injecting such steam into the formation with or alternatively to the gases.

4,499,947

PACKER FOR SEPARATION OF ZONES IN A WELL BORE

István Zsóka; László Madar, both of Budapest, Hungary; Anatoly A. Cübin, Moscow, U.S.S.R.; Albert A. Galvoronsky, Moscow, U.S.S.R.; Lev H. Farukshin, Moscow, U.S.S.R.; Piotr A. Morzsic, Luberci, U.S.S.R.; Aleksandr I. Lisov, and Vladilen A. Galusztainc, both of Moscow, U.S.S.R., assignors to Magyar Szenhidrogenipari Kutatofejleszto Intezet, Szazhalombatta, Hungary and Vsesojuzny Nauchno-Issledovatelsky Institut Burovol Technici, Moscow, U.S.S.R.

Filed Dec. 12, 1983, Ser. No. 560,264
Int. Cl.³ E21B *33/127*
U.S. Cl. 166—179 **5 Claims**



1. A packer for separation of zones behind casing in a well bore comprising a casing string serving as mandrel, for the packer, an expandable packing element, first and second sleeves tightly fixed to the peripheries of said packing element, the first sleeve is sealed and movable in respect of said casing string, the second sleeve is fixed to said casing string, characterized in that a collar (2) is tightly fixed to said casing string (1), a sleeve plug (3) is provided which is sealed against and slides on said casing string (1) from a starting position to a lower position and further to a final position which has a thicker upper part (3*a*) and a thinner lower part (3*b*) made of one piece, the upper part (3*a*) is slidingly arranged at least partially between said casing string (1) and said collar (2) and is sealed against both of them, the lower part (3*b*) is slidingly arranged at least partially between said casing string (1) and said packing element (6), and is sealed against both of them,

said first sleeve is sealed against and slides on said sleeve plug (3),

a non-return valve (9) is provided in said casing string (1) connecting the inside of said casing string (1) and the space between said casing string (1) and said sleeve plug (3),

a bore (13) is made in the lower portion (3*b*) of said sleeve plug (3) connecting the opening of said non-return valve (9) and the space between said packing element (6) and said sleeve plug (3) in its lower position,

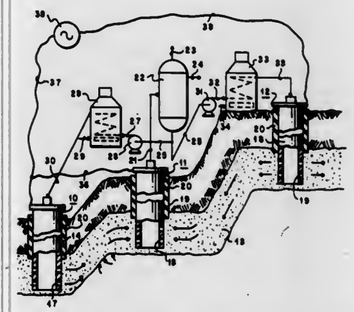
a bore (17) is made in said casing string (1) above the upper portion (3*a*) of said sleeve plug (3) in its starting position.

4,499,948

VISCOUS OIL RECOVERY USING CONTROLLED PRESSURE WELL PAIR DRAINAGE

Thomas K. Perkins, Dallas, Tex., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed Dec. 12, 1983, Ser. No. 560,695
Int. Cl.³ E21B *43/24*
U.S. Cl. 166—248 **11 Claims**



1. A method of recovering viscous oil from a subsurface formation comprising the steps of:

a. providing a first injection well and a first production well which extend into and communicate with said formation, said first injection well and said first production well being spaced laterally one from the other by a predetermined first distance, said first injection well and said first production well being electrically connected to each other by an electrically conductive metallic flow path;

b. injecting aqueous fluid into said first injection well at a predetermined first pressure in a manner such that said aqueous fluid flows from said first injection well through said formation and into said first production well, said first pressure being below the shut-in formation pressure of said first production well; and

c. passing electrical current from said first production well and said first injection well through at least a part of said formation.

4,499,949

COMBINED SURFACE AND IN SITU TAR SAND BITUMEN PRODUCTION

Costandi A. Audeh, Princeton, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Jun. 9, 1983, Ser. No. 502,817
The portion of the term of this patent subsequent to Aug. 9, 2000, has been disclaimed.
Int. Cl.³ E21B *43/243*
U.S. Cl. 166—260 **8 Claims**

1. The invention is a method for the recovery of hydrocarbons (bitumen) from a tar sand deposit having a minable tar sand formation and an unminable tar sand formation in an area proximate to the area of the minable formation, said unminable tar sand formation penetrated by at least one injection well and at least one spaced-apart production well, said injection well and production well being in fluid communication with a substantial portion of the unminable formation, comprising:

(a) mining the tar sands from the minable formation;

(b) conveying the mined tar sands to a processing operation wherein the tar sands are processed to recover bitumen and by-product hydrogen sulfide;

(c) injecting a predetermined amount of said hydrogen sulfide into said unminable tar sand formation via said injection well;

(d) initiating an in-situ combustion reaction in the unminable formation by injecting an oxygen containing gas into the injection well; and

(e) continuing to inject an oxygen containing gas into the injection well to propagate the combustion zone through the formation to stimulate recovery of hydrocarbons from the formation via the production well.

4,499,950

WELLHEAD STABILIZATION

Bruce J. Watkins, Rancho Palos Verdes, Calif., assignor to Hughes Tool Company, Houston, Tex.

Filed May 27, 1983, Ser. No. 499,069
Int. Cl.³ E21B *33/043*
U.S. Cl. 166—285 **7 Claims**

1. In a sub-sea well assembly of the type having an outer member mounted at the top of the well, an inner member protruding upwardly from the outer member and having connection means for connecting to the riser equipment extending to a drilling vessel, the lower end of the inner member being connected to a string of casing, an improved means for mounting the inner member within the outer member, comprising in combination:

supporting means for supporting with the outer member substantially all of the weight on the inner member and means for preventing substantially all vertical movement of the inner member with respect to the outer member;

a plurality of slips located in two vertically spaced-apart sets in an annular space between the outer member and the inner member; and

mounting means for mounting the slips for sliding movement between a contracted position when the inner member is being lowered into the outer member and an expanded position wedging between the inner member and the outer member after the weight on the inner member is supported by the supporting means, to prevent side-to-side movement of the inner member with respect to the outer member.

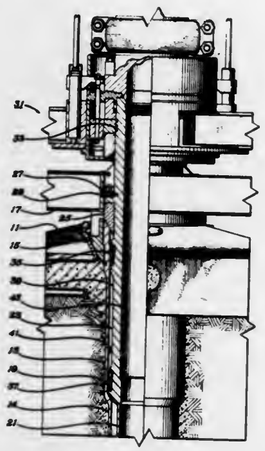
3. In a sub-sea well assembly of the type having a wellhead housing mounted at the top of the well, an improved method of mounting a wellhead within the wellhead housing, comprising in combination:

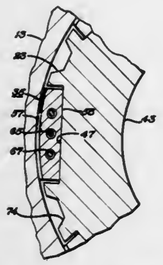
mounting a plurality of slips in two vertically spaced-apart sets around an exterior wall of the wellhead so as to be movable between a contracted position and an expanded position of larger diameter;

mounting a locking means to the wellhead for supporting the

weight of the wellhead on the wellhead housing and also for preventing upward movement of the wellhead;

securing casing to the lower end of the wellhead and lowering the casing and wellhead into the well until the locking means engages the wellhead housing to prevent vertical movement of the wellhead; then





moving the slips downward to wedge between the wellhead and the wellhead housing, to prevent side-to-side movement of the wellhead with respect to the wellhead housing; then

pumping cement down the casing to return upward between the wellhead and wellhead housing and through the slips; then

allowing the cement to harden.

4,499,951

BALL SWITCH DEVICE AND METHOD

Roy R. Vann, Odessa, Tex., assignor to GEO Vann, Inc., Houston, Tex.

Continuation of Ser. No. 175,515, Aug. 5, 1980, abandoned. This application May 9, 1983, Ser. No. 493,018
Int. Cl.³ E21B *43/11*
U.S. Cl. 166—297 **34 Claims**

10. A well completion apparatus mounted on a pipe string extending into a slanted cased borehole comprising:

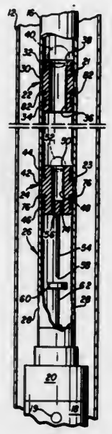
a perforating gun having a firing head and disposed on the pipe string in proximity of a hydrocarbon formation;

a tubular member series connected in the pipe string above said firing head;

said tubular member, firing head and perforating gun having their longitudinal axis substantially deviated from vertical due to the slanted cased borehole so as to preclude dropping a weight through the pipe string to impact and actuate said firing head;

vent means in said tubular member for opening the tubing string to fluid flow prior to the detonation of the perforating gun;

a piston reciprocably mounted within said tubular member and having an axial flow passageway formed therethrough;



circulation ports formed in said tubular member below said piston; and

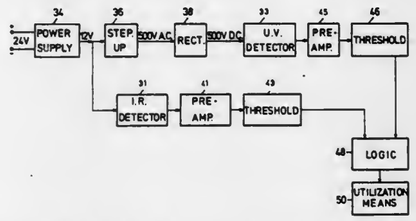
a ball circulated downhole through the pipe string for sealing said axial flow passageway whereby fluid pressure is applied to said piston causing said piston to engage said firing head and detonate said perforating gun.

4,499,952

FIRE AND EXPLOSION DETECTION AND SUPPRESSION SYSTEM AND ACTUATION CIRCUITRY THEREFOR

Dov Spector, 36 Har-Dafna St., Savion, and Yehiel Spector, 5 Avner St., Zahala-Tel Aviv, both of Israel

Continuation of Ser. No. 902,608, May 3, 1978, Pat. No. 4,270,613. This application May 29, 1981, Ser. No. 268,236
Claims priority, application Israel, May 3, 1978, 54138
Int. Cl.³ A62C *37/18*
U.S. Cl. 169—61 **18 Claims**



1. For use in a fire and explosion suppression system comprising a plurality of detectors and a plurality of suppression elements communicating with a common volume to be protected, actuation circuitry comprising:

means, responsive to the number of detectors detecting and to the elapsed time between detections and being operative in a first mode of operation, for operating said suppression elements in response to differing types of detection including:

first means operative in response to detection of a first type said first type characterized in that a first number of detectors detect within a first elapsed time span, for operating a first number of suppression elements; and

second means operative in response to detection of a second type, said second type characterized in that a second number of detectors detect within a second elapsed time span for operating a second number of suppression elements greater than said first number of suppression elements,

said detection of said second type being characterized in that at least one of the following criteria is fulfilled:

a. said second number of detectors which detect during said second elapsed time span exceeds said first number of detectors which detect during said second elapsed time span; and

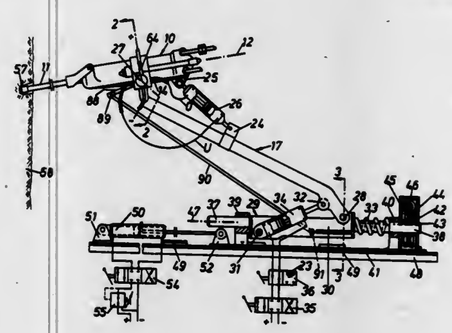
b. said second time span is less than said first time span.

4,499,953

APPARATUS FOR DRILLING ROCK

Alexis Molin, Saltsjöbaden, Sweden, assignor to Atlas Copco Aktiebolag, Nacka, Sweden

Continuation of Ser. No. 304,984, Sep. 23, 1981, abandoned, which is a continuation of Ser. No. 916,492, Jun. 19, 1978, abandoned. This application Oct. 7, 1983, Ser. No. 540,097
Claims priority, application Sweden, Jun. 21, 1977, 7707139-7
Int. Cl.³ E21B *15/04*
U.S. Cl. 173—43 **11 Claims**



1. Rock drilling apparatus comprising:

a drill boom,

a rock drilling machine equipped with a drill steel and pivotally carried on the drill boom at a fixed distance from and pivotally about a first pivot means transverse to the boom,

a boom supporting structure for pivotally supporting the drill boom about a second pivot means parallel with said first pivot means,

a pressure fluid driven positioning motor connected to said drill boom for pivoting during drilling said rock drilling machine and drill steel in unison about said first pivot means and about the tip of the drill steel in the hole being drilled so as to transmit to said first pivot means a corrective feeding movement relative to the desired drilling axis of the hole,

a pressure fluid driven feeding motor separate from said positioning motor connected to said boom supporting structure for moving said drill boom laterally during drilling so as to transmit a main feeding movement via said first pivot means to said rock drilling machine in the general direction of the desired drilling axis,

first sensing means incorporating a first rotary directional control valve element connected to said rock drilling machine for sensing during drilling the actual angular position in space of the rock drilling machine and drill steel relative to said supporting structure,

second sensing means incorporating a second rotary directional control valve element cooperating with said first valve element and selectively adjustable relative to said supporting structure to sense a set angular value parallel with the direction of the desired drilling axis,

angle transmission means between the rock drilling machine and said supporting structure associated with one of said first and second valve elements,

said first and second valve elements forming part of a pressure fluid servo control system connected to control the fluid supply to said positioning motor and having a feedback position wherein said positioning motor adapts said corrective feeding movement to said main feeding movement such that the rock drilling machine is fed and drills the hole closely along the desired drilling axis.

4,499,954

GEOTECHNICAL CONE LUBRICATION APPARATUS AND METHOD

Dennis A. Diggie, 12983 - 80th Ave., Surrey, British Columbia, Canada

Filed Jul. 12, 1983, Ser. No. 513,025
Int. Cl.³ F21B *11/02*
U.S. Cl. 175—21 **10 Claims**



1. A lubricating apparatus for lubricating a string of hollow rods connected to a cone penetrometer within a probe hole as used in geotechnical "in situ" testing, the rods having aligned bores communicating with each other and being of sufficient size to pass drilling fluid therethrough, the lubricating apparatus having an elongated tubular body characterized by:

(a) first and second end portions adapted to be connected to an inner end of the string of hollow rods and to structure adjacent the cone penetrometer respectively,

(b) a longitudinal bore extending along the body and communicating at the first end portion of the body with the bores of the hollow rods,

(c) a plurality of lubricating openings extending from the longitudinal bore to an outer surface of the tubular body, in which a major portion of the outer surface of the body is adapted to be within a maximum cross-section of the cone penetrometer,

(d) a plurality of projections extending from the outer surface of the body so as to be generally adjacent the maximum cross-section of the cone penetrometer, so as to roughen the sidewall of the probe hole,

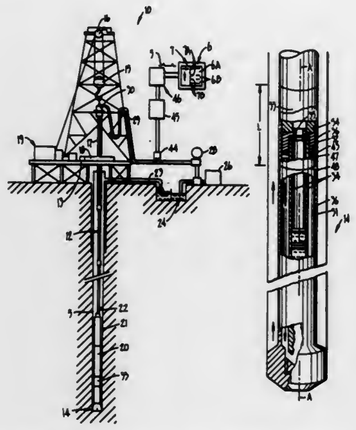
so that drilling fluid within the string of rods passes into the longitudinal bore of the body and is distributed through the plurality of lubricating openings to the outer surface of the body, and passes into side wall of the probe hole to stabilize the probe hole.

4,499,955

BATTERY POWERED MEANS AND METHOD FOR FACILITATING MEASUREMENTS WHILE CORING

Frank L. Campbell, Santa Ana; Dean C. Barnum, Fullerton, and William C. Corea, Placentia, all of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Filed Aug. 12, 1983, Ser. No. 522,923
Int. Cl.³ E21B *47/09*
U.S. Cl. 175—46 **11 Claims**



1. Apparatus for monitoring detrimental conditions associated with extraction of a core from an earth formation penetrated by a well bore using a core barrel having a rotatable outer cylindrical barrel attached to and operationally rotated by, a drill string, and drilling fluid circulating within said well bore as said core is extracted, wherein rotation of a usually stationary inner core barrel coaxial of the outer core barrel during said extraction of said core and its placement thereof within the cylindrical inner barrel, is used to indicate said associated detrimental coring conditions, comprising;

first means mechanically attached to said core barrel and operationally fitted between said outer and inner core barrels for generating a series of electrical signals indicative of relative rotation of the inner core barrel relative to the outer core barrel during extraction of said core from the formation;

downhole battery means connect to said first means for driving same with a dc current during said coring operations,

second means uphole from said first means and operational connected thereto for responding to said series of electrical signals indicative of said relative inner barrel rotation wherein occurrence of said relative inner barrel rotation causes operations to be initiated to overcome any associated detrimental condition within said well bore.

4,499,956

LOCKING MEANS FOR FACILITATING MEASUREMENTS WHILE CORING

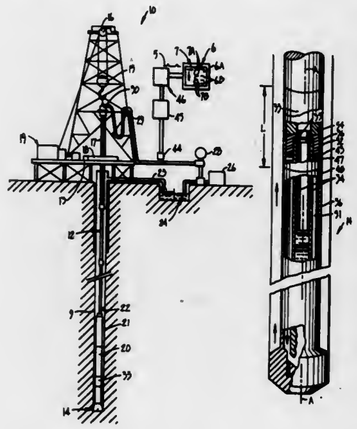
Frank L. Campbell, Santa Ana; Dean C. Barnum, Fullerton, and William C. Corea, Placentia, all of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Filed Aug. 12, 1983, Ser. No. 522,924
Int. Cl.³ E21B *47/09*
U.S. Cl. 175—46 **13 Claims**

1. Apparatus for monitoring detrimental conditions associated with extraction of a core from an earth formation penetrated by a well bore using a core barrel having a rotatable outer cylindrical barrel attached to and operationally rotated by, a drill string, and drilling fluid circulating within said well bore as said core is extracted, wherein rotation of a usually stationary inner core barrel coaxial of the outer core barrel during said extraction of said core and its placement thereof within the cylindrical inner barrel, is used to indicate said associated detrimental coring conditions, comprising;

locking means disconnectably locking said inner and outer core barrels together during tripping in of said core barrels and said drill string to a selected coring site, said locking means being deactivated by an increase in drilling fluid pressure within said well bore so as to free said inner and outer barrels for independent rotation after said barrels have been correctly positioned at a selected coring site within said well bore;

second means mechanically attached to said core barrel and



carried to said core site during tripping in of said drill string and core barrel, said means being operationally fitted relative to said inner and outer barrels for generating a series of electrical signals indicative of relative rotation of said inner core barrel relative to the outer core barrel during core extraction at said core site;

third means uphole from said first and second means but operationally connected to said second means so as to aid in interpreting said series of electrical signals indicative of said relative inner barrel rotation wherein occurrence of said relative inner barrel rotation causes operations to be initiated to overcome any associated detrimental condition within said well bore.

4,499,957

METHOD FOR REMOVING EARTH CUTTINGS FROM HOLES BEING FORMED BY A PNEUMATICALLY EXHAUSTED DRILL TOOL

Gerald Adcock, 2033 - 3rd Ave. North, Lewiston, Id. 83501

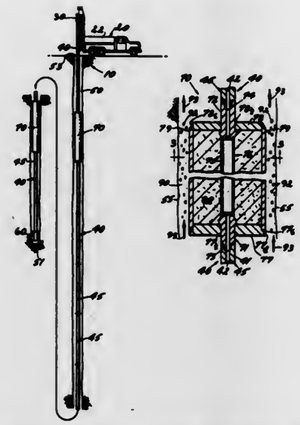
Filed Nov. 22, 1982, Ser. No. 443,231
Int. Cl.³ E21B *7/18*
U.S. Cl. 175—71 **1 Claim**

1. In a method for drilling holes in the earth using a pneumatically exhausted drill tool mounted at the distal end of an elongated drill string composed of a plurality of drill pipe sections wherein the improvement is a method for removing earth cuttings from the hole with a minimum amount of exhausting pneumatic gas or air without significantly increasing the weight or diameter of the drill string, comprising:

exhausting sufficient pressurized gas from the drill tool to initially flush the earth cuttings from the base of the hole as the cuttings are being formed and to entrain the cuttings in a gas stream along the outside of the drill string; and

intermittently accelerating the gas stream at spaced locations along the drill string by passing the exhausting gas through elongated approximately annularly shaped passageways of reduced cross-sectional flow area formed by

entrained flow accelerators placed intermittently in the drill string; the intermittent entrained flow accelerators being spaced apart approximately 50 to 200 feet and having lengths of between 5 and 35 feet; the entrained flow accelerators being sized to define annular cross-sectional flow areas which are between approximately 20 and 60 percent of the cross-sectional area of the hole; pressurized



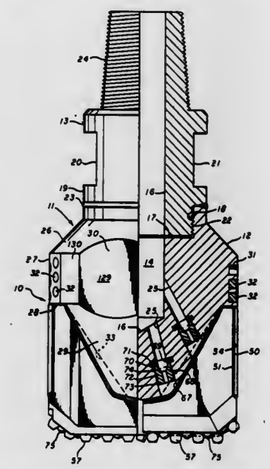
gas from the drill tool being exhausted at flow rates in the range between approximately 12 and 25 standard cubic feet per minute for each square inch of said annular cross-sectional flow area of said passageways to maintain the gas stream at a sufficient velocity to carry the suspended earth cuttings along the outside of the drill string to remove the cuttings from the hole.

4,499,958

DRAG BLADE BIT WITH DIAMOND CUTTING ELEMENTS

Robert P. Radtke, Kingwood, and Wilford V. Morris, Houston, both of Tex., assignors to Strata Bit Corporation, Houston, Tex.

Filed Apr. 29, 1983, Ser. No. 489,934
Int. Cl.³ E21B *10/46*
U.S. Cl. 175—329 **15 Claims**



1. A cutting element for a drag blade bit having a hollow metal bit body open at one end for connection to a drill string and closed at the other end,

said cutting element comprising a metal blade member adapted to be welded to said bit body in a position having forwardly and radially extending cutting edges and longitudinally extending gage edges comprising wear surfaces,

said blade member having a plurality of recesses spaced along said cutting edge,

a plurality of cutters positioned one in each of said recesses,

said cutters each comprising a cylindrical supporting stud of sintered carbide having an angularly oriented supporting surface with a disc-shaped element bonded thereon comprising a sintered carbide disc having a cutting surface comprising polycrystalline diamond;

said blade member cutting edge includes a bevelled surface at substantially the same angle of bevel as the angled surface of said cylindrical supporting stud, and

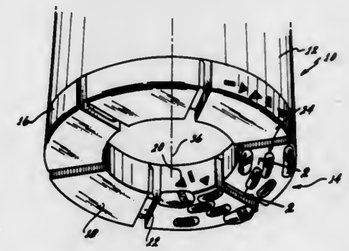
said cutters are positioned in said recesses at a depth such that the flat surfaces of said cutting discs lie in substantially the same inclined plane as said bevelled surface.

4,499,959

TOOTH CONFIGURATION FOR AN EARTH BORING BIT

Richard H. Grappendorf, Riverton, and Jana L. Brown, Orem, both of Utah, assignors to Christensen, Inc., Salt Lake City, Utah

Filed Mar. 14, 1983, Ser. No. 475,168
Int. Cl.³ E21B *10/48*
U.S. Cl. 175—330 **13 Claims**



1. A rotatable bit for use in earth boring comprising:

a matrix body member having portions forming a gage and a face,

said face including a plurality of waterways forming pad means between adjacent waterways,

each said pad means including a plurality of spaced synthetic polycrystalline diamond cutting elements mounted directly in the matrix during matrix formation,

each of said cutting elements being of a predetermined geometric shape and being temperature stable to at least about 1200° C.,

the said cutting elements including a portion received within the matrix body member of said pad means and a portion which extends above the surface of said pad means and which is adapted to form the cutting face of said cutting element,

each cutting element including side faces and a rear face spaced from said cutting face,

matrix material extending above said pad means and forming a plurality of spaced teeth, at least some of said cutting elements being positioned in said teeth,

at least some of said teeth including a trailing support contacting the rear of the associated cutting element,

at least some of said teeth which include a trailing support also including a prepad of matrix material extending above said pad and contacting and at least partially covering the cutting face of at least some of the associated cutting elements,

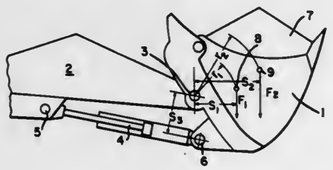
the side faces of each of the cutting elements received in said teeth being fully exposed above said paid,
the length of said tooth to the rear of said cutting element being greater than the length of said prepad, and
the portion of each of said cutting elements which forms the cutting face of said cutting elements extending more than 0.5 mm above the surface of the corresponding pad.

4,499,960

METHOD FOR MEASURING THE WEIGHT OF BULK GOODS LOADED BY A HYDRAULIC EXCAVATOR

Gerd Ehrich, Monheim, and Eberhard Dobner, Ratingen, both of Fed. Rep. of Germany, assignors to Mannesmann Aktiengesellschaft, Dusseldorf, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 389,716, Jun. 18, 1982,. This application Apr. 4, 1983, Ser. No. 481,637
Claims priority, application Fed. Rep. of Germany, Aug. 5, 1981, 3130901; May 28, 1982, 3220143
Int. Cl.³ G01G *23/37, 19/10, 19/02*
U.S. Cl. 177—25 **4 Claims**



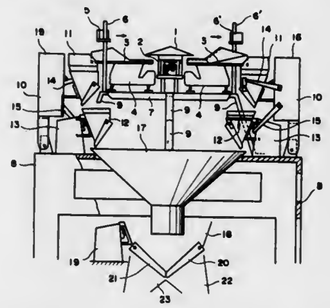
1. A method of measuring the loaded material of a material loading machine having a hydraulically operable loading arm and a material loading scoop pivotable on said loading arm about a pivot point, wherein said holding scoop and said loading arm are connected by a hydraulic piston-cylinder unit located therebetween and apparatus for measuring the bailing angle defined by the horizontal and a line passing through the pivot point of the scoop and the center of gravity of the empty scoop and for measuring the pressure on said hydraulic piston-cylinder unit comprising the steps of:
(a) feeding a computer the following predetermined fixed values;
(i) the weight of the empty scoop;
(ii) the distance from the center gravity of the empty scoop to said pivot point;
(iii) the surface area of the piston of the piston-cylinder unit and the moment distance of said piston-cylinder unit to said pivot point;
(iv) the distance from the center of gravity of the load in the scoop to said pivot point;
(v) the angle between the lines connecting the pivot point to the centers of gravity of the empty scoop and the load in the scoop;
(b) loading material into the scoop;
(c) measuring the pressure in said piston-cylinder unit at least in one position of said loading arm;
(d) measuring said bailing angle at the same position of said loading arm;
(e) providing said measured pressure and bailing angle values to said computer;
(f) computing the weight of the loaded material by using said computer which bases its calculations on said fixed predetermined values and said measured pressure and bailing angle values; and
(g) providing an indication of the weight of said loaded material.

4,499,961

COMBINATORIAL WEIGHING APPARATUS WITH CHECK WEIGHER

Masao Fukuda, Shiga, Japan, assignor to Kabushiki Kaisha Ishida Koki Seisakusho, Kyoto, Japan

Filed Jun. 21, 1983, Ser. No. 506,319
Claims priority, application Japan, Jun. 22, 1982, 57-93319[U]
Int. Cl.³ G01G *19/22, 19/52*; B07C *5/16*
U.S. Cl. 177—25 **8 Claims**



1. A combinatorial weighing apparatus for combining batches of articles having weight data from a plurality of weighing machines, finding a combination of weights giving a weight sum equal or closest to a target weight value within an allowable weight range setting, and discharging the batches of articles from the weighing machines providing the combination of weights, said combinatorial weighing apparatus comprising:
(a) a checking hopper for retaining the batches of articles discharged from the weighing machines providing the combination of weights; and
(b) a checking weighing machine, operatively connected to said checking hopper, for reweighing the batches of articles contained therein and providing reweighing data.

4,499,962

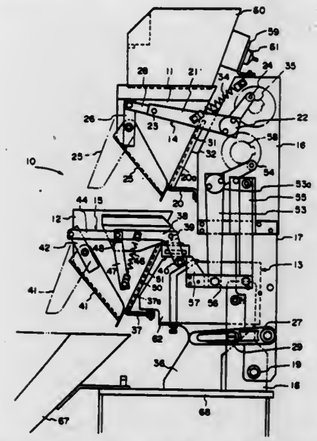
REMOVABLE HOPPER MECHANISM IN AN AUTOMATIC WEIGHING APPARATUS

Asashiro Izumi, Kusatsu, Japan, assignor to Kabushiki Kaisha Ishida Koko Seisakusho, Kyoto, Japan

Filed Sep. 20, 1982, Ser. No. 419,920
Claims priority, application Japan, Sep. 21, 1981, 56-140663[U]
Int. Cl.³ G01G *19/22, 21/28*
U.S. Cl. 177—58 **12 Claims**

1. A removable hopper mechanism for an automatic weighing apparatus having a dispersing table for supplying articles, a pool hopper for receiving articles from the dispersing table, a weighing hopper for receiving articles from said pool hopper and a weighing mechanism for weighing the articles received in said weighing hopper, comprising:
a frame;
a stand tiltably mounted on said frame;
a driver unit mounted on said stand;
a support bracket attached to said driver unit;
said pool hopper having guide members removably engaging said support bracket, a bottom cover drivable by said driver unit and guide plates removably mounted on said driver unit for guiding articles as supplied from the dispersing table into said pool hopper;
a first lever mechanism by which said driver unit and said bottom cover of said pool hopper are operatively interconnected, said first lever mechanism comprising disengageable levers; and
a second lever mechanism by which said driver unit and said bottom cover of said weighing hopper are operatively

interconnected, said second lever mechanism comprising a first lever operatively coupled with said bottom cover and having a roller, and a second lever operatively coupled with said driver unit and having a presser for engaging said roller when the bottom cover is to be driven by said driver unit.

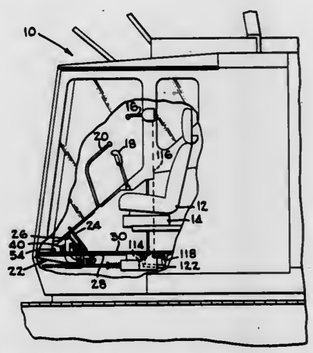


4,499,963

ADJUSTMENT MEANS FOR OPERATOR CONTROLS

Allen L. Liston, Cedar Rapids, Iowa, assignor to FMC Corporation, Chicago, Ill.

Continuation of Ser. No. 342,300, Jan. 25, 1982, abandoned. This application Jul. 11, 1984, Ser. No. 628,133
Int. Cl.³ B62D *25/20*
U.S. Cl. 180—90.6 **3 Claims**



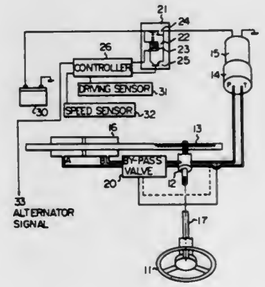
1. In a crane having an engine, an operators cab with a floor, an engine control shaft, the angular position of which controls the engine's output, rotatably mounted on the underneath side of said floor, and a seat mounted on said floor for fore and aft movement, the improvement comprising:
a subfloor suspended below said floor for fore and aft movement relative thereto;
a pair of outboard pedals pivotally mounted on said subfloor for independent control of said engine;
a pair of levers affixed to each end of said engine control shaft;
a pair of flexible control cables, each of which is operatively connected to one of said outboard pedals and to one of said levers;
a pair of inboard brake pedals pivotally mounted on said subfloor;
a pair of independent master brake cylinders, each having a moveable spool, attached to said subfloor;
a pair of rods, each of which is operatively connected between one of said inboard brake pedals and the spool of one of said brake cylinders;
and means for selectively positioning said subfloor relative to said floor.

4,499,964

POWER STEERING SYSTEM

Michio Abe, and Naoyuki Maeda, both of Aichi, Japan, assignors to Tokai TRW & Co. Ltd., Aichi, Japan

Continuation-in-part of Ser. No. 221,612, Dec. 31, 1980, Pat. No. 4,392,540, and a continuation-in-part of Ser. No. 384,539, Jul. 20, 1981, Pat. No. 4,417,640. This application May 26, 1982, Ser. No. 382,362
Claims priority, application Japan, May 29, 1981, 56-82346
Int. Cl.³ B62D *5/06*
U.S. Cl. 180—142 **8 Claims**



1. An apparatus for use in operating a power steering motor and turning a steerable vehicle wheel, said apparatus comprising a pump, electric motor means for driving said pump to supply fluid to the power steering motor, and control means for varying the speed of operation of said electric motor means through a range of operating speeds, said control means including circuit means operable between a nonconducting state and a conducting state wherein electrical energy is supplied to said motor means and means responsive to vehicle speed for decreasing the speed of operation of said motor means through the range of operating speeds as vehicle speed increases by switching said circuit means between the conducting and nonconducting states to maintain said circuit means in the conducting state a percentage of the time which decreases through the range of motor operating speeds as vehicle speed increases during a steering operation.

4,499,965

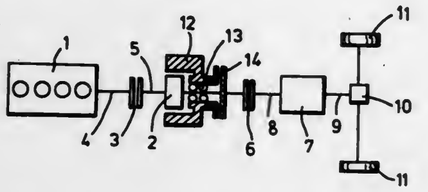
HYBRID DRIVE ARRANGEMENT

Hermann Oetting, Brunswick, and Paulus Heidemeyer, Wolfsburg, both of Fed. Rep. of Germany, assignors to Volkswagenwerk Aktiengesellschaft, Wolfsburg, Fed. Rep. of Germany

Filed May 13, 1982, Ser. No. 377,609
Claims priority, application Fed. Rep. of Germany, Jul. 4, 1981, 3126487
Int. Cl.³ B60K *9/04*
U.S. Cl. 180—165 **5 Claims**

1. A hybrid drive arrangement for a vehicle, which comprises:
an engine having a crankshaft;
a flywheel storage drive means having a storage flywheel supported to rotate concentrically with the crankshaft, for storing kinetic energy particularly during vehicle braking conditions;
a transmission for driving drive wheels of a vehicle;
an engine flywheel for equalizing nonuniformities of engine output torque;

means for selectively coupling said engine and said storage flywheel to said transmission, the coupling means including first clutch means for coupling said crankshaft and said engine flywheel; and second clutch means for coupling said engine flywheel and said storage flywheel, wherein said transmission has an input shaft comprising an intermediate shaft carrying said engine flywheel, wherein said



storage flywheel is supported on said intermediate shaft, wherein said first clutch means is arranged to couple said crankshaft and said intermediate shaft, wherein said second clutch means is arranged to couple said storage flywheel and said intermediate shaft, and comprising further third clutch means for coupling said input shaft and said intermediate shaft.

4,499,966

EMERGENCY ESCAPE SYSTEM

William G. Milne, and Minoru Saruwatari, both of Calgary, Canada, assignors to Tundra Holdings Ltd., Calgary, Canada

Filed Feb. 22, 1983, Ser. No. 468,392
Int. Cl.³ A62B *1/20*
U.S. Cl. 182—3 **16 Claims**



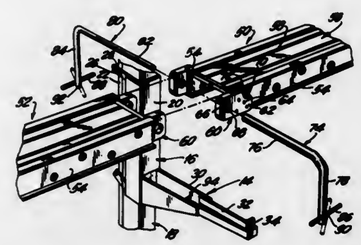
1. A gravity operated emergency escape system for a multistory building comprising:
- an elongate track vertically disposed and in a spaced relationship to a wall of the building, said track including an inside face facing the wall and an outside face facing away from the wall;
- a rack disposed in the center of said outside face along the length of said track;
- a traveller which moves along said track including a pinion which rotatably engages said rack, a pair of bearing members which engage opposite horizontal sides of said inside face, and a pivot means for each of said bearing members for pivoting each said bearing member horizontally clear of the respective side of said inside face as said pinion is brought into contact with said rack and for thereafter resiliently urging each said bearing member into bearing contact on the respective sides of said inside face after said pinion fully engages said rack such that said pinion is held in said rack;
- a velocity control means operatively connected to said pinion for controlling the rotational speed thereof and hence the speed of said traveller relative to said track; and
- a harness connection means on said traveller for connecting a user received in a harness to said traveller during an emergency whereby said traveller is then located on the track and slowly lowers the user to safety.

4,499,967

SCAFFOLDING STAGING

Carl E. Anderson, 2581 Richmond Ter., Staten Island, N.Y. 10301

Filed Nov. 9, 1983, Ser. No. 549,922
Int. Cl.³ E04G *5/08*
U.S. Cl. 182—222 **8 Claims**



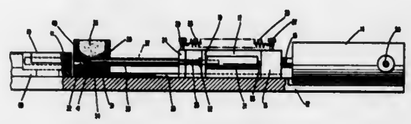
1. An interconnected scaffolding platform, comprising:
- at least two elongated staging sections to be butted together;
- a pair of end portions longitudinally projecting from the confronting ends of each section, each pair being staggered with respect to the other pair, so as to permit a mating interfit of the two pairs of end portions;
- each of said end portions having a transverse bore therethrough, said bores being aligned in the interfit position of the end portions so as to define a passageway transverse to the sections, and
- coupling means for extending through said passageway to securely interconnect said sections together, whereby the interconnected sections will lie colinearly in a common plane, said coupling means comprising an inverted U-shaped bar arrangement having one portion defining a bight portion extending through said passageway and other portions defining depending arms to retain the bar arrangement positioned through said passageway, wherein said interconnected platform rests on a support member having a vertical receiving slot therein for receiving said depending arms, and comprising locking means at the distal ends of said depending arms for preventing removal of said arms from said receiving slot.

4,499,968

BORE LUBRICATOR

Harry L. Zimmerly, Largo, Fla., assignor to Halkey-Roberts Corporation, St. Petersburg, Fla.

Filed Sep. 16, 1981, Ser. No. 302,777
Int. Cl.³ F01M *9/00*; F16N *7/14*
U.S. Cl. 184—18 **7 Claims**



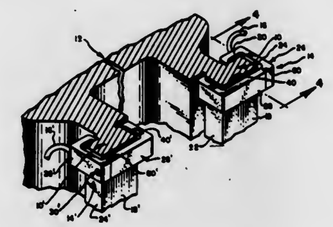
1. Apparatus for lubricating a wall of a bore in an article, comprising an elongated plunger having an outer free end portion with an outer surface and a cross-section at least slightly smaller than that of the bore in the article, means for holding the article having the bore therein with the bore aligned with the plunger, means on the outer free end portion of the elongated plunger presenting an annular transverse groove in the outer surface thereof, means for introducing lubricant into the annular groove in the plunger so as substantially to fill the groove with lubricant, means for moving the elongated plunger along its axis so a to insert the outer free end portion of the plunger with the groove therein for containing lubricant into the bore in the article, means for axially narrowing the groove after said introduction of the outer free end portion of the plunger into the bore in the article so as to expel substantially any lubricant from the groove and to dispense it within the bore circumferentially thereof, and wherein the means for moving is also capable of thereafter withdrawing the elongated plunger with the groove in narrowed condition from the bore, whereby to spread longitudinally of the bore any lubricant which has been dispensed thereinto.

4,499,969

LUBRICATING OIL SALVAGING BLOCK ASSEMBLY

Chauncey E. Toombs, 8010 Lake Shore Rd., Angola, N.Y. 14006

Filed Apr. 25, 1983, Ser. No. 488,075
Int. Cl.³ B23B *45/00*; F16C *1/26*
U.S. Cl. 184—106 **6 Claims**



1. An assembly adapted for mounting on a vertically disposed machine way for purposes of collecting lubricating oil passing downwardly along vertically elongated guide surfaces thereof, said assembly comprising in combination:
- a block having at least two sections of L-shaped plan view configurations defined by integrally formed first and second leg portions having inner surfaces cooperating to define a recess means sized and shaped to extend substantially throughout the transverse extent of said guide surfaces;
- coupling means for clamping free ends of said first leg portions together thereby to couple said sections one to another and contiguous to said guide surfaces with said recess means arranged for cooperation with said guide surfaces to define an upwardly opening lubricating oil collecting reservoir;
- means for providing a fluid seal between said sections and said guide surfaces substantially throughout the transverse extent thereof and relatively below said reservoir when said sections are contiguous to said guide surfaces; and
- means providing for flow of lubricating oil collected in said reservoir remotely of said block.

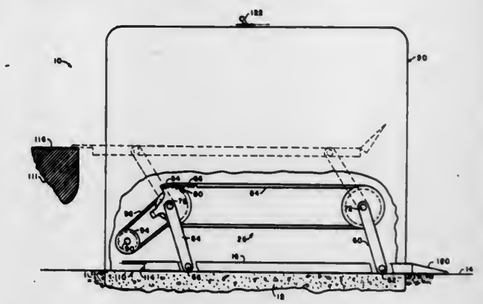
4,499,970

WAYSIDE WHEELCHAIR LIFT

Ian G. Hussey, Oakland, Calif., assignor to Environmental Equipment Corporation, San Leandro, Calif.

Filed Jun. 25, 1982, Ser. No. 392,085
Int. Cl.³ B66B *9/20*
U.S. Cl. 187—9 R **3 Claims**

1. A lifting apparatus comprising:
- a base support,
- a support platform,
- a first side support member attached to said base support adjacent one side of said support platform,
- a second side support member attached to said base support adjacent the other side of said support platform,
- means for raising and lowering said platform comprising
- a first side lifting apparatus connected to said first side support member, said first side lifting apparatus comprising
- a pair of spaced apart first and second rotating actuating arms pivotally connected proximate their outer ends to one side of said support platform,
- means for rotating said spaced apart first and second rotating actuating arms in unison,
- a second lifting apparatus connected to said second side support and comprising
- a pair of spaced apart third and fourth rotating actuating arms pivotally connected proximate their outer ends to the other side of said support platform,
- means for rotating said spaced apart third and fourth rotating actuating arms in unison comprising



- a first rotary motion actuator having a fixed housing and a rotor, said fixed housing connected to said first side support member,
- a first drive wheel,
- means for connecting said first drive wheel to said rotor of said first rotary motion actuator,
- means for connecting said first rotary actuator arm to said rotor,
- a first bearing connected to said first side support,
- a second drive wheel having a shaft journalled to said first bearing,
- means for connecting said second actuating arm to said shaft of said drive wheel, and
- means for interconnecting said first drive wheel with said second drive wheel, and
- means for interconnecting said first side lifting apparatus with said second side lifting apparatus for rotatating said first and second rotating actuating arms in unison with said third and fourth actuating arms.

4,499,971

MATERIAL HANDLING VEHICLE HAVING IMPROVED CHAIN MONITORING

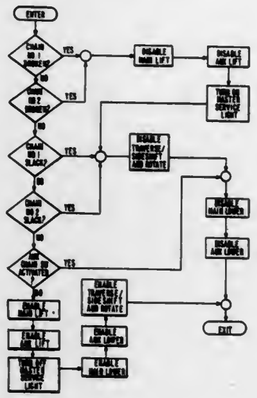
Donald Luebrecht, Fort Jennings, and Kim A. Klopfleisch, St. Marys, both of Ohio, assignors to Crown Controls Corporation, New Bremen, Ohio

Filed Apr. 22, 1983, Ser. No. 487,533
Int. Cl.³ B66B *9/20*
U.S. Cl. 187—9 R **16 Claims**

1. In a material handling vehicle having a first mast assembly, material handling means suspended from and guided for vertical movement by said first mast assembly, first motor means, and at least a first chain, said first motor means and said first chain being coupled to said first mast assembly and said material handling means to effect vertical movement of said material handling means in response to movement of said first

motor means, an improved chain monitoring system comprising:

first monitoring means coupled to said first chain for generating a slack chain signal in response to a first level of slackness in said first chain; and



control means responsive to said slack chain signal for disabling downward vertical movement of said material handling means, upward verticle movement of said material handling means remaining enabled such that said material handling means can be raised to clear whatever obstruction caused the detected slackness in said first chain.

4,499,972

SPEED CONTROL SYSTEM FOR A MOTOR WITH SHORT-CIRCUITED ROTOR

Heimo Mäkinen, and Seppo Suur-Askola, both of Hyvinkää, Finland, assignors to Elevator GmbH, Baar, Switzerland and Kone Oy, Helsinki, Finland

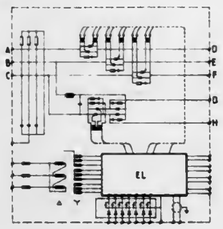
PCT No. PCT/FI82/00008, § 371 Date Nov. 2, 1982, § 102(e) Date Nov. 2, 1982, PCT Pub. No. WO82/03067, PCT Pub. Date Sep. 16, 1982

PCT Filed Mar. 4, 1982, Ser. No. 441,519

Claims priority, application Finland, Mar. 4, 1981, 810676

Int. Cl.³ B66B *1/28*

U.S. Cl. 187—29 R **2 Claims**



1. Elevator speed control system including a drive circuit for a motor which lifts the elevator, the drive circuit having thyristors connected to windings of the motor, the motor having a short-circuited rotor, characterized in that the system operates the thyristors for controlling said motor to permit full speed rotation of the motor; and while the elevator is running in the downward direction, said drive circuit connects with said motor for operation of the motor as a generator at an over-synchronous speed of rotation, and wherein the drive circuit comprises a control unit having a speed controller forming a command speed signal having a value which is increased to be considerably in excess of the actual value of elevator speed, whereby the motor with short-circuited rotor is left to rotate at full speed, and wherein said drive circuit initiates a retardation of the elevator by reducing the value of the command-speed signal to equal the actual value of elevator speed.

4,499,973

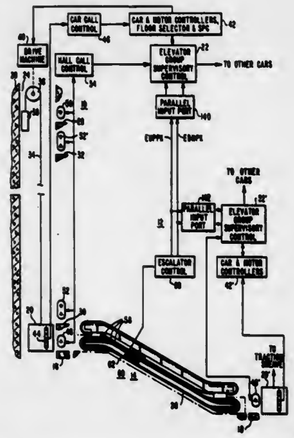
TRANSPORTATION SYSTEM

John J. De Lorenzi, Washington, and Elmer H. Sumka, Edison, both of N.J., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Mar. 24, 1983, Ser. No. 478,440

Int. Cl.³ B66B *1/18*

U.S. Cl. 187—29 **1 Claim**



1. A system for cooperation between an elevator system and an escalator, comprising:

a building having a plurality of floors,

an elevator system in said building having a plurality of elevator cars for serving said floors,

group supervisory control for said elevator system having selectable operating strategies, including first and second travel direction strategies for expediting peak travel in first and second travel directions, respectively,

an escalator in said building arranged to serve a predetermined floor thereof,

and load means responsive to the travel direction of said escalator and to a predetermined passenger load on said escalator, for providing a first signal when the predetermined load is exceeded in the travel direction of the escalator which delivers passengers to the predetermined floor of the building, and a second signal when the predetermined load is exceeded in the travel direction of the escalator which takes passengers away from the predetermined floor of the building,

wherein the group supervisory control selects the first travel direction strategy in response to one of the signals being provided by said load means, and the second travel direction strategy in response to the other of the signals being provided by said load means.

4,499,974

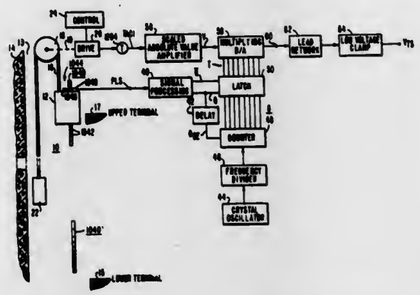
TERMINAL SLOWDOWN SPEED PATTERN GENERATOR

Tac H. Nguyen, Denville, and Alan L. Husson, Hackettstown, both of N.J., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Aug. 30, 1983, Ser. No. 527,886

Int. Cl.³ B66B *5/06*

U.S. Cl. 187—29 R **16 Claims**



1. A speed pattern generator for providing a terminal slowdown speed pattern for an elevator car approaching a terminal floor of a building, comprising:

a plurality of markers spaced along the slowdown approach to the terminal floor, with the spacing being a direct function of the distance of the markers from the terminal floor,

first means for detecting said markers as the elevator car approaches the terminal floor,

second means responsive to said first means for providing a train of signals T indicative of the marker-to-marker time,

third means for providing a signal V responsive to the actual speed of the elevator car,

and fourth means for providing a terminal slowdown speed pattern signal which varies as a function of the product of T and V.

4,499,975

CONTROL APPARATUS FOR ELEVATORS

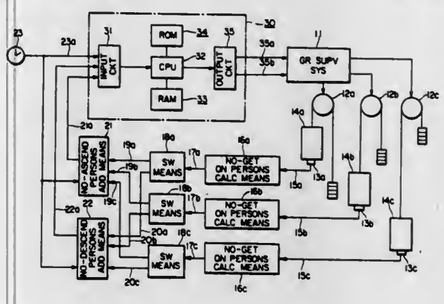
Shintaro Tsuji, Nagoya, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Japan

Filed Dec. 16, 1983, Ser. No. 562,006

Claims priority, application Japan, Dec. 22, 1982, 57/225308

Int. Cl.³ B66B *1/18*

U.S. Cl. 187—29 R **10 Claims**



1. A control apparatus for elevators, comprising:

estimation means for dividing one cycle of a fluctuating demand into a plurality of sections, for measuring the demand in each section or a service condition value of the elevators for the demand, and for estimating the demand or the service condition value of the corresponding section from the measured value so as to deliver an estimated value;

decision means for comparing the estimated value with a measured value of the demand or a measured value of the service condition obtained anew, and for deciding a compared result;

means for delivering, when the compared result has been decided to satisfy a first condition, an estimative value estimated by said estimation means by using the measured value obtained anew, and delivering, when the compared result has been decided to fail to satisfy the first condition, the estimated value estimated by said estimation means without using the measured value obtained anew; and

measurement value analyzing means for totalizing the measured values failing to satisfy the first condition, in the same section and for analyzing the totalization, so that when an analyzed result satisfies a second condition, cages may be controlled with the estimated value estimated by using the measured value failing to satisfy the first condition.

4,499,976

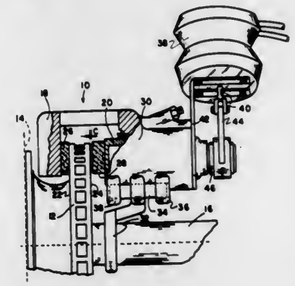
SLACK ADJUSTER FOR A DISC BRAKE

James L. Weber, West Bloomfield, Mich., assignor to Rockwell International Corporation, Pittsburgh, Pa.

Filed Jun. 16, 1983, Ser. No. 505,010

Int. Cl.³ F16D *55/224*

U.S. Cl. 188—71.9 **5 Claims**



1. A slack adjuster for a disc brake of the type which includes a disc mounted for rotation about an axle, a brake housing mounted on said axle in alignment with a friction surface of said disc, a non-rotatable braking piston mounted in said housing for axial movement toward and away from said friction surface of said disc, brake actuation means mounted on said housing, a powershaft mounted within said housing co-axially aligned with said piston and capable of selective rotation by said brake actuation means, said powershaft having worm gear teeth thereon engaged with a powershaft nut within said housing which said powershaft nut is prevented from rotating and capable of axial movement directly corresponding to said selective rotation of said powershaft, said powershaft nut being operably connected to said piston to produce said axial movement thereof toward and away from said friction surface of said disc, said powershaft being rotated in a first direction during actuation of said brake actuation means to move said piston toward said disc and in a second direction to move said piston away from said disc, and said slack adjuster being utilized to maintain a running clearance between said piston and said friction surface of said disc at a predetermined maximum distance when said brake actuation means is not being actuated, said slack adjuster comprising:

an adjusting sleeve threadably coupled to said piston and capable of rotation relative to said piston to adjust an axial position of said piston relative thereto, said adjusting sleeve being rotated in said first direction causing said piston to be adjusted toward said disc;

means for biasing said adjusting sleeve away from said disc to cause a rearward end thereof remote from said disc to be maintained in contact with a forward end of said powershaft nut;

means for preventing rotation of said adjusting sleeve in said second direction including one-way clutch means between said adjusting sleeve and said housing which said one-way clutch means includes a clutch shaft mounted for rotation in said housing and being geared to circumferential gear teeth on said adjusting sleeve for rotation therewith and a helical spring clutch around said clutch shaft having an end anchored relative to said housing;

lost motion means between said powershaft and said adjusting sleeve, said lost motion means allowing rotation of said powershaft without corresponding rotation of said adjusting sleeve when said piston moves toward said disc less than said predetermined maximum distance and with corresponding rotation of said adjusting sleeve when said piston moves toward said disc in excess of said predetermined maximum distance; and

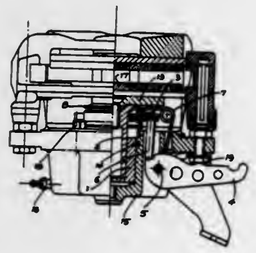
force limiting clutch means associated with said lost motion means preventing said corresponding rotation of said adjusting sleeve when said piston contacts said friction surface of said disc to provide a braking force thereto and when said powershaft rotates in said second direction.

4,499,977

INTEGRAL PARK BRAKE MECHANISM

Nui Wang, Punchbowl, Australia, assignor to Girlock Limited, Australia

Filed May 2, 1983, Ser. No. 490,588
Claims priority, application Australia, Aug. 25, 1982, PF5553
Int. Cl.³ F16D *55/26*
U.S. Cl. 188—72.6 **3 Claims**



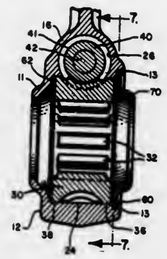
1. In a disc brake operating mechanism including an hydraulically operated piston in a cylinder arranged to move a friction pad into contact with a disc, the provision of a mechanically actuated brake operating mechanism consisting of a piston rod abutting the piston and being axially movable in relation thereto, an actuating collar having a bore surrounding the piston rod at a position outside said piston, a stop to support a part of the circumference of the actuating collar against movement towards the cylinder and means to apply an actuating force to a part of the collar diametrically opposed to the first mentioned part, the geometry of the actuating collar, the stop supporting the actuating collar, and the piston rod being such that on application of a force to said actuating collar by said means the actuating collar locks on the piston rod and moves the piston rod to effect application of the pad to the disc and such that on removal of said force frictional forces resisting the recovery of elastic strain in the system form a couple that unlocks the actuating collar from the piston rod whereby hydraulic operation of the brake can be effected independently of the parts of the mechanically actuated brake operating mechanism other than the piston rod.

4,499,978

SLACK ADJUSTER

Charles E. Norcross, Macomb, Ill., assignor to C. S. Norcross & Sons, Vernoa, Pa.

Continuation-in-part of Ser. No. 319,216, Nov. 9, 1981, abandoned. This application Apr. 7, 1983, Ser. No. 482,922
Int. Cl.³ F16D *65/46*
U.S. Cl. 188—79.5 K **25 Claims**



3. A manually adjustable brake slack adjuster comprising:

a slack adjuster body having a main portion provided with a central opening, an intermediate portion and a lever arm portion;

means provided on the lever arm portion for applying a braking force to the slack adjuster;

rotatable gear means positioned within said central opening to allow slack within a braking system to be adjusted;

cover means associated with said slack adjuster body and having an opening through which a brake shaft may be received; and

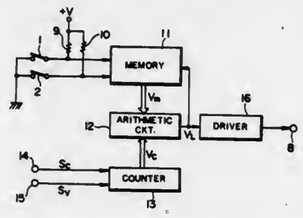
at least one of said cover means and said slack adjuster body being deformable to facilitate removably securing said cover means to said slack adjuster body.

4,499,979

LOCK-UP CONTROL SYSTEM FOR LOCK-UP TORQUE CONVERTER FOR LOCK-UP TYPE AUTOMATIC TRANSMISSION

Tadashi Suzuki; Yoshiro Morimoto; Hideo Hamada, all of Yokosuka; Masaaki Suga, Yokohama, and Masaaki Futagi, Yokosuka, all of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Oct. 5, 1981, Ser. No. 308,595
Claims priority, application Japan, Oct. 6, 1980, 55-138668
Int. Cl.³ B60K *41/22*
U.S. Cl. 192—3.31 **7 Claims**



1. A lock-up control system for a lock-up torque converter for a lock-up type automatic transmission for an automotive vehicle having an engine, the automatic transmission having at least two gear positions and having a lock-up control valve which is operable to cause the lock-up torque converter to lock up, said lock-up control system comprising:

means for generating a gear position signal indicative of one of the gear positions selected by the automatic transmission;

means for storing predetermined lock-up vehicle speed values versus at least the gear positions and for generating a signal indicative of a lock-up vehicle speed value versus the one gear position indicated by said gear position signal;

sensor means for generating sensor pulses having a frequency indicative of information related to the vehicle speed of the automotive vehicle;

clock means for generating clock pulses having a predetermined interval;

means responsive to one of said sensor pulses and said clock pulses for counting the other within a time interval between two adjacent pulses of said one pulses and for generating a vehicle speed signal indicative of the vehicle speed;

means for receiving said signal indicative of the lock-up vehicle speed value and said vehicle speed signal and for generating a lock-up signal when said vehicle speed signal has a predetermined relationship with said signal indicative of the said lock-up vehicle speed value; and

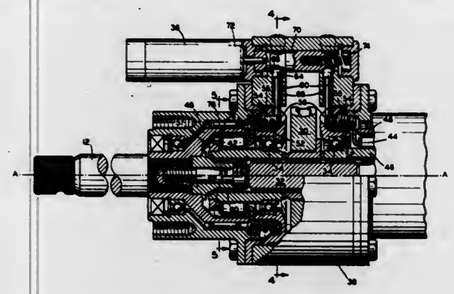
drive means for operating the lock-up control valve responsive to said lock-up command signal to cause the torque converter to lock up.

4,499,980

ACTUATOR FOR ROLLER CLUTCH DRIVE SYSTEM

David C. Kaminski, Sylvania, and Dennis W. Shea, Toledo, both of Ohio, assignors to Dana Corporation, Toledo, Ohio

Filed Sep. 30, 1982, Ser. No. 432,046
Int. Cl.³ F16D *27/10, 15/00*
U.S. Cl. 192—35 **2 Claims**



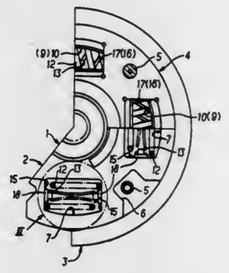
1. A two way overrunning roller clutch drive system including a case, two axles, and two pairs of complimentary drive and driven rotary members, each pair of rotary members sharing one of said axles, each said driven member including an axially extending bore, each said drive member having an end thereof disposed within said bore, each pair of said drive and driven members thus defining an axially extending annulus, each said pair further including a cage and a plurality of rollers positioned within said annulus, said cage disposed for maintaining said rollers in spaced relationship within said annulus, said cage further including a friction ring, wherein said drive system further includes an actuator ring in constant, resilient, frictional engagement with said friction ring, said actuator ring containing a plurality of circumferentially disposed garter springs thereabout, said overrunning clutch system further comprising means for positively locking said actuator ring to said case including a plurality of radially disposed detents uniformly spaced about said ring, said system further comprising a plunger supported in said case, said plunger extending radially inwardly toward said actuator ring and radially moveable into positive engagement with said ring, said plunger having first and second ends, said first end selectively moveable into one of said detents, said system further comprising a cam member also supported in said case, said cam member disposed for movement transversely to said second end of said plunger, said cam member including a cam surface engageable with said second end of said plunger, means for actuating said cam member to effect a positive engagement of said first end of said plunger with one of said detents, whereby engagement of said first end of said plunger with one of said detents frictionally energizes said actuator ring and said actuator ring is momentarily grounded to said case to effectuate lock-up of said rollers relative to said drive and driven members through said friction ring.

4,499,981

DAMPER DISC WITH CONCENTRIC SPRINGS INCLUDING HOURGLASS-SHAPED SPRINGS TO REDUCE THE EFFECT OF CENTRIFUGAL FORCES

Tamio Nagano, Hirakata, Japan, assignor to Kabushiki Kaisha Daikin Seisakusho, Neyagawa, Japan

Filed Sep. 27, 1982, Ser. No. 424,177
Int. Cl.³ F16D *3/14, 13/68*
U.S. Cl. 192—106.2 **5 Claims**



1. A damper disc comprising:

a spline hub splined to an output shaft and having a radial flange;

a pair of annular side plates arranged at both sides of said flange and having a radially outer portion to which a torque is transmitted; and

torsion spring means arranged at openings in said flange and said side plates for connecting said side plates to said flange, at least some of said torsion spring means respectively consisting of coaxially arranged double compressible coil springs comprising a diametrically large and a diametrically small spring, each of said small springs being hourglass-shaped so that the diameter thereof gradually changes along the length and the axially middle portion thereof has the smallest diameter.

4,499,982

VEND POSSIBLE JUDGEMENT DEVICE FOR A VENDING MACHINE

Osamu Sugimoto, and Masaki Akagawa, both of Sakado, Japan, assignors to Kabushiki Kaisha Nippon Coinco, Tokyo, Japan

Filed Mar. 17, 1982, Ser. No. 359,163
Claims priority, application Japan, Mar. 24, 1981, 56-41658
Int. Cl.³ G07F *5/24*
U.S. Cl. 194—1 N **12 Claims**

1. A vend possible judgement device for a vending machine, comprising:

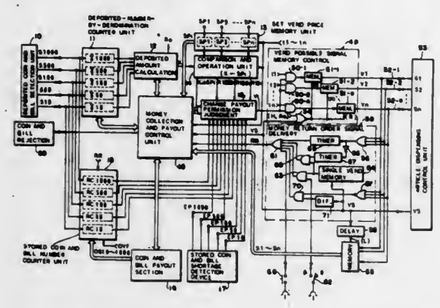
comparison means for comparing an amount of deposited coins and bills with at least one set vend price, and judging if vending is possible;

operation means for calculating the difference between said amount of deposited coins and bills and said set vend price, said difference being an amount to be paid out as change;

stored change counter means for establishing and maintaining a count of the numbers of coins and bills of each denomination stored for paying out as change; and

change payout permission judgement means for affirmatively judging that said amount to be paid out as change,

determined by said operation means, can be paid out when the numbers of stored coins and bills, established and maintained by said counter means are, by denominations or by combinations of denominations, sufficient to equal said amount to be paid out as change;



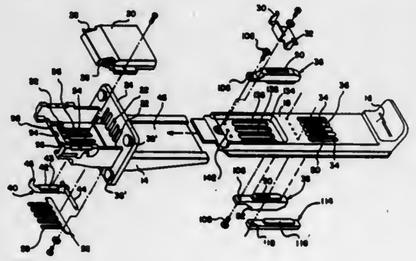
said vend possible judgement device rendering a judgement that vending is possible only if said comparison means has judged that vending is possible and said change payout permission judgement means has affirmatively judged that change can be paid out.

4,499,983

COIN SLIDE WITH COIN DROP DELAY MEANS

Harvey S. Gitlin, and John J. Duffy, both of 1723 Benjamin Dr., Ambler, Pa. 19002

Division of Ser. No. 348,172, Feb. 12, 1982, Pat. No. 4,401,202. This application Jul. 13, 1983, Ser. No. 513,368
Int. Cl.³ G07F *5/08*
U.S. Cl. 194—1 G **12 Claims**



1. A multiple coin slide of the type including a body adapted to be mounted to function a vending machine, a slide that is movable relative to the body between a coin receiving position and a vending position, the slide being provided with a plurality of coin openings for receiving a plurality of coins, the body including a mounting flange intermediate its forward and rearward ends, the flange being provided with a slide opening and a plurality of vertical openings, a lever checking mechanism secured within the body forwardly of the rearward body end, the lever checking mechanism comprising at least one pivotal lever with a hook adapted to limit rearward movement of the slide in the absence of a properly sized coin in a coin opening, a bridge overfitting the lever checking mechanism to urge the coins toward the lever checking mechanism as the slide is moved toward its said vending position, the improvement comprising

delay means rearwardly of the lever checking mechanism to delay the drop of some of the plurality of coins from the coin openings until after others of the coins have dropped from their associated coin openings,

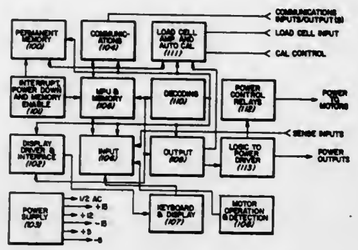
the delay means comprising a non-linear rearward end, the coins being adapted to contact laterally spaced portions of the non-linear end as they drop from their respective coin openings.

4,499,984

SELECTIVE SCRAP METAL COLLECTION APPARATUS

William J. Tuten, Scottsdale, and Kennith D. Crosby, Carefree, both of Ariz., assignors to Creative Technology Corp., Scottsdale, Ariz.

Filed Feb. 3, 1983, Ser. No. 463,573
Int. Cl.³ G07F *7/06*
U.S. Cl. 194—4 C **25 Claims**



1. In a collection apparatus for collecting scrap metal and for compensating depositors for a first type of metal as a function of the weight of the first type of metal deposited in a storage compartment of the apparatus, said apparatus having an input hopper, a start button, a first conveyor for conveying scrap metal from the hopper to a classifier, said classifier segregating a second type of metal from the first type, depositing the second type of metal in a metal receptacle and for depositing the first type of metal in a classifier conveyor, said classifier conveyor transporting the first type of metal to and loading said metal into a crusher, said crusher crushing the first type of metal and loading it into a weigher bucket of a weigher which measures the weight of the weigher bucket and its contents, said bucket having a door which is controlled by a scale dump solenoid for emptying the bucket after weighing, a stacker for conveying the first type of metal after it has been weighed to a storage compartment, an alarm display and means for producing motor alarms, second type metal alarms, classifier jam alarms and dispenser alarms, the improvement comprising:

a digital electronic controller responsive to a signal from the start button for energizing the first conveyor, the classifier, the crusher and the stacker, for calibrating the weigher, for weighing materials dumped in the bucket of the weigher, for monitoring the bucket to assure that the scale dump solenoid has opened the door thereto, for causing a reference voltage to be generated which represents a measure of exactly a given weight to be used in the weighing process, for dumping the materials from the hopper into the stacker for storage in the compartment, for dispensing compensation for the material weighed, and for stopping operation when there are is no more scrap metal to be processed;

a communication port for conveying and receiving remote information; and

front panel display means for indicating the weight of said first type of metal deposited.

4,499,985

VENDOR CHANGE RETURN CONTROL

James T. Schuller, St. Louis County, Mo., assignor to UMC Industries, Inc., Stamford, Conn.

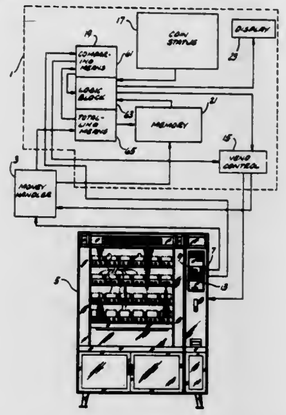
Filed Sep. 24, 1982, Ser. No. 422,955
Int. Cl.³ G07F *5/24*
U.S. Cl. 194—10 **27 Claims**

1. A change return control for a money handler in a vendor capable of a plurality of customer selectable transactions at different prices, said money handler having means for identifying the denomination of items of money deposited in the vendor, means for storing coins for use as change and means for issuing coins from the storage means in change in different amounts, comprising:

means for determining if the coin storage means contains at least a first predetermined amount of change, and for determining if the coin storage means contains at least a second predetermined amount of change, said second predetermined amount being larger than said first amount;

a vend control for permitting a vend;

logic means for determining the amount of credit accumulated as a result of each deposit of money in the vendor, for comparing the price of a selected transaction with the accumulated credit, and for governing said vend control, said means allowing a vend requiring more than the first predetermined amount of change only if an item of money of a denomination greater than the amount of change required has been deposited in the vendor;



wherein the coin storage means includes a plurality of change tubes, wherein the amount of change determining means includes first sensing means for sensing the presence of the first predetermined amount of change and second sensing means for sensing the presence of the second predetermined amount of change;

wherein the first sensing means includes a first optoelectronic sensor assembly and the second sensing means includes a second optoelectronic sensor assembly; and

wherein the first predetermined amount of change is 95¢ and the second predetermined amount of change is $4.95, wherein the coin storage means includes a nickel change tube and a quarter change tube, wherein the first sensor assembly is disposed on the quarter change tube at a position where it senses if at least three quarters are present in the quarter change tube, and wherein the first sensing means also includes an optoelectronic sensor assembly disposed on the nickel change tube at a position where it senses if at least four nickels are present in the nickel change tube.

4,499,986

CONTROL APPARATUS FOR PASSENGER CONVEYOR

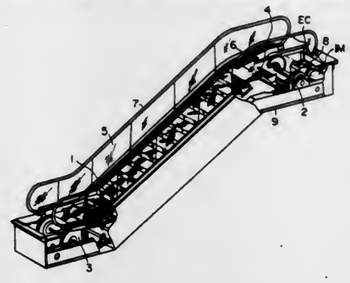
Nobuyoshi Tsuboi, Ibaraki; Seiya Shima, Katsuta; Morio Kanasaki, Katsuta, and Hayashi Nakazawa, Katsuta, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 24, 1982, Ser. No. 351,767
Claims priority, application Japan, Feb. 27, 1981, 56-27038
Int. Cl.³ B66B *9/00*; B65G *17/00*
U.S. Cl. 198—322 **8 Claims**

1. A control apparatus for a passenger conveyor which comprises step plates interlinked to one another in an endless form for transporting passengers thereon, and a three-phase induction motor for driving said step plates and capable of being changed over between star- and delta-connection modes, said control apparatus comprising:

transportation demand detecting means for detecting transportation demand for said passenger conveyor on the basis of electric power supplied to said three-phase motor;

means for setting a first predetermined value and a second



predetermined value smaller than said first predetermined value; and

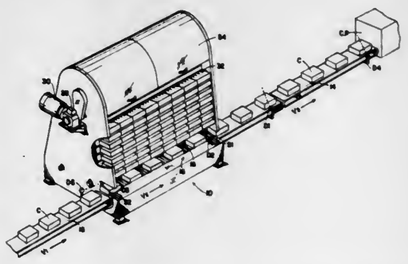
change-over means for switching the winding connection of said induction motor into the delta-connection mode when the transportation demand exceeds said first predetermined value and for switching the winding connection of said induction motor into the star-connection mode when the transportation demand is below said second predetermined value.

4,499,987

ACCUMULATOR FOR A CARTON FILLING AND PACKING PRODUCTION LINE

Charles P. Long, 216 Cleveland Ct., Mill Valley, Calif. 94941

Filed Aug. 30, 1982, Ser. No. 412,570
Int. Cl.³ B65G *37/00*
U.S. Cl. 198—347 **11 Claims**



1. An accumulator system for cartons moving along a conveyor line between first and second work stations comprising:

a generally horizontal conveyor section including a plurality of generally parallel, transverse support rollers of small diameter;

said section adapted to be interposed between an input conveyor moving at a first velocity from said first work station and an output conveyor moving at a greater velocity to said second work station;

said rollers being rotated to move cartons at an intermediate velocity along said section to said output conveyor;

a first stop member at the downstream end of said section movable when energized from a retracted position out of the path of cartons on said section to an extended position blocking movement of cartons thereon;

a jam detector positioned beyond the downstream end of said section and operative to generate a jam signal when cartons moving along said output conveyor are in abutment;

means operable in response to a jam signal to energize said first stop member;

a plurality horizontal rows of spaced, elongated carrier bars approximately coextensive with and adjacent said section;

a plurality of transverse lift fingers closely spaced along, and extending from, each of said carrier bars to be received between said support rollers; and

means operative when said first stop member is extended and said section has a full load of cartons thereon to move said carrier bars upwardly an increment sufficient to lift said full load of cartons clear of the path of carton movement on said section.

4,499,988

METHOD AND APPARATUS FOR DEFLECTING ARTICLES DURING THEIR CONVEYANCE

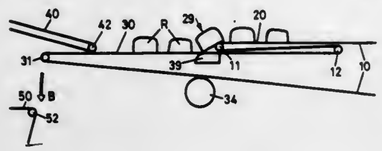
Markus Gasser, Gächlingen, Switzerland, assignor to SIG Schweizerische Industrie-Gesellschaft, Neuhausen am Rheinfall, Switzerland

Filed May 3, 1983, Ser. No. 491,239

Claims priority, application Switzerland, May 3, 1982, 2706/82

Int. Cl.³ B65G *47/46*

U.S. Cl. 198—369 **10 Claims**



1. In a conveyor assembly comprising an upper and a lower delivery conveyor each having a respective charging end, a supply conveyor belt carrying articles in a feed direction and having a discharge zone adjacent the charging ends of the upper and lower delivery conveyor, and an apparatus for selectively routing articles from the discharge zone of said supply conveyor belt onto the charging end of said upper delivery conveyor or onto the charging end of said lower delivery conveyor; the improvement in said apparatus comprising:

(a) a first deflecting roller; said supply conveyor belt being trained about said first deflecting roller; said first deflecting roller defining an upper reach and a first discharge end of said supply conveyor belt; the articles being carried by said supply conveyor belt into said discharge zone on said upper reach;

(b) a second deflecting roller spaced from said first deflecting roller in a direction generally parallel to said feed direction and upstream of said first deflecting roller as viewed in said feed direction; said supply conveyor belt being trained about said second deflecting roller from said first deflecting roller;

(c) first displaceable means supporting said first deflecting roller and movable, with said first deflecting roller, in a direction parallel to said feed direction, into advanced and withdrawn positions; in said advanced position of said first displaceable means said first deflecting roller being positioned in the immediate vicinity of said charging end of said upper delivery conveyor, whereby articles from said upper reach are transferred to said upper delivery conveyor; in said withdrawn position said first deflecting roller being situated upstream spaced from said charging end of said upper delivery conveyor, whereby articles from said upper reach are prevented from being transferred to said upper delivery conveyor;

(d) a third deflecting roller situated at a height level below that of said first deflecting roller; said supply conveyor belt being trained about said third deflecting roller from said second deflecting roller; said third deflecting roller defining a lower reach and a second discharge end of said supply conveyor belt; in said withdrawn position of said first displaceable means said first discharge end of said supply conveyor belt cooperating with said lower reach, whereby articles are transferred from said upper reach to said lower reach; and

(e) second displaceable means supporting said third deflecting roller and being swingable, with said third deflecting roller, into upper and lower positions; in said upper position said lower reach extending at least approximately parallel with said upper reach and in said lower position said third deflecting roller being positioned in the immediate vicinity of said charging end of said lower delivery conveyor, whereby articles advanced on said lower reach are transferred to said lower delivery conveyor.

4,499,989

METHOD AND DEVICE FOR TURNING A LONG

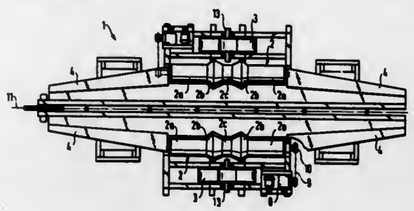
Erkki T. Lehtola, Böle, Finland, assignor to Tahka Oy, Kaskinen, Finland

Filed May 6, 1982, Ser. No. 375,748

Claims priority, application Finland, May 8, 1981, 811417

Int. Cl.³ B65G *47/24*

U.S. Cl. 198—407 **1 Claim**



1. Apparatus for changing the direction of a generally horizontally traveling log moving in a longitudinal direction relative to its axis comprising: a pair of spaced-apart oppositely rotating rollers disposed in fixed locations with their axes permanently transverse to the direction of log travel, each of said rollers having two spaced-apart protruding conical portions defining between them a log-receiving depression having inclined sides which extend upwardly and outwardly toward the ends of the respective roller and each roller having end portions of uniform diameter; a pair of generally V-shaped blades one of which is located upstream of the pair of rollers and the other of which is located downstream of the pair of rollers, with regard to the direction of log travel; and means for rotating the blades in opposite directions about axes parallel to the direction of log travel, the arrangement of the blades being such that upon rotation in opposite directions they push horizontally on the log in opposite directions thereby swinging the log through a small arc whereupon the log becomes engaged with the end portions of the rollers and is further swung by the action of the rollers on the log.

4,499,990

APPARATUS FOR IMPARTING ANGULAR MOVEMENT TO ARTICLES WHILE BEING MOVED ALONG A PREDETERMINED PATH

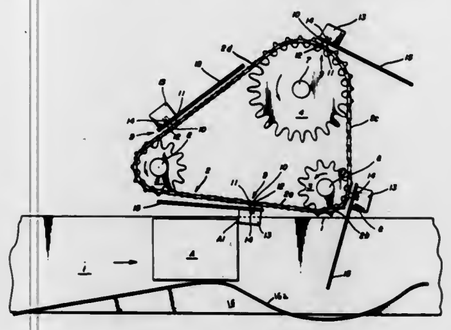
Alton J. Fishback, Austell, Ga., assignor to The Mead Corporation, Dayton, Ohio

Filed May 3, 1983, Ser. No. 491,176

Int. Cl.³ B65G *47/24*

U.S. Cl. 198—411 **13 Claims**

1. Apparatus for imparting angular movement to an article having substantially vertical angularly related sides while the article is being moved along a predetermined path, said apparatus comprising an endless element having a working reach movable alongside said predetermined path in angularly disposed converging relation thereto at a velocity somewhat less than the velocity of movement of the articles and having a curvilinear reach forming a continuation of the downstream



part of said working reach and extending in a direction away from said predetermined path, and at least one article engaging lug mounted on said endless element and engageable with an article for imparting angular movement thereto while said lug is moved along said curvilinear reach of said endless element.

4,499,991

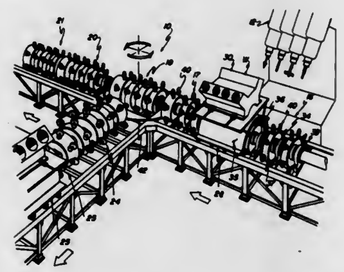
AUTOMATED CONVEYOR SYSTEM

Dillis V. Allen, 1080 Nerge Rd., Suite 205, Elk Grove Village, Ill. 60007

Filed Mar. 5, 1979, Ser. No. 17,710

Int. Cl.³ B65G *37/00*

U.S. Cl. 198—472 **5 Claims**



1. A conveyor system for conveying articles, comprising; a plurality of workholders movable in a predetermined path, means for moving said workholders including a plurality of separate drive sections, independent drive means for each of said drive sections, said drive sections having non-positive drive means engaging said workholders so that the workholders may move at different speeds than the drive means under a sufficient force, control means for selectively actuating said drive means to control said drive sections to slow or stop some of said workholders while continuing movement of other of said workholders, each of said drive sections including an elongated frame mounted for rotation about said predetermined path, a drive shaft extending through said frame, and clutch means for selectively connecting said drive shaft to said frame, said control means being connected to control said clutch.

4,499,992

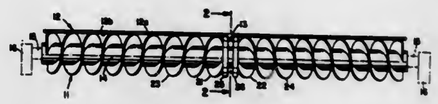
SELF-CLEANING SUPPORT ROLLER FOR AN ENDLESS CONVEYOR BELT

Bernard S. Paulson, Clear Lake; Bruce H. Paulson, Clayton; Brian K. Clark, and Richard A. Briesemeister, both of Clear Lake, all of Wis., assignors to Pixall Corporation, Clear Lake, Wis.

Filed Apr. 18, 1983, Ser. No. 486,251

Int. Cl.³ B65G *45/00*

U.S. Cl. 198—498 **12 Claims**



11. A self-cleaning support roller for a conveyor belt, comprising:

shaft means having first and second ends and a longitudinal center, the shaft means being adapted to be rotatably mounted at each of said ends;

first flighting means on the shaft means for conveying material from a first point proximate the longitudinal central area of the shaft means toward said first end;

second flighting means on the shaft means for conveying material from a second point proximate the longitudinal central area of the shaft means toward said second end;

said first and second points being spaced apart;

a first annular member mounted at said first point in encircling relation to the shaft means, the first annular member defining an axial opening permitting material to pass therethrough to said first flighting means;

and a second annular member mounted at said second point in encircling relation to the shaft means, the second annular member defining an axial opening permitting material to pass therethrough to said second flighting means.

4,499,993

BELT-TYPE BULK-MATERIAL CONVEYOR FOR UNDERGROUND USE

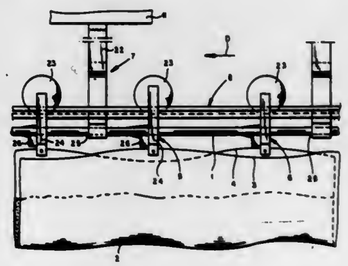
Friedrich W. Paurat, Kasselweg 29, and Roland Paurat, Blumenstr. 11, both of 4230 Wesel, Fed. Rep. of Germany

Filed Jan. 27, 1983, Ser. No. 461,534

Claims priority, application Fed. Rep. of Germany, Jan. 28, 1982, 3202719; Apr. 15, 1982, 3213803

Int. Cl.³ B65G *15/08*

U.S. Cl. 198—819 **19 Claims**



1. A conveyor for transporting bulk material mainly underground along a closed path traversing at least one loading or unloading zone, the conveyor comprising:

a track on the path and including

a one-level main rail following the path outside the zone and having ends at the zone,

respective one-level Y-intersections at the zone each hav-

ing a central leg connected to the respective rail end and right and left arms extending into the zone, and

respective right and left rail branches at the zone extending from the right and left arms of the one Y-intersection to the right and left arms of the other intersection and spaced apart transversely of the path, the rail branches being of construction similar to the main rail;

an endless conveyor belt extending along the path and through the zone and having right and left longitudinal edges;

respective endless rows of longitudinally spaced right and left trucks alternating with one another along the path and each having a lower end attached to the respective belt edge and an upper end riding on and displaceable longitudinally in the main rail, the trucks all being of substantially the same vertical dimension and of generally identical construction;

an endless and flexible tension-transmitting drive element extending along the path and through the zone and connected at least indirectly to the belt and trucks;

drive means connected to the drive element for advancing the belt and trucks along the path in a transport direction; and

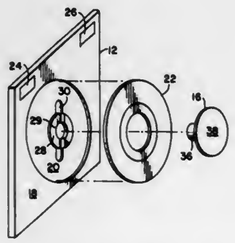
deflector means at, relative to the transport direction, the upstream Y-intersection for forcing the right trucks into its right arm and and thence into the right branch and for forcing the left trucks into its left arm and thence into the left branch, the belt being closed and tubular outside the zone when its right and left trucks are all in the main rail and being open in the zone when the right trucks are in the right branch and the left trucks are spaced therefrom in the left branch.

4,499,994

PHONOGRAPH RECORD AND ALBUM FRAME

Bruce W. Rentch, 7804 Byrds Nest Pass, Annandale, Va. 22003

Filed May 5, 1983, Ser. No. 491,811
Int. Cl.³ B65D *5/50*
U.S. Cl. 206—45.19 **15 Claims**



1. A phonograph record and album frame having a first mode of use wherein a phonograph record is displayed, and having a second mode of use wherein an album is displayed, said frame comprising:

a base member having a first surface and a second surface;

a cylindrical recess formed in the first surface of said base member, said cylindrical recess having an axis and having a predetermined diameter corresponding to the diameter of said phonograph record to be held in said cylindrical recess of said frame;

a through bore formed in said base member, said through bore having an axis which is coaxial with the axis of said cylindrical recess;

a holding member insertable into said through bore for retaining said phonograph record in said cylindrical recess;

a frame member cooperating with and releasably engageable with said base member; and

a transparent member engageably held by said frame member;

wherein, in said first mode of use, said transparent member is disposed adjacent and in spaced relation to said first surface of said base member, whereby said phonograph record is displayed through said transparent member; and

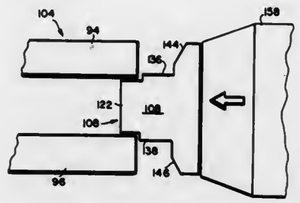
wherein, in said second mode of use, said transparent member is disposed adjacent and in spaced relation to said second surface of said base member so as to define an enclosed space therebetween for receiving and encompassing said album, whereby said album is held in said frame and displayed through said transparent member.

4,499,995

VIDEO DISC PACKAGE

Robert L. Turner, Mooresville, Ind., assignor to RCA Corporation, New York, N.Y.

Filed Apr. 25, 1983, Ser. No. 488,298
Int. Cl.³ B65D *85/30*
U.S. Cl. 206—312 **4 Claims**



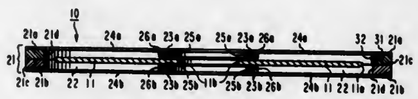
1. A disc record package consisting of a substantially U-shaped, plastic enclosure, and a pair of plastic, T-cross sectioned side rails; said U-shaped enclosure comprising a pair of spaced panel portions interconnected by an end portion along one side of said panel portions; each of said side rails having an edge wall portion and an intermediate flange portion extending substantially perpendicularly from said edge wall portion to define a pair of channels; each of said side rails having an integral raised step portion in each channel thereof; said perpendicular flange portions being inserted between the respective side edges of said panel portions such that said edge wall portions of said side rails are substantially flush with said side edges of said panel portions; wherein plasticizing energy is applied to said integral step portions, while said panel portions are securely held against said flange portions, to fuse said side rails to said enclosure to form said package; the improvement comprising making the inside surfaces of said edge wall portion of each of said side rails extend away from said perpendicularly-disposed, intermediate flange portion to provide room for excess molten plastic from the respective one of said integral step portions in said channels.

4,499,996

PROTECTIVE CARTRIDGE FOR DISC RECORD

Peter J. Coyle, Oakland, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Dec. 29, 1983, Ser. No. 566,886
Int. Cl.³ B65D *85/57;* **G11B** *17/04, 23/02*
U.S. Cl. 206—444 **19 Claims**



1. An enclosure for a disc record comprising:

a first annular frame member having an inner surface defining the periphery of a cavity for said disc record;

a second annular frame member positioned coaxial and generally coplanar with said first annular member, with said second annular member adjacent a first surface of said disc record; and

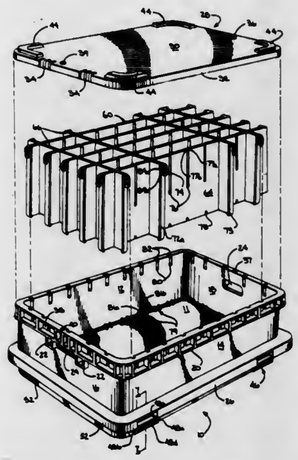
a first membrane cover affixed to said first member and to said second annular member and maintained in tension therebetween, said first membrane cover defining one generally planar surface of said disc record cavity.

4,499,997

TOTE BOX

Harold E. Swingley, Jr., Monona, Wis., assignor to Menasha Corporation, Neenah, Wis.

Filed Feb. 24, 1983, Ser. No. 469,439
Int. Cl.³ B65D *21/02, 25/06*
U.S. Cl. 206—509 **9 Claims**



1. An improved tote box especially suited for use in an automated storage and retrieval system comprising:

a bottom;

opposing side and end walls each extending upwardly from said bottom;

a bumper rim located a distance up from said bottom which distance is substantially less than the total height of said side and end walls and extending outwardly from the exterior of each of said side and end walls so as to substantially circumscribe the periphery of said box; and

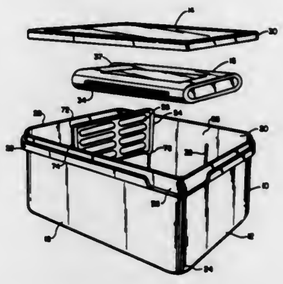
a plurality of stacking stops each including a horizontal top wall integrated with said bumper rim and extending outwardly from one of said side and end walls, a pair of generally vertical end walls each integrated to said top wall and each having a rearward edge integrated with said one of said side and end walls and a generally horizontal bottom wall integrated at each of its ends to a corresponding vertical end wall and integrated at its rearward edge to said one of said side and end walls to project horizontally therefrom, said bottom wall being spaced above the bottom of the tote box and providing a contact area for abutting the upper edge of a corresponding one of said opposing side and end walls of a like tote box when the boxes are stacked one on top of another, the portion of the box below the bottom walls of the stacking stops then being received in the lower box to limit relative horizontal movement.

4,499,998

FOOD CONTAINER WITH REMOVABLE LID

Arthur R. Carlson, East Malvern, Australia, assignor to Brian Davis and Company Proprietary Limited, Scoresby, Australia

Filed Mar. 18, 1983, Ser. No. 476,809
Claims priority, application Australia, Sep. 24, 1982, PF6048
Int. Cl.³ B65D *43/00*
U.S. Cl. 206—541 **3 Claims**



1. A container for food or the like comprising a base formed by a bottom wall and four perpendicular side walls of equal height joined to the bottom wall and to each other thereby creating an open-top enclosure; a rectangularly-shaped rim of constant height and width extending completely around the outer surfaces of said side walls at a line adjacent to but slightly below the top of said enclosure; at least one recess in said rim adjacent a junction of two side walls, said recess comprising a cut-away section of a substantial portion of the height of said rim extending from its top downwardly and extending from a point adjacent each side wall through the junction thereof; a detachable, flat lid having top and bottom surfaces; a rectangularly-shaped lip corresponding in width to the width of said rim extending downwardly from said bottom surface of said lid a distance equivalent to the distance at which the top of said rim is below the top of said enclosure, the bottom of said lip engaging the top of said rim except at the location of said recess when said lid is positioned on said base; at least one pair of inwardly projecting elongated lugs positioned on the inner surfaces of opposite side walls extending from points near the junctions of said side walls with said base upwardly towards the top of said enclosure, each of said lugs being provided with a slot extending substantially along its length; and a flat rectangularly-shaped divider detachably secured by two of its edges positioned in said slots thereby dividing said enclosure into horizontally disposed zones.

4,499,999

PICNIC BASKET

Marvin L. Behar, 316 Main St., Edmonds, Wash. 98020

Filed Jun. 30, 1983, Ser. No. 505,990
Int. Cl.³ A45C *11/20, 9/00;* **B65D** *81/36*
U.S. Cl. 206—546 **30 Claims**

1. An apparatus comprising:

a. a flexible, limber material;

b. said material having a first surface and a second surface;

c. said material having a first side and a second side;

d. said first side and said second side being, substantially, parallel;

e. said material having a first end and a second end;

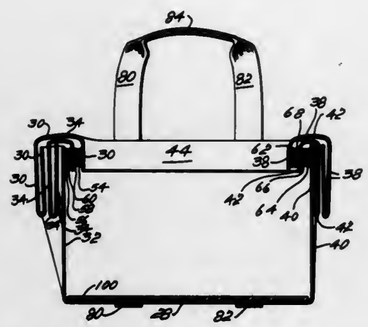
f. said first end and said second end being, substantially parallel;

g. said material may be considered as comprising nine panels;

h. said nine panels being a central panel, a first side panel, a first corner panel, a first end panel, a second corner panel, a second side panel, a third corner panel, a second end panel and a fourth corner panel;

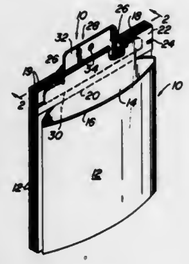
i. said first end panel bordering said central panel;

j. said first end panel being between and bordering said first corner panel and said second corner panel;
k. said second side panel bordering said central panel;
l. said second side panel being positioned between said second corner panel and said third corner panel;
m. said second end panel bordering said central panel;
n. said second end panel being positioned between said third corner panel and said fourth corner panel;
o. said first side panel bordering said central panel;
p. said first side panel being positioned between said first corner panel and said fourth corner panel;
q. a first attaching means on the first surface of the first corner panel and near the first side;



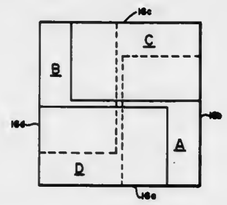
r. a second attaching means on the first surface of the first end panel and near the first end;
s. a third attaching means on the first surface of the second corner panel and near the second side;
t. a fourth attaching means on the second surface of the second corner panel and near the second side;
u. a fifth attaching means on the first surface of said third corner panel near the second edge;
v. a sixth attaching means on the first surface of the second end panel and near the second end;
w. a seventh attaching means on the first side of the fourth corner panel and near the first side; and,
x. an eighth attaching means on the second side of the fourth corner panel and near the first side.

4,500,000
PAD OF PLASTIC BAGS WITH SUPPORT MEANS
Hercules Membrino, 280 Paoli Pike, Malvern, Pa. 19355
Filed Mar. 12, 1984, Ser. No. 588,567
Int. Cl.³ B65D *85/62, 30/00*
U.S. Cl. 206—554 **10 Claims**



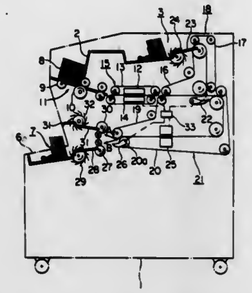
1. A pad of plastic open-mouthed pockets overlying each other and separably connected by a common base portion, said base portion being formed of selvage portions extending from the mouths of said pockets, said selvage portions having free edges in spaced parallel relation to the mouths of their respective pockets and side edges in common with the side edges of said pockets, said selvage portions being secured together by common side securing means at the side edges thereof and by common free edge securing means at the free edges thereof, a support hanger having a substantially longitudinal section and an extension projecting transversely therefrom, said longitudinal section being positioned to abut said free edge securing means to prevent movement thereof in a direction toward said free edges, said side edge securing means preventing lateral movement of said longitudinal section when it is so positioned, and said extension being positioned to by-pass said free edge securing means to project beyond said free edges when said longitudinal section is in abutment with said free edge securing means.

4,500,001
PALLETIZING PROCESS AND A PRODUCT OF THAT PROCESS
Frank J. Daniels, P.O. Box 518, Rexburg, Id. 83440
Filed Nov. 25, 1983, Ser. No. 555,164
Int. Cl.³ B65D *21/00*
U.S. Cl. 206—597 **11 Claims**



1. A process for high density stacking of three-cubic-foot bags containing a lightweight, loose material on a standard pallet where a layer consists of a pair or bags laid side by side to leave open areas therebetween and to the pallet sides consisting of
positioning a standard pallet within an arrangement for laterally supporting bags as they are stacked on said pallet;
positioning on that pallet, as a first layer, a pair of bags offset from and alongside one another leaving open areas therebetween with opposite bag corners aligning with opposite pallet corners;
positioning on that pallet, as a second layer, a pair of bags offset from and alongside one another and rotated ninety degrees (90°) from said first layer with opposite bag corners aligned with opposite pallet corners, portions of the bags of said second layer positioned over to fill in said open area between said bags and the pallet sides of said first layer;
positioning on that pallet, as subsequent layers to a desired stack height, pairs of bags offset from and laid alongside one another and each pair rotated ninety degrees (90°) from the layer below the opposite corners of the bags of each layer aligned with opposite pallet corners and filling in said open areas between said bags and the pallet sides of said layer below;
applying vertical pressure on each said bag in turn to force air out from the bag interior and to cause the materials therein to flow into open areas in the layer of bags below said bag; and
securing the stack of bags to the pallet.

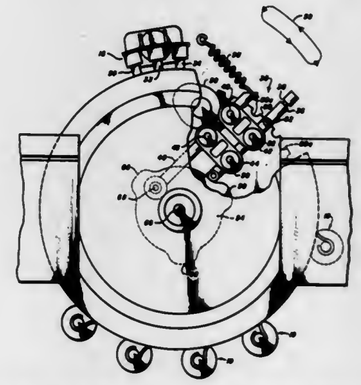
4,500,002
APPARATUS FOR SORTING AND COUNTING A NUMBER OF BANKNOTES
Yoshihiro Koshio, Odawara; Tadao Kato, Ninomiya, and Hikaru Kawano, Odawara, all of Japan, assignors to Musashi Co., Ltd., Tokyo and Hitachi Engineering Kabushiki Kaisha, Kanagawa, both of, Japan
Filed Dec. 16, 1982, Ser. No. 450,194
Claims priority, application Japan, Dec. 21, 1981, 56-205140
Int. Cl.³ B07C *5/08*
U.S. Cl. 209—534 **3 Claims**



1. An apparatus for sorting and counting a number of banknotes comprising;
a hopper for stacking the banknotes;
a feed-out unit for taking out the banknotes one by one from said hopper;
a judgement unit for identifying those banknotes in a damaged state and for judging the authenticity of the banknotes coming in from said feed-out unit;
a first branch unit for selecting the route to be followed by the banknotes from said judgement unit depending on the signals from said judgement unit;
a reject note stacker having a first vane wheel and adapted for stacking reject banknotes supplied through a first route specified by said first branch unit;
a front-reverse side checker for sensing the front and reverse sides of the banknotes supplied through a second route specified by said first branch unit;
a second branch unit for alternately selecting between two routes for the banknotes which have passed through said front-reverse side checker on the basis of respective front side and reverse side signals from said front-reverse side checker; and
a single, normal banknote stacker having a pair of vane wheels each provided in the respective of said two routes for banknotes that have passed through said front-reverse side checker, said vane wheels rotating in mutually opposite directions for stacking the notes from said second branch unit in said normal banknote stacker with their same sides facing in the same directions therein.

4,500,003
AXIAL LEAD TESTER/SORTER
Nicholas J. Cedrone, 10 Hawthorne Rd., Wellesley Hills, Mass. 02181
Filed May 20, 1982, Ser. No. 380,335
Int. Cl.³ B07C *5/344*
U.S. Cl. 209—573 **9 Claims**

1. Apparatus for handling, testing and sorting axial lead electronic devices comprising:
an input bin that holds a supply of said devices,
a rotating wheel carrier for the devices that includes means for attracting devices from said input bin and carrying them in a predetermined, circumferentially spaced array on the periphery of said wheel with the devices aligned with the axis of rotation of said wheel,
means for selectively stripping said devices from said wheel at at least one predetermined angular position of said wheel,
means for rotating said wheel,
at least one contactor assembly structured to make an electrical connection to at least one of said axial lead devices carried on said wheel when the device moves through a test zone intermediate said input bin and said stripping means, and
mechanical means for mounting and moving said contactor assembly through a closed loop path that includes (i) a first path portion generally coincident with said test zone where said contactor assembly is lowered into electrical connection with said leads and moves so that there is no relative motion between said contactor assembly and said



device carried on said wheel and (ii) a second path portion where said contactor assembly is raised from said devices and moves in a direction opposite to the direction of rotation of said wheel to a preselected re-entry point at the beginning of said test zone,
said mechanical means including (i) a flying arm assembly having a pivot arm mounted for pivotal movement at a lower end about an axis that is offset a distance from the axis of rotation of said wheel, (ii) a flying arm mounted on said pivot arm for movement along a line which is coincident with a radius of said wheel, and (iii) means for positively mechanically coupling said flying arm assembly to said wheel for said movement along said first path position when said contactor assembly is lowered into electrical connection with said leads,
said mechanical means being substantially free of mechanical collisions and vibrations that would detract from the accuracy of said testing.

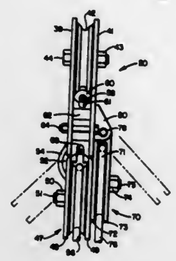
4,500,004
TRANSPORT CARRIAGE
Penn A. Peters; Cleveland J. Biller, and David D. Johnson, all of Morgantown, W. Va., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.
Filed Sep. 9, 1983, Ser. No. 530,829
Int. Cl.³ B66C *17/06*
U.S. Cl. 212—80 **4 Claims**

1. A skyline logging system including a ground anchor, a crane having a vertically extending boom, a high line connected in tension to the anchor and the upper end of the boom, a carriage mounted to move along said high line, a plurality of load blocks pivotally mounted on said carrige below said high line and a separate load line means extending from each load block for supporting separate loads,

the carriage including a pair of spaced apart plates, means for securing the plates in relative position with a circular track block and a locking means mounted therebetween, said track block being free to rotate about its axis while engaging the high line and not engaging the locking means,

means secured to said high line for (1) preventing movement of said carriage away from said crane along said high line, (2) moving the locking means to locking position with respect to the track block and (3) simultaneously unlocking a first of said load blocks;

means secured to the load line extending from said first load



block for (1) moving the locking means to locking position with respect to said load line and (2) simultaneously unlocking the track block to rotate,

each of said load blocks being circular and secured between a pair of plates, means for holding the pairs of plates associated with said load blocks in relatively stationary position with respect to each other while allowing each load block to rotate about the axis of its circular shape, each pair of plates associated with each load block being pivotally secured to said carriage with the axis of rotation of said pivotal security being substantially parallel with the adjacent high line and substantially perpendicular to the axis of the associated circular shape.

4,500,005

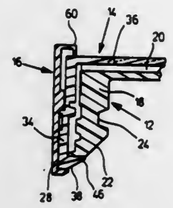
TAMPER-EVIDENT CAP ASSEMBLY FOR A CONTAINER

Jerry Forrester, 132 Greenwood Village, Sherwood Park, Alberta, Canada (T8A 0Z8)

Filed Mar. 12, 1984, Ser. No. 588,837

Int. Cl.³ B65D *55/02, 85/56;* **A61J** *1/00*

U.S. Cl. 215—203 **8 Claims**



1. A tamper-evident cap assembly for a container with an externally screw-threaded top, the cap comprising:

an inner cap having an annular wall and an open lower end, said annular wall having an internal screw-thread to enable the inner cap to be screwed onto the top of the container by clockwise movement of the inner cap relative to the container,

an outer cap having an annular wall, a closed upper end and an open lower end, said outer cap being fitted over the inner cap, means retaining the outer cap in assembly with the inner cap,

the annular walls of the inner and outer caps having mutually-engaging screw-threads to cause initial anticlockwise turning movement of the outer cap to result in angular movement of the outer cap relative to the inner cap,

the inner and outer caps having cooperating ratchet means to cause clockwise movement of the outer cap to be transmitted to the inner cap while permitting anticlockwise movement of the outer cap relative to the inner cap, the closed end of the outer cap having a window and the inner cap having insignia which is not visible in the window when the outer cap is in an initial relatively clockwise position relative to the inner cap and which is visible when the outer cap has been turned in an initial anticlockwise movement relative to the inner cap.

4,500,006

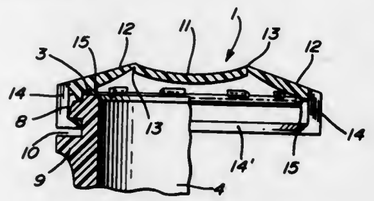
SAFETY CLOSURE CAP

Lucien Lafortune, 11510 Pasteur St., Montreal, Canada (H3M 2P2), and André Rouette, 12 du Vallon St., Saint-Sauveur-des-Monts, Canada (J0R 1R0)

Filed Apr. 30, 1984, Ser. No. 605,221

Int. Cl.³ B65D *55/02, 85/56;* **A61H** *1/00*

U.S. Cl. 215—224 **5 Claims**



1. In a container and a safety cap adapted to close the container in fluid-proof relationship, the combination comprising a rigid container having an open top with a horizontal flat rim; said rim joining at its outer edge with a downwardly and outwardly inclined slanted wall portion; at least one circular protuberance formed at the lower end of said slanted wall portion, at the upper portion of the container wall and defining a flat step, and at its underside, a flat annular plane having an outer corner; said safety cap having a deformable central area merging with an annular portion; the outer circumference of the latter being integrally formed with a vertical downwardly extending flange; said flange having an inwardly directed projection at its lower end adapted to releasably snap into locking engagement with said outer corner; said annular portion having a lower surface provided with a first circular ridge adapted to abut against said rim in the closed condition of said cap; and being further provided with a second continuous ridge radially outwardly-spaced from said first ridge and adapted to sealingly contact said slanted wall portion to provide a fluid-proof seal between said safety cap and said container.

4,500,007

PARROT-BEAKABLE FREESTANDING PLASTIC DRUM ASSEMBLAGE FOR HANDLING HEAVY MATERIALS

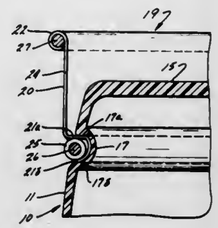
Andy J. Stoll, III, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Continuation of Ser. No. 113,016, Jan. 18, 1980, abandoned, which is a continuation of Ser. No. 879,841, Feb. 22, 1978, Pat. No. 4,203,526, which is a continuation of Ser. No. 636,264, Nov. 28, 1975, abandoned, which is a continuation of Ser. No. 635,206, Nov. 25, 1975, abandoned. This application Dec. 4, 1980, Ser. No. 212,790

The portion of the term of this patent subsequent to May 20, 1997, has been disclaimed.

Int. Cl.³ B65D *1/46, 6/34, 25/22*

U.S. Cl. 220—71 **2 Claims**



1. A plastic drum assembly comprising a single-piece molded plastic drum having a top end, a bottom end, and a circumferential sidewall merging with said top and bottom ends, said sidewall including a circumferential recess adjacent said top end, said recess having an upper horizontal flat ledge portion facing downwardly and disposed essentially perpendicularly to the longitudinal axis of said drum, and a removable circumferentially disposed collar mounted on said drum, said collar having a substantially circumferential inwardly extending projection adjacent its lower margin positioned within and engaging said circumferential recess, said inwardly extending projection including a horizontal upper flat shoulder surface disposed in snug contact with said flat ledge of said recess, said collar being out of contact with said top end to allow access for drum chime-handling devices, said collar having an annular bead disposed adjacent the top thereof, whereby said collar is grippable by steel drum chime-handling devices enabling lifting and transportation of said drum assembly.

4,500,008

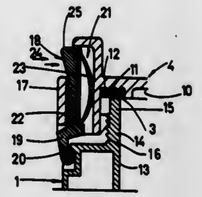
WEATHERPROOF AND/OR DUST PROOF FITTING

David L. Cook, Christchurch, New Zealand, assignor to PDL Industries Limited, Christchurch, New Zealand

Filed Sep. 22, 1982, Ser. No. 421,160

Int. Cl.³ H02G *3/14*

U.S. Cl. 220—242 **16 Claims**



1. A weatherproof and dust proof fitting cover comprising: a housing having a base attachable to a wall and similar surface; a bore in said base adapted to receive a fitting therein; a recess in said base surrounding said bore; a cover pivotally attached to the base for movement between an open and closed position and having a peripheral configuration substantially the same as said recess so that when in closed position it covers the bore; a resilient sealing means operatively disposed between said cover and recess to seal the bore when said cover is in the closed position; means to bias said cover toward its closed position wherein the inner surface of said cover and said sealing means contact each other; and latching means which automatically closes to releasably lock the cover in its closed position comprising a ledge protruding from the housing, a slot formed in the cover, a latching member mounted for toggle-like movement in said slot, a lip on said latching member cooperatively engageable with said ledge to lock said cover in said closed position, and a resilient biasing means operatively mounted in said slot to bias said latching member toward its locking position wherein said lip is engaged with the ledge of the housing and is disengageable from said ledge by pressing a part of said latching member against the force of said latch biasing means.

4,500,009

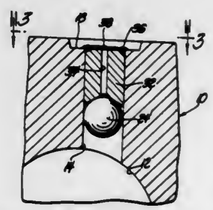
SEALED CONTAINER

Walter J. Rozmus, Traverse City, and Jerry L. Dietrich, Williamsburg, both of Mich., assignors to Kelsey-Hayes Company, Romulus, Mich.

Division of Ser. No. 399,932, Jul. 19, 1982, Pat. No. 4,478,788. This application Mar. 15, 1984, Ser. No. 589,768

Int. Cl.³ B65D *51/18*

U.S. Cl. 220—256 **5 Claims**



1. A sealed container (**10**) comprising an enclosed container (**10**) having a fill passageway (**14**) therein, a first sealing plug (**24**) disposed in sealing engagement with said fill passageway (**14**), a second sealing plug (**32**) disposed in sealing engagement with said passageway (**14**), said second plug (**32**) including a gas hole (**34**) therein for exiting gas between said plugs as said second plug (**32**) is inserted into said fill passageway (**14**).

4,500,010

WIDE-NECKED CONTAINER OF A SYNTHETIC RESIN WITH REMOVABLE LID

Udo Schütz, Am Rückersteg 4, D-5418 Selters, Fed. Rep. of Germany

Filed Feb. 1, 1984, Ser. No. 576,762

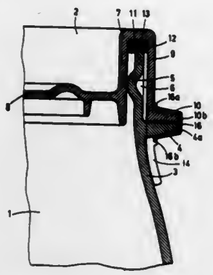
Claims priority, application Fed. Rep. of Germany, Feb. 17, 1983, 3305346

Int. Cl.³ B65D *45/32*

U.S. Cl. 220—320 **6 Claims**

1. Wide-necked barrel of a synthetic resin with a removable lid exhibiting a bottom entering into the barrel neck by way of an inner rim, and an outer rim extending over the barrel neck with a radial lid flange which is braced by means of a clamping ring against a closure element integrally molded to the barrel neck, a sealing ring inserted into the annular groove between the inner rim and the outer rim of the lid being urged against the top edge of the barrel neck, characterized in that the lid flange (**10**) exhibits on the underside alternatingly tongue-like extensions (**14**) and recesses (**15**) arranged with a specific pitch over the circumference of the lid; that radially outwardly oriented annular flange segments (**4**), molded on the barrel neck (**3**), engage into the flange recesses (**15**), these segments completing a partial cross-sectional profile (**10***b*) of the lid flange (**10**), formed in the zone of the recesses (**15**), to a full

cross-sectional profile (10*a*) of the lid flange (10) in the zone of the extensions (14); and that the clamping ring (16) encompassing the lid flange (10) and the annular flange segments (4) is



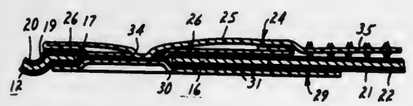
secured by means of clamping ridges (17) integrally molded with the lid extensions (14) and extending in the circumferential direction.

4,500,011

TAPE CLOSURE FOR A CAN END

Wilfred R. Brochman, Oakdale, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation-in-part of Ser. No. 458,564, Jan. 7, 1983, abandoned. This application Feb. 17, 1984, Ser. No. 580,752
Int. Cl.³ B65D *41/00*
U.S. Cl. 220—359 **12 Claims**



1. A container end assembly comprising:
a container end formed of metallic material having an exterior surface and an interior surface and being formed with a pour opening;
a first coating over said exterior surface of said end;
a second coating on said exterior surface over said first coating and bonded thereto, said second coating comprising a vinyl chloride/vinyl acetate copolymer;
a tape bonded by an adhesive to an area of the exterior surface of said second coating circumjacent and covering said pour opening, said adhesive forming a bond between said tape and said second coating which is greater than the bond between said second coating and said first coating whereby upon peeling of the tape from said container end said second coating delaminates in the area of the adhesive bond to said second coating, peeling said second coating from said first coating upon removal of the tape from the container end.

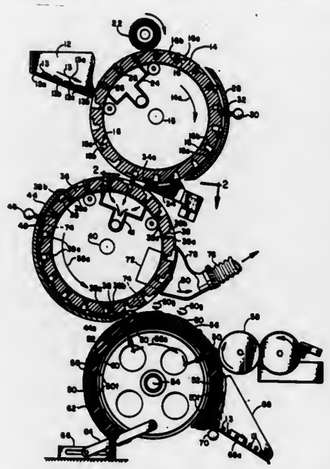
4,500,012

CAPSULE HANDLING APPARATUS

E. Michael Ackley, 1273 N. Church St., Moorestown, N.J. 08057

Filed Jun. 1, 1982, Ser. No. 383,691
Int. Cl.³ B65H *9/08*
U.S. Cl. 221—173 **43 Claims**

1. A carrier for handling an elongated article having two different diameter sections and an annular surface at the junction of said sections, said carrier having an elongated recess in a face thereof adapted to receive said article lengthwise along said face, said recess having first and second compartments separated by a wall disposed perpendicular to the longitudinal axis of said recess, said first compartment being at least as long



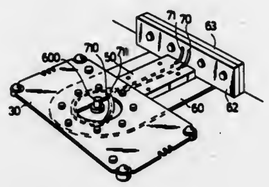
as the length of the larger diameter section of said article and said second compartment having a passage extending along said longitudinal axis of said recess to an outside surface of said carrier, said passage being at least as wide as the diameter of said larger diameter section of said article.

4,500,013

APPARATUS IN BANKS, POST OFFICES AND SIMILAR ESTABLISHMENTS FOR DISPENSING VALUABLE PAPERS

Leif Lundblad, Häradsvägen 102, S-141 41 Huddinge, Sweden

Filed Mar. 7, 1983, Ser. No. 473,031
Int. Cl.³ E05G *1/00*
U.S. Cl. 221—285 **18 Claims**



1. An apparatus in a bank, post office or like establishment for dispensing valuable papers such as banknotes, cheques etc., from a store of such papers to a customer receipt opening, said apparatus comprising a cabinet (10) for housing certain apparatus components, such as said store, means for conveying valuable papers from the store to said receipt opening, at least one keyboard, and said receipt opening, characterized by a base assembly (30-40-60-62) which is connected to the cabinet (10) and which is intended for attachment of the cabinet to a fixed wall or to the floor of a room in said establishment, said base assembly (30-40-60-62) comprising a support plate (30) having an abutment surface for the underside of the cabinet (10), a spacer or distance member (40) and a base plate (60-62) for direct attachment to said fixed wall or said floor, the support plate (30) and the underside of the cabinet (10) being designed to permit limited rotation of the cabinet (10) relative to the base assembly (30-40-60-62), said support plate (30), said distance

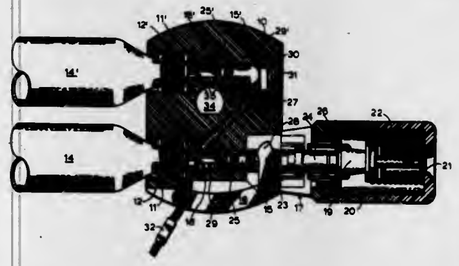
member (40) and said base plate (60-62) being so constructed that the support plate (30) can be firmly assembled to the distance member (40) and the base plate (60-62) in one of a plurality of distinct positions whereby the cabinet can be placed in a working position in one of a corresponding number of positions relative the base plate (60-62), thereby enabling the position of the cabinet relative to said base assembly to be adjusted in accordance with a selected position of the apparatus in the room in question.

4,500,014

MULTIPLE FIRING INFLATOR

Harry L. Zimmerly, Largo, Fla., assignor to Halkey-Roberts Corp., St. Petersburg, Fla.

Filed Dec. 14, 1982, Ser. No. 449,677
Int. Cl.³ B67B *7/24*
U.S. Cl. 222—5 **7 Claims**



1. In an inflator adapted for use with gas-inflatable articles, said inflator having a body with means to discharge gas therefrom, means for holding a first gas capsule on the body, a first pin for piercing the first capsule, and means for advancing the first piercing pin and the first capsule relatively toward each other to pierce the first capsule, the improvement which comprises means on the body for holding a second gas capsule, a second pin for piercing the second capsule, and means including a cylinder having a piston therein for advancing the second piercing pin and the second capsule relatively toward each other to pierce the second capsule, first conduit means in the body for leading gas discharged from the first capsule to the cylinder to drive the piston therein in a second capsule piercing stroke, means in the body for combining the flows of gas from the first and second capsules, and second conduit means in the body for leading the combined gas flow from the first and second capsules to the gas discharge means on the body.

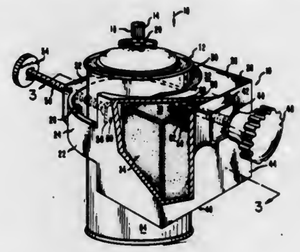
4,500,015

CAN PUNCTURING AND EMPTYING DEVICE

William H. Penney, 8775-20th St., Lot 475, Vero Beach, Fla. 32960

Filed May 24, 1982, Ser. No. 381,195
Int. Cl.³ B67B *7/24*
U.S. Cl. 222—83.5 **11 Claims**

1. A can puncturing and emptying device comprising a frame, said frame including a band portion, said band portion having an opening configured to permit portions of a can to pass therethrough, said can having an exterior surface, means to clampingly engage said can to said frame, a threaded shaft, said threaded shaft threadingly engaged to said frame, one end of said threaded shaft having an elongated point-like shape, said threaded shaft having a longitudinal axis, said longitudinal axis of said threaded shaft being disposed at right angles to the surface of said can, means to advance and retract said end of said threaded shaft towards and away from a portion of said exterior surface of said can inwardly and outwardly from said opening, a mat, said mat comprising a cellular material for diffusing fluid issuing from a hole punctured in the can by the point-like end of the threaded shaft, said mat being compressed between said portion of said exterior surface of said can and said frame, a portion of said mat disposed surrounding said pointed end of said threaded shaft, whereby rotating said threaded shaft in a first direction engages said pointed end thereof with said portion of said exterior surface of said can and upon continued rotation pierces said portion of said exterior surface of said can forming a hole therein and whereby counter rotation of said threaded shaft positions said pointed end of said threaded shaft outwardly from said portion of said exterior surface of said can to permit the fluid contents of the



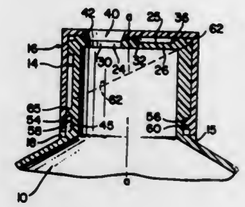
can to discharge through the hole and be diffused through said mat, said pointed end of said shaft being movable towards an exterior surface of said mat that is engaged with said portion of said can upon said threaded shaft being rotated in a first direction and being positioned passing through said exterior surfaces of said can and said mat upon said continued rotation of said threaded shaft a distance limited only by the amount of rotation of said threaded shaft in said first direction, whereby said hole in said can is positioned adjacent said exterior surface of said mat.

4,500,016

ROTATABLE CLOSURE AND DISPENSING DEVICE FOR COLLAPSIBLE TUBES AND/OR CONTAINERS

Horst Funfstuck, 364 W. Payson St., Glendora, Calif. 91740

Filed Dec. 16, 1982, Ser. No. 450,333
Int. Cl.³ B65D *35/48*
U.S. Cl. 222—153 **4 Claims**



1. A rotatable closure and dispensing device for collapsible tubes and/or containers, comprising:
a collapsible tube adapted to store various fluids or pastes therein;
a nozzle integrally formed on said tube or container, and having a discharge port and a blank detent formed therein;
a cap member rotatably mounted to said nozzle, said cap member having a discharge port formed therein for alignment with said discharge port of said nozzle;
means formed on said nozzle and said cap member for selectively positioning said cap member on said nozzle;
means for locking and sealing said cap member in an open or closed position;
wherein said locking and sealing means comprises:
said blank detent formed in said nozzle adjacent said nozzle-discharge port;
a first depending annular lip member formed about said cap

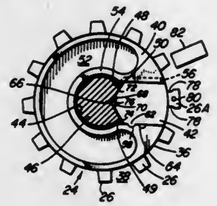
discharge port, and adapted to be selectively positioned in said nozzle discharge port or said blank detent; and
a second depending annular lip member formed in said cap member adjacent said cap-discharge port, and adapted to be selectively positioned in said nozzle-discharge part or said blank detent;
an annular groove formed in said nozzle having a lower wall defining a nozzle-base member, and an upper wall formed having cam means at opposite sides thereof; and
a keeper member formed on said cap adapted to move within said groove and engage each cam means, either of said cam means being engaged when said cap is in an open or closed mode, whereby said cap is compressed against said nozzle in a locked and sealed position;
wherein said nozzle-discharge port and said blank detent are formed having inclined annular walls, and said depending annular lip members are formed having inclined walls for matching engagement with said respective inclined walls of said nozzle-discharge port and said detent;
tamper-indicating means formed between said cap and said nozzle, whereby said tamper-indicating means must be broken prior to placing said cap in an open position;
wherein said tamper-indicating means comprises:
a depending tongue member integrally formed along the lower edge of said cap member; and
a notch formed in said base member of said nozzle, and adapted to receive said tongue member when said cap is mounted to said nozzle; and
wherein said positioning means of said cap member on said nozzle comprises:
a cam deflector formed on said nozzle;
a pair of deflector-lug members formed on said nozzle; and
a positioning gap formed at the base of said cam deflector and above said notch in said nozzle base, said cam deflector and said deflector-lug members being positioned to guide said keeper member which is to be received and passed over said positioning gap, whereby said keeper member is positioned in said groove and said tongue member is received in said notch.

4,500,017

DISPENSING WHEEL AND SHAFT MOUNTING ARRANGEMENT THEREFOR

Cecil B. Machnee, Yorkton, Canada, assignor to Morris Rod-Weeder Co. Ltd., Yorkton, Canada

Filed Sep. 21, 1982, Ser. No. 420,775
Claims priority, application Canada, Jan. 29, 1982, 395203
Int. Cl.³ F16H *55/22*
U.S. Cl. 222—288 **21 Claims**



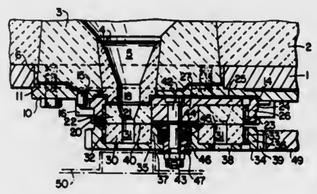
1. A dispensing wheel mountable on a shaft having a longitudinally extending V-shaped groove in the outer surface thereof and being rotatably mounted in an outlet of a dispensing apparatus, comprising: a generally C-shaped major part defining a major peripheral surface portion of said wheel and having a transverse shaft-receiving opening therethrough, the free edges of said major part being parallel and defining therebetween a slot extending from said opening to the outer periphery of said major part; and a minor part receivable in said slot, being lockingly engageable with said major part, and defining the remainder of the peripheral surface of said wheel when fully received in said slot, said minor part being provided with drive means in the form of a projection having converging edge surfaces matable with said V-shaped groove in said shaft, whereby said projection is automatically engageable with said groove when said minor part is fully received in said slot for providing a driving connection between said shaft and said dispensing wheel.

4,500,018

ROTARY SLIDING CLOSURE UNIT AND LIQUID MELT CONTAINER EMPLOYING THE SAME

Robert Zaugg, Baar, and Werner Keller, Steinhausen, both of Switzerland, assignors to Stopinc Aktiengesellschaft, Baar, Switzerland

Filed Jul. 6, 1982, Ser. No. 395,304
Claims priority, application Switzerland, Jul. 15, 1981, 4631/81
Int. Cl.³ B22D *41/08*
U.S. Cl. 222—598 **10 Claims**



1. A rotary sliding closure unit for use with a liquid melt container of the type including an outer jacket, an inner refractory lining, and a pouring opening extending through the lining, said rotary sliding closure unit comprising:
a base plate adapted to be connected removably to the outer jacket of the liquid melt container;
a stationary support frame mounted removably on said base plate;
a stationary refractory plate having therethrough a flow passage, said stationary refractory plate being supported by said stationary support frame such that said flow passage is in communication with the pouring opening, said stationary refractory plate including a center opening and having an annular, ring-shaped configuration;
a rotary refractory plate positioned in sliding abutting contact with said stationary refractory plate and having therethrough a plurality of flow passages to be moved selectively into and out of alignment with said flow passage of said stationary refractory plate, said rotary refractory plate including a center opening and having an annular, ring-shaped configuration;
a rotary support frame supporting said rotary refractory plate against said stationary refractory plate for rotational movement with respect thereto;
said stationary and rotary refractory plates having complementary, annular, abutting relative sliding surfaces;
said stationary and rotary support frames comprising respective disc-shaped members having hubs extending into respective said center openings; and
means, fixed to one of said support frames and without direct connection to said base plate, for coaxially aligning said stationary and rotary support frames and said stationary and rotary refractory plates, and for urging said rotary refractory plate toward said stationary refractory plate, said means comprising a bolt fixed in said hub of said stationary support frame and extending through said hub of said rotary support frame, a guide sleeve surrounding said bolt within a bore hole in said hub of said rotary support frame, and spring means acting between said guide sleeve and said rotary support frame for moving said rotary support frame away from said guide sleeve.

4,500,019

CARRIER FOR PORTABLE AUDIO DEVICES

John J. Curley, Jr., P.O. Box 206, Pleasant St., Dunstable, Mass. 01827

Filed Jun. 23, 1983, Ser. No. 507,284
Int. Cl.³ A45C *11/00*
U.S. Cl. 224—222 **17 Claims**



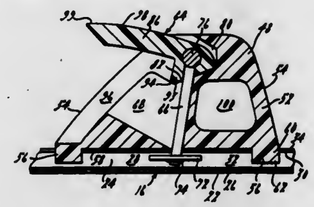
1. A carrier apparatus for portable audio devices comprising:
an armband portion longitudinally wrappable about a human upper arm and having an upper section which includes means defining a first inflatable chamber, a lower section which includes means defining a second inflatable chamber and an intermediate section which interconnects said upper and lower sections and is thin relative to said upper and lower chambers when said chambers are inflated, said armband portion further including port means for introducing a fluid into said chambers to thereby inflate said chambers into a condition wherein said armband is laterally contoured to substantially conform to the muscular contour of said upper arm and thereby maintains a substantially fixed position along the length of said arm; and
means attached to said armband portion of holding a portable audio device.

4,500,020

ARTICLE CARRIER WITH ADJUSTABLY POSITIONABLE BRACKET

William Rasor, Marysville, Mich., assignor to Masco Corp., Taylor, Mich.

Filed May 6, 1982, Ser. No. 375,399
Int. Cl.³ B60R *9/04*
U.S. Cl. 224—321 **8 Claims**



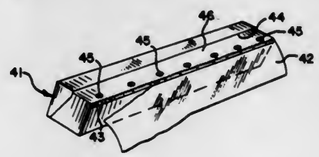
1. An article carrier for mounting on a surface of a motor vehicle, said article carrier comprising two tracks fixedly secured to said surface in a spaced apart parallel relationship, a longitudinal rib extending from each track, two brackets slidably secured to each of said tracks, two rails, each of said rails extending transversely between one of said brackets on one of said tracks and one of said brackets on the other of said tracks, said rails being fastened to said brackets such as to be supported above said surface, a resilient clamping plate disposed adjacent to said rib, a pin fastened to said plate, said pin having at its end furthest from said clamping plate a cylindrical member joined at right angles to said pin, a toggle arm having a linear passageway to pivotably mount said cylindrical member, and said pin passing through said toggle arm from said cylindrical member to said clamping plate, said toggle arm having a camming extension on a surface thereof in contact with the surface of said bracket whereby as said toggle arm is pivoted, said camming extension causes said toggle arm to draw said pin and urge said plate against said rib thereby clamping said rib between said plate and said bracket to fixedly secure said bracket to said rib.

4,500,021

RESEALABLE ARTICLES AND PROCESS

Leon L. Bildusas, 62 Hampton Rd., Aurora, Ill. 60538, assignor to Eschem Inc., Downers Grove, Ill.

Continuation-in-part of Ser. No. 220,116, Dec. 24, 1980, Pat. No. 4,399,249. This application May 26, 1983, Ser. No. 498,255
The portion of the term of this patent subsequent to Aug. 16, 2000, has been disclaimed.
Int. Cl.³ B32B *3/06*; B26F *3/02*
U.S. Cl. 225—49 **17 Claims**



1. A storage bag having a releasable and resealable resealing means, said storage bag having opposing film panels, said resealing means being near one edge of one of said panels, an opening located at said one edge, said bag having a closed condition at which said resealing means seals said panels together and closes said opening, said bag having an open condition at which said panels are separated at said opening, said bag being resealable from said open condition to said closed condition and being releasable from said closed condition to said open condition, the improvement comprising said resealing means being an area of resealable and releasable pressure sensitive adhesive composition including:
between about 20 and 60 weight percent based on the total weight of the composition of a block copolymer having non-elastomeric polymer blocks and at least one elastomeric polymer block, each said non-elastomeric block being a monoalkenyl arene polymer block, said elastomeric block being a conjugated diene polymer block;
between about 5 and 50 weight percent based on the total weight of the composition of an end block modifying resin that includes a monoalkenyl arene, said end block modifying resin being compatible predominantly with the non-elastomeric block and substantially incompatible with the elastomeric block;
between about 20 and 60 weight percent based on the total weight of the composition of a plasticizing process oil that is compatible predominantly with said elastomeric block and generally incompatible with the non-elastomeric block of the block copolymer; and
not more than about 14 weight percent, based on the total weight of the composition, of a mid block modifying resin that is compatible predominantly with the elastomeric block and substantially incompatible with the non-elastomeric block of the block copolymer.

14. A pad of peelable sheets, each said sheet having a back face and a resealing area located on each of said back faces of the peelable sheets, the improvement comprising said resealing

area being a resealable and releasable pressure sensitive adhesive composition including:

between about 20 and 60 weight percent based on the total weight of the composition of a block copolymer having non-elastomeric polymer blocks and at least one elastomeric polymer block, each said non-elastomeric block being a monoalkenyl arene polymer block, said elastomeric block being a conjugated diene polymer block;

between about 5 and 50 weight percent based on the total weight of the composition of an end block modifying resin that includes a monoalkenyl arene, said end block modifying resin being compatible predominantly with the non-elastomeric block and substantially incompatible with the elastomeric block;

between about 20 and 60 weight percent based on the total weight of the composition of a plasticizing process oil that is compatible predominantly with said elastomeric block and generally incompatible with the non-elastomeric block of the block copolymer; and

not more than about 14 weight percent, based on the total weight of the composition, of a mid block modifying resin that is compatible predominantly with the elastomeric block and substantially incompatible with the non-elastomeric block of the block copolymer.

15. A dispenser having a roll of wrapping film therewithin and a resealing area located on said dispenser at a position at which the resealing area adheres a leading portion of the wrapping film thereto, the improvement comprising said resealing area being a resealable and releasable pressure sensitive adhesive composition including:

between about 20 and 60 weight percent based on the total weight of the composition of a block copolymer having non-elastomeric polymer blocks and at least one elastomeric polymer block, each said non-elastomeric block being a monoalkenyl arene polymer block, said elastomeric block being a conjugated diene polymer block;

between about 5 and 50 weight percent based on the total weight of the composition of an end block modifying resin that includes a monoalkenyl arene, said end block modifying resin being compatible predominantly with the non-elastomeric block and substantially incompatible with the elastomeric block;

between about 20 and 60 weight percent based on the total weight of the composition of a plasticizing process oil that is compatible predominantly with said elastomeric block and generally incompatible with the non-elastomeric block of the block copolymer; and

not more than about 14 weight percent, based on the total weight of the composition, of a mid block modifying resin that is compatible predominantly with the elastomeric block and substantially incompatible with the non-elastomeric block of the block copolymer.

4,500,022

DEVICE FOR SEVERING BLANKS OF A BATCH OF DIE CUT SHEETS

Raymond Lucas, Prechac, France, assignor to Bobst SA, Lausanne, Switzerland

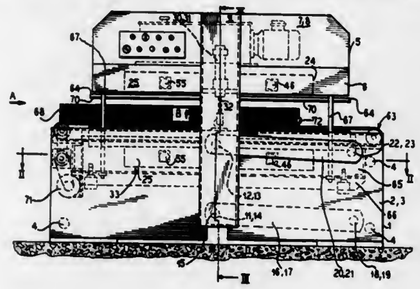
Filed May 18, 1983, Ser. No. 495,582

Claims priority, application Switzerland, May 19, 1982, 3143/82

Int. Cl.³ B26F *3/02*

U.S. Cl. 225—97 **9 Claims**

1. A device for severing various blanks of a batch of die cut sheets, said device comprising a lower frame having side frame members interconnected by a lower transverse plate, a movable upper frame having an upper transverse plate interconnecting a side frame, means forming an articulate parallelogram for interconnecting the movable upper frame and guiding it during movement relative to the lower frame, means for raising and lowering the upper frame relative to the lower frame, said transverse lower plate supporting a fixed plate and a slidable plate, said transverse upper plate supporting a fixed plate aligned with the lower fixed plate and an upper slidable plate, each of said upper and lower fixed plates and slidable plates supporting movable tables arranged in pairs, means for moving the movable tables in a direction transverse to the axis of the frame, means for moving the slidable plates longitudi-



nally in the frames and a conveyor disposed in the lower frame for transporting a stack in longitudinal direction of the device to be gripped between the movable tables as the upper frame is lowered onto the lower frame.

4,500,023

PAPER FEEDING APPARATUS FOR PRINTERS

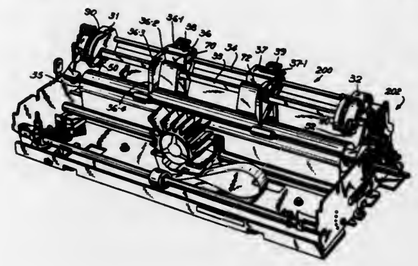
Hiroyuki Akazawa, Shiojiri, Japan, assignor to Epson Corporation and Kabushiki Kaisha Suwa Seikosha, both of Tokyo, Japan

Filed Aug. 18, 1982, Ser. No. 409,269

Claims priority, application Japan, Aug. 20, 1981, 56-123806[U]

Int. Cl.³ B65H *17/40;* **B41J** *11/28, 11/34, 13/14*

U.S. Cl. 226—76 **12 Claims**



1. A paper feeding apparatus for use in a printer for feeding both a continuous paper having holes along the peripheral edges thereof and a single sheet of paper comprising a frame, platen means rotatably supported on said frame, a guide shaft supported on said frame, first and second paper feeding means disposed on said guide shaft above said platen means, said first and second paper feeding means being spaced apart so that the peripheral edges of a continuous paper can contact the first and second paper feeding means so that the continuous paper can be fed by the paper feeding means by utilizing the holes along the peripheral edges of the continuous paper, and first and second paper guides disposed on said guide shaft intermediate said first and second paper feeding means, said first and second paper guides having a first portion for guiding a continuous paper fed by the first and second paper feeding means, a second portion for guiding a single sheet of paper therethrough not fed by said first and second paper feeding means while being fed into said printer and a third guide portion for guiding the single sheet of paper therebetween after having traveled beyond said platen means.

4,500,024

MULTIPLE CLIP APPLIER

John DiGiovanni, Irvington, and Donald M. Golden, Cherry Hill, both of N.J., assignors to Ethicon, Inc., Somerville, N.J.

Division of Ser. No. 208,368, Nov. 19, 1980, Pat. No. 4,430,997.

This application Jun. 9, 1983, Ser. No. 502,855

Int. Cl.³ A61B *17/32, 17/12*

U.S. Cl. 227—19 **8 Claims**



1. A disposable cartridge for a plurality of ligating clips comprising:

an elongated, generally U-shaped housing having a discharge end and having a transverse base defining a first plane and having two upstanding sidewalls;

a thin, generally planar, longitudinally-extending fixed rack secured in said first plane in said housing;

a thin, generally planar, longitudinally-extending movable rack mounted in said housing in a second plane generally parallel to said first plane of said first rack, with said planar surface of said movable rack disposed in confronting relationship to said planar surface of said fixed rack, each of said racks including a plurality of sets of resilient fingers projecting from its respective confronting planar surface toward the confronting planar surface of the other rack;

a plurality of clips arrayed in a line between the confronting planar surfaces of said racks from a first position adjacent the discharge end of said housing to successive positions placed longitudinally along said racks;

said movable rack advancing clips to said first position;

delivery means having a discharge end and movable in said housing in a third plane generally parallel to said first and said second planes;

long stroke motion receiving means on said delivery means;

short stroke motion receiving means on said movable racks;

said long stroke motion receiving means unconnected to said short stroke motion receiving means;

resilient transfer means cooperating with said delivery means and biased, in a rest position, in alignment with said movable rack and adapted for deflection transversely to said movable rack by said clip as said clip is advanced toward the discharge end of said housing;

said transfer means cooperating with said delivery means and said movable rack to transfer clips from said first position in said first plane of said fixed rack to said second plane of said movable rack and then to further transfer said clip from said second plane of said movable rack to said third plane of said delivery means.

4,500,025

BONE STAPLER

Edward P. Skwor, Burnsville, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Jul. 18, 1983, Ser. No. 514,929

Int. Cl.³ A61B *17/04*

U.S. Cl. 227—19 **1 Claim**

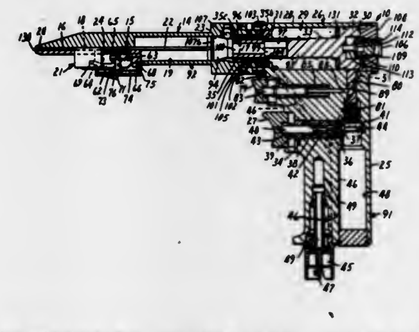
1. A bone stapler adapted for use with generally U-shaped staples each comprising a central portion and two generally parallel leg portions projecting generally in the same direction from opposite ends of its central portion and having distal ends, said stapler comprising:

a housing having a passageway extending from an inlet opening to an outlet opening, said passageway being adapted to guide a single staple moved from the inlet to the outlet opening with the distal ends of its legs leading;

means for biasing a stack of staples into said inlet opening;

a driver having an end portion adapted to engage the central portion of a said staple and being mounted on said housing for sliding movement between a load position with the driver spaced from the inlet opening to afford movement of one of the staples into the passageway, along said passageway through an intermediate position with said end portion pushing the staple, to an eject position at which the end portion of the plunger pushes the staple out said outlet opening and at which eject position the driver is stopped by said housing, said driver having a length along said passageway so that a portion thereof will be positioned adjacent said inlet opening during movement of said ram from said intermediate to said eject position to prevent movement of a second staple in said stack into said passageway through said inlet opening; and

drive means adapted to be manually activatable for rapidly and forcefully propelling said driver along said passageway toward said eject position and for subsequently biasing said driver for movement from said eject position back to said load position;



said housing and driver both comprising first and second parts, said first part of said housing defining said inlet and outlet openings and carrying said means for biasing, and said second part of said housing carrying said drive means; and

said stapler including manually operable engagement means adapted for releasable engagement to afford using first parts adapted for staples of different sizes with said second part, said engagement means comprising one of said parts of said driver having walls defining a socket and the other of said parts of said driver having a tip portion adapted to be inserted in said socket when said parts of said driver are rotated out of alignment and to engage within said walls when said parts of said driver are rotated into alignment; said parts of said housing being adapted to be relatively rotated to afford engagement of said driver parts, and means adapted for releasably latching said parts of said housing together in proper alignment.

4,500,026

AUTOMATIC BELLOWS WELDER AND METHOD FOR USING SAME

Richard R. Larsen, Daytona Beach, Fla., assignor to Pacific Scientific Company, Anaheim, Calif.

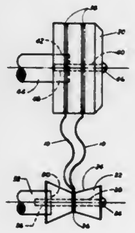
Filed Oct. 21, 1981, Ser. No. 313,283

Int. Cl.³ B23K *37/04*

U.S. Cl. 228—44.1 R **7 Claims**

1. A device for welding thin metallic objects each having an aperture therein comprising a pair of rollers positioned in a spaced apart relationship, each roller in said pair of rollers having a circumferential groove formed in the outer surface thereof to receive the surfaces defining the apertures in the thin metallic objects to be welded, said circumferential groove in each roller of said pair of rollers being located approximately

in the center portion thereof and having a V-shaped axial cross-section, said center portion being of a smaller diameter than the end portions of each roller of said pair of rollers resulting in the formation of lead-in surfaces to said V-shaped circumferential groove in each roller of said pair of rollers, a roller located in proximity to said pair of rollers and having a plurality of circumferential grooves formed in the outer surface thereof, one or more of said plurality of circumferential grooves in said outer surface of said roller receiving the outer surfaces of the thin metallic objects to be welded, means for applying a radially directed force by said roller to the outer surfaces of the thin metallic objects to be welded, said radially



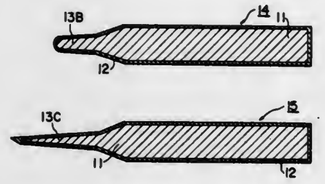
directed force causing the axial movement of the surfaces defining the apertures in the thin metallic objects over said lead-in surfaces into said V-shaped circumferential groove and the axial compression together of said aperture defining surfaces by the surfaces defining said V-shaped circumferential groove in each roller of said pair of rollers, means for rotating said roller and said pair of rollers causing the thin metallic objects to rotate about a common axis, and means for welding the surfaces defining the apertures in the thin metallic objects as they are compressed axially together and caused to rotate by rotation of said roller and said pair of rollers, said welding means being located between said pair of rollers.

4,500,027

METHOD OF MANUFACTURING SOLDERING TIPS

Masahiko Nakajima, Tokyo, Japan, assignor to Nakajima Dokosho Company Limited, Tokyo, Japan

Filed Nov. 2, 1982, Ser. No. 438,706
Claims priority, application Japan, Nov. 9, 1981, 56-179263
Int. Cl.³ B26K *3/02*
U.S. Cl. 228—54 **8 Claims**



1. A method of manufacturing a soldering tip, which comprises:
- plating the outer surface of a copper substrate having a rounded top end with an iron layer to form a tip blank, and
- subsequently, shaping said tip blank under pressure into a desired final tip configuration.

4,500,028

METHOD OF FORMING A COMPOSITE MATERIAL HAVING IMPROVED BOND STRENGTH

John F. Breedis, Trumbull, and Julius C. Fister, Hamden, both of Conn., assignors to Olin Corporation, New Haven, Conn.

Division of Ser. No. 392,999, Jun. 28, 1982, Pat. No. 4,429,022.
This application Oct. 28, 1983, Ser. No. 546,665
Int. Cl.³ B23K *20/04*
U.S. Cl. 228—117 **8 Claims**

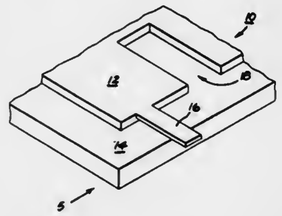
1. A method of forming a composite sheet material having improved bond strength and a substantially smooth external surface, said method comprising:
- providing a core material in strip form comprising a deoxidized copper alloy consisting essentially of at least 95% by weight copper and from about 0.05% to about 0.5% zirconium;
- providing a cladding material in strip form comprising a dissimilar copper alloy;
- rolling together said core and cladding materials in a single pass with a reduction of about 50% to 75% to form a metallurgical bond between said core and cladding materials; and
- heating said bonded core and cladding materials to a temperature in the range of about 200° C. to about 750° C. for a time period of about 5 minutes to about 24 hours to increase the bond strength of said composite material.

4,500,029

ELECTRICAL ASSEMBLY INCLUDING A CONDUCTOR PATTERN BONDED TO A NON-METALLIC SUBSTRATE AND METHOD OF FABRICATING SUCH ASSEMBLY

Alexander J. Yerman, Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Jun. 11, 1982, Ser. No. 387,717
Int. Cl.³ H05K *3/06*
U.S. Cl. 228—123 **10 Claims**



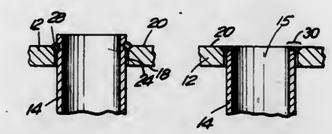
1. A method of fabricating an assembly including a conductor pattern bonded to a non-metallic substrate, wherein the method includes bonding a patterned metallic sheet to the substrate by forming at an elevated temperature a molten eutectic alloy between the sheet and the substrate and consisting essentially of metal substantially identical to the metal of the metallic sheet and a heat reactive substance, the improvement for implementing a non-bonded member in the conductor pattern, comprising, prior to bonding, partially penetrating through a selected area of the side of the metallic sheet to be bonded to the substrate, said selected area having a length in excess of about 42 mils, whereby the remaining portion of the metallic sheet in the selected area constitutes a member which does not bond to the substrate.

4,500,030

FLANGE WELD TECHNIQUE

James E. Gerber, Walbridge; Robert J. Kovacs, Oregon, and Willy Herrmann, Toledo, all of Ohio, assignors to APX Group, Inc., Toledo, Ohio

Filed Sep. 13, 1982, Ser. No. 417,210
Int. Cl.³ B23K *9/225*
U.S. Cl. 228—125 **12 Claims**



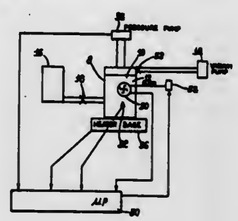
1. A method for manufacturing an exhaust manifold for mounting on an engine head, said method comprising:
- providing a flange having opposed first and second sides and at least one aperture therein, said flange being defined by a chamfer at the intersection of said aperature and said second side, said chamfer having an angle of between approximately 20° and approximately 60° and extending into said flange to a depth of between approximately 0.01 inch and approximately 0.15 inch;
- providing at least one tube dimensioned to fit in said aperture such that a gap of between approximately 0.01 inch and approximately 0.1 inch exists between said tube and said flange;
- inserting one end of said tube into said aperture from the first side of said flange such that said tube extends beyond the surface of the second side of the said flange a distance of up to approximately one-half inch;
- welding said tube to said flange about the circumference of said tube from the second side of said flange; and
- removing any weld material from the surface of the second side of said flange and removing the portion of the tube which extends beyond the second side of said flange, whereby the portion of said tube extending beyond said flange substantially prevents weld material from entering said tube during said welding, and whereby the removal of said portion of said tube enables proper mounting of said flange on the engine head.

4,500,031

METHOD AND APPARATUS FOR MANUFACTURING A HOT SPOT THERMOCOUPLE

James T. Pettingell, Escondido, Calif., assignor to Robert D. Hancock, Incline Village, Nev.

Filed Jun. 1, 1982, Ser. No. 383,515
Int. Cl.³ B23K *31/02*
U.S. Cl. 228—179 **6 Claims**



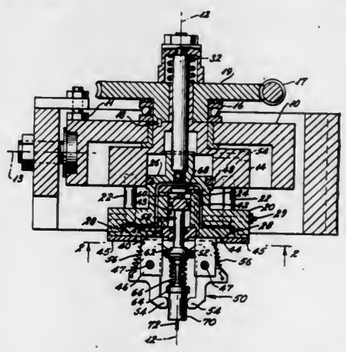
6. Apparatus for constructing a hot spot thermocouple having a body containing lead wires comprising:
- setup and holding means for holding a plurality of fine wires having diameters not greater than about 0.01 inches in fixed predetermined relative positions,
- welding fixtures means cooperating with said setup and holding means to position said plurality of fine wires for welding,
- welding and cutting means cooperative with said welding fixture means for making predetermined welds among said wires in said plurality of wires, and
- transfer fixture means cooperating with said setup and holding means to support the hot spot thermocouple body to make predetermined contacts between the lead wires and respective ones of said plurality of wires in substantially predetermined positions, whereby the welding and cutting means cooperates with said transfer fixture means to make welds at said predetermined contacts and cut away excess wire.

4,500,032

METHOD AND APPARATUS FOR PROPER REGISTRATION OF MATING PARTS

Daniel W. Ackerman, Chenango Bridge, N.Y., assignor to Universal Instruments Corporation, Binghamton, N.Y.

Filed Feb. 16, 1983, Ser. No. 467,082
Int. Cl.³ H01L *21/98*
U.S. Cl. 228—180 A **21 Claims**



1. A method of automated compensating for misalignment of a surface profile of a first body from a pattern on a bottom of said first body and mating said first body pattern within a specified tolerance, with a corresponding pattern on a top of a second body, said method comprising the steps of:
- providing a gage pattern in spaced relation from and having the same orientation as said second body pattern;
- engaging and gripping said first body at a first station by clamping at least a portion of said surface in a gripper assembly of a translatable head assembly; said gripper assembly being floatable relative to said head assembly within a floatation plane;
- translating said head assembly, after attaining said gripping, from said first station to a second station having said gage pattern;
- engaging and guiding said first body pattern with said gage pattern, and mating said first body and gage patterns within said specified tolerance;
- fixing said gripper assembly relative to said head assembly in said floatation plane; and
- disengaging said first body and gage patterns after said fixing, and translating said head assembly and gripped first body to a third station having said second body, and mating said first and second body patterns within said specified tolerance.

9. An apparatus to accomplish automated compensating for misalignment of a surface profile of a first body from a pattern on a bottom of said first body and mating said first body pattern, within a specified tolerance, with a corresponding pattern on a top of a second body, said apparatus comprising:
- a gage pattern in spaced relation from and having the same orientation as said second body pattern;

means for engaging and gripping said first body at a first station by clamping at least a portion of said surface in a gripper assembly of a translatable head assembly; said gripper assembly being floatable relative to said head assembly within a floatation plane;

means for translating said head assembly, after attaining said gripping, from said first station to a second station having said gage pattern;

means for engaging and guiding said first body pattern with said gage pattern, and for mating said first body and gage patterns within said specified tolerance;

means for fixing said gripper assembly relative to said head assembly in said floatation plane; and

means for disengaging said first body and gage patterns after said fixing, and for translating said head assembly and gripped first body to a third station having said second body, and for mating said first and second body patterns, within said specified tolerance.

4,500,033

METHOD FOR EXPELLING ENTRAPPED AIR FROM REACTIVE METALLIC LAYUPS PRIOR TO DIFFUSION BONDING

David W. Schulz, Belmont, and Gail E. Spaulding, Redondo Beach, both of Calif., assignors to Rockwell International Corporation, El Segundo, Calif.

Filed Sep. 30, 1982, Ser. No. 430,570
Int. Cl.³ B23K *35/38, 19/00*
U.S. Cl. 228—219 **12 Claims**

1. In a process for diffusion bonding of at least two metal workpieces of a reactive metal selected from the group consisting of alloys of titanium, zirconium and the refractory metals; the improvement for expelling entrapped air from between surfaces of said workpieces prior to said diffusion bonding, which comprises

precoating the metal surfaces of said workpieces which are to be diffusion bonded, with a substance in the form of an organic polymer capable of decomposing at a temperature above about 800° F. and below the diffusion bonding temperature of said workpieces, to form decomposition products comprising an inert gas having a density greater than air,

heating said workpieces to a temperature above about 800° F. and below the diffusion bonding temperature of said workpieces, and causing decomposition of said substance and forming a first inert gas atmosphere having a density greater than air,

flushing said first inert gas atmosphere together with said entrapped air out of contact with the surfaces of said workpieces, by means of a second inert gas having a density greater than the inert gas of said first inert gas atmosphere, at a temperature above the decomposition temperature of said organic polymer and below the diffusion bonding temperature of said workpieces, and

further heating said workpieces under pressure to cause diffusion bonding of said workpieces, in the absence of entrapped air.

4,500,034

ELECTRONIC CONTROL ARRANGEMENT FOR SYSTEM POWERED HVAC TERMINAL UNITS

James A. Reese, and Raymond H. Dean, both of Johnson County, Kans., assignors to Tempmaster Corporation, Kansas City, Mo.

Filed Sep. 30, 1982, Ser. No. 432,086
Int. Cl.³ F24F *7/00;* **G05D** *23/00*
U.S. Cl. 236—49 **8 Claims**

8. In an air distribution system for applying conditioned air to separate areas of a building, the combination of:

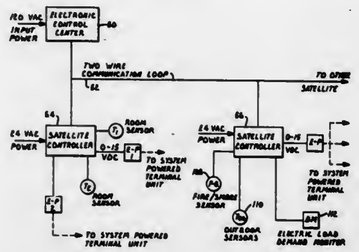
a duct for each area, each duct receiving conditioned air at a relatively high supply pressure and each duct having an outlet for directing the conditioned air into the corresponding area;

a pressure responsive control device for each outlet controlling the flow of conditioned air therethrough;

a pneumatic circuit for each flow control device, each circuit being powered by the supply pressure and including an actuator for controlling the pressure applied to said flow control device in accordance with the pressure conditions of the corresponding actuator;

a pneumatic amplifier in each pneumatic circuit disposed in fluid communication with the corresponding actuator to control the pressure condition thereof;

a thermostat controlled line disposed in fluid communication with each amplifier, each line having a thermostat for controlling the pressure therein;



a common control line communicating with each amplifier and cooperating with the thermostat controlled line to control the pressure of the amplifier;

an electro-pneumatic transducer connected with said control line to control the pressure therein, said transducer being operable to receive electrical signals and to control the pressure in said control line in accordance with the received signal; and

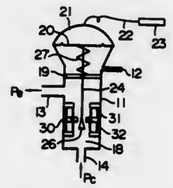
electronic means for sensing a preselected condition in the building and applying to said transducer an electrical signal representative of said condition, whereby the flow of conditioned air into each area is controlled by the thermostat in the area in conjunction with the condition sensed by said electronic means.

4,500,035

EXPANSION VALVE

Shigeaki Kuroda, Shimizu; Takao Senshu, Shizuoka; Kensaku Oguni; Taketoshi Mochizuki, both of Shimizu; Hiromu Yasuda, Shizuoka; Kyuhei Ishibane; Akira Atsumi, both of Shimizu; Hideyuki Kimura, and Toshio Hatada, both of Ibaraki, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jun. 21, 1983, Ser. No. 506,384
Claims priority, application Japan, Jun. 25, 1982, 57-108417
Int. Cl.³ G05D *27/00;* **F25B** *41/04*
U.S. Cl. 236—92 B **5 Claims**



1. An expansion valve having a refrigerant inlet passage, a refrigerant outlet passage, a valve chest to which both the inlet and outlet passages open, a diaphragm chamber communicating with a heat-sensitive bulb through a small diameter tube,

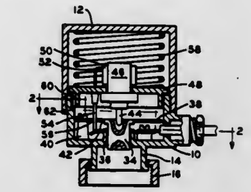
and a valve body actuated in response to an operation of a diaphragm, said valve body being disposed facing a valve seat in said valve chest to regulate a passage defined between said valve seat and said valve body to thereby control the flow rate of a refrigerant, said valve seat is adapted to be axially movable along an inner wall of said valve chest, and means for moving said valve seat in accordance with a change in pressure in a refrigerant circuit including annular bellows attached to both sides of said valve seat, annular fixing seats for respectively fixing the other ends of said bellows, a first passage means for introducing a high pressure fluid into one of said bellows, a second passage means for introducing a low-pressure fluid into the other of the bellows to thereby move said valve seat in accordance with a change in difference between high- and low-pressure side pressures in the refrigerant circuit.

4,500,036

ACTUATING MECHANISM

Rudolf Vollmer, Mosbach, Fed. Rep. of Germany, assignor to Honeywell Inc., Minneapolis, Minn.

Filed Feb. 22, 1984, Ser. No. 582,426
Int. Cl.³ G05D *23/20*
U.S. Cl. 236—68 B **8 Claims**



7. A linear actuator comprising, in combination:

a first housing portion having a wall rising from a bottom, and having a longitudinal axis; a displacement piece moveable along said axis and having an end extending to an aperture in said bottom for engaging the device to be actuated;

at least one resilient contact leaf carried by said bottom;

an assembly insertable in said housing portion and including a mounting plate supported on said wall, at least one contact pin positioned on said plate for engagement with said contact leaf, and a thermostatically working element carried by said plate and including a heated coil connected to said pin and a working piston moveable along said axis to engage said displacement piece;

a second housing piece engaging said wall of said first housing piece;

and a compression spring engaging said mounting plate and said second housing portion to urge said plate toward said wall.

4,500,037

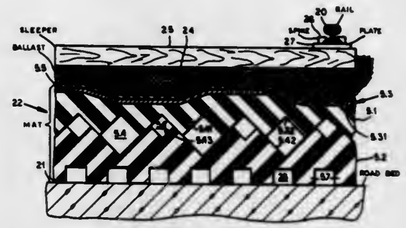
RAILWAY ROAD BED

Hans Braitsch, Bergisch-Gladbach; Hermann Ortwein, and Josef Vorwald, both of Cologne, all of Fed. Rep. of Germany, assignors to Clouth Gummiwerke Aktiengesellschaft, Cologne, Fed. Rep. of Germany

Filed May 28, 1982, Ser. No. 383,157
Claims priority, application Fed. Rep. of Germany, Jun. 3, 1981, 3121946
Int. Cl.³ E01B *2/00, 19/00;* **E01C** *3/00*
U.S. Cl. 238—2 **11 Claims**

1. In a railway track bed having a support surface, at least one resilient mat on said surface for cushioning and sound-damping, a layer of ballast on said mat, at least one sleeper received in said layer of ballast and a rail mounted on said sleeper, the improvement wherein the upper surface of said mat is provided with a hard elastic sheet of metal vulcanized to the mat and preventing penetration of said ballast into said mat.

2. In a railway track bed having a support surface, at least one resilient mat on said surface for cushioning and sound-damping, a layer of ballast on said mat, at least one sleeper received in said layer of ballast and a rail mounted on said sleeper, the improvement wherein the upper surface of said mat is provided with a hard elastic sheet preventing penetration of said ballast into said mat, said mat comprising a pair of slabs of elastomeric material having interfitting formations



defining hollows between said slabs and oriented so as to transform compressive force upon said mat into shear forces between said slabs.

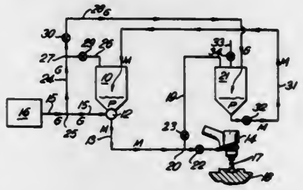
8. A mat adapted to support a layer of ballast in a railroad track bed, said mat comprising a body of elastomeric material overlain by a metal sheet bonded to said body and forming a barrier to penetration by said ballast, said body comprising a pair of slabs having interfitting formations shaped to transform compressive force on said mat into shear forces between said slabs and defining hollows between them.

4,500,038

POWDER FEED SYSTEM WITH RECIRCULATOR FOR PLASMA SPRAY APPARATUS

Alfred De Ferrari, Huntington, and William H. Doddman, Trumbull, both of Conn., assignors to Avco Corporation, Stratford, Conn.

Filed Nov. 1, 1982, Ser. No. 438,027
Int. Cl.³ B05B *7/30, 7/32*
U.S. Cl. 239—85 **8 Claims**



1. An apparatus for spraying a powder material on a workpiece to provide a coating thereon, said apparatus being adapted for rapid starting and stopping of spraying operations, said apparatus comprising:

means for storing and dispensing said powdered material;

means for applying said powdered material onto said workpiece;

powder feed means for carrying said powdered material from said means for storing and dispensing said powdered material to said means for applying said powdered material onto said workpiece;

diverting means in communication with said powder feed means intermediate said feed means and said means for applying said powdered material onto said workpiece, said diverting means being operative for selectively diverting said powedered material away from or towards

said means for applying said powdered material onto said workpiece;

accumulator means in communication with said diverting means for receiving and storing any powdered material diverted from said means for applying said powdered material onto said workpiece;

recirculation means for recirculating said powdered material from said accumulator means to said means for storing and dispensing said powdered material;

a source of pressurized gas in commumication with said powder feed means, with said means for storing and dispensing said powdered material and with said accumulator means, such that gas from said source of pressurized gas is operative to mix with and carry said powdered material towards said means for applying said powdered material onto said workpiece, to urge said powdered material from said means for storing and dispensing said powdered material to said powder feed means; and to urge said powdered material from said accumulator means into said recirculation means and said means for storing and dispensing said powdered material; and

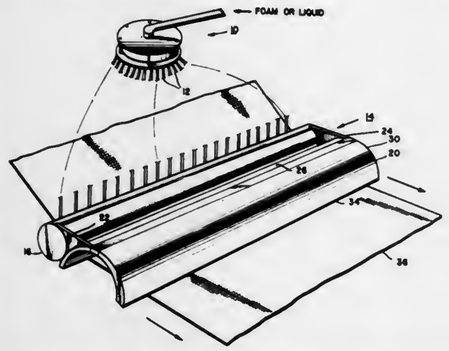
a gas directing means in communication with said source of pressurized gas for selectively directing pressurized gas either to said means for storing and dispensing said powdered material or to said accumulator means.

4,500,039

APPARATUS FOR UNIFORMLY APPLYING EITHER LIQUID OR FOAM COMPOSITIONS TO A MOVING WEB

Joseph A. Pacifici, La Grange, and Clifford A. Bryant, Dalton, both of Ga., assignors to West Point Pepperell, Inc., West Point, Ga.

Filed Oct. 20, 1982, Ser. No. 435,602
Int. Cl.³ B05C 5/02
U.S. Cl. 239—193 **5 Claims**



1. Apparatus for applying liquid and foam compositions to a moving web, including:

a manifold comprising a pipe having a plurality of inlet ports spaced along its length for receiving said composition, said inlet ports having axes normal to the direction of the axis of the manifold, but offset with respect thereto, whereby movement of said composition as it is received in the manifold is in a vortex;

a curved blade oriented so as to have a crest extending in a substantially horizontal line, said blade terminating in a straight edge on one side of the crest and contacting the manifold along a line parallel to, and below the level of, said horizontal line on the opposite side of the crest;

means for defining a reservoir between said manifold and the curved blade above the line of contact therebetween; and

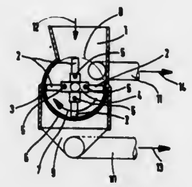
outlet means in the manifold for uniformly discharging said composition from the manifold into the reservoir to cause the reservoir to fill and overflow whereby said composition passes over the crest of the blade and moves as a uniform film along the blade to its edge for deposit onto the web as it moves past said edge.

4,500,040

METHOD AND APPARATUS FOR SEPARATING THE COMPONENTS OF CELLULOSE SANITARY ARTICLES

Bert Steffens, Auf der Jaugel 5, D-5470 Andernach 13, Fed. Rep. of Germany

Filed Jun. 10, 1982, Ser. No. 386,935
Claims priority, application Fed. Rep. of Germany, Apr. 19, 1982, 3214294; European Pat. Off., Jun. 4, 1982, 82104932.7
Int. Cl.³ B02C 19/12
U.S. Cl. 241—14 **5 Claims**



1. A process for separately recovering the flock and non-flock components in cellulose-based sanitary articles obtained as waste in the production of panties, diapers, sanitary towels, sick-bed undersheets, and the like, being a composite of cellulose flock and a non-flock carrier formed of plastic, cellulose or rubber sheets, tissues, adhesive tapes, rubber bands and the like, said process comprising the steps of:

(a) delivering the sanitary articles into a chamber having a plurality of rotatable entrainers;

(b) causing said entrainers to break up the sanitary articles so as to provide a mixture of loose cellulose flock and shredded non-flock carrier material;

(c) removing under effect of a first suction source acting through a sieve the loose cellulose flock formed in said chamber prior to the time said non-flock carrier is shredded so finely that the carrier shreds pass through the sieve; and

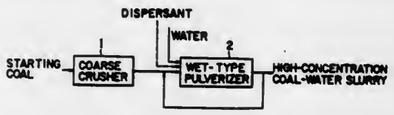
(d) removing under a second suction source acting in the chamber, the non-flock carrier shreds.

4,500,041

PROCESS FOR PRODUCING HIGH-CONCENTRATION SLURRY OF COAL

Kazuhiko Nakaoji, Ichihara; Mitsugu Kamao, Chigasaki; Hayami Itoh, Himeji; Shuhei Tatsumi, and Shoichi Takao, both of Akashi, all of Japan, assignors to Lion Corporation; Kao Corporation; Mitsui Engineering and Shipbuilding Company Limited; Electric Power Development Company Limited, all of Tokyo and Kawasaki Jukogyo Kabushiki Kaisha, Kobe, all of, Japan

Filed Dec. 3, 1982, Ser. No. 446,604
Claims priority, application Japan, Dec. 3, 1981, 56-194776; May 27, 1982, 57-91088
Int. Cl.³ B02C 19/12
U.S. Cl. 241—16 **7 Claims**



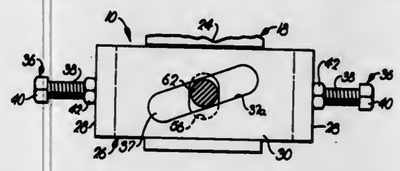
1. A process for producing high-concentration coal-water slurry by pulverizing coal consisting essentially of first coarsely crushing the coal, thereafter subjecting the coarsely crushed coal thus obtained to a pulverizing process, together with water, in a wet-type pulverizing machine, and feeding back one portion of the finely pulverized coal slurry thus obtained into the inlet of said wet-type pulverizing machine.

4,500,042

TWO-WAY KNIFE ADJUSTMENT FOR CROP HARVESTER CUTTING CYLINDER

Arnold E. Goertz, Buhler, and Ronald K. Guinn, Valley Center, both of Kans., assignors to Hesston Corporation, Hesston, Kans.

Filed Aug. 23, 1982, Ser. No. 410,376
Int. Cl.³ B02C 18/18
U.S. Cl. 241—238 **8 Claims**



1. In a rotary cutting cylinder for a crop harvester having a plurality of circumferentially spaced apart knives, and structure supporting the knives for inward and outward adjustment movement along respective paths of travel, the improvement comprising;

means associated with each of said knives for releasably holding same on said structure in a selected position along said path of travel of the knife; and

an adjuster for each knife reciprocable transversely of said path of travel thereof,

said adjuster having a portion thereof disposed to effect both said inward and said outward movement of each knife in response to reciprocation of the adjuster when said holding means is released,

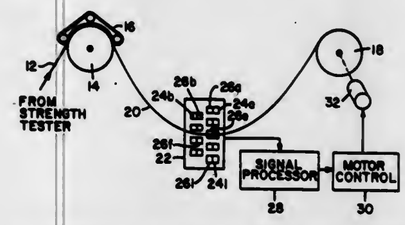
said portion of the adjuster including a pair of opposed surfaces, each of which is disposed in oblique relationship to said path of travel of each knife, one of said surfaces being coupled in force-transmitting relationship with each knife when the adjuster is shifted transversely of said path of travel in one direction and the other of said surfaces being coupled in force-transmitting relationship with each knife when the adjuster is shifted transversely of said path of travel in an opposite direction.

4,500,043

LOW TENSION WINDING APPARATUS

Patrick C. Brown, Painted Post, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed Aug. 1, 1983, Ser. No. 519,063
Int. Cl.³ B65H 59/38
U.S. Cl. 242—45 **5 Claims**



1. An apparatus for automatically controlling the sag depth of a catenary between a feed apparatus that supplies material to the catenary and a take-up apparatus that removes material from the catenary, comprising

a motor for driving said take-up apparatus,

means for illuminating said material in the vicinity of said catenary,

a plurality of photosensitive devices arranged in vertical orientation in the region of the catenary,

a first plurality of voltage generators equal in number to said photosensitive devices, each of said first plurality of voltage generators comprising a switching circuit which is connected to a respective one of said photosensitive devices, and an output resistor, one terminal of which is connected to said switching circuit, the remaining terminal of said output resistor being connected to a power supply by a common output resistor, each said voltage generator being capable of generating a unique voltage which depends upon the vertical position of the photosensitive device connected thereto,

motor speed control means connected to said motor for controlling the rate at which said take-up apparatus removes material from said catenary, and

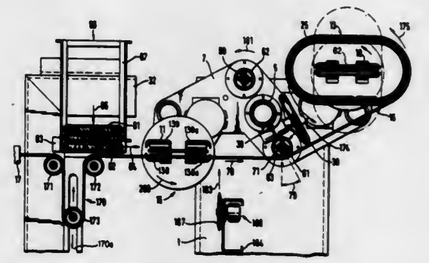
means for applying to said motor control means a voltage proportional to the voltage generated by the most recently activated voltage generator.

4,500,044

APPARATUS FOR WINDING BOLTS OF CLOTH OR THE LIKE

Heinrich Schnell, Schwanheimerstr. 78a, D-6930 Eberbach, Fed. Rep. of Germany

Filed Aug. 8, 1983, Ser. No. 521,505
Claims priority, application Fed. Rep. of Germany, Jan. 25, 1983, 3302291; Aug. 7, 1983, 3229506
Int. Cl.³ B65H 19/26, 19/28
U.S. Cl. 242—56 A **10 Claims**



1. Apparatus for converting a running web into a series of discrete bolts, comprising a source of running web; a support indexible about a fixed axis between first and second positions at 180° with reference to one another; first and second winding devices and first and second deflecting devices mounted on and indexible with said support so that said first winding device assumes an operative position in the first position of said support and receives from said source successive increments of the running web which is maintained in a predetermined path by the first deflecting device while said second winding device and the second deflecting device assume positions of readiness and the second winding device assumes an operative position in the second position of said support and receives from said source successive increments of the running web which is maintained in said predetermined path by said second deflecting device while said first winding device and said first deflecting device assume positions of readiness, said path extending through that winding device which is held in said position of readiness; and means for severing the web intermediate said winding devices upon completed conversion of a length of web into a bolt on the winding device which is held in the operative position, said winding devices being rotatable about axes which are parallel to said fixed axis and each thereof

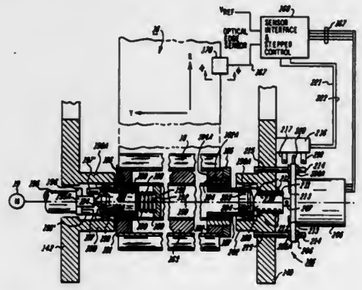
comprising a pair of coaxial rotary bolt holders disposed at the opposite sides of said path and having tongs movable axially with portions of the corresponding bolt holders between retracted positions of disengagement from and extended positions of engagement with the adjacent marginal portions of the web in said path, each of said bolt holders further comprising detent means arranged to maintain the respective tongs in a predetermined angular position in the retracted position of the tongs.

4,500,045

LATERALLY TRANSLATABLE ROLL APPARATUS

Angus H. Whitaker, Monte Sereno; Keith E. McFarland, Woodside; William A. Lloyd, Los Altos, and Willard J. Patrick, Los Gatos, all of Calif., assignors to Xerox Corporation, Stamford, Conn.

Filed Aug. 29, 1983, Ser. No. 526,939
Int. Cl.³ B65H *25/26*
U.S. Cl. 242—57.1 **12 Claims**



1. A laterally translatable roll apparatus for supply and/or take-up of a continuous web of material to maintain said roll in proper alignment as the web is paid from or rewound onto said roll, comprising:

a pair of frame members;

a roll for supporting said continuous web of material;

means on said frame members to rotatably support said roll therebetween, said support means comprising open ended bearing support means;

roll drive means having a drive shaft extending to one end of said roll;

interengagable coupler means on the output end of said roll drive shaft and said roll one end to permit said roll to be rotatably driven by said roll drive shaft while allowing for immediate lateral disengagement of said coupler means upon removal of the other end of said roll from said open ended bearing support means;

means axially mounted at said roll one end and biased to move axially outward away therefrom for engagement against said drive shaft output end;

lateral translation drive means mounted on the other of said frame members with translation output means engaging in axially aligned, abutting contact relation the other end of said roll,

said axially aligned, abutting contact relation to permit disengagement of said roll other end from said translation output means by singularly lifting said roll other end from its open ended bearing support means while not interfering either with the lateral operation or rotational operation of said roll when said roll is positioned for said operations in said open ended bearing support means;

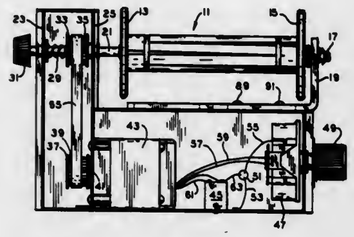
control means to operate said lateral translation drive means to translate said lateral output means.

4,500,046

STRIP MATERIAL TAKE-UP APPARATUS

William E. Woenker, Pierceton, Ind., assignor to Chem-Elec, Inc., North Webster, Ind.

Filed Nov. 22, 1982, Ser. No. 443,649
Int. Cl.³ B65H *23/20*
U.S. Cl. 242—67.1 R **6 Claims**



1. Strip material take-up apparatus comprising in combination:

an electric drive motor for exerting a relatively constant rotor torque substantially independent of the motor speed of operation, the drive motor torque being directly related to the magnitude of the voltage applied thereto;

a rheostat coupling the drive motor to a source of electrical energy and operator controllable to allow a user to select the magnitude of the voltage applied to the drive motor and therefore also the speed independent torque and the strip material tension;

an expandible mandrel for receiving, in its expanded condition, strip material, the mandrel comprising a hollow cylindrical core having axially extending slots extending from an end face of the core toward and terminating short of the opposite end face of the core with adjacent slots extending in opposite directions from opposite core end faces; and

means positively drivingly coupling the motor and mandrel in a slip-free manner to wind strip material about the mandrel as that material becomes available while maintaining tension on the strip material substantially constant independent of strip material movement;

first manually operable release means for allowing removal of the mandrel from the apparatus; and

second manually operable release means effective in a first state to maintain the mandrel in its expanded condition and effective in a second state to allow the mandrel to collapse somewhat to facilitate removal of strip material from the mandrel.

4,500,047

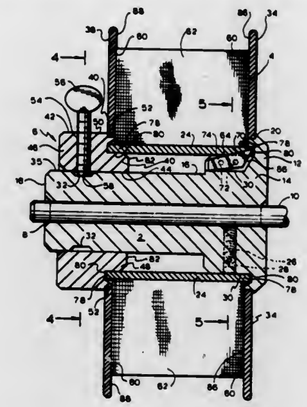
SPOOL ADAPTOR

Philip Merlin, 3 Gladwyne Ct., Spring Valley, N.Y. 10977

Filed Jul. 14, 1983, Ser. No. 513,683
Int. Cl.³ B65H *75/18*
U.S. Cl. 242—71.9 **13 Claims**

1. An adaptor for use with a spool of coiled elongated material having a cylindrical center core around which the material is wrapped, the adaptor comprising a cylindrical center section having a bore formed axially at least partially therethrough, first and second flange sections mounted to the ends of the center section, at least one of the flange sections being removable therefrom, and means for engaging a spool mounted on the adaptor to prevent rotational movement of the spool relative to the adaptor, the spool engaging means including a blade mounted on the adaptor and having a sharpened edge which engagingly contacts the center core of the spool to secure the spool in place on the adaptor, the center section including a cylindrical boss situated at an outermost end of the center section, a cylindrical inner hub adjacent the boss which is

dimensioned to be closely received by the core of the spool so as to prevent radial movement of the spool on the adaptor and



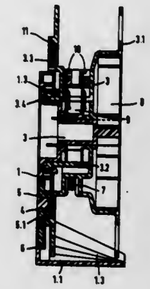
a main body portion extending from the inner hub to the opposite end of the center section.

4,500,048

CENTRIFUGAL BRAKE DEVICE, ESPECIALLY FOR THE AUTOMATIC WINDING OF AN ELECTRICAL CABLE

Albert R. Schaller, Rilkeweg 1, 7573 Sinzheim, Fed. Rep. of Germany

PCT No. PCT/DE81/00003, § 371 Date Jun. 23, 1982, § 102(e) Date Jun. 23, 1982, PCT Pub. No. WO82/01624, PCT Pub. Date May 13, 1982
PCT Filed Jan. 2, 1981, Ser. No. 394,911
Claims priority, application Fed. Rep. of Germany, Oct. 24, 1980, 3040143
Int. Cl.³ B65H *75/48;* F10D *59/00*
U.S. Cl. 242—107.3 **9 Claims**



1. A device for the automatic winding up of a cable comprising:

a base plate (1) having a pivot spindle (2) and a journal pin (4) spaced from said spindle, said base plate further having a brake collar (6); having a hub rotatably mounted on said pivot spindle; and

a brake wheel (5) rotatably mounted on said journal pin for engagement, in a speed amplifying manner, with said drum, said brake wheel having centrifugal braking means appliable to said braking collar when said wheel rotates;

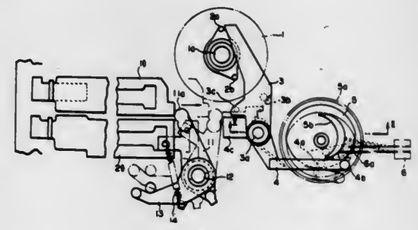
said base plate having a generally planar member with said pivot spindle and journal pin extending from the same side of the planar base plate member so that the device may be assembled by sequentially placing said brake wheel on said journal pin and said drum on said pivot spindle, said pivot spindle and journal pin being so spaced on said base plate member as to place said brake wheel at least partially behind said drum for retaining said brake wheel on said journal pin, said braking collar surrounding said journal pin on said same side of said base plate member, said base plate member having means for retaining said drum, and hence said brake wheel, on said base plate member so as to retain said device in an assembled condition.

4,500,049

DEVICE FOR AUTOMATICALLY STOPPING A TAPE RECORDER

Masanori Sugihara, Saitama, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

Filed Sep. 1, 1982, Ser. No. 413,842
Claims priority, application Japan, Sep. 2, 1981, 56-130478[U]; Sep. 2, 1981, 56-130479[U]
Int. Cl.³ B65H *59/38;* G03B *1/04;* G11B *15/32*
U.S. Cl. 242—186 **7 Claims**



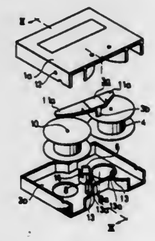
1. A device for automatically stopping a tape recorder, comprising; a takeup reel pulley, a sensing arm attached to said takeup reel pulley, a pivot shaft, a stop lever urged against said sensing arm and angularly movable about said pivot shaft, a stop arm extending from said pivot shaft, means for resiliently coupling said stop arm to said stop lever, said stop arm including a switch actuator projection, switch means for enabling said tape recorder to enter a stop mode when said switch means is actuated, and means for urging said projection into contact with said switch means in response to stoppage of said takeup reel pulley to thereby actuate said switch means.

4,500,050

MAGNETIC TAPE CASSETTE

Kengo Oishi, and Osamu Suzuki, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Aug. 12, 1983, Ser. No. 522,761
Claims priority, application Japan, Aug. 19, 1982, 57-124452[U]
Int. Cl.³ G11B *15/08*
U.S. Cl. 242—198 **6 Claims**



1. A magnetic tape cassette comprising:

a lower cassette half having a light emitting element insertion hole therein, said insertion hole being defined by a

cylindrical wall having a plurality of vertically extending grooves;

an upper cassette half secured to said lower cassette half;

a tape supplying reel and a tape winding reel juxtaposed in said cassette inside a space defined by said upper and lower cassette halves; and

a reel retaining plate having opposite end portions which depress tops of said reels, said reel retaining plate having a plurality of protrusions at a central portion thereof, said protrusions being engaged with said grooves of said cylindrical wall such that a central portion of said reel retaining plate is held between a top surface of said cylindrical wall and an inner wall of said upper cassette half.

4,500,051

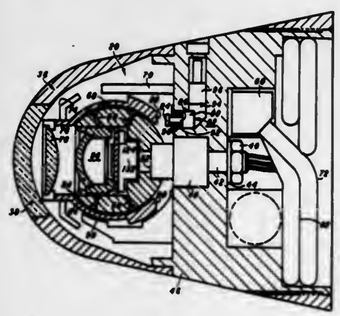
GYRO STABILIZED OPTICS WITH FIXED DETECTOR

Wilbur W. Cottle, Jr., and Lilburn R. Smith, both of Richardson, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 295,746, Oct. 6, 1972, abandoned. This application May 8, 1975, Ser. No. 575,684

Int. Cl.³ F41G 7/22

U.S. Cl. 244—3.16 **9 Claims**



1. A method for guiding to a target a cannon launched guided projectile having a timer, stabilizing fins, a direction finding signal processor electronic means, a gyro-optical system, a gyro, an electrical drive means and projectile guidance means comprising:

(a) activating the timer upon setback to time an unguided portion of the projectile's trajectory;

(b) deploying the stabilizing fins during the unguided portion of the projectile's trajectory to stabilize the projectile against spin;

(c) sequentially activating the direction finding signal processor electronic means to determine, responsive to signals generated by the gyro-optical system, target acquisition, while delaying the output of projectile guidance signals of the processor electronic means and during the delay, activating the gyro of the gyro-optical system and the projectile guidance means;

(d) precessing the gyro through pitch and yaw signals received from the direction finding signal processor to align the gyro with the target;

(e) providing pitch and yaw angle signals from the direction finding signal processor electronic means for producing pitch and yaw guidance signals; and

(f) applying the pitch and yaw guidance signals to an electrical drive means to selectively actuate the projectile's guidance means to align the projectile with the target.

4,500,052

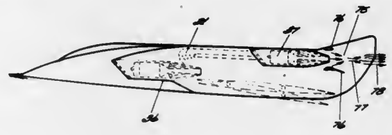
LIQUID FUEL PREVAPORIZATION AND BACK BURNING INDUCTION JET OVAL THRUST TRANSITION TAIL PIPE

Kyusik Kim, 5026 Rhoads Ave., Santa Barbara, Calif. 93111

Filed Mar. 5, 1981, Ser. No. 240,619

Int. Cl.³ B64C 29/00, 39/10

U.S. Cl. 244—12.1 **8 Claims**



1. A liquid fuel prevaporization and backburning induction jet thrust transition tail pipe adapted to be affixed to a turbojet engine comprising

means defining a primary air inlet adapted to be affixed to a said turbojet engine and defining a diverging area in the transition tailpipe located downstream therefrom, said diverging area defining means including means for forming a vertically converging and horizontally diverging thrust nozzle, said diverging area defining means further including means defining a pair of air plenums each having an air inlet plenum which is adapted to direct an air/ram flow into a main airflow path defining means including means defining a bellmouth shaped inlet which communicates with an airflow inducing nozzle having a diverging downstream throat which terminates in a chamber having a downstream end opening, each of said airflow path chambers end openings defining a secondary inlet to said diverging area;

a plurality of parallel, vertically spaced curved inductor vanes positioned in the secondary inlets to the diverging area, said inductor vanes being adapted to deflect a secondary airflow passing through said bellmouth shaped airflow inducing nozzle, through said throat and chamber and through the secondary inlet into a path through said diverging area which is substantially directed towards said thrust nozzle;

means positioned adjacent the exit nozzle and ahead of said thrust nozzle for defining upper and lower liquid fuel prevaporization chambers adapted to the outstream surface of said diverging area of transition tail pipe, fuel injecting means which are positioned in the prevaporization chambers and means for defining vaporized gas outlets from said prevaporization chambers;

means defining a vaporized gas distributing manifold positioned around said diverging area and ahead of said horizontally diverging portion of said thrust nozzle, said distributing manifold defining means having a plurality of distributing orifices each having a convergent-divergent discharge nozzle which is adapted to direct a vaporized gas flow into and to be mixed with the airstream within said diverging area, each of said discharge nozzles having a discharge opening which is downstreamwardly inclined towards said thrust nozzle and adjacent a secondary inlet of said diverging area and responsive to the velocity of the airstream slipflow passing over the downstreamwardly inclined discharge openings producing a vacuum within the prevaporization chambers through the distributing manifold and the discharge nozzles wherein the vacuum has a pressure within the prevaporization chambers which is varied by the injection of liquid fuel into the prevaporization chambers by the injection means;

an ignitor positioned adjacent the discharge outlets at the vaporized gas-air mixing point which ignites the vaporized gas-air mixture at a location upstream from the thrust nozzle such that the ignited vaporized gas-air mixture combustion occurs in said thrust nozzle.

4,500,053

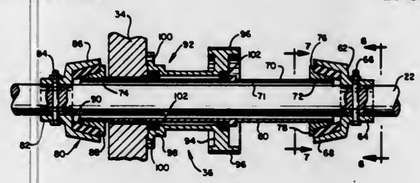
PROPELLER AND ENGINE MOUNTING DEVICE

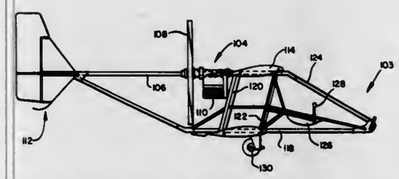
Rolf Brand, 212 N. Mecklenburg Ave., South Hill, Va. 23970

Continuation-in-part of Ser. No. 213,458, Dec. 5, 1980, Pat. No. 4,382,566. This application Jul. 30, 1982, Ser. No. 403,697

Int. Cl.³ B64C 11/00; B64D 27/00

U.S. Cl. 244—54 **26 Claims**





1. A device for mounting an aircraft engine and a propeller on a longitudinal member of an aircraft comprising:

a sleeve having first and second ends disposed about said longitudinal member,

a securing means for preventing longitudinal movement of said sleeve relative to said longitudinal member,

a vibration dampening means disposed between at least a portion of said securing means and said sleeve,

an engine mounting means for mounting said engine on said sleeve, and

an attaching means on said sleeve for attaching said propeller for rotation about said sleeve,

said propeller being rotatable about the longitudinal axis of said longitudinal member.

4,500,054

MOUNTING SYSTEM FOR COUPLED TURBOSHAFT GAS TURBINE ENGINES

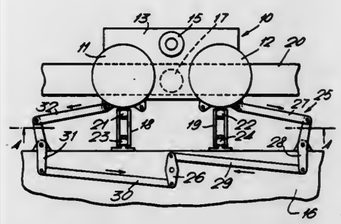
Alfred W. Osborn, Harrow, England, assignor to Rolls-Royce Limited, London, England

Filed Oct. 6, 1983, Ser. No. 539,736

Claims priority, application United Kingdom, Oct. 29, 1982, 8231063

Int. Cl.³ B64D 27/00, 27/16

U.S. Cl. 244—54 **6 Claims**



1. A coupled gas turbine engine/coupling gearbox assembly comprising first and second gas turbine engines, a coupling gearbox, said first and second gas turbine engines being attached to said coupling gearbox so that the longitudinal axes of said engines are parallel, a vehicle, and a mounting system mounting said assembly on said vehicle, said mounting system comprising a mounting supporting said gearbox for pivotal movement of said assembly relative to said vehicle but which prevents longitudinal movement of said assembly relative to said vehicle, and first and second strut members which respectively support said first and second gas turbine engines from said vehicle, each of said strut members being pivotally attached to said vehicle and its respective gas turbine engine so as to permit lateral and longitudinal movement of each of said gas turbine engines relative to said vehicle, said gas turbine engines being interconnected with an intermediate member rotatably mounted on said vehicle by a plurality of link members, said link members interconnecting said gas turbine engines and opposite sides of said rotatably mounted member with respect to its axis of rotation in such a manner that any relative lateral movement between said gas turbine engines is unconstrained and results in said intermediate member being rotated about its axis of rotation by said link members, but that all lateral movements of said gas turbine engines relative to said vehicle which are in unison are constrained by said link members and intermediate member.

4,500,055

AIRCRAFT PROPULSION SYSTEM ARRANGEMENT

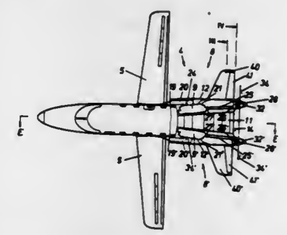
Hubert Krojer, Bermatingen, Fed. Rep. of Germany, assignor to Dornier GmbH, Friedrichshafen, Fed. Rep. of Germany

Filed May 2, 1983, Ser. No. 490,651

Claims priority, application Fed. Rep. of Germany, May 21, 1982, 3219159

Int. Cl.³ B64C 27/00, 29/04

U.S. Cl. 244—55 **11 Claims**



1. In an aircraft structure comprising a main fuselage (2) having a circular or approximately circular cross-section for cabin pressurization and a rear section (3), which is provided with a wing (5), said fuselage containing a power plant (4) in the rear section thereof, said power plant consisting of at least two independently operating propulsion units (8,8') each comprised of an engien (9,9') and a rearwardly extending drive shaft (25,25') terminating in a propeller spinner (32,32') having a pusher propeller (31,31') with propeller disk (34,34') mounted thereon, the improvement which resides in that

(a) the fuselage rear section is formed by a central section (11) and lateral spindle-shaped engine nacelles (12,12'), where said central section and said engine nacelles form a structural unit with a blending outer contour and extend directly from the main fuselage section and together contain the propulsion units,

(b) the longitudinal axis of each engine assumes an outwardly diverging position in the direction of the fuselage rear end,

(c) the engines are positioned in the region of the main fuselage section partially within the main fuselage section and partially with the engine nacelles,

(d) the engine nacelles comprise spaces for the reception of air supply (20,20') and exhaust gas ducts (21,21') lateral of the engine, and

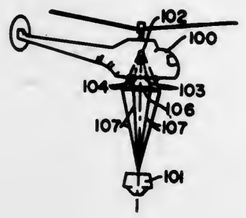
(e) the outer contour of the engine nacelles tapers in the area of their rear end into the circular contour of the propeller spinners.

4,500,056

AIRCRAFT TOWING AND CARRYING LINKAGE SYSTEMS HAVING HIGH STABILITY

Leonard B. Della-Moretta, 1796 Russell Pl., Pomona, Calif. 91767

Division of Ser. No. 240,199, Mar. 3, 1981, Pat. No. 4,438,944. This application Sep. 28, 1982, Ser. No. 425,714
Int. Cl.³ B64D *9/00*
U.S. Cl. 244—137 R **2 Claims**



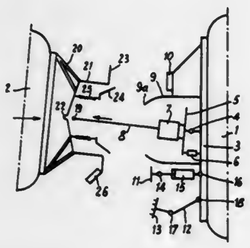
1. A method of suspending a load from a helicopter, comprising:
- selecting a stable point within the helicopter body from which a load could best be suspended, near its center of gravity;
- mounting at least three generally symmetrically located ball jointed links connected at one end of the helicopter and connected at the other end to a rigid subframe in a manner so that extended lines on which the links lie intersect generally at the selected point of stability; and
- suspending the load from the frame by a plurality of lines in such a manner that the load and subframe may swing rigidly as one body, the length of the suspension lines being selected to adjust the pendulum length of the load to avoid the natural periods of the helicopter's pitch and roll motions.

4,500,057

MECHANISM FOR DOCKING AND JOINING SPACE CRAFT

Alain J. Duwelz, Mantes-la-Ville, France, assignor to Societe Nationale Industrielle Aerospatiale, France

Filed Jun. 8, 1983, Ser. No. 502,193
Claims priority, application France, Jun. 15, 1982, 82 10446
Int. Cl.³ B64G *1/64*
U.S. Cl. 244—161 **4 Claims**



1. A mechanism for docking and joining space craft comprising:
(a) in a first space craft:
- a plate articulated to said first space craft by means equivalent to a ball and socket joint centrally located on said plate for permitting pivoting movement of said plate about its center;
- actuating means for pivoting said plate;
- a storable tubular extendable boom member formed of supple individually windable metallic bands which cooperate when unwound to form said boom;
- boom storage and extension means mounted on said plate for storing said metallic bands and extending them to form said boom;
- a first locking element connected to the free end of said boom;
- a cable having an end connected to said first locking element and extendable with said boom;
- means for retracting said cable; and
- a first centering element comprising an open first envelope encircling said plate and said boom, the outer edge of said envelope being formed to provide an outwardly convex generally spherical surface; and

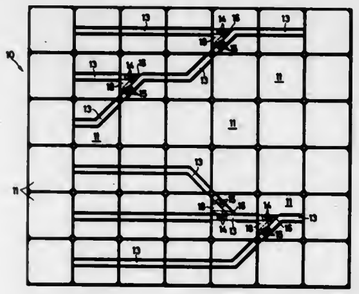
(b) in a second space craft:
- a second locking element mounted on said second space craft and adapted to interlock with said first locking element; and
- a second centering element encircling said second locking element, said second centering element having an outwardly opening, generally conical surface adapted to mate with the spherical surface of said first envelope.

4,500,058

MODULAR CONTROL PANEL FOR MINIATURE-RAILWAY SWITCHES

Francesco Reginato, Dueville, Italy, assignor to Lima S.p.A., Vicenza, Italy

Filed May 19, 1982, Ser. No. 379,711
Claims priority, application Italy, May 25, 1981, 21883/81[U]
Int. Cl.³ B61L *25/06, 27/02*
U.S. Cl. 246—3 **9 Claims**



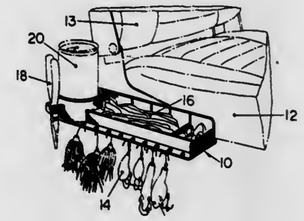
1. A panel for controlling the actuation of the switches at the crossings of a miniature railway line, said panel comprising:
(a) a support in one surface of which at least a portion of a miniature railway line is reproduced by means of grooves which correspond to a corresponding portion of the tracks of the miniature railway line, at least some of said grooves bifurcating into two downstream grooves at a plurality of control panel switching points corresponding to track switching points at which the tracks of the miniature railway line bifurcate into two downstream tracks;
(b) electrical contacts disposed in said downstream grooves adjacent to said control panel switching points, said electrical contacts being adapted to make electrical contact with a conductive stylus which can be moved through said grooves, said electrical contacts and said conductive stylus being electrically connected to an electric control circuit which actuates switches at the corresponding ones of said track switching points; and
(c) a direction indicator mounted on said support adjacent to each of said control panel switching points and between the two downstream grooves emanating from each of said control panel switching points, each of said direction indicators being movable by physical contact with said conductive stylus between a first position in which it blocks a first one of the two downwstream grooves emanating from the corresponding one of said control panel switching points and unblocks the second one of the two downstream grooves emanating from the corresponding one of said control panel switching points and a second position in which it blocks the second one of the two downstream grooves emanating from the corresponding one of said control panel switching points and unblocks the first one of the two downstream grooves emanating from the corresponding one of said control panel switching points, whereby the position of said direction indicators provides a visual indication of the position of the corresponding switches in the miniature railway line.

4,500,059

FISHING SEAT TRAY

John L. Papizan, 3753 Aletha Dr., Baton Rouge, La. 70814

Filed Aug. 18, 1982, Ser. No. 409,118
Int. Cl.³ A47C *7/62*
U.S. Cl. 248—205.1 **1 Claim**



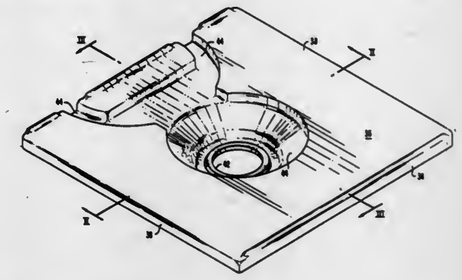
1. A tray assembly for connection to a fisherman's seat comprising, in combination:
a. a tray for containing fishing lures, said tray having
i. a top side,
ii. a flat, planar bottom side,
iii. a side wall extending vertically upwardly from said top side of said tray and horizontally along the length of the tray,
iiii. a horizontal lip connected to said side wall adapted to be placed under the bottom of a fisherman's seat,
iiiii. two parallel longitudinal slots located on said bottom side of said tray, said longitudinal slots being parallel to said side wall,
b. a generally rectangular, elongated plate for attaching said tray to a seat, said plate having a bottom side and a top side, said plate having a first portion which is adapted to extend beneath the bottom of said seat and a second portion which extends beneath the bottom of said tray, said first portion having a hole therein in which is received a fastener to connect said plate to the bottom of said seat, said top side of said second portion of said plate having two parallel, longitudinal ridges thereon adapted for receipt in two longitudinal slots located on said bottom side of said tray, the surface of said second portion of the top side of said plate on each side and between said two ridges being a flat, generally rectangular plane adapted to contact and support said flat, planar bottom side of said tray, said bottom side of said plate being a flat, generally rectangular plane, the top side of said first portion of said plate being a flat, generally rectangular plane adapted to contact the flat bottom of said seat, said plate being adapted to connect to the bottom of a fisherman's seat to bias said horizontal lip against the bottom of said fisherman's seat and to bias said sidewall against a side of said fisherman's seat.

4,500,060

SWIVEL-TILT PLATFORM

William C. Anderson, Grand Rapids; Bruce K. Boundy, Holland, and Raoul J. P. Schoumaker, Wyoming, all of Mich., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jun. 11, 1982, Ser. No. 387,640
Int. Cl.³ A47B *91/00*
U.S. Cl. 248—349 **7 Claims**



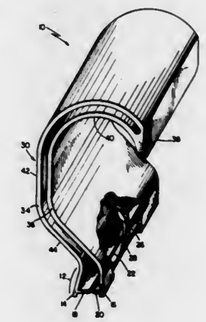
1. A mounting pedestal for supporting a computer terminal display device or the like comprising;
- a base portion having a flat upper peripheral surface, an annular inwardly and downwardly sloped spherical segment interiorly of said flat upper peripheral surface and a central aperture through said base portion;
- a tilt platform having a central spherical segment bottom portion with a central aperture therethrough and laterally extending cylindrical segments extending outwardly of said spherical segment, said spherical segment bottom portion of said tilt platform being complimentary to and constructed and arranged to rest on said spherical segment in said base portion with said outwardly extending cylindrical segments overlying said upper peripheral surface of said base portion; and
- a platform top overlying said tilt platform, said platform top having a planar upper surface with a central aperture therethrough and at least one trough portion in said planar upper surface interconnecting one edge of said platform top with said central aperture.

4,500,061

HOLDER

Louis V. Nigro, Saugus, Mass., assignor to The Gillette Company, Boston, Mass.

Filed Jun. 1, 1983, Ser. No. 499,918
Int. Cl.³ B65D *35/56*
U.S. Cl. 248—359 I **11 Claims**



1. A unitary holder of molded plastic material for a tubular

package that has a transverse base portion, said holder comprising a two spaced sidewall portions,

a flange at the lower end of each said sidewall portion,

said flanges being in spaced opposed alignment and defining therebetween a slot for receiving the neck of the tubular package and said sidewall portions spaced apart sufficiently to receive the base portion of the tubular package, and

a stabilizing web interconnecting said sidewall portions intermediate their ends such that pressure at one end of said sidewall portions that tends to close said slot at said one end concurrently tends to open said slot at the other end, and

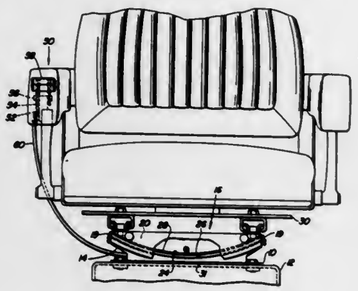
a support portion integral with and being an upward extension of said sidewall portions for securing said holder to a support member.

4,500,062

ADJUSTABLE SEAT LEVELING MECHANISM

Leonard E. Sandvik, Cedar Falls, Iowa, assignor to Deere & Company, Moline, Ill.

Filed Nov. 15, 1982, Ser. No. 441,357
Int. Cl.³ B60N *1/02*
U.S. Cl. 248—371 **4 Claims**



1. A vehicle seat support system comprising:

a platform rigidly mounted on the vehicle;

an elongated arcuate rail member fixed to and projecting from the platform, extending along an arc of a circle, and having a first elongated bearing surface extending transversely to a fore-and-aft axis of the vehicle, the rail member comprising a vertically extending upright member and a horizontally extending cross member forming a T-shaped cross section, an upper surface of the cross member forming the first bearing surface;

an elongated guide member supporting the seat and having an arcuate slot receiving the rail member, the guide member having a second elongated bearing surface extending transversely to the fore-and-aft axis, the guide member slot having a T-shaped cross sectional area;

bearing means located in the slot for engaging the first and second bearing surfaces and for permitting lateral movement of the guide member relative to the rail member along an arc of a circle, the support system having at least one position wherein the entire first bearing surface is in contact with the bearing means and wherein the entire second bearing surface is in contact with the bearing means; and

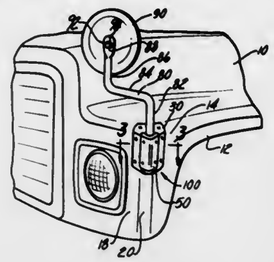
latch means for holding the seat in selected positions with respect to the platform.

4,500,063

FENDER MOUNT FOR A MIRROR

William P. Schmidt, 21000 Woodruff, Rockwood, Mich. 48173, and Franklin D. Hutchinson, 28000 Bell Rd., New Boston, Mich. 48164

Filed Mar. 20, 1981, Ser. No. 245,886
Int. Cl.³ B60R *1/02*
U.S. Cl. 248—475.1 **9 Claims**



1. A mount adapted for securing a mirror support member to the curved portion of a vehicle fender, said mount comprising:

a base member having a mounting surface adapted to be secured to the curved portion of the vehicle fender and an opposite outer surface;

a cover member secured to said outer surface of said base member; and

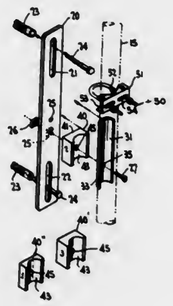
aperture means, interposed between said base member and said cover member, for holding a predetermined length of the the mirror support member therebetween so that the mirror support member is rigidly secured to the vehicle fender, said aperture means further having at least two rib members extending between said base member and said cover member, one of said at least two rib members forming a stop and the other of said at least two rib members having portions defining a bore for frictionally engaging the mirror support member.

4,500,064

MAST SUPPORT ASSEMBLY

Philip Calabro, 9025 Linton St., Silver Spring, Md. 20901

Filed Jan. 12, 1983, Ser. No. 457,359
Int. Cl.³ A01K *97/10*
U.S. Cl. 248—539 **17 Claims**



1. A mounting assembly for securing a mast to a wall, said mounting assembly comprising:

a mounting plate having a flat rear surface;

a mast-receiving cradle member having an elongated mast support surface extending axially parallel to the lengthwise dimension of the mast and having an arcuate cross-section, wherein the axial length of said support surface is at least twice the arcuate length of said cross-section;

means for mounting said mounting plate on said wall with the entire flat rear surface disposed flush against the wall, said means for mounting including at least two lengthwise-spaced mounting holes defined through said mounting plate;

means securing said cradle and said mounting plate to one another in spaced relation such that, when said mounting plate is secured to said wall, the axial dimension of said support surface extends generally parallel to and is spaced transversely from said wall; and

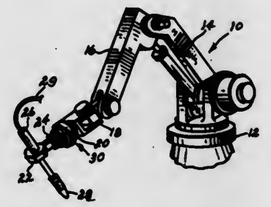
means for clamping the mast against said cradle member at said support surface.

4,500,065

RELEASABLE TOOL MOUNT FOR MANIPULATOR

Daniel M. Hennekes, Morrow; David E. Suica, Lebanon, and Robert F. Beckman, Cincinnati, all of Ohio, assignors to Cincinnati Milacron Inc., Cincinnati, Ohio

Filed Mar. 1, 1982, Ser. No. 353,512
Int. Cl.³ B66C *23/88*
U.S. Cl. 248—542 **10 Claims**



1. Apparatus for releasably mounting tools to a mechanical manipulator comprising:

a. a tool mounting plate;

b. a housing having a recess, defined by the walls of said housing, for receiving the mounting plate and a surface for attachment to the manipulator;

c. a plurality of support pins disposed peripherally upon the mounting plate, each support pin having a free end projecting beyond the periphery of the plate and a second end retained by the mounting plate;

d. a plurality of pin receptacles disposed within the side walls of the recess, each receptacle receiving the free end of a support pin, the support pins and receptacles suspending the mounting plate within the recess such that a relative force between the mounting plate and housing, irrespective of the direction thereof, effects relative motion of the mounting plate and housing; and

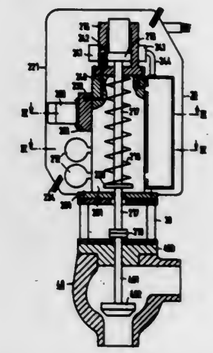
e. preload means attached to the mounting plate for resisting forces acting along the longitudinal axes of the support pins in the direction away from the receptacles, each preload means being connected between the second end of a support pin and the mounting plate, the magnitude of the relative force between the mounting plate and housing required to release the mounting plate being determined by the force required to overcome the preload resistance to dislodge at least one support pin from its associated receptacle.

4,500,066

ELECTRO-HYDRAULIC CONTROL ACTUATOR FOR TURBINE VALVES

Werner Trassl, Mülheim an der Ruhr, Fed. Rep. of Germany, assignor to Kraftwerk Union Aktiengesellschaft, Mülheim an der Ruhr, Fed. Rep. of Germany

Continuation of Ser. No. 265,626, May 20, 1981, abandoned. This application Feb. 15, 1984, Ser. No. 579,295
Claims priority, application Fed. Rep. of Germany, May 22, 1980, 3019602
Int. Cl.³ F16K *31/122*
U.S. Cl. 251—26 **4 Claims**



1. Electro-hydraulic control actuator assembly for turbine valves, comprising a turbine valve having a valve cone being movable between an open and a closed position of said valve, a shaft connected to said valve cone, a valve housing, an integrated compact actuator unit disposed on said valve housing and combined with said valve, said actuator unit including an electro-hydraulic converter, a hydraulic control cylinder being connected to said electro-hydraulic converter and having a control piston connected to said shaft for moving said valve cone to said open position of said valve, a power spring connected to said shaft for absorbing movement of said valve cone into said open position of said valve and for resetting said valve cone for rapid closing be spring loading, and a hydraulic fluid supply system, said supply system including a hydraulic fluid reservoir, first and second fluid pumps each being fed from said fluid reservoir and each having a pressure side, first and second electric motors each driving a respective one of said pumps, a hydraulic pressure accumulator subdivided into at least two part-accumulators, and piping disposed in said actuator unit connecting said part-accumulators to said pressure side of said pumps and to said hydraulic control cylinder for providing hydraulic fluid for an opening motion of said valve, each of said part-accumulators having a hydraulic fluid storage volume sufficient for providing hydraulic fluid for at least one full opening motion of said valve even if one of said part-accumulators is inoperative, said fluid pump having a flow capacity being dimensioned for continuously replenishing leakage losses and for slowly filling said pressure accumulator, and said second fluid pump being operable when said first fluid pump is inoperative.

4,500,067

PILOT OPERATED LOW FLOW VALVE

Keith E. Zukausky, Hanover, Ill., assignor to Eaton Corporation, Cleveland, Ohio

Filed Feb. 7, 1983, Ser. No. 464,307
Int. Cl.³ F16K *31/126*
U.S. Cl. 251—38 **4 Claims**

1. A pilot operated pressure actuated valve comprising;

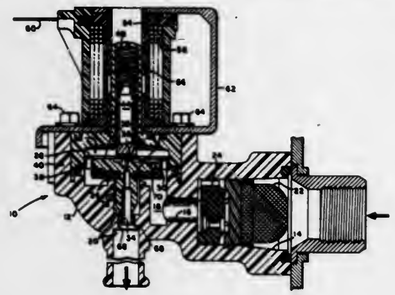
(a) body means defining a valve inlet port and a valve outlet port and a valving cavity communicating with said inlet

and outlet ports and having a valving surface disposed in the flow path therebetween;

(b) pressure responsive main valve means operable to divide said cavity into a first valving chamber and a second chamber communicating with said inlet and said outlet and operative to move between a position contacting and a position spaced from said valving surface for alternately preventing and permitting flow from said inlet to said outlet, said main valve means including a pilot flow passage therethrough communicating said first chamber with said outlet and including a pilot valve seat;

(c) means defining a bleed passage providing limited continuous communication between first chamber with said second chamber;

(d) pilot valve means operable upon actuation and deactuation to move between a position contacting and a position spaced from said pilot valve seat for alternately permitting



and preventing flow from said first chamber to said outlet passage; and

(e) guide means including an extended portion movable with said main valve means to direct movement thereof, said extended portion including flow restriction means comprising a raised surface disposed circumferentially thereabout and cooperating with said outlet port to create a desired pressure drop thereacross upon opening of said main valve means,

wherein said bleed passage permits pressure equilibrium in said first and second chambers when said main and pilot valve means are each in their respective flow preventing positions and, upon said pilot valve means opening fluid flows from said first chamber through said pilot passage to said outlet causing a pressure differential across said main valve means thereby causing said main valve means to open.

4,500,068

AIR VALVE

Donald C. Rasmussen, deceased, late of Barrington, Ill. (by Jaunice O. Rasmussen, executor), and James A. Kozel, deceased, late of Elmhurst, Ill. (by Violet M. Kozel, executor), assignors to The Singer Company, Stamford, Conn.

Filed Mar. 31, 1983, Ser. No. 480,983
Int. Cl.³ F16K *1/00*
U.S. Cl. 251—205 **6 Claims**

1. An air valve comprising,

a body having an inlet and an outlet,

a partition in the body between the inlet and outlet and separating the interior of the body into inlet and outlet chambers,

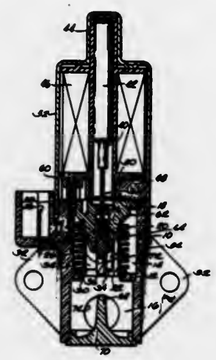
a sleeve valve slideably mounted in the partition,

a generally conical metering cone fixed in the inlet chamber, said sleeve valve being reciprocable relative to the cone,

a spring biasing the sleeve valve to a seat surrounding the base of said cone,

a stem connected to the valve and projecting through the cone,

an actuator acting on the stem to position the sleeve valve relative to the cone, the air flow from the inlet to the outlet being in the clearance between the sleeve valve and the cone,



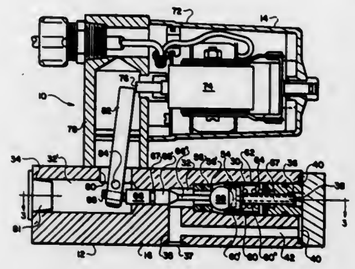
the sleeve valve having an inward offset near the end which engages the seat whereby the outside diameter of the sleeve valve for the greater part of its length is substantially the same as the inside diameter of the sleeve valve between the offset and the end which engages the seat.

4,500,069

HYDRAULIC DIRECTIONAL CONTROL VALVE

Ralph R. Barber, Waxhaw, and Eckart F. Schultze, Charlotte, both of N.C., assignors to Duff-Norton Co., Charlotte, N.C.

Filed Feb. 5, 1982, Ser. No. 346,175
Int. Cl.³ F16K *39/00*
U.S. Cl. 251—282 **6 Claims**



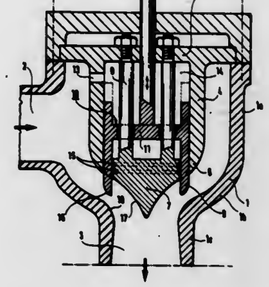
1. In a ball-type fluid directional control valve comprising a valve body having formed therewithin a valve chamber for receiving pressurized fluid and a fluid exhaust passageway, an annular valve seat in one wall surface of said chamber defining a valve seat opening providing fluid communication between said chamber and said passageway, a ball in said chamber adapted for seated engagement in said valve seat to sealably close said valve seat opening, and a ball retaining member disposed in said chamber in engagement with said ball in opposition to said valve seat, said retaining member having a head portion engaging said ball and a stem portion extending from said head portion oppositely of said ball through another wall surface of said chamber generally opposite said valve seat to exposure exteriorly of said chamber, said ball and said retaining member being selectively movably toward and away from said valve seat to engage and disengage said ball in said valve seat, the improvement comprising the cross-sectional area of said stem portion taken substantially parallel to said valve seat at said another wall surface of said chamber being less than the cross-sectional area of said valve seat opening, said head portion having an annular engaging surface in sealing contact annularly about said ball substantially parallel to said valve seat and defining a cross-sectional area greater than said cross-sectional area of said stem portion at said another wall surface, said stem portion and said head portion cooperating with said valve seat opening to leave exposed to pressurized fluid in said chamber only a reduced net effective surface area of said ball and said retaining member for application thereagainst by said pressurized fluid in said chamber of a relatively slight valve closing force sufficient alone to bias said ball and said retaining member into engagement in said valve seat to reduce the force required in opposition to said pressurized fluid to open said valve while maintaining said retaining member in sealing contact with said ball to prevent separation thereof, said stem portion extending sealably in said valve body to communication with an area exteriorly of said chamber of a fluid pressure lower than said pressurized fluid in said chamber, said annular engaging surface of said head portion forming therewithin a ball receiving recess and said stem portion having formed therein a bore opening to said recess at one end thereof and to said lower pressure area at the other end thereof to relieve any fluid pressure at the location of contact between said annular engaging surface and said ball to permit said pressurized fluid to apply said valve closing force against said net effective surface area to maintain said retaining member in contact with said ball.

4,500,070

VALVE FOR ADJUSTING THE RATE OF FLOW OF A GASEOUS FLUID

Gilbert Riollet, Paris, and Raymond Bessay, Belfort, both of France, assignors to Alsthom-Atlantique, Paris, France

Filed Aug. 12, 1982, Ser. No. 407,411
Claims priority, application France, Aug. 25, 1981, 81 16204
Int. Cl.³ F16K *39/04*
U.S. Cl. 251—282 **2 Claims**



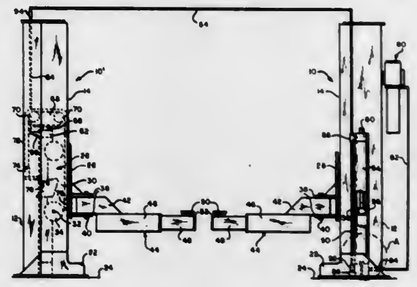
1. A valve for adjusting the rate of flow of a gaseous fluid, said valve comprising a valve body (1) of tubular form including a large diameter inlet portion (1*a*) leading to a small diameter outlet portion (1*c*) via tapered portion (1*b*), said large diameter inlet portion having a radial side fluid inlet (2) at pressure Po, said small diameter outlet portion (1*c*) forming an axial end fluid outlet (3), a cylindrical housing (4) fastened within the large diameter inlet portion (1*a*) of said body (1) by means (5) located externally of the fluid flow path between the inlet (2) and the outlet (3), and obturator (10) fitted with a stem (12) actuated by operating means and slidably mounted within said housing, said obturator (10) having a front part (9) engageable against a seat (18) defined by said tapered portion (1*b*) so as to shut off said outlet (3) and a rear part within the housing (4), said cylindrical housing forming a chamber, means subjecting said chamber to a pressure comparable with the pressure Po of the fluid at the inlet (2), the improvement wherein said housing (4) terminates in a conical streamlined nose-piece (7) within said tapered portion (1*b*) of said valve body, said nose-piece (7) having a tip within the small diameter outlet portion (1*b*) of said valve body, such that said nose-piece (7) forms with said valve body tapered portion (1*b*) a narrow conical flow passage leading to said outlet (3), and wherein the front part (9) of said obturator (10) is in the form of a hollow cylinder surrounding with limited clearance said nose-piece (7) and with limited clearance within said cylindrical housing (4), and said nose-piece (7) is attached to the housing (4) by rigid arms (8) within said housing (4), whereby unsteady forces acting on said obturator by fluid flow from the inlet to the outlet are minimized through the full range of travel of the obturator between open and closed positions, while insuring a low level of fluid flow head loss when the valve is fully open.

4,500,071

DUAL HYDRAULIC LIFTS

Bobby F. Bagwell, 52 W. Main St., and Rickey D. Wells, 50 W. Main St., both of Broadalbin, N.Y. 12025

Filed Sep. 3, 1982, Ser. No. 414,886
Int. Cl.³ B66F *7/12*
U.S. Cl. 254—423 **8 Claims**



1. Apparatus for lifting large loads such as vehicles and the like comprising a pair of lifting units set in opposition to each other to straddle said load, each lifting unit comprising a vertical standard, a cantilevered arm mounted on said standard for movement therealong, and a hydraulic actuator for raising and lowering said arm, one actuator functioning as a master comprises a cylinder, a piston located in said cylinder and dividing the same into lower and upper chambers, and a piston rod extending from said piston outwardly of the upper chamber and connected to said cantilevered arm, the other actuator functioning as the slave comprises a cylinder having a single chamber, a piston located therein, and a piston rod extending from said piston outward of said chamber and connected to its associated cantilevered arm, a source of fluid under pressure and means for serially transfering fluid from said source to said master actuator and thence to said slave actuator said means comprising a first conduit connecting said source of fluid to said lower chamber of said master actuator, and a second conduit connecting said upper chamber of said master actuator to said single chamber of said slave actuator and valve means operable to effect passage of fluid between said lower and upper chambers of said master cylinder, establishing equal pressure in the chambers of said master and slave actuators and to effect thereafter simultaneous and uniform movement of the pistons in said master and slave actuator.

4,500,072

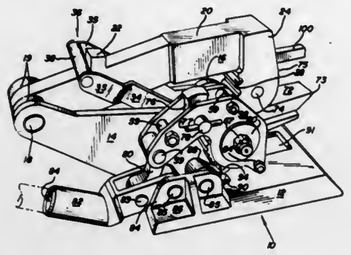
LOW PROFILE JACK CONSTRUCTION

David S. Leong, Lincolnwood, Ill., assignor to Templeton Kenly & Company, Broadview, Ill.

Filed Sep. 30, 1982, Ser. No. 430,106
Int. Cl.³ B66F *3/00*
U.S. Cl. 254—95 **13 Claims**

1. A readily collapsible jack construction particularly

adapted for use in railway track maintenance comprising a curved rack pivotally movable about a stationary pivot from a lowered position to an elevated position; railway track engaging means supported by said rack movable with said rack into the elevated position; a rotatable pinion engageable with said rack for moving said rack into the elevated position; rotatable drive means in adjacent relationship with said pinion and rotat-



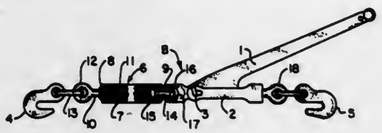
able with said pinion about a stationary axis of rotation; means adapted to fail in shear interconnecting said pinion and rotatable drive means whereby they may rotate as a unit in the normal course of rack elevation; failure of the means adapted to fail in shear allowing said rack to substantially instantaneously fall into the lowered position; said rack in the lowered position lying below the level of track to be engaged by the track-engaging means in the normal course of jack use.

4,500,073

ADJUSTABLE LOAD BINDER

Loanie M. Smith, St. Louis, Mo., assignor to Durbin-Durgo, Inc., St. Louis, Mo.

Filed Sep. 29, 1982, Ser. No. 426,838
Int. Cl.³ B25B *25/00*
U.S. Cl. 254—258 **3 Claims**



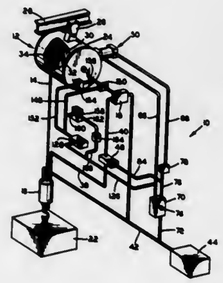
1. In an adjustable load binder for use in securing a load held by tie means such as a chain, cable, or the like, said binder being of the type including a lever means and a clevis means, each having a securing means connected thereto for fastening onto the said tie means during load securement, pivot means mounting said lever means for shifting with respect to the said clevis means in, a first direction to a binding position and in an opposite direction to a second, loosened position, the improvement which comprises, an adjustable linkage interconnecting between one of the said securing means and one of the lever means and clevis means for facilitating the prompt adjustment of the load binder during attachment to the tie means, said adjustable linkage being disposed remote and exteriorly of the lever means and clevis means to avoid any interference with their functioning, the adjustable linkage including a sleeve member having opposite ends, thread means provided within the sleeve member, a threaded connector adjustably connecting with one of the ends of the sleeve member, the connector attaching the adjustable linkage to one of the securing means, and a swivel connector attached to the opposite end of the sleeve member and attaching the adjustable linkage to one of the lever means and clevis means, and wherein the said swivel means includes a stud means, said stud means being shaped at one end to facilitate the maneuverability of the adjustment means in its connection with the load binder.

4,500,074

FLUID-OPERATED APPARATUS FOR HANDLING AND LIFTING LOADS

Albert D. Fox, Novi; Robert J. Kish, Flint, and Doan C. Knight, Madison Heights, all of Mich., assignors to D. W. Zimmerman Mfg., Inc., Madison Heights, Mich.

Continuation-in-part of Ser. No. 477,927, Mar. 23, 1983, Pat. No. 4,478,390, which is a continuation-in-part of Ser. No. 351,943, Feb. 24, 1982, Pat. No. 4,462,571. This application Nov. 10, 1983, Ser. No. 550,374
The portion of the term of this patent subsequent to Oct. 23, 2001, has been disclaimed.
Int. Cl.³ B66D *1/08, 1/48*
U.S. Cl. 254—270 **6 Claims**



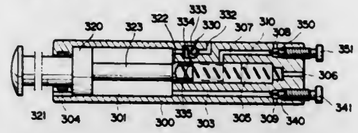
1. Load-handling apparatus comprising a fluid-operated hoist having a housing, a piston moveable in said housing, said housing and said piston forming a fluid chamber, a hoist drum rotatably supported in said housing and rotated as said piston moves in a lineal path in said housing, a flexible, elongate member wound on said hoist drum and extending downwardly from said drum for urging a load in one direction when fluid pressure applied to the chamber exceeds a particular value and for enabling the load to move in another direction when the pressure applied to the chamber is less than a particular value, a pilot fluid-controlled regulator for applying fluid pressure to said fluid chamber in response to pilot fluid pressure applied to said regulator, a load-responsive, pilot fluid regulator for applying pilot fluid to said pilot fluid-controlled regulator, a blocking valve between said pilot fluid-controlled regulator and said chamber having one position enabling communication between said pilot fluid-controlled regulator and said chamber and a second position isolating said pilot fluid-controlled regulator from said chamber, an adjustable flow control valve communicating with said blocking valve for bleeding air from said blocking valve to enable said blocking valve to move from the second position to the one position, a fluid-operated brake having a brake shoe engagable with and retractable from said hoist drum, means for controlling the supply of fluid to said brake, and a manually-operated, fluid-control valve for supplying fluid to said fluid chamber independently of said pilot fluid-controlled regulator and said load-responsive, pilot fluid regulator, said manually-operated, fluid-control valve also supplying fluid to said blocking valve to move said blocking valve from the one position to the second position when said manually-operated, fluid-control valve supplies fluid to said hoist chamber.

4,500,075

AIR PRESSURE SHOCK ABSORBER

Tatsuo Tsuchiya, and Kazuhiro Hozumi, both of Asahi, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma and Kuroda Precision Industries Ltd., Kawasaki, both of, Japan

Filed Dec. 17, 1981, Ser. No. 331,752
Claims priority, application Japan, Dec. 18, 1980, 55-179176
Int. Cl.³ F16F *9/48*
U.S. Cl. 267—8 R **5 Claims**



1. An air pressure shock absorber comprising:
a cylinder defining a first opening at one end of said cylinder;
a first chamber defined by said cylinder having a forward chamber portion and a rear chamber portion;
a first piston slidably mounted in said first chamber;
a first piston rod mounted on said first piston, said first piston rod extending fron the cylinder through said first opening;
spring means located in the cylinder for moving the piston by a pressing force;
a second chamber of smaller diameter than said first chamber defined by said cylinder located contiguous with the forward portion of said first chamber;
a second piston rod mounted at one end to the first piston opposite to said first piston rod;
a second piston slidably mounted in said second chamber of the cylinder, the other end of said second piston rod mounted on said second piston and said second piston being of said smaller diameter; and
a bypass passage defined by an aperture in a wall of said cylinder communicating between said second chamber and the atmosphere, and said bypass passage rapidly releases compressed air in a forward portion of said first chamber of the cylinder to the atmosphere when the second piston moves a predetermined distance to position itself past the aperture to open said bypass passage to said first chamber due to a force pushing on an end of the outwardly extended first piston rod.

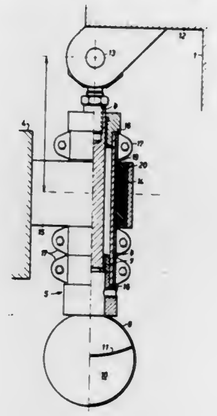
4,500,076

ARRANGEMENT IN SPRING SUSPENSION SYSTEMS PARTICULARLY FOR VEHICLES

Jan-Erik Rova, Laerkvaegen 20, S-981 37 Kiruna, Sweden

Continuation of Ser. No. 355,948, Mar. 8, 1982, abandoned. This application Jul. 10, 1984, Ser. No. 628,975
Claims priority, application Sweden, Mar. 10, 1981, 8101518
Int. Cl.³ B62D *27/04*
U.S. Cl. 267—8 R **6 Claims**

1. In a device for resiliently supporting a driver's compartment which is subjected to vibrations in a heavy-duty vehicle having a nonresilient wheel suspension, said compartment having at least one seat therein and being connected to a frame portion of said vehicle by means of a spring suspension system comprising a plurality of springs which are disposed in spaced relation to one another and which are located respectively between said compartment and said frame portion, each of said springs being located substantially at the horizontal level of the center of gravity of said compartment, the improvement wherein each of said springs in said spring suspension system comprises a hydropneumatic spring which includes an elongated rigid cylindrical casing having a pressurized chamber connected to one end of said casing, a piston which is slideably movable within said casing along the central axis of said casing, said piston being connected to a piston rod which protrudes outwardly of the other end of said casing and which is connected by means of an articulated joint to one of said compartment and frame portion, said spring being connected to the other of said compartment and frame portion by an elastomeric bushing which surrounds the exterior of said cylindrical casing at an intermediate position on said casing and a bracket which connects said elastomeric bushing to the other of said compartment and frame portion, said piston being located within said



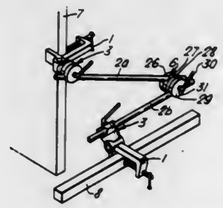
casing between said elastomeric bushing and said pressurized chamber whereby said piston and said articulated joint are located respectively on opposite sides of said bushing, and means for adjustably fixing the position of said elastomeric bushing along said casing so as to adjust the distance between said elastomeric bushing and said articulated joint thereby to adjust the spring characteristic of said spring suspension system.

4,500,077

DEVICE FOR CLAMPING WORKPIECES

John R. Coxon, Penfound, Stane St., Pulborough, Sussex, England

Filed Jul. 15, 1983, Ser. No. 514,095
Claims priority, application United Kingdom, Jul. 16, 1982, 8220736
Int. Cl.³ B25B *1/22*
U.S. Cl. 269—45 **7 Claims**



1. In a device for holding two workpieces in relative positions which can be varied and for holding a single workpiece from a support in a spatial position which can be varied, said device comprising first and second workpiece clamps, each of said clamps being arranged to hold a workpiece of to be fixed to a support, an elongate cylindrical member and a clamping device for mounting each of said first and second clamps to said cylindrical member, said clamping devices allowing said first and second clamps to be adjusted in a position along a longitudinal axis of said cylindrical member; to be adjusted in an angular position around said longitudinal axis and also to be

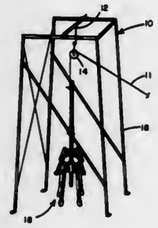
adjusted in an angular position about a second axis which is perpendicular to said longitudinal axis and about a third axis which is perpendicular to said second axis, the improvement wherein each of said clamping devices by which said first and second clamps are mounted on said elongate member includes a single clamping screw for operating said clamping device, two plates arranged face to face, means defining registering grooves in said two plates, said elongate member being held in said grooves, a body member and pivot means attaching said body member to said workpiece clamp, said clamping screw passing through said plates and through said body member to said pivotal means and being arranged so that, when tightened, it clamps the said plates together with said elongate cylindrical member between said plates and also clamps said plates to said body member and clamps the said pivot means against movement, and, when loosened, allows said plates to turn relative to said elongate cylindrical member about the axis thereof; allows said plates to turn relative to said body member about the axis of said clamping screw, which forms said second axis; and frees said pivot means to allow said workpiece clamp to pivot relative to said body member about an axis, which forms said third axis, perpendicular to the axis of said clamping screw.

4,500,078

CHIMNEY FLUE INSERTION APPARATUS

Gerald J. Brennan, 710 Third St. S., Moorehead, Minn. 56560

Filed Jan. 3, 1983, Ser. No. 455,203
Int. Cl.³ B23Q *1/00*
U.S. Cl. 269—46 **4 Claims**



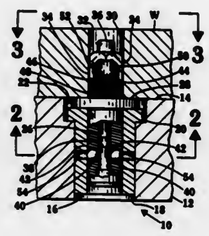
1. Pipe stacking apparatus comprising in combination:
(a) a threaded rod;
(b) a jointed coupler attached to one end of said threaded rod and coupled to means for imparting a rotative force to said coupler and rod;
(c) a sleeve mounted about said rod so as to freely revolve therearound at a predetermined position along the length thereof and having a plurality of fingers radiating orthogonally therefrom;
(d) a plurality of L-shaped arms, each having a major portion of a length longer than a minor portion and each of said arms coupled to a respective one of said fingers at the juncture of the major and minor portions and the opposed outermost end of each major portion formed to grasp the inside of a pipe into which said pipe stacking apparatus is inserted and to extend therefrom a sufficient length to be insertable into a successively lower positioned length of pipe;
(e) a plurality of coupling links, each coupled at one end to be opposed outermost end of a respective one of the minor portions; and
(f) screw follower means coupled to the opposite ends of said coupling links and threadably mounted to and rotatively movable along said rod for causing the pipe grasping end of the major portions of said L-shaped arms to expand or contract in a radial fashion relative to said rod, thereby grasping or releasing a length of pipe into which said apparatus is inserted and permitting the end-to-end stacking of lengths of pipe.

4,500,079

REMOVABLE AND REPLACEABLE LOCATING PIN FOR LOCATING A WORKPIECE ON A SUB-PLATE FOR MACHINING

Manfred Morghen, San Diego, Calif., assignor to General Dynamics Corporation/Convair Div., San Diego, Calif.

Filed Jan. 30, 1984, Ser. No. 575,234
Int. Cl.³ B23Q *3/10*
U.S. Cl. 269—47 **5 Claims**



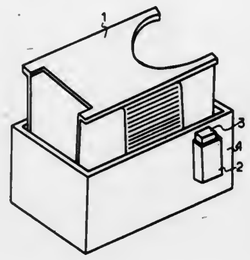
1. A removable and replaceable locating pin adapted to locate a workpiece on a sub-plate for machining of the workpiece comprising:
a receiver bushing adapted to be received within an aperture within a sub-plate at a pre-determined location, said bushing is provided with a radially extending flange at one end thereof which cooperates with the sub-plate for precisely vertically positioning the bushing within the aperture in the sub-plate;
a locating means removably positioned within the receiver bushing and extending above the upper surface of the sub-plate for cooperating with the workpiece positioned on the sub-plate, the head portion of the locator pin has a longitudinally extending generally diamond shaped configuration wherein at least one face thereof is rounded for intimate contact with the inner surface of the aperture in the workpiece; and
actuatable ball lock means cooperating with the receiver bushing and the locator means to precisely locate the locating means in a pre-determined position for precision machining of the workpiece and to permit selective removal of the locating means for replacement with another locating means having a different configuration.

4,500,080

CARRIER FOR CLEANING AND ETCHING WAFERS

Seiichiro Aigo, 3-15-13, Negishi, Daito-ku, Tokyo, Japan

Filed Aug. 13, 1982, Ser. No. 407,732
Claims priority, application Japan, Mar. 15, 1982, 57-36024[U]
Int. Cl.³ B23Q *1/04*
U.S. Cl. 269—56 **5 Claims**



1. In a carrier for supporting a single lot of prescribed sheets of semiconductor wafers so as to transfer the single lot of

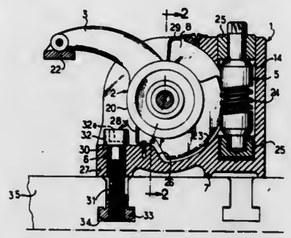
prescribed sheets of semiconductor wafers from one processing step to another processing step in their cleaning and etching processing, in combination with equipment for effecting the steps, the improvement comprises said carrier having an information member holder and an information member detachably supported by said holder, and the informatin member includes a semiconductor chip which constitutes a microprocessor and reading and writing memory, said holder being formed on said carrier as an integral part thereof and being shaped in the form of a pocket for said information member, and an input/output control unit connected to said equipment for effecting the steps, which unit receives said information member for controlling said equipment and storing information about the steps.

4,500,081

CLAMP APPARATUS, ESPECIALLY FOR CLAMPING A PART ONTO A MACHINE TOOL

André Carossino, Louveciennes, France, assignor to Carossino Freres, France

Filed Dec. 23, 1983, Ser. No. 564,844
Claims priority, application France, Jan. 5, 1983, 83 00072
Int. Cl.³ B23Q *3/02*
U.S. Cl. 269—93 **6 Claims**



1. Clamp apparatus comprising a housing presenting a base and a wall, fixing means projecting from said base for fixing said housing to a support, said housing containing a disc mounted in said housing for rotation about an axis parallel to said base, at least one fixed cheek member mounted in said wall, said cheek member and said disc presenting cooperating generally cylindrical radial bearing surfaces and cooperating generally planar annular lateral bearing surfaces, a clamp arm projecting from said disc through an aperture in said wall for engaging a part to be clamped, a toother sector solid with said disc at a portion thereof generally diametrally opposite to said arm, screw means mounted in said housing and cooperating radially with said toothed sector whereby to rotate said disc and said clamp arm, said disc presenting at least one outer cylindrical surface portion between said clamp arm and said toothed sector, and at least one scraper blade juxtaposed with said wall and said outer cylindrical surface portion whereby to close substantially a gap between said outer cylindrical surface portion and said wall, wherein said annular lateral bearing surface of said disc and said outer cylindrical surface portion are substantially contiguous, and said annular lateral bearing surface of said cheek member is disposed at least approximately flush with the inner surface of said wall.

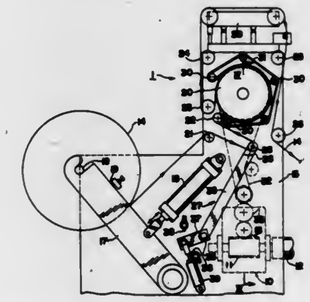
4,500,082

ROTARY BUSINESS FORM PRINTING PRESS

Masayuki Izume, Kyoto, Japan, assignor to Taiyo Ltd., Osaka, Japan

Filed Nov. 30, 1983, Ser. No. 556,921
Int. Cl.³ B41F *13/56*
U.S. Cl. 270—20.1 **15 Claims**

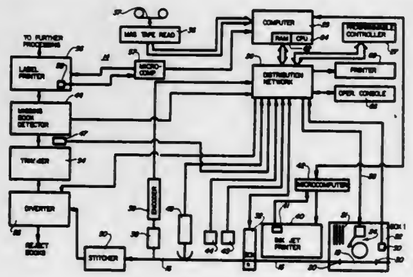
1. A rotary business form printing press comprising:
the sheet feed mechanism **1** having a feed roller **20** for the web **14**,
the printing mechanism **2** having the plate cylinder **80** the impression cylinder **82** which contacts to the plate cylinder **80** directly or through the blanket cylinder **81**,
the punching unit **158** having pin wheels **166** and die wheels **171**, the counterparts of the pin wheels,
a vertical perforation unit **160** having processing heads **190** provided with vertical perforation cutters **191**,
cross perforation units **161** and **162** having a perforation cylinder **195**,
the zigzag folding unit **211**,
the whole drive mechanism **6** and
the control unit **7**,
wherein
the differential gear **33** for controlling the velocity of the feed roller provided with the motor **34** which speed control is performed by the control unit **7** being provided between the feed roller **20** and the drive mechanism **6**,
an adjustment device for the impression cylinder **109** which adjusts the wheel base between the impression cylinder **82** and the plate cylinder **80** or the blanket cylinder **81** contacting thereto by using the motor **125** controlled by the control unit **7** being provided in the printing mechanism **2**,
motors for adjusting the positions which are controlled by the control unit **7** and permit the wheels **166**, **171** and the processing heads **190** to travel right and left being provided in the punching unit **158** and the vertical perforation unit,



rotational angle detecting devices **104** being provided on the revolving shaft **94** of the plate cylinder **80**, on the revolving shafts **164** of the wheels **166** and **171** in the punching unit **158**, on the revolving shaft **194** of the perforation cylinder **195** and on the revolving shaft **233** for driving the zigzag folding unit **211** respectively,
the differential gear **33** for adjusting the vertical register provided with the motor **34** controlled by the control unit **7** being provided between these revolving shafts **94**, **164**, **194**, **233** and the drive mechanism **6**,
and the control unit **7** having the functions of adjusting:
the rotation speed of the feed roller **20** through the differential gear **33** according to the previously-set paper thickness,
the wheel base between the impression cylinder **82** and the plate cylinder **80** or the blanket cylinder **81** contacting thereto through the adjustment device for the impression cylinder **109** according to the previously-set paper thickness,
the positions of the wheels **166**, **171**, in the punching unit **158** and of the processing heads **190** in the vertical perforation unit **160** through said motor for adjustment of position according to the previously-set contents, and
the vertical register by making the revolving shafts **94**, **164**, **194** and **233** of the plate cylinder **80**, the wheels **166**, **171** in the punching unit **158**, the perforation cylinder **195** and the zigzag folding unit **211** respectively to rotate to the

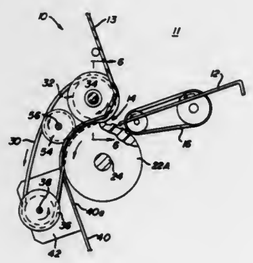
previously-set angular position through the differential gear.

4,500,083
COLLATING AND BINDING SYSTEM AND METHOD WITH POSTAGE INDICATION
Did-Bun Wong, Elmhurst, Ill., assignor to R. R. Donnelley & Sons Company, Chicago, Ill.
Filed Dec. 8, 1983, Ser. No. 559,398
Int. Cl.³ B65H *39/02*
U.S. Cl. 270—54 **41 Claims**



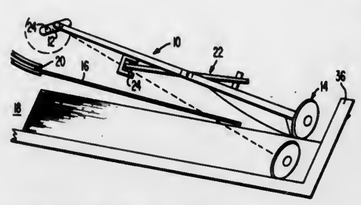
1. A method of operating a collating system, comprising:
producing a series of books in an original sequence, such original sequence being determined in accordance with postal information relative to such books;
checking for a defective book;
generating a signal when a defective book is detected;
reordering the defective book in response to the generated signal at a point in the original sequence determined in accordance with the postal information relative to the rejected book and another book to produce the series of books in a revised sequence; and
deriving an indication of postage for the nondefective produced books in accordance with the revised sequence.

4,500,084
STRIPPER MECHANISM FOR DOCUMENT SEPARATING APPARATUS
George P. McInerny, Andalusia, Pa., assignor to Technitrol, Inc., Philadelphia, Pa.
Filed Jul. 27, 1983, Ser. No. 517,683
Int. Cl.³ B65H *3/52*
U.S. Cl. 271—35 **11 Claims**



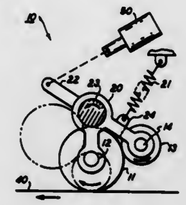
1. A document separating apparatus for separating documents such as sheets or the like from a stack thereof comprising:
a frame,
a feed roller means mounted for rotation with a first rotating drive shaft mounted on said frame,
a stripper means mounted on said frame in opposed relation to said feed roller means for counter-rotation to said rotation of said feed roller means,
a bin for holding a stack of documents,
said feed roller means and stripper means being mounted adjacent the bottom end of the stack of documents in said bin for receiving documents fed from the bottom of said stack into a document feeding area where said feed roller means moves in the direction of feed of the documents through the apparatus and said stripper means moves counter to said direction of document feed for stripping all but the bottom document entering the document feeding area, and
a pair of stripper idlers mounted for free-wheeling rotation on a second shaft and located in said document feeding area with said stripper means therebetween,
each of said stripper idlers having a circular rim constructed and arranged to contact the surface of said feed roller means in said document feeding area with an interference fit so that when no document is present between said feed roller means and said stripper idlers, said stripper idlers are caused to rotate with said feed roller means in the direction of movement of documents through the apparatus, said circular rims of said stripper idlers being flexible away from said feed roller means and being constructed and arranged such that when documents are present between said stripper idlers and said feed roller means, a desired pressure is applied to said documents that allows the bottom document to be fed in the desired direction through the apparatus by said feed roller means without creating an excessive force which tends to lock the bottom document by friction to the document thereabove.

4,500,085
OSCILLATING WHEEL PAPER ITEM STACKING APPARATUS
Wilson P. Rayfield, Longwood; Emmett B. Peter, III, Orlando, and Richard E. Shultz, Maitland, all of Fla., assignors to Burroughs Corporation, Detroit, Mich.
Filed Apr. 14, 1983, Ser. No. 485,092
Int. Cl.³ B65H *31/00*
U.S. Cl. 271—207 **10 Claims**



1. Sheet item stacking apparatus comprising;
elongated, articulated means capable of moving both side to side and forwardly and rearwardly relative to an item receiving hopper;
means coupled to said articulated means providing forward and rearward movement thereof,
rotatable means disposed on the free end of said articulated means and including means providing one way rotation of this latter means,
means coupled to said articulated means for translating said forward and rearward movement into side to side movement effective to drive a sheet item forwardly into said item receiving hopper and sideways therein so as to edge align said item with other like items previously forwarded to said hopper.

4,500,086
ROTATING INVERTER
Gerald M. Garavuso, Macedon, N.Y., assignor to Xerox Corporation, Stamford, Conn.
Filed Dec. 1, 1982, Ser. No. 445,878
Int. Cl.³ B65H *5/00*
U.S. Cl. 271—225 **8 Claims**



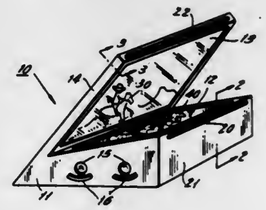
1. An inverter device for use in a sheet conveying apparatus, comprising:
a drive shaft;
dual pivotable collars supported by said drive shaft;
dual pair of primary and secondary rollers mounted through yoke means to said dual collars such that said primary rollers are driven by said drive shaft while said secondary rollers are simultaneously driven by said primary rollers, said primary and secondary rollers being adapted to convey a sheet in a first or second direction; and
means for independently pivoting said dual collars from a first position to a second position so that when both collars are in said first position a sheet is driven by said primary rollers in said first direction and when only one of said collars is pivoted into said second position the sheet is rotated 180° in a horizontal plane due to the driving of a primary and secondary roller and when both collars are pivoted into said second position the sheet is driven in said second direction by the driving of said dual pairs of secondary rollers.

4,500,087
DROP TRAY SORTER
R. Clark DuBois, Fairfield, Conn., assignor to Gradco Systems, Inc., Santa Ana, Calif.
Filed Jan. 17, 1983, Ser. No. 458,581
Int. Cl.³ B65H *39/11*
U.S. Cl. 271—293 **10 Claims**



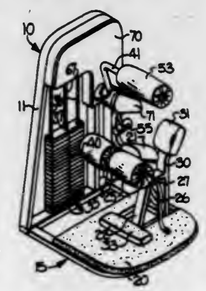
1. In a sheet-sorter for a photocopier, which photocopier includes a carriage and a cover and which discharges a sheet along a path into said sorter,
a plurality of trays,
a frame to support said trays,
the frame including vertical guides for the inboard end of each of said trays and a support for the outboard end of each of said trays,
said trays having support portions extending into said guides,
said vertical guide having upper and lower horizontally offset sections meeting at and forming a step in said frame engageable by said support portions to support the inboard ends of the trays above the sheet-path,
a pusher to move the support portions of the lower-most tray in a stack of trays off said step, and
a drive-mechanism to move said pusher into engagement with said support portions on said step when a sheet has passed from the photocopier into the sorter to move the support portions of said lower-most tray to the lower guide section.

4,500,088
3D DISPLAY
Richard J. Lasky, Clifton, N.J., assignor to Trans-World Manufacturing Corporation, E. Rutherford, N.J.
Filed Jun. 28, 1983, Ser. No. 508,552
Int. Cl.³ A47F *11/06*
U.S. Cl. 272—8 M **19 Claims**



1. A display device, comprising:
a generally planar light transmitting surface having a background image located thereat;
a generally planar mirror having a foreground image located thereat;
first means for projecting light through said light transmitting surface onto said mirror for reflection thereby;
second means for maintaining said light transmitting surface at an acute angle with respect to said mirror such that said light transmitting surface may be viewed by looking at said mirror along an axis which is within said acute angle whereby said background and foreground images are superimposed on each other when viewed along said axis to create the illusion that the background image is located behind said foreground image thereby creating a three-dimensional scene.

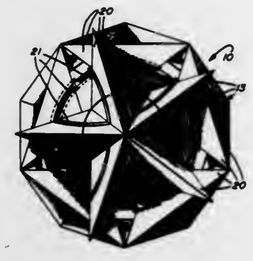
4,500,089
WEIGHT LIFTING LOWER BACK EXERCISING MACHINE
Arthur A. Jones, Lake Helen, Fla., assignor to Nautilus Sports/-Medical Industries, Inc., Lake Helen, Fla.
Filed Jan. 20, 1983, Ser. No. 459,508
Int. Cl.³ A63B *21/06*
U.S. Cl. 272—117 **13 Claims**



1. A machine for exercising the muscles associated with the lower back of the user and comprising

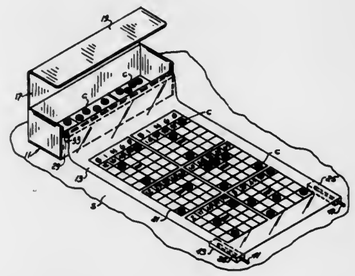
(a) a frame,
(b) a seat connected to said frame for supporting the user,
(c) resistance means for opposing movement of a user while the latter is positioned on said seat, said resistance means being connected to said frame,
(d) user-actuated lever means for engaging the back of a user while a user is positioned on said seat, said lever means having one end pivotally connected to said frame, the other end of said lever means continuously engaging the back of the user at a position spaced above the waist of the user, said lever means being movable in an arcuate path of movement between a first position with the spine of the user in a forwardly bent position, and a second position with the spine in a substantially straight position, and
(e) means operatively connecting said lever means with said resistance means for transmitting movement of said user-actuated lever means between said first and second positions for exercising the muscles associated with the lower back of the user.

4,500,090
POLYHEDRAL PUZZLE
Antoliano Nieto, 3421 Drummond St. - Apt. 15, Montreal, Canada H3G 1X7
Filed May 14, 1982, Ser. No. 378,293
Int. Cl.³ A63F *9/08*
U.S. Cl. 273—153 S **3 Claims**



1. A polyhedral puzzle comprising a central body, of regular polyhedron shape, having faces defined by congruent regular polygons, as many intermediate bodies as there are central body faces, and each of frustum shape defining a base face of the same congruent regular polygon shape as the central body faces and defining equally-inclined lateral faces of isosceles-trapezoidal shape, the base face of each intermediate body resting over a respective central body face, pivot means pivoting the center of the base face of each intermediate body to the center of a respective central body face, said intermediate bodies rotatable relative to said central body to a position in which each edge of the base face of said intermediate body coincides with a respective edge of said central body, as many external bodies as there are lateral faces of said intermediate bodies, each external body being of tetrahedron shape forming a pair of base surfaces and a pair of lateral faces, said base surfaces being inclined relative to each other and meeting at a common straight edge, said straight edge being positioned over a respective one of each edge of the central body in said rotated position of said intermediate bodies with the two base faces of each external body respectively engaging over a pair of lateral faces defined by a pair of adjacent intermediate bodies, respectively, said lateral faces of said external bodies being co-planar with the respective lateral faces of adjacent intermediate bodies in said rotated position, and a circular slideway system slidably connecting each external body rotatably onto the corresponding pair of adjacent intermediate bodies, each circular slideway system being coaxial with a respective pivot means of said intermediate bodies on said external body and including circular groove segments and projections slidably retained in said groove segments and formed at the lateral faces of said intermediate bodies and on said base surfaces of said external bodies, each external body being capable of rotation with respect to said central body about the pivot axis of either one of two adjacent intermediate bodies.

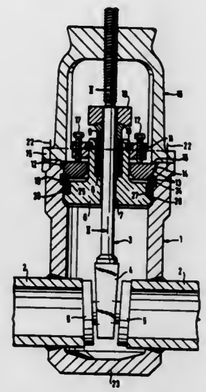
4,500,091
GAME BOX
Edward Rovsek, 1822 Heights St., P.O. Box 21, Brooklyn, Mich. 49230
Filed Mar. 16, 1984, Ser. No. 590,394
Int. Cl.³ A63F *3/00*
U.S. Cl. 273—269 **14 Claims**



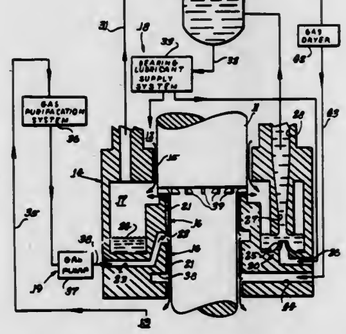
1. In combination, an elongated game holder box having a cover mountable upon a support and adapted to store a plurality of game markers, chips or tokens;
an elongated flexible strip of rectangular shape overlying said support adapted to mount said markers selectively over its surface during playing of a game;
said strip at one end projecting into said box along its length and secured thereto;
the other end of said strip being adapted for grasping on opposite sides forming an elongated chute when said sides are elevated above the box, the markers sliding and flipped into said box.

4,500,092
VALVE COVER SEALING ARRANGEMENT
Vilho Uomala; Kjell Sandström, and Jorma Matilainen, all of Pietarsaari, Finland, assignors to Oy Wartsila Ab, Helsinki, Finland
Filed Mar. 28, 1983, Ser. No. 479,340
Claims priority, application Finland, Apr. 7, 1982, 821224
Int. Cl.³ F16J *15/30;* F16K *31/44, 41/02*
U.S. Cl. 277—12 **7 Claims**

1. A valve comprising a valve housing with a detachable cover, at least one sealing member between said housing and said cover and supporting means for compressing said sealing member and for keeping it in place, said sealing member being preformed to a form corresponding substantially to the form of said member under valve operation, said sealing member being kept under a compression load between said cover and said valve housing and being made of a material allowing elastic compression of said sealing member with at least 5%.

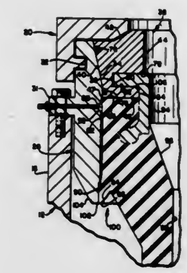


4,500,093
SHAFT SEAL SYSTEM
Davorin D. Kapich, Carlsbad, Calif., assignor to GA Technologies Inc., San Diego, Calif.
Filed Aug. 27, 1982, Ser. No. 412,110
Int. Cl.³ F16J *15/56*
U.S. Cl. 277—15 **5 Claims**



1. In a shaft seal system for isolating two regions of different fluid mediums between which a shaft extends, said system including a seal housing defining an annular land and an annular labyrinth facing the shaft, said land being spaced axially toward a selected one of said regions from said labyrinth, said seal housing further defining a fluid collection cavity for communicating with the space between said land and the shaft and the space between said labyrinth and the shaft, first means for introducing a first fluid compatible with the fluid in said selected one of said regions into the space between said land and the shaft in a manner to form a fluid seal therein and effect entry of said first fluid into said collection cavity, second means including gas purification means and gas pumping means for introducing a second gaseous fluid compatible with the fluid in the other of said regions into the space between said labyrinth and the shaft in a manner to normally form a fluid seal therein and effect entry of said second fluid into said collection cavity and prevent ingress of said first fluid into said other region through said space between said labyrinth and the shaft, means for removing fluids from said collection cavity,
a fixed captive volume separator adapted to receive a mixture of the first and second fluids from said means for removing fluids from said collection cavity and to separate the fluids from each other,
a dryer connected to said separator for drying the second gaseous fluid,
means for introducing the dry second gaseous fluid from said gas dryer into the space between said labyrinth and said shaft, and
passive pumping means associated with said shaft for effecting passage of said dried gaseous fluid from said means for introducing the dry second gaseous fluid into said space between said labyrinth and said shaft in a manner to prevent ingress of said first fluid into said other region in the event said gas pumping means becomes disabled.

4,500,094
HIGH PRESSURE ROTARY STRIPPER
Morris S. Biffle, 2609 Country Club Dr., Midland, Tex. 79701
Filed May 24, 1982, Ser. No. 381,158
Int. Cl.³ F16J *15/56;* F21B *33/03*
U.S. Cl. 277—31 **18 Claims**



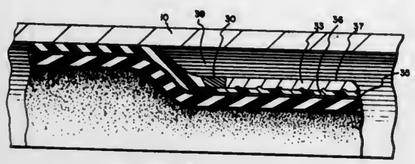
1. In an RBOP **10** having a relatively stationary main body **12** adapted to be affixed to the upper end of a cased borehole, a central passageway **71** formed through the body, so that a rotatable driving member can extend through the passageway and into a borehole; the improvement comprising:
a rubber stripper assembly **30** having a flange **36** at the upper end thereof, and a stripper rubber **56** at the lower end thereof, said stripper assembly is rotatable respective to said main body, said flange has opposed faces **78, 82** and is spaced from an upwardly directed annular surface **86** to form an outwardly opening groove **86, 106, 82**; a medial circumferentially extending sidewall **62** of said stripper rubber is spaced below said annular surface **86**; an axial passageway **96, 98** formed through said stripper assembly for slidably receiving a driving member **71** therethrough;
a bushing **38** having an annular groove **78, 80, 82** within which said flange **36** is rotatably received in low friction relationship therewith;
said bushing **38** has a lower downwardly directed annular face **46** against which said annular surface **86** of said stripper assembly bears when the stripper is thrust uphole;
means mounting said bushing **44** in fixed relationship respective to said main body, said central passageway **62, 90** of said main body includes a bearing surface against which said sidewall **62** and **90** of said rubber bears and thereby forms a radial bearing.

4,500,095

INFLATABLE OIL WELL HOLE PLUG WITH REINFORCING WIRES

Robert C. Schisler, and George W. Eisenzimmer, both of Akron, Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Nov. 3, 1983, Ser. No. 548,391
Int. Cl.³ F16J *15/46*
U.S. Cl. 277—34 **6 Claims**



1. An inflatable packer element, comprising a first annular shoe means;

a second annular shoe means axially spaced from said first shoe means;

an inflatable bladder means connected between said first and second shoe means, and including a reinforcing means; and

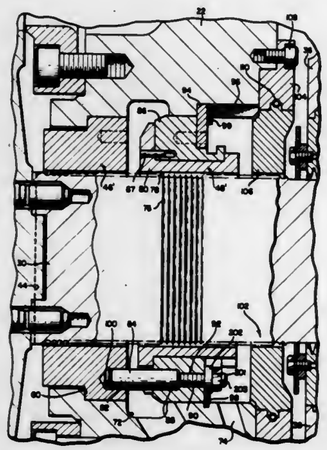
said reinforcing means comprising a series of inline steel cables spaced parallel with the center line of said bladder and having their ends securely fastened to said first and second shoe means, respectively, said series of inline steel cables being embedded in an elastomeric composition over an elastomeric tube and having a cover of a tough elastomer.

4,500,096

TURBINE SHAFT SEAL ASSEMBLY

Alan H. Tuttle, Andover; James K. Leonard, Wellsville, and Henry J. Dlugosz, Olean, all of N.Y., assignors to McGraw-Edison Company, Rolling Meadows, Ill.

Filed Feb. 22, 1983, Ser. No. 468,348
Int. Cl.³ F16J *15/48*
U.S. Cl. 277—53 **23 Claims**



1. In an overhung turbine having a rotor, a rotating rotor shaft, a non-split turbine casing for housing the rotor and the overhung end of the rotor shaft, and a bearing case disposed adjacent the turbine casing for supporting the shaft, said turbine casing having a gland exhaust duct and an opening at one end through which the overhung end of the shaft extends, a seal assembly for plugging the annular zone defined by said shaft and that portion of said turbine casing in the vicinity of said opening, comprising:

(a) a first split ring, removably carried by the turbine casing adjacent said rotor, sealingly disposed between said rotor shaft and said turbine casing with said annular zone;

(b) a second split ring, removably carried by the turbine casing adjacent to and spaced apart from said first split ring, sealingly disposed between said rotor shaft and said turbine casing, the annular space between said first split ring and second split ring and defined by said shaft and said turbine casing being in flow communication with said gland exhaust duct; and

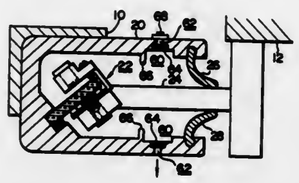
(c) holding means, removably carried by said turbine casing, for releasably holding said second split ring against said first split ring and for releasably holding said first split ring and second split ring against axial movement relative to said turbine casing.

4,500,097

SEAL DEVICE IN DISPLACEMENT MEASURING INSTRUMENT

Hitoshi Sakamoto, Kashiwa; Seiji Sakagami, and Shigeru Nagashima, both of Kawasaki, all of Japan, assignors to Mitutoyo Mfg. Co., Ltd., Tokyo, Japan

Filed Jan. 20, 1984, Ser. No. 572,320
Claims priority, application Japan, Jan. 27, 1983, 58-11656; Jan. 27, 1983, 58-11657; Jan. 27, 1983, 58-10184[U]
Int. Cl.³ G01B *5/02*; F16J *15/32, 15/40*
U.S. Cl. 277—59 **18 Claims**



1. A seal device in a displacement measuring instrument, comprising:

a hollow case formed with an opening along a moving line of one member whose relative movement is detectable, which is fixed to the other member whose relative movement is detectable;

a connecting rod for imparting a displacement of said one member to a displacement detecting mechanism housed in said hollow case through the opening;

seal members disposed at opposite sides of said opening of the hollow case, for shielding a penetrating portion of said connecting rod;

at least one liquid receiving groove extending along said opening and provided at least at one side of the inner surface of said hollow case;

at least one liquid-proof bank provided between said liquid receiving groove and said displacement detecting mechanism;

at least one liquid drain hole communicating with the outside of said hollow case and provided in the bottom of said liquid receiving groove; and

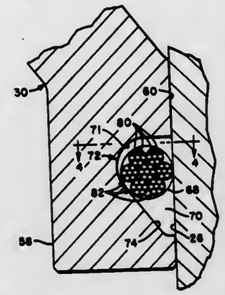
at least one filter provided in said liquid drain hole for excluding dust intruding from the outside.

4,500,098

GAS SEAL FOR ROTATING COMPONENTS

Ernest W. Wilcox, Lake Park, and Jack W. Wilson, Jr., West Palm Beach, both of Fla., assignors to United Technologies Corporation, Hartford, Conn.

Filed Dec. 22, 1983, Ser. No. 564,448
Int. Cl.³ F16J *15/34, 15/40*
U.S. Cl. 277—170 **4 Claims**



1. A seal assembly comprising;

a first component adapted to rotate about an axis and including means defining a radially extending annular surface disposed about said axis of rotation;

a second component interconnected to said first component and adapted to rotate therewith at the same speed about the same axis of rotation, said second component comprising wall means adjacent said annular surface, said wall means defining a substantially frusto-conical surface coaxial with said annular surface defining an annular seal compartment therebetween; and

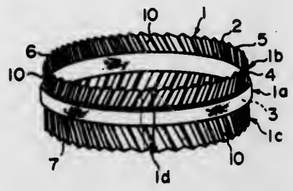
a free length of flexible wire rope, said flexible wire rope comprising a plurality of wire filaments twisted together, said rope disposed in said annular compartment and extending once substantially completely around said compartment in substantially continuous contact with both said annular surface and said frusto-conical surface, wherein during rotation of said seal assembly said wire rope is pressed into sealing relationship against said annular and frusto-conical surfaces by centrifugal forces.

4,500,099

ELASTIC SUPPORTING AND SEALING MEMBER WITH THERMAL FOAMING STRIP

Katsutoshi Kitagawa; Kiyoshi Isogai; Nobuo Ohmori; Naka Takita; Makoto Okamoto; Itsuo Koga, all of Toyota, and Kazuo Ito, Nagoya, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota and Chuo Spring Co., Ltd., Nagoya, both of, Japan

Filed Mar. 4, 1983, Ser. No. 472,183
Claims priority, application Japan, Jun. 15, 1982, 57-103168
Int. Cl.³ F16J *15/12*
U.S. Cl. 277—228 **15 Claims**



1. An elastic supporting and sealing member for mutually supporting a first body with respect to a second body and for sealing a gap between said first body and said second body, the member comprising:

a first and a second strip shaped portion of wire net; and

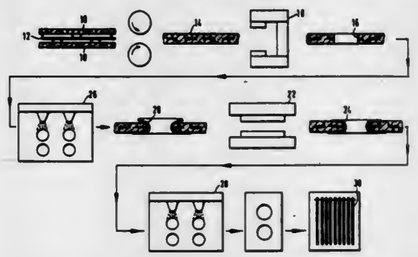
a strip shaped piece of thermal foaming material disposed between said first and said second wire net portions to extend in the longitudinal direction of said first and said second strip shaped wire net portions, said first and said second wire net portions extending laterally beyond the lateral extent of said strip shaped piece of thermal foaming material on opposite sides thereof so as to provide laterally extreme portions where said first and second wire net portions oppose one another without the interposition of said piece of thermal foaming material.

4,500,100

CYLINDER HEAD GASKET

Rudolf Bindel, Grafenberg, and Eugen Ruoff, Urach, both of Fed. Rep. of Germany, assignors to Elring Dichtungswerke GmbH, Felibach, Fed. Rep. of Germany

Division of Ser. No. 536,909, Sep. 28, 1983,. This application Jul. 24, 1984, Ser. No. 633,800
Claims priority, application Fed. Rep. of Germany, Oct. 30, 1982, 3240295
Int. Cl.³ F16J *15/12*; B65D *53/00*
U.S. Cl. 277—235 B **20 Claims**



1. A cylinder head gasket having at least one plate of soft material and at least one combustion chamber opening:

said plate of soft material consisting predominantly of inorganic fibers connected by binding means and including free OH groups, wherein part of the fibers or filling materials extend up to the surface of the plate of soft material, said plate of soft material being mixed with polymer impregnation means;

said polymer impregnation means including a first impregnating material application of a first polysiloxane containing reactive hydrogen groups for reaction with the free OH groups of the fibers and filling materials and a second impregnating material application of a second polysiloxane of a higher degree of polymerization which polymerizes with itself as well as with the reactive hydrogen groups of the polysiloxane of the first impregnating material, the second polysiloxane forming a stable siloxane structure having mre branches than the first polysiloxane.

4,500,101

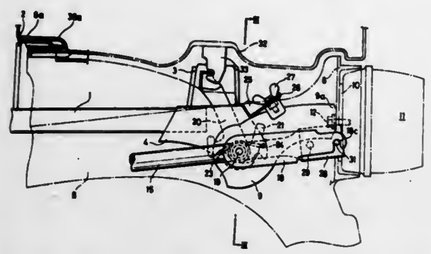
REAR FENDER STRUCTURE FOR MOTORCYCLES

Masanori Aoki, Tokyo, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 304,468, Sep. 22, 1981, abandoned. This application Dec. 22, 1983, Ser. No. 563,889
Claims priority, application Japan, Sep. 22, 1980, 55-131914; Sep. 22, 1980, 55-131915
Int. Cl.³ B62J *15/00*
U.S. Cl. 280—152.1 **21 Claims**

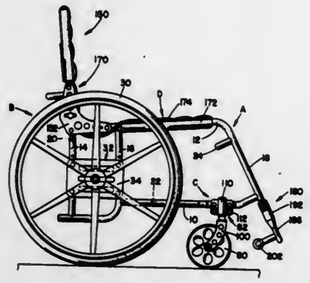
1. A rear fender structure for use in a motorcycle comprising; a rear fender, a support shaft supported to a motorcycle frame body, an upper member comprising a seat or rear box

positioned to overlap with said rear fender, and interlocking means provided between said rear fender and said upper mem-



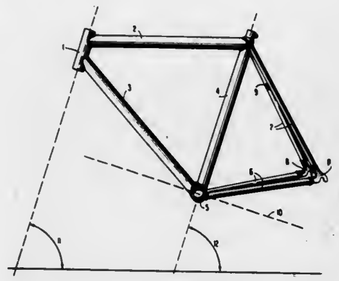
ber, said rear fender being pivotally secured at an intermediate portion thereof to said support shaft and detachably engaged with said upper member through said interlocking means.

4,500,102
SPORTS WHEELCHAIR
Gilbert E. Haury, Grafton; Nathalal G. Patel; Walter G. Lockard, both of Elyria, and Thomas R. Wiatrak, Brunswick, all of Ohio, assignors to Invacare Corporation, Elyria, Ohio
Filed Nov. 16, 1982, Ser. No. 442,037
Int. Cl.³ B62M *1/14*
U.S. Cl. 280—242 WC **28 Claims**



1. A wheelchair which is adapted for both sporting activities and daily use, the wheelchair comprising:
a frame assembly;
supporting means for supporting a user, the supporting means being operatively connected with the frame assembly;
a pair of rear wheels;
an adjustable rear wheel mounting means for selectively mounting each of the rear wheels to the frame assembly in one of a plurality of positions, the rear wheel mounting means being operatively connected with the frame assembly, the rear wheel mounting means including:
a mounting plate including a plurality of slots which are elongated along parallel slot axes;
an axle receiving assembly which is selectively positionable in the slots at a selectable position along the slot axis;
a stop means for stopping the axle receiving assembly from shifting along the slot axis;
a pair of front wheels; and,
a front wheel mounting means for mounting each of the front wheels to the frame assembly.

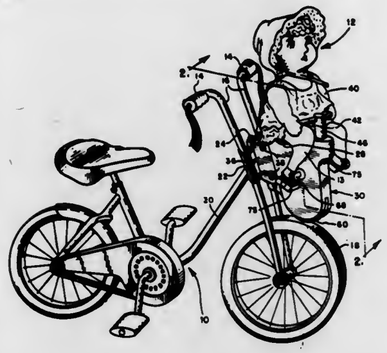
4,500,103
HIGH EFFICIENCY BICYCLE FRAME
Gary G. Klein, 207 B S. Prairie Rd., Chehalis, Wash. 98532
Continuation of Ser. No. 658,620, Feb. 17, 1976, abandoned. This application Nov. 7, 1977, Ser. No. 849,141
Int. Cl.³ B62K *19/06*
U.S. Cl. 280—281 R **7 Claims**



1. In a bicycle having wheels of greater than 25 inches diameter and a frame of the type including a tubular top tube having front and rear ends, a tubular seat tube having top and bottom ends with the top end secured to the rear end of said top tube, a tubular head tube having top and bottom ends with the top end secured to the front end of said top tube, a tubular down tube having top and bottom ends with the top end secured to the bottom end of said head tube, a pair of chainstay tubes having front and rear ends, two or more bridged seatstay tubes having top and bottom ends with the top ends secured to the top end of said seat tube, a bottom bracket secured to the lower ends of said seat and down tubes and the forward ends of said chainstay tubes, two rear fork ends secured to the rear and lower ends, respectively, of said chainstay and seatstay tubes, the head tube being at a ground angle of between 60 to 80 degrees and the seat tube to ground angle is between 58 and 85 degrees when the appropriate front fork and wheels are attached and rest on the ground, the mass of the frame without fork or other equipment is less than 5 pounds, the improvement wherein said top, down, seat, chainstay tubes and seatstay tubes have diameter to wall thickness ratios of less than 50, and are of a diameter and wall thickness such that said frame has a torsional rigidity between the said head tube and bottom bracket of at least 67 pounds$_{force}$ feet per degree of deflection with the said torque being applied to the bottom bracket along an axis normal to the axis of the said seat tube and normal to the axis of the said bottom bracket, and a lateral bending rigidity of at least 120 pounds$_{force}$ per inch of delfection measured at the said rear fork ends of the bicycle frame with an axle installed, with the said head tube clamped immovably in a horizontal position and the said bottom bracket supported but not otherwise restrained, said force being applied and deflection measured in a direction normal to the plane of the bicycle frame and along the axis of the rear axle.

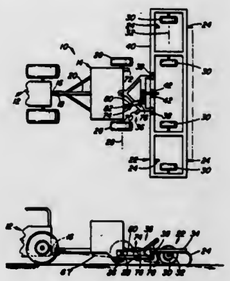
4,500,104
BICYCLE AND DOLL MECHANISM
Elliot A. Rudell, 2215 W. 237 St., Torrance, Calif. 90501; Michael E. Shumate, Manhattan Beach, and Joseph S. Cernansky, Gardena, both of Calif., assignors to Elliot A. Rudell, Lawndale, Calif.
Filed Mar. 16, 1983, Ser. No. 475,969
Int. Cl.³ B62K *3/00*
U.S. Cl. 280—289 D **41 Claims**

1. A doll assembly for use with a cycle, the cycle having handlebars and a front wheel; the front wheel coupled to be turned by the handlebars; the doll assembly simulating a second rider on the cycle and comprising:
a doll with arms and motile legs;
a set of miniature handlebars, doll seat structure, and crank means, the crank means coupled to be rotated by and in the same rotational direction as the cycle's front wheel;
the hands of the doll being fastened to the miniature handlebars and the feet of the doll being fastened to the crank means;



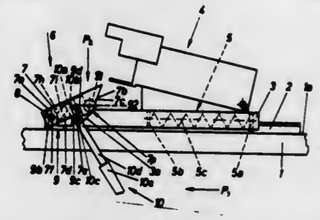
the doll appearing to be steering and pedalling in concert with the actions of the rider when the cycle is being ridden.

4,500,105
AGRICULTURAL IMPLEMENT HITCH ASSEMBLY
Cecil B. Machnee, Yorkton, Canada, assignor to Morris Rod-Weeder Company, Limited, Yorkton, Canada
Filed May 16, 1983, Ser. No. 495,275
Claims priority, application Canada, Jun. 15, 1982, 405169
Int. Cl.³ B60D *1/00*
U.S. Cl. 280—468 **19 Claims**



1. A hitch assembly for use in connecting a primary wheeled unit to an intermediate wheeled unit in a train of units, said intermediate unit including a pair of ground-engaging wheels rotatable about a first transverse axis, and said primary unit including a frame mounting at least one ground-engaging element and a pair of ground-engaging wheels rotatable about a second transverse axis, said assembly comprising: first link means extending below said frame; second link means extending above said frame; drawbar means pivotally connected at one end to said first link means and having connection means at the other end thereof for pivotable connection to said intermediate unit at a point which is both on or closely adjacent to said first axis and is located on or closely adjacent to a reaction line drawn from a connection point for said intermediate unit in the train to the ground-engagement area of said element; and third link means pivotally connected to said drawbar means and to said second link means for fixing the angular relation between said frame and said drawbar means.

4,500,106
SKI BRAKE
Josef Svoboda, Schwechat, Austria, assignor to TMC Corporation, Baar, Switzerland
Filed Mar. 30, 1982, Ser. No. 363,741
Claims priority, application Austria, Apr. 1, 1981, 1510/81
Int. Cl.³ A63C *7/10*
U.S. Cl. 280—605 **14 Claims**

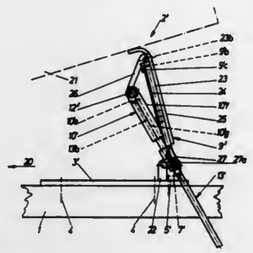


1. A ski brake, comprising a braking bar which is supported for pivotal movement about a first axis extending approximately perpendicular to the longitudinal axis of the ski, has two braking mandrels, is made of a bent wire material, and can be pivoted about said first axis by a pedal between a braking position in which the two braking mandrels project below the running surface of the ski and a retracted position in which the braking mandrels lie substantially above the upper side of the ski, said pedal being supported for pivotal movement about a second axis which extends at approximately a right angle with respect to the longitudinal axiis of the ski and being supported on the ski at a location spaced a small distance from a ski binding part, said ski binding part including a guide plate which is longitudinally movably supported on a guide rail secured to the ski, said guide plate being movably along said guide rail in a direction away from said first axis against the force of resilient thrust-blancing means which includes at least one spring, said pedal having an end which is spaced from said second axis and faces an end of said ski binding part, and including a roller supported on one of said end of said pedal and said end of said ski binding part for rotation about a transverse horizontal axis, said roller being operatively engageable with a surface which is provided on the other of said end of said pedal and said end of said ski binding part and which is inclined upwardly in a direction toward said ski binding part; wherein said roller is provided on said pedal and has its circumferential surface tangential to the underside of said pedal.

4,500,107
SKI BRAKE
Josef Svoboda, and Emilie Szabo, both of Schwechat, Austria, assignors to TMC Corporation, Baar, Switzerland
Division of Ser. No. 200,121, Oct. 24, 1980, Pat. No. 4,371,187. This application Aug. 19, 1982, Ser. No. 409,481
Claims priority, application Austria, Oct. 25, 1979, 6933/79
Int. Cl.³ A63C *7/10*
U.S. Cl. 280—605 **9 Claims**

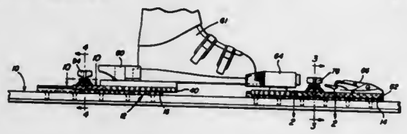
1. In a ski brake mountable on a ski, having pedal means supported on a base for pivotal movement about a first axis between a braking position and a retracted position, and having two braking arms which each have a first section which is rotatably supported on said pedal means and extends generally perpendicular to said first axis, a second section which is radially offset from and extends parallel to said first section and a third section which connects said first and second sections, rotation of each said braking arm first section effecting movement of said second section thereof between a first position spaced laterally outwardly of an adjacent side wall of the ski and a second position located laterally inwardly of said side wall, and including resilient means for yieldably urging said pedal means toward said braking position, the improvement comprising wherein said first sections of said braking arms are supported for axial movement relative to said pedal means, and

including means for effecting axial movement of said first sections relative to said pedal means as said pedal means moves between said braking and retracted positions and means for effecting rotation of said first section of said braking arms



relative to said pedal means in response to relative axial movement therebetween, said second sections of said braking arms moving between said first and second positions as said pedal means moves between said braking and retracted positions, respectively.

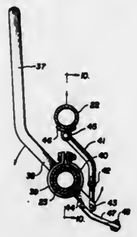
4,500,108
CONVERTIBLE SKI DEVICE
Luvern C. Johnson, III, P.O. Box 1725, Pocatello, Id. 83204
Filed Feb. 16, 1983, Ser. No. 467,144
Int. Cl.³ A63C *9/00*
U.S. Cl. 280—614 **8 Claims**



1. In combination with a ski including front and rear end portions as well as front and rear boot binding mounting areas, a rear boot heel binding mount supported on said ski in said rear mounting area, a front boot toe binding mount supported on said ski in said front mounting area, rear ski binding mounting structure supported from said rear mount, a rear downhill boot binding supported from said rear ski binding mounting structure, means mounting said rear ski binding mounting structure from said rear mount for shifting thereon between a forward active position and a rear inactive position; front ski binding mounting structure mounted on said front mount, downhill and cross-country ski boot toe bindings supported from said front ski binding mounting structure in horizontally spaced apart positions thereon and with said downhill and cross-country toe bindings opening in opposite directions, said front ski binding mounting structure and said front binding mount including coacting structure releasably supporting said front ski binding mounting structure from said front binding mount for reverse positioning thereon.

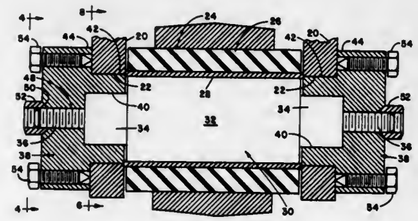
4,500,109
WHEELCHAIR WIDTH ADJUSTER
Frank Volin, Columbia, S.C.
Filed Dec. 15, 1982, Ser. No. 450,068
Int. Cl.³ B62B *11/00*
U.S. Cl. 280—650 **8 Claims**

1. In a laterally folding wheelchair of the type having a pair of vertical frame sides interconnected by a vertically folding X-frame, the frame sides including fixed horizontal fore-to-aft bars and parallel vertically movable fore-to-aft seat web support bars connected with the top of said X-frame, the improvement comprising a vertically swingable manual lever swiveled on one of the fixed horizontal fore-to-aft bars and being operable in a vertical plane at right angles to the vertical plane of the adjacent frame side of the wheelchair, the manual lever including a comparatively long handle portion which extends upwardly adjacent to the outer side of one vertical frame side of the wheelchair in ready reach of a chair occupant when the chair is in a full width condition, the manual lever further including a comparatively short power extension, a link having one end pivotally attached to said power extension and having its opposite end pivotally attached to one of said vertically



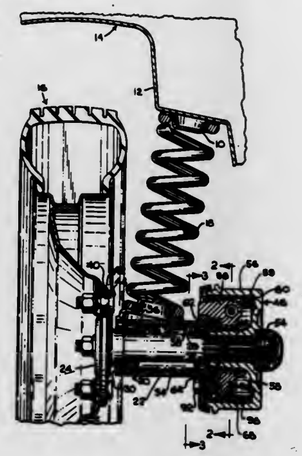
movable fore-to-aft seat web support bars and being bodily movable in a vertical plane in response to movement of said manual lever downwardly by a chair occupant to elevate said seat web support bar, and a substantially rigid stop element secured to said short power extension and projecting beyond one end of the same and being in a common vertical plane with said link and contacting one side of the link to limit downward movement of said manual lever by an occupant of the wheelchair to reduce the width of the wheelchair.

4,500,110
ECCENTRIC ADJUSTMENT FOR VEHICLE AXLE SUSPENSIONS
Fred A. McWhorter, 2134 Kraftmeyer Dr., Davenport, Iowa 52803, and William L. Bates, 1731 - 18th St., Bettendorf, Iowa 52722
Filed Apr. 13, 1983, Ser. No. 484,725
Int. Cl.³ B60G *11/10*
U.S. Cl. 280—680 **8 Claims**



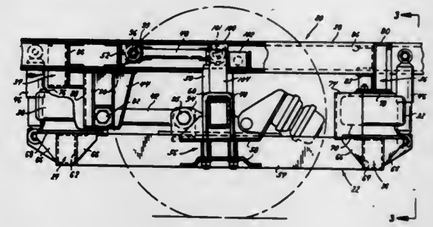
1. In a vehicle axle suspension including a fore-and-aft walking beam and a transverse axle housing having a pair of spaced apart ears straddling the walking beam, said ears respectively having circular openings of like diameter therein and coaxial on a transverse axis, the improvement comprising interconnecting structure between the walking beam and axle housing, including means carried by the walking beam and providing a pair of opposite, transversely coaxial cylindrical portions of like diameter projecting respectively at opposite sides of the walking beam and respectively into the axle housing ear openings, said portions being of lesser diameter than said openings, a pair of adjustment members respectively cooperative with the cylindrical portions and openings for mounting the axle housing on the walking beam, each adjustment member having an internal cylindrical bore rotatably receiving the adjacent cylindrical portion and an exterior cylindrical surface rotatably receiving the adjacent ear opening, the axes of the bore and surface being eccentric to each other whereby angular movement of an adjustment member causes the axle housing to shift relative to the walking beam, and means for securing the adjustment in any selected position of adjustment.

4,500,111
SUSPENSION ASSEMBLY FOR A WHEEL AND BRAKE
Ji Y. Woo, South Bend, Ind., assignor to The Bendix Corporation, Southfield, Mich.
Continuation of Ser. No. 217,724, Dec. 18, 1980, abandoned. This application Oct. 19, 1983, Ser. No. 543,571
Int. Cl.³ B60T *1/06*
U.S. Cl. 280—688 **3 Claims**



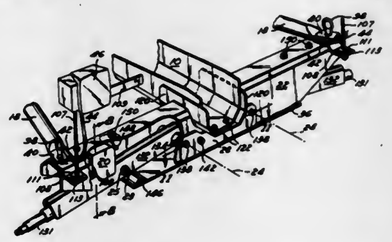
1. A combined wheel mounting and brake assembly for a vehicle having a small lightweight frame with front wheels associated with disc brakes and rear wheels associated with drum brakes, comprising a support fixedly engaging the vehicle frame via a spring engaging the support and the vehicle frame, said support defining an opening extending axially therethrough, and an axle rotatably disposed within said support opening via a pair of bearings carried within said support opening at substantially opposite ends of said support opening, said axle including a first portion at one end of said support outside said one end support opening, said first portion extending radially outwardly of said support opening and releasably mounting one of the rear wheels to said axle, said axle including a second portion at the other end of said support opening, said second portion extending radially outwardly of said support opening and having an axially extending outer rim, said rim substantially defining a cavity for receiving one of the drum brakes which is disposed adjacent said support other end, the one drum brake being operable to brake the rear wheel via said axle, said axially extending rim defining a surface engageable with the one drum brake and said surface defines a diameter dimension which is less than a diameter dimension for the radial outer periphery of said first portion, said second portion defining an inner axially extending boss engageable with said axle and cooperating with one of said pair of bearings to retain the latter within the support opening, said second portion being releasably coupled to said axle via a nut, and said nut cooperates with said axle when said second portion is coupled thereto and cooperating with the one bearing to retain the other of said pair of bearings within the support opening, whereby said pair of bearings are carried within the support opening to one side of the rear wheel in the direction of said second portion.

4,500,112
WIDE BASE AIR SPRING SUSPENSION SYSTEM
John E. Raidel, Rte. 1, Box 400-M, Springfield, Mo. 65804
Division of Ser. No. 266,006, May 21, 1981, abandoned. This application Jun. 22, 1983, Ser. No. 506,697
Int. Cl.³ B60G *3/18*
U.S. Cl. 280—693 **11 Claims**



11. A vehicle suspension assembly for supporting a vehicle chassis on a steer axle, said chassis having a frame comprised of a plurality of longitudinal rail members extending along the undercarriage thereof, said suspension including an integral stool shaped axle seat for mounting to the axle, the axle seat having an outrigger extension member extending upwardly and outwardly from the base thereof, an upper spring bracket for mounting to the chassis and having an outrigger extension member extending out from the chassis, each of said outrigger members having means to mount an air spring, an air spring mounted to and extending between said outrigger members and outside the longitudinal rail frame members, a hanger assembly for mounting to and extending downwardly from a rail frame member and forwardly of the axle seat, each of said axle seat and hanger assembly having means to pivotally connect two torque rods, two torque rods pivotally connected to and extending between said axle seat and said hanger assembly, the axle seat having means to pivotally mount a sway bar, a sway bar pivotally mounted to and extending between the axle seat and a rail frame member, the axle seat having means to mount two shock absorbers, and two shock absorbers for extending between the axle seat and a rail frame member.

4,500,113
VEHICLE SUSPENSION SYSTEM
Denny B. Law, San Marcos, Calif., assignor to Unique Functional Products, San Marcos, Calif.
Division of Ser. No. 327,257, Dec. 3, 1981,. This application Aug. 1, 1983, Ser. No. 518,945
Int. Cl.³ B60G *11/22*
U.S. Cl. 280—716 **14 Claims**



7. In a two wheel trailer, the improvement in mounting of said wheels, comprising:

(a) a swing axle extending laterally of the trailer at either side having at one end one of said wheels mounted thereon and a pivotal mounting on said trailer for the other end of each axle on opposite sides of said trailer, said pivotal mountings being oriented so that said axles will pivot about axes

parallel to each other and parallel to the longitudinal axis of said trailer, and

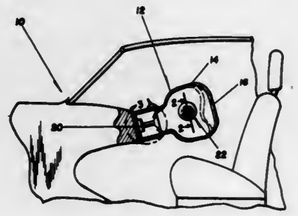
(b) a housing extending laterally of said trailer and a pair of vertical plates separate from and abutting forward and rear sides of said housing and said pivotal mountings for the other ends of said axles being provided by precision drilled pairs of openings in said plates and precision bolts mounted in said pairs of openings to insure that said axes will be parallel.

4,500,114

DEVICE FOR CONTROLLED DIFFERENTIAL FLOW

James T. Grey, Jr., Yardley, Pa., assignor to Thiokol Corporation, Chicago, Ill.

Filed Aug. 27, 1982, Ser. No. 412,339
Int. Cl.³ B60R *21/08*
U.S. Cl. 280—742 **21 Claims**



1. An inflatable structure having a folded, deflated condition and an inflated, expanded condition for restraining the movement of a vehicle occupant relative thereto during a collision and having flexible, fluid impermeable walls defining a confinement for a pressurizing fluid introduced interiorly thereof for expanding said structure, a portion of said structure being fluid permeable permitting passage of fluid into and out of said confinement and providing rebound protection for said occupant under restraint when said occupant impacts said structure during the collision of said vehicle, said portion including a fluid permeable fabric having a filamentous surface formed on at least one side, said filamentous surface comprising a plurality of extensile, flexible filaments anchored at one end to said fabric and having free opposite ends adapted to be extended in mutual, substantially parallel relation from said surface, generally perpendicular to said fabric by said fluid permeating said fabric and flowing through said filamentous surface in a direction tending to inflate said structure, passage of said fluid into said structure being relatively unhindered; and,

said filaments collapsible onto said fabric by fluid flowing through said filamentous surface and permeating said fabric in a direction tending to deflate said structure, upon impact thereof by said occupant, passage of said fluid in said structure deflating direction being relatively more hindered thereby providing said rebound protection for said vehicle occupant.

4,500,115

MOUNTING ARRANGEMENT FOR THROUGH ANCHOR

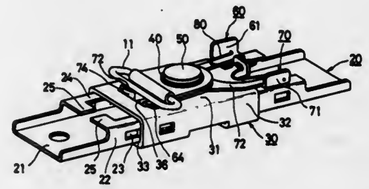
Katsuyasu Ono, Kanagawa, Japan, assignor to NSK-Warner K.K., Japan

Filed Nov. 24, 1982, Ser. No. 444,503
Claims priority, application Japan, Nov. 24, 1981, 56-174382[U]
Int. Cl.³ B60R *21/10*
U.S. Cl. 280—808 **11 Claims**

1. A device adapted to mount, on an automobile body, a through-anchor which permits the webbing of an automobile seat belt to extend therethrough, said device comprising:

an adjustable anchor carrying the through-anchor fixedly secured thereon;

a base to be fixedly mounted on the automobile body and equipped with a plurality of interlocking means which are arranged in pairs along two mutually-parallel lines with a predetermined interval between each two adjacent interlocking means on each of the lines;



a pair of latch pieces provided with the adjustable anchor in such a way that the latch pieces are displaceable between engagement positions where the latch pieces are engaged with the interlocking means in any of the pairs and non-engagement positions where the latch pieces are not engaged with any of the interlocking means; and

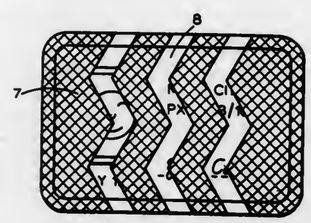
biasing means adapted to bias the latch pieces toward the engagement position.

4,500,116

IDENTIFICATION MATTER

Berkeley M. Ferro, Barnehurst, and Aubrey D. Walker, North Harrow, both of England, assignors to The Post Office, London, England

Continuation of Ser. No. 4,054, Jan. 16, 1979, abandoned. This application Jul. 14, 1980, Ser. No. 168,151
Claims priority, application United Kingdom, Jan. 18, 1978, 2096/78
Int. Cl.³ B42D *15/00*
U.S. Cl. 283—92 **7 Claims**



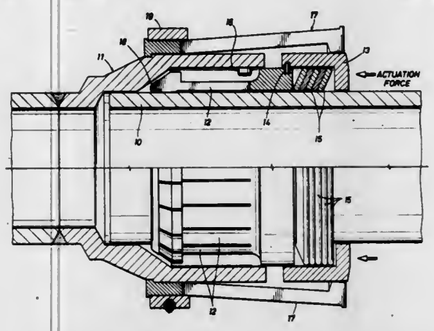
1. An article for establishing personal identity, comprising a substrate carrying identification markings, said substrate having thereon or therein a phosphorescent material comprising a rigid matrix in which there are dispersed two or more organic phosphorescense activators which are unresponsive to visible light and which during and after irradiation with ultraviolet light emit visible phosphorescense, said matrix being transparent to radiation at the excitation and emission frequencies of said phosphorescense activators, said emissions of said phosphorescense activators differing from one another with respect to both wavelengths and lifetime, whereby the total emission of said phosphorescent material after cessation of said irradiation changes from an initial colour representing the combined emissions of said activators to a final colour representing the emission of that activator having the longest phosphorescence lifetime.

4,500,117

PIPELINE CONNECTOR

Ray R. Ayers, and Robert M. Kipp, both of Houston, Tex., assignors to Shell Oil Company, Houston, Tex.

Filed Nov. 24, 1982, Ser. No. 444,416
Int. Cl.³ F16L *37/00*
U.S. Cl. 285—3 **10 Claims**



1. A connector for joining a bell-end pipe to a straight-end pipe comprising:

collet wedge fingers encircling the straight-end pipe and insertable into the bell-end pipe;

deformable sealing material at the lateral extremity of the collet wedge fingers;

driving means for pressing the collet wedge fingers and deformable sealing material into sealing engagement with the bell-end pipe; and

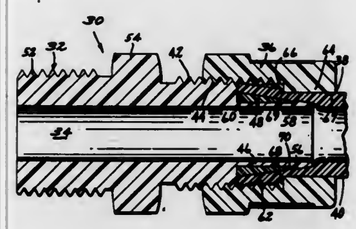
locking means attached to the bell-end pipe for maintaining said sealing engagement.

4,500,118

FITTING APPARATUS FOR SOFT TUBING

Brian J. Blenkush, Maple Grove, Minn., assignor to Colder Products Company, St. Paul, Minn.

Filed Dec. 30, 1982, Ser. No. 454,562
Int. Cl.³ F16L *33/00, 33/16, 25/00*
U.S. Cl. 285—247 **17 Claims**



1. A fitting for use withe soft tubing, comprising:

(a) a female member defining an aperture for insertion therethrough of a tubing, said female member having a threaded portion;

(b) a male member defining a tubular portion adapted for insertion into the tubing, said male member including radially extending flange means for preventing the insertion of said tubular portion into the tubing beyond a predetermined distance, said male member including a threaded portion adapted for cooperation with the threaded portion of said female member;

(c) a collar portion slideably mounted on said tubular portion for axial movement on said tubular portion, said collar portion being adapted for insertion at least partially into the tubing; and

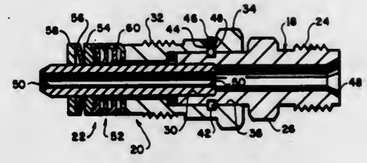
(d) a generally radially inwardly projecting collar portion of said female member engaging the outer surface of the tubing, said collar portion of said female member cooperating with said axially slideable collar portion of said male member to retain the tubing in the fitting when a tensile pull is exerted thereon.

4,500,119

FLUID SWIVEL COUPLING

John D. Geberth, Jr., 10 Goose Cove Lane, Ramsey, N.J. 07446

Filed Mar. 21, 1983, Ser. No. 477,131
Int. Cl.³ F16L *27/00*
U.S. Cl. 285—276 **1 Claim**



1. A fluid swivel coupling for interconnecting a first fluid conduit and a second fluid conduit, said second fluid conduit having an internal shoulder therein, for rotational movement about their common axis where the fluid flowing therein contains suspended solid particles, said fluid swivel coupling comprising:

(a) a spindle having an axial fluid bore therethrough including means for securing a first end of said spindle to said first fluid conduit;

(b) a stem portion of hard, wear resistant material at the second end of said spindle having an axial fluid bore therethrough axially aligned with the fluid bore of said spindle;

(c) a swivel body having an axial bore therethrough for accepting said spindle coaxially therein including means for threadably engaging said swivel body axially to said second fluid conduit so that an end of said swivel body extends into said conduit;

(d) means for connecting said spindle within the axial bore of said swivel body so that said swivel body rotates on said spindle about their common axis; and

(e) a packing seal for effecting a fluid tight seal between said spindle and said swivel body disposed surrounding the stem portion of said spindle and between the internal shoulder of said second fluid conduit and said end of said swivel body extending into said conduit, so that said packing seal is compressed about said stem portion and between the shoulder of said second fluid conduit and said end of said swivel body to thereby effect a fluid tight seal between said spindle and said swivel body which is adjustable by adjustment of the threadable engagement between said swivel body and said second fluid conduit.

4,500,120

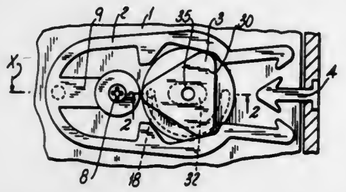
CATCH OR LOCK

Terence E. Ridgewell, Gravesend, and Keith Vallis, Windsor, both of England, assignors to Kimberly-Clark Limited, Kent, England

Filed Dec. 22, 1982, Ser. No. 452,142
Int. Cl.³ E05C *19/08*
U.S. Cl. 292—19 **8 Claims**

1. A lock comprising a casing, a rotatable cam mounted to the casing, means of the cam for accepting a key, a latch comprising at least one latch arm including a hasp engaging latching means, the latch being in co-operable relationship with the cam, a hasp with which each latching means is engageable for locking, the arrangement being such that on insertion of the key into the lock the cam may be rotated to disengage the latch from the hasp, two abutments forming stop means for deter-

mining releasing and locking positions of said cam, the key being insertable or removable when the cam is in the locking position, wherein a groove and follower cooperatively couple the casing and cam, the groove having a first and second portion, said first portion having a ramp with a raised end forming one of said abutments at an end of said second portion, another of said abutments formed at another end of said second



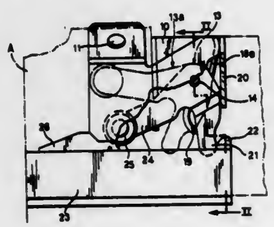
portion, the follower engaging in the groove and acting with the abutments to limit the movement of the cam relative the casing and acting with said ramp to limit said movement in a direction from said first portion to said second portion and not in reverse of said direction, an end of said first portion remote from said second portion defining a first supplementary releasing position of the cam, the key being insertable or removable from said lock at said first supplementary releasing position.

4,500,121

DEVICE FOR STOPPING AND HOLDING IN THE OPEN POSITION A SLIDING DOOR ON A VEHICLE

Giuseppe Ferrero, Cherasco, Italy, assignor to Fiat Auto S.p.A., Turin, Italy

Filed Jul. 15, 1983, Ser. No. 514,125
Claims priority, application Italy, Jul. 15, 1983, 53517/82[U]
Int. Cl.³ E05C *19/04*
U.S. Cl. 292—79 **1 Claim**



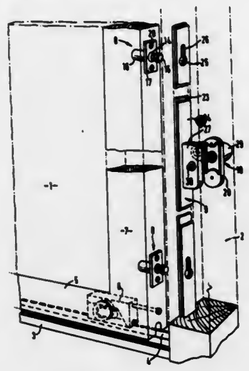
1. A device for stopping and holding in the open position a sliding door on a vehicle comprising:
- a sheet metal support fixed to the door,
- a V-shaped lever, pivoted at the vertex of the V on a pin carried by said support and having a first and a second arm,
- a roller rotatably mounted at the free end of said first arm of the lever,
- a guide rail,
- a spring interposed between said lever and said support, said spring causing said lever to rotate on said pin in order to press said roller on said rail,
- a projection carried by said guide rail, said projection having a substantially triangular profile with two slopes inclined in opposite directions,
- an end stop carried by said rail, said end stop cooperating with said second arm of said V-shaped lever,
- the distance between said triangular projection and said end stop being such that in the last portion of the opening stroke of the door one of the slopes of said projection causes said lever to rotate on said pin against the action of said spring and that in the open position of the door the free end of said second area of the lever abuts against said stop and the roller carried by the free end of said first arm abuts against the other slope of said triangular projection which is inclined towards said end stop.

4,500,122

FASTENER FOR SLIDING DOORS OR WINDOWS

Jack E. Douglas, Walsall, England, assignor to Arthur Shaw Manufacturing Limited, Rose Hill, England

Filed Jul. 7, 1983, Ser. No. 511,587
Claims priority, application United Kingdom, Jul. 24, 1982, 8221460
Int. Cl.³ E05C *1/16*
U.S. Cl. 292—161 **8 Claims**



1. A fastener for sliding doors, windows or the like comprising:
- a receivor assembly including two overlying rails, one of said rails being a retainer rail which is slidable relative to the other of said rails, said receivor assembly further including aligned openings in said overlying rails;
- a bolt assembly including a headed bolt and a spring means for spring loading said headed bolt towards said aligned openings in said receivor assembly; and
- a handle means operatively connected to said receivor assembly for sliding said retainer rail relative to said other rail to engage and hold the head of said bolt.

4,500,123

APPARATUS AND METHOD FOR LOCKING DOORS

Orville L. Harms, Boulder, Colo., assignor to Timpte Industries, Inc., Denver, Colo.

Filed Jul. 22, 1983, Ser. No. 516,473
Int. Cl.³ E05C *19/18*
U.S. Cl. 292—259 A **19 Claims**

1. Apparatus for securing a pair of doors in a closed position comprising:
- first and second doors mounted to fixed supports so that said first and second doors can be moved to an opened or closed position;
- first and second hollow elongated bodies respectively fixed to the outer surfaces of each of said first and second doors so that said first and second bodies are in alignment when said first and second doors are in the closed position;
- a third hollow elongated body open at each end secured to said first door adjacent to and in operative association with an end of said first body to effectively seal one end of said third body;
- a fourth hollow elongated body having a cross-sectional area less than the cross-sectional area of said first and second bodies and a length greater than the length of either of said first and second bodies;

portions of said fourth body being located within said first body, said second body and said third body; and



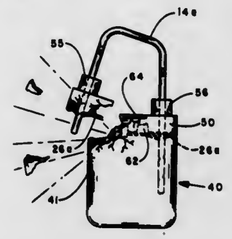
locking means associated with said fourth body and located within said third body and adjacent said effectively sealed one end.

4,500,124

SEAL OF THE PADLOCK TYPE

Allan W. Swift, Denville, N.J., assignor to E. J. Brooks Company, Newark, N.J.

Filed Jan. 13, 1983, Ser. No. 457,235
Int. Cl.³ B05D *33/34*
U.S. Cl. 292—318 **5 Claims**



1. A seal of the padlock type, comprising a seal body having a pair of spaced openings to receive the legs of a shackle, and an elongated metal fastener in the body having spaced apertures positioned in alignment with the body apertures to receive the shackle legs, and shackle engaging means disposed at the apertures, said fastener and the portion of the body above the fastener having a weakened portion disposed between the shackle apertures, whereby excessive tension applied to a shackle leg will cause fracture of the fastener and the body at the weakened portions.

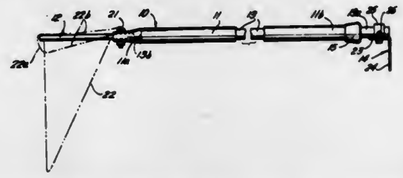
4,500,125

PET LITTER COLLECTING DEVICE

Edward A. Olson, 111 Maolis Ave., Bloomfield, N.J. 07003

Filed Mar. 12, 1984, Ser. No. 588,569
Int. Cl.³ A01K *29/00*
U.S. Cl. 294—1 BA **8 Claims**

1. A pet litter collecting device consisting essentially of a two part receptacle holder and scoop assemblage, said receptacle holder comprising an elongated tubular handle having at one end a fixedly mounted coplanar triangular frame with the remote side of the triangular frame being perpendicular to the axis of said tubular handle, said remote side of the triangular frame joining convergent sides in rounded corners, and said convergent sides terminating in essentially parallel coplanar extensions which are fixedly secured in a flatened end of said tubular handle, the dimensions of said triangular frame being such as to correspond with the perimeter of the open end of standard plastic sandwich bags whereby folding over the bag edge can securely envelope said frame, hook means on said handle at the juncture of said frame and handle for tensionally anchoring a bag edge in engagement with said frame, said hook means being part of the clamping means for fixedly securing said frame extensions to said handle, said scoop comprising an elongated hand grip portion telescopically and detachably fitting within said tubular handle and having at one end thereof



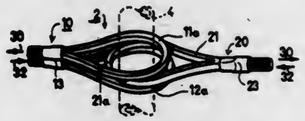
a detachable scoop head, said scoop head supporting an operative element disposed perpendicularly to the hand grip member at one side of the axis thereof, the width of said operative portion being somewhat greater than its height and less than the size of the opening provided by the remote edge of said triangular frame, whereby the operative element of said scoop head, after use, can be received by the bag as the tubular handle and hand grip member are arranged in juxtaposition for carrying purposes.

4,500,126

OBJECT-GRIPPING DEVICE AND INDUSTRIAL ROBOT INCLUDING SAME

Yosef Tur-Kaspa, and Ehud Lenz, both of Haifa, Israel, assignors to Technion Research & Development Foundation Ltd., Haifa, Israel

Filed Mar. 23, 1983, Ser. No. 477,867
Int. Cl.³ B66C *1/10*
U.S. Cl. 294—86 R **14 Claims**



1. An object-gripping device particularly useful for gripping thin-wall tubes, comprising:
- a first gripping member formed at one end with two spaced loops adapted to partially enclose one side of the object;
- a second gripping member formed at one end with a third loop interposed between the two loops of the first gripping member and adapted to partially enclose the opposite side of the object; and
- actuator means engaging the opposite ends of the two gripping members and adapted to move them away from each other to cause their loops to grip the object, or towards each other to cause their loops to release the object.

4,500,127

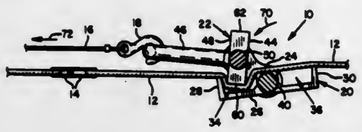
BELT CLAMP FOR CONVEYOR BELTS

Donald H. Van Derlin, P.O. Box 261, North Bend, Oreg. 97459

Filed Sep. 16, 1982, Ser. No. 419,085
Int. Cl.³ B25B *5/04*; B66F *19/00*
U.S. Cl. 294—104 **10 Claims**

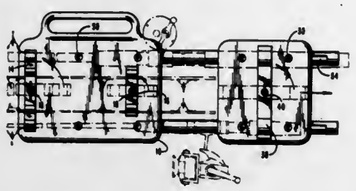
1. A belt clamp for a conveyor belt, comprising:
- a channel member having a base wall and a pair of parallel sidewalls defining a channel, the length of the channel member being sufficient to span the width of the belt;

a bar member sized to span the conveyor belt and to fit into said channel together with a thickness of the belt;
connecting means pivotally interconnecting the bar member and the channel member on opposite sides of the belt so that the bar member can rotate about a pair of spaced-apart pivot axes parallel to the sidewalls into said channel,



together with said belt thickness, to engage the belt against the channel member; and
attachment means connected to the bar member for attaching the clamp to a belt-pulling means for pulling the belt lengthwise in a direction to tension the belt;
the attachment means including means for rotating the bar member to the channel as the belt is pulled lengthwise.

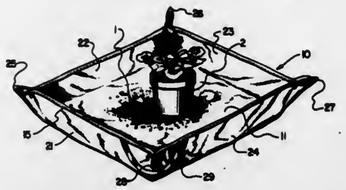
4,500,128
DEVICE FOR CARRYING FISHING RODS
John McClure, 2145 Brescia, Claremont, Calif. 91711
Filed May 24, 1983, Ser. No. 497,685
Int. Cl.³ B65D *71/00*
U.S. Cl. 294—146 **7 Claims**



1. A device for carrying fishing rods comprising:
(a) a first panel-like member having two opposite generally planar sides and a handle along one edge thereof, clamp means adjustably affixed to said first panel-like member, said clamp means having an inner surface disposed to engage said rods, said clamp means being adjustable such that movement of said clamp means toward said first panel-like member forces said rods against the surface of said first panel-like member;
(b) a second panel-like member having clamp means adjustably affixed thereto, said clamp means having an inner surface disposed to engage said rods, said clamp means being adjustable such that movement of said clamp means toward said second panel-like member forces said rods against the surface of said second panel-like member; and
(c) connecting means affixed to said panel-like members for maintaining said first and second panel-like members in a generally co-planar relationship, said connecting means being elongated members affixed to said first and second panel-like members, said second panel-like member being adjustable along the length of said connecting members.

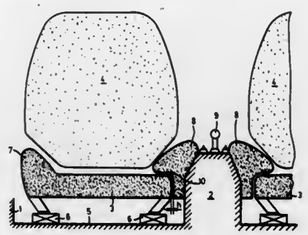
4,500,129
PROTECTIVE PAD
Terrence P. Hahn, 32032 Via Slona, San Juan Capistrano, Calif. 92693
Filed Mar. 9, 1983, Ser. No. 473,797
Int. Cl.³ A47G *7/02*
U.S. Cl. 294—172 **6 Claims**

1. A pad comprising a sheet of flexible material having a top and bottom face, a plurality of fastening means spaced around the edge of the flexible material on the top face, adjacent fastening means being attached to each other for folding the edge of the flexible material upward to form a lip around the top face of the pad, the flexible material lying flat when the



fastening means are released from each other, and handle means having at least two opposed handles near the edge of the pad for holding the pad and positioned to fold the edges of the pad toward each other when the pad is lifted by the handles.

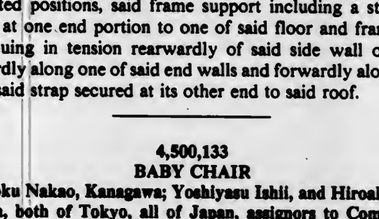
4,500,130
VEHICLE SEAT
Michel Harmand, Meudon-La-Foret, France, assignor to Automobiles Citroen, Neuilly and Automobiles Peugeot, Paris, both of, France
Filed Jan. 4, 1983, Ser. No. 455,566
Claims priority, application France, Jan. 11, 1982, 82 00548
Int. Cl.³ B60N *1/02*
U.S. Cl. 296—65 R **9 Claims**



1. In a seat for a vehicle comprising a central console, of which the horizontal seat element comprises lateral pads rising above a horizontal portion of a horizontal seat element of the seat which is movable in translation along said central console, the improvement wherein,
an inner pad member forming one of said lateral pads is independent of the horizontal seat element of the seat and is fixed on an adjacent side wall of the console.

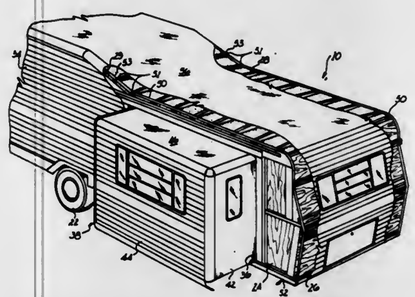
4,500,131
VISOR CONTROL
Dennis J. Fleming, Holland, Mich., assignor to Prince Corporation, Holland, Mich.
Filed Jun. 28, 1982, Ser. No. 392,534
Int. Cl.³ B60J *3/02*; F16C *11/04*
U.S. Cl. 296—97 K **12 Claims**

10. A visor control including a spring clamp for mounting to a visor and for receiving a visor pivot rod for providing a visor holding force, said control comprising:
an elongated U-shaped clamp formed by a base and first and second integral resilient legs extending from opposite edges of said base and spaced a distance from one another to apply a compressive force to a visor pivot rod positioned therebetween, said clamp including spaced recesses cooperating with alternately staggered lobes and flats on a



pivot rod to urge and releasably hold the visor in a raised stored position.

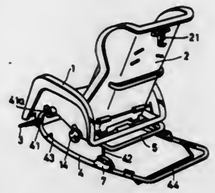
4,500,132
TRAVEL TRAILER FRAME SUPPORT
Clarence T. Yoder, 11642 County Road 36, Goshen, Ind. 46526
Filed Sep. 26, 1983, Ser. No. 535,946
Int. Cl.³ B62D *39/00*
U.S. Cl. 296—171 **4 Claims**



1. In combination, a mobile structure and a frame support for said mobile structure, said mobile structure including a longitudinal frame, an axle attached in said frame and carrying wheels, a floor secured to said frame, side walls and end walls extending upwardly from said floor, one of said side walls having an opening formed therein rearwardly of said axle, a roof overlying said end walls and side walls, a slideout room fitting in said side wall opening, and being shiftable between extended and retracted positions, said frame support including a strap secured at one end portion to one of said floor and frame and continuing in tension rearwardly of said side wall opening upwardly along one of said end walls and forwardly along said roof, said strap secured at its other end to said roof.

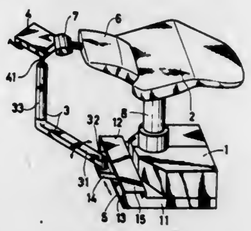
4,500,133
BABY CHAIR
Shinroku Nakao, Kanagawa; Yoshiyasu Ishii, and Hiroaki Matsuda, both of Tokyo, all of Japan, assignors to Combi Co., Ltd., Tokyo, Japan
Filed Sep. 2, 1982, Ser. No. 414,091
Int. Cl.³ B60R *21/10*
U.S. Cl. 297—131 **13 Claims**

1. A baby chair comprising: a chair body including a seat portion and a back rest portion; main support leg means for supporting said chair body, said main support leg means including an integrally formed U-shaped main support leg member pivotally coupled directly to said seat portion of said chair body; means for supporting said main support member in a lateral position at which said main support leg member is located substantially below an underside surface of said seat portion; and means for holding said support member in a rising



position at which said main support leg member is located substantially behind said back rest portion.

4,500,134
DENTAL TREATMENT CHAIR ASSEMBLY
Kazuyoshi Kaneko, Tokyo, and Jun Tamura, Kyoto, both of Japan, assignors to Kabushiki Kaisha Morita Seisakusho, Kyoto, Japan
Filed Aug. 3, 1982, Ser. No. 404,693
Claims priority, application Japan, Aug. 14, 1981, 56-121235[U]
Int. Cl.³ A47B *83/02*
U.S. Cl. 297—170 **6 Claims**

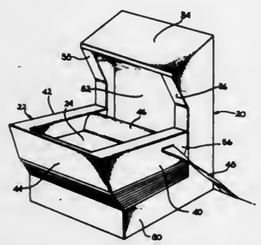


1. A dental treatment chair assembly including a dental treatment chair (2) elevatably mounted on a base (1) and a unit table (4) elevatably and rotatably supported by an arm mechanism (3), said assembly being characterized in that said arm mechanism (3) is attached to said base (1) so as to permit the sliding of the arm mechanism (3) within a slot (5) in said base (1), said slot (5) maintaining a cross relation with the longitudinal body axis l of said dental chair and opening in the direction of the head portion of the dental chair.

4,500,135
BABY CAR SEAT
Dan Kincheloe, San Clemente, Calif., assignor to Kim-Kee Enterprises, San Clemente, Calif.
Filed Apr. 20, 1983, Ser. No. 486,704
Int. Cl.³ A47C *1/08*
U.S. Cl. 297—250 **11 Claims**

1. A baby car seat, comprising:
seat-like means for resting on a seat, said seat-like means being a means for maintaining a baby in a sitting position and for supporting the baby's back,
enclosure means attached to said seat-like means and rotatable with respect thereto between first and second positions, said enclosure means in said first position extending over and forward of the baby's abdomen so as to not substantially obstruct the baby's play and vision, said enclosure means in said second position extending upward in front of the baby's chest and head and together with said seat-like means, substantially enclosing the baby's body and head in a protective enclosure,
means for coupling said baby car seat to a car seat belt, and

means for rotating said enclosure means from said first position toward said second position in response to an inertial force,



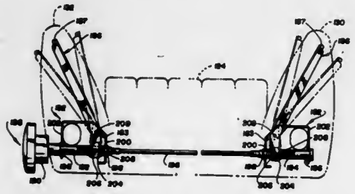
whereby, in response to the force created by a collision, said rotating means will rotate said enclosure means toward said seat-like means to provide a protective enclosure for the baby in case of an accident.

4,500,136

VEHICLE SEAT INCLUDING IMPROVED ADJUSTABLE SIDE BOLSTERS

Randall T. Murphy, Farmington Hills, and Dennis Heling, Canton, both of Mich., assignors to Lear Siegler, Inc., Santa Monica, Calif.

Division of Ser. No. 173,536, Jul. 30, 1980,. This application May 20, 1983, Ser. No. 496,617
Int. Cl.[3] A47C *3/00, 7/14*
U.S. Cl. 297—284 1 Claim



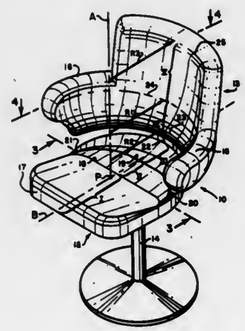
1. In combination with a vehicle seat having a backrest portion and a seating portion, a pair of movable lateral bolster sections mounted on opposite sides of at least one of said portions and projecting therefrom, and adjustment means including a pair of drive members comprising pins for selectively and simultaneously moving the bolster sections in a controlled fashion between a first lateral support position and a second lateral support position, said adjustment means being adapted to maintain the bolster sections in the first and second lateral positions wherein each of said bolster sections has inner and outer parts, said sections being connected at opposite sides of said one of said portions at their inner parts and wherein said one of said portions includes a frame assembly having a pair of mounting flanges and wherein each of said bolster sections includes a rigid support paddle, having an outer free end portion, an inner, supported end portion and upper and lower spaced frame members having elongated slots formed therethrough and adjacent the supported end portion, the inner end portion of said support paddle being hingedly connected to said mounting flanges to permit the support paddle to rotate about a first longitudinal axis and wherein each support paddle is hingedly connected to its respective drive member to permit the support paddle to rotate with respect to the drive member about a second longitudinal axis spaced away from the first longitudinal axis towards said frame end portion to move the free end portion of the support paddle about the first longitudinal axis, coupling means comprising a flexible drive cable pivoted to said frame assembly to rotate thereon about a pivot point, operating means including first and second rotary drive shafts rotatably supported by said frame assembly with handle means for manually rotating one of said drive shafts, a pair of coupling members threaded on their respective drive shafts to be movable along said shafts, said coupling members coupled to said drive cable whereby movement of said coupling members along said shafts as a result of the manual rotation of said shaft causes said drive cable to rotate about said pivot point on said frame assembly to cause said pins to simultaneously move said support paddles, said pins extending through the slots and engaging the upper and lower frame members to thereby cause the paddles to rotate about their respective pins upon movement from one lateral support position to another lateral support position, said first and second drive shafts comprising threaded screws, the threads of one of said drive shafts having a right-handed configuration and the threads of the other of said drive shafts having a left-handed configuration.

4,500,137

PHYSIOLOGICAL CHAIR

Laurence E. Morehouse, 209 16th St., Manhattan Beach, Calif. 90266

Filed Jan. 21, 1982, Ser. No. 341,542
Int. Cl.[3] A47C *7/02, 7/46*
U.S. Cl. 297—458 9 Claims



1. A physiological chair including a seat having forward, central and rear sections,

(a) said forward section sloping downwardly at a first acute angle adjacent to its front edge to its interception with said central section to provide thigh support for an occupant;

(b) said central section sloping upwardly at an angle less than said acute angle from its interception with said forward section to its interception with said rear section to provide a tuber support for said occupant;

(c) said rear section having a generally crescent shape when viewed in plan so that it wraps partially around the sides of said central section, said rear section initially sloping upwardly at an acute angle corresponding to said first acute angle, thence gradually sloping upwardly more steeply to terminate in an arcuate edge of the seat extending over at least 150° and being in the shape of a cup rim to provide sacral support for an occupant, even should said occupant sit obliquely on said seat; and

(d) back and arm rests, said back rest including a lower section concavely contoured when viewed in plan and including a convexly curved portion when viewed in side cross section providing a bulge functioning as a hip rest, each of said arm rests constituting integral continuations of said concavely contoured back portion over arcuate extents so that the tops of the arm rests and concavely contoured back at the same horizontal level define a continuous arc when viewed in plan, said arm rests having downwardly sloping inner surfaces including convex curved portions providing bulges at the same level as and integrally connecting with the bulge on said lower back portion so that the hip rest is extended over a continuous arc and hip and back support is provided by the arm rests when said occupant sits obliquely in said seat.

4,500,138

BRAKE OIL PRESSURE CONTROLLING VALVE DEVICE FOR VEHICLES

Mitutoyo Mizusawa, and Masao Fujisawa, both of Ueda, Japan, assignors to Nissin Kogyo Kabushiki Kaisha, Nagano, Japan

Filed May 6, 1983, Ser. No. 492,423
Claims priority, application Japan, May 7, 1982, 57-76209; May 26, 1982, 57-89392
Int. Cl.[3] B60T *8/02, 8/26*
U.S. Cl. 303—6 C 6 Claims

1. In an improved brake oil pressure controlling valve device for vehicles of the type wherein a valve housing is interposed in an oil path connecting an output port of a master cylinder and a rear wheel brake, said valve housing being provided therein with a reducing valve adapted to proportionally reduce output oil pressure from said output port to transmit the thus reduced oil pressure to said rear wheel brake, and with a pressure adjusting spring for urging said reducing valve in the valve opening direction and determining a reduction starting pressure thereof, the improvement wherein said valve housing is further provided therein with:

a pressure reducing piston which is normally held by virtue of resilient force of a set spring at its advanced limit position where said reducing valve is made open and which is retreated, when the resilient force of said set spring is released, to close said reducing valve and reduce pressure on the output side of said reducing valve;

a controlling oil pressure chamber supplied with oil pressure from on oil pressure source when a rear wheel is about to come into a locked state;

a controlling piston operable with oil pressure within said controlling oil pressure chamber to allow said reducing valve to be released from the resilient force of said set spring; and

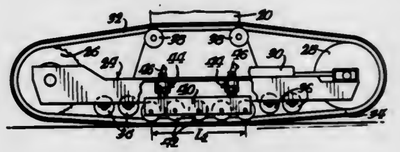
wherein said output port of the master cylinder is composed of a first output port and a second output port, said rear wheel brake is composed of a right rear wheel brake and a left rear wheel brake, said oil path is composed of a first oil path connecting said first output port with said right rear wheel brake and a second oil path connecting said second output port with said left rear wheel brake, said reducing valve is composed of a pair of first and second reducing valves which are provided on the right and left side portions of said valve housing, respectively, said first reducing valve is interposed in said first oil path, said second reducing valve is interposed in said second oil path, a left front wheel brake is connected to said first oil path on the upstream side of said first reducing valve, and a right front wheel brake is connected to said second oil path on the upstream side of said second reducing valve.

4,500,139

CRAWLER TRACK SUPPORT SYSTEM WITH VERTICALLY EXTENSIBLE CENTRA ROLLERS

Frank J. Tucek, Wausau, Wis., assignor to J. I. Case Company, Racine, Wis.

Filed Jan. 28, 1983, Ser. No. 461,862
Int. Cl.[3] B62D *55/14*
U.S. Cl. 305—10 6 Claims



1. A support system for an endless crawler track for selectively altering the length of the ground-engaging portion of the track, comprising:

an undercarriage including a longitudinally extending frame member, and a track drive sprocket roller and a track idler roller rotatably mounted at respective opposite ends of said frame member, said crawler track being mounted on and extending about said drive sprocket and said idler roller to define upper and lower runs of said track;

a plurality of track-engaging rollers mounted in longitudinally spaced relation on said longitudinally extending frame member, said track-engaging rollers being adapted to engage the upwardly-facing surface of the lower run of said crawler track;

relatively vertically positionable roller support means mounted on and positioned generally beneath said longitudinally extending frame members, at least one-half of said plurality of track-engaging rollers being mounted on said frame member by common mounting on said roller support means for relative vertical movement therewith;

fluid actuated motor means operatively disposed between said longitudinally extending frame member and said roller support means for providing relative vertical movement of said roller support means and said ones of said track-engaging rollers mounted thereon with respect to said frame member between a first, retracted position and a second extended position, wherein in said retracted position the length of the ground-engaging portion of the lower run of said crawler track generally corresponds to the distance between the respective rotational axes of said drive sprocket and said idler roller, and wherein in said extended position the length of the ground-engaging portion of the lower run of said track generally corresponds to the distance between the respective rotational axes of the two longitudinally endmost ones of the ones of said track-engaging rollers mounted on said roller support means; and

means on said longitudinally extending frame member for positively engaging said roller support means when said roller support means are in said retracted position to substantially eliminate the vertical load carried by said motor means.

4,500,140

SLIDE FOR DRAWERS AND THE LIKE

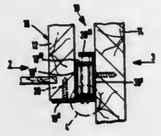
Karl Lautenschläger, Jr., and Horst Lautenschläger, both of Reinheim, Fed. Rep. of Germany, assignors to Karl Lautenschläger KG, Möbelbeschlagfabrik, Reinheim, Fed. Rep. of Germany

Filed Oct. 26, 1983, Ser. No. 545,682

Claims priority, application Fed. Rep. of Germany, Oct. 28, 1982, 3239956

Int. Cl.³ F16C *29/04*

U.S. Cl. 308—3.8 **13 Claims**





1. A guide for a drawable cabinet part, comprising: an elongated profiled guiding rail having a front and rear end and to be fastened to a cabinet carcass, an elongated profiled running rail having a front and a rear end and to be fastened to the drawable cabinet parts, at least one wheel journalled on said guiding rail at said front end thereof, and at least one wheel journalled on said running rail at said rear end thereof, each wheel running on a profile limb of the other rail, said rails being displaceable relative to one another by means of said wheels, and adjusting means disposed on said guiding rail and resting on said running rail for adjusting lateral play of said drawable cabinet part with respect to said carcass, said adjusting means being an elongated guiding strip held on the guiding rail and longitudinally displaceable in the drawing direction of the drawable part, said adjusting means having a surface facing away from said carcass and lying against said running rail, said guiding rail having at least one adjusting surface or edge for supporting said guiding strip and which runs at an angle to the drawing direction, such that a component of displacement transverse to the drawing direction is superimposed on said guiding strip upon displacement in said drawing direction.

4,500,141

DRILL STEEL IDLER GUIDE

Estes M. Daugherty, 2804 Mimosa Dr., Sherman, Grayson County, Tex. 75090

Filed Sep. 13, 1982, Ser. No. 417,603

Int. Cl.³ F16C *31/04*

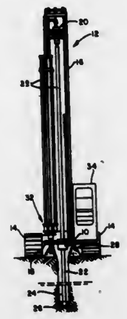
U.S. Cl. 308—4 R **2 Claims**

1. An idler guide for supporting drill pipe in a rotary drilling rig, comprising:

an elongated cylindrical member having a central cylindrical opening formed therethrough for receiving the drill pipe, said cylindrical opening having an inside diameter greater than the outside diameter of the drill pipe;

means for affixing said cylindrical member to the rotary drilling rig;

a plurality of rotatable bearing surfaces aligned along the inside wall of said cylindrical member, said bearing members projecting inwardly beyond the interior wall of said cylindrical member, said bearing members projecting inwardly beyond the interior wall of said cylindrical member for engaging the drill pipe for reducing the frictional forces on the drill pipe moving in said cylindrical member, said bearing surfaces being adapted to rotate freely with



any combination of axial or rotational movement of drill steel in the idler guide; and

said bearing surfaces being cylindrical rollers mounted in rotatable housings along the interior wall of said cylindrical member.

4,500,142

MAGNETIC SUSPENSION DEVICE OF A ROTOR PLACED IN A SEALED ENCLOSURE

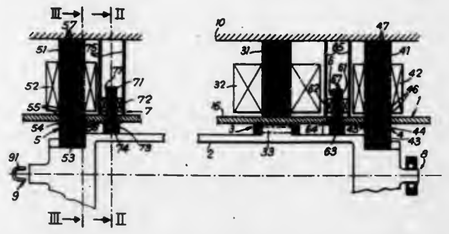
Maurice Brunet, St. Marcel, France, assignor to Societe Europeenne de Propulsion, Puteaux, France

Filed Jun. 13, 1983, Ser. No. 503,626

Claims priority, application France, Jun. 17, 1982, 82 10600

Int. Cl.³ F16C *39/06*

U.S. Cl. 308—10 **9 Claims**



1. Magnetic suspension device for a rotor placed in a sealed enclosure, comprising at least two active radial electromagnetic bearings servocoupled by means of position detectors to support the rotor without contact, each bearing comprising an annular armature of laminated magnetic material mounted on the rotor and a stator composed of electromagnetic windings associated with a yoke of laminated magnetic material which has end pole pieces positioned at a short distance from the annular armature, but without contact with the latter, and the electromagnetic windings being all positioned outside the sealed enclosure, wherein the sealed enclosure includes fluid-tight walls at least some portion of which is formed of glass, each stator yoke of laminated material being extended to the level of the end pole pieces by a terminal portion of non-laminated magnetic material, of little thickness, constituted by a set of small solid pieces formed of a magnetic material of high resistivity and relative permeability greater than about 200, arranged parallel to the magnetic lines of force, and molded in glass so as to be attached in sealed manner to the glass portions of the wall of the sealed enclosure.

4,500,143

MEANS FOR CONTROLLING CLEARANCE IN AN INTERSHAFT BEARING JOURNAL OF A MULTI-SPOOL GAS TURBINE

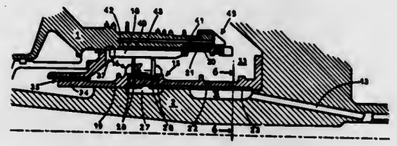
Robert Kervistin, Le Mee Sur Seine; Alain M. J. Lardellier, Melun; Georges Mazeaud, and Francois E. G. Crozet, both of Yerres, all of France, assignors to S.N.E.C.M.A., Paris, France

Filed Dec. 22, 1982, Ser. No. 452,131

Claims priority, application France, Dec. 22, 1981, 81 23900

Int. Cl.³ F16C *37/00*; F01D *25/12*; F02C *7/06*

U.S. Cl. 384—467 **9 Claims**



1. A clearance control device in an inter-shaft bearing journal of a multi-spool turbojet engine, comprising:

means for feeding cold oil;

a first outer shaft which further comprises a high pressure trunnion of a shaft line of a high pressure spool, and including a bore and a first series of longitudinal holes and a second series of radial holes formed therein;

a second, inner shaft which further comprises a low pressure trunnion of a shaft line of a lower pressure stage wherein said high pressure trunnion revolves in relation to said low pressure trunnion;

an outer ring mounted directly on the first shaft;

an inner ring mounted upon the second shaft; and

a roller bearing mounted so as to be disposed between said first and second shaft and wherein said longitudinal holes of said high pressure trunnion have a length at least equal to the width of said outer ring and wherein said bore of said high pressure trunnion includes a series of grooves formed therein which communicate with said cold oil feeding means and via said radial holes with said series of longitudinal holes and within which the cooling oil circulates.

4,500,144

BEARING MEMBER

Hugo N. de Campos, South Bend, Ind., assignor to The Bendix Corporation, Southfield, Mich.

Filed Apr. 2, 1984, Ser. No. 596,221

Int. Cl.³ F16C *33/38, 33/66*

U.S. Cl. 384—463 **10 Claims**





5. A bearing member comprising:

an outer race member having a cylindrical member with a bore therethrough, said cylindrical member having a concentric groove connected to said bore;

a series of arcuate sections having a semi-spherical peripheral surface and a semi-spherical inner surface, said peripheral surface located in said concentric groove, each of said sections having semi-spherical pockets located on the end thereof and arcuate wing sections axially extending from said semi-spherical surface;

a series of balls located in said concentric groove and between said semi-spherical pockets; and

an inner race member having a cylindrical member with a peripheral groove thereon, said inner semi-spherical surface of said arcuate segments and balls being located in said peripheral groove, said peripheral groove retaining said balls in radial alignment with said concentric groove, said semi-spherical peripheral surfaces of the arcuate sections engaging said outer race prior to said spherical pockets engaging said balls to prevent the development of a radial force that could adversely effect the arcuate sections.

4,500,145

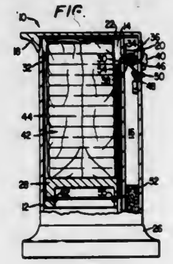
APPARATUS FOR STORING AND SERVING PERISHABLE FOOD PRODUCTS

Arthur L. Fassauer, 420 Forest La., Canyon, Tex. 79015

Filed Jan. 21, 1983, Ser. No. 459,768

Int. Cl.³ A47F *1/06*

U.S. Cl. 312—61 **11 Claims**



1. An apparatus for storing and dispensing perishable food products, comprising;

a semi-airtight container with a hollow interior having:

a lower cuboidal shaped housing with an opening on one end thereof,

a rectangular lid for disposal over said opening,

a gasket disposed on said lid between said lid and said housing, and

a breakover hinge attached to one edge of said lid and one edge of the opening on said lower housing for rotation of said lid thereon, said breakover hinge providing a closing force when said lid is mated to said opening on said lower housing;

platform means slideably disposed with said airtight container for defining a variable volume therein for receiving and containing the food products, said platform means having a planar side disposed parallel to the opening in said container; and

motive force means for applying a distributed force to the side of said platform means opposite the opening on said container to selectively urge said platform means toward said opening to dispense the food products contained in said variable volume and away from said opening for storing said food products, the platform being maintained at a position during storage and when the lid is closed so that said variable volume is maintained essentially equal to the volume of the remaining food products:

said motive force comprising:

an auxiliary chamber adjacent the hollow interior of said container;

a shaft disposed in said chamber and rotatably mounted on the exterior walls of said container;

a cord having one end thereof connected to one edge of the opening in said container and extending down the vertical side of the interior of said container diametrically opposite said auxiliary chamber, around the end of said platform means opposite said opening and extending up the vertical side of said container adjacent said auxiliary chamber to attach to said shaft for winding thereabout such that rotation of said shaft winds said cord about said shaft to thereby urge said platform means toward said opening; and

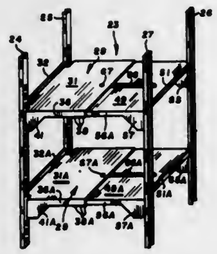
means for rotating said shaft.

4,500,146

LOCKER SHELF ASSEMBLY

Richard R. Peterson, Minnetonka, Minn., assignor to Sioux Technology, Inc., Minnetonka, Minn.

Filed Aug. 1, 1983, Ser. No. 519,038
Int. Cl.³ A47F *5/00*
U.S. Cl. 312—257 SM **16 Claims**



7. A portable and removable shelf assembly for a locker having opposite first and second side walls, a back wall joined to the side walls, a bottom wall, and a front door frame having a doorway, said door frame being joined to the side walls providing access to the interior of the chamber of the locker defined by said walls, said chamber having corners comprising: a plurality of upright first rails located adjacent the first side wall, a plurality of upright second rails adapted to be located adjacent the second side wall, said first and second rails being unattached to said side walls to allow removal of the rails from the locker chamber, shelf means for supporting articles, said rails and shelf means having cooperating means for releasably mounting the shelf means on the rails in a selected position, said shelf means having a first shelf member and a second shelf member, means on said first and second shelf members for guiding the shelf members for lateral movement relative to each other, said shelf members being laterally movable relative to each other to expand the shelf means and locate the first rails adjacent said first side wall and locate the second rails adjacent said second side wall, and means for holding the shelf members in an expanded position to thereby locate the shelf assembly in the locker chamber with the first and second rails positioned adjacent the first and second side walls of the locker.

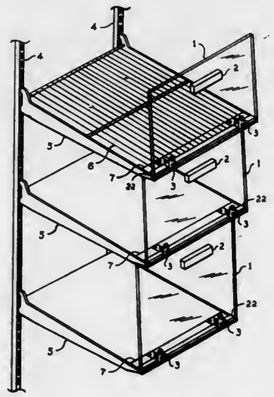
4,500,147

REFRIGERATOR SHELF DOORS

Richard A. Reister, Rte. 1, Box 124H, Tryon, Okla. 74875

Filed Mar. 17, 1983, Ser. No. 476,139
Int. Cl.³ A47B *77/04*
U.S. Cl. 312—291 **16 Claims**

1. In a refrigerator, freezer, or side by side refrigerator-freezer, individual shelf means within said refrigeration units, normal outside door means for said refrigeration units; individual door means for said individual shelf means, said individual shelf door means being in addition to said normal outside door means, hinge means for said individual shelf door means, means to attach said hinge means near the bottom of said individual shelf door means, means to affix the axis of said hinge means for said individual shelf door means near the front edge of said individual shelf means, doorstop means for said individual shelf door means, said doorstop means permitting the top of each individual shelf door means to be recessed inwardly behind the front edge of the individual shelf means immediately above, handle means for said individual shelf door means, means to affix said handle means near the top of said individual shelf door means, said recessment of the top of said individual shelf door means inwardly behind the front edge of the individual shelf means immediately above providing an enhancement in the appearance of said individual shelf door means and said refrigeration units, said recessment of the top of said individual shelf door means further providing gravity action to keep the



individual shelf door means in a closed position, said recessment of the top of said individual shelf door means further providing convenient space for said handle means for said individual shelf door means within said refrigeration units when said normal outside doors of said refrigeration units are in a closed position, said individual shelf door means being transparent, opening of said individual shelf door means for removal of food providing a minimal loss of cold air from said refrigeration units, said transparent individual shelf door means permitting convenient selection of foods to be removed without hurriedly closing said normal outside door means of said refrigeration units.

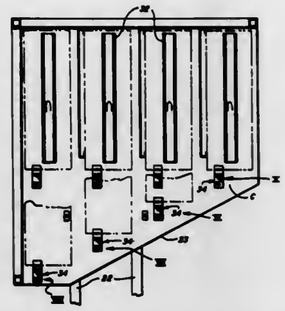
4,500,148

DISPLAY AND STORAGE UNIT

Homer F. King, Elmhurst, Ill., assignor to H. King & Associates, Ltd., Elmhurst, Ill.

Filed Jan. 31, 1983, Ser. No. 462,580
Int. Cl.³ A47B *51/00*
U.S. Cl. 312—312 **8 Claims**

1. A display and storage unit for articles arranged in a plurality of segregated groups, said unit comprising a housing having an interior chamber with an open bottom, said open bottom being exposed and positioned a substantial distance above a supporting surface; a plurality of carriers each accommodating a predetermined number of segregated article groups, said carriers being disposed in substantially face-to-face relation within said chamber, each carrier being mounted for independent movement between predetermined modes, when in a first mode, each carrier being substantially concealed within said chamber, when in a second mode, a substantial portion of the carrier projects downwardly through the housing open bottom whereby depleted groups of accommodated articles can be manually replenished, and when a predetermined number of said carriers are simultaneously in a third mode intermediate said first and second modes, the corresponding lower portions of said predetermined number of carriers are exposed and extend downwardly through said housing open bottom a predetermined amount so that said exposed lower portions are arranged in a downwardly stepped relation when viewed from



the front side of the unit; and independently adjustable means co-acting with the housing and each carrier for retaining each of said carriers in a selected mode.

4,500,149

SOLDER-BEARING LEAD

Robert D. Mackay, North Andover, Mass., assignor to AT&T Technologies, Inc., New York, N.Y.

Filed Jul. 28, 1982, Ser. No. 402,631
Int. Cl.³ H05K *1/00*; H01R *11/22, 4/02*
U.S. Cl. 339—17 C **10 Claims**

1. A solder-bearing lead, which comprises:

an elongated stem;

first and second resilient clamping fingers having respective opposed clamping portions extending in opposed spaced relationship from the elongated stem, the clamping portion of the first resilient clamping finger having an inner surface in opposed spaced relationship to an inner surface of the clamping portion of the second resilient clamping finger; and

a solder preform attached to the inner surface of the clamping portion of the first resilient clamping finger and having a surface portion disposed in opposed relationship to the inner surface of the clamping portion of the second resilient clamping finger such that the surface portion of the solder preform and the inner surface of the clamping portion of the second resilient clamping finger define respective opposite sides of a gap for receiving a substrate therebetween, and such that the surface portion of the solder preform directly enngages a contact pad on the substrate when the substrate is received between the surface portion of the solder preform and the second clamping portion;

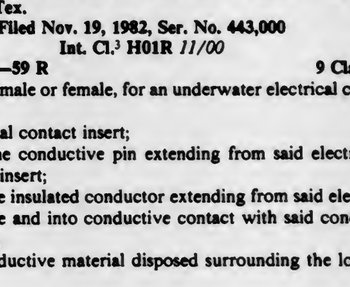
the clamping portion of the first resilient clamping finger being partially wrapped about the solder preform to attach the solder preform to the inner surface of the clamping portion, and the clamping portion including an inner wrapped section which merges into an outer wrapped section having an outer end portion which terminates adjacent the contact pad-engageable surface portion of the solder preform in spaced relationship to the inner wrapped section of the clamping portion to define an opening through which the surface portion of the solder preform extends to define the respective side of the substrate-receiving gap.

4,500,150

DEVICE FOR ELECTRIFYING DINING TABLE

Robert L. Leibensperger, and Donna C. Leibensperger, both of 4731 Woodside Ave. NW., Canton, Ohio 44709

Filed Jun. 23, 1982, Ser. No. 391,114
Int. Cl.³ H01R *25/06*
U.S. Cl. 339—28 **15 Claims**



1. A device for electrifying a dining or food serving table including:

(a) a mounting plate;

(b) means for attaching the mounting plate to the table, which means is completely concealed beneath the table on the underside surface of the table to be electrified;

(c) first receptacle means mounted on the plate for receiving a plug of a cord of an electric appliance placed on the upper surface of the table with said cord extending over the table edge;

(d) an electric supplying cord connected with the first receptacle means having a plug end;

(e) holding means provided on the plate for holding substantially the entire supply cord wound in a stored position;

(f) clip means formed on the mounting plate adjacent the first receptacle means for releasably gripping a cord of said electric appliance and for maintaining a subsantial portion of the cord adjacent the underside surface of the table, which cord is connected with the first receptacle means to prevent the plug end of the cord from being pulled from the receptacle; and

(g) second receptacle means adapted to be mounted in a floor directly beneath the table and connected to a source of electric power for receiving the plug end of the electric supply cord to supply power to the first receptacle means.

4,500,151

MARINE ELECTRICAL PLUG

Ray R. Ayers, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Nov. 19, 1982, Ser. No. 443,000
Int. Cl.³ H01R *11/00*
U.S. Cl. 339—59 R **9 Claims**

1. A plug, male or female, for an underwater electrical cable comprising:

an electrical contact insert;

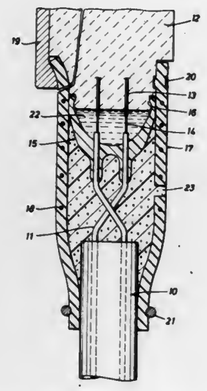
at least one conductive pin extending from said electrical contact insert;

at least one insulated conductor extending from said electrical cable and into conductive contact with said conductive pin;

a non-conductive material disposed surrounding the locale

of said conductive contact of said conductive pin and said insulated conductor;

a seal boot forming a cup partially surrounding the non-conductive material, with the electrical contact insert being on the opposite side of the non-conductive material from the seal boot;



a polymeric foam at least partially surrounding said seal boot; and

an outer boot at least partially surrounding said polymeric foam, a rim of the seal boot being secured between a recess in the electrical contact insert and the outer boot.

4,500,152

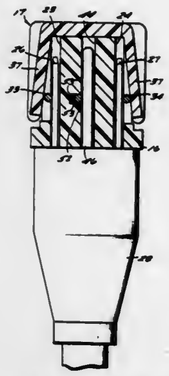
UNIVERSAL OUTLET

S. Scott Hammill, Mount Laurel, N.J., assignor to SL Industries, Inc., Mariton, N.J.

Continuation-in-part of Ser. No. 190,050, Sep. 23, 1980, Pat. No. 4,364,623. This application Sep. 30, 1982, Ser. No. 430,608

Int. Cl.³ H01R *11/00*

U.S. Cl. 339—61 M **17 Claims**



5. An electrical receptacle comprising: a receptacle body of electrical insulating material; means defining first, second, and third spaced, parallel, elongated prong-receiving slots in said receptacle body; first, second, and third conductor wires, each having a bare, uninsulated portion thereof, and each being substantially longer than any dimensions of said body; means formed on said receptacle body for receiving said first, second, and third conductor wire bare portions and mounting said first conductor bare portion so that it extends substantially perpendicular to and intersects said first prong-receiving slot, mounting said second conductor wire bare portion so that it extends substantially perpendicular to and intersecs said second prong-receiving slot, and mounting said third conductor wire bare portion so that it extends substantially perpendicular to and intersects said third prong-receiving slot, and for mounting said conductor wires so that said first, second, and third conductor wire bare portions will be directly tangentially engaged by an electrical plug prong when a said prong is inserted into said respective first, second, or third prong-receiving slots; and said receptacle body including a plurality of elongated flexible cantilever portions each having a free end and fixed end, and each having a cam surface formed on the free end thereof and a locking surface extending generally perpendicular to the dimension of elongation of said cantilever portion, and immediately adjacent said cam surface.

4,500,153

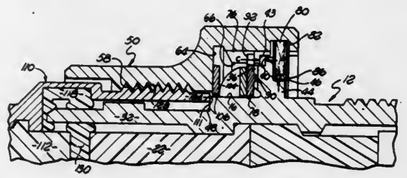
SELF-LOCKING ELECTRICAL CONNECTOR

William R. Mattingly, Jr., Santa Ana, Calif.; Lyle Johnson, Ft. Lauderdale, Fla., and Tommy B. Maher, La Verne, Calif., assignors to Matrix Science Corporation, Torrance, Calif.

Filed Nov. 9, 1981, Ser. No. 319,543

Int. Cl.³ H01R *13/62*

U.S. Cl. 339—89 M **11 Claims**



6. An electrical connector assembly for being interconnected to a first shell comprising:

a cylindrical second shell having a cylindrical outer surface and an annular nut retention flange extending outwardly therefrom, the nut retention flange having an annular first stop shoulder disposed about its periphery on one side for facing in a first axial direction and a flange retention shoulder positioned on another side, opposite the one side, for facing in a second axial direction opposite the first axial direction;

a coupling nut rotatably mounted to the second shell about its outer surface, the coupling nut having an interior surface with an annular groove therein defining an annular groove retention shoulder which faces in the first direction, the interior surface of the coupling nut further having an annular radially extending spring retention shoulder facing in the second axial direction, the annular groove being bounded on one of its sides by a radially extending annular second stop shoulder integral with the coupling nut and facing in the second axial direction;

a retention ring positioned for abutting against the groove retention shoulder on one of its sides and against the flange retention shoulder on the other of its sides; and

a wave spring positioned between the spring retention shoulder and the nut retention flange, the first and second stop shoulders aligned in axially facing relationship for abutting each other to prevent relative axial movement between the second shell and the coupling nut when the coupling nut is moved to decouple the first and second shells from each other for limiting the amount of compression of the wave spring during said decoupling.

4,500,154

ELECTRICAL CONNECTOR ASSEMBLY HAVING AN ANTI-DECOUPLING DEVICE

Gordon T. Collins, Franklin, Ind., assignor to Allied Corporation, Morristown, N.J.

Filed Mar. 30, 1983, Ser. No. 480,191

Int. Cl.³ H01R *13/623*

U.S. Cl. 339—89 M **9 Claims**



1. An electrical connector assembly having an anti-decoupling device, the assembly comprising: a pair of mateable connector shells adapted for mating along a primary axis and a coupling nut mounted for rotation on one of the shells for coupling the one shell to the other shell, said other shell including an annular shoulder the outer surface of which includes ratchet teeth spaced circumferentially therearound, and said anti-decoupling device comprising normally inoperative ratchet means engageable between said coupling nut and said other shell which become operative only when the connector shells approach their fully mated relation by rotation of the coupling nut in the mating direction, said ratchet means providing a lock against rotation of the coupling nut in the unmating direction and being manually releasable at any position where engaged without disturbing shell mating; and release means operative independently of said coupling nut rotation for releasing said ratchet means from engagement, said anti-decoupling device characterized by:

said release means comprising a latch member pivotally mounted to the coupling nut for flexure laterally of the axis and including at least one ratchet tooth for pivoting into and out of engagement with the ratchet teeth, and the outer circumference of said annular shoulder and the inner face of said latch member including said tooth define tapered and frusto-conical surfaces relative to the axis.

4,500,155

PLUG-IN ELECTRIC CONNECTOR FOR USE IN A LIQUID MEDIUM

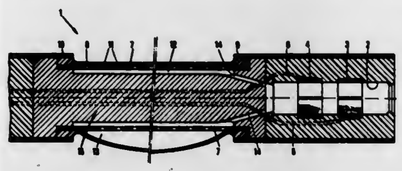
André Chevalier, Pantin, France, assignor to Institut Francais du Petrole, Ruell-Malmaison, France

Filed Mar. 17, 1982, Ser. No. 358,990

Claims priority, application France, Mar. 17, 1981, 81 05306

Int. Cl.³ H01R *13/523*

U.S. Cl. 339—94 M **15 Claims**



1. A plug-in connector for use underwater, comprising a socket provided with a bore adapted to receive a complementary plug, and a chamber containing an insulating product of substantial viscosity in communication with the bore of the socket for filling said bore with insulating product when said plug is withdrawn from the socket, said chamber comprising a rigid tube having a wall traversed by a plurality of channels and an elastic sleeve surrounding the tube and defining therewith said chamber of insulating product, the interior of said rigid tube being in permanent communication with said bore of said socket, and said sleeve constructed of sufficient elasticity for expelling insulating product from the chamber as a result of its elasticity for contacting substantially the entire surface of the outer wall of said rigid tube when said plug is withdrawn from said socket, and for causing said insulating product to fill said socket.

4,500,156

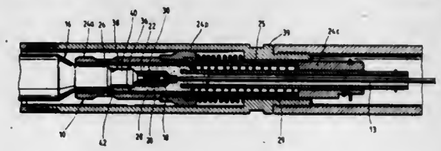
ELECTRICAL CONNECTOR

Khoi B. Nguyen, Sugar Land, Tex., assignor to Schlumberger Technology Corporation, Houston, Tex.

Filed Mar. 2, 1983, Ser. No. 471,416

Int. Cl.³ H01R *13/523*

U.S. Cl. 339—94 C **12 Claims**



1. An electrical connector suitable for use in an underwater environment comprising:

a first and second member each having one or more electrically conductive elements thereon which members are adapted to mate with each other and thereby establish electrical contact between said conductive elements, said second member including a receptacle for closely receiving at least part of the other member and said part of said other member being adapted for insertion within said receptacle,

a housing for supporting said second member,

means, within wall portions of said housing, defining a passageway in communication with said receptacle for affording egress to an environment exterior to said receptacle for any fluids within said receptacle which are displaced during the mating of said members, and

means for interrupting said means for affording egress after said members have been mated and for sealing said receptacle from the exterior environment comprising:

resilient means affixed between said housing and said second member supported by said housing, for closely receiving at least part of said other member, and for sealing the outer periphery of said members from the exterior environment when said members are mated,

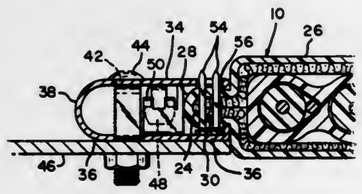
means for mounting said member being supported by said housing in said housing affording the movement of said member from a first position where said egress means provides communication with the exterior environment and said receptacle to a second position where said egress means is interrupted, and

biasing means axially aligned with said receptacle means and positioned between said housing and said member being supported by said housing, for biasing said supported member at said first position to afford an egress from said receptacle to the exterior environment through which, any fluids within said receptacle means can be displaced to the exterior environment, and whereby the continued application of a force on said members in the direction of mating in excess of the force being exerted by said biasing means affords the movement of said supported member to said second position thereby sealing said receptacle means from the exterior environment.

4,500,157
MOUNTING AND GROUNDING CLAMP FOR SHIELDED CABLE

Clifton W. Huffnagle, Camp Hill, and LeRoy J. Moraingstar, Middletown, both of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Sep. 21, 1982, Ser. No. 420,763
Int. Cl.³ H01R *4/24, 4/66*
U.S. Cl. 339—97 R 7 Claims

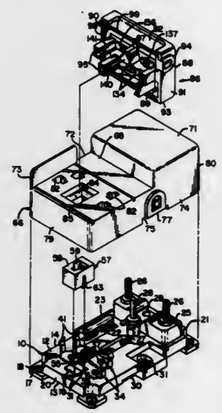


1. A mounting and grounding clamp adapted to be secured onto a dielectric jacket and form a ground connection with a conductive shield of a shielded cable, comprising:
- opposed leg members having inwardly-directed ends defining undulating surfaces, said undulating surfaces clampingly engaging a section of the dielectric jacket therebetween;
- contact means extending outwardly from one of said leg members toward the other of said leg members in alignment with openings in the other of said leg members, said contact means adapted to penetrate through the dielectric jacket into electrical engagement with the conductive shield and extend into said openings;
- latch means on said leg members for latching said leg members together with said undulating surfaces in clamping engagement with the section of the dielectric jacket and said contact means in ground connection with the conductive shield and within said openings; and
- means provided by said leg members for mounting said clamp onto an electrical grounding member.

4,500,158
NETWORK INTERFACE DEVICE

Frank P. Dola, Port Richey, Fla., assignor to AMP Incorporated, Harrisburg, Pa.

Filed May 31, 1983, Ser. No. 499,659
Int. Cl.³ H01R *13/514*
U.S. Cl. 339—122 R 6 Claims

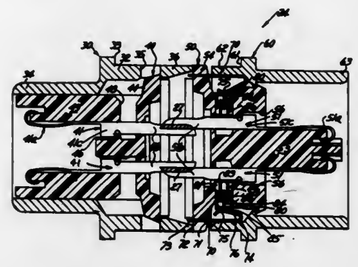


1. A network interface device for terminating network telephone wiring at a subscriber's premises and for connecting the subscriber's wiring to the network which comprises:
- a base having a first surface, an opposed second surface, and means for mounting said base to a fixed surface so that said second surface faces said fixed surface, said base carrying on said first surface a telephone jack having a plurality of spring contacts therein and a like plurality of first terminals for connecting to said network telephone wiring, said spring contacts being electrically connected to said first terminals,
- a cover having a first surface, an opposed second surface, and means for mounting said cover to said base so that said second surface of said cover faces said first surface of said base, said cover having a plurality of apertures therethrough between said first and second surface thereof which provide access to said first terminals and said jack,
- a plug member having a first surface, an opposed second surface, and means for mounting said plug member to said cover so that said second surface of said plug member faces said first surface of said cover, said plug member carrying on said second surface a plurality of second terminals for connecting to said subscriber's wiring and arranged for mating to said first terminals through said apertures when said cover is mounted to said base and said plug member is mounted to said cover.

4,500,159
FILTER ELECTRICAL CONNECTOR

Francisco R. Briones, Markham, and Kamal S. Boutros, Downsview, all of Canada, assignors to Allied Corporation, Morristown, N.J.

Filed Aug. 31, 1983, Ser. No. 528,290
Int. Cl.³ H01R *13/648, 13/66*
U.S. Cl. 339—147 R 23 Claims

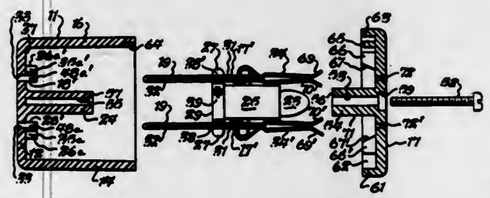


1. An electrical connector assembly including an electrically conductive shell, a dielectric body having front and rear faces and at least one row of separated passages extending between the faces, said body being disposed in said shell and each said passage receiving an electrical contact, and means for filtering said electrical contacts from radio frequency interference, said connector assembly characterized by:
- said body including a plurality of separated cavities with each said cavity communicating with one respective passage;
- said filter means comprising a discrete monolithic capacitor being received in each said cavity and disposed in contacting relation with the electrical contact disposed in the respective passage, said capacitor comprising a dielectric substrate having a live and a ground electrode with the live electrode contacting the electrical contact; and
- means for electrically coupling each said electrical contact and capacitor to said shell.

4,500,160
ELECTRICAL CONNECTOR DEVICE

Jack Bertsch, Orchard Park, N.Y., assignor to Polytronics, Inc., Buffalo, N.Y.

Continuation-in-part of Ser. No. 476,990, Mar. 21, 1983, abandoned. This application May 21, 1984, Ser. No. 612,745
Int. Cl.³ H01R *13/50*
U.S. Cl. 339—166 R 30 Claims

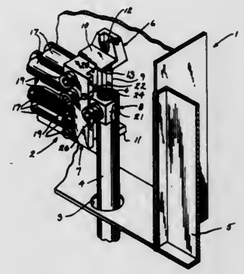


1. A connector device for placement between a female electrical outlet and a male plug comprising a housing, a first end wall on said housing, side wall means extending from said first end wall, a first post extending from said first end wall within said side wall means, a pair of first slots extending through said first end wall on opposite sides of said first post, a tubular member for mounting on said first post in mating relationship, a pair of diametrically opposed teates extending radially outwardly from said tubular member, a pair of combined prongs and prong receptacles having prong portions at first ends extending through said slots and having prong receptacles at their second ends for receiving prongs of an external male plug, central portions on said combined prong and prong receptacles, apertures in said central portions for fitting on said teats, a second end wall mountable on said side wall means in opposition to said first end wall, a pair of second slots in said second end wall in alignment with said prong receptacles, and means for securing said second end wall relative to said side wall means.

4,500,161
ELECTRICAL CONNECTOR WITH SLIDING COLLAR

Josef Keglewitsch, and Theodore J. Stechschulte, both of Bowling Green, Ohio, assignors to Marathon Electric Mfg. Corp., Wausau, Wis.

Filed Apr. 27, 1983, Ser. No. 489,202
Int. Cl.³ H01R *4/36*
U.S. Cl. 339—242 9 Claims

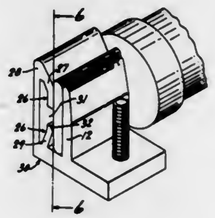


1. A connector assembly for providing connection between the conductors of an electric power cable and a plurality of leads, comprising:
- a distribution block connectable to said leads, said block having a channel formed along one side thereof;
- a terminal connector slidably mounted on said block for selective positioning thereof to provide contact between the cable and the block, said connector including a split collar body having an axial opening for receiving the ends of said conductors, a threaded bore communicating with said axial opening and extending normal thereto, and a pair of opposing legs projecting outwardly from the free ends thereof slidably received within said channel; and
- a set screw disposed in said bore and engageable with the ends of said conductors to provide intimate contact between the conductors and the connector and to simultaneously spread said legs against the sides of said channel to provide intimate contact between said connector and said block.

4,500,162
CONTACT CLIP APPARATUS FOR BLADE-TYPE CONTACTS

Josef Keglewitsch, and Theodore J. Stechschulte, both of Bowling Green, Ohio, assignors to Marathon Electric Manufacturing Corporation, Wausau, Wis.

Filed Apr. 12, 1982, Ser. No. 367,454
Int. Cl.³ H01R *11/22*
U.S. Cl. 339—252 F 14 Claims



1. A fuse clip apparatus for receiving a flat fuse blade comprising an extruded conductive member including a lead terminal connector, an open channel member integrally connected to said terminal connector and including a planar wall defining a blade-engaging contact surface having an extent and configuration substantially corresponding to that of the fuse blade and being engaged by the fuse blade in the operative state and a second support wall spaced from said contact surface, and a curved beam spring secured by means at the opposite ends to said support wall within said channel and curving inwardly from the opposite ends of said support wall and forming a curved spring means spanning the contact surface with the outermost curved portion located generally centrally of the blade-engaging contact surface, said outermost curved portion being spaced from the contact surface by a distance significantly less than the thickness of the fuse blade and establishing a horizontal deflection force in excess of the vertical insertion force whereby a fuse blade of a blade type fuse positioned between said contact surface deflects said beam spring and said beam spring functions to maintain said fuse blade in full surface contact with said contact surface.

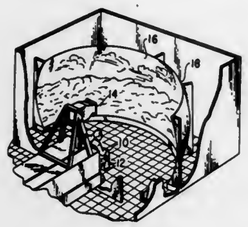
4,500,163
HOLOGRAPHIC PROJECTION SCREEN

Richard H. Burns, N. Hollywood; William M. Hall, La Crescenta, and Bernard P. Hildebrand, El Toro, all of Calif., assignors to The Singer Company, Stamford, Conn.

Filed Jul. 29, 1981, Ser. No. 288,085
Int. Cl.³ G03B *21/56*; G02B *5/32*
U.S. Cl. 350—3.7 10 Claims

1. A front projection viewing screen having a fixed size observation pupil at a predetermined position relative to the screen, said screen comprising an array of a plurality of ele-

mental screen areas wherein each of said elemental screen areas is formed of at least one elemental reflective hologram of



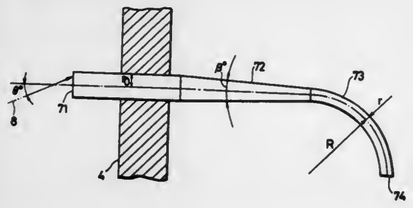
the observation pupil, and wherein each of said holograms is made with a specular object beam.

4,500,164

LIGHT TRIGGERED THYRISTOR, INCLUDING A LIGHT GUIDE, WHOSE PARAMETERS ARE RELATED BY AN EQUATION

Toyohiko Kiyohara, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 7, 1982, Ser. No. 447,598
Claims priority, application Japan, Dec. 7, 1981, 56-197339
Int. Cl.³ G02B *5/14*
U.S. Cl. 350—96.10 **1 Claim**



1. In a light triggered thyristor, including; a light guide made of transparent material with a refractive index n_1, and having a light entrance end with a radius r_0, a light exit end with a radius r, a tapered portion tapering from the radius r_0 to the radius r with a taper angle β, and a bent portion having a bending radius R, the improvement wherein said light guide satisfying the following inequality when light is incident to said light entrance end with a maxium entrance angle θ with respect to a line normal to said entrance end:

$$n_1\left(\frac{1-\frac{r}{R}}{1+\frac{r}{R}}\right)\sin\left[\cos^{-1}\left\{\frac{r_0}{r}\sin\left(\sin^{-1}\frac{\sin\theta}{n_1}+\frac{\beta}{2}\right)\right\}-\frac{\beta}{2}\right]\geqq 1.$$

4,500,165

METHOD AND APPARATUS FOR ALIGNING OPTICAL FIBERS

Frederick W. Scholl, Riverdale, and Michael H. Coden, New York, both of N.Y., assignors to Codenoll Technology Corporation, Yonkers, N.Y.

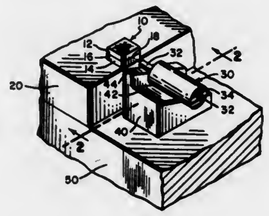
Filed Apr. 2, 1982, Ser. No. 364,649
Int. Cl.³ G02B *5/14*
U.S. Cl. 350—96.20 **6 Claims**

1. Apparatus for aligning an optical fiber with a light source or photodetector comprising:

a substrate;

means for mounting said light source or photodetector on said substrate; and

means for mounting said optical fiber on said substrate such that said optical fiber is aligned with said light source or photodetector to permit coupling of light therewith, said



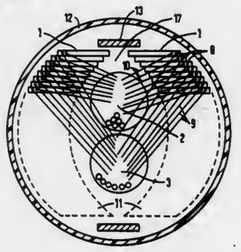
mounting means having a sloping surface set at an angle to the plane of said substrate, said optical fiber being cemented onto the sloping surface which aligns it with said light source or photodetector, and said sloping surface being tangent to an outer surface of said optical fiber.

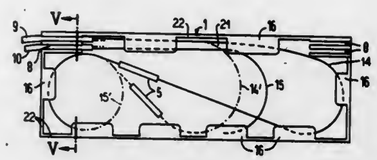
4,500,166

SPLICE CARRIER FOR LIGHT WAVEGUIDE CABLES

Dieter Kunze, Neuried, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Jul. 15, 1982, Ser. No. 398,640
Claims priority, application Fed. Rep. of Germany, Aug. 25, 1981, 3133586
Int. Cl.³ G02B *7/26*
U.S. Cl. 350—96.20 **17 Claims**





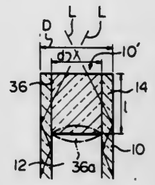
1. In a splice carrier for light waveguide cables having bundles of light waveguides, said splice carrier being inserted into a cable sleeve with a plurality of similar splice carriers to form a splice connection between waveguides of two bundles from two cables entering opposite ends of the cable sleeve, each individual splice carrier being a rectangular member and containing both means for mounting the splices of the waveguides and means for storing excess length of the waveguides of each bundle of waveguides associated with the carrier, the improvement comprising each of the splice carriers having two opening means with an axis for introducing the incoming and outgoing bundles of light waveguides to the carrier, said opening means being disposed on the same side of the splice carrier adjacent a corner of the rectangular member and adjacent each other in such a manner that an individual splice carrier can be pivoted around an imaginary point lying adjacent the corner and approximately on the axis of the two opening means.

4,500,167

OPTICAL ENERGY COLLECTING AND TRANSMITTING APPARATUS USING TUBULAR LIGHT TRANSMITTING ELEMENT

Kei Mori, 3-16-3-501, Kaminoge, Setagaya-ku, Tokyo, Japan

Filed Nov. 15, 1982, Ser. No. 441,705
Claims priority, application Japan, Nov. 14, 1981, 56-182781; Nov. 14, 1981, 56-182782
Int. Cl.³ G02B *5/14, 5/16*
U.S. Cl. 350—96.32 **26 Claims**



1. A tubular light transmitting unit for transmitting optical energy from a light source to a desired location, comprising:

a tubular member made of silica glass;

a bore defined by said tubular member; and

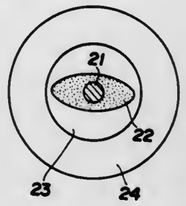
a transparent plug member which stops up at least one of a light inlet end portion and a light outlet end portion of the tubular member, whereby the optical energy is transmitted through the tubular member and the bore.

4,500,168

SINGLE POLARIZATION OPTICAL FIBERS

Hiroshi Kajioka, Hitachi; Toshihide Tokunaga, Kitaibaraki, and Junkichi Nakagawa, Hitachi, all of Japan, assignors to Hitachi Cable, Ltd., Tokyo, Japan

Filed Jun. 17, 1982, Ser. No. 389,265
Claims priority, application Japan, Aug. 19, 1981, 56-129804; Jan. 6, 1982, 57-682
Int. Cl.³ G02B *5/14*
U.S. Cl. 350—96.34 **4 Claims**



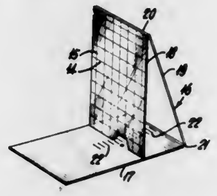
1. In a single polarization optical fiber of the type comprising a circular core having a predetermined first refractive index; an elliptical jacket positioned on the outside of said circular core, having a predetermined second refractive index which is smaller than that of said first refractive index; and a supporting layer made of silica glass and positioned on the outside of said elliptical jacket; the improvement wherein said elliptical jacket contains dopants of B_2O_3 and P_2O_5, the content of said dopants being 5-20 mol % relative to the total material forming said elliptical jacket, said B_2O_3 being provided for decreasing the second refractive index and said P_2O_5 being provided for lowering softening temperature and viscosity thereof.

4,500,169

COSMETIC AND OBSERVER LINE OF SIGHT MIRROR

John H. Donnelly, 234 Eagle Rock Ave., West Orange, N.J. 07052

Filed Jul. 13, 1982, Ser. No. 397,819
Int. Cl.³ G02B *5/08*; G01C *3/00*
U.S. Cl. 350—288 **7 Claims**



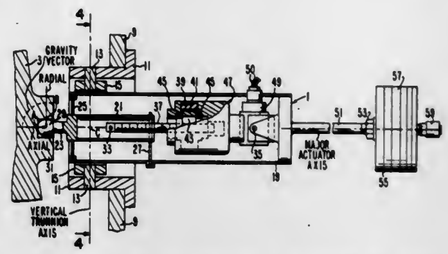
1. A cosmetic application and observer line of sight mirror comprising a plane mirror, two sets of spaced parallel lines associated with at least part of the surface of said mirror with one set of lines being substantially horizontal and the other set of lines being at right angles thereto said sets of lines facilitating application of make-up by the user, and means including a scale operable by the user for tilting said mirror about a horizontal axis said scale enabling the user to observe the appearance presented to an observer at selected distances and elevations and said scale being calibrated in terms of the elevation and distance of an observer relative to the user and the distance of the user from the mirror.

4,500,170

GRAVITY AND TEMPERATURE COMPENSATING REFLECTOR SUPPORT ACTUATOR

Ernest C. Montesanto, San Jose, Calif., assignor to Ford Aerospace & Communications Corporation, Detroit, Mich.

Filed Jun. 14, 1982, Ser. No. 388,290
Int. Cl.³ G02B *7/18*
U.S. Cl. 350—611 **12 Claims**



1. An actuator for mechanically positioning an object in variable spaced relationship with respect to a support structure, said actuator being coupled to the object at a single location and comprising:

means for effectuating small adjustments in the axial length of the actuator, and thereby in the distance between the object and the structure; and

means, substantially independent from said effectuating means, for balancing forces on said single location in a radial direction orthogonal to said axial direction;

wherein the axial adjustments and the radial force balancing are both conveyed to the object at said single location; and

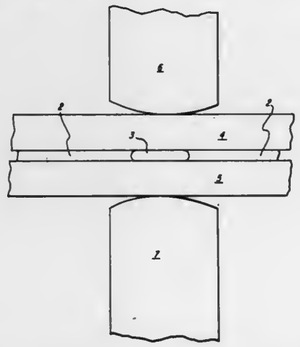
said actuator is pivotable throughout small angular excursions about a point fixed with respect to the structure but not with respect to the object.

4,500,171

PROCESS FOR PLASTIC LCD FILL HOLE SEALING

Perry A. Penz, Richardson, and Jeffrey B. Sampsell, Plano, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Jun. 2, 1982, Ser. No. 384,356
Int. Cl.³ G02F *1/13*; G02B *0/00*; A61J *5/04*; B29C *13/00*
U.S. Cl. 350—320 **7 Claims**



1. A method for fabricating plastic liquid crystal displays, comprising the steps of:
providing front and rear plastic liquid crystal display substrates;
bonding said front and rear substrates together along a portion of the periphery thereof, said bonding step leaving a fill hole gap at one point in the periphery of said substrates;
pressing first and second heated elements against said plastic substrates in the neighborhood of said fill hole, said heated elements being heated to a temperature which is greater than the melting temperature of said plastic substrates;
wherein the portion of each said element in contact with said plastic substrates comprises a spherical radius of curvature which is in the range of 10 to 100 times the width of said fill hole gap.

7. A method for fabricating a plastic liquid crystal display, comprising the steps of:
providing first and second plastic LCD substrates;
joining said first and second substrates together along the entire periphery of each said substrate;
providing a fill hole in said first substrate;
filling said substrate with liquid crystal material;
welding said fill hole to said second substrate.

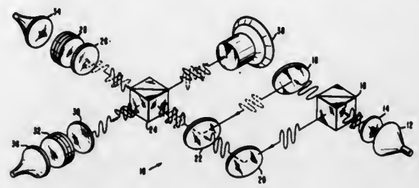
4,500,172

TWO COLOR LIQUID CRYSTAL LIGHT VALVE IMAGE PROJECTION SYSTEM WITH SINGLE PREPOLARIZER

Ralph J. Gagnon, Chico, and Roy A. Cedarstrom, Fullerton, both of Calif., assignors to Hughes Aircraft Company, El Segundo, Calif.

Filed Dec. 28, 1981, Ser. No. 334,679
Int. Cl.³ G02F *1/13*; G03B *21/00*; G02B *5/30*
U.S. Cl. 350—331 R **5 Claims**

3. A color selective prepolarizing system for liquid crystal light valve projectors comprising:
a prepolarizing beamsplitter for splitting and prepolarizing light from a source into first and second beams having first and second polarization states respectively;
first means for extracting light of a first color from said first beam;
second means for extracting light of a second color from said second beam; and
means for combining the first and second beams into a single beam having substantially two components, the first component having essentially light of a first color and first polarization state and the second component having essentially light of a second color and a second polarization state.

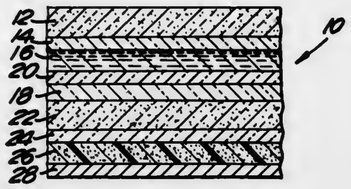


4,500,173

ELECTROLUMINESCENT LAMP FOR LIQUID CRYSTAL DISPLAY

Marshall Leibowitz, Ridgefield, and Douglas A. George, Watertown, both of Conn., assignors to Timex Corporation, Waterbury, Conn.

Filed May 2, 1983, Ser. No. 490,621
Int. Cl.³ G02F *1/133*; H05B *37/00*
U.S. Cl. 350—345 **6 Claims**



1. An improved combination electroluminescent backlight and incident light reflector for a liquid crystal display for nighttime and daytime viewing, respectively, the improvement comprising:
a liquid crystal display
a light-reflective electrode in said electroluminescent backlight arranged to reflect incident light entering and passing through said liquid crystal display, and
a thin electroluminescent layer in said electroluminescent backlight between said light-reflective electrode and said liquid crystal display having a minimal amount of phosphor selected to provide for light diffusion for improving daytime viewability of said liquid crystal display as well as to provide a light source for improving nighttime viewability of said crystal display, in which said minimal amount of phosphor is dispersed in a binder in said electroluminescent layer in substantially one volume unit of phosphor for every four to five volume units of binder.

4,500,174

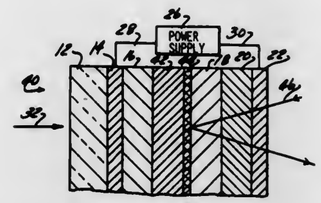
ELECTROCHROMIC IMAGING APPARATUS

Bruce E. Conner, 510 Catherine St., Ann Arbor, Mich. 48104

Filed Jan. 5, 1983, Ser. No. 455,742
Int. Cl.³ G02F *1/25*
U.S. Cl. 350—357 **11 Claims**

1. An electrochromic imaging apparatus comprising:
a substrate formed of an optically transparent material;
a first electrode formed of an optically transparent material having an electrically conductive surface, the first electrode contacting the substrate;
a layer of a photoconductive material contacting the electrically conductive surface of the first electrode;

a layer of electrochromic iridium oxide contacting the photoconductive material layer;
a layer of a solid ionic conductive material contacting the electrochromic iridium oxide layer;



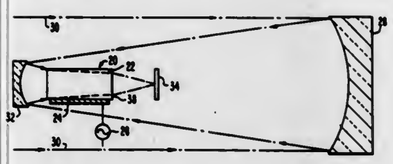
a second electrode formed of an optically transparent material having an electrically conductive surface, the electrically conductive surface of the second electrode contacting the ionic conductive material layer; and
means for selectively applying an electric field of opposite polarities across the first and second electrodes.

4,500,175

METHOD AND APPARATUS FOR LIGHT CHOPPING BY ACOUSTO-OPTIC REFRACTION

Fredrick L. Schaff, Ellicott City, Md., and Milton Gottlieb, Churchill, Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Sep. 30, 1982, Ser. No. 431,472
Int. Cl.³ G02F *1/11*
U.S. Cl. 350—358 **13 Claims**



1. A method of refracting an optical ray comprising the steps of:
passing said optical ray through an optical medium to establish a first focal point in a quiescent mode; and
launching acoustic waves into said optical medium to induce a refractive index gradient within said optical medium, refracting the optical ray from said first focal point to at least a second focal point in an active mode.

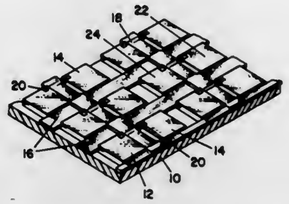
4,500,176

METHOD AND DEVICE FOR IMPROVING A CONDUCTIVE SWITCHING GRID FOR SWITCHABLE MAGNETIC ELEMENTS

Bruce E. MacNeal, Fullerton, Calif., assignor to Litton Systems, Inc., Beverly Hills, Calif.

Filed May 5, 1982, Ser. No. 375,326
Int. Cl.³ G02F *1/09*
U.S. Cl. 350—376 **15 Claims**

1. A magneto-optic device having a plurality of post elements formed upon a nonmagnetic substrate from a material that exhibits magnetic domain characteristics having grid-like separations between said post elements, comprising:
said material forming said post elements having a high anisotropy characteristic with a first relatively small surface region in said material having a low anisotropy characteristic;
said grid-like separations positioned between said post elements in a first and second direction;
conductor means aligned with each of said grid-like separations between said post elements in said first direction of said separation and with every other of said grid-like separations in said second direction of said separation to form intersecting conductor means, and



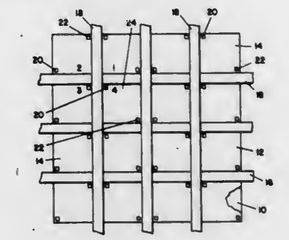
said first relatively small surface region in said material located within each of said post elements in juxtaposition to said intersecting conductor means.

4,500,177

METHOD AND DEVICE FOR CREATING SWITCHABLE REDUNDANCY WITH A MAGNETIC ELEMENT

Bruce E. MacNeal, Fullerton, Calif., assignor to Litton Systems, Inc., Beverly Hills, Calif.

Filed May 5, 1982, Ser. No. 375,330
Int. Cl.³ G02F *1/09*
U.S. Cl. 350—376 **11 Claims**



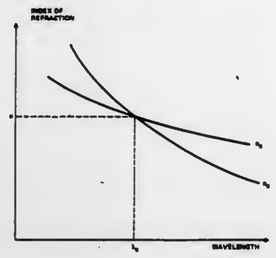
1. A method for creating redundancy within a plurality of switchable magnetic post elements formed from a magnetic material upon a nonmagnetic support, comprising the steps of:
placing a magnetic material having a high anisotropy upon said nonmagnetic material to form separations in said magnetic material and thus form said magnetic post elements;
arranging said separations in a grid-like pattern having a first set of separations in a first direction and a second set of separations in a second direction to form said post elements into quadrilateral shapes;
placing a conductive material in each of said grid-like separations in said first and second directions;
placing a first region of material in said high anisotropy magnetic material which forms said post elements that has a low anisotropy relative to said high anisotropy of said magnetic post elements, said first region placed in a corner of each quadrilaterally shaped post element;
placing a second region of material in said high anisotropy magnetic material which forms said post elements that has a low anisotropy relative to said high anisotropy of said magnetic post elements, said second region placed in a corner of each quadrilaterally shaped post element opposite said first region of material wherein said second region may be used to switch said magnetic post element in addition to said first region.

4,500,178

ISO-INDEX BIREFRINGENT FILTERS

Pochi A. Yeh, Thousand Oaks, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Oct. 13, 1981, Ser. No. 310,562
Int. Cl.³ G02B *5/28*
U.S. Cl. 350—404 **10 Claims**



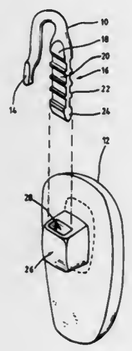
1. An optical Filter for selectively transmitting light in a passband at the wavelength λ, comprising:
- an initial polarizer with a polarization direction perpendicular to a beam path;
- a final polarizer spaced from said initial polarizer along said path and having said polarization direction; and
- a birefringent element positioned between said polarizers with an optic axis perpendicular to said path and directed approximately 45° from said polarization direction, said element having a birefringence which is zero at the wavelength λ.

4,500,179

SIDE BRIDGE FOR METAL SPECTACLES

Kurt Schönhut, Schwaebisch Gmuend-Unterbettringen, Fed. Rep. of Germany, assignor to Firma Ferdinand Menrad, Schwabisch-Gmund-Bettringen, Fed. Rep. of Germany

Filed Jun. 15, 1982, Ser. No. 388,644
Claims priority, application Fed. Rep. of Germany, Jun. 16, 1981, 3123925
Int. Cl.³ G02C *1/00, 5/12*
U.S. Cl. 351—137 **1 Claim**



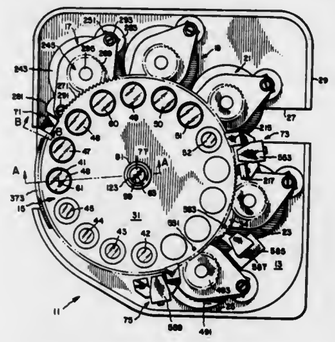
1. A side bridge for metal spectacles comprising:
- a plastic pad formed of synthetic resin;
- a mounting support formed of resilient material having a longitudinal opening therein and an axis substantially parallel to said pad;
- at least one locking projection extending generally transversely into said opening with respect to the longitudinal axis thereof, said at least one locking projection being disposed generally centrally in said opening and said opening flaring outwardly on each side of said at least one locking projection;
- a metallic bridge support having one end which is insertable axially into said opening of said mounting support; and
- a plurality of successive ridges on said one end of said bridge support disposed transversely with respect to said axis of said opening;
- said at least one locking projection in said opening of said mounting support being engageable with each of said successive ridges and the outward flare of said opening in said mounting support on each side of said at least one locking projection permitting pivotal movement of said pad about the engagement of said at least one locking projection with one of said ridges substantially in the plane defined by said axis of said opening and transverse to said ridges and said at least one locking projection.

4,500,180

MOTORIZED REFRACTION APPARATUS

Donn E. Stevens, Rochester, N.Y., assignor to Bausch & Lomb Incorporated, Rochester, N.Y.

Filed Jul. 22, 1981, Ser. No. 285,715
Int. Cl.³ A61B *3/02*
U.S. Cl. 351—234 **24 Claims**



1. In an ophthalmic instrument including a base and one or more optical elements positionable along an optical axis;
- (a) hub means supported by said base, said hub means having an axis and including at least one cylindrical bearing surface;
- (b) a rotatable disk for supporting said optical elements, said disk including a central bearing aperture which cooperates with said cylindrical bearing surface to permit relative rotation between said disk and said hub and to radially align said disk relative to said hub axis; and
- (c) a plurality of peripheral disk support means supported by said base, each of said peripheral support means including a groove adapted to receive the periphery of said disk to axially position said disk along said optical axis and to permit relative rotation between said disk support means and said disk.

4,500,181

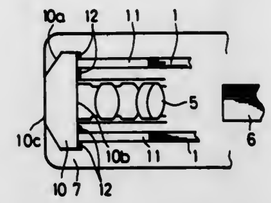
ILLUMINATING OPTICAL SYSTEM FOR ENDOSCOPES

Susumu Takahashi, Hachiouji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed May 25, 1982, Ser. No. 381,885
Claims priority, application Japan, May 26, 1981, 56-79921
Int. Cl.³ G02B *5/04, 23/02;* A61B *1/06*
U.S. Cl. 350—574 **8 Claims**

1. An illuminating optical system for endoscopes comprising a light source; a transparent body arranged in front of said light source; and a tubular transparent member having one end face adjacent to said light source and the other end face contacted with a first surface of said transparent body, refractive indices

of a first medium to be contacted with the object side surface of said transparent body, said transparent body and a second medium located between said light source and said transparent body and contacting said transparent body, when refractive index of said first medium is represented by n_1, refractive index of said transparent body is represented by n_2 and refractive index of said second medium is represented by n_3, being so selected that, conditions $n_1 > n_3$ and $n_2 > n_3$ are satisfied, said transparent body being a prism having said first surface inter-



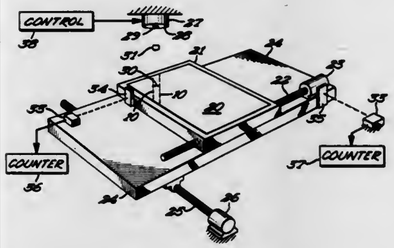
secting at right angles with the optical axis of an objective arranged in the rear side of said transparent body and facing said objective, a reflecting surface forming an angle θ with said first surface and a second surface located forward of said first surface and parallel with said first surface, the angle θ refractive indices n_2 and n_3 and an angle ϵ of fitting said tubular transparent member to said transparent body being so selected that the entrance angle of the light from said light source onto said second surface of said transparent body is larger than a critical angle θ_1 ($\theta_1 = \sin^{-1}(n_3/n_2)$).

4,500,182

PHOTOPLOTTER

Robert W. Schumann, Madison, Wis., assignor to Nicolet Instrument Corporation, Madison, Wis.

Filed Dec. 27, 1982, Ser. No. 453,481
Int. Cl.³ G03B *41/00*
U.S. Cl. 354—4 **26 Claims**



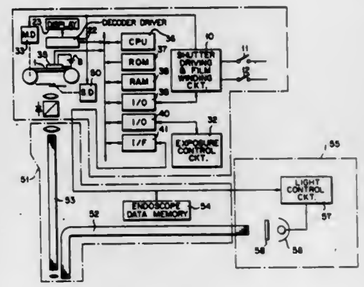
1. In a photoplotter of the type having means for supporting photosensitive media, means for generating a radiant energy pattern on said photosensitive media with said pattern generating means having a face and means for displaying an alterable pattern object on said face, and means for producing relative movement between said photosensitive media and a radiant energy pattern thereon, said relative movement being in accordance with a desired exposure trace on said photosensitive media, the improvement which comprises means for detecting a difference between actual and desired relative movement between said photosensitive media and radiant energy pattern and means responsive to said difference for selectively varying the position of said pattern object on said face of the pattern generating means to vary the position of said radiant energy pattern to compensate for said difference.

4,500,183

FILM CASSETTE AND A PHOTOGRAPHING DEVICE USING THE SAME

Kowji Tanikawa, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 258,946, Apr. 30, 1981, Pat. No. 4,443,077. This application Jan. 6, 1983, Ser. No. 456,103
Claims priority, application Japan, May 2, 1980, 55/58988
The portion of the term of this patent subsequent to Apr. 17, 2001, has been disclaimed.
Int. Cl.³ G03B *7/24, 17/36, 17/26*
U.S. Cl. 354—21 **9 Claims**



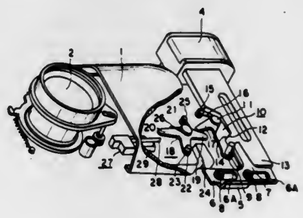
1. A film cassette comprising:
- a film case including an unexposed film chamber section, and a film take-up chamber section having a film take-up spool therein;
- a film initially contained in said unexposed film chamber section and which is moved to said film take-up chamber section by being wound up on said film take-up spool; and
- a semiconductor memory means provided on said film case and storing and reading out data relative to the film contained in said film case.

4,500,184

ELECTRONIC FLASH CAMERA

Masaaki Morizumi; Toru Kando, and Keisuke Haraguchi, all of Tokyo, Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 18, 1983, Ser. No. 476,796
Claims priority, application Japan, Apr. 19, 1982, 57-55652[U]
Int. Cl.³ G03B *15/05*
U.S. Cl. 354—149.11 **3 Claims**



1. An electric flash camera comprising:
- a camera frame;
- an electric flash unit movably mounted on the camera frame between an extended set position and a retracted reset position;
- a lens cover movably mounted on the camera frame between an open position for exposing a camera lens and a closed position for covering the camera lens;

a power source switch positionable in an on position and an off position for controlling the electronic flash unit;

means for turning on and off the power source switch controlled by the movement of the electronic flash unit and the lens cover, the means for turning on and off the power source switch turns off the power source switch when the lens cover is in the closed position and the electronic flash unit is in the extended set position, the means for turning on and off the power source switch turns off the power source switch when the electronic flash unit is in the retracted reset position and the means for turning on and off the power source switch turns on the power source switch when the electronic flash unit is in the extended set position and the lens cover is in the open position.

4,500,185

FILM TRANSPORTATION DEVICE FOR CAMERA

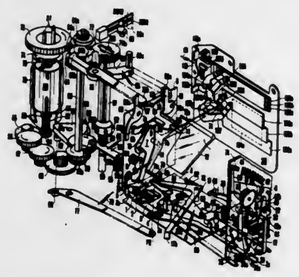
Shosuke Haraguchi, Kanagawa, and Yoichi Tosaka, Tokyo, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 30, 1982, Ser. No. 454,627

Claims priority, application Japan, Jan. 14, 1982, 57-4317

Int. Cl.³ G03B *19/04*

U.S. Cl. 354—209 **5 Claims**



1. A film transportation device for a camera comprising:

(a) an operating member arranged upon movement from a first position to a second position to switch said camera to a rewinding mode;

(b) a locking member for holding said operating member in said second position;

(c) a changeover member supported to be movable forward and backward and arranged to move forward in response to winding up of the camera, said changeover member being taken out of cooperating relationship with the winding operation of the camera just before the winding operation of the camera is terminated; and

(d) a spring member for urging said changeover member in the backward direction, said spring member driving said changeover member to move backward, whereby said locking member is pushed to take said locking member and said operating member out of engagement with each other.

4,500,186

SHUTTER CONTROL DEVICE FOR CAMERA

Akio Sunouchi, Tokyo; Ryuji Suzuki, Kanagawa; Masahisa Fujino, Tokyo, and Tatsuo Konno, Kanagawa, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 18, 1982, Ser. No. 389,885

Claims priority, application Japan, Jun. 22, 1981, 56-96409; Jun. 22, 1981, 56-96410

Int. Cl.³ G03B *9/34*

U.S. Cl. 354—234 **2 Claims**

1. A shutter control device for a camera, comprising:

(a) a shutter closing member having first and second catch portions;

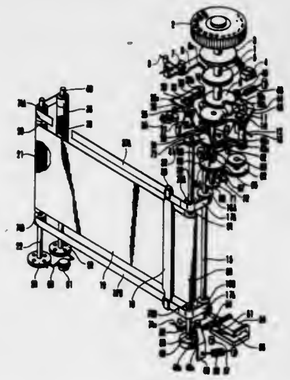
(b) a first catch member cooperative with said first catch portion of said shutter closing member;

(c) a second catch member cooperative with said second catch portion of said shutter closing member, said second catch member producing a gap between said first catch member and said first catch portion while it is in engagement with said second catch portion of said shutter closing member;

(d) a shutter opening member having an engagement portion;

(e) an engagement member cooperative with said engagement portion of said shutter opening member;

(f) charge means operative in correspondence to windup operation of the camera to engage said second catch member with said second catch portion of said shutter closing member by overcharge operation and to produce said gap between said first catch member and said first catch portion of said shutter closing member and then to engage said engagement member with said engagement portion of said shutter opening member;



(g) a first member operating in response to actuation of a camera release operation for causing said second catch member to disengage from said second catch portion of said shutter closing member, said disengagement causing said shutter closing member to actuate across said gap to bring said first catch member into engagement with said first catch portion of said shutter closing member;

(h) a second member operating in response to actuation of a camera release operation, said second member starting to move after the start of movement of said first member, with said engagement member being disengaged from said engagement portion of said shutter opening member to permit action of said shutter opening member; and

(i) a mechanical shutter mechanism for releasing said first catch portion of said shutter closing member from the latching connection with said first catch member after a predetermined time from the start of movement of said shutter opening member so that said shutter closing member runs off.

4,500,187

SHUTTER ARRANGEMENT

Takashi Endo, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Japan

Filed Jun. 29, 1982, Ser. No. 393,300

Claims priority, application Japan, Jul. 7, 1981, 56-105986

Int. Cl.³ G03B *17/38*

U.S. Cl. 354—266 **23 Claims**

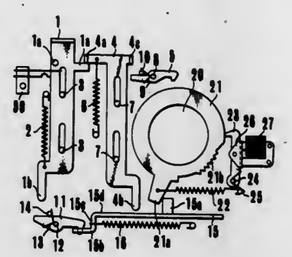
1. A shutter arrangement for a camera including a shutter with shutter blades and an electromagnet wherein closing operation of said shutter blades is controlled by said electromagnet comprising:

release means adapted to be actuated by application of a force thereto;

running means;

first bias means applying a force to move said running means;

latch means holding said running means in a predetermined position against the force of said first bias means, said latch means being responsive to the action of said release means for releasing said running means;



actuating means arranged to initiate opening operation of said shutter blades when said running means reaches a certain position; and

delay means responsive to the action of said release means thereby to be moved into abutting contact with said running means;

said delay means operating to delay movement of said running means thereby to restrain said actuating means from initiating opening operation of said shutter blades until normal operation of said electromagnet is achieved.

4,500,188

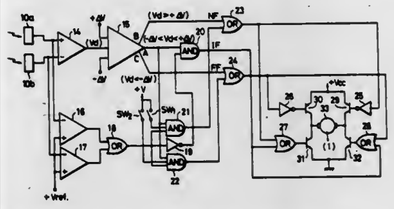
FOCUSING DEVICE FOR A CAMERA

Nozomu Kitagishi, Inagi, and Akira Tajima, Kawasaki, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 6, 1983, Ser. No. 529,717

Int. Cl.³ G03B *7/08*

U.S. Cl. 354—406 **6 Claims**



1. A focusing device for a camera, comprising

(a) a focus detecting circuit for forming a signal indicative of the state of focusing degree;

(b) a picture-taking lens driving circuit for driving a picture-taking lens to the in-focus position on the basis of the signal indicative of the state of focusing degree from said focus detecting circuit;

(c) signal forming means for forming an impossibility signal when the focus detecting operation of said focus detecting circuit is impossible; and

(d) a position detecting portion for detecting the set focus position of the picture-taking lens and forming a first signal when the set position is on the short distance focus side and forming a second signal when the set position is on the long distance focus side;

(e) said driving circuit being responsive to said impossibility signal and said first signal to drive the picture-taking lens to the long distance focus side and responsive to said impossibility signal and said second signal to drive the picture-taking lens to the short distance focus side.

4,500,189

APPARATUS FOR DETECTING THE FOCUS CONDITION OF AN IMAGING LENS

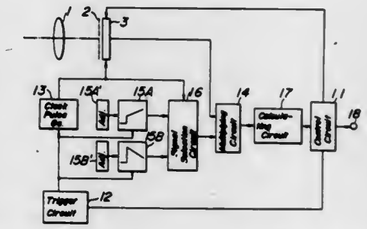
Masahiro Aoki, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Sep. 29, 1983, Ser. No. 537,026

Claims priority, application Japan, Oct. 4, 1982, 57-173293

Int. Cl.³ G03B *7/08*; G01J *1/20*

U.S. Cl. 354—407 **9 Claims**



1. An apparatus for detecting a focus condition of an imaging lens comprising:

means for dividing an exit pupil of the imaging lens into sections;

means comprising plural sets of paired light receiving elements arranged to receive light fluxes transmitted through the different divided exit pupil sections;

means for generating a correction signal for eliminating the influence of an image height;

means for receiving said correction signal and for receiving output signals supplied from the light receiving elements and correcting variation in the output signals due to an image height to produce corrected signals;

means for processing the corrected signals to detect a lateral shift of two images projected on the light receiving elements; and

means for detecting a focus condition of the imaging lens on the basis of the detected lateral shift.

4,500,190

CAMERA SYSTEM INCLUDING FLASH AND STATUS INDICATING CONTROL CIRCUIT

Yoshifumi Kuroki, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 384,515, Jun. 3, 1982, abandoned. This application Feb. 9, 1984, Ser. No. 577,732

Claims priority, application Japan, Jun. 15, 1981, 56-90878

Int. Cl.³ G03B *15/05*; H05B *41/32*

U.S. Cl. 354—416 **4 Claims**

1. In a camera system which includes a plurality of electrical terminals for connecting a flash device with a photographic camera, wherein said flash device includes a flash tube for producing light emissions, a condenser for accumulating a voltage of a firing level to discharge the flash tube, and means for automatically terminating light emissions from the flash tube when an appropriate exposure level is reached during flashlight photography; the improvement comprising:

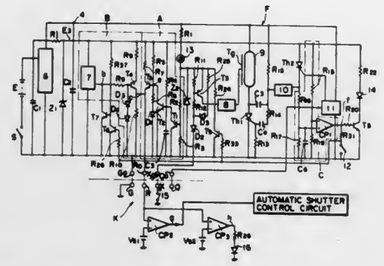
a charge completion circuit for producing a charge completion signal of a predetermined level when the voltage of the condenser reaches the firing level;

a light adjustment display circuit for producing, after termination of light emissions from said flash tube, a light adjustment display signal composed of a periodic pulse train;

a timer circuit for producing a control signal to inhibit the production of the charge completion signal for a predetermined period of time after termination of light emissions

from the flash tube and to actuate said light adjustment display circuit;

a common electrical terminal interposed between the flash device and the camera and coupled to said charge completion circuit and said light adjustment display circuit through which the charge completion signal and the light adjustment display signal are transmitted; and



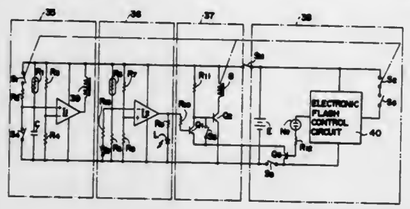
a changeover switch connected to said timer circuit for interrupting said control signal thereby to pass the charge completion signal to the camera in preference to the light adjustment display signal when the voltage across the condenser remains above the firing level after discharge of the flash tube.

4,500,191

PHOTOGRAPHY MODES SWITCHABLE CAMERA

Akira Yamanaka, Sakai, Japan, assignor to Minolta Camera Kabushiki Kaisha, Azuchi, Japan

Filed Oct. 12, 1982, Ser. No. 433,613
Claims priority, application Japan, Oct. 15, 1981, 56-165416
Int. Cl.³ G03B *15/05*
U.S. Cl. 354—418 **7 Claims**



1. A camera switchable between a natural light photography mode and a flash photography mode, comprising:

an objective lens device the focal length of which is changeable;

a low brightness condition detecting means for detecting a brightness condition of an object to generate a low brightness signal upon detection of a low brightness condition;

a switching means for switching said camera from the natural light photography mode to the flash photography mode in response to the low brightness signal;

a control means for causing said detecting means to generate the signal at different brightness conditions in accordance with the change in the focal length so that the switching of said camera to the flash photography mode is effected with a higher brightness condition in the case of a longer focal length;

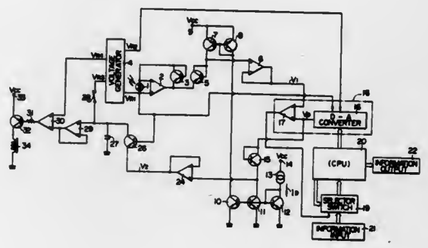
an electronic flash control circuit including means for charging and storing electric energy for flash photography; and means for disabling the switching of said camera by said switching means to the flash photography mode until the charge on said storing means has been completed.

4,500,192

AUTOMATIC EXPOSURE CONTROLLER FOR A CAMERA

Masafumi Yamasaki, Hachioji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 356,125, Mar. 8, 1982, abandoned. This application Aug. 29, 1983, Ser. No. 527,504
Claims priority, application Japan, May 27, 1981, 56-81587
Int. Cl.³ G03B *7/093*
U.S. Cl. 354—427 **8 Claims**



1. An automatic exposure controller for a camera comprising:

photometry request means for generating a request signal requesting a photometry measurement;

a light sensing element for generating an analog voltage signal representing brightness of the object to be photographed;

compression means for logarithmaically compressing said analog signal;

an analog-to-digital converter for converting the analog signal, in logarithmically compressed form from said compression means which signal corresponds to the brightness of an object being photographed, into a corresponding digital value;

an information input circuit for providing exposure information relating to a diaphragm aperture, film speed or the like;

an arithmetic circuit for determining a digital version of an exposure period responsive to said request signal on the basis of the digital value supplied from the converter and the exposure information from the information input circuit;

a storage circuit for storing the digital version of the exposure period generated by said arithmetic circuit;

means for generating a shutter release signal;

a digital-to-analog converter for converting the digital version of the exposure period stored in the storage circuit prior to a shutter release operation as determined by the arithmetic circuit into a corresponding analog version in response to said shutter release signal;

a transistor for providing a logarithmically expanded output current of the output voltage developed by the digital-to-analog converter;

a capacitor for integrating the output current from the transistor upon the initiation of an exposure circuit;

an exposure decision circuit for determining the end of an exposure period in response to an integrated voltage across the capacitor reaching a given value; and

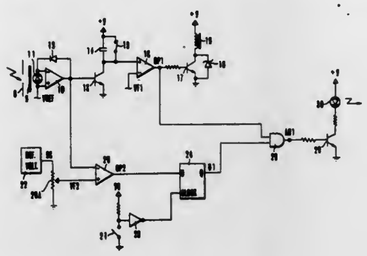
means responsive to said decision circuit for generating a shutter closing signal.

4,500,193

INDICATING APPARATUS FOR CAMERA

Ryoichi Suzuki, Kanagawa, and Ryuji Tokuda, Tokyo, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 250,687, Apr. 3, 1981, abandoned. This application Jan. 10, 1983, Ser. No. 456,786
Claims priority, application Japan, Apr. 7, 1980, 55-45958
Int. Cl.³ G03B *7/08*
U.S. Cl. 354—471 **10 Claims**



1. A camera comprising:

an auxiliary aperture for opening partially to a pre-open condition during a measuring mode, for completely closing at the start of an exposure mode and then for opening fully during an exposure;

an auxiliary aperture light measuring system having a light sensing element for measuring the light coming from the object through the auxiliary aperture;

an indicating signal producing element for producing an indicating in response to the output of the light sensing element; and

an indicating element for assuming a first indicating state in response to the indicating signal;

latch means for latching the indicating signal in response to a shutter release operation so as to maintain the output of the indicating element regardless of changes in light measured by said auxiliary light measuring system when said auxiliary aperture closes completely at the start of the exposure mode and then opens during an exposure; and

first means for bringing the indicating element into another indicating state in response to a shutter closing operation.

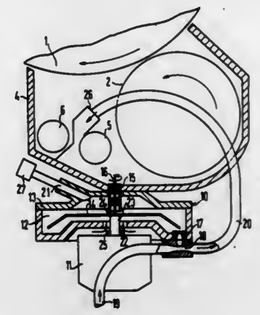
4,500,194

DEVICE FOR REGENERATING THE CARRIER PARTICLES OF A TWO-COMPONENT DEVELOPER CONSISTING OF CARRIER PARTICLES AND TONER

Joseph Knott, Tutzing, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Apr. 5, 1982, Ser. No. 365,391
Claims priority, application Fed. Rep. of Germany, Apr. 15, 1981, 3115331
Int. Cl.³ G03G *15/06*
U.S. Cl. 355—3 DD **16 Claims**

1. Apparatus for regenerating a developer particulate mix comprising carrier and toner particles contained in a developer unit adapted to deposit toner particles on an image bearing member comprising a chamber, an intake passage means for conducting said mix from said developer unit to said chamber, means for swirling said mix in said chamber in order to effect regenerative stripping of toner crust formations from carrier particles, and a discharge passage means for conducting regenerated mix from said chamber, said discharge passage means having an outlet end connected to a carrier line containing a pressurized air flow for conducting regenerated mix there-



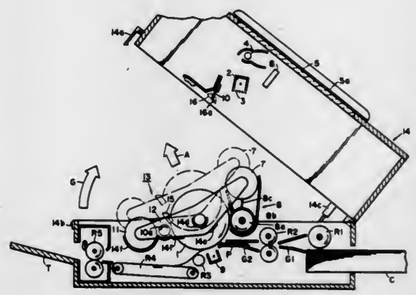
through, said carrier line leading from said discharge passage means to said developer unit.

4,500,195

IMAGE FORMING APPARATUS AND A UNIT DETACHABLY USED IN THE SAME

Nagao Hosono, Chofu, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 321,077, Nov. 13, 1981, abandoned. This application Jan. 30, 1984, Ser. No. 575,080
Claims priority, application Japan, Nov. 22, 1980, 55-165069
Int. Cl.³ G03G *15/00*
U.S. Cl. 355—3 R **36 Claims**



1. An image forming apparatus, comprising:

a process unit for forming images;

a main assembly having means for actuating said process unit to operate for image formation, wherein said process unit is receivable into said main assembly;

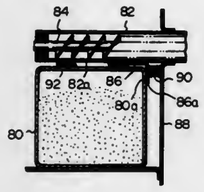
process means provided in said process unit and comprising a photosensitive member and means actable thereon for repetitive image formation, for cooperating with said actuating means of said main assembly to repetitively form an image on an image receiving material; supporting means for supporting said process means as a unit; and means for providing a representation of a property of said process means for use in forming said repetitive images on the image receiving material, effected by the cooperation of the means of said main assembly and said process means within said unit; and

control means coupled to said process means for controlling said process means within said unit in accordance with the property representation from said representation means.

4,500,196
PHOTOCONDUCTIVE ELEMENT CLEANING APPARATUS AND RESIDUAL TONER COLLECTING APPARATUS

Akira Shimura, Tokyo, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Division of Ser. No. 406,831, Aug. 10, 1982,. This application May 31, 1984, Ser. No. 616,340
Claims priority, application Japan, Aug. 19, 1981, 56-130663; Aug. 19, 1981, 56-130662; Aug. 19, 1981, 56-123285; Dec. 19, 1981, 56-189589
Int. Cl.³ G03G *15/08*
U.S. Cl. 355—3 DD **11 Claims**

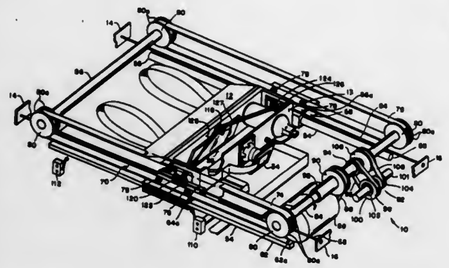


1. A toner collecting apparatus for collecting residual toner removed from a photoconductive element, comprising:
a toner discharging means which includes an opening for discharging the removed toner from a cleaning unit;
a removable container formed with a mouth through which the removed toner discharged from the toner discharging means through the opening is collected in said container;
a closure mechanism for positioning the container relative to the toner discharging means and blocking the opening of the toner discharging means when the container is removed from the toner discharging means.

4,500,197
TRANSPORT MEANS FOR FLAT BED SCANNER

Hugh St. L. Dannatt, Bethel, Conn., assignor to Pitney Bowes Inc., Stamford, Conn.

Filed Apr. 1, 1983, Ser. No. 481,507
Int. Cl.³ G03G *15/28*
U.S. Cl. 355—8 **5 Claims**

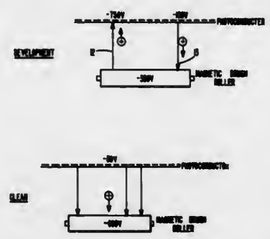


1. A scanning carriage assembly for use in a photocopy machine or similar reprographic reproducing apparatus, said assembly comprising:
(a) a pair of elongate parallel spaced apart guides,
(b) a support carriage extending between each of said guides and including means connecting said carriage to said guides for movement therealong between fixed end positions,
(c) electro-optical means mounted on said support carriage in position to scan a document as said carriage moves between said fixed positions,
(d) a pair of flexible drive members mounted in juxtaposition to said parallel guides and connected to said carriers for moving said carriers on said guides between said fixed end positions,
(e) means for driving said flexible drive members in opposite directions, and
(f) a pair of stabilizing cables fixedly connected to a suitable frame portion of the photocopy machine and extending at least from one of said fixed end positions to the other thereof, each of said cables commencing adjacent said fixed end of one of said parallel guides and terminating adjacent the other end of the other of said parallel guides, both of said cables passing through said support carriage and being relatively movably connected thereto, whereby said cables are operative to stabilize said support carriage during movement thereof in order to prevent any misalignment of said carriage with respect to said parallel guides which may result from slippage or creep of said flexible drive members.

4,500,198
MULTIPLE ROLLER MAGNETIC BRUSH DEVELOPER HAVING DEVELOPMENT ELECTRODE VOLTAGE SWITCHING

Raymond A. Daniels, Thornwood, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 10, 1982, Ser. No. 448,577
Int. Cl.³ G03G *15/08*
U.S. Cl. 355—14 D **4 Claims**



1. A two-cycle xerographic device having a reusable photoconductor with at least one image area and one interimage area thereon, and a plurality of xerographic facilities for performing the charging, imaging and transferring functions, said device including:
a multiroller magnetic brush developer and development electrode voltage source means therefor; and
control means responsive to the instantaneous position of said interimage area relative the position of each of the individual rollers of said magnetic brush, and operable to control said voltage source means so as to change an individual roller's voltage from a development mode to a cleaning mode as the leading edge of the interimage area encounters each of said individual rollers of said developer during the second cycle of the device.

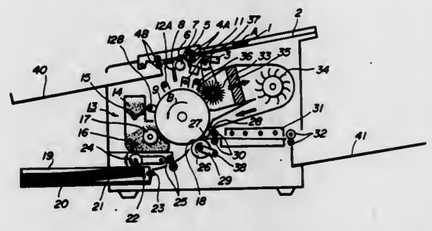
4,500,199
ELECTROPHOTOGRAPHIC APPARATUS COMPRISING DETECTION ASSEMBLY FOR DETECTING RECORD PAPER SHORTAGE

Muneo Kasuga; Akira Shimizu, and Tadashi Nishio, all of Hachioji, Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Apr. 8, 1983, Ser. No. 483,171
Claims priority, application Japan, Apr. 13, 1982, 57-60276
Int. Cl.³ G03G *15/00*
U.S. Cl. 355—14 CU **10 Claims**

1. An electrophotographic apparatus of the retention-type for forming a plurality of duplicated copies from a single latent image of a document, the apparatus comprising:

a photosensitive member, said photosensitive member being movably arranged;
means for substantially uniformly charging said photosensitive member;
means for projecting an optical image of the document to be duplicated onto the uniformly charged photosensitive member so as to form an electrostatic latent image thereon corresponding to the document;
means for developing the electrostatic latent image with toner particles to form a toner image;
means for transferring the developed toner image onto a record paper at a transfer section;

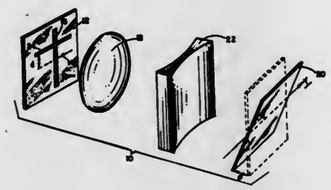


means for feeding the record paper through the transfer section; and
means for fixing the transferred toner image to form a duplicated copy;
means for detecting the number of remaining record papers in a paper supplying means; and
means for producing a paper shortage signal when the number of remaining record papers is decreased to a predetermined number slightly larger than the maximum number of duplicated copies which can be formed from a single latent image.

4,500,200
ELECTRO-OPTIC SENSOR FOR MEASURING ANGULAR ORIENTATION

William A. Kleinhans, Santa Ana, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Continuation-in-part of Ser. No. 206,744, Nov. 14, 1980, abandoned. This application Jul. 26, 1982, Ser. No. 401,758
Int. Cl.³ G01B *11/26;* G01C *1/00*
U.S. Cl. 356—152 **7 Claims**

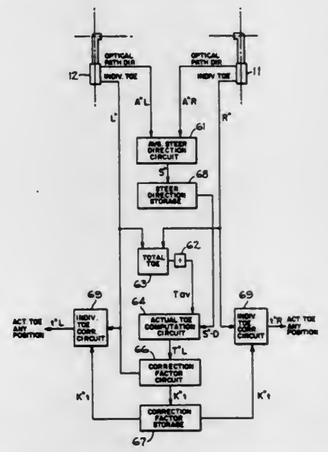


1. Apparatus for measuring angular displacement about a selected axis, comprising:
an array of photodetectors disposed along a line on a planar surface, wherein said planar surface is maintained substantially parallel to an axis plane containing said selected axis and a second axis orthogonal to said selected axis, and wherein said array line is substantially perpendicular to said selected axis;
a source of light disposed on said planar surface adjacent to a selected point on said array line;
optical means for transmitting light received from said source, wherein said transmitted light is collimated by said optical means, wherein said planar surface is at the focal plane of said optical means and wherein said optical means, said light source and said planar surface are mounted in fixed relationship to each other;
a reflecting reference flat mounted a, for receiving said transmitted light and for reflecting it back through said optical means and into an image of said source on said photodetector array, wherein the linear displacement along said array line of said image, relative to the position of said selected point, is a measure of the angular displacement about said selected axis between said flat and said planar surface; and
wherein said optical means includes means for spreading said image into a line image extending substantially perpendicular to said array line, said image spreading means having no more than about enough diverging effect than is necessary to maintain said line image in registration with said array of photodetectors for limited angular displacement about said second axis.

4,500,201
INDIVIDUAL TOE MEASURING SYSTEM

Melvin H. Lill, San Jose, Calif., assignor to FMC Corporation, Chicago, Ill.

Continuation of Ser. No. 261,445, May 5, 1981, abandoned. This application Oct. 12, 1983, Ser. No. 540,911
Int. Cl.³ G01B *11/26, 5/255*
U.S. Cl. 356—152 **6 Claims**



1. A method of measuring toe for wheels supporting a vehicle chassis wherein the wheels include pairs of non-steerable and steerable wheels, utilizing a pair of alignment heads adapted to be mounted on ones of the wheels and providing signals indicative of the individual toe of the wheels on which the heads are mounted, and an optical system incorporated in each head having an aimable optical axis extending therefrom, comprising the steps of
mounting an alignment head on each of the non-steerable wheels,
aiming each optical axis in a fixed direction at separate ones of a pair of points equidistant from a point on the centerline of the vehicle chassis,
providing an electrical signal indicative of the angular departure of each aimed optical axis from the plane of the non-steerable wheel on which the respective head is mounted,
combining the angular departure signals and providing and storing an average rolling direction value for the non-steerable wheels,

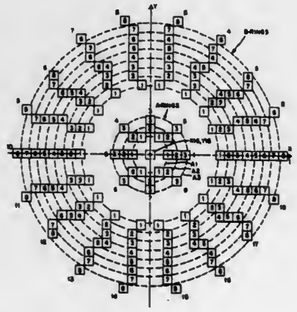
calculating a value indicative of the total toe of the non-steerable wheels utilizing the individual toe signals,
combining one-half of the total toe value with the average rolling direction value to obtain an actual toe value,
comparing the actual and individual toe values to obtain a toe correction value,
removing the alignment heads from the non-steerable wheels and mounting them on the steerable wheels,
aiming each optical axis in a fixed direction at separate ones of a pair of points equidistant from the centerline of the vehicle chassis approximately at the position of the non-steerable wheels,
providing an electrical signal indicative of the angular departure of each aimed optical axis from the plane of the steerable wheel on which the respective head is mounted,
calculating a value indicative of total toe of the steerable wheels utilizing the steerable wheel individual toe signals,
combining one-half of the steerable wheel total toe and the angular departure signals with the stored non-steerable wheel rolling direction signal so that an actual toe angle signal for each steerable wheel is obtained which is referenced to the non-steerable wheel average rolling direction,
comparing the actual toe for one steerable wheel with the individual toe for that wheel to obtain a steerable wheel toe correction factor, and
storing the steerable wheel correction factor for application to steerable wheel individual toe for other steering angles and toe adjustments.

4,500,202

PRINTED CIRCUIT BOARD DEFECT DETECTION OF DETECTING MAXIMUM LINE WIDTH VIOLATIONS

Bruce E. Smyth, Waltham, Mass., assignor to Itek Corporation, Lexington, Mass.

Continuation-in-part of Ser. No. 381,618, May 24, 1982,. This application Aug. 8, 1983, Ser. No. 521,045
Int. Cl.[3] G06K *9/00*
U.S. Cl. 356—237 **4 Claims**



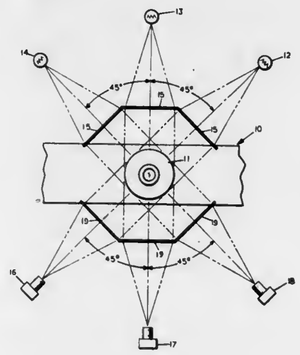
1. The method of determining in patterned images of lines and spaces of predetermined line width and spacing the presence of lines exceeding the maximum allowable predetermined line width comprising the steps of:
(a) forming pixels comprising a plurality of electronic signals corresponding to the patterned image;
(b) arranging said pixels in two concentric rings of pixels;
(c) said rings including an inner ring having a diameter slightly greater than the maximum allowable predetermined line width and an outer ring substantially greater than the maximum allowable predetermined line width;
(d) determining the following:
(i) if all pixels on said inner ring are in a logic state corresponding to a line image;
(ii) if less than a predetermined number X of pixels on said outer ring are in the same logic state as (i) above;
(iii) if less than Y number of selected opposite pairs of pixels on said outer ring are in identical logic state.

4,500,203

METHOD AND APPARATUS FOR INSPECTING ARTICLES

Robert J. Bieringer, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Sep. 30, 1982, Ser. No. 429,777
Int. Cl.[3] G01N *21/90*
U.S. Cl. 356—240 **23 Claims**



1. The method of inspecting the shape of a generally cylindrical or oval article which comprises the steps of illuminating the said article with a series of three lamps located at three different angles along one side of said article, scanning the profile of the illuminated article with a series of three similar photosensors located in fixed juxtaposition at three different complemental angles along the other side of said article during operation of the juxtaposed lamps, measuring the extremities of each of the three profiles of said article at the same planar elevation to permit calculation of the major and minor axes of said article independently of orientation, and rejecting the said article as defective when the deviation of the major and minor axes exceeds established maximum or minimum dimensions.

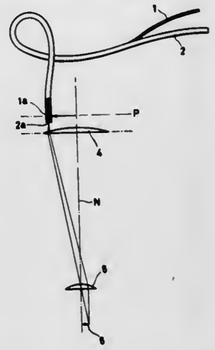
4,500,204

SCANNING-TYPE LITHOGRAPHIC AND IMAGE-PICKUP DEVICE USING OPTICAL FIBER

Mutsuo Ogura, Ibaraki, Japan, assignor to Agency of Industrial Science & Technology and Ministry of International Trade & Industry, both of Tokyo, Japan

Filed Apr. 2, 1982, Ser. No. 364,911
Claims priority, application Japan, Apr. 21, 1981, 56-61018; Apr. 21, 1981, 56-61019
Int. Cl.[3] G01N *21/63*
U.S. Cl. 356—318 **26 Claims**

1. A scanning-type lithographic and image-pickup device, comprising at least one projecting optical fiber, at least one picking-up optical fiber, a scanning mechanism for causing the terminal portions of said projecting and picking-up optical fibers to produce a scanning motion, and an optical system for guiding the light projected from said projecting optical fiber to the surface of a given object and then guiding the light reflected on said surface through the same light path into said picking-up optical fiber, either of said projecting optical fiber and picking-up optical fiber being positioned in the plane of



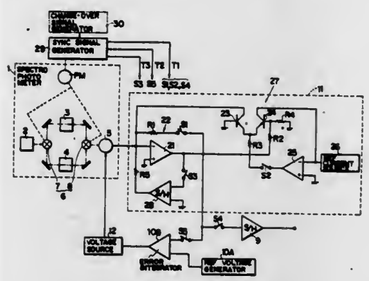
real image of said optical system and the other optical fiber being positioned in front of or behind the plane of real image.

4,500,205

SPECTROPHOTOMETER

Shinichiro Watanabe, Tokyo, Japan, assignor to Japan Spectroscopic Co., Ltd., Hachioji, Japan

Filed Feb. 10, 1983, Ser. No. 465,683
Claims priority, application Japan, Feb. 15, 1982, 57-23248
Int. Cl.[3] G01J *3/42*
U.S. Cl. 356—325 **7 Claims**



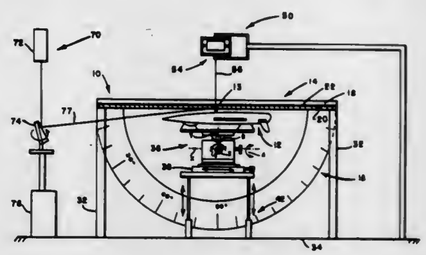
1. In a spectrophotometer of the type comprising a radiation source, a reference cell, a sample cell, a radiation detector which produces an electrical output, and beam path switching means for directing monochromatic radiation of varying wavelengths from the source alternately to the reference and sample cells to form reference and sample beams and directing in synchronism the reference and sample beams to said detector, wherein an output of said detector which responds to the reference beam is fed back to said detector such that said output may be equal to a reference voltage upon measurement of a sample material in said sample cell at all wavelengths, whereby an output of said detector which responds to the sample beam represents the transmittance of the sample for each wavelength,
the improvement comprising
a current-voltage converting amplifier connected to the output terminal of said detector,
a logarithmic amplifier connected to the output terminal of said detector, and
synchronization switching means for alternately rendering said current-voltage converting amplifier and said logarithmic amplifier operative in synchronism with the operation of said beam path switching means,
whereby selection is made by means of said synchronization switching means in synchronism with the operation of said beam path switching means between at least two states, a first state where an output of said detector is directly fed to said logarithmic amplifier without passing said current-voltage converting amplifier and a second state where an output of said detector is directly fed to said current-voltage converting amplifier without passing the logarithmic amplifier.

4,500,206

OPTICAL SYSTEM FOR MEASURING SHADOWGRAPH DATA

Eugene O. Cole, Tucson, Ariz., and Vahan H. Yeterian, Lompoc, Calif., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Oct. 15, 1982, Ser. No. 434,671
Int. Cl.[3] G01B *11/24*
U.S. Cl. 356—376 **10 Claims**



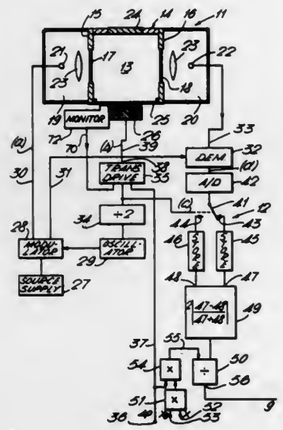
1. An optical system for measuring shadowgraph data from an object under study comprising:
first means fixedly secured to a stationary surface for providing angular markings from 0 to 360 degrees;
second means fixedly secured to said first means and situated perpendicular thereto for providing angular markings from 0 to 90 degrees;
said first and second angular marking means being joined together in order to form an imaginary spherical configuration in which said object under study can be positioned;
means for positioning said object under study within said imaginary spherical configuration, said object positioning means providing movement of said object under study about three independent axes as well as linear movement along said three axes;
means for aligning said object under study with respect to said first and second angular marking means;
means for providing a beam of electromagnetic radiation adjacent said second angular marking means and for illuminating preselected angular markings on said second means; and
means operably associated with said object positioning means for rotating said object about an axis passing through the center of and perpendicular to said first angular marking means;
whereby upon rotation of said object under study about said axis passing through said first angular marking means, shadowgraph data angular measurements are obtained as said electromagnetic beam intersects said angular markings of said second means and said object under study.

4,500,207

NON-DISPERSIVE OPTICAL DETERMINATION OF GAS CONCENTRATION

Adrian J. Maiden, Stockport, England, assignor to Ferranti, PLC, England

Filed Nov. 8, 1982, Ser. No. 440,040
Claims priority, application United Kingdom, Nov. 14, 1981, 8134389
Int. Cl.³ G01N *21/61*
U.S. Cl. 356—409 13 Claims



1. Apparatus for non-dispersive optical determination of the concentration of an identifiable gas in an atmosphere comprising a sample chamber arranged to communicate with the atmosphere by flow limiting means in the form of a plug of porous material operable to limit the rate of gas flow between the chamber and atmosphere to a value whereby after a pressure change is induced in the chamber and for a time period thereafter there is no substantial restoration of gas pressure within the sample chamber towards atmospheric, transducer means operable to change the pressure of the gas mixture in the sample chamber by a predetermined amount between first and second pressures, a source of a beam of radiation at a wavelength absorbed by the identifiable gas only of the mixture, window means by which the radiation is passed through the sample chamber, a detector responsive to radiation at said wavelength after passage through the sample chamber to produce a signal related to the intensity level of the radiation detected, and signal processing means operable to derive a signal representing the fractional change in intensity ($\Delta I/I$) of the detected radiation due to the pressure change in the sample chamber and calculate from said derived signal, the chamber pressure change (Δp), radiation path length through the gas mixture (x) and an absorption constant characteristic of the specific gas (α_o), a representation of the gas concentration g in accordance with the formula

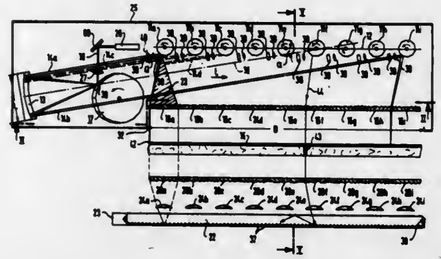
$$g = -\Delta I/(I \cdot \Delta p \alpha_o x).$$

4,500,208

APPARATUS FOR SEEKING FAULTS IN WIDE MATERIAL WEBS

Erwin Sick, Icking, Fed. Rep. of Germany, assignor to Erwin Sick GmbH Optik-Elektronik, Waldkirch, Fed. Rep. of Germany

Filed Jun. 16, 1982, Ser. No. 388,860
Claims priority, application Fed. Rep. of Germany, Jun. 26, 1981, 3125189
Int. Cl.³ G01N *21/88;* G01M *11/08*
U.S. Cl. 356—431 31 Claims



1. Apparatus for seeking faults in wide material webs during movement of the same, the apparatus comprising:

beam scanning means for scanning a sharp light beam across the web transverse to the direction of web movement to examine the web across its full width with full coverage of the scanning beam;

light receiving means including photoelectric converter means arranged along the web to receive the light beam from the web according to the presence of a fault in the web, whereby faults in the web are detected from signals from said photoelectric converter means;

said beam scanning means including a main light deflecting device, illuminated by the light beam, for sequentially scanning a plurality of subsidiary light deflecting devices spaced apart along a first line with each subsidiary light deflecting device being arranged to scan the light beam incident thereon across a respective linear scanning zone on the web; and

a main optical imaging element for successively illuminating the subsidiary light deflecting devices with the light beam at an angle to said first line, said linear scanning zones jointly covering the full width of the web.

4,500,209

FEED MIXING APPARATUS

Marvin B. Steiner, and Roy I. Steiner, both of Orrville, Ohio, assignors to Sevenson Company, Orrville, Ohio

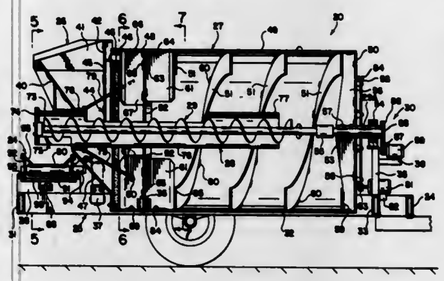
Continuation-in-part of Ser. No. 253,307, Apr. 13, 1981, Pat. No. 4,444,509. This application Feb. 10, 1984, Ser. No. 578,853
Int. Cl.³ B01F *15/02, 9/08*
U.S. Cl. 366—157 8 Claims

1. In a mixing apparatus for livestock feed constituents having a frame, a cylindrical drum with front and rear walls and internal spiral mixing and conveying blades mounted for unidirectional rotation on said frame, said drum front wall having an axial opening, a hopper assembly supported on said frame in front of said drum, a feed pipe extending from said hopper assembly and into said drum through said axial opening and axially of said spiral mixing and conveying blades, and a feeder screw auger shaft mounted for bidirectional rotation in said feed pipe, the improvements wherein:

said drum carries a circular shroud ring projecting in front of said drum front wall and terminating adjacent said hopper assembly;

the outer face of said drum front wall has thereon, within said shroud ring, a series of radial paddles;

said hopper assembly has front, side and rear walls forming a box for receiving said feed constituents, said hopper assembly rear wall, below said box, terminating at a substantially circular opening having a diameter slightly less than the diameter of said drum shroud ring and substantially greater than said drum front wall axial opening, said hopper assembly front and side walls, below said box, extending downwardly below said feed pipe forming a chamber for holding said feed constituents; and,



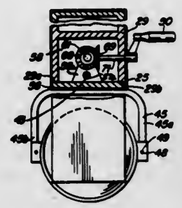
said feed pipe has a front segment projecting in the front of said hopper assembly and a semi-cylindrical upwardly opening medial segment extending from said hopper assembly and through said hopper assembly and through said hopper assembly rear wall circular opening and said drum front wall axial opening, said projecting feed pipe front segment having an opening for discharging mixed feed from said drum toward a delivery point.

4,500,210

MIXING APPARATUS

Erik O. Vilen, La Grange Park, Ill., assignor to Blakeslee, A division of Blako, Inc., Cicero, Ill.

Filed May 20, 1983, Ser. No. 496,544
Int. Cl.³ B01F *7/30*
U.S. Cl. 366—207 8 Claims



1. For use with a mixing apparatus, a bowl support arrangement which is self-aligning with respect to the mixing apparatus, said support arrangement comprising:

a bowl support member having:

(a) a yoke portion adapted to receive and hold a mixing bowl,

(b) a base portion adapted to be raised and lowered as desired by the user thereof, and

(c) a single guide portion defining an aperture extending inwardly from said base portion into the mixing apparatus;

a guiding means comprising a guide rod mounted inwardly of said mixing apparatus and passing through said aperture and defining a single vertically extending guide rail for said bowl support member, said guiding means engageable by said single guide portion of said bowl support member for raising and lowering said bowl support member as desired, and

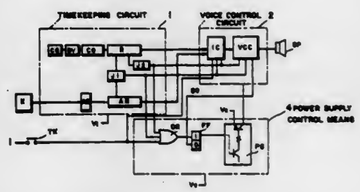
a bearing surface means engageable by said base portion of said bowl support member, with said guiding means and said bearing surface means cooperating with said bowl support member to maintain and to support said bowl support member when the mixing apparatus is operative and to provide a load bearing surface between said bearing surface means and said base portion during the mixing operation.

4,500,211

AUDIBLY ANNOUNCING APPARATUS WITH POWER SAVING FEATURE

Shintaro Hashimoto, Ikoma; Sigeaki Masuzawa, Nara; Shinya Shibata, Yamatokoriyama; Hiroshi Tsuda, Uji, and Masahiro Nakano, Yamatokoriyama, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 129,653, Mar. 12, 1980, abandoned. This application Apr. 30, 1982, Ser. No. 373,680
Claims priority, application Japan, Mar. 12, 1979, 54-29024
Int. Cl.³ G04B *21/08, 1/00*
U.S. Cl. 368—63 9 Claims



1. An audibly announcing timepiece comprising:

timekeeping means for producing a signal indicative of the time of day;

alarm means monitoring said signal produced by said timekeeping means for producing an alarm enable signal representative of the occurrence of a desired time of day;

speech synthesis means responsive to the presence of said alarm enable signal produced by said alarm means and responsive to said signal indicative of the time of day for generating a representation of information stored therein in an audible synthetic speech voice;

a power supply;

enablement means for selectively supplying power from said power supply to said speech synthesis means when said alarm signal is present in order to enable said speech synthesis to produce said audible voice;

said enablement means disconnecting power to said speech synthesis means when said audible sounds are not desired.

4,500,212

EXPANDED INTERVAL TIMER DRIVE MECHANISM

Guy A. Wojtanek, Franklin Park, Ill., assignor to The Singer Company, Stamford, Conn.

Filed Jul. 2, 1984, Ser. No. 627,128
Int. Cl.³ G04F *8/00*
U.S. Cl. 368—108 7 Claims

1. A program timer having a plurality of timing cams located on a rotating member and controlling the operation of switches in a predetermined program, characterized by:

a ratchet ring mounted on said rotating member for movement therewith, said ratchet ring having a first group of ratchet teeth of a first major radius and a second group of ratchet teeth of a second major radius less than said first major radius;

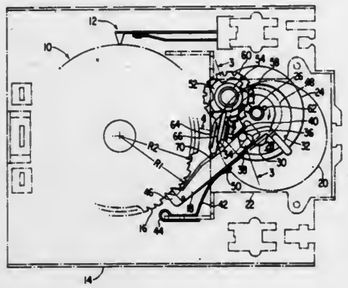
a drive pawl;

means for yieldably biasing said drive pawl against said ratchet ring;

drive means for linearly reciprocating said drive pawl substantially tangential to said ratchet ring; and

lifting means operating against the force of said biasing means for intermittently lifting said drive pawl away from the center of said rotating member to a level between said

second major radius and said first major radius so that said drive pawl cannot engage said second group of ratchet



teeth but can engage said first group of ratchet teeth when so lifted.

4,500,213

ULTRA-FLAT SELF-WINDING WATCH

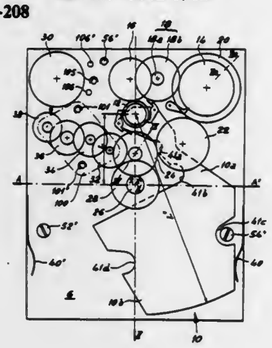
Maurice Grimm, Neuchatel, Switzerland, assignor to Ebauches, S.A., Switzerland

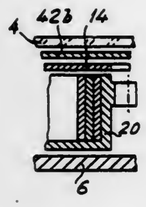
Filed Oct. 19, 1981, Ser. No. 312,731

Claims priority, application Switzerland, Oct. 24, 1980, 7961/80

Int. Cl.³ G04B *5/02*

U.S. Cl. 368—208 **7 Claims**





1. A self-winding watch comprising a case with a back and, within said case:

a first zone including analogue time indicating means rotating about a first axis perpendicular to the back; and

a second zone at least partially located between said first zone and said back and including in a first region, a spring barrel having a thickness defined by spaced apart planes substantially parallel to the case back, an escapement-balance wheel unit, a gear train drivably interconnecing said spring barrel, said time indicating means and said escapement-balance wheel unit, and an arm located in said second zone and between the planes defining the thickness of the spring barrel, said arm having a longitudinal axis and first and second ends, said first end being pivotally mounted about a second axis perpendicular to the back, which is offset with respect to the first axis, and in a second region, an oscillating mass which is fixed to the second end of said arm to form therewith a winding weight for driving said spring barrel;

said mass and said spring barrel being located at the same level relative to the back; and

said first axis being closer to the mass than said second axis.

4,500,214

APPARATUS FOR THE CONTINUOUS MEASUREMENT OF THE HEATING POWER OF A GAS

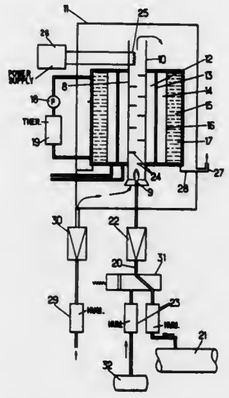
Pierre Calvet, and Bernard Platet, both of Toulouse, France, assignors to Office National d'Etudes et de Recherche Aerospatiales, Llon sous Bagneau, France

Filed Sep. 27, 1982, Ser. No. 424,238

Claims priority, application France, Oct. 5, 1981, 81 18722

Int. Cl.³ G01N *25/22*

U.S. Cl. 374—36 **10 Claims**



1. An apparatus for the continuous measurement of the heating power of a fuel gas, comprising:

a calorimeter;

an open cell in said calorimeter having a lower part and an upper part;

a burner located in and surrounded by said lower part and means for supplying the burner and the cell respectively with fuel gas and combustion air at a predetermined pressure and feedrate, said calorimeter having an external wall defining an annular space with a wall of said cell;

means for maintaining said external wall at a constant temperature;

a dividing wall parallel to said external wall and partitioning said space into a closed internal enclosure and a closed external enclosure having thicknesses which are small as compared with their other dimensions, said internal and external enclosures being filled with respective quantities of a common measurement gas and constituting a heat transmission path from said cell to said external wall; and

a differential gas thermometer arrangement for measuring the difference between the temperature of said common gas in said external enclosure and in said internal enclosure to thereby determine the heating power of said fuel gas.

4,500,215

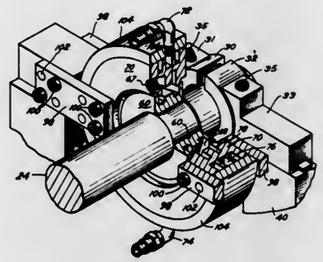
ICE BEARING ASSEMBLY

Timothy C. Rusboldt, 338 Hickory St., Michigan City, Ind. 46360

Filed Sep. 1, 1983, Ser. No. 528,548

Int. Cl.³ F16C *37/00*

U.S. Cl. 384—319 **14 Claims**



1. An ice bearing assembly having a rotatably supported member for rotation in the assembly, said assembly comprising at least one centering means disposed around said supported member and at least one ring member disposed around said centering means and defining a chamber therebetween, a means for injecting a freezable fluid into said chamber for freezing therein, a means for cooling said ring member to a temperature sufficient to cause freezing of said fluid, whereby said centering means slidably engages said frozen fluid during rotation of the supported member, and alignment bearing assemblies for said supported member, having open and closed positions and being spaced apart along the axis of said supported member, said closed position for aligning and supporting the supported member before injection of said fluid into said chamber and before said fluid has frozen, and said open position for allowing free movement of the supported member.

4,500,216

ELECTRONIC TYPEWRITER

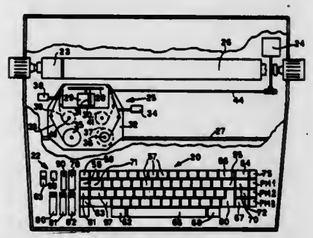
Flippo Demonte, Borgofranco, and Mario Figini, Borsco Marengo, both of Italy, assignors to Ing. C. Olivetti & C., S.p.A., Ivrea, Italy

Continuation of Ser. No. 58,202, Jul. 17, 1979, abandoned. This application Oct. 13, 1981, Ser. No. 310,964

Claims priority, application Italy, Jul. 18, 1978, 68695 A/78

Int. Cl.³ B41J *19/64, 5/30*

U.S. Cl. 400—8 **6 Claims**



1. In an electronic typewriter comprising a keyboard having alphanumeric keys for entering characters of words and space means for entering spaces between said words and a print unit for printing the entered characters, the combination comprising: justification selecting means of the keyboard actuatable between an inoperative state and an operative state, means for defining in sequence each printing point of the entered characters along a printing line, end margin positioning means for storing the position of an end margin of the printing line, means for fixing an editing region on the printing line wherein the entered characters should be edited to have the last character of the printing line justified with respect to the end margin of the printing line, means for confronting the printing point of the entered characters defined by said defining means with respect to said region, a line store for sequentially storing the printing points of the printing line and associated characters to be printed in said printing points, means responsive to the operative state of said justification selecting means and to said confronting means for causing the print unit to print immediately in sequence the entered characters on said printing points whether said points are external to the editing region and for storing without printing said entered characters in said line store whether the defined printing points are internal to said editing region, means responsive to said confronting means and to the entered characters to complete printing of all characters of a last word, even in the case when part of said characters of the last word are internal to the editing region and to actuate storage without print only after a space adjacent to the last word has been entered by said space means, means for modifying the printing points of stored and not printed characters along the printing line and service keys actuatable to cause the print unit to print in sequence said stored and not printed characters on the modified printing points of said editing region to obtain the last character of the printing line correctly justified with respect to the end margin of the printing line.

6. An electronic typewriter comprising a keyboard having alphanumeric keys actuatable for entering characters to be printed and having a heavy print selecting member, a serial print unit movable along a plurality of printing points of a printing line of a sheet, print control means causing said print unit to print the entered character on its printing point of the sheet, wherein said print control means respond to the code of each actuated alphanumeric key and to an actuated position of said heavy print selecting member to cause the print unit to print the entered character on its printing point and to repeat the print of said entered character after the print unit has been displaced through a predetermined small distance with respect to its printing point in order to give the appearance of heavy print, code generating means responsive to actuation of one of said alphanumeric keys for generating a character code associated with said actuated alphanumeric key, wherein said code generating means respond to actuated position of said heavy print selecting member for generating a heavy print code associated with said character code, a line store having cells associated with said printing points for storing therein character codes and the associated heavy print code for moving the print unit along the printing line and in front of the printing points of the already written characters, means responsive to the printing point of the print unit for addressing in sequence an associated cell of said cells, and a deleting device for deleting from the sheet characters already written using reprinting in a deleting mode of the characters written, wherein said deleting device comprises means which identify the cell of the character written to be deleted and which recall from the line store the code of said characters written, means responsive to the character code of said characters to reprint them in a deleting mode and means responsive to the heavy print code associated with said code of character for repeating the reprint of said characters in the delete mode after the print unit has been displaced substantially said predetermined distance with respect to the first reprint in order to completely delete the character written through said heavy print mode.

4,500,217

ELECTRONIC PRINTER MECHANISM WITH MOVABLE PRINTHEAD ASSEMBLY

Danny E. Swindler, Lubbock, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Nov. 12, 1982, Ser. No. 441,313

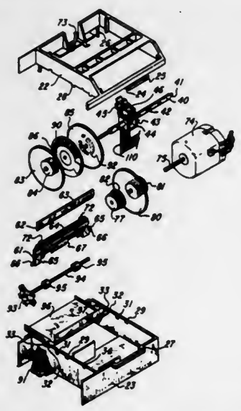
Int. Cl.³ B41J *19/30, 25/30, 29/02*

U.S. Cl. 400—320 **2 Claims**

1. A printer mechanism comprising:

a housing;

a rotatable operating shaft mounted in said housing;
a carrier member mounted on said operating shaft for traversing movement therealong;
a printhead fixedly supported by said carrier member for traversing movement therewith in relation to said operating shaft and adapted to selectively produce indicia including alphanumeric characters and symbols for printing onto a web medium disposed in opposed relation to said printhead;
a platen member disposed above said operating shaft and extending across said housing in parallel offset relation to said operating shaft, said platen member having a web-supporting planar surface facing said printhead;
means biasing said platen member in a direction toward said printhead such that the web medium extending between said printhead and said platen member is loosely clamped therebetween;
a motor having a rotatable power shaft;
gear train means operably associated with said power shaft and said operating shaft to impart rotation to said operating shaft upon the rotation of said power shaft, said gear train means comprising
a drive gear fixed to said power shaft and rotating therewith,
an idler reducer gear having a cogwheel of larger diameter with respect thereto and movable therewith loosely mounted on said power shaft,



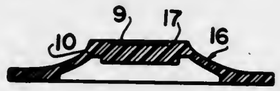
a first driven gear fixedly mounted on said operating shaft,
a second driven gear of smaller diameter than said first driven gear, said second driven gear being fixedly mounted on said operating shaft and being movable with said first driven gear,
control gear means loosely mounted on said operating shaft, said control gear means comprising a toothed gear wheel having a plurality of teeth on its outer periphery of a number xN, where x is an integer multiple of the number of teeth N on the outer periphery of said reducer gear, said toothed gear wheel of said control gear means having a pattern of conductive timing strips disposed on one side surface thereof to define a timing control and having cam means disposed on the opposite side surface thereof,
said drive gear being in meshing engagement with said first driven gear to impart rotation thereto via the rotation of said power shaft for rotating said second driven gear and said operating shaft,
said second driven gear being in meshing engagement with said cogwheel of said idler reducer gear to impart rotation thereto when said second driven gear is undergoing rotation,
said reducer gear being in meshing engagement with said toothed gear wheel of said control gear means to impart rotation thereto when said reducer gear is undergoing rotation such that said control gear means is rotated at a speed 1/x of the rotary speed of said reducer gear,
timing control means including an electrical contact member in engagement with one of said conductive timing strips of said pattern thereof disposed on said one side surface of said toothed gear wheel for regulating the operating cycle of said printer mechanism in response to rotation of said control gear means disposing successive conductive timing strips in respective engagement with said electrical contact member in producing respective lines of printed type on the web medium, and
means operably associated with said cam means disposed on the opposite side surface of said toothed gear wheel of said control gear means for advancing the web medium one line at a time in response to completion of one line of printed type by said printhead; and
means actuating said motor to rotate said power shaft; and
said carrier member moving axially along said operating shaft in response to the rotation thereof to position said printhead for producing printed indicia along a line of the web medium disposed between said printhead and said platen member.

4,500,218

KEYBOARD KEY WITH EMBEDDED TOP CHARACTER

Yoshikazu Nishikawa, Misato, Japan, assignor to Toho-Polymer Kabushika Kaisha, Tokyo, Japan

Filed May 20, 1982, Ser. No. 380,414
Claims priority, application Japan, Jun. 5, 1981, 56-85565
Int. Cl.³ B41J *5/16*
U.S. Cl. 400—490 **3 Claims**



1. An operation indicating member which comprises a body made of a soft silicone-type elastomer, said body having a smooth, uninterrupted top surface, and a pre-printed indicia layer embedded in the top surface of said body and having a top surface extending flush with the top surface of said body as a continuation thereof, said pre-printed indicia layer comprising a printing ink consisting of a material having a vulcanizing mechanism similar to that of the silicone-type elastomer, said printing ink being embedded in the form of an indicia character in the soft silicone-type elastomer forming the top surface of said body and vulcanized together with said silicone-type elastomer to form a unitary structure therewith, said pre-printed indicia layer being initially formed by printing of said ink on a separate transfer plate and transferred to the top surface of said body without punching by virtue of the co-vulcanization of said ink and said body.

4,500,219

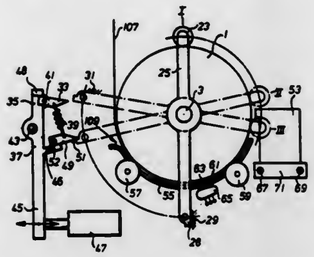
METHOD AND APPARATUS FOR GUIDING THE PAPER IN TYPEWRITERS OR SIMILAR OFFICE MACHINES

Heinz Lange; Albert Rix, and Dieter Drogi, all of Wilhelmshaven, Fed. Rep. of Germany, assignors to Olympia Werke AG, Wilhelmshaven, Fed. Rep. of Germany

Filed Aug. 18, 1982, Ser. No. 409,050
Claims priority, application Fed. Rep. of Germany, Aug. 22, 1981, 3133297
Int. Cl.³ B41J *3/04, 11/44, 13/042*
U.S. Cl. 400—568 **15 Claims**

1. A paper guiding device for use in an office machine in which successive lines of characters are printed on a paper sheet with an ink which can be smeared for a short period after application to the sheet, and which machine includes a carriage supporting a printing head for movement along a printing line, said device comprising: a platen shaft arranged to be rotatably

mounted in the machine; a platen carried by said shaft and constituting a paper support; said platen shaft and platen being rotatable in a first direction for insertion and feeding of a paper sheet in the machine and in a second direction opposite to the first direction; a paper guide trough surrounding a portion of said platen; a paper holding rail disposed adjacent said platen; a plurality of pressure rollers carried by said rail; spring means disposed for urging said rollers toward said platen in order to press a paper sheet against said platen; a rocker member supporting said rail and mounted to undergo pivotal movement about the axis of rotation of said platen shaft between a paper insertion position and a normal printing position; and coupling means coupling said rocker member and platen such that: rotation of said platen in said second direction effects pivotal



movement of said rocker member into said paper insertion position for insertion of the leading edge of a paper sheet between said rollers and said platen; rotation of said platen in said first direction during insertion and feeding of a paper sheet is accompanied by maintenance of said rocker member in said paper insertion position until the leading edge of such paper sheet is pressed between said rollers and said platen; and further rotation of said platen in said first direction effects pivotal movement of said rocker member into said normal printing position, with simultaneous transport of the paper sheet, while said rollers maintain the sheet flat against said platen, said normal printing position being sufficiently remote from the printing line to assure that the printed characters will not be smeared upon contact with said rollers.

4,500,220

MECHANICAL PENCIL WITH REMOVABLE LEAD FEED COVER

Junichi Hashimoto, Tokyo, Japan, assignor to Pentel Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 20, 1982, Ser. No. 420,294
Int. Cl.³ B43K *21/02, 21/22, 9/00*
U.S. Cl. 401—53 **6 Claims**



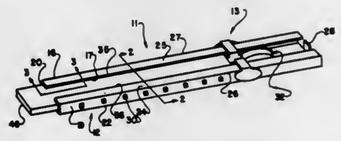
1. A mechanical pencil having a removable cover and comprising:
an elongated tubular housing having first and second ends;
a sleeve longitudinally displaceably mounted in said housing and projecting from said first end thereof to form a pencil tip, said sleeve including an inner surface portion;
an elastomeric ring mounted in said sleeve for frictionally slideably holding a lead therein;
a lead feed tube longitudinally displaceably mounted within said housing, said feed tube including jaws for clamping the lead and a lead container projecting from said second end of said housing, said jaws being positioned within said sleeve;
first spring means for biasing said feed tube to a retracted position towards said second end of said housing;
an annular member mounted in said inner surface portion of said sleeve for longitudinally sliding movement to a position in close contact with said jaws for forcibly placing said jaws into a closed position to firmly grasp the lead therein;
a removable tubular cover capable of being attached to said tubular housing over either of said first or second ends thereof; and
means for, upon mounting said cover over said first end of said housing, moving the lead to extend from said tip by retracting said sleeve inwardly of said housing against the force of said spring means for a first distance, during which said jaws are maintained in position clamping the lead and said sleeve moves relative to the lead and said feed tube, and for a second distance, during which said jaws are unclamped from the lead and said sleeve and the lead move relative to said feed tube, said moving means comprising a button member mounted within said cover coaxially therewith, said button member having a surface contacting said sleeve during retraction thereof, and said surface having therein a slot into which the free end of the lead is extended upon movement of said sleeve relative to the lead.

4,500,221

MARKER HOLDER APPARATUS

Clarence A. Emerson, 203 E. Birch, Bozeman, Mont. 59715

Filed Oct. 1, 1981, Ser. No. 307,617
Int. Cl.³ B43K *23/00, 21/06*
U.S. Cl. 401—82 **7 Claims**



1. Marker holder apparatus including a guide portion and an advancing portion; said guide portion including an elongated member with an open longitudinal slot, said elongated member including a bottom section, sidewall sections extending substantially perpendicularly from the longitudinal edges of said bottom section, flange sections extending from longitudinal edges of said sidewall sections remote from said bottom section, said flange sections extending toward one another substantially parallel to said bottom section, a stop section disposed adjacent one end of said elongated member, biasing means located adjacent the end of said elongated member remote from said stop section, a plurality of spaced openings along the length of each of said sidewall sections, the openings in one of said sidewall sections being spaced therealong at points corresponding to the openings in the other of said sidewall sections; said advancing portion including an arcuate strip section disposed within said elongated member with each free end thereof being disposed adjacent a sidewall section, said strip section having a width substantially the same as the height of said elongated member, connector sections extending from said strip section across said flange sections from the free edges to the outer edges thereof, actuator sections extending from said connector sections along said sidewall sections and spaced substantially parallel therefrom, opening-engaging sections extending from said arcuate strip section adjacent said connector sections, said opening-engaging sections extending from said strip section partway toward said actuator sections, said opening-engaging sections each including a projection of reduced width extending from said arcuate strip section, said arcuate strip section biasing said opening-engaging sections toward said sidewall sections; whereby applying finger pres-

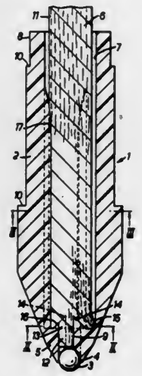
sure to said actuator sections frees said opening-engaging sections from openings in said sidewall sections to allow said advancing portion to be moved along the length of said elongated member.

4,500,222

AQUEOUS INK WRITING TIP

John P. Clading-Boel, Enfield, England, assignor to Waite & Son Limited, Mitcham, England

Filed Jul. 10, 1979, Ser. No. 56,230
Claims priority, application United Kingdom, Jul. 11, 1978, 29444/78; Sep. 11, 1978, 36371/78
Int. Cl.³ B43K *7/10, 8/02*
U.S. Cl. 401—209 **6 Claims**



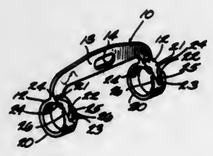
1. A writing tip for use with aqueous ink comprising an elongate housing; a socket at one end of the housing; a ball retained in the socket; a bore extending from the other end of the housing towards the socket; a feed passage in the housing between the bore and the socket, said feed passage comprising a central channel and a plurality of grooves extending radially outwardly from the channel and between the bore and socket; and a feed core comprising fibrous material defining aqueous ink feeding capillaries extending into the housing at the other end thereof, through said bore and into the feed passage at the end thereof remote from the socket, which end of the feed passage is formed with a plurality of projections which extend into said bore and shear the material of the core as it is inserted into the feed passage to displace material not aligned with said passage into a region of the bore adjacent said end of the passage whereby the material of the core within the feed passage is substantially uncompressed.

4,500,223

CARRIER FOR HINGED SUPPORT OF PAGES

Gerald T. Downing, Port Washington, and Karl P. Schaefer, Brookfield, both of Wis., assignors to W. H. Brady Co., Milwaukee, Wis.

Filed Sep. 14, 1983, Ser. No. 531,883
Int. Cl.³ B42F *3/02, 13/02*
U.S. Cl. 402—20 **6 Claims**



1. A carrier for holding a plurality of pages having ring-engaging apertures along an edge portion comprising, in combination:

(1) a support member;

(2) at least one ring extending from the support member and including

(a) a rigid lower retention finger extending about a major portion of the ring, and

(b) a flexible upper finger integral with the retention finger and extending about a minor portion of the ring;

(3) the lower retention finger and the flexible upper finger each having a free end located adjacent to and spaced from one another;

(4) the free end of the lower retention finger being defined by at least one rigid tang and the free end of the upper finger being defined by a flexible tang extending alongside of the rigid tang; and

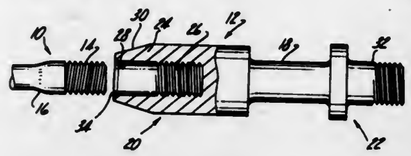
(5) the inner surface of the lower retention finger and the inner surface of the flexible upper finger each having substantially the same radius, the lower retention finger having a substantially constant thickness, and the flexible upper finger decreasing in thickness from its root portion connected to the retention finger to its free end to form a tapered flexible upper finger which is displaceable inwardly relative to the retention finger to provide a space between the two free ends of the fingers through which pages can be inserted onto and removed from the ring.

4,500,224

COUPLING FOR SUCKER ROD ASSEMBLY

Peter D. Ewing, Milford, Mich., assignor to NSS, Industries, Inc., Plymouth, Mich.

Filed Jul. 22, 1983, Ser. No. 516,453
Int. Cl.³ F16B *7/18*
U.S. Cl. 403—343 **4 Claims**



1. A sucker rod assembly comprising:

a rod with a threaded head of enlarged diameter at one end thereof, said head and rod being unitary with a tapered shoulder at the juncture thereof,

the major diameter of the threads on said threaded head being greater than the diameter of an unthreaded portion of the head,

a rod-end fitting comprising a unitary body including a tool receiving shank, a first connector portion at one end of said shank and a second connector portion at the other end of said shank,

said first connector portion comprising a socket having a threaded portion adjacent the bottom of said socket and an unthreaded flange adjacent the outer end of said socket,

said threaded head being threadedly engaged with the threaded portion of said socket,

said unthreaded flange of said socket being disposed in surface engagement with said tapered shoulder,

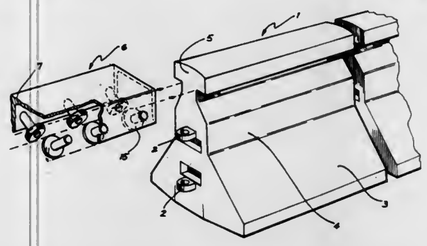
whereby said rod and rod-end fitting are mechanically interlocked in close fitting surface engagement.

4,500,225

TRANSFERABLE ROADWAY LANE DIVIDER

John P. Quittner, Castle Cove, Australia, assignor to Quicksteel Engineering Pty. Ltd., Botany, Australia

Continuation-in-part of Ser. No. 344,755, Feb., 1982,. This application Apr. 18, 1983, Ser. No. 485,622
Int. Cl.³ E01F *13/00*
U.S. Cl. 404—6 **13 Claims**



1. A transferable roadway lane divider comprising

at least one upstanding divider section having a base and a T-shaped upper end, said divider section being sufficiently high to form a crash barrier for automobiles and the like, and

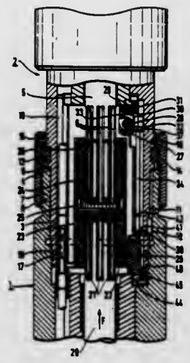
transfer means formed in unobstructed relationship on lateral sides and longitudinally throughout the entire length of the T-shaped upper end of said divider section for receiving and engaging a transfer apparatus to enable said divider section to be lifted and suspended for transfer on a roadway.

4,500,226

COUPLING DEVICE, AN ELECTRIC MOTOR FITTED WITH SAID DEVICE AND A METHOD OF COUPLING TWO ELECTRIC MOTORS TOGETHER

Jacques Romand-Monnier, Delle, and Jean-Pierre Lejeune, Beaucourt, both of France, assignors to Alsthom-Atlantique, Paris, France

Filed Apr. 8, 1983, Ser. No. 483,305
Claims priority, application France, Apr. 15, 1982, 82 06487
Int. Cl.³ F16D *1/00*
U.S. Cl. 403—13 **6 Claims**



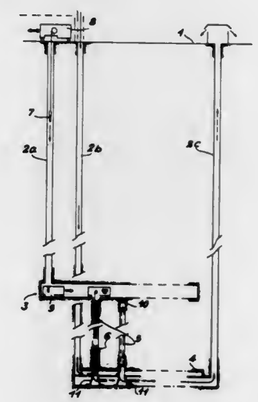
1. A device for coupling first and second units, each of which has a stationary body and a coaxial rotating shaft, wherein; the end of the body of the second unit has an outer male cylindrical coupling bearing portion shoulder, the end of the body of the first unit having a corresponding female coupling bore receiving said male cylindrical coupling bearing portion; the shaft end of each unit is splined and is axially recessed relative to the end of the unit body; each unit further having an automatic shaft relative positioning and blocking means for its shaft relative to its body at the time of coupling, means for releasing said automatic shaft relative positioning and blocking means allowing the rotating shafts to be released at the end of the coupling process and means for relative angular positioning of the bodies of the two units, a shaft coupling sleeve with splined inside surfaces for coupling said shafts and a body coupling sleeve rotatably mounted on the body of the second unit and screwed onto the body of the first unit, a first stop on the body of said second unit engageable with said first unit body for terminating axial movement of said first unit relative to said second unit, a second stop on the body of said second unit engageable with said body coupling sleeve for terminating movement of said body coupling sleeve thereby making said bodies fast in the coupled postion.

4,500,227

PROCESS AND GEOLOGICAL INSTALLATION FOR THE REMOVAL OF RADIOACTIVE WASTE

Guy Courtois, Paris, and Claude Jaquen, Guyancourt, both of France, assignors to Commissariat a l'Energie Atomique, Paris, France

Filed May 4, 1983, Ser. No. 491,395
Claims priority, application France, May 5, 1982, 82 07786
Int. Cl.³ E21F *17/16;* G21F *9/24*
U.S. Cl. 405—128 **12 Claims**



1. A geological installation for storing radioactive waste, said installation comprising;

a storage site located at a predetermined depth below ground level;

a plurality of vertical access shafts extending between the surface of the ground and the storage site for providing access for the waste and for ventilation purposes;

a first upper plurality of tunnels all lying in a first horizontal plane substantially equidistant from each other and parallel to a first reference line representative of the common direction of said first plurality of tunnels, the first reference line lying in the first horizontal plane and also lying in a first vertical plane;

means within said first plurality of tunnels for moving the waste;

a second lower plurality of tunnels all lying in a second horizontal plane substantially equidistant from each other and parallel to a second reference line representative of the common direction of said second plurality of tunnels, the second reference line lying in the second horizontal plane and also lying in a second vertical plane;

the first vertical plane of the first reference line representative of the common direction of said first plurality of tunnels intersecting the second vertical plane of the sec-

ond reference line representative of the common direction of said second plurality of tunnels at an angle α;

a plurality of vertical storage shafts for storing the waste and linking, in accordance with a regular geometric grid, the tunnels of the first plurality and the tunnels of the second plurality, the upper part of each storage shaft communicating with a tunnel of the first plurality and the lower part of each storage shaft communicating with a lateral recess connected to one of the tunnels of the second plurality; and

at least one of said vertical access shafts supplying the tunnels of the second plurality with fresh air from the ground surface, and at least one other of said vertical access shafts evacuating hot air from the tunnels of the second plurality to the ground surface, the cooling air circulation taking place in hairpin-like manner in an upward-downward path in the vertical storage shafts connecting the two pluralities of tunnels during interim storage by the convective effect of heat released by the stored waste.

4,500,228

GRANULAR MATERIAL PNEUMATIC TRANSPORT APPARATUS

Robert C. McDonald, Waterloo, and Derek L. Macartney, Kitchener, both of Canada, assignors to Joy Manufacturing Company, Pittsburgh, Pa.

Filed Apr. 15, 1982, Ser. No. 368,559
Int. Cl.³ B65G *53/48*
U.S. Cl. 406—61 **12 Claims**



1. An apparatus for transporting a granular material comprising:

a first axially extending conduit means having a narrowing frustroconical discharge portion at a first end thereof:

inlet means for introducing said granular material into said first conduit means;

an auger means axially extending within said first conduit means for transporting said granular material therethrough;

a first compressible fluid conduit means axially extending through said auger means the inlet to said fluid conduit means extending axially outwardly of a second end of said first conduit means;

a nozzle associated with the discharge end of said first fluid conduit means and located within said frustroconical discharge portion for delivering to said granular material a compressible fluid at a low volume and high pressure from a first source, said first compressible fluid capable of disaggregating said granular material;

second conduit means having an inlet directly connected to said narrow end of said frustroconical discharge portion of said first conduit means for receiving said granular material therefrom;

a second conduit compressible fluid supply means substantially adjacent to the inlet of said second conduit means for delivering to said second conduit means a compressible fluid at a high volume and a low pressure from a second source, said compressible fluid capable of propelling said disaggregated granular material out of said second conduit means; and

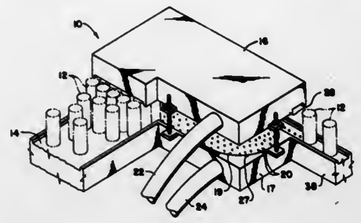
motor means located outwardly of said second end of said first fluid conduit means for axially pushing or pulling said nozzle intermediate said frustroconical discharge portion of said first conduit in response to remote commands.

4,500,229

METHOD AND APPARATUS FOR FORMING CYLINDRICAL ARTICLES INTO A SINGLE LINE

Rodger E. Cole, Golden, and Richard H. Vander Meer, Arvada, both of Colo., assignors to Goldco Engineering, Inc., Golden, Colo.

Filed Apr. 8, 1982, Ser. No. 366,749
Int. Cl.³ B65G *51/02*
U.S. Cl. 406—88 **10 Claims**



1. Apparatus for forming mass conveyed similar cylindrical articles into a single file row, the apparatus comprising:

delivery means for conveying a plurality of cylindrical articles across the width thereof;

a pair of substantially horizontal plates spaced apart a distance greater than the height of the articles but less than the diagonal dimension thereof;

first barrier means positioned between said plates with said first barrier means having an arcuate central portion that extends between opposite first and second end portions, said first end portion of said first barrier means being adjacent to said delivery means and said arcuate central portion being positioned in the path of cylindrical articles received from said delivery means so that said cylindrical articles received at said arcuate central portion of said first barrier means are thereafter directed by said arcuate central portion in an arcuate path between said plates toward said second end portion of said first barrier means;

a plurality of angled holes defined through each of said plates with each hole being individually oriented relative to vertical at an angle less than normal to the plate and with a predetermined component in the horizontal direction of the plate, with the horizontal components of said holes adjacent said first barrier means being substantially parallel thereto in a common direction and with the horizontal components of others of said angled holes being oriented in directions toward different parts of said arcuate central portion of said first barrier means;

single file barrier means located parallel to and spaced from said second end portion of said first barrier means a distance which will admit one cylindrical article therebetween, said single file barrier means extending along a segment of said second end portion of said first barrier means in the common direction of the horizontal components of said adjacent holes; and

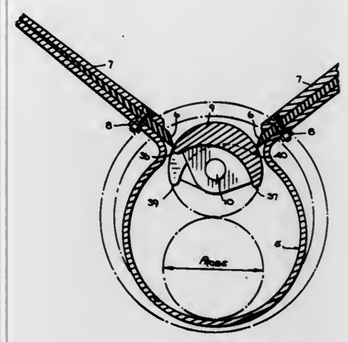
air flow means communicating with the angled holes defined through each plate and adapted to conduct a pneumatic flow to and through the holes toward the volume between the plates whereby cylindircal articles conveyed from said delivery means between the plates will be urged toward said arcuate central portion of said first barrier means by pneumatic flow through said others of said angled holes and along said first barrier means by pneumatic flow through said angled holes adjacent to said first barrier means so that cylindrical articles are thereby passed in a single file between said second end portion of said first barrier means and said single file barrier means and thereafter discharged in single file therebetween.

4,500,230

PNEUMATIC GATE FOR RAILWAY HOPPER CARS

Norman E. Bateson, Culver, Ind., assignor to Norson Industries, Inc., Culver, Ind.

Continuation of Ser. No. 393,826, Jun. 30, 1982, abandoned, which is a continuation of Ser. No. 80,277, Oct. 1, 1979, abandoned. This application Jul. 28, 1983, Ser. No. 517,919
Int. Cl.³ B65G *53/46*
U.S. Cl. 406—131 **11 Claims**



8. A hopper discharge structure having a discharging valve for evacuating granular-like lading from hopper cars and the like comprising:

(a) a hopper structure providing end walls and inclined side walls, the confronting lower edges of which are spaced apart to provide a discharge opening therebetween;

(b) a cylindrical valve rotatably supported between said end walls along a line parallel to said discharge opening formed between said inclined side walls;

(c) said valve shaft having its axis of rotation located equally between and along a line beneath said confronting lower edges of said inclined side walls, and

(d) an arcuate member having a periphery of less than 360° fixed to said shaft for rotation therewith, said arcuate member having an arcuate outer surface extending circumferentially of said axis of rotation and of a size such that in at least one of its rotated positions no portion of its periphery intersects said lower edges of the hopper, so that said aperture is fully open, and in another of its rotated positions, two portions of its periphery intersect said lower edges so that said aperture is closed and said arcuate member having an inner surface which is non-parallel to said outer surface thereof and extending from one peripheral edge of said outer surface to the other peripheral edge of said outer surface, said inner surface being substantially co-extensive with said outer surface for substantially the axial length of said outer surface and being spaced from said outer surface substantially throughout its length between said one peripheral edge and said other peripheral edge by an amount greater than the spacing between said inner surface and said outer surface at said peripheral edges thereby to provide a rigid arcuate member capable of withstanding the load of the lading; and

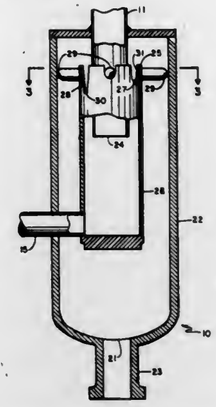
(e) means for rotating said shaft within said discharge opening so as to selectively position said arcuate member into positions thereof.

4,500,231

VALVE FOR CONTROLLING SOLIDS FLOW

M. Daniel Staiger, Idaho Falls, Id., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Sep. 29, 1982, Ser. No. 426,446
Int. Cl.³ B65G *53/40*
U.S. Cl. 406—198 **5 Claims**



1. A valve for controlling the flow of solids into a transport means comprising:

a container having a bottom located opening for receiving said transport means and having a top located opening therethrough;

a vessel for receiving solids positioned within said container and having a top overflow, said vessel including a plurality of V-notch weirs spaced about said top overflow, said V-notch weirs having unequal depth;

an inlet line, positioned within said vessel and sealingly positioned through said top located opening, for discharging the solids into said vessel, said inlet line having a discharge point lower than said top overflow;

a fluid line sealingly connected into said vessel for introducing a fluidizing fluid into said vessel to fluidize the solids therein sufficiently to cause solids to overflow said top overflow;

means for controlling the flow of fluidizing fluid through said fluid line such that the flow of solids is controlled at a rate determined by the flow of said fluidizing fluids.

4,500,232

BORING BAR

Mark K. Jacobson, and Stanley C. Belttari, both of West Bloomfield, Mich., assignors to Boremaster Precision Tool & Mfg., Windsor, Canada

Filed Mar. 17, 1982, Ser. No. 359,158
Int. Cl.³ B23B *29/02*
U.S. Cl. 408—153 **8 Claims**

1. A boring bar comprising:

a body having a transverse throughbore at one end, said throughbore having a first end and a second end,

a slide member axially slidably positioned within said throughbore,

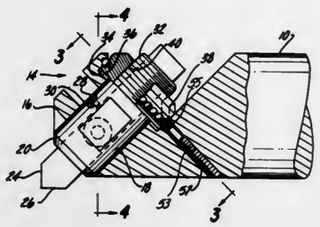
means for locking a cutting tool having at least one cutting edge to said slide member so that said at least one cutting edge extends outwardly from one end of said slide member at said first end of said throughbore,

said body having a cylindrical recess formed concentrically around said second end of said throughbore,

means for axially adjustably positioning said slide member in said body throughbore,

wherein said slide member includes an externally threaded

portion at the other end of said slide member and wherein said axial adjustment means further comprises an internally threaded annular dial positioned within said cylindrical recess which threadably engages the slide member threaded portion, and means for locking said dial to said body against axial movement,



wherein said dial includes an annular groove formed about its outer periphery which registers with a groove in the cylindrical recess of said body thus forming an annular channel therebetween and wherein said locking means further comprises a plurality of ball bearings positioned within said channel, and

means for locking said ball bearings against rotation while permitting said dial to rotate with respect to said body.

4,500,233

ROTARY MATERIAL REMOVING TOOL

Dieter Dehn, Frankfurt am Main, Fed. Rep. of Germany, assignor to Stellram GmbH, Heusenstramm, Fed. Rep. of Germany

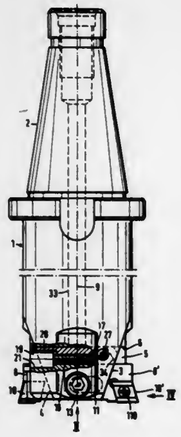
Filed Jul. 16, 1982, Ser. No. 398,796

Claims priority, application Fed. Rep. of Germany, Feb. 12, 1982, 3204923

The portion of the term of this patent subsequent to Aug. 7, 2001, has been disclaimed.

Int. Cl.³ B23B *29/03*

U.S. Cl. 408—182 **25 Claims**



1. A material removing tool, comprising a rotary support including a first portion arranged to receive torque from a prime mover, a second portion having an end face, a transversely extending recess in said end face, a bottom surface in said recess, and a pair of legs flanking said recess; a carrier disposed in said recess, abutting said bottom surface and having a front end face facing away from said bottom surface and provided with an elongated guide groove extending transversely of the axis of said support; a pair of abutting knife holders in said guide groove; means for shifting said holders relative to said carrier and lengthwise of said guide groove, said shifting means comprising discrete screws having heads and shanks meshing with said carrier and extending in parallelism with said groove, said carrier and said holders defining chambers for the heads of the respective screws; and clamping means for biasing said legs against said carrier.

4,500,234

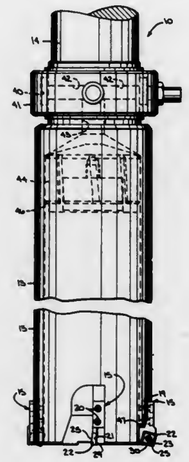
TREPANNING TOOL

Eugene C. Orth, Delafield, and Sebastian Ebenhoch, Menomonee Falls, both of Wis., assignors to Waukesha Cutting Tools, Inc., Waukesha, Wis.

Filed Nov. 12, 1982, Ser. No. 441,287

Int. Cl.³ B23B *51/04*

U.S. Cl. 408—206 **6 Claims**



1. In a trepanning tool for producing a through hole in a metal workpiece by cutting an annular groove about a removable core; a hollow, cylindrical body open at its leading end and closed at its trailing end; an axially disposed and extending shank provided at the trailing end of the body for mounting the tool in a machine for actual or effective rotation relative to the workpiece; four carbide cutting inserts having a cutting face defining a plurality of cutting edges at the periphery thereof and mounted at the leading end of the body; said inserts being circumferentially and equidistantly spaced with their cutting faces facing in the direction of actual or effective tool rotation; said inserts being varyingly spaced relative to the axis of the tool and comprising an outermost insert, a next outermost insert, an innermost insert, and a next innermost insert; said outermost insert being disposed to establish the outside diameter of the annular groove and having an active cutting edge extending generally inwardly toward the tool axis; said innermost insert being disposed to establish the inside diameter of the annular groove and having an active cutting edge extending generally outwardly relative to the tool axis; said next outermost insert being angularly oriented relative to the outermost insert to provide that its active cutting edge will cut a segment of the annular groove that intersects with the active cutting edge of the outermost insert so that the active cutting edge of the outermost insert will cut a pair of spaced segments of the annular groove; said next innermost insert being angularly oriented relative to the innermost insert to provide that its active cutting edge will cut a segment of the annular groove that intersects with the active cutting edge of the innermost insert so that the active cutting edge of the innermost insert will cut a pair of spaced segments of the annular groove; said four cutting inserts being thus adapted to sever the radial span of the annular groove into six relatively small segments that

can readily be evacuated from the cutting region and annular groove as chips.

4,500,235

COUPLING

Anders E. Johnsen, Karlsgårdsgatan 7B, S-781 33 Borlänge, Sweden

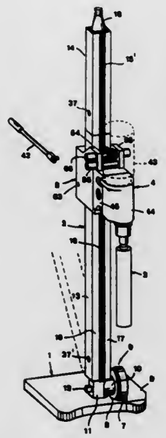
PCT No. PCT/SE81/00249, § 371 Date May 4, 1982, § 102(e) Date May 4, 1982, PCT Pub. No. WO82/00863, PCT Pub. Date Mar. 18, 1982

PCT Filed Sep. 4, 1981, Ser. No. 380,666

Claims priority, application Sweden, Sep. 5, 1980, 8006209

Int. Cl.³ B23B *39/00*

U.S. Cl. 408—238 **6 Claims**



1. A coupling for connecting at least two tubular members to each other, a first of said tubular members having a recess and a second of said tubular members having a projection, said recess having an interior conical surface and said projection having an exterior conical surface, tightening means for moving said conical surfaces into wedging contact with each other, said tightening means being operable to cause a generally axial relative movement of said tubular members so as to tend to urge said projection on said second tubular member into said recess of said first tubular member, said projection on said second tubular member including two elements axially movable relative to each other, said elements including a first element including said conical surface of said second member and a second element engageable by said tightening means, spring means acting between said elements and being operable to accumulate spring force upon axial displacement of said second element relative to said first element by said tightening means in order to tighten said coupling, said second element having a portion located at the outer end of said projection so as to form an extension on that part of the first element which has the smallest diameter, an axial hole in said first element, a rod passing through said axial hole and having a threaded end provided with a nut, said portion being attached to said rod, said spring means being located between said nut and a surface on said first element facing away from the outer end of said projection, said first element having an outer end with a shoulder, said spring means acting on said nut so as to urge said second element in a direction towards said shoulder, said recess in said first tubular member having an inner recess portion confined by a wall for receiving said second element, said wall and said second element having transversally extending openings locatable in register with each other upon assembly of said tubular members to receive said tightening means, said tightening means including an eccentric, said rod transmitting, when the coupling is assembled, generally all longitudinally directed forces tending to separate the members from each other.

4,500,236

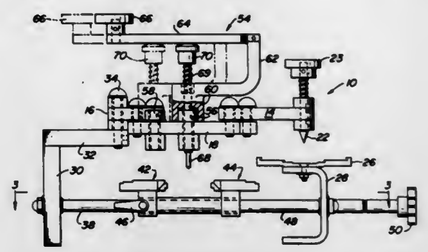
ENGRAVING APPARATUS

Victor Plotkin, Brooklyn, N.Y., assignor to New Hermes Incorporated, New York, N.Y.

Filed Oct. 26, 1981, Ser. No. 314,610

Int. Cl.³ B23C *1/16*

U.S. Cl. 409—86 **8 Claims**



1. Engraving apparatus comprising a frame, a pantograph supported by the frame, the pantograph supporting a stylus for tracing indicia to be engraved, a spindle assembly including a spindle for engraving indicia, two discrete links of said pantograph each having means thereon for mounting the spindle assembly at locations which change the magnification of the indicia to be engraved, said assembly being manually movable from one mounting means to the other mounting means, said assembly including a pivotable lever arranged to move the spindle downwardly while the spindle is in each of the locations identified by said mounting means, each mounting means including an upstanding boss, said spindle assembly including a portion which is telescoped with respect to one of said bosses, said mounting means being located on parallel links of the pantograph and wherein said parallel links are each pivotably connected at one end to a link supporting the stylus, means for enabling said spindle assembly to be pivotable through an arc approximately 180° with respect to its mounting boss so as to facilitate application of left-hand or right-hand pressure to the engraving tool, and a work holder capable of holding work to be engraved adjacent each said mounting means.

4,500,237

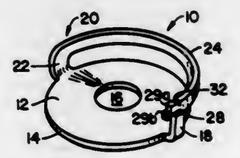
TENSION INDICATING WASHER FOR SMOOTH AND IRREGULAR SURFACES

Frank V. Pliml, Jr., Arlington Heights, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.

Filed Aug. 4, 1983, Ser. No. 520,286

Int. Cl.³ F16B *31/02*

U.S. Cl. 411—11 **2 Claims**



1. A tension indicating washer for use with a smooth as well as an irregular support surface for indicating the tension in a bolt and comprising:

a frustoconical washer having a centrally disposed aperture for receiving a bolt therethrough and a peripheral bearing

surface for engaging said support surface, said peripheral bearing surface including one relieved area; and

means for indicating, said means including a radially and axially disposed reference means, and circumferentially disposed arm means, said arm means supported in axially spaced relation from said washer by attachment of one end of said arm means proximate to the outer periphery of said washer with the free end of the arm means spaced from the reference means in a predetermined manner;

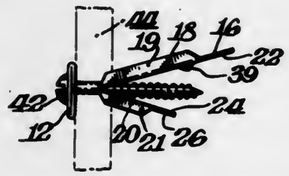
whereby as force is applied to the washer by increased tension in the bolt the washer deflects towards a planar condition causing the arm means to move in a predetermined manner to a predetermined position relative to said reference means for indicating a predetermined measure of tension in the bolt and whereby said one relieved area precludes irregularities in said surface from affecting the predetermined manner in which a predetermined tension is indicated, said one relieved area is coined and extends along said peripheral bearing surface continuously where said one end attaches to said washer.

4,500,238

HOLLOW WALL ANCHOR

Eustathios Vassiliou, 12 S. Townview Ln., Newark, Del. 19711

Filed Sep. 27, 1982, Ser. No. 425,057
Int. Cl.³ F16B *13/04*
U.S. Cl. 411—30 **11 Claims**



1. A fastening member for a hollow wall comprising a thin sheet-metal anchor having a substantially flat head portion and a hole therethrough, said hole having an axis perpendicular to the head, a substantially flat neck in a plane perpendicular to the head containing the axis, said neck having an elongated opening therethrough the opening extending in the plane of the neck the full length of the neck along the axis and, first and second, thin, flat sheet metal spreadable anchoring blades extending from said neck in the direction of the axis, said blades being coplanar with said neck, each of said blades having an inner and an outer surface, the inner surface of the first blade in close contact with the inner surface of the second blade, at least one of said blades terminating in a point, and a generally elongated fastener having a diameter commensurate with the hole in said head whereby insertion of the fastener in the hole and through the neck spreads the blades angularly.

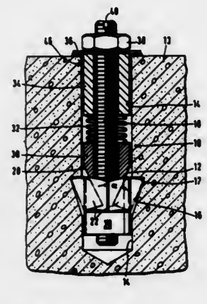
4,500,239

INTERLOCKING TOGGLE BOLT

Heinrich Liebig, Wormser Strasse 23, D-6102 Pfungstadt, Fed. Rep. of Germany

PCT No. PCT/EP82/00061, § 371 Date Aug. 25, 1982, § 102(e) Date Aug. 25, 1982, PCT Pub. No. WO82/03664, PCT Pub. Date Oct. 28, 1982
PCT Filed Mar. 23, 1982, Ser. No. 414,369
Claims priority, application Fed. Rep. of Germany, Apr. 14, 1981, 3115040
Int. Cl.³ F16B *13/04*
U.S. Cl. 411—65 **3 Claims**

1. A toggle bolt to be set interlockingly in a bore provided with a radially circumferential undercut surface; said toggle bolt comprising a toggle body having a diameter corresponding substantially to the diameter of the bore and adapted to be inserted into the bore, an elongated mounting bolt having a bore internal end and an outer end, said body being in the form of an end piece of relatively short length disposed on the bore-internal end of said elongated mounting bolt; said mounting bolt having on said outer end a screw head or threaded-on nut, locking elements having internal ends seated on said mounting bolt and closed together to form a thick-walled cylindrical barrel around said mounting bolt, said locking elements also having ends which point toward the bore mouth and which are swingable from a position lying within the diameter of the bore to a position in which said ends project at least partially beyond the diameter of the toggle body and lockingly hook the undercut surface of the bore, a component having a conical section tapering toward the bore interior and engaging between the locking element ends pointing toward the bore mouth, said component upon a displacement of the end piece in the direction of the bore mouth positively turning the rearward ends of the locking elements outwardly, at least one sleeve displaceable in the bolt length direction and one helical spring adapted to be biased by axial compression being disposed between the conically tapering component disposed



for longitudinal displacement on the mounting bolt and the screw head or nut, an annular clasping element for fixing the bias of the spring being disposed on the ends of the locking elements which point toward the bore mouth, and having an annular section projecting on the bore mouth side beyond the diametric dimension of the corresponding bore, the clasping element being a plastic sleeve having a planar circumferential annular flange projecting integrally from the bore-mouth side end of said sleeve radially outwardly beyond the diametric dimension of the bore and also having at least one relatively thin, bendable tab projecting integrally from a bore-mouth side end edge of said plastic sleeve radially inwardly in the same plane as said annular flange and located on the bore-mouth side in front of at least one locking element respectively and, at the time of introduction of the toggle bolt into the bore, resting on the conical section of said tapering component, to thereby prevent displacement of said clasping element from said locking elements by engagement of said at least one tab on said conical section.

4,500,240

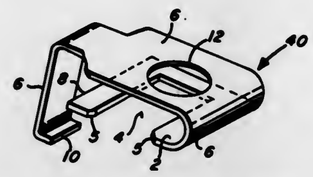
BOLT FASTENER

Thomas M. Moran, Cleveland, and Benedict J. DiBello, Strongsville, both of Ohio, assignors to Eaton Corporation, Clevaland, Ohio

Filed Apr. 26, 1983, Ser. No. 488,832
Int. Cl.³ F16B *37/04*
U.S. Cl. 411—103 **4 Claims**

1. A fastener for securing a bolt to a frame through an aperture therethrough, said bolt having adjacent head and elongate shank portions, said fastener having a base member having a slot therethrough extending from an edge thereof that is dimensionally adapted to receive the bolt shank portion, a resilient arm extending upwardly away from an edge of the base member and thence in spaced-apart overhanging relationship across the side of the base member facing away from the frame

to which the bolt is to be secured to an opposite edge thereof and thence downwardly past the base member opposite edge and thence inwardly to a free-end thereof disposed on the side of the base member facing towards the frame to which the bolt is to be secured to provide an open-ended clip adapted to clip the fastener to an edge of the frame, said arm and base member spaced-apart for a distance sufficient to insure that the bolt head portion is received therebetween when the bolt shank



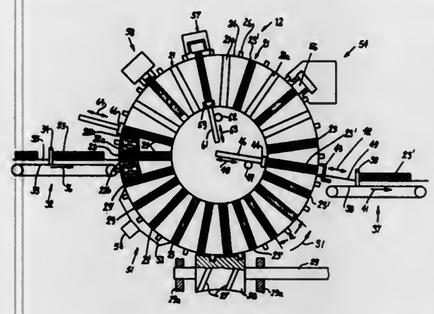
portion is received into the base member slot, and said fastener, bolt and frame cooperating with each other such that the arm is able to press the bolt head portion against the base member when the bolt shank portion is received into the slot and the arm is able to be snapped about the edge of the frame to secure the fastener thereto when the bolt shank member is received into the frame aperture with the base member laid against the frame.

4,500,241

MACHINE FOR MAKING RULED PADS OR THE LIKE

Hartmut Peters, and Bernd Ramcke, both of Hamburg, Fed. Rep. of Germany, assignors to E.C.H. Will (GmbH & Co.), Hamburg, Fed. Rep. of Germany

Filed Sep. 15, 1982, Ser. No. 418,211
Claims priority, application Fed. Rep. of Germany, Jan. 28, 1982, 3202706
Int. Cl.³ B42C *9/00, 19/00;* B65C *9/06;* B65G *29/00*
U.S. Cl. 412—37 **25 Claims**



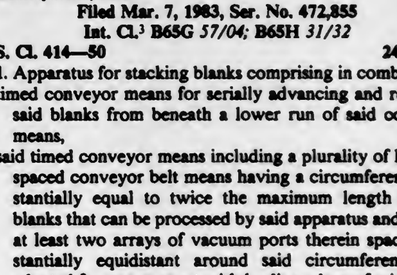
1. A machine for converting stacks of overlapping sheets into pads wherein the sheets are held together by an adhesive which is applied to one edge face of each stack, comprising an indexible conveyor including a predetermined number of equidistant stack receiving means having inlets and arranged to orbit in a predetermined direction along a predetermined path; indexing means operable to rotate said conveyor by equal steps each of which is a whole multiple of the distance between the centers of the inlets of two neighboring receiving means; stack feeding means having means for advancing stacks of sheets in a given direction toward a first portion of said path and into empty receiving means of said conveyor while said indexing means is idle between successive operations thereof; treating means adjacent to said path and arranged to convert stacks in said receiving means into pads whose sheets are held together by an adhesive; and pad removing means having means for advancing pads from filled receiving means of said conveyor in a second portion of said path and in a direction at least substantially corresponding to said given direction, the distance between said first and second portions of said path, as considered in said predetermined direction, not being a whole multiple of one of said steps and the total number of said receiving means being divisible with a rest by the number representing said whole multiple of distances covered by one of said steps.

4,500,242

APPARATUS AND METHOD OF HANDLING BALES

Douglas L. Beikman, R.R. #2 Box 24, Linn, Kans. 66953

Filed Mar. 9, 1983, Ser. No. 455,106
Int. Cl.³ A01D *87/12;* B60P *1/16*
U.S. Cl. 414—24.5 **1 Claim**



1. An apparatus for handling bales comprising a frame;
an axle secured to said frame;
a pair of wheels rotatably attached to said axle for supporting said frame;
a pair of generally arcuate shaped basket means pivotally mounted on said frame for holding bales;
and hydraulic means attached to said frame for receiving power take off from a tractor, or the like, to pivot the basket means along the longitudinal axis thereof for dumping the bales onto the ground, each of said pair of basket means comprises an outside support rail, an inside support rail, and a plurality of arcuate shaped ribs interconnected to said rails, said hydraulic means engages each of said pair of basket means on the inside rail thereof, said hydraulic means comprises a pair of hydraulic cylinders connected to said frame in proximity to the axle and crosswise disposed with respect to each other;
a pair of hydraulic hoses extending from the tractor, or the like, to said pair of hydraulic cylinders; and
a rectangular tube attached to said frame, said hydraulic hoses being disposed within said tube while extending from the tractor, or the like, to said pair of hydraulic cylinders.

4,500,243

BLANK STACKING APPARATUS

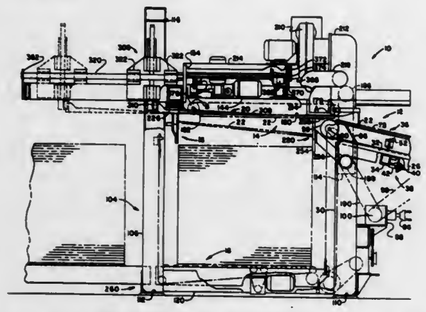
Henry D. Ward, Jr., Cockeysville, and John B. West, Glyndon, both of Md., assignors to The Ward Machinery Company, Cockeysville, Md.

Filed Mar. 7, 1983, Ser. No. 472,855
Int. Cl.³ B65G *57/04;* B65H *31/32*
U.S. Cl. 414—50 **24 Claims**

1. Apparatus for stacking blanks comprising in combination:
timed conveyor means for serially advancing and releasing said blanks from beneath a lower run of said conveyor means,
said timed conveyor means including a plurality of laterally spaced conveyor belt means having a circumference substantially equal to twice the maximum length of said blanks that can be processed by said apparatus and having at least two arrays of vacuum ports therein spaced substantially equidistant around said circumference and adapted for engagement with leading edges of said blanks

for causing said blanks to adhere to said belt means during advancement thereof,

said conveyor belt means further including a standoff portion extending substantially between said arrays of vacuum ports for preventing the portion of said blanks not adhering to said arrays from adhering to said conveyor belt means;



backstop means adjacent a discharge end of said conveyor means for stopping the advance of said blanks upon their release by said conveyor means; and

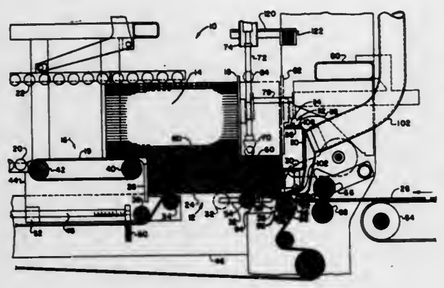
receiving means beneath said conveyor means upon which said blanks are stacked following release by said conveyor means.

4,500,244

AIR LIFT FOR BLANK STACKERS

Louis M. Sardella, Towson, and William F. Ward, Sr., Hampstead, both of Md., assignors to The Ward Machinery Company, Cockeysville, Md.

Filed Dec. 20, 1982, Ser. No. 450,994
Int. Cl.³ B65G *57/30*
U.S. Cl. 414—92 **4 Claims**



1. Apparatus for directing a flow of air between the bottom blank of a stack of substantially rigid and folded blanks and a similar blank advancing beneath said stack comprising:

air supply means adjacent a trailing edge of said bottom blank in a position to direct said flow of air beneath said bottom blank and above said advancing blank to form a cushion of air therebetween for reducing friction between said bottom blank and said advancing blank during advancement of said advancing blank to substantially completely beneath said stack and to press said advancing blank against an advancing means used to advance said advancing blank beneath said stack,

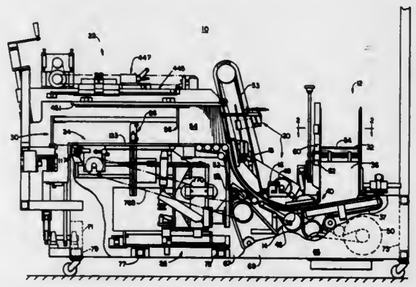
said air supply means including nozzle means inclined from horizontal no less than about 30° and no more than about 50° with a discharge end thereof being about one-half inch from a trailing edge of said bottom blank and about even with a bottom surface thereof and having an opening of about one-sixteenth to about one-quarter inch extending from about one-third to about the full width of said advancing blank for supplying air in a thin stream against said advancing blank at an exit elocity of no less than about 500 feet per minute and no more than about 8000 feed per minute.

4,500,245

MACHINE FOR ACCUMULATING EDGEWISE SUPPORTED ARTICLES

James A. Madewell, Terrace Park; Edwin A. Molitor; Norman P. Crowe, both of Miami Township; Guy W. Lampe, and Charles F. Pavey, both of Anderson Township, all of Ohio, assignors to Multifold-International, Inc., Milford, Ohio

Filed Sep. 22, 1982, Ser. No. 421,267
Int. Cl.³ B65H *31/06, 31/30*
U.S. Cl. 414—108 **6 Claims**



1. A machine for forming a slug of edgewise supported flat articles which comprises a table, paired conveyor belt means advancing the articles in shingle fashion past an edge of the table, one of the belt means having a portion parallel to and at substantially the level of the table for rapidly advancing lower edges of the articles away from the other of the belt means and onto the table, an upper backstop means supporting the articles on the table and on said belt portion, means urging the articles toward the upper backstop means to form the slug, means for advancing the upper backstop means away from said edge of the table as the slug of articles forms on the table, means for arresting advance of articles to the slug when the slug reaches a predetermined size, an auxiliary backstop means, means for transferring control of the slug from the upper backstop means to the auxiliary backstop means, upright finger means advanceable into engagement with a last article in the slug, and means for advancing the finger means and the auxiliary backstop means in unison to advance the slug to a discharge station.

4,500,246

INDEXED FEED OF ELECTRONIC COMPONENT SUPPLY TUBES

Stanley W. Janisiewicz, Endwell; Maynard J. Hills, Owego, and Edward J. Lovell, Binghamton, all of N.Y., assignors to Universal Instruments Corporation, Binghamton, N.Y.

Filed Mar. 1, 1983, Ser. No. 471,056
Int. Cl.³ H05K *3/30*
U.S. Cl. 414—414 **9 Claims**

4. An automated apparatus for supplying electronic components to a processing station, said apparatus comprising:

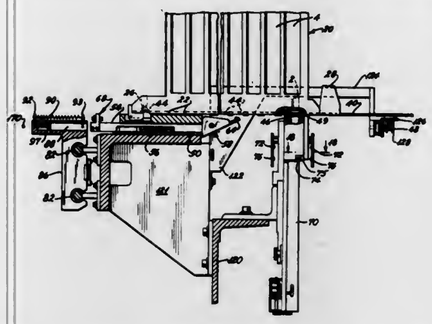
cartridge means for supporting plural, generally inline and generally vertical columns of said components;

plural cartridge means stations and unload stations and reservoir means respectively arranged side-by-side;

indexing and locating means for indexing said columns generally horizontally and locating each of said columns sequentially at a column unload station, said column located at said unload station being an unload column;

said indexing and locating means comprising carriage means transferable between each of said catridge means stations for selective indexing of said columns, according to said controller means;

reservoir means for receiving components from said unload column and providing a reservoir of a sufficient number of



said components for said processing station such that a continuous processing of said components at said processing station is attainable during a replacement of said columns; and

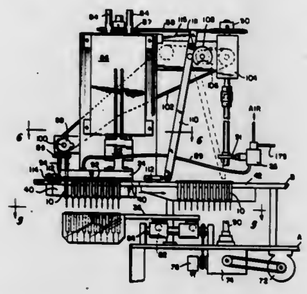
controller means for controlling said indexing.

4,500,247

SYRINGE INSPECTION APPARATUS

Hugh P. McKnight, Indianapolis; Kenneth B. Welty, and Harold B. Dinius, both of Mooresville, all of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Division of Ser. No. 373,979, May 3, 1982, Pat. No. 4,456,115.
This application Feb. 17, 1984, Ser. No. 581,423
Int. Cl.³ B65B *21/02*
U.S. Cl. 414—416 **9 Claims**



1. Apparatus for loading onto processing mechanism filled hypodermic syringes or the like having a needle end and an opposite open end provided with a finger flange, comprising

a movable loading table adapted to receive a syringe carrier containing a plurality of rows of syringes, each row containing a plurality of syringes,

means to move said table stepwise to position said rows successively in a loading position,

a feed conveyor having a pair of spaced longitudinal conveyor elements adapted to receive syringe bodies between them and to engage beneath the finger flanges of the syringes to support them in depending positions for longitudinal movement along the conveyor,

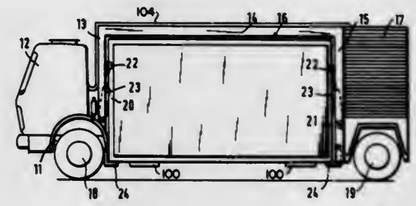
a gang chuck having means for clutching a plurality of syringes in a row and means to move the same in synchronism with said table moving means to clutch a row of syringes at said loading position, to carry the syringes therefrom to the conveyor, and to release the same onto the conveyor.

4,500,248

TRUCK WITH EXCHANGEABLE LOAD CARRIER

Thomas Kramer, Krefeld, Fed. Rep. of Germany, assignor to The Coca-Cola Company, Atlanta, Ga.

Filed Oct. 29, 1981, Ser. No. 316,360
Claims priority, application Fed. Rep. of Germany, Nov. 8, 1980, 3042228; Aug. 14, 1981, 3132165
Int. Cl.³ B60P *1/64*
U.S. Cl. 414—459 **3 Claims**



1. An over-the-road truck with an exchangeable load carrier comprising:

a load carrier having a front, rear, sides and projecting extensions for support thereof, the sides of said load carrier being parallel to the normal direction of movement of said truck, said sides being substantially completely open to facilitate access to the contents thereof;

a rigid frame having a cavity sized to accept said load carrier, said frame enclosing the front and rear of said load carrier but not enclosing the sides thereof and including at least one beam bridging said cavity;

front and rear axles having wheels mounted thereon and being mounted to said frame, said wheels mounted on said front axle being steerable while said rear wheels are non-steerable;

means supported by said frame and interacting with said projecting extensions for lifting and lowering said load carrier into and from a travel position within said cavity;

latch means attached to said frame for securely supporting and latching said load carrier in said frame when in the travel position independently from operation of said means for lifting;

a driver's cab positioned over said front axle;

a motor mounted behind the cavity in said frame and driving said rear axle; and

control means interconnecting said driver's cab and motor for controlling said motor;

said load carrier having rollers provided on the underside thereof to facilitate removal of said load carrier from said cavity by rolling said carrier transversely to the normal direction of movement of said truck.

4,500,249

SELF-ADJUSTING BOAT TRAILER CRADLE

Lars Johansson, Kalmarsand, S-198 00 Bålsta, Sweden

Filed Feb. 16, 1982, Ser. No. 348,763
Claims priority, application Sweden, Feb. 18, 1981, 8101102
Int. Cl.³ B60P *3/10*
U.S. Cl. 414—534 **2 Claims**

1. A self contained boat trailer cradle adapted to be mounted on a boat trailer chassis having a pair of parallel longitudinal chassis members, said boat trailer cradle comprising:

(a) two parallel girders (1,2) adapted to support said cradle on the pair of parallel longitudinal chassis members (3,4) of a boat trailer chassis;

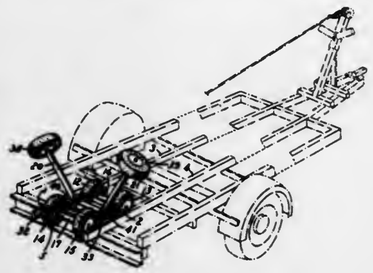
(b) a cradle frame positioned and extending between and supported on said two parallel girders, said cradle frame including:

(i) two parallel frame side members connected with one another over cross members in a manner such that their ends extend outside the cross members;

(ii) two wheel shafts mounted between the free ends of said frame side members of the cradle frame with the ends of the shafts extending into the spaces between the girders and said parallel frame side members and each of said shaft ends carrying a freely rotatable rubber-tired wheel for steering a boat in the course of its hauling up on to the cradle;

(iii) a pair of keel rollers each of which being mounted freely rotatable on its respective shaft between the frame side members of the cradle frame; and

(c) a pair of cradle suspension mechanisms mounted between the frame side members and the girders symmetrically with respect to the longitudinal and transverse axes of the cradle frame, each of said suspension mechanisms comprising a supporting arm extending outwards in the transverse axial direction of the cradle frame, said supporting arm:



(i) being pivotally connected at its inner end, on one hand, via an innermost pivot pin, with the frame side member of the cradle and, on the other hand, via an intermediate pivot pin, with the adjacent girder; and

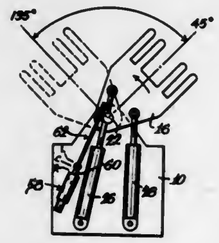
(ii) carrying at its extreme end a rubber-tired wheel; the pivots mounted to said girders constituting fulcrums of said arms thus acting as a pair of double-armed levers, wherein the length of the levers connected with the pivots mounted to said frame side members is governed by the distance between the pivots of the side members of the cradle frame and the respective adjacent girder, whereas each of the extreme levers with its rubber-tired wheel is of a length such that the static moments of the respective extreme levers with the rubber-tired wheel and the inner levers with the cradle coupled thereto are substantially equal, when the lateral support arms are swung outwards horizontally and with the cradle unloaded.

4,500,250

BACKHOE SWING MECHANISM

Herman J. Maurer; Carl O. Pedersen, and Barry C. Nudd, all of Burlington, Iowa, assignors to J. I. Case Company, Racine, Wis.

Filed Jun. 7, 1982, Ser. No. 385,784
Int. Cl.³ E02F 3/32
U.S. Cl. 414—695.5 **9 Claims**



1. For an implement having a frame supporting a boom assembly for pivotal movement about a vertical axis, an arrangement for pivoting said boom assembly relative to said frame through an arc comprising:

a pair of hydraulic motors interconnected between said frame and said boom assembly, each motor having first and second ends defining respective expansible fluid chambers, the extension and contraction of said motors pivoting said boom assembly about said vertical axis, each of said motors being fully extended when its respective centerline intersects said vertical axis;

a hydraulic system including a source of fluid under pressure and directional control valve means for selectively directing fluid under pressure from said source to the first end of each of the hydraulic motors,

sequencing valve means, comprising a multi-position spool valve and hydraulic cushioning means, hydraulically joined between the second ends of the hydraulic motors and said control valve means, said spool valve being sequentially positionable in first, second, and third positions,

valve control means comprising linkage means including lost-motion means, connecting said sequencing valve means directly with said boom assembly at said vertical axis thereof whereby pivotal movement of said boom assembly through said arc operates said sequencing valve means via said lost-motion means to alter hydraulic fluid flow between the second ends of said motors and said directional control valve means, and

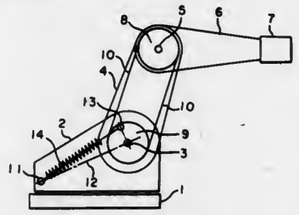
centering means for urging said spool valve from either of said first and third positions toward said second position, said linkage means operating to reposition said spool valve from said second position to either of said first and third positions and cooperating with said centering means to maintain said spool valve in said second position as said boom assembly is moved through a central portion of said arc.

4,500,251

MULTIJOINT MANIPULATOR

Yuichi Kiryu, Tokyo, and Tadashi Sawada, Sagamihara, both of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 1, 1983, Ser. No. 463,016
Claims priority, application Japan, Feb. 5, 1982, 57-17007; Feb. 17, 1982, 57-20823[U]
Int. Cl.³ B66C 23/00, 23/72
U.S. Cl. 414—719 **10 Claims**



1. A multijoint manipulator which comprises:

an upper arm having one end which is pivotally supported by a shoulder joint portion of a main body to be capable of rotation around said shoulder joint portion;

a lower arm having one end which is pivotally supported by an elbow joint portion formed at the other end of said upper arm to be capable of rotation around said elbow joint portion;

a distal device fitted to the distal end of said lower arm;

a first chain wheel fixedly fitted to said lower arm having its center coaxial with the center of revolution of said elbow joint portion;

a second chain wheel rotatably fitted to said shoulder joint portion, the center of said second chain wheel being coaxial with the center of revolution of said shoulder joint portion;

a transmitting means for linking said first and second chain wheels to rotate them at the same angle; and

a torque producing means which has one end secured to said main body and the other end secured to said second chain wheel to impart the maximum torque when said lower arm is in the horizontal position and to impart the minimum torque when said lower arm is in the vertical position,

wherein when said lower arm is in the horizontal position, the other end of said torque producing means is at the periphery portion of said second chain wheel on a linear line perpendicular to a line passing through the center of revolution of said shoulder joint portion and said one end secured to said main body,

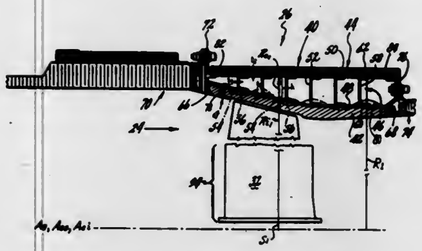
whereby said torque producing means is affected only by the position of said lower arm.

4,500,252

BEAM FOR A CONTAINMENT STRUCTURE

Richard J. Monhardt, Glastonbury; Alfred B. Orr, West Suffield, and Joseph B. Wright, Somers, all of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Dec. 21, 1981, Ser. No. 332,694
Int. Cl.³ F01D 21/04
U.S. Cl. 415—9 **7 Claims**



1. For an axial flow rotary machine, a structrue of the type adapted to position and support a fabric for containment of particles having an axial and radial velocity, which comprises:

an annular beam which is hollow, which extends axially and circumferentially about an axis of symmetry and which has an inner wall, an outer wall, and a plurality of annular plates which are attached to the inner wall and the outer wall and which extend circumferentially about the interior of the beam for stiffening the beam against radial deflection,

wherein the annular beam has a characteristic vibratory pattern at the inner wall including spaced nodes and antinodes, and wherein each annular plate is attached to the inner wall at an antinode.

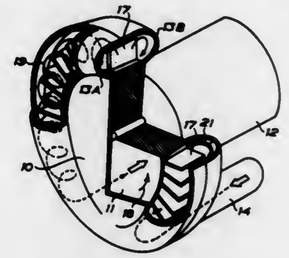
4,500,253

SIDE-CHANNEL PUMP

Johann K. Haberl, Fiskarholmsgränd 2, S-127 41 Skärholmen, Sweden

PCT No. PCT/SE82/00037, § 371 Date Sep. 23, 1982, § 102(e) Date Sep. 23, 1982, PCT Pub. No. WO82/02748, PCT Pub. Date Aug. 19, 1982
PCT Filed Feb. 10, 1982, Ser. No. 433,136
Claims priority, application Sweden, Feb. 10, 1981, 8100913
Int. Cl.³ F04D 5/00
U.S. Cl. 415—53 T **5 Claims**

1. Side-channel pump comprising an open impeller; a side-channel formed with a semi-circular side wall and having an inlet and an outlet; and a bead projecting substantially axially into the side-channel and located between the inlet and the outlet at an angular distance from the center of the inlet as seen in the rotational direction of the impeller of about 1/5 of the arc over which the side-channel extends from the center of the inlet to the center of the outlet and having a height of about



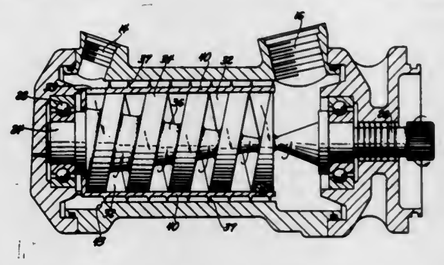
25% to about 40% of the internal radius of the side-channel at least a portion of the bead extending helically in the rotational direction of the gas flow passing through the side channel at a pitch angle ranging from about 10° to about 30°

4,500,254

GAS EXPANSION MOTOR

Edward J. Rozniecki, 31041 Angeline, St. Clair Shores, Mich. 48082

Filed Nov. 8, 1982, Ser. No. 439,665
Int. Cl.³ F01D 5/00
U.S. Cl. 415—75 **3 Claims**



1. A pressurized gas-expansion motor comprising a housing; spaced bearings carried by the housing and operable to define a rotational axis; a pressure-operated rotor comprising a central elongated shaft and two shaft end sections mounted in the spaced bearings for enabling the rotor on the aforementioned rotational axis; said rotor further comprising an outwardly-projecting helical wall extending circumferentially around and along the central elongated shaft for at least four helix convolutions, and an elongated shroud carried on the helical wall in close adjacency to an inner annular surface of the housing; seal means preventing pressurized gas flow through the annular clearance space between the shroud and housing inner surface; said housing having an inlet opening near one end of the annular shroud for receiving pressurized gas, and an outlet opening near the other end of the annular shroud for discharging depressurized gas; the elongated central shaft, helical wall and annular shroud defining an elongated helical gas passage extending circumferentially around and along the central shaft; said shroud having a gas intake port at its inlet end continuously communicating the gas passage with the housing inlet opening; said intake port extending only a limited distance around the shroud circumference; the defined helical gas passage having a progressively increasing cross-sectional area, measured from the inlet end of the shroud to the outlet end, whereby the gas undergoes a continual expansion and depressurization action while it is moving through the gas passage; the length of the helical gas pressure being related to the initial pressure of the gas received through the housing inlet opening,

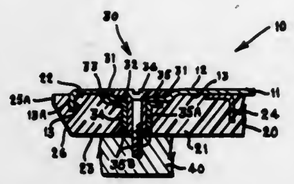
such that the gas exiting through the housing inlet opening is at a relatively low pressure near atmospheric pressure.

4,500,255

SPACER STRUCTURE

George Webb, Cincinnati, Ohio, assignor to United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Apr. 24, 1981, Ser. No. 256,880
Int. Cl.³ F01D 1/02
U.S. Cl. 415—189 16 Claims



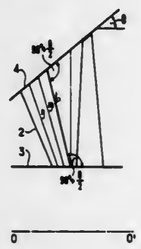
1. A structure useable as a spacer, comprising:
a. a metal face skin member having an inner surface, and aerodynamically configurated outer surface with a centrally positioned concavity therein, and a preselected geometric form with a width, wherein said concavity is positioned transverse to said width, and whereby said concavity constitutes and functions as a rib;
b. and, a backing pad member made of a thermoplastic foamed unicellular material, wherein this member has an outer surface, a preselected geometric form similar to and larger than said preselected geometric form of said face skin member, an embedded rib skin stiffener positioned under, along, and in contact with said concavity in said outer surface of said face skin member, and integral peripheral edge sealing lips, wherein said backing pad member is oriented with said face skin member and is joined by its own outer surface to said inner surface of said face skin member.

4,500,256

GUIDE BLADE SET FOR DIVERGING JET STREAMS IN A STEAM TURBINE

Raymond Bessay, Belfort, and Gilbert Riollet, Paris, both of France, assignors to Alsthom-Atlantique, Paris, France

Filed Mar. 15, 1983, Ser. No. 475,562
Claims priority, application France, Mar. 19, 1982, 82 04687
Int. Cl.³ F01D 19/02
U.S. Cl. 415—191 1 Claim



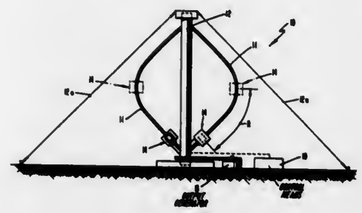
1. A guide blade set for diverging streams in a steam turbine which has blades disposed between a floor plate and a ceiling plate, said floor plate extending generally parallel to the axis of the turbine, said ceiling plate being conical and forming an angle θ with the axis of the turbine, the improvement wherein the blades are curved such that concave and convex surfaces of said blades at one end thereof defined by substantially linear generator lines form an angle of substantially $90°+\theta/2$ with the floor plate, and an angle of substantially $90°+\theta/2$ with said ceiling plate, where θ is the angle of divergence of the jet stream.

4,500,257

WIND TURBINE SPOILER

William N. Sullivan, Albuquerque, N. Mex., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Feb. 24, 1983, Ser. No. 469,348
Int. Cl.³ F03D 7/06
U.S. Cl. 416—32 15 Claims



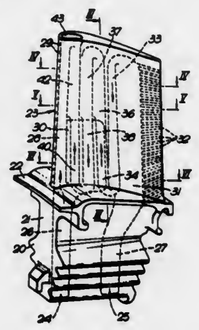
1. A wind turbine comprising:
a vertical axis wind turbine including a vertical rotor axis and a curved blade having two opposed ends, each end being connected to said axis;
spoiler vane means slidably mounted on said blade;
holding means to hold said vane means in an undeployed position near said rotor axis; and
control means for said holding means; whereby upon release of said holding means by operation of said control means, said spoiler vane means slides along said blade to a deployed outboard position spaced from said rotor axis to produce a braking effect on said wind turbine.

4,500,258

COOLED TURBINE BLADE FOR A GAS TURBINE ENGINE

Alec G. Dodd, and Martin Hamblett, both of Derby, England, assignors to Rolls-Royce Limited, London, England

Filed May 24, 1983, Ser. No. 497,585
Claims priority, application United Kingdom, Jun. 8, 1982, 8216584
Int. Cl.³ F01D 5/08
U.S. Cl. 416—97 R 3 Claims



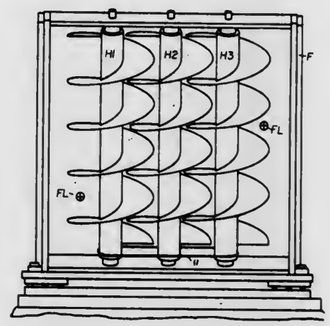
1. A cooled turbine blade for a gas turbine engine comprising an aerofoil having a root end, a tip end and a spanwise extent with convex and concave flanks, said aerofoil having a taper in cross-section from said root end to said tip end with said root end being thicker than said tip end, a first set of cooling air passages extending spanwise of said aerofoil between said root end and said tip end, a dead central cavity extending from said root end of the aerofoil part way up said spanwise extent of the blade and terminating short of said tip end below upper extremities of said first set of cooling air passages, said aerofoil having a relatively constant metal thickness between said cavity and both of said flanks, said first set of cooling passages forming a part of a multi-pass cooling system and bifurcating to pass between said cavity and both flanks of the aerofoil, said first set of cooling passages being of conventional form outboard of said dead central cavity and splitting at said bifurcation into duplicated passages between said dead central cavity and said both flanks of the aerofoil, and a further cooling passage extending adjacent the leading edge of said aerofoil and from which said dead central cavity extends.

4,500,259

FLUID FLOW ENERGY CONVERTER

Berthold W. Schumacher, 24635 Winona, Dearborn, Mich. 48124

Filed Aug. 18, 1981, Ser. No. 293,857
Int. Cl.³ F03D 3/02
U.S. Cl. 416—122 11 Claims



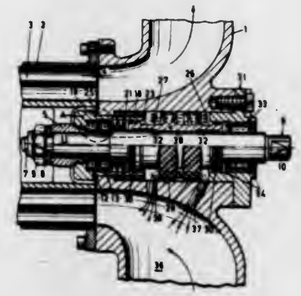
1. Apparatus for extracting energy from the kinetic energy of an unbounded fluid flow such as wind or water, making use of an array of helicoids, characterized by
(a) the helicoids having all the same pitch angle of between 5° and 36° and having their axes arranged in one plane and parallel to one another,
(b) the spacing of the axes being so chosen that the outer diameters of adjacent helicoid structures overlap, so that the helicoid sheet of the second helicoid structure gets positioned in the open spaces between the sheet of the first helicoid structure, the sheet of the third gets positioned in the open spaces between the sheet of the second, and so forth, so as to present a long, nearly dense looking array to the fluid flow,
(c) means for coupling and synchronizing the rotation of all said helicoil structures, so as to secure the mutual position of said helicoid sheets in their respective spatial relationship as just described, and means to couple their rotation to a common output shaft to which they then deliver their energy, said output shaft being coupled to a device doing useful work,
(d) means securing an appropriate angular relationship between the fluid flow vector and the axis of the helicoids, namely so that the flow vector and a radius vector at right angles to the axes of the helicoids form an angle between them of the same order as the pitch angle of the helicoid, so that essentially only one side of the helicoid sheets is impacted by the fluid flow, at an angle to the normal of the sheet surface, thus deflecting the flow without stopping it completely, the helicoid thereby being set in rotation by the recoil forces, as well as on account of the fluid dynamic negative pressure forces generated on the opposite sides of the helicoid sheets by that part of the flow which passes through the structure.

4,500,260

PRESSURE WAVE SUPERCHARGER WITH ROLLING BEARINGS FOR THE ROTOR

Andreas Mayer, Niederrohrdorf, and Adolf Niederer, Unterehrendingen, both of Switzerland, assignors to BBC Brown, Boveri & Company, Limited, Baden, Switzerland

Filed Feb. 25, 1983, Ser. No. 469,992
Claims priority, application Switzerland, Mar. 3, 1982, 1293/82
Int. Cl.³ F04F 11/00
U.S. Cl. 417—64 21 Claims



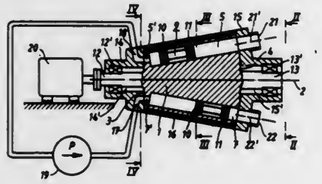
1. A pressure-wave supercharger, comprising:
a rotor casing having a first end face and a second end face;
a rotor arranged within said rotor casing;
an air casing closing said first end face of said rotor casing and including air induction ducts through which flows induction air and high-pressure discharge ducts;
an exhaust gas casing closing said second end face of said rotor casing and including high-pressure gas supply ducts and low-pressure gas exhaust ducts;
a rotor shaft upon which said rotor is mounted;
a shaft space and a rolling bearing system included in said air casing for accommodating said rotor shaft;
duct means interconnecting said shaft space with said air induction ducts;
said duct means comprising, for each air induction duct of said air induction ducts, both an inlet duct at a front position of said air induction duct and an outlet duct lying behind said inlet duct, looking in the flow direction of the induction air;
said outlet duct issuing into said air induction duct just in front of an entry position of the induction air into said rotor;
said rolling bearing system including a first ball-bearing situated closer to said rotor, a second ball-bearing situated further away from said rotor and a bearing sleeve rigidly fixed in said air casing;
said first ball-bearing being equipped with a first outer ring and said second ball-bearing being equipped with a second outer ring;
said first outer ring sitting firmly in said bearing sleeve; and
said second outer ring sitting in said bearing sleeve so that it can be displaced axially.

4,500,261

PUMP MEANS FOR PUMPING A MIXTURE OF COARSE-GRAINED MATERIAL AND FLUID

Bengt Ode, and Lars Törnblom, both of Västerås, Sweden, assignors to Ab Asea-Atom, Vasteras, Sweden

Filed Mar. 21, 1983, Ser. No. 477,545
Claims priority, application Sweden, Apr. 7, 1982, 8202248
Int. Cl.³ F04B *23/12, 23/14, 35/04*
U.S. Cl. 417—203 **3 Claims**



1. A pump apparatus for pumping a mixture of liquid and solid material, comprising:

a rotor body with a longitudinal axis which extends between a first end surface and a second end surface of the rotor body and coincides with an axis of rotation;

a drive means arranged to give said rotor body a rotating movement about said axis of rotation;

an auxiliary pump for providing a pressure medium;

a first stationary guiding member having a first inlet channel and a first outlet channel;

a second stationary guiding member having a second inlet channel and a second outlet channel;

a plurality of cylindrical bores made in said rotor body and extending between said end surfaces; and,

a plurality of piston members, each of said bores containing a corresponding piston member, and each piston member comprising a motor piston portion facing said first guiding member and a pump piston portion facing said second guiding member;

wherein said first guiding member is disposed adjacent to said first end surface and said second guiding member is disposed adjacent to said second end surface;

wherein said first inlet channel and said first outlet channel are connected to said auxiliary pump;

wherein said second inlet channel is directly connected to a conveyor tube for said mixture and said second outlet channel is connectible to an outlet conduit for said mixture;

wherein said conveyor tube, via an opening in the tube wall, is connected to a feeding pocket arranged above the conveyor tube, said conveyor tube comprising a conveyor worm one end of which is insertable into said second inlet channel;

wherein each one of the channels of said first guiding member is arranged to be in a pressure-transmitting communication with a corresponding channel in said second guiding member more than one time during a rotor revolution, each time via one of said bores; and,

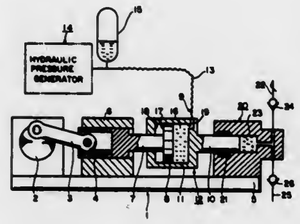
wherein said rotor body is substantially formed as a truncated cone, the radial extension of said second end surface being greater than the radial extension of said first end surface, and said bores being in diverging relation to each other in a direction towards said second guiding member.

4,500,262

VARIABLE PRESSURE AND DISPLACEMENT RECIPROCATING PUMP

Kenji Sugino, and Yukiaki Nagata, both of Uozu, Japan, assignors to Sugino Machine Limited, Uozu, Japan

Filed Apr. 24, 1980, Ser. No. 143,317
Claims priority, application Japan, May 8, 1979, 54-55212
Int. Cl.³ F04B *49/08*
U.S. Cl. 417—214 **5 Claims**



1. In a positive displacement reciprocating pump having an inlet check valve and a discharge check valve wherein a plunger is reciprocated in a cylinder through a crank shaft, a connecting rod and a crosshead, means for varying pressure and displacement of said reciprocating pump characterized in that said crosshead and said plunger are coupled to each other by cushioning means comprising a piston rod integrally extended from a forward end of said crosshead and provided at the end thereof with a piston having a larger cross-sectional area than that of said piston rod and of said plunger disposed in a fluid pressure cylinder having said plunger attached to the forward end thereof, said piston being slidably mounted in said cylinder, and fluid pressure generating means and an accumulator which are arranged to communicate with a head side of said cylinder.

4,500,263

ELECTRICALLY DRIVEN SUBMERSIBLE PUMP SYSTEM

Frank Mohn, London, England, assignor to Framo Developments (UK) Limited, London, England

Continuation of Ser. No. 366,695, Apr. 8, 1982, abandoned. This application Jul. 9, 1984, Ser. No. 629,733
Claims priority, application United Kingdom, Apr. 10, 1981, 8111368; Feb. 19, 1982, 8204943
Int. Cl.³ F04B *39/06*
U.S. Cl. 417—360 **12 Claims**

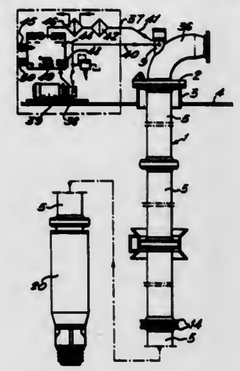
1. For use in the pipe stack of a submersible pump system having a pump head with an electrically driven drive means for an impeller at the lower end of the said pipe stack, a pipe stack section comprising:

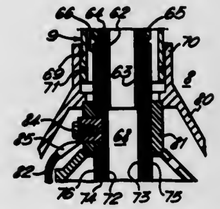
a guide pipe defining a duct for guiding a fluid pumped by the system,

a plurality of electrical conductors for conveying electrical power to said pump head drive means, and

a further pipe located around said conductors with clearance for dielectric liquid for insulation of said conductors,

each of said guide pipe, said further pipe and said conductors being adapted, at each end of said pipe section, for releaseable connection respectively with a guide pipe, a further pipe, and conductors of co-operating pipe stack sections, whereby said pipe stack can be assembled in a desired length from a selected plurality of said pipe stack sections, said conductors and said further pipe cooperating to define a supply path and a return path along said section for circulation of dielectric liquid in said pipe stack, each of said plurality of conductors comprising a tubular conductor of which the interior provides one of said supply and return paths being defined between said tubular conductors and said further pipe.



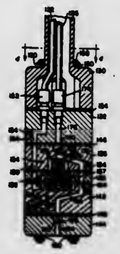


4,500,264

AIR OPERATED DIAPHRAGM PUMP SYSTEM

Georg H. Lindner, Vlissingen, Netherlands, assignor to M&T Chemicals Inc., Woodbridge, N.J.

Filed Jun. 4, 1982, Ser. No. 385,176
Int. Cl.³ B67D *5/50*
U.S. Cl. 417—395 **3 Claims**



1. In combination, an upwardly opening receptacle, liquid stored within said receptacle, a lid for said receptacle, said lid having an aperture formed therethrough, and a diaphragm pump assembly for withdrawing the liquid from said receptacle, said assembly comprising:

(a) a diaphragm pump submerged within said receptacle below the level of the liquid,

(b) said pump having a body with an inlet passage for admitting liquid, an outlet passage for discharging liquid and a pumping chamber intermediate said inlet and outlet passage for receiving liquid there,

(c) a first valve controlling the admission of liquid into the pumping chamber and a second valve controlling the discharge of liquid from said pumping chamber,

(d) a pair of spaced diaphragms extending within the pump body to define a first pressure chamber therebetween,

(e) a displacer secured to said diaphragms, said displaced being movable within pumping chamber,

(f) an extension sleeve extending vertically upwardly from the pump through the aperture in said lid to a position above the receptacle,

(g) a pulse generator and a supply of compressed air for pressurizing same, said pulse generator comprising a circuit of interconnected pneumatic logic elements, at least one of said logic elements comprising a bistable element with two outlet channels, and said circuit further including an inverter connected to one of the outlet channels of said bistable element, and

(h) inlet conduit means passing through said extension sleeve for connecting said pulse generator to said pump body to transmit pressurized pulses to said diaphragms for driving said plunger into said pumping chamber;

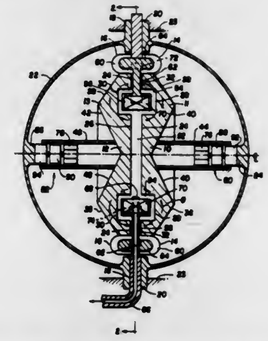
(i) outlet conduit means passing through said extension sleeve for discharging the liquid forced out of said pumping chamber in said pump body by said displacer.

4,500,265

MAGNETICALLY ACTUATED COMPRESSOR

Jack Evans, Baltimore, and Philip A. Studer, Silver Spring, both of Md., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Jan. 28, 1983, Ser. No. 461,724
Int. Cl.³ F04B *17/04;* H02K *33/14;* F01B *19/00;* F25B *9/00*
U.S. Cl. 417—417 **14 Claims**



1. Fluid compressor apparatus substantially free of mechanical vibrations, comprising in combination:

a pair of mutually opposing movable magnetizable bodies (10, 12) located in a body housing (22),

a sealed volume of a working fluid under pressure located between said pair of bodies (10, 12) which urges said bodies apart;

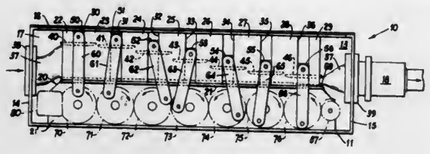
means (56) in relatively close proximity to said pair of magnetizable bodies (10, 12) for periodically generating a single magnetic field interlinking said bodies, said single magnetic field passing through said magnetizable bodies and producing mutually attractive magnetic forces therebetween for causing said bodies to be drawn together, whereupon said volume alternately compresses and expands to respectively increase and decrease the pressure of the working fluid to generate a compression wave therein; and

outlet means (66) for coupling said compression wave generated in the gas volume out of the body housing (22), said outlet means being located intermediate said magnetizable bodies.

4,500,266
LINEAR PERISTALTIC PUMP

Donald L. Cummins, Hopewell, Va., assignor to AMF Incorporated, White Plains, N.Y.

Continuation of Ser. No. 305,011, Sep. 24, 1981, abandoned. This application Dec. 8, 1983, Ser. No. 559,004
Int. Cl.³ F04B 43/12, 45/08
U.S. Cl. 417—474
11 Claims

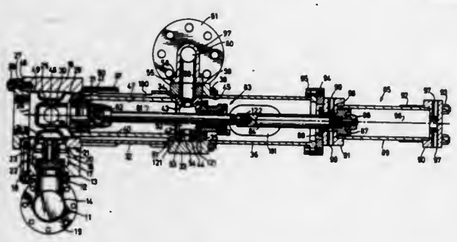


1. A pump comprising:
a housing defining a chamber;
a linear flexible conduit disposed in said chamber having an inlet at one end of said housing to receive material to be moved and a discharge for such material at the other end of said housing;
a fixed surface in said chamber supporting said conduit;
a plurality of shoes disposed in series and movable along linear axes normal to the axis of said conduit thereby compressing said conduit against said support surface by each of said shoes forming a closure of said conduit;
means for moving said shoes in a predetermined sequence forming closures progressively positioned along said conduit to move material from the conduit inlet to the conduit discharge;
laterally spaced guide means including opposed pairs of guide tracks or surfaces extending substantially perpendicular to the support suface on the same side of said surface as said flexible conduit and on either side of said conduit;
said conduit and said shoes disposed between said guide pairs of guide tracks or surfaces; and
each of said shoes having stem portions extending into and being movable along an opposed pair of guide tracks or surfaces to limit the movement of each shoe along an axis extending normal to the axis of said conduit.

4,500,267
MUD PUMP

J. C. Birdwell, 8535 Glencrest, Houston, Tex. 77061

Continuation-in-part of Ser. No. 309,979, Oct. 8, 1981, abandoned. This application Nov. 16, 1983, Ser. No. 552,400
Int. Cl.³ F16J 10/04
U.S. Cl. 417—552
12 Claims

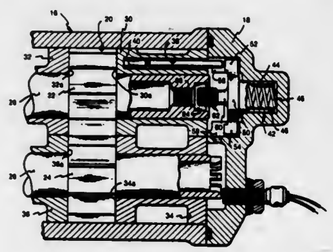


2. Pump apparatus comprising:
two or more cylinders each having a bore with a piston slidably and sealingly disposed therein;
connection means to each piston for receiving reciprocating driving means;
each said piston dividing each said cylinder into first and second expansion chambers with at least one of said expansion chambers being fitted with inlet and outlet unidirectional flow means positioned to enable fluid to be pumped therethrough said flow means as said pistons are reciprocated;
said pistons disposed within replaceable piston housings;
each of said piston housings secured within the confines of an outer housing of said pump apparatus;
each of said piston housings fitted on opposing ends with an inclined surface that sealingly mates with a matching inclined surface that is formed on an adjourning end member;
each said end member being positioned to align the centerline of said matching inclined surface concentric to the centerline of reciprocation of said piston;
said piston housing constructed to align said piston bore concentric to the centerline of said inclined surface on each end thereof; and
means to tighten said end members against said piston housing, with said unidirectional flow means being separate from said end members.

4,500,268
ROTARY PUMP HAVING BRAKE MEANS WITH THERMAL FUSE

Jack G. Sundberg, Meriden; John P. Schaffner, South Windsor, and Daniel J. Conlon, Hartford, all of Conn., assignors to Chandler Evans Inc, West Hartford, Conn.

Filed Sep. 30, 1982, Ser. No. 430,828
Int. Cl.³ F04C 2/18, 15/00; B60T 13/04; F04B 49/02
U.S. Cl. 418—1
8 Claims



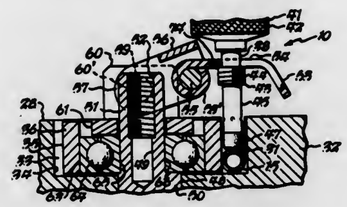
1. A method of preventing prolonged dry running of a pump having a shaft journal mounted for rotation in the pump, a rotating pumping member carried by the shaft journal for rotation therewith and a bearing positioned in the pump for rotatably mounting the shaft journal, which method comprises the steps of:
placing a thermal fuse in the bearing; and
placing a braking member in the pump adjacent an end of the shaft journal, the braking member being adapted to engage and stop rotation of the shaft journal upon melting of the thermal fuse.

4,500,269
INTEGRAL TUBE-LOADING ASSEMBLY FOR PERISTALTIC PUMP

Thurman S. Jess, Lydonville, N.Y., assignor to Cormed, Inc., Medina, N.Y.

Filed Nov. 30, 1983, Ser. No. 556,370
Int. Cl.³ F04B 43/12, 45/08
U.S. Cl. 418—45
12 Claims

1. In a peristaltic pump having a housing with an inner wall, a rotor having an outer wall, a flexible tube for insertion between said inner and outer walls, and means mounting said rotor for eccentric movement within said housing with said inner wall spaced from said outer wall, said eccentric movement causing a portion of said outer wall of said rotor to progressively recede from said inner wall during rotation of said rotor so as to accommodate said flexible tube in a relatively uncompressed state, the improvement comprising a device for inserting said tube between said inner and outer walls comprising a pin member including a tube inserting end and a digital grasping end and a central portion therebetween, and linkage means mounting said pin member relative to said rotor for

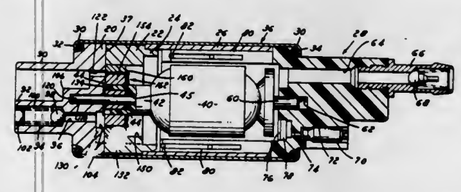


causing said tube inserting end to always be aligned with said portion of said outer wall of said rotor so that the tube inserting end of said pin member can progressively press portions of said tube in a relatively uncompressed state between said inner and outer walls as said rotor is caused to rotate.

4,500,270
GEAR ROTOR FUEL PUMP

Charles H. Tuckey, Cass City, Mich., assignor to Walbro Corporation, Cass City, Mich.

Filed Jul. 29, 1982, Ser. No. 403,097
Int. Cl.³ F04B 23/14, 17/00
U.S. Cl. 418—133
3 Claims

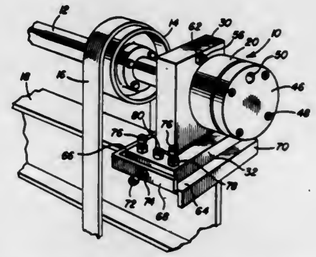


1. In a gear rotor pump having an outer gear rotor with pumping recesses and an inner gear rotor driven within an eccentric opening in a cam ring by a rotating power input unit, that improvement in construction which comprises:
(a) an inlet housing having a liquid inlet at one end and a flat pump housing wall at the other end and a pump inlet and outlet ports circumferentially spaced therein,
(b) a gear assembly mounted for rotation including an inner gear rotor rotatable about a first axis and an outer gear rotor within said cam ring rotatable with said inner gear rotor, each said rotor having equal axial dimensions with one end lying against said flat housing wall,
(c) first flexible plate means rotatable with said assembly radially overlying the other end of said inner and outer gear rotor assembly to close the pumping recesses at said other end and pressing said assembly against said wall, and
(d) second means for rotatably driving said first flexible plate means and said inner gear rotor to cause rotation of said outer gear rotor and a consequent pumping action,
(e) means is provided to mount said gear assembly within said cam ring comprising a non-rotating stub shaft concentric with said first axis and mounted in said inlet housing and projecting perpendicularly from said flat wall rotatably mounting said inner rotor through a central opening in said inner rotor, the stub shaft being independent of and unsupported by said power input unit and said second means,
(f) the second means comprising a rotating means on said power unit rotatable independent of said stub shaft having a body portion exerting axial pressure against said flexible plate means and circumferentially spaced finger projections positioned outwardly of said first axis and projecting into receiving recesses in said inner gear rotor.

4,500,271
UNDERWATER PELLETIZER WITH ADJUSTABLE BLADE ASSEMBLY

Donald W. Smith, Fincastle, Va., assignor to Gala Industries, Inc., Eagle Rock, Va.

Filed Dec. 6, 1983, Ser. No. 558,470
Int. Cl.³ B29C 17/14; B29F 3/00
U.S. Cl. 425—67
6 Claims

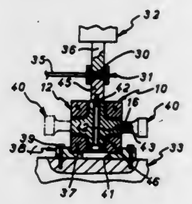


1. In an underwater pelletizer including a rotatable cutter blade assembly associated with a cutting surface of a die for forming pellets and including a drive shaft, means adjustably supporting the drive shaft for adjustable movement axially of the axis of rotation and radially of the axis of rotation for adjusting the cutter blade assembly in relation to the cutting surface on the die said adjustably supporting means being manually operable to accurately adjust the position of the cutter blade assembly and said adjustably supporting means including a bearing journalling the shaft, a bearing housing mounting the bearing and a bearing support plate, said bearing housing being threaded through the bearing support plate for rotational movement of the bearing housing and axial movement of the bearing and shaft.

4,500,272
FLOATING CORE TRANSMISSION MEMBER FOR ULTRASONIC ASSISTANCE

Jean-Francois Astier, Boisseuil Feytiat; Louis Bessaguet, Limoges, and Michel Laplanche, Feytiat, all of France, assignors to Legrand, Limoges, France

Filed May 4, 1983, Ser. No. 491,445
Claims priority, application France, May 4, 1982, 82 07701
Int. Cl.³ B30B 11/02
U.S. Cl. 425—78
19 Claims



1. In a transmission member for ultrasonic vibrations said transmission member being of the type including a casing, a floating core free to move in all directions within said casing, said core having at least two arms disposed at an angle to one another, said at least two arms separately projecting towards the exterior of said casing, one of said arms having means for connection to an ultrasonic driving member and another of said arms having means for connection to a driven member,

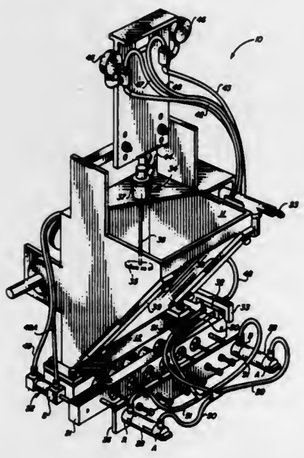
and said casing defining an internal housing having a configuration which corresponds to that of the exterior of said core and being spaced from said core, an improvement comprising an insulating layer positioned between said floating core and walls of said internal housing in the casing in which said floating core is disposed, said insulating layer being formed of a solid elastic material filling said space in said casing between said casing and said core.

4,500,273

AUTOMATIC POURING AND DISPENSING MACHINE FOR MANUFACTURING HARD AND SOFT CANDY

Dennis M. Anderson, Star Route Box 1049J, Ox Bow Estates, Payson, Ariz. 85541

Filed Dec. 19, 1983, Ser. No. 562,870
Int. Cl.³ B29C *5/00*; A23G *3/18*
U.S. Cl. 425—143 **11 Claims**



1. An apparatus for measuring and dispensing sugar syrups into a mold comprising:

a mounting block defining a cavity therein having first input and output ports,

a hopper for dispensing syrups through said first input port into said cavity,

a dispensing valve mounted in said cavity,

said valve comprising a cylinder movable in said cavity and a piston means movable in said cylinder,

said cylinder having second input and output ports,

first and second fluid operable means,

first and second sequencing means,

said first sequencing means, when activated by fluid under pressure in one position, activates said first cylinder means to connect said inlet port of said block with said inlet port of said cylinder and activates said second sequencing means to move said piston means outwardly of said cylinder to enlarge a cavity in said cylinder to receive syrup from said hopper,

said first sequencing means, when activated to another position, activating said first cylinder means to move said cylinder to close said first inlet port in said block and said second inlet port in said cylinder and to open said second outlet port in said cylinders and place it in alignment with said first outlet port in said block,

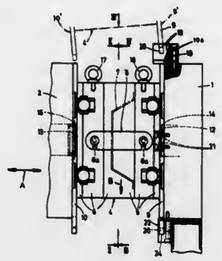
said first sequencing means, when activated to said another position, activating said second sequencing means to cause said piston means to move inwardly of said cylinder to force syrup in the cavity in said cylinder out of said first and second outlet ports into a mold.

4,500,274

QUICK-CHANGE MOLD ASSEMBLY FOR INJECTION-MOLDING MACHINES

Wilhelm Cyriax, Meinerzhagen; Gerhard Tamboers, Plettenburg, and Johannes Holzschuh, Meinerzhagen, all of Fed. Rep. of Germany, assignors to Battenfeld Maschinenfabriken GmbH, Meinerzhagen, Fed. Rep. of Germany

Filed Apr. 26, 1983, Ser. No. 488,755
Claims priority, application Fed. Rep. of Germany, Apr. 26, 1982, 3215567
Int. Cl.³ B29C *1/16*
U.S. Cl. 425—185 **19 Claims**



1. In an injection-molding machine having a pair of mold-carrying plates at least one of which is adapted to be displaced toward and away from the other in a mold-opening and a mold-closing direction, a quick-change mold system which comprises:

a mold having a pair of separable mold parts adapted to define an injection mold cavity;

a respective adapter plate bolted to each of said parts and confronting the respective one of said mold-carrying plates;

guide means on only one of said mold-carrying plates forming a linear guide path for the respective mold-adapter plate and the respective mold part affixed thereto whereby said mold between said adapter plates can be shifted along said path between said mold-carrying plates transversely to said direction;

latch means for coupling said parts together in a closed position of said mold for introduction of said mold between said mold-carrying plates into and for withdrawal out of position in said machine;

abutment means on said one of said mold-carrying plates transverse to said direction forming a stop for at least one of said adapter plates along said path thereby aligning said one of said adapter plates with the respective mold-carrying plate; and

locking means on said mold-carrying plates for engagement with said adapter plates to retain said adapter plates against the respective mold-carrying plates during opening and closing of the mold, said locking means including a plurality of releasable clamps on the other of said mold-carrying plates shiftable to engage over the confronting adapter plate.

4,500,275

QUICK CHANGE LOCATOR CLAMP ASSEMBLY FOR PLASTIC MOLDING MACHINE

Edward A. Ruhl, Southfield, Mich., assignor to Sharp Die & Mold Company, Inc., a subsidiary of R & R Plastic Material, Inc., Fraser, Mich.

Filed Dec. 23, 1983, Ser. No. 564,686
Int. Cl.³ B29F *1/06*
U.S. Cl. 425—192 R **15 Claims**

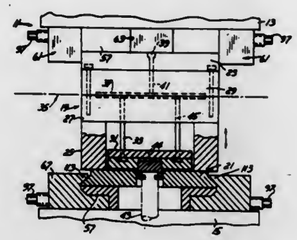
1. In a plastic or die cast molding machine having opposed stationary and movable platens adapted to receive, mount and support a sectional plastic molding die having opposed stationary and movable guidably interconnected clamps plates comprising;

opposed inwardly facing symmetrical quick change locator clamp assemblies mounted upon said platens;

each clamp assembly including a body plate bearing against and secured to a platen;

laterally spaced index pins mounted upon said body plate and projecting outwardly thereof;

there being correspondingly spaced keyhole slots within the corresponding edges of said clamp plates adapted to cooperatively receive said pins for locating said clamp plates relative to and against said body plates respectively;



longitudinally spaced opposed inward directed pairs of plate clamps adjustably and guidably mounted upon opposite sides of said body plate adapted to receive and retainingly engage opposite sides of a clamp plate;

and rotatable screw means interconnecting each pair of clamps rotatable in one direction for simultaneously moving each pair of clamps inwardly to operatively and retainingly engage a clamp plate for securing said clamp plates to said platens respectively;

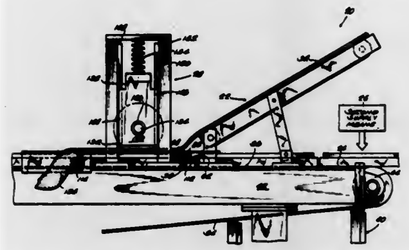
and alternately rotatable in the opposite direction for moving each pair of clamps outwardly to disengage said clamp plates to facilitate removal of said sectional die and clamp plates from said platens.

4,500,276

APPARATUS FOR MAKING DEEP DISH PIZZA CRUSTS OR THE LIKE

Miles R. Cherkasky, 833 E. Washington St., Appleton, Wis. 54912, and Ernest V. Canamero, Green Bay, Wis., assignors to Miles R. Cherkasky, Appleton, Wis.

Filed Mar. 7, 1983, Ser. No. 472,555
Int. Cl.³ A21C *3/02, 9/08, 11/10*
U.S. Cl. 425—297 **9 Claims**



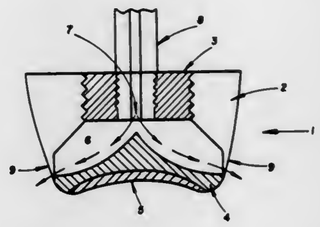
1. Automated apparatus for forming pie crusts, comprising first supply means for providing a ribbon of dough; conveyor means comprising plural flight plates, each flight plate including a cutting ring and support means within said cutting ring for supporting a pie pan interiorly of said ring; second supply means for delivering a pie pan to each said support means; anvil means for urging said ribbon of dough against each said cutting ring, thereby severing disks of dough from said ribbon and allowing each said disk to drop into the associated pan; and fluid reciprocated diaphragm means capable of being distended for pressing each said disk into the corresponding pan in conforming relation and capable of being withdrawn for separating from said disk.

4,500,277

APPARATUS FOR THERMOFORMING THERMOPLASTIC SHEET MATERIALS

Lance W. Bullock, Wonga Park; Josip Vlahek, and Ferenc Kovacs, both of Tullamarine, all of Australia, assignors to W. R. Grace Australia Limited, Fawkner, Australia

Filed Jan. 4, 1983, Ser. No. 455,618
Claims priority, application Australia, Mar. 2, 1982, 2922/82
Int. Cl.³ B29C *17/04, 17/03*
U.S. Cl. 425—387.1 **12 Claims**



1. A thermoforming tool adapted to selectively distribute and stretch a heated thermoplastic sheet material comprising:

a body portion comprising a sidewall means having an internal surface defining at least one cavity and an external surface adapted to contact said heated thermoplastic sheet material;

at least one insert portion having an external surface adapted to contact said heated thermoplastic sheet material, said insert being retainingly held by said sidewall means and having an internal surface co-operating with said internal surface of said body portion to define a hollow internal chamber;

inlet means adapted to admit pressurized air into said chamber;

wherein the surface defining the internal chamber is configured to direct circulation of pressurized air admitted into said chamber from said inlet means initially across said internal surface of said insert portion to said sidewall means;

wherein the thermal conductivity of said insert portion is different from the thermal conductivity of said body portion and whereby said body portion and said insert portion are adapted to chill said heated thermoplastic sheet material and the rate of chilling of said heated thermoplastic sheet material by said insert portion is different from the rate of chilling of said heated thermoplastic sheet material by said body portion.

4,500,278

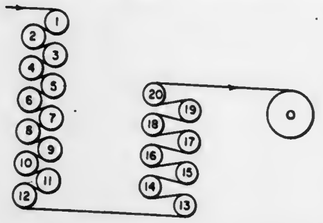
YARN HEAT TREATMENT APPARATUS

Stanley R. Cochran, Midlothian, Va., and Francis W. Strahorn, Hockessin, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Apr. 22, 1983, Ser. No. 487,897
Int. Cl.³ B29C *25/00*
U.S. Cl. 425—445 **2 Claims**

1. Apparatus for heat treating para-aramid filaments at high speed comprising a staggered array of at least 3 closely spaced heated rolls having diameters of no more than 38.1 cm capable of operating at a first surface speed in excess of 274 m/min and surface temperatures of 175°-300° C. followed by a second staggered array of at least 3 closely spaced heated rolls having diameters of no more than 38.1 cm capable of operating at a surface speed in excess of the surface speed of the first array of

rolls and having surface temperatures of 175°–300° C. and a third staggered array of at least 3 closely spaced constant-tem-



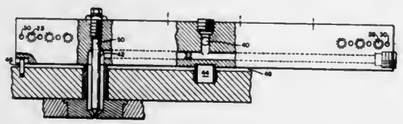
perature cooling rolls having diameters of less than 30.5 cm capable of operating at a surface speed sufficient to maintain 0.6 to 4.0 gpd tension on yarn entering the cooling rolls.

4,500,279

HEAT PIPE MANIFOLD SYSTEM

Richard D. Devellian, Rockport, and Paul M. Swenson, Gloucester, both of Mass., assignors to Kona Corporation, Gloucester, Mass.

Filed Jul. 6, 1983, Ser. No. 510,440
Int. Cl.³ B29F *1/03*
U.S. Cl. 425—548 **15 Claims**



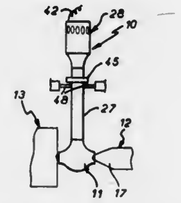
1. A hot manifold system for use between the melt input and the cavity portion of a hot runner mold comprising:
(a) an elongated block member having a top, a bottom, a left end and a right end;
(b) a first portion of said block defining within part thereof a runner channel through which molten material is adapted to flow, said runner channel extending from said melt input in the top of said block therethrough to at least one output in the bottom of said block to the cavity portion of said mold;
(c) a second portion of said block adjacent one end thereof;
(d) a heat source in direct thermal contact with said second portion;
(e) a first plurality of elongated isothermal heat pipes disposed within said block;
(f) said heat pipes extending from within said second portion of said block into said first portion of said block the left to right length thereof such that said heat pipes are substantially uniformly disposed within said first portion of said block relative to each other in proximate relation to said runner channel;
(g) whereby the temperature of said block may be maintained at a uniform level regardless of factors tending to vary such uniformity by the self compensating variation in the rate of change of state of the operating fluid contained in said heat pipes.

4,500,280

VIBRATION-AIDED FEED DEVICE FOR A MOLDING APPARATUS

Jean-Francois Astier, Boisseuil Feytiat; Louis Bessaguet, Limoges, and Michel LaPlanche, Feytiat, all of France, assignors to Legrand, Limoges, France

Filed Jul. 13, 1983, Ser. No. 513,385
Claims priority, application France, Jul. 13, 1982, 82 12279
Int. Cl.³ B29F *1/03*; B29C *11/00*
U.S. Cl. 425—569 **27 Claims**



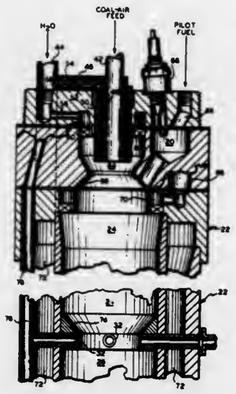
1. A vibration-aided feed device for a molding apparatus of the kind comprising an injection head and a mold, a feed channel for bringing said injection head into communication with said mold, said feed device comprising a connecting body having a distribution channel defining at least part of said feed channel, a laterally extending vibrating arm linked to said connecting body, a vibration generator coupled to said vibrating arm for imparting vibrations to said connecting body without substantially increasing temperatures in said distribution channel, and resilient means floatingly mounting said connecting body for permitting vibration thereof relative to said injection head and said mold.

4,500,281

BURNING OF FUELS

David H. Beardmore, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Aug. 2, 1982, Ser. No. 403,979
Int. Cl.³ F23J *7/00*
U.S. Cl. 431—3 **18 Claims**



1. A method of burning a fuel, containing significant amounts of NO_x precursors, comprising:
(a) passing said fuel through at least three serially connected combustion zones in open communication with one another, including; at least two fuel-rich zones and a last fuel-lean zone;
(b) adding a first volume of combustion-supporting material adjacent the upstream end of the first of said fuel-rich zones and intimately mixing the thus added first volume of combustion-supporting material with all of said fuel adjacent said upstream end of said first of said fuel-rich zones;
(c) adding an additional volume of combustion-supporting material adjacent the upstream end of each of the remaining fuel-rich zones and intimately mixing the thus added additional volume of combustion-supporting material with effluent from the immediately preceeding fuel-rich zone adjacent said upstream end of each of said remaining fuel-rich zones;
(d) the total combustion-supporting material thus added to the upstream end of said first fuel-rich zone and said remaining fuel-rich zones, together with said fuel, resulting in a fuel/combustion-supporting material equivalence ratio greater than 1.0;
(e) adding a still further volume of combustion-supporting material adjacent the upstream end of said fuel-lean zone and intimately mixing the thus added still further volume of combustion-supporting material with effluent from the last of said fuel-rich zones adjacent said upstream end of said fuel-lean zone;
(f) the total combustion-supporting material thus added to the upstream ends of said first fuel-rich zone, said remaining fuel-rich zones and said fuel-lean zone, together with said fuel, resulting in a fuel/combustion-supporting material equivalence ratio less than 1.0;
(g) providing an outlet from each combustion zone of substantially less cross-sectional area than the cross-sectional area of the beginning of the next succeeding combustion zone and abruptly terminating more fuel-rich combustion adjacent the downstream end of each of a preceeding one of said combustion zones and initiating less fuel-rich combustion adjacent the upstream end of each of an immediately succeeding one of said combustion zones, at least in part, by thus adding combustion-supporting material to the effluent of said preceding one of said combustion zones as a plurality of radial jets toward the center of said combustion zone, whereby at least three clearly defined combustion zones are formed;
(h) adding a catalytic amount of a combustion catalyst to the thus formed mixture of said fuel and said first volume of combustion-supporting material adjacent said upstream end of said first of said fuel-rich zones; and
(i) burning said fuel in the presence of said combustion-supporting material and said combustion catalyst in a serial manner in said at least three combustion zones.

4,500,282

BURNER GUIDE VANE DEVICE

Vladislav Y. Eschenko, Tashavtomash-2, 15, kv. 20; Irsali K. Musaev, kvartal 19, 10, kv. 39; Zakhidzhan S. Talibdzhanov, kvartal TS 17/18, 7, kv. 26, all of Tashkent; Viktor A. Leonov, ulitsa Alishera Navoi, 21/6, kv. 55, Dushanbe; Anatoly D. Bobrov, ulitsa Dimitrova, 5, kv. 132, Ulyanovsk; Efim I. Kirovsky, Chilanzar, kvartal 13, 3, kv. 62, Tashkent; Vladimir A. Gritsenko, Kara-Kamysh, 2/4, 35, kv. 48, Tashkent, and Alexandr V. Golovanov, massiv Junus-Abad B-1, 63, kv. 73, Tashkent, all of U.S.S.R.

Filed May 27, 1981, Ser. No. 267,477
Int. Cl.³ F23M *9/00*
U.S. Cl. 431—184 **4 Claims**



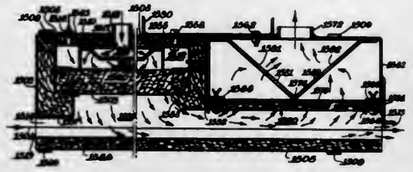
1. A burner guide vane device for use with a burner nozzle comprising: a housing having an inlet pipe and an outlet pipe; a cylindrical swirl chamber defined by said housing; equidimensional spaced stationary segments positioned within said housing forming gas inlet ports arranged symmetrically in diametrical opposition to each other; and pivotable vane units mounted at their central portions on respective axles positioned centrally of said gas inlet ports each said pivotable vane units being comprised of two parts, each part of each vane unit being independently pivotable around its said respective axle along an inner edge of each said part.

4,500,283

INFRA-RED GENERATORS AND USE

Thomas M. Smith, 1415 Golf Rd., Cinnaminson, N.J. 08077

Continuation-in-part of Ser. No. 435,512, Oct. 20, 1982, Ser. No. 312,730, Oct. 19, 1981, Pat. No. 4,443,185, Ser. No. 292,167, Aug. 12, 1981, Ser. No. 279,081, Jun. 30, 1981, Pat. No. 4,416,618, and Ser. No. 238,418, Feb. 26, 1981, Pat. No. 4,447,205, each is a continuation-in-part of Ser. No. 186,491, Sep. 12, 1980, Pat. No. 4,378,207, said Ser. No. 312,730, Ser. No. 292,167, Ser. No. 279,081, and Ser. No. 238,418, each is a continuation-in-part of Ser. No. 952,332, Oct. 18, 1978, Pat. No. 4,326,843, which is a continuation-in-part of Ser. No. 906,229, May 15, 1978, Pat. No. 4,157,155, said Ser. No. 238,418, and Ser. No. 186,491, each is a continuation-in-part of Ser. No. 94,901, Nov. 16, 1979, Pat. No. 4,272,238. This application Jun. 29, 1983, Ser. No. 509,161
Claims priority, application Japan, Jun. 29, 1982, 57-110884; New Zealand, Aug. 11, 1982, 201562
Int. Cl.³ F23D *13/12*
U.S. Cl. 431—328 **3 Claims**



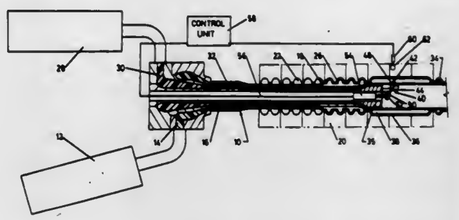
1. A gas-fired infra-red-generating burner having a combustion gas plenum covered by a porous panel secured to a metal burner body the exterior of which is covered with exposed thermal insulation blocks, and those blocks are held in place by wire screening wrapped around the blocks, the burner including means clamping edges of the screen in place.

4,500,284

FORMING SINGLE WALL BELLS IN DOUBLE WALL PIPE

Manfred A. A. Lupke, 35 Ironshield Cres., Thornhill, Canada L3T 3K7

Filed Sep. 16, 1983, Ser. No. 532,857
Int. Cl.³ B29C *5/06, 17/07, 17/14*; B29D *23/03*
U.S. Cl. 425—511 **2 Claims**



1. An apparatus for producing a double-walled thermoplastic pipe having a corrugated outer wall and a substantially

smooth inner wall secured to the latter, including extruders for said walls, a core plug over which the inner wall is extruded, and a travelling mold defining a cavity having corrugated sections, wherein the latter are separated with at least one bell section to produce accordingly said outer wall with corrugated and bell sections means for conforming said outer wall to said cavity, said plug being provided with a cutter mounted downstream and having an actuator to puncture the inner wall in said bell section in order to admit air into a chamber of the latter between its outer and inner walls.

4,500,285

ARRANGEMENT FOR MOUNTING A BARREL RING ON THE CASTING OF A ROTARY CYLINDER

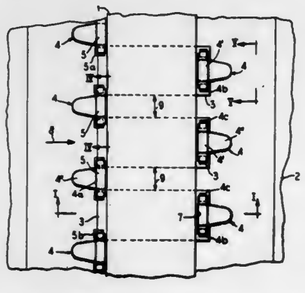
Fred Klotmann, Cologne, and Hubert Ramesohl, Bergisch Gladbach, both of Fed. Rep. of Germany, assignors to Klöckner-Humboldt-Deutz AG, Fed. Rep. of Germany

Filed Jan. 26, 1983, Ser. No. 461,167

Claims priority, application Fed. Rep. of Germany, Feb. 1, 1982, 3203241

Int. Cl.³ F27B *7/00*; D06F *58/00*; F16C *13/00*

U.S. Cl. 432—103 **12 Claims**



1. A rotary kiln construction comprising in combination:

a rotary kiln cylinder having a cylindrical outer surface;

an annular bearing ring for supporting the kiln in rotation and having an inner circumference larger than the outer circumference of the cylinder;

a plurality of spacing plates located between the ring and cylinder and circumferentially spaced from each other; and

support elements at each axial side of the bearing ring secured to the outer surface of the cylinder having retaining elements projecting on both circumferential sides of the plates and being radially outward of the plates to provide radial inward support to the plate ends.

4,500,286

PRIMARY AIR SUPPLY UNIT OF ROTARY KILN

Hiroshi Nagai, Kanagawa, Japan, assignor to Nippon Furnace Kogyo Co., Ltd. and Chichibu Cement Co. Ltd., both of Tokyo, Japan

Filed Jun. 23, 1983, Ser. No. 507,186

Claims priority, application Japan, Jul. 29, 1982, 57-131109; Aug. 26, 1982, 57-146949

Int. Cl.³ F27B *7/02*; F27D *15/02*

U.S. Cl. 432—106 **6 Claims**

1. In combination, a rotary kiln,

a burner disposed at one end of said kiln,

means for supplying primary air under pressure to said burner,

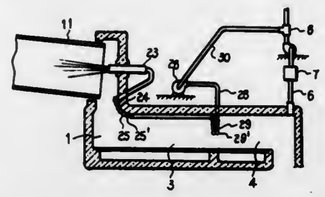
a clinker box adjacent said end of said kiln for receiving clinker produced by said kiln,

said clinker box having a ceiling thereover,

means for passing secondary air into contact with said clinker prior to passing said secondary air into said end of said kiln,

at least one heating tube group disposed adjacent to said ceiling,

said heating tube group formed with a continuous passage having one end in communication with said burner and



the other end in communication with said means for supplying said primary air to said burner whereby said primary air passes through said heating tube group in said clinker box and is preheated prior to passing into said burner.

4,500,287

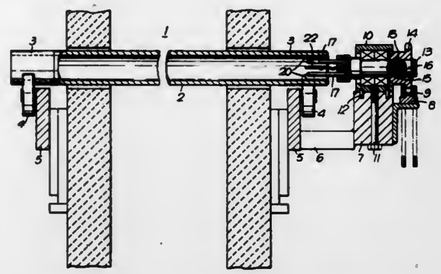
ROLLER TABLE FOR SINGLE-LAYER CERAMIC KILNS IN GENERAL

Dario Carraroli, Modena, and Giordano Giavelli, Sassuolo, both of Italy, assignors to Carfer S.r.l., Modena and Officina Meccanica Giavelli S.p.A., Reggio Emilia, both of, Italy

Filed Nov. 15, 1982, Ser. No. 441,905

Int. Cl.³ F27D *3/00*; B65G *13/06*

U.S. Cl. 432—246 **11 Claims**



1. In a roller table for single-layer ceramic kilns of the type comprising a plurality of generally equidistant hollow metal or ceramic rollers, the opposite ends of which emerge from the respective side walls of a ceramic material firing tunnel of the kiln for rotation by a friction drive system comprising a chain, the improvement comprising outside the firing tunnel at the opposite ends of each of said rollers, a pair of spaced apart idle wheels for supporting the roller for rotation; each roller having a drive end, and at the drive end of each roller, a rotatable drive shaft generally coaxial with the roller and axially outwardly of the drive end; cooperating means between said drive shaft and said drive end for driving the roller to transfer material along the tunnel while leaving the roller free to expand axially as a result of thermal expansion, and cooperating means between said drive shaft and said drive end of the roller maintaining the roller in an operating position in the tunnel during operation of the kiln, and for permitting axial removal of the roller from the kiln by withdrawing the roller axially away from the shaft.

4,500,288

ANGULAR MOLD FOR DENTAL USE

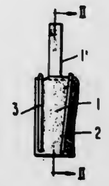
Hans C. von Weissenfluh, Magadino, Switzerland, assignor to Hawe-Neos Dental Dr. H. v. Weissenfluh S.A., Gentilino, Switzerland

Filed Dec. 30, 1982, Ser. No. 454,851

Claims priority, application Switzerland, Jan. 21, 1982, 350/82

Int. Cl.³ A61C *9/00*

U.S. Cl. 433—40 **14 Claims**



1. An angular mold for dental use comprising a cap of material transparent to ultraviolet rays and the rays of the visible solar spectrum, the cap having the shape of the lateral half of a human tooth and being open on one side and closed at its top and open at its bottom, the cap having a stem on its closed top that makes it possible to grasp the mold without blocking the passage of the rays of ultraviolet and visible light, and a permanently deformable reinforcement that extends from top to bottom of the cap and that occupies only a minor portion of the area of the cap thereby to avoid blocking said rays.

4,500,289

DENTURE OCCLUSAL MOUNTING TRANSLATOR

Ugo S. Garganese, 1790 Warwick Ave., Warwick, R.I. 02889; John R. Griffin, 5 Franconia St., Dorchester, Mass. 02122, and Raymond H. Martin, 88 Brisbon Rd., Somerset, Mass. 02726

Filed Aug. 5, 1982, Ser. No. 405,427

Int. Cl.³ A61C *11/00*

U.S. Cl. 433—54 **1 Claim**



1. A dental occlusal mounting translator for use with an articulator said translator is used to mount and set a dental cast of a patients maxilla to the patients exact occlusal plane in relation to the zero-degree table, said translator having a flat zero-degree table on which artificial teeth are to be set; said zero-degree table having an anterior elevating calibrated rod capable of swivel movements with a horizontal support pin grooved on one end for supporting the anterior papilla of the maxillary cast; a pointer on the opposite end of the pin for positioning of the arch of multiple artificial teeth said pointer located at the top section of the elevating calibrated rod; a posterior horizontal support bar for engaging the hammula notches of the maxilliary cast with elevating capabilities located at the opposite side of the zero-degree table from the calibrated papilla rod; a square holed mounting disc at the base of the zero-degree table and a mounting attachment for the translator table having adjustable clamp with a set screw for tightening to the base of articulator having mounting platform with a square protrusion at the top side to fit the square holed disc of the base of the translator table to secure the attachment and table together and a mounting attachment for insertion into the square holed disc for attaching the translator table to any articulator, said mounting attachment having adjustment clamp with a set screw for tightening to the base of any articulator.

4,500,290

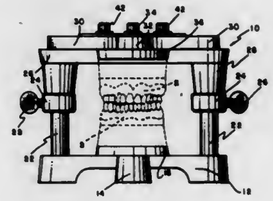
ARTICULATOR DEVICE AND METHOD

Jerry C. Anderson, 4567 W. Central, Suite B, Wichita, Kans. 67212

Filed Jun. 9, 1983, Ser. No. 502,762

Int. Cl.³ A61C *11/00*

U.S. Cl. 433—54 **3 Claims**



1. An articulator device for articulating upper and lower dental casts comprising a base having a generally T-shaped structure defining a tongue-like protrusion including a longitudinal slot;

a lower dental cast holding pad for holding said lower dental cast and secured to the tongue-like protrusion and movably disposed along said longitudinal slot for anterior-posterior direction repositioning of the lower dental cast with respect to the upper dental cast for malocclusive correction;

a pair of support pins implanted in said base;

a pair of collars slideably positioned along the support pins and having means for fixedly securing the collars to the support pins;

a guide member slideably disposed along the pair of support pins and supported by the collars in order to be elevated or lowered in accordance with the movements of the collars;

a holder supported by said guide member and having a generally T-shaped structure defining a tongue-like protrusion, said holder comprising a structure defining a pair of generally elongated recessed apertures wherethrough said pair of pins slideably pass and said holder further defining a pair of elongated slots;

means for adjustably laterally moving said holder with respect to said guide member to align the upper and lower dental casts for posterior occlusion;

and an upper dental cast holding pad for holding the upper dental cast and rotatably bound to said tongue-like protrusion of said holder.

4,500,291

METHOD OF FABRICATING DENTURES

Sammy G. Davis, and Donna C. Gulling, both of 10319 E. 42nd St., Kansas City, Mo. 64133

Filed Jul. 25, 1983, Ser. No. 516,790

Int. Cl.³ A61C *13/00*

U.S. Cl. 433—213 **6 Claims**

1. A method for fabricating denture plates, comprising the steps of:

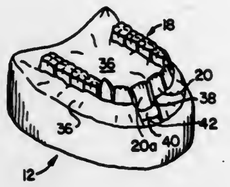
preparing an impression of the patient's arch;

casting a plaster model of the patient's arch;

forming a wax plate to the contour of the palate and gingiva of the model;

removing one of the teeth of the model to thereby expose the base of the model;

preparing the denture plate by building up a base of acrylic



material on the exposed base for the removed tooth and positioning a replacement tooth in the acrylic material to thereby replace the removed tooth; and

building up the gingival area around the replacement tooth.

4,500,292

METHOD AND APPARATUS FOR PREPARING MUCOSAL TISSUE FOR THE RECEPTION OF DENTURE ANCHORING INTRAMUCOSAL INSERTS

Carl E. Misch, 1611 Monroe, Dearborn, Mich. 48124

Filed Jul. 27, 1983, Ser. No. 517,569
Int. Cl.³ A01C *8/00*
U.S. Cl. 433—173 **3 Claims**



1. A temporary insert for use in preparing a freshly formed cavity in the mucosal tissue of a patient for the reception of an intramucosal insert permanently attached to a denture, said intramucosal insert having a shaft with an enlarged head fixedly secured to and projecting from the inner surface of the denture, said temporary insert comprising:

a shaft formed with an enlarged head at one end thereof of a size and shape the same as that of the shaft and enlarged head of said intramucosal insert, said head having a dome-like face opposed to the shaft and a flat, planar face contiguous to the shaft adjoining the upper at an angle; and

a thin retainer plate fixedly secured to the other end of said shaft of said temporary insert to lie flat against the surface of mucosal tissue of a patient when the shaft and head of said temporary insert are seated within said freshly formed cavity;

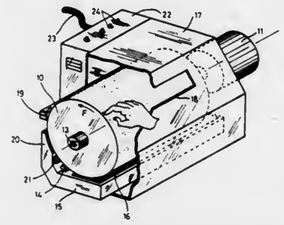
the thickness of said plate being insufficient to exert any substantial interference with a normal denture seated on said mucosal tissue in unattached overlying relationship to said temporary insert when said temporary insert is seated in said cavity.

4,500,293

APPARATUS FOR CONVERTING ELECTRIC SIGNALS REPRESENTING DATA INTO A GROUP OF RAISED DOTS CONSTITUTING THE IMAGE OF SAID DATA

Jean J. Eltgen, Paris, France, assignor to Compagnie Internationale pour l'Informatique Cii Honeywell Bull (Societe Anonyme), Paris, France

Filed Jan. 30, 1984, Ser. No. 575,293
Claims priority, application France, Feb. 11, 1983, 83 02238
Int. Cl.³ G09B *21/02*
U.S. Cl. 434—114 **16 Claims**



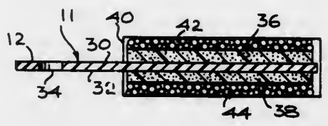
1. Apparatus for converting electric signals representing data into a coded image of said data comprising a group of raised dots intended to be read by touch or recorded on a medium, said apparatus comprising a magnetic recording medium (10) having a surface capable of being magnetized locally at quasi point-shaped sites disposed in rows (L1, L2, L3) and columns (K1, K2), a recording unit (14) placed near said surface and operatively arranged to selectively magnetize said elementary sites of said medium in response to the reception of said electric signals, a drive (11) to bring about a relative displacement between said recording medium and said recording unit according to a preset direction of movement so as to enable said elementary sites to be selectively magnetized in the course of their movement past said recording unit, and an applicator means (15) downstream of said recording unit (14) in relation to said direction of movement for depositing on said recording medium (10) particles that are capable of being attracted magnetically, said magnetic recording medium (10) having a plurality of cells (12) each locally established in each of said elementary sites and adapted to receive a particle deposited by said applicator means (15) in the cells that have been magnetized, said particle being shaped so that the particles received at a site juts out at the surface of said recording medium.

4,500,294

METHOD AND DEVICE FOR DETECTING DENTAL CAVITIES

William D. Lewis, Flintridge, Calif., assignor to Epic International Corporation, North Hollywood, Calif.

Filed Oct. 3, 1983, Ser. No. 538,568
Int. Cl.³ A61C *5/00*
U.S. Cl. 433—215 **16 Claims**



1. A device for detecting tooth decay comprising:

a support member having upper and lower surfaces adapted for placement in a user's mouth for concurrent engagement of said upper surface against the user's upper teeth and said lower surface against the user's lower teeth;

temperature sensing means responsive to a temperature in excess of a first threshold temperature T1 for producing a first visible indication and responsive to a temperature in excess of a second threshold temperature T2 for producing a second visible indication, distinguishable from said first visible indication; and

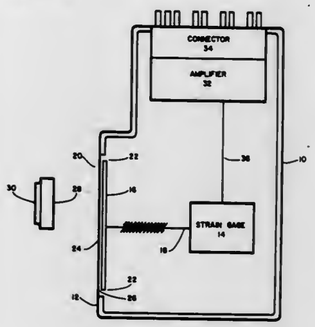
means affixing said temperature sensing means to said support member upper surface for contacting multiple ones of said user's upper teeth, said temperature sensing means exhibiting a substantially uniform response across said upper surface whereby teeth of the same temperature will cause said sensing means to produce the same visible indications.

4,500,295

PERSONAL ALPHA CONTAMINATION SIMULATOR AND DETECTOR

Richard H. Insinger, III, Tangerine, and Alfred H. Rodemann, Maitland, both of Fla., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 26, 1983, Ser. No. 498,337
Int. Cl.³ G09B *9/00*
U.S. Cl. 434—218 **7 Claims**



1. Apparatus useful as a portable radiation comtamination training device that simulates detection of alpha radiation on personnel and clothing by reacting to a magnet that has been purposefully placed on a personnel subject, comprising:

a housing simulating in appearance the probe of an operational alpha radiation detection device, having a portion designed to face said subject during said training;

a deformable, magnetically responsive material mounted within said housing adjacent said portion;

gage means fixedly coupled to said material for providing an electrical signal indicative of deformation in said material;

electronic means coupled to said signal for preparing said signal to be coupled to said operational alpha radiation detection device.

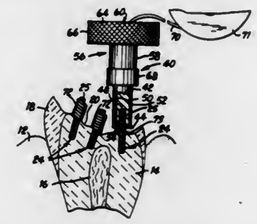
4,500,296

METHOD AND APPARATUS FOR REINFORCING DENTAL ANCHORS

Abraham Friedman, Brooklyn, N.Y., assignor to IPCO Corporation, White Plains, N.Y.

Filed Jun. 16, 1983, Ser. No. 504,936
Int. Cl.³ A61C *5/04*
U.S. Cl. 433—225 **20 Claims**

1. In combination, a dental anchor for insertion into a channel formed in a tooth, and a dental tool coacting on the dental anchor, said dental anchor comprising an elongated body integrally including an anchoring portion for operative association within the channel and an extended portion protruding from said channel, said dental tool including means for wrapping a wire peripherally about at least a part of said extended portion of said dental anchor, said dental tool means including an elongated rod having an operating end and an opposite manipulating end, a receiving chamber provided in said rod and axially extending from said operating end for receiving said extended portion therein, a passageway provided longitudinally through said rod in an offset arrangement with said chamber for retaining a supply wire therein so that rotation of said tool helically wraps the wire about the extended portion of



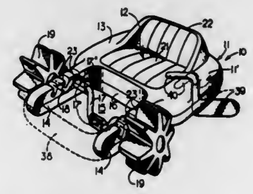
the dental anchor when said extended portion is received in said chamber, said dental tool being insertable into an automatically driven handpiece, a neck portion being provided on said manipulating end and having means for locking the tool into the handpiece, and a driving portion being provided on said tool for rotatably driving the tool by means of the handpiece.

4,500,297

PADDLE WHEEL PROPELLED WATERCRAFT

Paul Boulva, 221 Lockhart, T.M.R., Montreal, Que., Canada H3P 1Y3

Filed Sep. 30, 1982, Ser. No. 429,309
Int. Cl.³ B63H *16/00*
U.S. Cl. 440—27 **11 Claims**



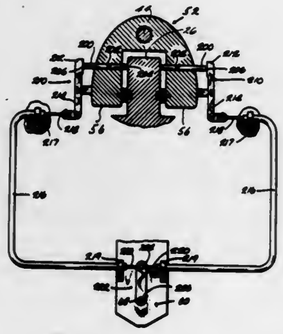
1. A watercraft comprising a main flotation body, said main flotation body having a seat portion, said seat portion being formed integral with said main flotation body and a seat cavity extending substantially centrally below an upper surface of said main flotation body, said main flotation body defining a circumferential flotation casing about said seat cavity for lateral flotation stability of said body, support means for a crank axle, said support means having at least two spaced apart side booms extending forwardly of said main flotation body one to each side of said main flotation body, a front boom bridging said side booms in a forward end thereof to constitute a wave breaking means, an open area defined between said side booms and said front boom, said open area being provided with a bottom wall spaced from said crank axle to permit crank formations in said axle to be freely displaced thereabove on an axle pivot axis, a crank axle removably retained transversely across said side booms over said open area in axle retaining means, said crank formations imparting axial rotation to opposed end portions of said axle, and a floatable paddle wheel secured to each opposed end portions of said axle to propel said flotation body on a water surface, said paddle wheel being formed as a flotation body to add flotation support to said booms on said water surface, said crank axle and paddle wheels connected thereto being detachable from said booms as a unitary structure to solely support a user on said water surface and to provide for the user to propel himself by hand operation

of said crank formations to impart rotation to said wheels to generate a propelling force.

4,500,298
CONTROL SYSTEM FOR TORQUE CORRECTING DEVICE

Charles B. Hall, Ingleside, and Martin J. Mondek, Wonder Lake, both of Ill., assignors to Outboard Marine Corporation, Waukegan, Ill.

Filed Dec. 20, 1982, Ser. No. 451,268
Int. Cl.³ B63H 25/42
U.S. Cl. 440—62 **1 Claim**



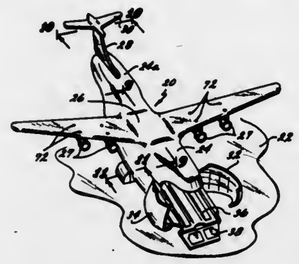
1. A marine propulsion device comprising a propulsion unit, a transom bracket adapted to be fixedly connected to a boat transom, a swivel bracket mounted on said transom bracket for pivotal movement about an axis which is horizontal when said transom bracket is boat mounted, king pin means mounted on said swivel bracket for pivotal steering movement of said propulsion unit, means for mounting said propulsion unit on said king pin means so as to permit limited rotational movement of said propulsion unit relative to said king pin means in a horizontal direction, torque correcting means, means for mounting said torque correcting means on said propulsion unit for pivotal movement about an axis transverse to said horizontal axis, and linkage means for displacing said torque correcting means about said transverse axis in response to rotational movement of said propulsion unit relative to said king pin means, said linkage means including rod means slidably mounted in said means mounting said propulsion unit on said king pin means and means connecting said rod means to said torque correcting means for transmitting sliding movement of said rod means to adjust said torque correcting means.

4,500,299
TOY CARGO PLANE

William J. Kelley, Torrance, and Terry K. Prince, Palos Verdes, both of Calif., assignors to Mattel, Inc., Hawthorne, Calif.

Filed May 19, 1983, Ser. No. 496,149
Int. Cl.³ A63H 27/00
U.S. Cl. 446—230 **8 Claims**

1. A toy cargo plane having a fuselage; a pair of front doors moveably affixed to said fuselage; means for manually opening and closing said front doors including a rod slideably carried in said fuselage, said rod having a lever fixed thereto and being formed so as to be capable of being grasped by the hand of a user for moving said rod along its axis; means attached to said rod cooperating with said front doors for moving said front doors; and further manually operated means slideably carried

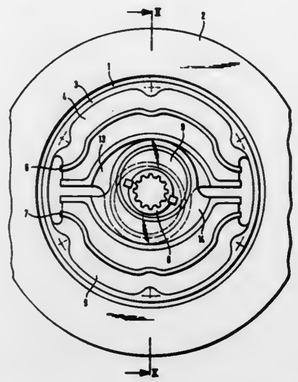


in said fuselage for moving a ramp in and out of said front doors, when said front doors are opened.

4,500,300
ROTATIONALLY ELASTIC COUPLING

Franz-Josef Wolf, Bad Soden-Salmünster, and Hubert Pletsch, Birkenau, both of Fed. Rep. of Germany, assignors to WOCO Franz-Josef Wolf & Co., Bad Soden-Salmünster, Fed. Rep. of Germany

Filed Nov. 29, 1982, Ser. No. 445,386
Claims priority, application Fed. Rep. of Germany, Mar. 26, 1982, 3211238
Int. Cl.³ F16D 3/68, 3/50
U.S. Cl. 464—83 **22 Claims**

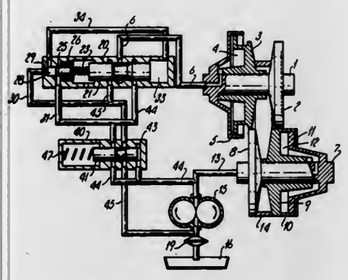


1. A rotationally elastic coupling comprising two rotatable half coupling means, an eccentric disc means mounted on one of said half coupling means, said eccentric disc means being displaced along a translatory path of travel upon rotation of said one half coupling means, resilient means mounted on said other half coupling means, said resilient means being disposed within said translatory path of travel of said eccentric disc means such that said resilient means is compressed generally radially outwardly in resiliently resisting relative rotation between said two half coupling means, whereby said two rotatable half coupling means are thereby resiliently coupled.

4,500,301
APPARATUS FOR CONTROLLING THE TRANSMISSION RATIO OF AN INFINITELY VARIABLE TRANSMISSION

Theodorus P. M. Cadeé , Goirle, Netherlands, assignor to Van Doorne's Transmissie B.V., Tilburg, Netherlands

Filed Oct. 5, 1982, Ser. No. 432,857
Claims priority, application Netherlands, Oct. 5, 1981, 8104510
Int. Cl.³ F16H 11/04
U.S. Cl. 474—28 **3 Claims**



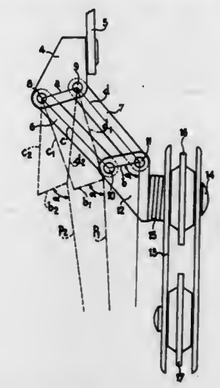
1. An apparatus for controlling the transmission ratio of an infinitely variable V-belt transmission of the kind including a fluid control valve which supplies fluid to and relieves fluid from a cylinder space the volume of which controls the transmission ratio by adjusting the axial position of a first conical sheave portion relative to a second conical sheave portion, said valve including a valve housing, an internal axially displaceable valve body an electromagnet having a displaceable armature, the electromagnet upon electrical energization producing an axial force on the armature, and spring means connected between the armature and said axially displaceable valve body, the arrangement being such that the axial force on the armature produced by energization of the electromagnet produces a displacing force, via said spring means, on said valve body in one direction; and fluid connection means controlled by the position of the armature for supplying fluid pressure to said valve body to effect a displacing force thereon in a direction opposite to said one direction such that said valve body is displaced in said opposite direction to a position in which the displacing forces on said valve body are balanced.

4,500,302
DERAILLER FOR A CYCLE HAVING AN ORIENTABLE CHAIN GUIDING DEVICE

Hervé Crépin, Noyelles sur Mer, France, assignor to Huret et ses Fils, Nanterre, France

Filed Oct. 5, 1983, Ser. No. 539,176
Claims priority, application France, Oct. 12, 1982, 82 17081
Int. Cl.³ F16H 7/22
U.S. Cl. 474—82 **5 Claims**

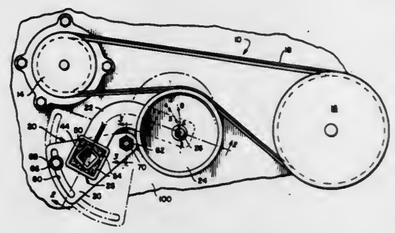
1. A derailleur for a cycle having free-wheel sprockets, the derailleur comprising a fixed support, a chain guiding device, a deformable articulation structure pivotally connecting the chain guiding device to the support and for connection to a control cable for positioning the chain guiding device relative to the free-wheel sprockets, the deformable articulation structure comprising a deformable quadrilateral structure having at least two sides which are of unequal lengths.



4,500,303
IDLER MECHANISM

DeWayne T. Sermersheim, and Jack L. Baxter, both of Columbus, Ind., assignors to Cummins Engine Company, Inc., Columbus, Ind.

Filed Dec. 31, 1981, Ser. No. 336,333
Int. Cl.³ F16H 7/10, 7/12
U.S. Cl. 474—112 **14 Claims**



1. An idler mechanism for establishing and maintaining tension in a drive belt having a length which may be within a known tolerance range, with the belt being used in a belt drive system which includes at least one driving pulley and one driven pulley operatively interconnected by the drive belt, comprising:

(a) pulley means having a pulley rotation axis;

(b) pulley supporting means operating in both a retensioning mode and a fixed pivot axis mode for biasing said pulley means against the belt in response to application of a known belt tensioning force when said pulley supporting means is operating in a retension mode, by causing the pulley rotational axis to reside at a point along a predetermined retensioning arc which has no single fixed radius of curvature, said point being dependent upon the length of the belt within the known tolerance range and for continuing to apply a tensioning force to the belt when said pulley supporting means is operating in a fixed pivot axis mode by causing the pulley rotational axis to move along a second arcuate curve centered around a fixed axis, said pulley supporting means including

(1) an idler arm supporting said pulley means;

(2) resilient means for applying a biasing force to said idler arm;

(3) pivot axis forming means supporting said idler arm for

rotation about the fixed pivot axis defined by said pulley supporting means when operating in the fixed pivot axis mode; and

(4) plate means attached to said pivot axis forming means for adjusting the position of said fixed pivot axis about a second pivot axis when said pulley supporting means is operating in the retensioning mode, said plate means having an aperture defined at said second pivot axis and including

(i) fastening means located at said second pivot axis for holding said plate means in a fixed position during said fixed mode of operation and for permitting said plate means to pivot thereabout during the retensioning mode of operation, and

(ii) a tubular torque receiving collar means integral with said plate means and extending outwardly from said plate means along said second pivot axis for receiving said fastening means, said torque receiving collar means having a bore and surrounding said aperture so said bore and said aperture are in cooperative association with each other for receiving said fastening means, said torque receiving collar means further including an end surface spaced from said plate means for engaging said fastening means to prevent said plate means from rotating about said second pivot axis during said fixed pivot axis mode of operation and for being spaced apart from said fastening means during said retensioning mode of operation, said torque receiving collar means further including a planar surface thereon which extends between said end surface and said plate means and which is adapted to be grasped by a torque tool, such as a standard torque wrench for imposing the known force about said second pivot axis during the retensioning mode of operation.

4,500,304

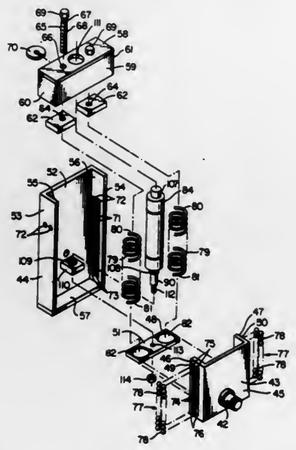
BELT TENSIONER

Randy C. Foster, Springfield, Mo., assignor to Dayco Corporation, Dayton, Ohio

Division of Ser. No. 301,351, Sep. 11, 1981, Pat. No. 4,413,982. This application Feb. 23, 1983, Ser. No. 468,918

Int. Cl.³ F16H *7/12*

U.S. Cl. 474—138 **4 Claims**



1. In a tensioner for a power transmission belt that is adapted to be operated in an endless path, said tensioner comprising a support means for being fixed relative to said belt, a belt engaging means carried by said support means and being movable relative thereto, mechanical spring means operatively associated with said support means and said belt engaging means for urging said belt engaging means relative to said support means and against said belt with a force to tension said belt, and fluid dampening means operatively associated with said support means and said belt engaging means to dampen the movement of said belt engaging means relative to said support means in at least one direction of movement thereof, said fluid dampening means comprising a piston and cylinder means having a piston member and a cylinder member, the improvement wherein said mechanical spring means comprises a pair of coiled compression springs with their longitudinal axes disposed in substantially parallel side-by-side spaced relation, said fluid dampening means being generally disposed between said springs and in substantially parallel relation therewith, said belt engaging means having a part thereof disposed in sliding relation with said support means, said part of said belt engaging means having a pair of substantially flat parallel spaced apart surfaces interconnected together by a front wall, said support means having a part thereof comprising a pair of substantially flat parallel spaced apart surfaces respectively facing said surfaces of said part of said belt engaging means and being interconnected together by a rear wall, and bearing means disposed between said facing surfaces to facilitate said sliding movement between said part of said belt engaging means and said support means, said part of said belt engaging means having a third substantially flat surface disposed between said pair of surfaces thereof and being substantially transverse relative thereto, said springs and said piston member of said fluid dampening means being respectively operatively interconnected to said third surface of said belt engaging means, said part of said support means having a third substantially flat surface disposed between said pair of surfaces thereof and being substantially transverse thereto and being between said pair of springs, said cylinder member of said fluid dampening means being operatively interconnected to said third surface of said support means.

4,500,305

SIDE-BAR CHAIN FOR INFINITELY VARIABLE CONE PULLEY TRANSMISSIONS

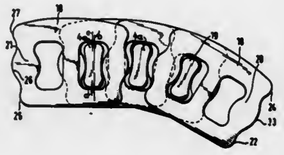
Manfred Rattunde, Bad Homburg, Fed. Rep. of Germany, assignor to P.I.V. Antrieb Werner Reimers GmbH & Co. KG, Bad Homburg, Fed. Rep. of Germany

Filed Jul. 28, 1982, Ser. No. 402,557

Claims priority, application Fed. Rep. of Germany, Jul. 28, 1981, 3129631

Int. Cl.³ F16G *1/00*

U.S. Cl. 474—201 **4 Claims**



1. In a side-bar chain for an infinitely variable cone pulley transmission; said chain having a running direction and including links composed of individual side bars and single-part rocker pieces inserted through apertures in the side bars and connecting the links together, the rocker pieces having a length transverse to said running direction and end faces extending parallel to said running direction for directly frictionally engaging friction pulley sheaves and for transmitting friction forces between associated friction pulley sheaves and the side-bar chain, the improvement wherein:

each of said side bars has first and second end webs spaced apart parallel to said running direction, said first and second end webs extending transverse to the running direction and to the length of the rocker pieces, said first end web having a first edge and said second web having a second edge; said first and second edges extending generally transversely to the running direction and to the length of the rocker pieces and bounding a side-bar aperture: said side-bar aperture being traversed by a first rocker piece adjoining said first edge and a second rocker piece adjoining said second edge; said first and second edges having a convex rocker surface projecting into the side-bar aperture; the convex rocker surfaces having a first radius of curvature;

each of said first and second rocker pieces have opposite concave rocker surfaces extending parallel to the length of the respective rocker piece; said concave rocker surfces having a second radius of curvature;

said first radius of curvature of each said convex rocker surface is smaller than said second radius of curvature of each said concave rocker surface;

the concave rocker surfaces of each said rocker piece are in rolling engagement with respective adjoining convex rocker surfaces of said first and second webs;

each rocker piece traverses the respective side bar apertures with a clearance in both directions transverse to the running direction and to the length of the rocker piece; and

said rocker pieces being normally contacted by the side bars solely with said rolling engagement.

4,500,306

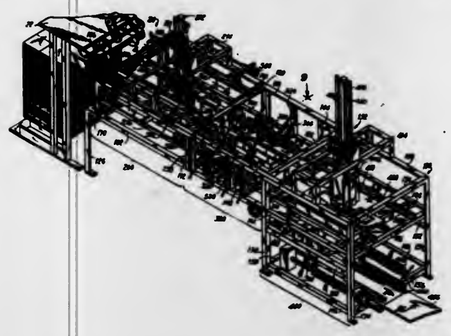
METHOD AND APPARATUS FOR ERECTING A CARTON WITH INTEGRAL INTERIOR PARTITIONS

Ulrich G. Nowacki, Leisure City, Fla., assignor to International Paper Company, New York, N.Y.

Continuation-in-part of Ser. No. 393,493, Jun. 29, 1982, abandoned. This application Jun. 21, 1983, Ser. No. 504,529

Int. Cl.³ B31B *11/26*

U.S. Cl. 493—92 **28 Claims**



1. A method for manufacturing from a single carton blank a rectangular carton with integral interior partitions, each carton blank having a bottom wall, two end walls and two side portions, each side portion having a side wall, an upper-right flap portion, a lower-right flap portion, an upper-left flap portion, and a lower-left flap portion, the steps in sequence comprising:

feeding the carton blank into an apparatus for erecting the carton into a box;

bending the flap portions of the carton blank perpendicular to the side walls of the carton blank;

applying adhesive to the flap portions;

folding and sealing the side portions to form two open-ended rectangular tubes;

applying adhesive to the open-ended rectangular tubes;

raising the open-ended rectangular tubes to a position perpendicular to the bottom wall of the carton blank;

forcing the end walls of the carton blank to bend perpendicular to the bottom wall of the carton blank;

sealing the open-ended rectangular tubes to the end walls to form the completed carton; and

ejecting the completed carton from the carton erecting apparatus.

4,500,307

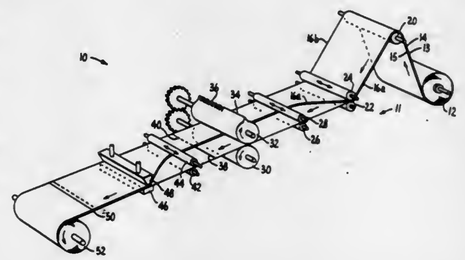
APPARATUS FOR PRODUCING CONTINUOUS BAGS OF THIN WALL MATERIAL

Danial N. P. Bridgeman, 12650 Skyline Blvd., Woodside, Calif. 94062

Filed Oct. 23, 1981, Ser. No. 314,205

Int. Cl.³ B31B *1/64*

U.S. Cl. 493—196 **6 Claims**



1. An apparatus for the production of continuous bags of thin material with each of said bags having an opening on a side, wherein said apparatus having reel means for supplying a continuous length of advancing thin tubing advancing in the direction of production, said tubing having a width substantially perpendicular to said direction of production, sealing means for sealing said tubing in a plurality of first spaced locations, wherein said improvement comprising:

a single blade having a length at least the width of said tubing; said blade adapted to cut through substantially one half the width of said tubing, and to perforate through the other half of the width of said tubing.

4,500,308

AUTOTRANSFUSION DEVICE WITH TWISTED COLLECTION BAG

Leonard D. Kurtz, Woodmere, and Joseph LiCausi, Port Jefferson Station, both of N.Y., assignors to BioResearch Inc., Farmingdale, N.Y.

Filed Nov. 16, 1982, Ser. No. 441,991

Int. Cl.³ A61M *1/03*

U.S. Cl. 604—4 **14 Claims**

1. An autotransfusion device for collecting blood from a pool in a patient and for subsequently returning the collected blood to the circulatory system of the patient comprising:

a rigid cylindrical housing having an end wall and a side wall;

a movable piston located in said housing;

a generally cylindrical, deformable collection bag located in said housing, the peripheral ends of said collection bag being attached, respectively, adjacent the periphery of said end wall and the periphery of said piston such that a collection chamber is formed between said end wall, said piston and said collection bag;

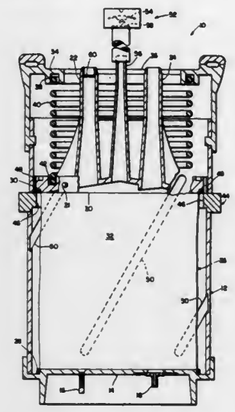
aspirator means for connecting said collection chamber to a source of suction and to the pool of blood;

outlet means for connecting said collection chamber to the circulatory system of the patient;

resiliency means located in said housing for resiliently urging said piston towards said end wall and collapsing said collection bag;

locking means for releasably locking said piston spaced from

said end wall during collection of the blood from the pool such that after said collection bag is adequately filled, said locking means is released to force the collected blood from said collapsing collection bag to the circulatory system of the patient as said piston is urged by said resiliency means toward said end wall; and



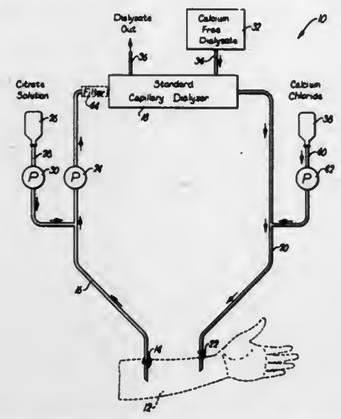
guide means for rotating said piston about the longitudinal axis of said housing as said piston moves toward said end wall such that said collection bag is correspondingly twisted as said collection bag is collapsed so that said collection bag is prevented from becoming inadvertently trapped between said side wall and said piston.

4,500,309

METHOD FOR REGIONAL ANTICOAGULATION DURING EXTRACORPOREAL DIALYSIS

Dennis A. Diederich, Overland Park; Thomas B. Wiegmann, Fairway, and Robert V. Pinnick, Overland Park, all of Kans., assignors to The Kansas University Endowment Association, Lawrence, Kans.

Filed May 7, 1982, Ser. No. 375,890
Int. Cl.³ A61M 1/03
U.S. Cl. 604—5 **12 Claims**



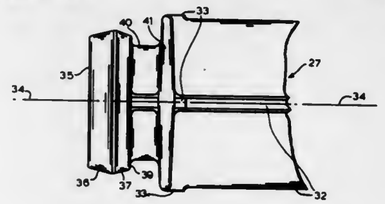
1. A blood treatment method comprising the steps of:
withdrawing blood from a patient at a rate of from about 100 to 300 milliliters per minute;
preventing the coagulation of said withdrawn blood by infusing an anticoagulant substance into the blood, said anticoagulant substance consisting essentially of citrate anion and being infused at a level to provide up to about 10 millimoles of citrate anion per liter of blood;
passing the withdrawn, citrate-infused blood through treatment apparatus concurrently with a toxin-removing dialysate for removing toxins from the blood;
after passage of said blood through said apparatus, infusing into said blood a calcium compound in an amount to achieve a desired level of calcium ion in said blood; and
returning the calcium-infused blood to said patient.

4,500,310

VARIABLE SEALING PRESSURE PLUNGER ROD ASSEMBLY

Werner Christinger, Franklin Lakes, N.J., assignor to Becton, Dickinson and Company, Paramus, N.J.

Filed Dec. 20, 1982, Ser. No. 451,307
Int. Cl.³ A61M 5/00
U.S. Cl. 604—228 **27 Claims**



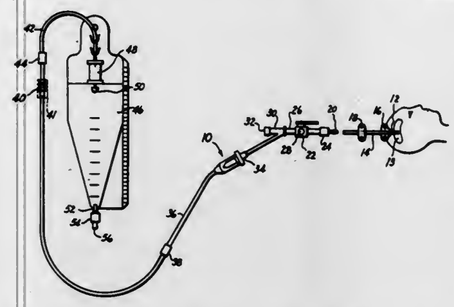
1. A plunger rod assembly for use with a syringe barrel having a cylindrical inside wall and provided with a proximal open end to receive the plunger rod assembly and a distal end adapted to receive and be in fluid communication with fluid delivery means comprising:
a plunger rod including a rigid elongate shaft portion having a circular tapered tip portion at the distal end thereof, said shaft portion being sufficiently long as to be accessible outside of the syringe barrel;
a flexible thermoplastic stopper including an annular side wall circumscribing a longitudinal axis, a continuous front wall intersecting said longitudinal axis and being integral with said side wall, an annular rib being larger in diameter than said side wall and being integral with said side wall, said rib being larger in diameter than the syringe barrel cylindrical inside wall, an inside surface of said front wall, a tapered annular inside wall extending from said inside surface and being integral with said side wall, said tapered annular inside wall and said inside surface defining a cavity which has said tapered tip portion received therein, said tapered annular inside wall having a substantially continuous smooth surface, said tapered annular inside wall being inclined at approximately the same angle as said tapered tip portion and adjacent thereto whereby force applied to said shaft portion in the direction of descending taper of said tapered tip portion creates a force component which is directed substantially outwardly from the interface of said tapered tip portion and said tapered annular inside wall wherein said rib applied more pressure to the syringe barrel cylindrical wall than the initial pressure existing as a result of said rib being larger than the syringe barrel inside wall; and
cooperating means for maintaining the positional relationship of said stopper and said plunger rod.

4,500,311

EXTERNAL VENTRICULAR DRAINAGE ASSEMBLY

Russell J. Redmond, and Jessica B. Ash, both of Santa Barbara, Calif., assignors to American Hospital Supply Corporation, Evanston, Ill.

Filed Feb. 23, 1983, Ser. No. 469,060
Int. Cl.³ A61M 5/00
U.S. Cl. 604—246 **22 Claims**



1. An external ventricular drainage assembly comprising:
(a) a ventricular drainage catheter for placement in the ventricles of a patient's brain for receiving cerebrospinal fluid;
(b) retention means connected to the catheter for securing the catheter to the patient and for preventing relative movement between the catheter and patient;
(c) valve means connected to the catheter for selectively opening and closing the external ventricular drainage assembly to fluid flow;
(d) an adapter means connected to the valve means for providing access to the fluid flow path of the assembly;
(e) a one-way valve connected to the adapter means;
(f) a first length of flexible tubing connected to the one-way valve;
(g) coupling means having a first member connected to the first length of flexible tubing and a second member connected to a second length of flexible tubing, which first and second members interconnect to connect the first and second lengths of flexible tubing; and
(h) a collection reservoir for collecting cerebrospinal fluid, having an entry port which is connected to the second length of flexible tubing through a drip chamber and having an outlet port from which collected cerebrospinal fluid can be removed.

4,500,312

CONNECTING ASSEMBLY

Richard H. McFarlane, 2571 Kaneville Rd., Geneva, Ill. 60134

Filed Dec. 15, 1982, Ser. No. 450,025
Int. Cl.³ A61M 5/00
U.S. Cl. 604—263 **5 Claims**



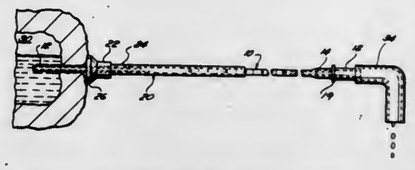
1. A connecting assembly used in combination with a catheter means and mounted at least in part on said catheter means and on a sheath element positionable in covering relation to a portion of said catheter means, said connecting assembly comprising:
(a) flange means including two flange elements mounted on said catheter means and each extending outwardly therefrom in an opposite direction to one another and substantially transversely to a longitudinal axis of said catheter means,
(b) a locking assembly including two locking fingers mounted on said sheath element in spaced apart relation and each disposed for engagement with one of said flange elements,
(c) two link elements integrally formed on said sheath element and each attached in interconnecting relation between said sheath element and one of said locking fingers, each of said locking fingers pivotal about said link element into and out of attached relation with the respectively positioned flange element,
each of said locking fingers disposed and structured for substantially overlapping engagement with a respective flange element including groove means integrally formed in an undersurface of each locking finger,
(e) each of said groove means correspondingly dimensioned and configured relative to a distal edge of said respectively positioned flange element and disposed for selective, substantially surrounding reception of said distal edge therein, upon selective pivotal movement of said flange element,
(f) guide means mounted on and extending outwardly from said sheath element in substantially parallel relation to a leading end of each locking finger, said guide means comprising two pairs of projections, each pair adjacent to one of said locking fingers and each projection thereof spaced apart a sufficient distance to border oppositely disposed lateral peripheral edges of each flange element adjacent said distal edge thereof,
(g) each of said locking fingers and one respectively positioned pair of projection collectively disposed in surrounding engagement with a peripheral portion of one of said flange elements, whereby each flange element and said catheter means attached thereto being mounted in fixed, attached position relation to said sheath element upon connection of the flange means with said locking fingers and said guide means.

4,500,313

URETHRAL CATHETER

David E. Young, Watlington, England, assignor to Protectair Limited, Watlington, England

Filed Jan. 27, 1983, Ser. No. 461,564
Int. Cl.³ A61B 5/10
U.S. Cl. 604—280 **7 Claims**



1. A catheter comprising an inner tubular member having an end portion with an opening, said end portion being adapted to be received in the urethra and an outer sleeve member into which said inner tubular member is freely movably received, said outer sleeve member having an enlarged end adapted to be situated adjacent the external urethral meatus, said inner tubular member comprising a section comprising calibration markings thereon, said calibration section being spaced from said opening in said end portion a distance substantially equal to the length of said outer tubular member.

4,500,314

COLLAPSIBLE URINAL DROP COLLECTOR APPLICATOR

Lennart I. Brendling, Volmvägen 10, S-175 43 Järfälla, Sweden

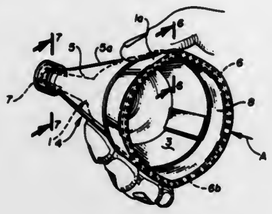
PCT No. PCT/SE81/00174, § 371 Date Jan. 21, 1982, § 102(e) Date Jan. 21, 1982, PCT Pub. No. WO81/03609, PCT Pub. Date Dec. 24, 1981

PCT Filed Jun. 10, 1981, Ser. No. 346,032

Claims priority, application Sweden, Jun. 11, 1980, 8004355; Jun. 11, 1980, 8004356

Int. Cl.³ A61F *5/44*

U.S. Cl. 604—346 **2 Claims**



1. A device for facilitating the connection of a urinal drop collector to a penis comprising:

(a) a normally flat tubular casing having inner and outer surfaces and being comprised of a pair of opposed, flexible, substantially identical, generally triangular walls, each of which has a pair of side edges juxtapositioned to the corresponding side edges of the other and flexibly connected thereto and having a relatively large open upper end portion and a relatively small open tubular lower end portion; and

(b) an open-ended elastic tubular envelope removably connected to said casing and extending therethrough throughout the length thereof, said envelope having one end portion thereof stretched outwardly over and around the exterior of said lower end portion of said casing and having its opposite end portion stretched outwardly over and around said upper end portion of said casing, each in air-tight sealing relation and thereby sealing the area between said casing and said envelope in air-tight relation, whereby upon said pairs of side edges of said casing being pressed toward each other, said upper end portion of said casing will assume a conical shape and said envelope will expand and extend in close-fitting relation along the inner surface of said casing along a substantial portion of the entire length of said envelope.

4,500,315

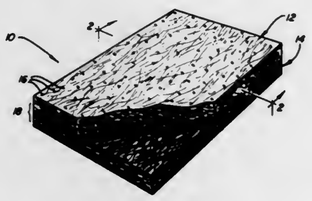
SUPERTHIN ABSORBENT PRODUCT

Heinz A. Pieniak, North Brunswick, and Michael J. Iskra, Flemington, both of N.J., assignors to Personal Products Company, Milltown, N.J.

Filed Nov. 8, 1982, Ser. No. 439,963

Int. Cl.³ A61F *13/00*

U.S. Cl. 604—379 **21 Claims**



1. A disposable absorbent compressed composite laminate comprising a first layer, a second layer, and a transition area integrally and intimately connecting said first and second layers and being substantially coextensive therewith, said first layer comprising a fibrous web having a dry bulk recovery of at least about 60 percent, an initial dry bulk of at least about 20 cc/gm, and a weight less than about 2 oz/yd², and a plurality of particles or globules of superabsorbent material disposed randomly and intermittently throughout said first layer, said particles or globules being of a size and spacing whereby said particles do not interfere with the absorption of liquid by adjacent particles, said second layer comprising randomly disposed, frictionally entangled particles selected from the group consisting of cellulosic fibers, peat moss, and mixtures thereof, said particles being sufficiently closely spaced to adjacent particles to promote rapid movement of liquid along the plane of said layer, and said transition area comprising portions of said entangled particles extending into and becoming integral with said first layer with portions of said entangled particles in intimate contact with said superabsorbent material, said composite laminate in its compressed form being less than one-half its thickness in an uncompressed form and upon contact with liquid, regains at least 75 percent of its thickness in uncompressed form.

4,500,316

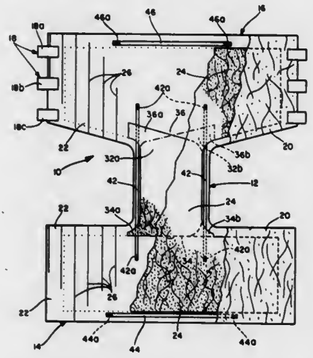
DISPOSABLE GARMENT

Joyce A. Damico, Winnebago County, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.

Filed Jun. 1, 1983, Ser. No. 500,120

Int. Cl.³ A61F *13/16*

U.S. Cl. 604—389 **20 Claims**



1. In a disposable garment having a fluid pervious inner sheet, a fluid impervious outer sheet and a batt of absorbent material therebetween and having a generally hour-glass shape with a narrow crotch portion integral to oppositely disposed front and back body-encircling portions, at least one of the latter having garment securement means attached to the side edges thereof, and including elastic leg bands disposed longitudinally adjacent the longitudinal margins of the crotch portion and extending into the front and back portions of the garment and with elastic waist bands transversely extending across said front and back portions adjacent the latitudinal margins thereof, the improvement comprising:

elastic waist bands affixed to at least one of said inner and outer sheets in said front and back portions outboard of longitudinal lines extending generally along the longitudinal margins of said crotch portion,

elastic leg bands affixed to at least one of said inner and outer sheets in said front and back portions between the crotch portion and said elastic waist bands and inboard of the anchored ends of the later,

said elastic leg bands exerting a longitudinal contracting and convoluting force in the crotch portion of the garment,

said elastic waist bands exerting a transverse contracting and convoluting force adjacent the latitudinal margins of said front and back body-encircling portions,

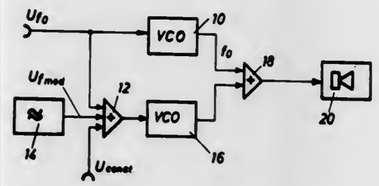
and the contraction of said elastic leg bands and waist bands interacting to form generally truncated triangular front and back pocket portions having one or more large longitudinally angled convolutions forming the legs of said triangles and with the bases of said triangular portions located generally along the margins of said contracted and convoluted crotch portion of the garment.

4,500,317

METHOD OF AND APPARATUS FOR PRODUCING AN ORCHESTRA EFFECT

Christian J. Deforeit, Semur-en-Auxois, France, assignor to Matth. Hohner AG, Trossingen, Fed. Rep. of Germany

Filed Jun. 6, 1983, Ser. No. 501,531
Claims priority, application Fed. Rep. of Germany, Dec. 15, 1982, 3246418
Int. Cl.³ G10H *1/043*
U.S. Cl. 84—1.24 2 Claims



1. A method for producing a signal which, when applied to a sound transducer, will produce a complex tone commensurate with the effect of different plural sources simultaneously generating the same note, said method comprising the steps of:

producing a first control signal commensurate with a desired frequency;

producing a first audio frequency signal commensurate with said first control signal;

producing a signal which varies at a sub-audio frequency;

producing a second control signal commensurate with a preselected difference between the frequency of said first audio frqucncy signal and the mean frequency of a second audio frequency signal which varies in frequency;

summing said first control signal, said sub-audio frequency signal and said second control signal to produce a third control signal;

producing said second audio frequency signal in response to said third control signal, said second audio frequency signal varying in frequency over a range which is a function of the peak-to-peak amplitude of the sub-audio frequency signal about a frequency which is commensurate with the algebraic sum of said first and second control signals; and

summing said first and second audio frequency signals to produce a complex waveform.

4,500,318

METHOD FOR DESIZING, SCOURING AND BLEACHING TEXTILE PRODUCT

Yoshikazu Sando; Eiichi Nakano, and Hiroshi Ishidoshiro, all of Wakayama, Japan, assignors to Sando Iron Works Co., Ltd., Tokyo, Japan

Filed Aug. 9, 1983, Ser. No. 521,709
Claims priority, application Japan, Aug. 10, 1982, 57-138795
Int. Cl.³ D06L *3/02, 3/04, 1/06;* D01C *3/02*
U.S. Cl. 8—111 3 Claims

1. A method for desizing, scouring and bleaching a textile product, which comprises soaking a natural cellulose-type textile product with a neutral aqueous hydrogen peroxide solution, steaming the soaked product in a saturated water vapor atmosphere at 120° to 160° C., soaking the steamed product immediately with a hot caustic soda solution in a saturated water vapor atmosphere at 120° to 160° C. and steaming the soaked product again in a saturated water vapor atmosphere at 120° to 160° C.

4,500,319

TEXTURED PILE FABRICS

Frank E. Ehrenfeld, Jr., Morrisville, Pa., assignor to Congoleum Corporation

Continuation of Ser. No. 15,297, Feb. 26, 1979, Pat. No. 4,340,381, which is a continuation-in-part of Ser. No. 616,307, Sep. 24, 1975, abandoned, which is a continuation of Ser. No. 492,011, Jul. 26, 1974, abandoned, which is a continuation of Ser. No. 267,227, Jun. 28, 1972, abandoned, which is a continuation of Ser. No. 64,475, Aug. 17, 1970, abandoned. This application Apr. 9, 1982, Ser. No. 367,211
The portion of the term of this patent subsequent to Jul. 20, 1999, has been disclaimed.
Int. Cl.³ D06M *3/30*
U.S. Cl. 8—114.5 28 Claims

1. A process for producing an embossed effect on synthetic nylon pile fabric that comprises applying to at least certain of the upstanding nylon fibers incorporated in the pile of said fabric, a composition comprising a halogenated acetic acid in a concentration of at least about 25 percent by weight, and subjecting at least said fibers to an elevated temperature for a period sufficient to effect linear contraction thereof.

4,500,320

USE OF FINE-PARTICULATE ALKALI METAL ALUMINO-SILICATES IN THE PROCESS OF DYE SOAPING

Heinz Grunert, Dusseldorf; Fritz Hahn, Leichlingen; Ulrich Rall, Langenfeld; Klaus Schumann, Erkrath; Milan J. Schwuger, Haan, and Heinz G. Smolka, Langenfeld, all of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Düsseldorf-Holthausen, Fed. Rep. of Germany

Continuation of Ser. No. 102,787, Dec. 12, 1979, abandoned, which is a continuation of Ser. No. 903,598, May 8, 1978, abandoned. This application Feb. 24, 1983, Ser. No. 469,420
Claims priority, application Austria, May 13, 1977, 3444/77
Int. Cl.³ B08B *3/00;* D06P *5/02*
U.S. Cl. 8—442 14 Claims

1. In the process of dyeing or printing textile materials comprising subjecting textile material to the action of aqueous dye solutions or suspensions at elevated temperatures, followed by soaping with soaping agents and recovery of the dyed or printed textile materials, the improvement consisting essentially of employing a fine-particulate, water-insoluble alkali metal aluminosilicate, containing bound water, of the formula

$$(M_2O)_x.Al_2O_3.(SiO_2)_y$$

wherein M represents an alkali metal, x is a number from 0.7 to 1.5 and y is a number from 0.8 to 6, said aluminosilicate having an average particle size in the range of from 0.1 to 25μ and a calcium binding power of from 20 to 200 mg CaO/gm of anhydrous active substance measured at 22° C. according to the Calcium Binding Power Test Method, as the sole soaping agent in the absence of polyphosponates and surfactants.

4,500,321

PROCESS FOR THE PREPARATION OF CONCENTRATED FLUID DYE COMPOSITIONS

Paul Hugelshofer, Muttenz; Beat Bruttel, Böcktea; Heinz Pfenninger, Lupsingen, all of Switzerland, and Roger Lacroix, Village-Neuf, France, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation of Ser. No. 268,812, Jun. 1, 1981, abandoned. This application Feb. 22, 1983, Ser. No. 468,630
Claims priority, application Switzerland, Jun. 4, 1980, 4334/80; Jul. 11, 1980, 5351/80; Mar. 6, 1981, 1527/81
The portion of the term of this patent subsequent to Jun. 28, 2000, has been disclaimed.
Int. Cl.³ C09B *67/26, 67/10*
U.S. Cl. 8—527 38 Claims

1. A process for the preparation of storage-stable concen-

trated fluid dye compositions of water-soluble dyes, wherein an aqueous solution or suspension which, contains 10 to 60% by weight of at least one anionic crude dye is passed over an asymmetrical semi-permeable membrane containing ionic groups and having a pore diameter of 1 to 500 Å, to remove salts and synthesis by-products of molecular weights less than 500 and to partially remove water, and mixed with 15 to 85% by weight of a water-miscible organic solvent and, before or after or both before and after passage over the semi-permeable membrane.

4,500,322

APPARATUS FOR REGULATION OF GAS FEED FOR GAS CONSUMPTION

Bert S. Wikholm, Tulline, Sweden, assignor to Alfa-Laval AB, Tumba, Sweden

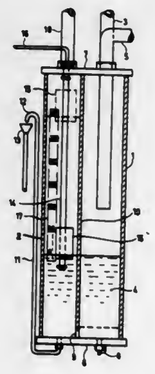
PCT No. PCT/SE82/00041, § 371 Date Sep. 28, 1982, § 102(e) Date Sep. 28, 1982, PCT Pub. No. WO82/02782, PCT Pub. Date Aug. 19, 1982

PCT Filed Feb. 11, 1982, Ser. No. 432,903

Claims priority, application Sweden, Feb. 11, 1981, 8100938

Int. Cl.³ F17D *3/00*; G05D *16/00*; G01L *7/22*

U.S. Cl. 48—191 **4 Claims**



1. An apparatus for regulation of gas feed for gas consumption from a source with a variable gas production, which comprises means forming first and second chambers communicating with each other at their lower ends, at least one of the chambers being closed at its upper end, a liquid filling the lower parts of said chambers, the first chamber having an inlet for supplying gas from said source, said first chamber also having a gas outlet separate and distinct from the gas inlet for delivering gas to a gas consumer, and control means located in said second chamber and including contact means in a high position operable to start the gas consumer in response to a high liquid level in said second chamber and contact means in a low position operable to shut off the gas consumer in response to a low liquid level in the second chamber.

3. An apparatus for regulation of gas feed for gas consumption from a source with a variable gas production, which comprises means forming first and second chambers communicating with each other at their lower ends, at least one of the chambers being closed at its upper end, a liquid filling the lower parts of said chambers, the first chamber having an inlet for supplying gas from said source, said first chamber also having a gas outlet separate and distinct from the gas inlet for delivering gas to a gas consumer, control means located in said second chamber operable to start the gas consumer in response to a high liquid level in said second chamber and to shut off the gas consumer in response to a low liquid level in the second chamber, and means forming a weir outlet located outside said chambers and communicating with their lower parts, said weir outlet being on the same level as said high liquid level.

4,500,323

PROCESS FOR THE GASIFICATION OF RAW CARBONIFEROUS MATERIALS

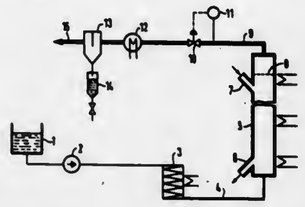
Peter Siegfried, Uttenreuth, and Martin Wenger, Ingolstadt, both of Fed. Rep. of Germany, assignors to Kraftwerk Union Aktiengesellschaft, Mülheim, Fed. Rep. of Germany

Filed Jul. 29, 1982, Ser. No. 402,850

Claims priority, application Fed. Rep. of Germany, Aug. 26, 1981, 3133723; Aug. 26, 1981, 3133670

Int. Cl.³ C10J *3/00*

U.S. Cl. 48—197 R **13 Claims**



1. A process for gasification of a liquid or solid carbon-containing material which comprises maintaining a body of water in the liquid phase in a reaction zone, said liquid body of water containing a catalyst consisting of a water-soluble salt catalytically active to accelerate the gasification of the carbon-containing material to carbon monoxide and hydrogen, dissolved ionogenically in the body of water, maintaining the body of water at a reaction temperature for gasification of the carbon-containing material and sufficient pressure to retain the body of water in the liquid phase, the reaction temperature in the reaction zone is below the melting temperature of the catalytically active salt at the pressure prevailing in the reaction zone and the reaction temperature is above the critical temperature of pure H_2O, introducing the carbon-containing material into the body of water, said body of water being in the liquid phase and having ionogenically dissolved therein the catalytically active salt to accelerate the gasification to convert at least part of the carbon of the carbon-containing material to gaseous products leaving an unconverted residue, releasing the gaseous products together with some water in vapor form from the reaction zone, discharging the residue from the reaction zone, introducing make-up water and catalyst into the body of water, and introducing additional carbon-containing material into the body of water in the liquid phase containing ionogenically dissolved catalyst salt for further conversion into gaseous products.

4,500,324

METHOD OF REDUCING THE NICKEL CONTENT IN WASTE WATER

Dinh-Cuong Vuong, Port Arthur, Tex., assignor to Texaco Inc., White Plains, N.Y.

Filed Jun. 27, 1983, Ser. No. 507,866

Int. Cl.³ C02F *1/54*

U.S. Cl. 48—197 R **27 Claims**

18. In the process for the production of hot raw synthesis gas, reducing gas, or fuel gas by the partial oxidation of a nickel containing liquid hydrocarbonaceous fuel with a free-oxygen containing gas and optionally with a supplemental temperature moderator, quench cooling and/or scrubbing said hot raw gas streams with water in a quench cooling and/or scrubbing zone, processing the quench and scrubbing water and recovering a dilute stream of grey water from a decanter that substantially comprises water and including at least one of the following water soluble and/or insoluble impurities: nickel and nickel compounds, metals and the sulfides of the metals V and/or Fe, particulate carbon, soot, cyanide, formates, halides, and ammonia: the improved process for reducing the content of soluble and insoluble nickel from the grey water along with at least a portion of the other soluble and insoluble impurities comprising: (1) mixing said grey water with or without degassing and at a temperature in the range of about 60° to 220° F. with the following: (a) a water soluble material selected from the group consisting of HCHO, alkali metal polysulfide or ammonium polysulfide, and H_2O_2; (b) dimethyl glyoxime; (c) ferrous sulfate or ferrous chloride, and (d) a base material so as to adjust the pH of the grey water mixture to a desired value in the range of over 7 to 11; wherein a sufficient amount of the material from (a) is mixed with the waste water so that substantially all of the nickel in the soluble nickel compounds in the waste water is converted to a form which can be precipitated by the dimethyl glyoxime from (b); (2) precipitating out from the grey water mixture in (1) the following water insoluble materials: nickel-dimethyl glyoxime complex, an inorganic CN-containing sludge, iron hydroxide, and iron sulfide; and (3) separating the water insoluble materials precipitated in (2) and at least a portion of the water insoluble matter comprising nickel and its compounds, particulate carbon, soot, and the metals and the sulfides of the metals V and/or Fe from the water stream in at least one conventional solids-liquid separation means to produce a stream of clarified water having a total nickel content of less than 1 milligram per liter.

4,500,325

ABRASIVE ARTICLE

Johann Huber, Kramsach, and Otto Thanner, Schwaz, both of Austria, assignors to Tyrolit Schleifmittelworke Swarovski K.G., Austria

Filed Jul. 15, 1982, Ser. No. 398,595

Claims priority, application Austria, Jul. 20, 1981, 3189/81

Int. Cl.³ B24D *3/34*

U.S. Cl. 51—298 **1 Claim**

1. An abrasive article comprising abrasive grain, a binder agent, and fillers, at least part of the fillers being active fillers and including metal halogenides, the active fillers being chosen from the group consisting of:

$(NH_4)_2MnCl_4.2H_2O$,
$(NH_4)_6MnCl_8.2H_2O$, $KMnCl_3$, K_4MnCl_6, K_2MnCl_4,
$K_3Mn_2Cl_7$, $K_2MnCl_4.2KCl$, $KMnCl_3.2H_2O$,
$K_2MnCl_4.2H_2O$,
$K_2SnCl_4.(NH_4)_2SnCl_4$,
K_2MnCl_4,
$K_2MnCl_4.KCl$,
$K_2MnCl_4.2KCl$,
$K_2MnCl_4.3KCl$,
K_2ZnCl_4,
$K_2ZnCl_4.KCl$,
K_2ZnCl_42KCl,
$K_2ZnCl_4.3KCl$,
Na_2MnCl_4,
$Na_2MnCl_4.KCl$,
$Na_2MnCl_4.2KCl$,
$Na_2MnCl_4.3KCl$,
Na_2ZnCl_4,
$Na_2ZnCl_4.KCl$,
$Na_2ZnCl_4.2KCl$,
$Na_2ZnCl_4.3KCl$,
$K_2MnCl_3F.2KCl$,
$K_2ZnCl_3F.2KCl$,
$Na_2MnCl_3F.2KCl$ and
$Na_2ZnCl_3F.2KCl$.

4,500,326

METHOD FOR SEQUENTIALLY CLEANING FILTER ELEMENTS IN A MULTIPLE CHAMBER FABRIC FILTER

Thomas C. Sunter, Wellsville, N.Y., assignor to The Air Preheater Company, Inc., Wellsville, N.Y.

Filed Feb. 28, 1983, Ser. No. 470,410

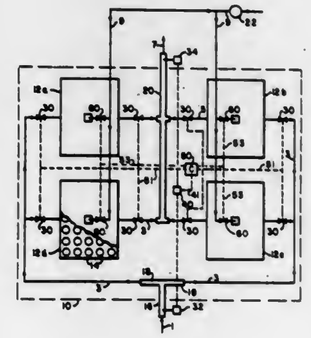
Int. Cl.³ B01D *46/04*

U.S. Cl. 55—21 **5 Claims**

1. In a method of filtering particulate matter from a particulate matter-laden gas stream wherein the particulate matter-laden gas stream is passed through a fabric filter collection apparatus comprised of a plurality of independent, isolatable filter chambers, each filter chamber housing fabric filter means upon which a portion of the particulate matter deposits, the particulate matter-laden gas stream being subdivided upstream of the collection apparatus into a like plurality of substreams each of which is passed through one of said plurality of independent, isolatable filter chambers prior to recombining said substreams downstream of said collection apparatus to form a relatively particulate matter-free gas stream, an improved method of sequentially cleaning the fabric filter means housed in each of said plurality of filter chambers of deposited particulate matter comprising:

a. continuously sensing the gas pressure differential between a point upstream of the subdivision of the particulate matter-laden gas stream into a plurality of substreams and a point downstream of the recombination of said substream into the relatively particulate matter-free gas stream;

b. continuously comparing the sensed gas pressure differential to a preselected upper limit of desired gas pressure differential;



c. when the sensed gas pressure differential reaches the preselected upper limit of desired gas pressure differential, isolating one of said plurality of filter chambers and cleaning the deposited particulate matter from the fabric filter means disposed within said isolated filter chamber;

d. returning said isolated filter chamber to operation after completion of the cleaning and thereafter maintaining all of said plurality of filter chambers in normal filtering operation without further cleaning of the fabric filter means disposed in any of said plurality of filter chambers until the sensed gas pressure differential again reaches the preselected upper limit of desired gas pressure differential;

e. while continuously performing steps (a) and (b), continuously repeating steps (c) and (d) so as to clean the fabric filter means disposed within each of the remaining uncleaned chambers of said plurality of filter chambers in a rotating sequence thereby cleaning all of said plurality of filter chambers prior to recleaning any one thereof; and

f. varying the preselected upper limit of desired gas pressure differential in response to the concentration of particulate matter in the particulate matter-laden gas stream.

4,500,327

PROCESS FOR REMOVAL OF MERCURY VAPOR AND ADSORBENT THEREFOR

Hiroshi Nishino, Saita; Toshio Aibe, and Katsuya Noguchi, both of Toyonaka, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Filed Jun. 28, 1983, Ser. No. 509,232

Claims priority, application Japan, Jul. 8, 1982, 57-119409; Oct. 25, 1982, 57-186990; Oct. 25, 1982, 57-186991; Mar. 3, 1983, 58-34922

Int. Cl.³ B01D *53/04*

U.S. Cl. 55—72 18 Claims

1. A process for the removal of mercury vapor from a gas containing the same, which comprises contacting the gas with an adsorbent comprising an activated carbon having as supported thereon (1) one or more components included in one of the three groups shown below and (2) one or more components included in the remaining two groups shown below:

Group	Component
I	sulfur
II	sulfate and nitrate of Al, V, Fe, Co, Ni, Cu, Zn or NH_4
III	oxide of iodine, oxyacid corresponding to the oxide of iodine, salt of said oxyacid, and bromide and iodide of K, Na or NH_4

9. An adsorbent for the removal of mercury vapor, which comprises an activated carbon having as supported thereon (1) one or more components included in one of the three groups shown below and (2) one or more components included in the remaining two groups shown below:

Group	Component
I	sulfur
II	sulfate and nitrate of Al, V, Fe, Co, Ni, Cu, Zn or NH_4
III	oxide of iodine, oxyacid corresponding to the oxide of iodine, salt of said oxyacid, and bromide and iodide of K, Na or NH_4

4,500,328

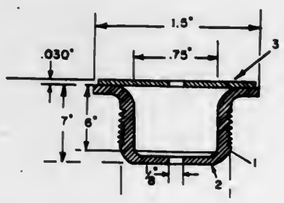
BONDED CARBON OR CERAMIC FIBER COMPOSITE FILTER VENT FOR RADIOACTIVE WASTE

Gilbert W. Brassell, 13237 W. 8th Ave., Golden, Colo. 80401, and Ronald P. Brugger, Lafayette, Colo., assignors to Gilbert W. Brassell, Golden, Colo.

Filed Feb. 22, 1983, Ser. No. 468,610

Int. Cl.³ B01D *46/00*

U.S. Cl. 55—97 18 Claims



1. A closed but safely vented, walled area comprising,
at least one wall defining a closed area, all walls being substantially impermeable to both gases and particulate matter, and the closed area containing radioactive particulate material, and
located in a wall thereof, a filter consisting essentially of a carbon bonded carbon fiber composite, ceramic bonded ceramic fiber composite or a carbon bonded ceramic fiber composite, said filter being permeable to gaseous species and retaining radioactive particles of a diameter of 0.3 μm with an efficiency of 99.97%.

11. A method of safely venting a container of radioactive particulate material, comprising incorporating in a wall thereof a filter consisting essentially of a carbon bonded carbon fiber composite, a ceramic bonded ceramic fiber composite or a carbon bonded ceramic fiber composite, said filter being permeable to gaseous species and retaining radioactive particles of a diameter of 0.3 μm with an efficiency of 99.97%.

4,500,329

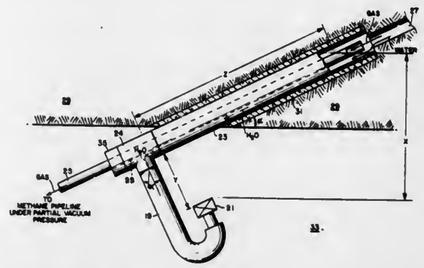
SELF-ACTUATING VACUUM GAS/LIQUID SEPARATOR

Alan A. Campoli, Irwin, and Fred Garcia, Donora, both of Pa., assignors to United States of America as represented by Secretary of the Interior, Washington, D.C.

Filed Apr. 25, 1983, Ser. No. 488,482

Int. Cl.³ B01D *19/00*

U.S. Cl. 55—189 2 Claims



1. A self-actuating gas/liquid separator with only one moving valve part comprising:
a partial gaseous vacuum generating source;
an inclined first conduit capable of conveying a liquid therein by the force of gravity, said conduit being insertable at one end into a connection to the source of gas and liquid to be separated;
a second inclined smaller conduit capable of conveying a gas extending in the same direction as the first conduit and mounted in said first conduit, said second conduit being opened to receive gases at the end thereof nearer the source of supply for the gas and liquid to be separated, said second conduit being connected at its other end to said partial gaseous vacuum generating source to cause gases to flow from its opened end towards said vacuum generating source;
a bent third conduit in fluid communication with said first conduit and adapted to receive gravity drained separated liquids from the gas and liquid to be separated, said third conduit being vertically below the end of the first conduit which receives the gas and liquid to be separated; and
said third conduit having a liquid flow control valve constituting the one moving part of the separator, said valve being attached to the third conduit to permit the flow of excess liquid therethrough once the liquid height in the first conduit exceeds that needed to counter-balance the created partial vacuum pressure on the gas.

4,500,330

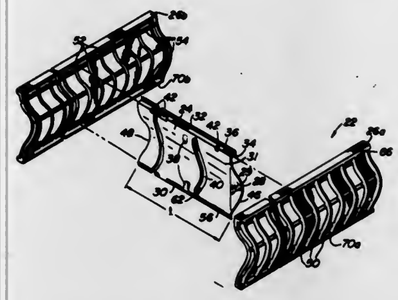
DRIFT ELIMINATOR

Wilson E. Bradley, Jr., Ellicott City, Md., and Palle Rye, Reading, Pa., assignors to Evapco, Inc., Baltimore, Md.

Filed May 31, 1983, Ser. No. 499,741

Int. Cl.³ B01D *47/00*

U.S. Cl. 55—257 PV 19 Claims



1. Apparatus for removing mist from a mist laden air stream comprising:
a. a plurality of stacked blades mounted in blade holding means, each blade having an inlet side and an outlet side and being stacked to allow the mist laden air stream to flow between the blades;
b. impact means disposed on a surface of each blade against which the mist and air impacts for removing mist from the air stream;
c. a combined air stream accelerating and directing means and remnant mist removing means disposed on the outlet side of each blade; and
d. pressure drop reducing means disposed on the outlet side of each blade for reducing the pressure drop of the air stream across the blades.

4,500,331

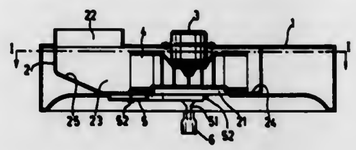
KITCHEN EXHAUST APPARATUS

Chung-Tsung Cheng, 32-1, Alley 9, Lane 390, Tun Hua South Rd., Taipei

Filed Jan. 7, 1983, Ser. No. 456,371

Int. Cl.³ B01D *45/14*

U.S. Cl. 55—406 10 Claims



1. A kitchen exhaust apparatus comprising:
a fan housing including:
a cylindrical portion having a curved outer wall,
an extension contiguous with said cylindrical portion and having first and second side walls which intersect said curved outer wall, said first side wall being oriented tangentially relative to said curved outer wall,
a bottom wall extending across said cylindrical portion and said extension, said bottom wall having:
a vertical inlet portion disposed in said cylindrical portion and being spaced radially inwardly from said curved outer wall, and
an upwardly sloped portion disposed in said extension between said side walls and slopding upwardly away from said cylindrical portion,
means forming an outlet port above said sloped portion,
a first drain aperture disposed in said bottom wall within said extension and located between said side walls and adjacent a lower end of said upwardly sloping portion, and
a second drain aperture disposed in said bottom wall between said inlet port and a point of intersection of said second side wall with said curved outer wall,
a motor-driven centrifugal fan arranged in said cylindrical portion above said inlet port to draw-in air and discharge the air through said outlet port and to impart centrifugal force to oleaginous and liquid particles entrained in the air, whereupon such particles travel along a path extending along said first side wall and upwardly along said sloped portion and then downwardly along said sloped portion toward said second drain aperture, with some of the particles falling through said first and second drain apertures, and
a gathering tray disposed beneath said fan housing and said first and second apertures to catch particles falling through said first and second apertures.

4,500,332

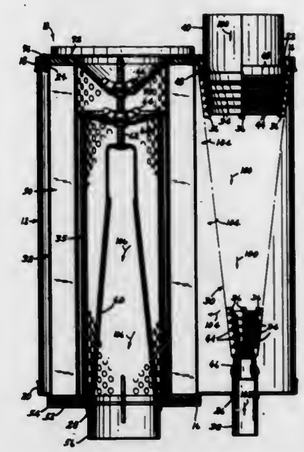
THROUGHPUT BLADE FOR LOUVERED SEPARATORS

Gary R. Gillingham, Prior Lake, Minn., assignor to Donaldson Company, Inc., Minneapolis, Minn.

Filed Sep. 30, 1982, Ser. No. 430,736

Int. Cl.³ B01D *45/00*

U.S. Cl. 55—443 8 Claims



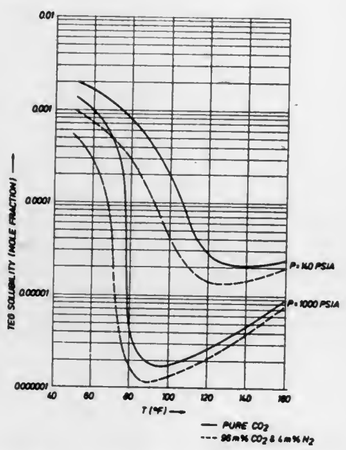
8. An inertial air cleaner for use within a housing, said cleaner including a wall and a plurality of successive adjacent louvered members spaced from the wall defining an inlet for unfiltered air between the wall and the members at one end and an outlet for more concentrated particulate laden air at the other end thereof, said members and said wall being closer to each other at the outlet than inlet, the louvered members each having leading and trailing edges and together forming a converging array converging toward an imaginary plane at the outlet end, means attached to said members for maintaining them in an adjacent relationship, said members being disposed with air passages between successive members, a tab member located intermediate said leading and trailing edges and extending from the outer peripheral surface of each member, said tab being oriented perpendicularly to the plane, wherein unfiltered air is passed between the space between the wall and the louvered members and filtered air passes between the louvered members and said tab member reducing the turbulence of filtered air.

4,500,333

AQUEOUS ELECTROLYTE DESICCATION OF SUBSTANTIALLY SUPERCRITICAL CO_2

George C. Blytas, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Nov. 29, 1983, Ser. No. 556,249
Int. Cl.[3] F25J 3/00
U.S. Cl. 62—17 3 Claims



1. A process for drying water-containing CO_2 at conditions near or above its critical point comprising:

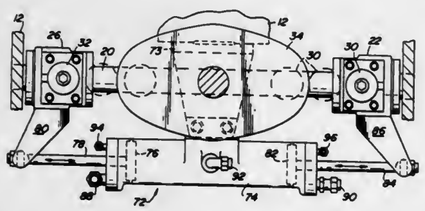
flowing said CO_2, at conditions near or above its critical point, into and out of contact with an aqueous liquid desiccant solution or pumpable slurry having water-removing capacities and efficiencies at least substantially equivalent to those provided by a calcium chloride desiccant solution, sufficient to render said CO_2 substantially non-corrosive.

4,500,334

GLASS STREAM CUTTING APPARATUS

Edward Parkell, Millville, and Mark C. Newkirk, Vineland, both of N.J., assignors to Maul Technology Corporation, Millville, N.J.

Filed Aug. 2, 1983, Ser. No. 519,446
Int. Cl.[3] C03B 5/38
U.S. Cl. 65—334 13 Claims



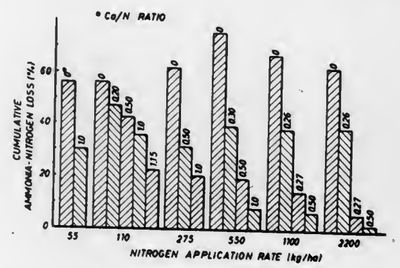
1. Apparatus for simultaneously cutting a plurality of glass streams into gobs comprising first and second arms supported at one end by a discrete carriage for reciprocation in a horizontal direction, a cam, a cam follower associated with each carriage, an electric motor coupled to said carriages by way of said cam for simultaneously reciprocating the free ends of said arms toward and away from each other, each arm supporting a plurality of blades adapted to mate with blades on the other arm, and a pneumatic spring biasing said arms towards each other and biasing said cam followers into contact with said cam, said pneumatic spring being adapted to lock said arms in an open position.

4,500,335

COMPOSITION OF MATTER AND METHOD OF USE FOR NITROGEN FERTILIZATION

Lloyd B. Fenn, El Paso, Tex., assignor to Texas A&M University, College Station, Tex.

Continuation-in-part of Ser. No. 221,435, Dec. 30, 1980, abandoned, which is a continuation-in-part of Ser. No. 039,870, May 17, 1979, abandoned. This application Aug. 19, 1983, Ser. No. 524,912
Int. Cl.[3] C05C 9/00
U.S. Cl. 71—28 8 Claims



1. The method of reducing ammonia volatilization loss from surface applied ammoniated or urea-containing soil fertilizers which comprises

analyzing the soil on which said fertilizer is to be applied so as to determine the amount of available cation Y present in the soil to react in a hydrolyzing system to form carbonates having a solubility product above about 10^{-10} grams per liter;

applying said fertilizer to the soil surface; and

applying to the soil surface in the presence of said fertilizer an effective amount of water soluble salt which has an essentially neutral solution pH and which provides in combination with any cations Y already present in the soil sufficient cations Y to suppress the formation of hydroxyl ions that would otherwise be produced in the soil according to the reaction

$$YCO_3 + H_2O \rightleftarrows Y(OH)_2 + CO_2$$

with Y=calcium or magnesium;

the amount of the water soluble salt is determined by the chemical equivalents ratio (Y/N) of the calcium and magnesium (Y) provided (a) as a cation of the water soluble salt or (b) by way of cation exchange between a cation of the water soluble salt and calcium and magnesium present in the soil to the nitrogen (N) in the fertilizer, which chemical equivalents ratio (Y/N) is at least about 0.25; and the water soluble salt is formed from the NO_3^- or Cl^- anions.

4,500,336

PROCESS FOR MAKING GRANULES CONTAINING UREA AS THE MAIN COMPONENT

Willy H. P. Van Hijfte, Assenede, and Luc A. Vanmarcke, Kaprijke-Lembeke, both of Belgium, assignors to Compagnie Neerlandaise de l'Azote (Societe Anonyme), Belgium

Filed Jun. 18, 1982, Ser. No. 390,044
Claims priority, application Netherlands, Jul. 3, 1981, 8103210; Feb. 12, 1982, 8200552
Int. Cl.[3] C05G 3/00; C05C 9/00
U.S. Cl. 71—29 2 Claims

1. In a process for preparing granules containing urea as the main component by spraying an aqueous urea solution having a urea concentration of 85–98% by weight, to which said solution is added a crystallization retarder for the urea, said solution optionally containing other fertilizers including ammonium sulphate, ammonium dihydrogen phosphate, and diammonium hydrogen phosphate in solution or suspension, in the form of fine droplets having an average diameter between 20 and 120 microns, into a fluidized bed of urea particles at a temperature at which the water from the solution or suspension sprayed onto the particles is evaporated and the urea or fertilizer material containing urea as the main component solidifies on the particles to form granules having the desired size, the improvement comprising using a crystallization retarder consisting essentially of a water-soluble aluminum salt, wherein said aluminum salt is added to the solution or suspension in an amount equivalent to at least 0.1 to about 1.0% by weight of Al_2O_3 calculated on the urea in said solution or suspension.

4,500,337

ADHERENT CONTROLLED RELEASE MICROBIOCIDES CONTAINING HYDROLYZABLE SILANES AND ORGANIC TITANIUM COMPOUNDS

Robert W. Young, 101 W. 55th St., New York, N.Y. 10019; Samuel Prussin, Partington Ridge, Big Sur, Calif. 93920, and Norman G. Gaylord, 28 Newcomb Dr., New Providence, N.J. 07974

Filed Sep. 3, 1980, Ser. No. 183,765
The portion of the term of this patent subsequent to Apr. 15, 1997, has been disclaimed.
Int. Cl.[3] A01N 25/00
U.S. Cl. 71—67 36 Claims

1. A composition capable of undergoing hydrolysis under ambient conditions to form a polymeric network capable of controlling the release of a microbiocide, consisting essentially of (a) a hydrolyzable silane selected from the group consisting of (1) a hydrocarbon substituted hydrolyzable silane, and (2) an organopolysiloxane containing hydrolyzable silane groups, or a partial hydrolyzate thereof, (b) a hydrolyzable titanium compound or a partial hydrolyzate thereof, said titanium compound being selected from the group consisting of (1) tetraesters, tetraanhydrides and tetraamides, and (2) chelates of glycols, hydroxy acids, dicarboxylic acids, diketones, ketoesters and alkanolamines, and (c) a microbiocide.

4,500,338

ADHERENT CONTROLLED RELEASE MICROBIOCIDES CONTAINING HYDROLYZABLE ORGANIC TITANIUM COMPOUNDS

Robert W. Young, 101 W. 55th St., New York, N.Y. 10019; Samuel Prussin, deceased, late of Partington Ridge, Big Sur, Calif. (by Shirley Prussin, executor), and Norman G. Gaylord, 28 Newcomb Dr., New Providence, N.J. 07974

Filed Sep. 3, 1980, Ser. No. 183,766
The portion of the term of this patent subsequent to Feb. 26, 1997, has been disclaimed.
Int. Cl.[3] A01N 25/00
U.S. Cl. 71—67 18 Claims

1. A composition capable of undergoing hydrolysis under ambient conditions to form a polymeric network capable of controlling the release of a microbiocide, consisting essentially of (a) a hydrolyzable titanium compound or a partial hydrolyzate thereof, said titanium compound being selected from the group consisting of (1) tetraesters, tetraanhydrides and tetraamides, and (2) chelates of glycols, hydroxy acids, dicarboxylic acids, diketones, ketoesters and alkanolamines, and (b) a microbiocide.

4,500,339

ADHERENT CONTROLLED RELEASE MICROBIOCIDES CONTAINING HYDROLYZABLE SILANES

Robert W. Young, 101 W. 55th St., New York, N.Y. 10019; Samuel Prussin, Partington Ridge, Big Sur, Calif. 93920, and Norman G. Gaylord, 28 Newcomb Dr., New Providence, N.J. 07974

Filed Sep. 3, 1980, Ser. No. 183,767
The portion of the term of this patent subsequent to Oct. 30, 1996, has been disclaimed.
Int. Cl.[3] A01N 25/00
U.S. Cl. 71—67 34 Claims

1. A composition of undergoing hydrolysis under ambient conditions to form a polymeric network capable of controlling the release of a microbiocide, consisting essentially of (a) a hydrolyzable silane selected from the group consisting of (1) a hydrocarbon substituted hydrolyzable silane, and (2) an organopolysiloxane containing hydrolyzable silane groups, or a partial hydrolyzate thereof, and (b) a microbiocide.

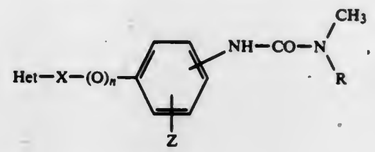
4,500,340

UREA DERIVATIVES AND THEIR USE FOR CONTROLLING UNDESIRABLE PLANT GROWTH

Rainer Becker, Bad Durkheim; Hans Theobald, Limburgerhof; Ulrich Schirmer, Heidelberg; Wolfgang Spiegler; Walter Seufert, both of Ludwigshafen, and Bruno Wuerzer, Otterstadt, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Nov. 22, 1982, Ser. No. 443,523
Claims priority, application Fed. Rep. of Germany, Dec. 5, 1981, 3148291
Int. Cl.[3] C07D 277/62, 333/14, 277/20; A01N 47/30
U.S. Cl. 71—90 9 Claims

1. A urea derivative of the formula



(I)

where

R is hydrogen, or alkyl, alkenyl, alkynyl or alkoxy of not more than 4 carbon atoms,

X is straight-chain or branched alkylene of not more than 4 carbon atoms,

Z is hydrogen, halogen, methyl or trifluoromethyl and Het is an isoxazole, oxazole, thiazole, oxadiazole, thiadiazole, pyrazole or triazole ring, unsubstituted or substituted by halogen, or by alkyl, haloalkyl, alkoxy, haloalkoxy, alkoxyalkyl or alkoxycarbonyl, each of not more than 5 carbon atoms, or by phenyl, by phenyl substituted by halogen, alkyl, alkoxy or nitro, by benzyl or by benzyl substituted by halogen, alkyl, alkoxy or nitro, or is a corresponding benzyl-fused benzothiazoyl radical, which may substituted in the same way,

and

n is 0 or 1.

4,500,341
PHENOXYCARBOXYLIC ACID AMIDE COMPOUNDS AND HERBICIDAL COMPOSITIONS

Heinz Förster, Wuppertal; Ludwig Eue, Leverkusen, and Robert R. Schmidt, Cologne, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

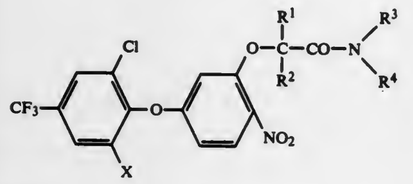
Continuation of Ser. No. 115,453, Jan. 25, 1980, abandoned. This application Oct. 21, 1981, Ser. No. 313,698

Claims priority, application Fed. Rep. of Germany, Feb. 17, 1979, 2906237

Int. Cl.³ A01N *37/20, 43/56;* C07C *103/75;* C07D *231/12*

U.S. Cl. 71—92 13 Claims

1. Phenoxylcarboxylic acid amide compound of the formula



(I)

wherein

R^1 is hydrogen,

R^2 is methyl,

R^3 is hydrogen,

R^4 is alkoxycarbonylmethyl with 1 to 4 carbon atoms in the alkoxyl group or

R^3 and R^4 together with the adjacent nitrogen atom are pyrazolyl or pyrazolyl which is substituted by one or two methyl groups and

X is hydrogen or chlorine.

10. Method of combating weeds, which method comprises applying to an area of cultivation an effective amount of a phenoxycarboxylic acid amide compound as claimed in claim 1.

4,500,342
HERBICIDALLY ACTIVE SUBSTITUTED PHENYLSULFONYLUREA DERIVATIVES AND INTERMEDIATES THEREFOR

Masahiro Aya; Junichi Saito; Kazuomi Yasui, all of Tokyo; Kozo Shiokawa, Kanagawa; Norihisa Morishima, Tokyo, and Toshio Goto, Kanagawa, all of Japan, assignors to Nihon Tokushu Noyaku Seizo K.K., Tokyo, Japan

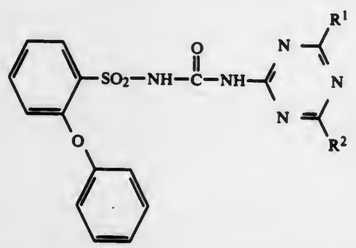
Filed Jan. 20, 1982, Ser. No. 340,903

Claims priority, application Japan, Jan. 26, 1981, 56-8977; Jun. 20, 1981, 56-94571

Int. Cl.³ C07D *251/46;* A01N *43/66;* C07D *251/42;* C07C *155/02*

U.S. Cl. 71—93 8 Claims

1. A phenoxyphenylsulfonylurea derivative of the formula



in which

R^1 and R^2 each independently is methyl or methoxy.

4,500,343
OXAZOLYL AND THIAZOLYL AMIDES AS HERBICIDES

Kenneth W. Burow, Jr., Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Filed Sep. 30, 1982, Ser. No. 429,765

Int. Cl.³ A01N *43/74, 43/80, 43/82*

U.S. Cl. 71—76 3 Claims

1. A method for controlling undesired plants which comprises applying to the plants a growth inhibiting amount of 4-chloro-N-[5-(1,1-dimethylethyl)-3-isoxazolyl]-2-methylbutanamide.

4,500,344
HERBICIDAL ORTHO-(ALKOXY)-BENZENESULFONAMIDES

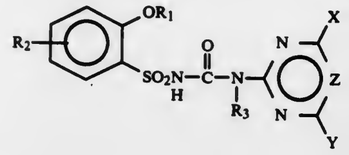
Robert W. Freerksen, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Mar. 21, 1983, Ser. No. 474,873

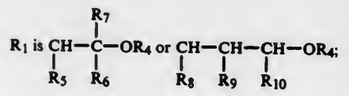
Int. Cl.³ C07D *251/18, 251/46, 251/52;* A01N *43/70*

U.S. Cl. 71—93 24 Claims

1. A compound of the formula:



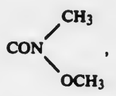
wherein



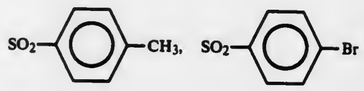
R_2 is H, F, Cl, Br, CH_3, OCH_3 or CF_3;

R_3 is H or CH_3;

R_4 is H, $COCH_3$, COC_2H_5, $COCH_2CH_2CH_3$, $COCH(CH_3)_2$, COC_6H_5, $CONHCH_3$, $CONHC_2H_5$, $CON(CH_3)_2$,



$CONHC_6H_5$, SO_2CH_3, $SO_2C_2H_5$, $SO_2C_6H_5$,



or SO_2CF_3;

R_5 is H or CH_3;

R_6 is H or CH_3;

R_7 is H or CH_3;

R_8 is H or CH_3;

R_9 is H or CH_3;

R_{10} is H or CH_3;

Z is N;

X is CH_3 or OCH_3; and

Y is CH_3, C_2H_5, OCH_3, OC_2H_5, CH_2OCH_3, $CH(OCH_3)_2$,



NH_2, $NHCH_3$ or $N(CH_3)_2$;

provided that

(1) when R_6 and R_7 are both CH_3, then R_4 is H; and

(2) when either R_8, R_9 or R_{10} is CH_3, then the others must be H;

and their agriculturally suitable salts.

17. A method for controlling the growth of undesired vegetation which comprises applying to the locus to be protected an effective amount of a compound of claim 1.

4,500,345
ISOXAZOLOTRIAZINDIONES AND PLANT GROWTH INHIBITING USE THEREOF

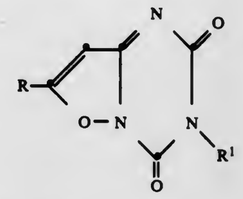
Kurt H. Pilgram, and Thomas P. Price, both of Modesto, Calif., assignors to Shell Oil Company, Houston, Tex.

Filed Nov. 18, 1983, Ser. No. 553,020

Int. Cl.³ A01N *31/08;* C07D *498/04*

U.S. Cl. 71—93 6 Claims

1. A compound of the formula



wherein R is alkyl of one to six carbon atoms, alkynyl of three to six carbon atoms, cyclopropyl or 1-methylcyclopropyl, an R^1 is alkyl or alkoxy of from one to four carbon atoms, and the hydrohalide salts thereof.

3. A method for inhibiting the growth of unwanted plants at a locus which comprises applying to the locus a plant growth inhibiting effective amount of a compound of claim 1.

4,500,346
SUBSTITUTED PHENOXYPROPIONATES AND HERBICIDAL COMPOSITIONS CONTAINING SAME AND THEIR HERBICIDAL USE

Junichi Saito; Kazuomi Yasui, both of Tokyo; Kozo Shiokawa, Kanagawa, and Atsumi Kamochi, Tokyo, all of Japan, assignors to Nihon Tokushu Noyaku Seizo K.K., Tokyo, Japan

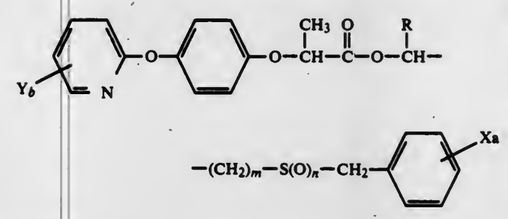
Filed Apr. 11, 1983, Ser. No. 483,974

Claims priority, application Japan, Apr. 20, 1982, 57-64702

Int. Cl.³ C07D *213/64;* A01N *43/40*

U.S. Cl. 71—94 14 Claims

1. Substituted phenoxypropionates of the formula



in which

Y represents a halogen atom or a trifluoromethyl group and b is 1 or 2,

R represents a hydrogen atom or a methyl group,

X represents a hydrogen atom, a halogen atom, a nitro group, a lower alkyl group or a lower alkoxy group,

a and m independently is 1 or 2, and

n is 1 or 2.

12. A method of combating weeds which comprises applying to the weeds, or their habitat, a herbicidally effective amount of a substituted phenoxypropionate as claimed in claim 1.

4,500,347
OXIME DERIVATIVES FOR PROTECTING PLANT CROPS

Henry Martin, Allschwil, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

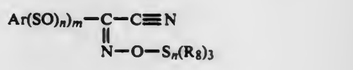
Division of Ser. No. 271,310, Jun. 8, 1981, abandoned, which is a division of Ser. No. 068,252, Aug. 20, 1979, Pat. No. 4,294,772. This application Apr. 6, 1983, Ser. No. 482,389

Claims priority, application Switzerland, Aug. 31, 1978, 9200/78

Int. Cl.³ A01N *55/04*

U.S. Cl. 71—97 21 Claims

1. A composition for use in protecting crops against the herbicidal action of a haloacetanilide comprising an effective amount of a compound of the formula:



wherein

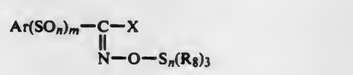
n is 0, 1 or 2,

m is 0 or 1,

Ar is unsubstituted phenyl, phenyl substituted with from one to three substituents selected from the group consisting of alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms and halo, or naphthyl, and

R_8 is alkyl of 1 to 4 carbon atoms, benzyl or phenyl, in a quantity sufficient to provide a protective action against said haloacetanilide, in combination with an inert liquid or solid carrier for the compound.

6. In the method of combating weed growth in a crop through the application of a herbicidal haloacetanilide, the improvement which comprises applying to said crop, the seed or seedling from which said crop is grown, or to the habitat of the crop's growth a compound of the formula:



wherein

n is 0, 1 or 2,

m is 0 or 1,

X is hydrogen, cyano, alkyl of 1 to 4 carbon atoms or carboalkoxy in which alkoxy contains 1 to 4 carbon atoms,

Ar is unsubstituted phenyl, phenyl substituted with from one to three substituents selected from the group consisting of alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms and halo, or naphthyl, and

R_8 is alkyl of 1 to 4 carbon atoms, benzyl or phenyl, in a quantity sufficient to protect the crop from the herbicidal effects of said haloacetanilide.

4,500,348

OIL-IN-WATER EMULSIONS, AND THEIR USE

Heinz Hausmann, Leichlingen; Heinz J. Niessen, Bergisch Gladbach; Otto Telle, Cologne, and Hermann Neumaier, Leichlingen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Mar. 5, 1982, Ser. No. 355,076

Claims priority, application Fed. Rep. of Germany, Mar. 26, 1981, 3111934

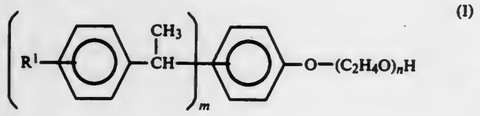
Int. Cl.³ A01N *41/00*

U.S. Cl. 71—103 **13 Claims**

1. Oil-in-water emulsion comprising

(a) 5 to 80% by weight of at least one agrochemically active compound having a maximum solubility of 0.5% by weight in water at 20° C.,

(b) 3 to 15% by weight of at least one alkylaryl polyglycol ether of the formula



(I)

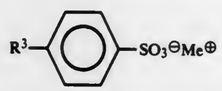
wherein

R^1 represents a hydrogen atom or an alkyl group having 1 to 12 carbon atoms,

m is 2 or 3 and

n is an integer from 12 to 40,

in admixture with an alkylarylsulphonic acid salt of the general formula



(II)

wherein

R^3 represents an alkylgroup having 9 to 30 carbon atoms and

$M^{\oplus}$ represents a sodium cation or an equivalent of a calcium cation, and

(c) water.

4,500,349

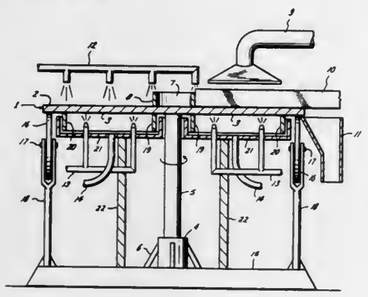
PRODUCTION OF ROUND SALT COATED METAL GRANULES

Edward J. Skach, Jr., Angleton, Tex., assignor to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 334,201, Dec. 24, 1981, abandoned. This application Jul. 29, 1983, Ser. No. 518,775

Int. Cl.³ C22C *1/04*

U.S. Cl. 75—0.5 B **6 Claims**



1. A process which consists essentially of feeding a molten salt material, having small metal particles dispersed therein, to a non-central portion of the top side of a flat, planar, horizontal, circular, rotating sheet or plate,

maintaining the material in a substantially dry or inert atmosphere while

cooling the material on said sheet or plate to a state at which it is brittle, friable, or plastic,

and

scraping the cooled material from the rotating sheet or plate before it reaches the point at which it was fed to the plate, said rotating being done at a speed which is less than that which would cause movement of the material across the surface of the plate by centrifugal action.

4,500,350

DISINTEGRATION OF CHROMITES

Johann-Nikolaus Meussdoerffer, Leverkusen; Hans Niederprüm, Monheim; Hans-Georg Nieder-Vahrenholz, Cologne, and Wolfgang Bockelmann, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Feb. 7, 1977, Ser. No. 766,414

Claims priority, application Fed. Rep. of Germany, Feb. 21, 1976, 26071318

Int. Cl.³ C22B *1/02*

U.S. Cl. 75—1 R **7 Claims**

1. In the disintegration of a chromite or chromium containing residue, wherein the chromium-containing material is disintegrated with an alkaline compound in the presence of oxygen and a diluent at a temperature above about 800° C. and thereafter leached, the improvements which comprise employing as said chromium-containing material a chromite selected from the group consisting of gangue-rich chemical grade chromite, metallurgical-grade chromite and refractory-grade chromite, and pre-roasting the chromium-containing material for about 2 hours at 1000° to 1100° C. whereby upon subsequent disintegration and leaching there is obtained a higher yield of chromium.

4,500,351

CAST DUPLEX STAINLESS STEEL

Armand P. Bond, Livonia; Abraham Poznansky, and Paul J. Grobner, both of Ann Arbor, all of Mich., assignors to Amax Inc., Greenwich, Conn.

Filed Feb. 27, 1984, Ser. No. 583,903

Int. Cl.³ C22C *38/42*

U.S. Cl. 75—128 N **3 Claims**

1. A casting made of an alloy consisting essentially of about 0.02% to 0.05% carbon, about 23% to about 25% chromium, about 8% to 12% nickel, about 5% to 7% molybdenum, about 0.4% to 0.8% manganese, about 0.1% to 0.3% silicon, about 0.1% to 0.4% nitrogen, up to about 0.5% copper, up to about 0.1% tungsten, up to about 0.1% cerium and the balance essentially iron, said alloy being resistant to the corrosive effects of acids, chloride solutions and seawater, said alloy having a microstructure consisting essentially of about 40% to about 55% austenite in a continuous matrix of ferrite and having a composition balanced in accordance with the relationship:

$$0.85 > \frac{\%\ Ni + 30\%\ C + 25\%\ N + 1}{\%\ Cr + 1.5\%\ Mo - 10} > 0.68.$$

4,500,352

PRODUCTION OF CAST IRON

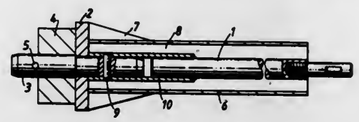
George E. Else, Chesterfield; Cyril Millward, Heanor; Ronald H. T. Dixon, Chesterfield, all of England, and Knut Jörgensen, Hardanger, Norway, assignors to Stanton and Staveley Limited, Derbyshire, England and A/S Bjolvefossen, Oslo, Norway

Filed Nov. 23, 1983, Ser. No. 554,971

Claims priority, application United Kingdom, Dec. 1, 1982, 8234252

Int. Cl.³ C22C *33/08*

U.S. Cl. 75—130 B **13 Claims**



1. Apparatus for adding magnesium containing material to molten iron in the production of nodular or modified graphite irons commprising a block of magnesium containing material, and a plunging arm, the block and the arm being shaped such that the block is securely mountable on the arm with the arm projecting into the block substantially to its center of mass, the block being formed by mixing a powdered or granular combination of at least metallic magnesium and a magnesium alloy with a binder and compacting to the desired configuration of the block.

4,500,353

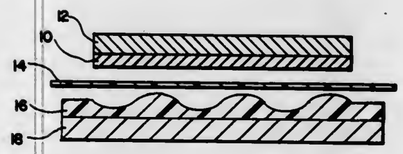
ELASTOMERIC COMPRESSIBLE MIXTURE

Judith A. Maszalec, 464 Riverside Ave., Rutherford, N.J. 07070

Filed Jan. 9, 1984, Ser. No. 569,523

Int. Cl.³ B22F *1/00*

U.S. Cl. 75—252 **5 Claims**



1. An elastomeric compressible mixture having the compressible properties of stiff rubber or rubber-like compounds and having heat transfer characteristics of metal such as aluminum, this mixture for use as a flat sheet or as a roll covering and is disposed in contiguous relationship with a heat conductive metal backup, said mixture including:

(a) at least two parts polymerized tetrafluoro ethylene powder, and

(b) the remainder aluminum powder in a range of fifty to seventy-five percent and of rubber or rubber-like materials about forty eight to twenty three percent.

4,500,354

HEAT SENSITIVE RECORDING PAPERS

Boris J. Katsen, N. Tonawanda; Robert T. Brinkworth, Lakeview; Daniel J. Kay, Amherst, and James A. Riester, N. Tonawanda, all of N.Y., assignors to Graphic Controls Corp., Buffalo, N.Y.

Filed Sep. 27, 1982, Ser. No. 423,851

Int. Cl.³ C09D *11/00*

U.S. Cl. 106—21 **19 Claims**

1. A water-stable phenol-amine complex having limited water solubility and for use in a thermal-sensitive paper coating containing a chromogenic compound,

said complex being characterized in that the ratio of OH^- groups of the phenol to amine groups of the amine is essentially 2:1, and being further characterized in that the amine is a lower aliphatic amine of up to C-6 and selected from the group consisting of primary amines, secondary amines forming aminophenolic complexes in a 1:1 ratio, and mixtures thereof,

said phenol being selected from the group consisting of phenols which have the capability of forming, in water, a molecular complex with amines, in a ratio of two OH^- groups to one amine group when a primary amine is used,

said complex in said coating being responsive to heat applied thereto to effect dissociation of said complex to liberate said phenol for reaction with said chromogenic compound to produce colored trace indicia.

4,500,355

AQUEOUS INK COMPOSITION

Masaru Shimada, Shizuoka, and Masaomi Sasaki, Susono, both of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

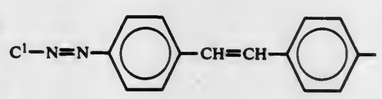
Filed Sep. 28, 1983, Ser. No. 536,928

Claims priority, application Japan, Oct. 29, 1982, 57-189203

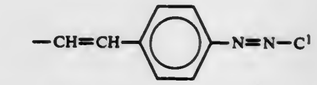
Int. Cl.³ C09D *11/02*

U.S. Cl. 106—22 **12 Claims**

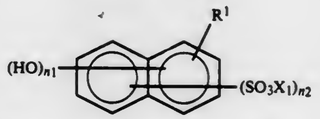
1. An aqueous ink composition comprising an aqueous solution of a water-soluble first dye component and a humectant dissolved in water, said first dye component being at least one dye selected from the group consisting of a cyan azo dye of formula (I), a magenta azo dye of formula (II), and a yellow azo dye of formula (III);



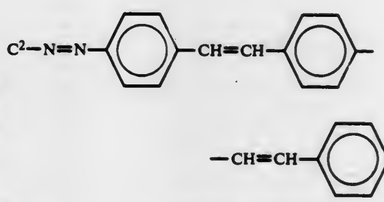
(I)



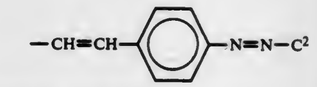
wherein C^1 represents



wherein R^1 represents hydrogen, an unsubstituted or substituted amino group, a sulfo-group-substituted alkyl carbamoyl group, a sulfo-group-substituted phenyl carbamoyl group or a sulfo-group-substituted naphthyl carbamoyl group; X^1 represents hydrogen, Na, K, Li or an organic amine; n_1 is an integer of 1 or 2; and n_2 is an integer of 0 through 3;

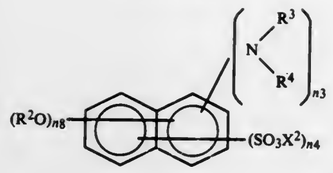


(II)

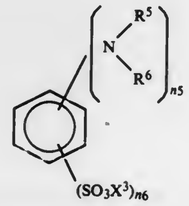


wherein C^2 represents

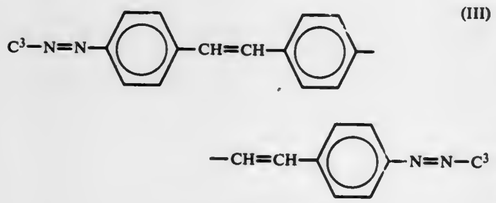
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or

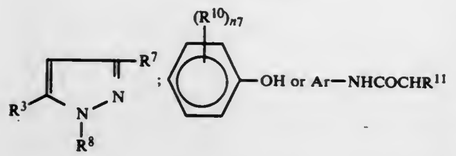


wherein R^2 represents hydrogen or an alkyl group; R^3 and R^4 independently represent hydrogen, an alkyl group, an acyl group, an unsubstituted or substituted phenyl group, or an unsubstituted or substituted phenylsulfonyl group; R^5 and R^6 independently represent hydrogen or an alkyl group; X^2 and X^3 independently represent hydrogen, Na, K, Li or an organic amine; n_3, n_5 and n_6 each are an integer of 1 or 2; n_8 is an integer of 0 or 1; and n_4 is an integer of 1 through 3; and



(III)

wherein C^3 represents



wherein R^7 represents an alkyl group, an unsubstituted or substituted phenyl group, a cyano group, a hydroxyl group, an alkoxy group, an amino group, an acylamino group, an anilino group, an ureido group, a carbamoyl group, a carboxyl group or an alkyl ester of a carboxyl group; R^8 represents an alkyl group or an unsubstituted or substituted phenyl group; R^9 represents a hydroxyl group or an amino group; R^{10} represents hydrogen, an alkyl group, an alkoxy group, a hydroxyl group, halogen or a carboxyl group; R^{11} represents an acetyl group, a benzoyl group, a carboxyl group, an alkyl ester of a carboxyl group, a cyano group, or an amido group; Ar represents a sulfo- group-substituted phenyl group or naphthyl group; and n_7 is an integer of 0 through 3.

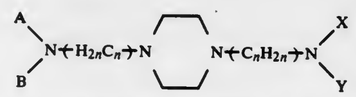
4,500,356

METHYLENEPHOSPHONIC ACID DERIVATIVES OF BIS(AMINOALKYL)PIPERAZINES AS CEMENT SET RETARDING AGENTS

Druce K. Crump, Lake Jackson; Jaime Simon, Angleton, and David A. Wilson, Richwood, all of Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed Feb. 24, 1984, Ser. No. 583,527
Int. Cl.³ C04B 7/35
U.S. Cl. 106—90 **16 Claims**

1. In a process for retarding the setting of an aqueous cement slurry which comprises adding to said slurry an organic phosphonate, the improvement which comprises employing a compound which is a phosphonomethylated bis(aminoalkyl)piperazine having the formula



wherein n is 2–3 and wherein substituents A, B, X and Y each are independently selected from radicals consisting of hydrogen, hydroxyalkyl (wherein the alkyl group contains 2–6 carbon atoms); methylenephosphonic; methylene-, ethylene- and propylenesulfonic; hydroxymethyl-, hydroxyethyl- and hydroxypropylsulfonic acid radicals; carboxylic acid radicals (having 2–4 carbon atoms) and the alkali, alkaline earth metal, ammonium and amine salts of any of the phosphonic, sulfonic or carboxylic acid derivatives, and wherein at least one of A, B, X and Y is a methylenephosphonic acid radical or a salt thereof.

4,500,357

OIL FIELD CEMENTING METHODS AND COMPOSITIONS

Lance E. Brothers, Lawton, and S. Prabhakara Rao, Duncan, both of Okla., assignors to Halliburton Company, Duncan, Okla.

Filed Apr. 3, 1984, Ser. No. 596,228
Int. Cl.³ C04B 7/35
U.S. Cl. 106—90 **20 Claims**

1. A cementing composition for use in cementing operations for oil and gas wells having bottom hole circulating temperatures above about 200° F. comprising a salt water cement slurry, a water soluble form of borate, and a terpolymer, wherein said terpolymer is comprised of about 10-65 mole precent of a strong acid monomer selected from the group consisting of sodium vinylsulfonate, 2-acrylamido, 2-methyl propane sulfonic acid, and vinyl benzene sulfonic acid; about 10–60 mole percent of a weak acid monomer selected from the group consisting of acrylic acid, methacrylic acid, ethacrylic acid and vinyl acetic acid; and about 10-60 mole percent of a nonionic monomer selected from the group consisting of acrylamide, N-vinylpyrrolidone and N,N dimethylacrylamide; wherein the average molecular weight of said terpolymer is between about 10,000 and about 100,000.

4,500,358

FOAM CAPSULES

Jean P. Mayer, Colmar, France, and Fritz Wittwer, Lupsingen, Switzerland, assignors to Warner-Lambert Company, Morris Plains, N.J.

Division of Ser. No. 438,147, Oct. 29, 1982, abandoned. This application Apr. 13, 1983, Ser. No. 484,723
Int. Cl.³ C08L 89/00; A01N 25/34; B28B 1/38
U.S. Cl. 106—122 **32 Claims**

1. A method for the formation of capsule halves by the dipmolding technique and thereby for the production of a foam capsule with telescopically engageable body and cap halves of an unfilled foam capsule adopted to be filled, the joined halves of the capsule providing the finished foam capsule adopted for filling, which method comprises

A. dissolving gelatin water to make an aqueous gelatin solution;

B. mixing a gas into the aqueous gelatin solution to make a gas and aqueous gelatin solution;

C. micronizing the gas and aqueous gelatin solution to make a micronized gas and aqueous gelatin solution; and

forming by the dipmolding technique telescopically engageable body and cap halves of unfilled foam capsules from the micronized gas and aqueous gelatin solution.

4,500,359

WAX COMPOSITION USEFUL AS A BEESWAX SUBSTITUTE

John H. Woods; Toby R. Graves, both of Longview, Tex.; William E. Nasser, Tulsa, Okla., and Ashvinkumar N. Jagtap, Longview, Tex., assignors to Petrolite Corporation, St. Louis, Mo.

Continuation of Ser. No. 156,903, Jun. 6, 1980, abandoned. This application Oct. 8, 1982, Ser. No. 433,601
Int. Cl.³ C08L 91/06
U.S. Cl. 106—270 **18 Claims**

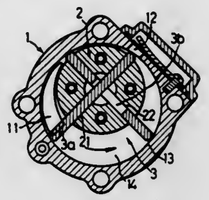
1. A wax composition useful as a beeswax substitute comprising (1) 40–90% by weight of a wax alcohol ester whose alcohol moiety is a linear polyalkylene group of about 4 to 70 carbons and whose acid moiety is that of a monofunctional straight chain carboxylic acid of from 2 to about 33 carbon atoms, said wax alcohol ester having an acid number of 0.5 and a melting point of 95° to 180° C. and (2) 5–50% by weight of an oxidized hydrocarbon wax of about 22–100 carbons.

4,500,360

SLIDING MEMBER MADE OF FIBER-REINFORCED METAL

Masao Wakayama, Nagoya; Makoto Takemura, and Takao Kasagi, both of Okazaki, all of Japan, assignors to Nippon Soken, Inc., Nishio, Japan

Filed Nov. 22, 1982, Ser. No. 443,736
Claims priority, application Japan, Nov. 25, 1981, 56-189474
Int. Cl.³ C09D 1/00; F01C 21/00
U.S. Cl. 106—286.5 **1 Claim**



1. In a compressor having a vane of which a portion is disposed with a normally small clearance from another part of the compressor, made of iron-based metal, for potential sliding contact with such other part under some operating condition of the compressor,

the improvement wherein:

said vane portion is made of carbon fiber-reinforced aluminum having a coefficient of thermal expansion of from 0.9 to 1.6×10^{-5}/°C. from 0° C. to 250° C.;

said carbon fiber-reinforced aluminum containing 15–40 percent, by volume, of carbon fiber, which is irregularly and isotropically distributed within a matrix of aluminum.

4,500,361

PROCESS FOR THE PREPARATION OF TREATED LEAD CHROMATE BASED PIGMENTS

Carlos M. Solé, and Juan A. Vallvey, both of Barcelona, Spain, assignors to Colores Hispania, S.A., Spain

Filed Apr. 28, 1983, Ser. No. 489,297
Int. Cl.³ C04B 31/02; C08K 3/00
U.S. Cl. 106—298 **14 Claims**

1. In a process for preparing crystalline lead chromate-based pigments by precipitation from lead nitrate and sodium dichromate, the improvements comprising:

(a) aging the precipitated pigment crystals to allow release of the lead ions by means of time and/or temperature conditions to allow the later precipitation of the lead ions absorbed or occluded in the crystal and rearranging of the crystals;

(b) precipitating excess lead ion with sodium or potassium salts;

(c) treating the pigment crystals with silicon hydroxide;

(d) coating the crystals with hydrated oxides of a metal at two valency levels thereof; and

(e) treating the crystals with phosphorous salts.

4,500,362

PROCESS FOR PREPARING AQUEOUS DISPERSION OF PIGMENT

Osamu Takahashi; Nobuo Yamamura; Yasuo Mukunoki, all of Kanagawa; Shungi Ogawa, Tokyo, and Yutaka Nakagawa, Saitama, all of Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Nov. 15, 1983, Ser. No. 552,188
Claims priority, application Japan, Nov. 15, 1982, 57-200862
Int. Cl.³ C09C 1/00; C09B 1/00; C04B 31/40
U.S. Cl. 106—309 **11 Claims**

1. A process for preparing an aqueous dispersion of a pigment, comprising the steps of:

dissolving in a mixture of water and an organic solvent an ionic surface active agent which is insoluble in water or has a solubility of 0.1% or less in water at a temperature of 25° C., the ionic surface active agent being soluble in the organic solvent thereby forming a solution;

removing the organic solvent from the solution by distillation to provide an aqueous emulsion of the ionic surface active agent; and

dispersing a pigment in the form of particles in the aqueous dispersion of the ionic surface active agent to form an aqueous dispersion of the pigment.

4,500,363

METHOD OF EXTRACTING PERCHLORETHYLENE FROM DRY CLEANER FILTER CARTRIDGES

Ernest O. Roehl, 16262 Rascal La., Huntington Beach, Calif. 92649

Filed Sep. 14, 1983, Ser. No. 531,958
Int. Cl.³ B01D 41/02
U.S. Cl. 134—10 **9 Claims**

1. A method of removing perchlorethylene dry cleaning fluid from spent dry cleaner filter cartridges which comprises the steps of:

(a) Disjoining the spent dry cleaner filter cartridges into housing components, charcoal components and filter media components;

(b) Immersing said charcoal and said filter media components into a boiling chamber having water therein;

(c) Maintaining said perchlorethylene/water mixture at a temperature equivalent to the boiling point of said perchlorethylene/water azeothrope to produce perchlorethylene-containing vapors;

(d) Condensing said perchlorethylene-containing vapors into a condensate;

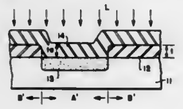
(e) Collecting said condensate into a drying tank;

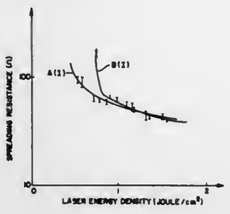
(f) Separating the perchlorethylene from said water in said condensate; and
(g) Collecting said perchlorethylene into a collecting container.

4,500,364
METHOD OF FORMING A PROTECTIVE ALUMINUM-SILICON COATING COMPOSITION FOR METAL SUBSTRATES
Richard C. Krutenat, New Providence, N.J., assignor to Exxon Research & Engineering Co., Florham Park, N.J.
Filed Apr. 23, 1982, Ser. No. 371,257
Int. Cl.³ C23C *1/08*
U.S. Cl. 148—6.14 R **4 Claims**

1. A method of coating a metal substrate which comprises applying to said substrate a hypereutectic aluminumsilicon composition in the form of a slurry in a liquid vehicle comprising a mixture of (1) an Al-Si eutectic, Al-Si hypereutectic or elemental aluminum powder in combination with (2) elemental silicon powder, heating the coating composition to a temperature high enough to form eutectic liquid but low enough to retain elemental silicon in solid form, said heating taking place in the presence of an oxidation-protective pack which comprises silica sand mixed with about 2 to about 30% by weight silicon powder and about 0.05 to about 2% by weight NaCl, and then cooling to form the final coating which contains aluminides and silicides formed from the interaction with the metal substrate, said composition mixture components being present in sufficient amounts to provide the final coating with a net silicon content of about 20 to about 80% by weight.

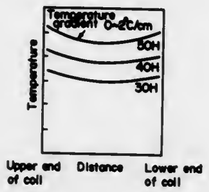
4,500,365
LASER TREATING IMPLANTED SEMICONDUCTOR SURFACE THROUGH PHOTO-RESIST LAYER
Haruhisa Mori, Yokohama, Japan, assignor to Fujitsu Limited, Kawasaki, Japan
Continuation of Ser. No. 204,907, Nov. 7, 1980, abandoned. This application Feb. 16, 1983, Ser. No. 467,188
Claims priority, application Japan, Nov. 12, 1979, 54-146347
Int. Cl.³ H01L *21/263*
U.S. Cl. 148—1.5 **7 Claims**





1. A method of manufacturing a semiconductor device wherein an ion implanted surface region of a semiconductor substrate is heated by irradiating with a laser beam of wavelength λ, said method comprising the steps of:
(a) selectively placing an impurity into said semiconductor substrate by ion implantation using an insulating layer as a mask;
(b) forming a light transmitting film, comprising a photoresist and having a refraction index n, on said ion implanted surface region of the semiconductor substrate and on the insulating layer formed on the non-implanted surface of the semiconductor substrate, said light transmitting film having a uniform thickness defined by mλ/4n, where m is an odd natural number; and
(c) irradiating said laser beam through said light transmitting film for selectively heating and activating said ion implanted surface region of the semiconductor substrate.

4,500,366
PROCESS FOR PRODUCING A GRAIN-ORIENTED ELECTROMAGNETIC STEEL STRIP OR SHEET
Katsuaki Kokai, and Takeo Ohta, both of Kitakyusyushi, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan
Filed Oct. 4, 1982, Ser. No. 435,457
Int. Cl.³ H01F *1/04*
U.S. Cl. 148—111 **4 Claims**

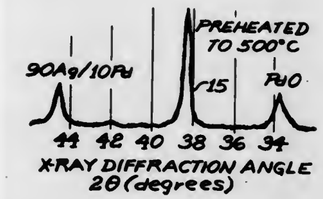


1. In a process for producing a grain-oriented electromagnetic steel strip or sheet, which comprises annealing, for primary recrystallization, a cold rolled electromagnetic steel strip or sheet having a final thickness, and subjecting said strip or sheet to secondary recrystallization annealing by heating said strip or sheet so that every portion of said strip or sheet along the width of said strip, or the width or length of said sheet, will pass through the boundary between the temperature ranges for primary recrystallization and seconary recrystallization with a predetermined temperature gradient, the improvement which comprises:
applying a principal supply of heat to one of a pair of opposite ends of a coil of said strip, which ends of said coil define the width of said strip, or to one of a pair of opposite ends of a stack of a plurality of said sheets, which ends of said stack define the width or length of said sheets, while keeping the inner and outer peripheral surfaces of said coil or the front and rear surfaces of said stack insulated against heat by a heat insulating material;
moving said heat insulating material, or said coil or stack, to gradually expose said surfaces of said coil or stack;
applying an additional supply of heat to said exposed surfaces to heat an enlarged area of said coil or stack from said one end thereof to the other end thereof; and
cooling said other end of said coil or stack, whereby said secondary recrystallization annealing is effected, with a predetermined temperature gradient, on every portion of said strip or sheet along the width of said strip, or the width or length of said sheet.

4,500,367
LPE GROWTH ON GROUP III-V COMPOUND SEMICONDUCTOR SUBSTRATES CONTAINING PHOSPHORUS
Vassilis G. Keramidas, Warren, and Jose A. Lourenco, Union, both of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.
Filed Oct. 31, 1983, Ser. No. 547,333
Int. Cl.³ H01L *21/208*
U.S. Cl. 148—171 **14 Claims**

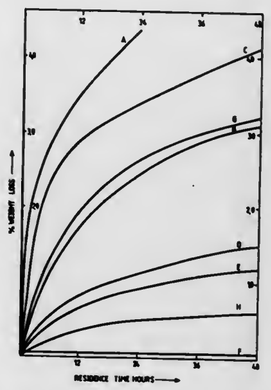
1. A method for liquid phase epitaxially growing, upon a first Group III-V semiconductor compound substrate containing phosphorus, a layer of a second Group III-V semiconductor compound comprising the steps of:
(a) heating in a first gas atmosphere comprising nitrogen or helium to a first predetermined temperature both the substrate and a molten solution from which the second compound can be grown;
(b) contacting the substrate with the molten solution in a second gas atmosphere comprising hydrogen; and
(c) cooling the substrate and the molten solution in the second atmosphere at a predetermined rate, whereby the layer of the second compound epitaxially grows upon the substrate.

4,500,368
AG/PD ELECTRODING POWDER AND METHOD FOR MAKING
Galeb H. Maher, North Adams, Mass., assignor to Sprague Electric Company, North Adams, Mass.
Filed May 12, 1983, Ser. No. 493,863
Int. Cl.³ H01G *1/01*
U.S. Cl. 148—431 **6 Claims**



1. A metal electroding powder for use in making monolithic ceramic capacitors comprised of a silver-palladium alloy powder having a composition by weight of 90Ag/10Pd and a fine palladium oxide formed at the surfaces of the particles of said alloy powder to elevate the temperature at which said alloy will sinter, the presence of said alloy and said palladium oxide being detectable by X-ray defraction angle analysis.

4,500,369
EMULSION EXPLOSIVE
Arne Tag; Bjorn R. Petterson, both of Oslo, and Erik C. Nygaard, Porsgrunn, all of Norway, assignors to Norsk Hydro a.s., Oslo, Norway
Filed Dec. 14, 1983, Ser. No. 561,206
Claims priority, application Norway, Dec. 23, 1982, 824351
Int. Cl.³ C06B *45/00*
U.S. Cl. 149—2 **9 Claims**

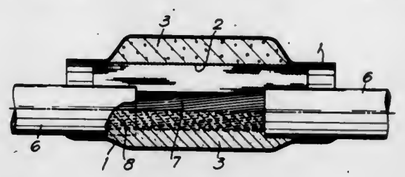


1. An emulsion explosive of the water-in-oil type comprising:
a total of 60–90 percent by weight of both ammonium nitrate and calcium nitrate;
4–15 percent by weight of a crystallization temperature lowering agent;
an emulsifier;
a density reducing agent; and
2–6 percent by weight of at least one hydrocarbon fuel selected from the group consisting of wax and oil;
wherein the content of water in said explosive substantially consists of water of crystallization bound to said calcium nitrate.

4,500,370
EMULSION BLASTING AGENT
Ernest A. Hajto, North Bay, Canada, assignor to Du Pont Canada Inc., Montreal, Canada
Filed Dec. 27, 1983, Ser. No. 565,776
Claims priority, application United Kingdom, Mar. 15, 1983, 8307134
Int. Cl.³ C06B *45/00*
U.S. Cl. 149—109.6 **10 Claims**

1. A method for producing a water-in-oil emulsion-type explosive composition which comprises combining with agitation, a liquid carbonaceous fuel, an aqueous solution of at least one inorganic oxidizing salt, dispersed gas bubbles and ingredients A and B, ingredient A being selected from the group consisting of oleic acid, linoleic acid, and mixtures thereof, and ingredient B being selected from the group consisting of phosphates and carbonates of ammonia and alkali metals, at least one of said ingredients A and B being added during agitation.

4,500,371
HEAT-RECOVERABLE ARTICLE
Hubert De Groot, Duisburg, Belgium, assignor to N.V. Raychem S.A., Kessel-lo, Belgium
Filed Feb. 14, 1984, Ser. No. 580,050
Claims priority, application United Kingdom, Feb. 14, 1983, 8304027
Int. Cl.³ H01B *13/06*; B32B *31/26*
U.S. Cl. 156—48 **15 Claims**



1. An assembly for applying a heat-activatable adhesive to an elongate substrate, which comprises:
a heat-recoverable driver sleeve;
a particulate heat-activatable adhesive; and temporary restraining means for locating the adhesive adjacent an inner surface of the sleeve until heat-recovery of the sleeve.

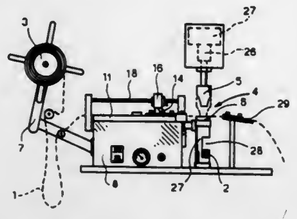
13. A method of producing a cable block, which comprises: surrounding a portion of the cable having a section thereof at least partially bare of jacket with an assembly according to claim 1; and heating the assembly to recover the sleeve and activate the adhesive, recovery causing the adhesive to be displaced from the temporary restraining means and driven into the core of the cable at the bared section thereof.

4,500,372

METHOD AND APPARATUS FOR CUTTING WOVEN LABELS

Sergio Mion, Padua, Italy, assignor to A. Mion S.p.A. Nastrificio, Padua, Italy

Filed May 20, 1982, Ser. No. 380,068
Claims priority, application Italy, Dec. 10, 1981, 41703 A/81
Int. Cl.³ B29C *27/08;* B32B *31/18*
U.S. Cl. 156—73.3 **2 Claims**



1. A method for cutting woven labels from a ribbon of labels, said method comprising: feeding a ribbon of fabric labels woven from synthetic yarn to a cutting machine; guiding the labels to an ultrasonic wave cutting device; positioning each label between a first cutting element defining an ultrasonic wave emitter and, respectively, a second cutting element having a continuous closed cutting edge defining the outline of the label and having an opening within said closed cutting edge; pressing the label between the cutting elements and emitting an ultrasonic wave impulse, causing the simultaneous cutting of the label from the ribbon and the welding of the fabric around its cut edges; providing a tubular collector positioned below said second cutting element and in communication with said opening; and collecting said cut labels in said tubular collector.

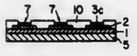
4,500,373

PROCESS FOR PRODUCING COINCIDENTLY EMBOSSED DECORATIVE SHEETS

Hajime Kubota, Kyoto, Japan, assignor to Dai Nippon Insatsu Kabushiki Kaisha, Japan

Filed May 4, 1982, Ser. No. 374,744
Claims priority, application Japan, Sep. 29, 1981, 56-154084; Feb. 8, 1982, 57-18539
Int. Cl.³ B32B *5/18, 31/00;* B29H *7/20;* D06N *7/04*
U.S. Cl. 156—79 **10 Claims**





1. A process for producing a decorative sheet with a concave pattern coincident with a design or color pattern, which comprises:

forming in sequence on a paper for decorative use a printed layer of ordinary ink having a desired pattern and then a printed layer of heat-foamable ink having a desired pattern thereby forming a layered product;

impregnating the layered product with a thermosetting resin liquid thereby forming a resin layer on the layered product;

drying the layered product with the resin layer thereby forming a dried layered product;

laminating the dried layered product with a substrate thereby forming a laminate sheet;

sandwiching the laminate sheet between a pair of heating plates and molding the laminate sheet by heating and pressing simultaneously curing the thermosetting resin and rendering, the laminate sheet into an integral structure by curing the resin layer, and simultaneously foaming the heat foamable ink by heating and pressing the laminate sheet, thereby forming cells;

coating the laminate sheet with a solvent such that the solvent is absorbed into said cells formed by the heat-foamable ink during the heating and pressing of the laminate and said cells swelling with the solvent, extending beyond the resin layer; and

rubbing the laminate sheet to remove said cells swollen by the solvent.

4,500,374

DISPLAY PANEL AND PROCESS FOR FORMING PATTERN THEREFOR

Shigeko Nakazima, 4-11-7, Nishiogi Minami, Suginami-ku, Tokyo, Japan

Filed Jul. 21, 1982, Ser. No. 400,382
Claims priority application Japan, Sep. 14, 1981, 56-145085
Int. Cl.³ B32B *31/02;* B44C *1/04;* C09J *5/00;* G09F *19/00*
U.S. Cl. 156—83 **12 Claims**



1. A process for forming patterns in accordance with transferring operations comprising the steps of forming on the surface of a transfer sheet a water - resistant retention film having there on a layer of a water - resistant printing ink formed into an arbitrary pattern, said retention film having affinity for said printing ink, said transfer sheet comprising a pulpboard sheet; bonding said transfer sheet to the surface of a substrate, with said retention film facing the surface of said substrate; applying a pulp dissolving solution on the pulpboard to dissolve said pulpboard; scraping the pulp of said pulpboard to leave said retention film and said printing ink layer on said substrate; expanding or shrinking at least one member of said substrate and said transfer sheet so as to coincide the pattern so formed on said substrate with the pattern on another transfer sheet; repeating the above described steps to transfer a plurality of printing ink layers on said substrate; and providing a colored film adhering closely to the surface of said printing ink layers thereon after completing the last transferring step.

4,500,375

COLD RECAPPING METHOD FOR TIRES UTILIZING UNCURED RUBBER

Leon C. Goldstein, Atlanta, Ga., assignor to An-Rix, Inc., Atlanta, Ga.

Filed Mar. 24, 1982, Ser. No. 361,403
Int. Cl.³ B29H *17/37, 5/04, 17/36*
U.S. Cl. 156—96 **11 Claims**

1. A cold tire recapping method utilizing uncured rubber and a prepared tire carcass comprising the steps of:

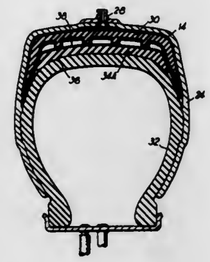
selecting a male mold that has the transverse contour wanted for the tread of the recapped tire and selected sidewall portions for the recapped tire and has the desired design and dimensions therefor,

building up on the male mold tread and selected sidewall portions a first layer of uncured rubber having cross-sectional dimensions appropriate for forming the tread and sidewall portions of the recapped tire,

removing the first layer from the male mold and wrapping the male mold tread and selected sidewall portions with perforated plastic film,

positioning a rectangle of stretchable cloth between the first layer and the film-covered male mold tread, the cloth dimensioned larger than the desired tread and sidewall portions of the recapped tire such that the longer opposing edges of the cloth fold over the top of the first layer and overlap,

molding the first layer and cloth against the male mold with heat and pressure for a period sufficient to mold and to cure the rubber in the first layer and secure the cloth to the entire surface thereof while simultaneously permitting air trapped between the first layer and the male mold and gases evolved from the first layer during curing to escape through the cloth, the cured first layer and cloth forming a flexible female mold with a cloth surface partially faced with plastic film,



removing the flexible female mold,

coating the buffed surface of the prepared tire carcass with an adhesive cement,

placing a second layer of uncured rubber on the buffed surface of the prepared tire carcass,

placing the female mold around the buffed tire carcass,

placing the tire carcass, cement, second layer, and female mold assembly in a flexible envelope, and

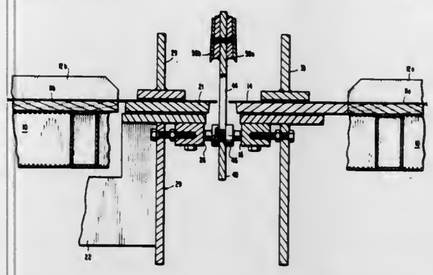
curing the second layer by applying heat and forcing the female mold against the second layer while venting the inner portion of the envelope to atmospheric pressure to allow gases trapped within the envelope to escape.

4,500,376

METHOD OF USING A VENEER BUTT-END SPLICER

John DeLigt, Covington, Va., assignor to Westvaco Corporation, New York, N.Y.

Division of Ser. No. 356,491, Mar. 9, 1982, Pat. No. 4,421,591. This application Jun. 9, 1983, Ser. No. 502,658
Int. Cl.³ B31F *5/00;* G03D *15/04*
U.S. Cl. 156—159 **4 Claims**



1. A method of joining ends of two finite length sheets of material having substantially the same thickness comprising the steps of:

a. longitudinally aligning said two sheets in the same plane with the ends to be jointed positioned over respective cutting edges of separated, parallel bed knives at a first position of separation and under respective cutting edges of a structurally unitized, vertically reciprocable shear knife in a pre-cut position, said bed knife and shear knive cutting edges being below and above each of said two sheets respectfully, and defining respective shear planes;

b. positionally securing said sheets to said bed knives in said alignment;

c. first moving said shear knife cutting edges unidirectionally in said respective shear planes against and through said sheets from said pre-cut position to a post-cut position clear of said sheets and bed knives;

d. while said reciprocable shear knive remains in said post-cut position, moving the cutting edge of one bed knife parallel along said sheet plane from said first separated edge position to a contiguous bed knive edge position in contiguous parallel alignment with the cutting edge of the other bed knife without disturbing the alignment of said sheets relative to said bed knife cutting edges;

e. adhesively applying lap splice material across a joint between said sheared sheet ends;

f. releasing said two sheets from said bed knives;

g. removing said joined sheets from within the two shear planes;

h. returning said bed knife edges from said contiguous edge position to a second separated edge position having a greater separation space than said first separated edge position; and

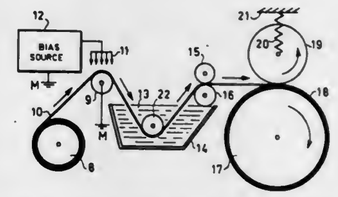
i. returning said shear knife edges to said pre-cut position.

4,500,377

PROCESS FOR THE PRODUCTION OF A BLOCK OF PIEZOELECTRIC MACROMOLECULAR MATERIAL

Dominique Broussoux; Hugues Facoetti; Pierre Ravinet; Daniel Bernard, and Francois Micheron, all of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Sep. 27, 1982, Ser. No. 424,292
Claims priority, application France, Dec. 31, 1981, 81 24560
Int. Cl.³ B32B *31/08*
U.S. Cl. 156—164 **21 Claims**



1. Process for the production of blocks of piezoelectric macromolecular material from a thin film utilised as an element of a monolithic multilaminar structure, said process comprising the steps of:

(a) cutting said film into a strip of uniform width;

(b) drawing said strip off a feed reel;

(c) conveying the strip, drawn off said feed reel according to step (b), to a receiving mandrel and rolling the strip onto said receiving mandrel thereby forming a multiturn roll having the said width;

(d) compressing the roll formed at said mandrel according to step (c) at right angles to said turns until a monolithic multilaminar structure is obtained; and

(e) cutting portions from the said roll to thereby form said blocks; wherein between steps (b) and (c) there are sequentially practiced the steps of:

(i) electrically polarizing the strip across its thickness; and

(ii) coating the strip electrically polarized according to step (i) with an adhesive on at least one surface of said strip by contacting said strip with a solution of said adhesive in a solvent.

4,500,378

PROCESS AND AN APPARATUS FOR PRODUCING WOODEN COMPONENTS DESIGNED FOR RESISTING FLEXURAL LOADS

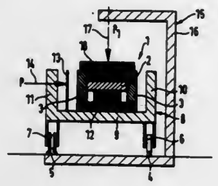
Werner Reppel, Gaggenau, and Claus Overlack, Gernsbach, both of Fed. Rep. of Germany, assignors to Casimir Kast GmbH & Co. KG, Gernsbach, Fed. Rep. of Germany

Filed Apr. 7, 1983, Ser. No. 482,990

Claims priority, application Fed. Rep. of Germany, May 14, 1982, 3218134

Int. Cl.³ C09J *31/00*; B32B *31/00*; B26D *5/00*

U.S. Cl. 156—160 **6 Claims**



1. A process for producing a wooden structural component having at least a first part and a second part comprising the steps of:

(a) prestressing said first part of the component by a linear force acting in the longitudinal direction thereof, said linear force being a pulling force;

(b) loading said second part of the component with a compressive force; and

(c) bonding said first part to said second part while said first part and said second part of the component are being acted upon by said pulling force and said compressive force to thereby flexually load said component.

4,500,379

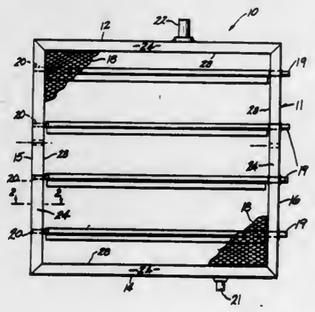
METHOD OF MAKING A COMPOSITE FIBER REINFORCED PLASTIC FRAME

James M. Ford; Robert A. Dean; Kenneth E. Woodard, Jr., all of Cleveland, Tenn., and Antonio Branco, Prospect, Ky., assignors to Olin Corporation, Cheshire, Conn.

Division of Ser. No. 402,200, Jul. 26, 1982, Pat. No. 4,439,298. This application Aug. 25, 1983, Ser. No. 526,309

Int. Cl.³ B65H *81/00*

U.S. Cl. 156—172 **4 Claims**



1. A method of making a composite reinforced plastic frame for use in a monopolar filter press type of electrolytic cell comprising the steps of:

(a) selecting a corrosion resistant liner of predetermined thickness and composition, the liner further having a first side face, a second opposing generally parallel side face and a third side face interconnecting the first side face and the second side face face to thereby form an open-topped channel of predetermined thickness and height;

(b) fastening at least four predetermined lengths of the liner together at corners to form a generally rectangularly shaped shell frame having a top member, a bottom member, and two opposing side members, the shell frame further having the open-topped channel facing outwardly about the periphery;

(c) mounting the shell frame on a rotatable jig having uniformly spaced side walls and base walls;

(d) impregnating glass fiber roving with a catalyzed thermosetting resin;

(e) winding the impregnated glass fiber roving about the shell frame within the channel in layers while the frame is rotated on the jig;

(f) inserting reinforcing means during winding of the glass fiber roving at each corner of the frame;

(g) applying a predetermined amount of pressure against the impregnated glass fiber roving along the open-topped channel about the periphery;

(h) curing the impregnated glass fiber roving; and

(i) removing the frame from the jig.

4,500,380

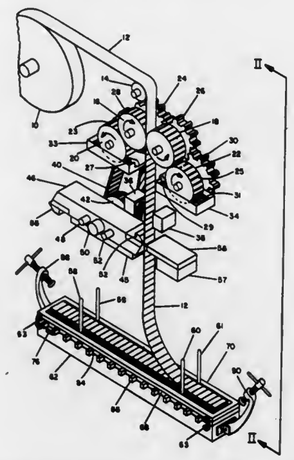
METHOD AND APPARATUS FOR CONTINUOUS PRODUCTION OF EXPANDABLE HONEYCOMB

Joseph D. Bova, 2104 Harford Rd., Fallston, Md. 21047

Filed Dec. 19, 1983, Ser. No. 563,199

Int. Cl.³ B31D *3/02*

U.S. Cl. 156—197 **14 Claims**



1. A method of forming an expanded honeycomb panel comprising the steps of:

a. printing laterally extending and linearly spaced first lines of adhesive on a first side of a moving strip of narrow material;

b. printing laterally extending and linearly spaced second lines of adhesive on a second side of said strip opposite said first side with said second lines being evenly linearly offset with respect to said first lines;

c. transversely notching said strip in parallel with said lines of adhesive at intervals along its length to form succeeding portions of said strip of a desired length between said notches;

d. fan folding succeeding portions of said strip to form a collapsed panel of said succeeding portions;

e. securing a first of said succeeding portions to a first spreading means and securing a last of said succeeding portions to a second spreading means spaced from said first spreading means;

f. heating said first and last succeeding portions in an amount and for such time sufficient to cure all of said adhesive lines between said succeeding portions of said collapsed panel to bond said succeeding portions to each other in the area of said adhesive lines; and

g. spreading said first and second spreading means apart to expand said collapsed panel to form an expanded honeycomb panel.

4,500,381

METHOD AND APPARATUS FOR MAKING MULTIPLE PLY PAPERBOARD

Duane M. Nordstrom, Kelso, Wash., assignor to Longview Fibre Company, Longview, Wash.

Filed Apr. 20, 1983, Ser. No. 486,788

Int. Cl.³ B31F *1/20*; B32B *31/12*

U.S. Cl. 156—205 **17 Claims**



1. A method of making multiple ply paperboard comprising applying glue to a surface of predetermined ones of paperboard sheets as they move between a cut-off section and a stacker section of paperboard making apparatus, and stacking the paperboard sheets one upon another at the stacker section and allowing the glue to bond the associated group of paperboard sheets together throughout substantially their entire areas.

4,500,382

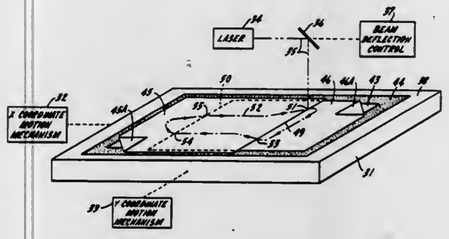
METHOD OF MANUFACTURE OF RESIN FILM PRECISION BIOMEDICAL ARTICLE

William J. Foster, Chicago, Ill., assignor to Transilwrap Company, Inc., Chicago, Ill.

Filed Jun. 10, 1983, Ser. No. 503,347

Int. Cl.³ B29C *19/02*

U.S. Cl. 156—272.8 **9 Claims**



1. The method of manufacture of a precision article for biomedical use, such as a corneal implant glide, of the kind comprising first and second overlapping resin film members, each having a preselected thickness and a precise predetermined size and configuration, with the overlapping portions of the two resin film members corresponding in size and configuration and joined together along one or more mating edges, comprising the following steps:

A. aligning a first resin film, having a thickness corresponding to that required for the first film member but larger in area than the first film member, in at least partially overlapping relation to a second resin film, having a thickness corresponding to that required for the second film member but larger in area than the second film member, the overlapping portions of the two films being larger in area than the overlapping portions of the resin film members of the article;

B. constraining the two resin films to maintain areas of the two aligned films larger than the finished article in essentially flat, surface-to-surface contact, exposed from one side;

C. directing a laser beam having a maximum cross-sectional dimension no larger than the combined thicknesses of the two resin films, to impinge upon the exposed area of the aligned, constrained films; and

D. moving the laser beam relative to the exposed areas of the aligned, constrained films, along a predetermined path corresponding precisely to the size and configuration of the peripheral outline of the finished article to cut the two resin film members from the resin films and simultaneously to weld the resin film members together, in a narrow, controlled band not appreciably wider than the combined thicknesses of the two resin films, along their mating edges.

4,500,383

PROCESS FOR BONDING COPPER OR COPPER-CHROMIUM ALLOY TO CERAMICS, AND BONDED ARTICLES OF CERAMICS AND COPPER OR COPPER-CHROMIUM ALLOY

Yoshiyuki Kashiwagi, and Tsutai Suzuki, both of Shinagawa, Japan, assignors to Kabushiki Kaisha Meidensha, Tokyo, Japan

Filed Feb. 8, 1983, Ser. No. 465,043

Claims priority, application Japan, Feb. 18, 1982, 57-24758; Mar. 4, 1982, 57-34247

Int. Cl.³ B29C *17/00*

U.S. Cl. 156—285 **13 Claims**

1. A process for bonding a copper body and a ceramic body to each other, said ceramic body having a melting point higher than that of copper, said process comprising the steps of:

directly sandwiching a layer of chromium oxide between the copper and ceramic bodies;

heating a temporary assembly of the ceramic and copper bodies and the chromium oxide in an atmosphere in which copper will not oxidize, at a temperature of at least 900° C. but below the melting point of copper; and then

slowly cooling the resulting bonded assembly in which a bonded portion of the copper body is plastically deformed.

4,500,384

PROCESS FOR PRODUCING A NON-WOVEN FABRIC OF HOT-MELT-ADHERED COMPOSITE FIBERS

Susumu Tomioka, and Masahiko Taniguchi, both of Shigaken, Japan, assignors to Chisso Corporation, Osaka, Japan

Filed Feb. 2, 1983, Ser. No. 463,074

Claims priority, application Japan, Feb. 5, 1982, 57-17126

Int. Cl.³ D02G *3/00*; D04H *1/54, 1/56*; B32B *27/02*

U.S. Cl. 156—290 **5 Claims**

1. A process for producing a soft and light-weight non-woven faric of hot melt adhered fibers, which mainly comprises:

(A) forming a web of fiber aggregate consisting of:

(1) sheath-and-core composite fibers alone

the core component of said composite fibers being a fiber-formable polymer,

the sheath component having an average thickness of 1–4 microns comprising at least one polymer having a melting point at least 30° C. lower than that of said core component, or

(2) mixed fibers of said sheath-and-core composite fibers with other fibers containing said composite fibers in an amount of at least 20% by weight based on the total amount of said mixed fibers,

(B) imparting crimps to the sheath-and-core type composite fibers, and

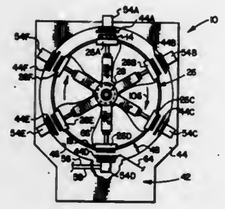
(C) subjecting said web of fiber aggregate to a heat treatment at a temperature which is lower than the melting point of said core component and equal to or higher than the melting point of said sheath component, and which affords to said sheath component an apparent viscosity of 1×10^3 to 5×10^4 poises as measured at a shear rate of 10 to 100 sec^{-1}, to thereby stabilize the form of said web of fiber aggregate by way of the hot-melt adhesion of said sheath component.

4,500,385

LUMBER ASSEMBLY MACHINE

Dennis H. Waggoner, 11960 Forestwood Dr., Dallas, Tex. 75234

Filed Apr. 6, 1984, Ser. No. 597,712
Int. Cl.³ B32B *19/02, 31/00;* B31F *5/00;* B65H *29/00*
U.S. Cl. 156—380.4 **2 Claims**



1. Apparatus for curing adhesive applied to the union of two boards of lumber mated end-to-end in a finger joint union comprising, in combination:

a stator assembly having an opening for receiving a rotor, said stator also having a plurality of electrode plates disposed at spaced locations around said opening thereby defining a plurality of curing stations;

a rotor assembly having a plurality of electrode plates disposed at angularly spaced locations within said stator opening in axial alignment with said stator electrode plates, the number and spacing of said rotor electrode plates corresponding with the nunber and spacing of said stator electrode plates; means for moving the plurality of stator electrode plates into compressive engagement with the finger joint union of two boards disposed intermediate said rotor stator electrode plates at each curing station when said rotor electrode plates are in radial alignment with said stator electrode plates, all of said rotor and stator electrode plates being adapted to conduct electrical current through said finger joint union.

4,500,386

CONTAINER FEED FOR LABELING MACHINE

Wolfgang Hoffman, Modesto, Calif., assignor to B & H Manufacturing Company, Inc., Ceres, Calif.

Continuation of Ser. No. 783,285, Mar. 31, 1977, abandoned. This application Apr. 18, 1983, Ser. No. 485,754
Int. Cl.³ B32B *31/00*
U.S. Cl. 156—449 **4 Claims**

1. Labeling apparatus comprising:

(a) a cylindrical rotary label transport and a rotary container transport-label applicator rotating about parallel axes

(b) means for rotating such label transport and container transport-label applicator in opposite directions about their parallel axes

said label transport being adapted, as it rotates, to pick up labels at a label pick up station, to transport each label on its cylindrical surface and to release each label at a label applying station

said container transport-label applicator having angularly spaced, peripheral pockets each adapted to cradle a cylindrical container with its cylinder axis parallel to the axis of the label transport and the axis of the container transport-label applicator, the outermost surface of each cradled container, as it rotates about the axis of the container transport-label applicator, describing a segment of a cylinder which is concentric to the axis of the container transport-label applicator

said label transport and container transport-label applicator being spaced apart by a gap such that each container, as it passes into such gap, is tangent to the label transport

(c) an upstream container guide disposed with its downstream terminus substantially tangent to said label transport, such upstream guide acting to hold each cradled container in its pocket until said container reaches such gap, is tangent to the label transport and picks up and adheres to the leading edge of the label at the labeling station and

(d) a downstream container guide and label applicator concentric to the axis of the label transport, such guide and applicator being spaced from the label transport and located so that it will extract each container, in turn, from its pocket with the leading end of a label attached to its surface and will roll the container on the label transport to wrap the respective label about it;

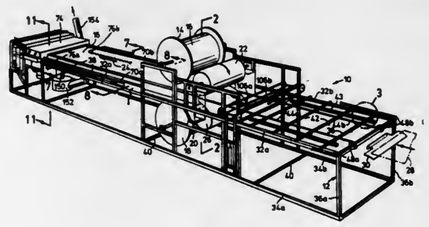
such upstream container guide, container transport-label applicator, downstream container guide and label transport causing each container to traverse an S-shaped path, the initial part of which is formed by the upstream guide and container transport-label applicator and is concave to the container transport-label applicator, the terminal part of such path is formed by the downstream guide and label transport and is concave to the label transport and the portion of such path at the inflection of the S being located at said gap, whereby each container is caused to pass smoothly through such path under continuous positive control by the elements forming such path.

4,500,387

LAMINATING APPARATUS WHEREIN SHEETS TO BE BONDED FORM HEATING CHAMBER

Lloyd Embury, Islington, Canada, assignor to Embury Company, Downsview, Canada

Filed May 6, 1983, Ser. No. 492,316
Claims priority, application Canada, Feb. 8, 1983, 421096
Int. Cl.³ B32B *31/00*
U.S. Cl. 156—499 **8 Claims**



1. A laminating machine for laminating two outer sheets to an inner sheet, all said sheets having the same width, said machine comprising:

(1) means for supporting said outer sheets in spaced apart parallel opposed relation with the side edges of said outer sheets aligned, for travel of said outer sheets together along a direction of travel;

(2) means for supporting said inner sheet between and spaced from said outer sheets and parallel thereto with the side edges of said inner sheet aligned with those of said outer sheet, for travel of said inner sheet along said direction of travel;

(3) motive means for moving all three said sheets in unison along said direction of travel;

(4) side cover means enclosing said side edges of said three sheets to form a chamber, the top and bottom walls of said chamber being constituted by such moving outer sheets;

(5) means for applying a solvent-containing contact adhesive to said sheets to coat at least some of the opposed surfaces of said sheets for said sheets to be adhered together;

(6) means for providing heat within said chamber to dry said adhesive;

(7) means for exhausting solvent laden air from said chamber, and

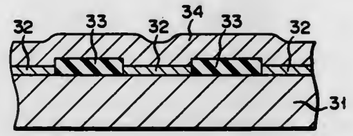
(8) means to pinch said outer sheets together onto said inner sheet to secure said sheets together.

4,500,388

METHOD FOR FORMING MONOCRYSTALLINE SEMICONDUCTOR FILM ON INSULATING FILM

Yamichi Ohmura, Sagamihara, and Yoshiaki Matsushita, Kawasaki, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Nov. 29, 1982, Ser. No. 445,265
Claims priority, application Japan, Nov. 30, 1981, 56-190628
Int. Cl.³ C30B *1/04*
U.S. Cl. 156—603 **12 Claims**



1. A method for forming a monocrystalline semiconductor film on an insulating film, comprising the steps of:

selectively forming at least one insulating film which has sides substantially perpendicular to <100> or <211>-axes, contiguous to a cubic crystal system monocrystalline semiconductor substrate;

forming an amorphous film of a cubic crystal system semiconductor material to cover an exposed surface of said substrate and said insulating film; and

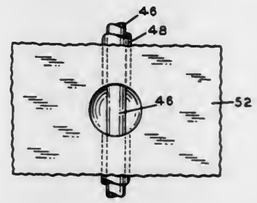
annealing said amorphous semiconductor film under a condition such that said amorphous film is grown from said substrate by solid-phase epitaxial growth, thereby converting said amorphous film to a monocrystalline semiconductor film having a crystal lattice continuous to that of said substrate.

4,500,389

PROCESS FOR THE MANUFACTURE OF SUBSTRATES TO INTERCONNECT ELECTRONIC COMPONENTS

Charles L. Lassen, Cold Spring Harbor, N.Y., assignor to Kollmorgen Technologies Corporation, Dallas, Tex.

Filed Apr. 14, 1981, Ser. No. 254,132
Int. Cl.³ B44C *1/22*
U.S. Cl. 156—643 **32 Claims**



1. A process for providing substrates on which to mount and interconnect high density components, the steps comprising:

(a) applying and affixing filaments in a preprogrammed pattern to a base, said filaments baving at least one conductive portion;

(b) applying a substantially smooth, flat planar coating over said filaments and said base for the purpose of maintaining the position of the filaments and for providing a surface suitable for mounting surface-mounted components;

(c) at desired locations on said planar surface, forming at least one cavity, penetrating said coating and substantially exposing the conductive portion of said filaments while maintaining the integrity of said filaments; and

(d) providing an interfacing means between said exposed conductive portion of the filaments and the external surface of said planar coating.

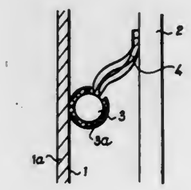
21. A process, as recited in claim 1, in which said penetration is achieved with a high energy beam.

4,500,390

ELASTIC SCRAPER FOR HIGH-CAPACITY FILM DEVICE

Alexander Tkac, and Jan Cvengros, both of Bratislava, Czechoslovakia, assignors to Slovenska vysoka skola technika, Bratislava, Czechoslovakia

Continuation-in-part of Ser. No. 266,761, Jan. 22, 1981, abandoned. This application Sep. 30, 1982, Ser. No. 431,120
Claims priority, application Czechoslovakia, Feb. 4, 1980, 721-80
Int. Cl.³ B01D *1/22*
U.S. Cl. 159—6.1 **10 Claims**



1. An elastic scraper for a high-capacity film device having a liquid heating means in the form of a shell with a circular cross-section, said shell having a circular cylindrical heating surface on which there is formed a liquid film which is wiped by said scraper, the scraper comprising a plurality of supporting rods with wiper segments mounted thereon, the wiping segments being held from above on their respective supporting rod, an elastic coupling connected at its upper end to the

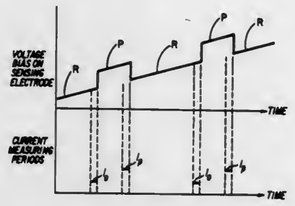
supporting rod and at its lower end to the wiping segment and means for mounting said scraper in said high-capacity film device.

4,500,391

METHOD OF AND SYSTEM FOR REAL TIME DIFFERENTIAL PULSE DETECTION

John C. Schmidt, Baltimore; Clifton A. Sands, Oxon Hill, and Donald N. Campbell, Timonium, all of Md., assignors to Allied Corporation, Morristown, N.J.

Filed Oct. 13, 1983, Ser. No. 541,631
Int. Cl.³ G01N *27/48*
U.S. Cl. 204—1 T **24 Claims**



1. A system for detecting a gas in an environment comprising an electrochemical detection cell having a reference electrode, a counter electrode and a sensing electrode; said reference electrode and said counter electrode spaced apart from each other and from said sensing electrode, an electrolyte in contact with said reference electrode, counter electrode and sensing electrode, a membrane having a first surface exposed to said environment for passing said gas in said environment through said membrane to said sensing electrode, an operational amplifier having an output terminal, an inverting input terminal and a non-inverting input terminal, said output terminal being coupled to said counter electrode, said reference electrode being coupled to one of said input terminals; means for applying a fixed D.C. voltage bias to the other of said input terminals; means for applying at least one differential D.C. voltage pulse to said other input terminal to superimpose same on said fixed D.C. voltage bias to provide a corresponding differential D.C. voltage pulse on its output terminal, and means coupled to said sensing electrode and responsive to current therefrom for determining difference in Faradaic currents produced during a period before application of the differential D.C. voltage pulse and a period before termination thereof as an indication of presence of a given gas.

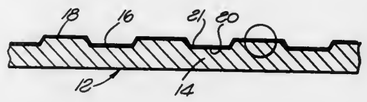
23. A method for detecting a gaseous agent in an ambient with an electrochemical detection cell having a sensing electrode, a counter electrode and a reference electrode, said reference electrode and said counter electrode spaced apart from each other and from said sensing electrode and having an electrolyte in contact with said reference electrode, counter electrode and sensing electrode, comprising the steps of exposing said ambient to one side of a membrane capable of passing said gaseous agent, exposing said sensing electrode with the gas passing through said membrane, applying a fixed D.C. voltage bias to the counter electrode for supplying electrical current through said electrolyte to said sensing electrode to maintain a predetermined potential at said reference electrode, superimposing at least one differential D.C. voltage pulse on the fixed D.C. voltage bias and determining the difference between Faradaic signals produced from the sensing electrode during a period before superimposing the differential D.C. voltage pulse and in a period before termination of the differential D.C. voltage pulse.

4,500,392

STAMPER AND METHOD FOR INJECTION MOLDING INFORMATION BEARING MEMBER

Gary G. Slaten, Tucson, Ariz., assignor to Discovision Associates, Costa Mesa, Calif.

Division of Ser. No. 505,565, Jun. 17, 1983,. This application May 16, 1984, Ser. No. 611,049
Int. Cl.³ C25D *1/10, 1/20*
U.S. Cl. 204—5 **8 Claims**



1. A method for producing an improved metallic stamper against which an optically-readable information bearing member may be formed, comprising the steps of:

preparing an information bearing surface on a substrate having the information contained therein in the form of surface discontinuities;

vacuum depositing a conductive coating over the information bearing surface of the substrate of sufficient thickness to be conductive over the entire information bearing surface;

electroplating nickel material onto said conductive coating, thereby forming a relatively thick nickel stamper base having an information bearing surface complementary to that of said substrate;

separating the nickel stamper from the substrate; and

depositing, by electroplating in an electrolyte bath, a relatively thin layer of chromium over said complimentary information bearing surface of said stamper base, said depositing step including the steps of:

maintaining the electrolyte bath temperature at 40° C. to 50° C.;

establishing a current density within the electroplating bath in the range of 0.250 to 2.00 amps/cm²; and

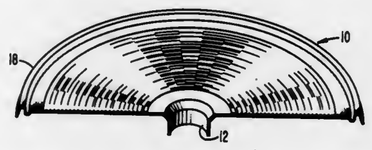
performing said depositing step for a time in the range of 10 to 40 seconds.

4,500,393

METHOD FOR THE MANUFACTURE OF RECORD STAMPERS

Donald J. Wierschke, Brownsburg, Ind., assignor to RCA Corporation, New York, N.Y.

Filed Apr. 30, 1984, Ser. No. 605,240
Int. Cl.³ C25D *1/10*
U.S. Cl. 204—5 **6 Claims**



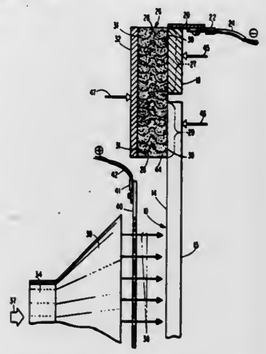
1. The method for the manufacture of a record stamper having a formed inner edge of a first predetermined configuration, a recorded section having a negative copy on an information track defined therein, and a formed outer edge of a second predetermined configuration; said method comprising the sequential the steps of: forming a matrix having a flat inner section, a recorded portion having positive copy of the information track defined therein, and a flat outer section; shaping the flat inner section into a form which is a mirror image of the first predetermined configuration; shaping the flat outer section into a form which is the mirror image of the second predetermined configuration; after the inner and outer sections of the matrix are shaped, electroforming a metal on the matrix in a preselected thickness required for the stamper; and separating the resulting stamper from the matrix, whereby a stamper is obtained having electroformed inner and outer edges of the predetermined configurations.

4,500,394

CONTACTING A SURFACE FOR PLATING THEREON

John S. Rizzo, Birdsboro, Pa., assignor to AT&T Technologies, Inc., New York, N.Y.

Filed May 16, 1984, Ser. No. 610,737
Int. Cl.³ C25D *5/02, 17/08*
U.S. Cl. 204—15 **12 Claims**



1. Apparatus for plating on a first surface of an article comprising:

a conductor disposed adjacent to the first surface and means for connecting said conductor to a source of electrical current;

means for contacting the conductor and the first surface, including a first portion in contact with the conductor and a second portion in contact with the first surface, each of said portions having a substantially nonconductive matrix supporting a plurality of conductive elements having first and second ends, said first ends of elements in the first portion being in contact with the conductor and said first ends of elements in the second portion being in contact with the first surface; and

at least one coupling member in contact with and interconnecting the second ends of the conductive elements in the first and second portions of the contact means thereby completing conductive paths from the conductor through the elements of the first portion to the coupling member and therefrom through the elements of the second portion to the first surface.

4,500,395

METHOD OF PRODUCING ELECTRODE FOR LIQUID FUEL CELL

Masashi Nakamura, Miura, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

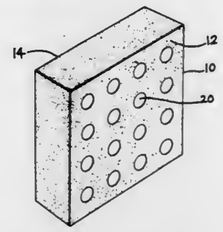
Filed May 2, 1983, Ser. No. 490,955
Claims priority, application Japan, Nov. 5, 1982, 57-193318
Int. Cl.³ B01J *23/38, 35/02*
U.S. Cl. 204—284 **11 Claims**

1. A method of producing an electrode for a liquid fuel cell, comprising the steps of:

(a) depositing a noble metal onto a porous electrode body comprising carbon to coat and impregnate said electrode body with said noble metal;

(b) immersing said electrode body coated and impregnated with said noble metal in a solution containing ions of a base metal for at least 5 minutes to sufficiently diffuse said solution into the pores in said electrode body;

(c) after step (b) activating said noble metal deposited on said electrode body by changing the arrangement of the atoms of said noble metal on the surface of said electrode body to an unstable state; and



(d) thereafter depositing said base metal onto the surface of said electrode body already coated with said noble metal while said noble metal remains in the activated state.

4,500,396

COPPER RECOVERY PROCESS

Vincent F. D'Agostino, 4 Greenland Dr., Huntington Station, N.Y. 11746; Joseph Y. Lee, 911 Hawkins Ave., Lake Grove, N.Y. 11755; Stephen Zapisek, 12 Vandorn St., Huntington Station, N.Y. 11746, and George Schore, 45 Hillpark Ave., Great Neck, N.Y. 11021

Filed Jan. 26, 1984, Ser. No. 574,048
Int. Cl.³ C25C *1/12*
U.S. Cl. 204—107 **24 Claims**

1. A method of metal recovery comprising;

(a) forming a weakly-acidic cation-exchange material by radiation-grafting vinylic or ethylenic monomers comprising carboxylic acid functional groups to a polymeric felt substrate to the extent of 10–1500%;

(b) converting the carboxylic acid groups to the corresponding carboxylate salt groups; and

(c) contacting the cation-exchange material with an alkaline aqueous solution comprising ammoniated metal cations so as to form a complex between the cations and the carboxylate groups, thereby removing the cations from solution.

4,500,397

METHOD FOR THE PREPARATION OF A PYROELECTRIC MATERIAL

Toshio Mori, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

PCT No. PCT/JP82/00290, § 371 Date Mar. 24, 1983, § 102(e) Date Mar. 24, 1983, PCT Pub. No. WO83/00404, PCT Pub. Date Feb. 3, 1983
PCT Filed Jul. 27, 1982, Ser. No. 478,556
Claims priority, application Japan, Jul. 27, 1981, 56-117551; Jul. 29, 1981, 56-117806; Jul. 29, 1981, 56-117807
Int. Cl.³ C25D *13/02, 13/20*
U.S. Cl. 204—181 T **14 Claims**

13. A method for the preparation of a complex pyroelectric structure comprising:

dispersing crystalline pyroelectric particles between an opposing pair of electrodes,

establishing an electric field between said electrodes with a sufficient magnitude to cause said particles in the dispersion to be deposited in a layer on one of said electrodes,

changing the temperature of said particles before deposition of said particles on said one electrode, the temperature change being sufficient to orient the pyroelectric axes of the crystal particles in the deposited layer and

impregnating binder material into the layer of the pyroelectric structure thus produced.

4,500,398

PRODUCTION OF LEAD FROM SULFIDES

Ernest R. Cole, Jr., Newburg; Agnes Y. Lee, and Danton L. Paulson, both of Rolla, all of Mo., assignors to The United States of America as represented by the Secretary of the Interior, Washington, D.C.

Filed Jun. 20, 1984, Ser. No. 622,515
Int. Cl.[3] C25C 1/18
U.S. Cl. 204—117 9 Claims

1. A method for the recovery of lead from sources of lead which also contain sulfur, which comprises the steps of:
(a) reacting the sulfur-containing lead source with a fluosilicic acid solution in the presence of an oxidizing agent to produce a solution containing lead fluosilicate and a residue containing elemental sulfur; and
(b) subjecting the lead fluosilicate solution to electrolysis to produce lead and fluosilicic acid.

4,500,399

METHOD OF PRODUCING METAL-FILLED ORGANIC COATING

Robert G. Hart, Bethlehem, and Herbert E. Townsend, Center Valley, both of Pa., assignors to Bethlehem Steel Corporation, Bethlehem, Pa.

Filed Sep. 20, 1983, Ser. No. 534,010
Int. Cl.[3] C25D 13/20, 13/04
U.S. Cl. 204—181 C 9 Claims

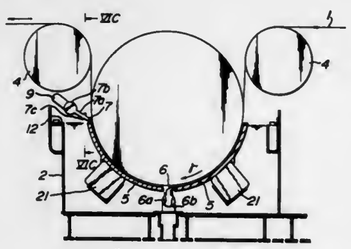
1. In a method of electrophoretically coating a weldable composite ferrous substrate which includes the steps of selecting a ferrous substrate whose surface has been suitably cleaned of grease and oxides, applying to such surface an organic coating having dispersed therein a particulate metal, which coating has been applied to a depth of between about 0.5 to 1.0 mil, and curing such metal-filled organic coating through heating and quenching, the improvement comprising in combination therewith the steps of selecting said particulate metal from the group consisting of Al, Ni, Cr, Fe, Mn, Cu, Mo, Co, Ag, Au and alloys thereof and subjecting the thus coated product to cathodic electrophoretic coating at an applied voltage of at least 300 V.

4,500,400

COUNTER FLOW DEVICE FOR ELECTROPLATING APPARATUS

Akira Komoda; Yasuhiro Hirooka; Takahisa Yoshihara, and Akira Matsuda, all of Chiba, Japan, assignors to Kawasaki Steel Corporation, Kobe, Japan

Filed Jul. 3, 1984, Ser. No. 627,394
Claims priority, application Japan, Oct. 7, 1983, 58-186883
Int. Cl.[3] C25D 17/00
U.S. Cl. 204—206 9 Claims



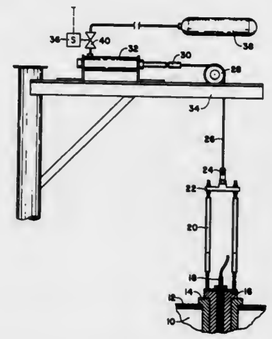
1. A counter flow device for a plating apparatus including a rotary drum with its substantially half part immersed in a plating solution in a plating bath about said drum a metallic strip to be plated passing in synchronism with rotation of said rotary drum and anodes spaced apart by radial gaps from the strip for causing electric current to flow between said strip and the anodes, said device comprising a bottom nozzle arranged at a bottom of the bath and having a nozzle opening directing in a direction substantially opposite to an entering direction of said strip thereat and a top nozzle having a nozzle opening whose tip end is immersed in the proximity of a surface of said plating solution at a location where the strip leaves the plating solution.

4,500,401

ANODE RETRACTION DEVICE FOR A HALL-HEROULT CELL EQUIPPED WITH INERT ANODES

James M. Clark, Johnson City; Duane R. Secrist, Elizabethton; Scotty L. Hardin, Elizabethton, and Stephen C. McEntyre, Elizabethton, all of Tenn., assignors to Great Lakes Carbon Corporation, New York, N.Y.

Filed Dec. 27, 1983, Ser. No. 565,925
Int. Cl.[3] C25C 3/10, 7/06
U.S. Cl. 204—225 3 Claims



1. A device for the automatic partial or complete retraction of an inert anode from the bath in a Hall-Heroult cell when electrical power to said cell is interrupted comprising, in combination, a compressed air reserve power source mechanically linked remotely to the anode by a pneumatic actuator which is controlled by electrical power interruption sensing means, said sensing means comprising a direct current solenoid operated valve which during normal operation is energized to the closed position by a D.C. power supply and following a power failure is energized by a battery operated circuit which contains a mechanical or electrical time delay mechanism, said time delay mechanism set to open the solenoid valve a predetermined period after electrical power is interrupted to said cell, admitting air to said actuator from said power source to retract said anode.

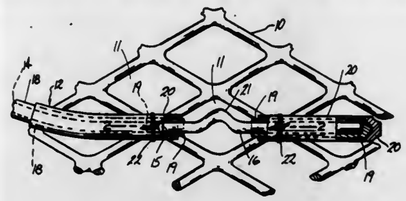
4,500,402

REFERENCE ELECTRODE

Ronald C. Miles, Cleveland; George W. Geren, Georgetown, and R. W. Peel, Tellico Plains, all of Tenn., assignors to Olin Corporation, Cheshire, Conn.

Filed Apr. 29, 1982, Ser. No. 373,204
The portion of the term of this patent subsequent to Mar. 5, 2002, has been disclaimed.
Int. Cl.[3] G01N 27/30
U.S. Cl. 204—242 44 Claims

1. An electrolytic cell having a wire reference electrode immersed in an electrolyte solution for use in the electrolytic cell, the cell having at least a first foraminous cathode surface with foramens of a predetermined height and a second foraminous anode surface with foramens of a predetermined height separated by an ion-selective permeable separator, the combination comprising:
a. a lead-in wire of predetermined size and composition, the lead-in wire being connectable to a voltmeter;
b. a reference wire portion connected to the lead-in wire at a first location, the reference wire portion being of a predetermined size and composition and extending along and at least partially into a foramen;
c. sealing means for sealing the lead-in wire, the first location



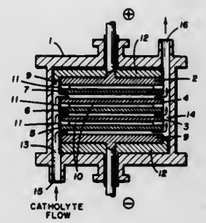
and at least a portion of the reference wire portion from the electrolyte solution; and
d. heat shrink means collapsed about the sealing means to cover at least a portion of the sealing means when subjected to a predetermined level and manner of heating.

4,500,403

DIVIDED ELECTROCHEMICAL CELL ASSEMBLY

Christopher J. H. King, Pensacola, Fla., assignor to Monsanto Company, St. Louis, Mo.

Filed Jul. 8, 1983, Ser. No. 511,810
Int. Cl.[3] C25B 9/00, 11/02
U.S. Cl. 204—255 4 Claims



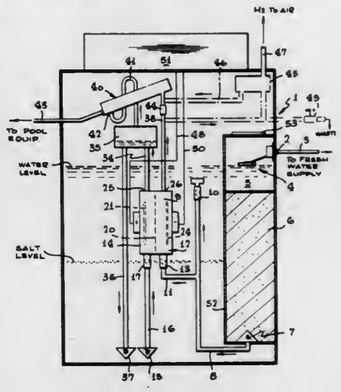
1. A divided electrochemical cell assembly comprising an essentially cylindrical electrolytic chamber having interior periferal walls, a plurality of stacked bipolar substantially square parallel planar electrodes and membranes so arranged within the chamber that each pair of one electrode and one adjacent membrane defines an electrolyte channel with alternating channels being anolyte channels and alternating channels being catholyte channels and that the corners and edges of the electrodes and membranes in juxtaposition with the interior periferal walls of the chamber define four electrolyte circulating manifolds, means for applying a direct current across the stack of electrodes, means for introducing catholyte at one side of the cylinder and into one of the manifolds, means for withdrawing the catholyte from one other manifold, means for exiting the catholyte at the opposite side of the cylinder from the catholyte introduction, and channeling and insulative spacer means comprising at least two spacers between and along the edges of each catholyte channel; means for introducing anolyte at another side of the cylinder and into another of said manifolds, means for withdrawing anolyte from another manifold, means for exiting anolyte at the opposite side of the cylinder from the anolyte introduction and channeling and insulative spacer means comprising at least two spacers between and along the edges of each anolyte channel.

4,500,404

CHLORINE GENERATOR DEVICE

Daniel Tucker, 1981 Chateau Ct., Walnut Creek, Calif. 94598

Filed Dec. 21, 1981, Ser. No. 332,957
Int. Cl.[3] C25G 1/34, 15/02
U.S. Cl. 204—266 3 Claims



1. A chlorine generating device comprising;
a tank containing a saturated solution of sodium chloride; an electrolytic cell submerged therein;
said cell containing an ion selective membrane separating anode and cathode compartments such that a brine solution is present only on said anode compartment of said cell;
a water softening means to supply hardness free water to make up said brine solution as well as to be directly supplied to said cathode compartment of said cell; and
a source of direct current, the positive output thereof connected to an anode electrode of said cell and the negative output to a cathode electrode of said cell.

4,500,405

CATHODE FOR ELECTROLYZING ACID SOLUTIONS AND PROCESS FOR PRODUCING THE SAME

Hisoshi Asano, Chiba; Takayuki Shimamune, Tokyo; Toshiki Goto, and Masashi Hosonuma, both of Kanagawa, all of Japan, assignors to Permelec Electrode Ltd., Kanagawa, Japan

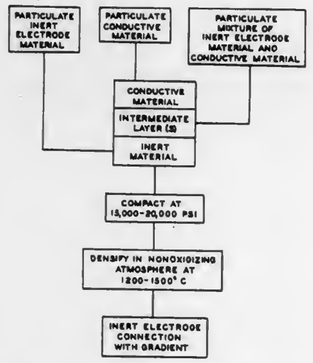
Continuation of Ser. No. 416,512, Sep. 9, 1982, abandoned. This application Jan. 9, 1984, Ser. No. 568,515
Claims priority, application Japan, Sep. 22, 1981, 56-148698
Int. Cl.[3] C25B 11/10
U.S. Cl. 204—290 F 8 Claims

1. A cathode for electrolyzing acid solutions which comprises
an electrically conductive metal substrate,
a spray coated layer of a cathode active material containing tungsten, tungsten carbide or a mixture thereof in an amount of 10% by weight or more on said substrate, and
an impregnation coated layer of 1 g/m^2 or more of an acid-resistant fluorine containing resin on the outside surface of said spray coated layer of cathode active material wherein portions of said cathode active material are left exposed.

4,500,406
INERT ELECTRODE CONNECTION

John D. Weyand, Greensburg; Robert W. Woods, New Kensington; David H. DeYoung, and Siba P. Ray, both of Plum Boro, all of Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.

Filed Dec. 12, 1983, Ser. No. 560,602
Int. Cl.³ C25B *11/04*
U.S. Cl. 204—293 17 Claims

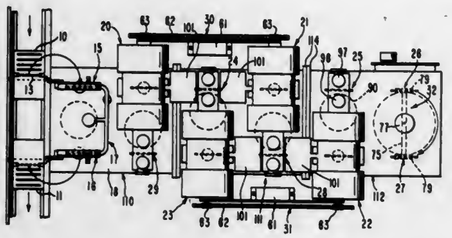


1. An inert electrode suitable for use in an electrolytic reduction cell for the production of aluminum characterized by good electrical conductivity and substantial inertness to the electrolyte in the molten salt bath comprising an interwoven network of a nickel-iron alloy and at least one nickel-iron oxide and having an electrical-mechanical connection thereto capable of carrying electrical current between said electrode and a source of current; said electrical-mechanical connection comprising a first portion consisting essentially of said inert electrode material, a second portion comprising a conductive metal material selected from the class consisting of nickel and nickel-iron alloys, and at least one region therebetween comprising an electrically conductive gradient of said inert electrode material and said conductive metal material whereby a continuous conductive path of nickel/nickel-iron material will extend from said conductive metal into said molten salt bath while said oxides dispersed throughout the inert electrode will provide sufficient inertness to protect the conductive portions.

4,500,407
DISK OR WAFER HANDLING AND COATING SYSTEM

Donald R. Boys, Cupertino, and Walter E. Graves, San Jose, both of Calif., assignors to Varian Associates, Inc., Palo Alto, Calif.

Filed Jul. 19, 1983, Ser. No. 515,247
Int. Cl.³ C23C *15/00*
U.S. Cl. 204—298 43 Claims

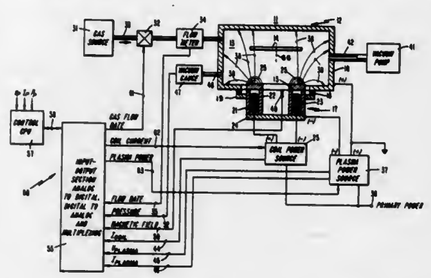


1. A system for handling and individually processing a plurality of relatively thin substrates, said substrates being vertically oriented during said handling and processing, said system comprising a main chamber, an entrance load lock and an exit load lock, a plurality of processing stations, load lock load/unload means, vertical transport means, and horizontal transport means, said load locks being positioned above said main chamber and sealed to a top wall thereof, said processing stations being disposed between said load locks and also sealed to said top wall of said main chamber, said load lock load/unload means being used to transfer said substrates from an entrance cassette to said entrance load lock and to transfer said substrates from said exit load lock to an exit cassette, said vertical transport means being used to raise said substrate from said main chamber into said processing stations and into said exit load lock, said vertical transport means also being used to lower said substrates from said entrance load lock and from said processing stations into said main chamber, said vertical transport means including a plurality of individual lift blades, each of said load locks and processing stations being served by a dedicated one of said lift blades, each of said lift blades being configured to securely hold an individual one of said substances during vertical transport, said lift blades for said processing stations being configured to hold said substrates during processing in said processing stations, said horizontal transport means being used to effect simultaneous one-station shifts of all said substrates within said main chamber, said shifts being directed toward said exit load lock; whereby said individual substrates are transported through said system, being processed sequentially in successive ones of said processing stations, all of said processing stations simultaneously processing one of said substrates, thereby allowing a high rate of production to be achieved.

4,500,408
APPARATUS FOR AND METHOD OF CONTROLLING SPUTTER COATING

Donald R. Boys, Cupertino, and Robert M. Smith, San Jose, both of Calif., assignors to Varian Associates, Inc., Palo Alto, Calif.

Continuation of Ser. No. 515,246, Jul. 19, 1983, abandoned. This application Dec. 27, 1983, Ser. No. 564,776
Int. Cl.³ C23C *15/00*
U.S. Cl. 204—298 58 Claims

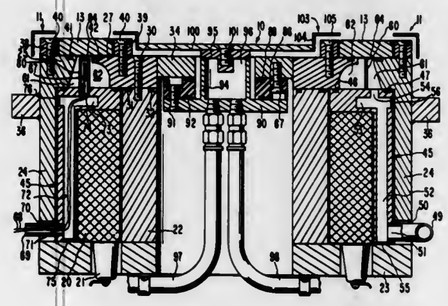


1. A method of controlling a sputter coating depositing apparatus including a target cathode, an anode and a plasma, ionizing electrons for the plasma having a tendency to be confined in proximity to an emitting surface of the target by a magnetic field having lines of flux adjacent the emitting surface of the target, the confining magnetic field intersecting electric field lines extending between the anode and cathode, the methode comprising controlling the electric impedance of the plasma by controlling the magnetic field intensity in response to a plasma parameter having a tendency to vary.

4,500,409
MAGNETRON SPUTTER COATING SOURCE FOR BOTH MAGNETIC AND NON MAGNETIC TARGET MATERIALS

Donald R. Boys, Cupertino, and Walter E. Graves, San Jose, both of Calif., assignors to Varian Associates, Inc., Palo Alto, Calif.

Continuation of Ser. No. 515,093, Jul. 19, 1983, abandoned. This application Dec. 27, 1983, Ser. No. 564,777
Int. Cl.³ C23C *15/00*
U.S. Cl. 204—298 73 Claims



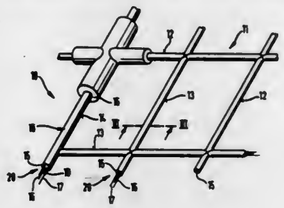
1. A magnetron sputter coating source comprising an anode, a cathode means including means for mounting a magnetic sputter target, and a magnetic field means including an electromagnet coil, a yoke, and a pair of polepieces separated by a spatial gap and joined to said yoke, said yoke and polepieces being made of materials of high magnetic permeability and high saturation magnetization, said magnetic sputter target being mounted so as to be positioned atop said polepieces, said gap and magnetic sputter target being configured and positioned so the target completely bridges said spatial gap, whereby a continuous magnetic path between said polepieces is provided through said target, an electric current flowing in said electromagnet coil causing magnetic field lines to be established in said yoke, polepieces, and magnetic sputter target, said coil current having a critical value, substantially all of said magnetic field lines being confined to the interior of said yoke, polepieces, and magnetic sputter target when said coil current is less than said critical value, a magnetically saturated portion of said magnetic sputter target occurring when said coil current is greater than said critical value, whereby a magnetic gap is established in said magnetic sputter target, said magnetic gap allowing fringing magnetic field lines to be established above and below said magnetic sputter target in the vicinity of said magnetic gap, said coil current having a required value, said required value being sufficiently greater than said critical value that said fringing magnetic field lines above said magnetic sputter target having required intensities may be established, thereby allowing a magnetically confined and magnetically enhanced glow discharge to be established above said magnetic sputter target in a region adjacent said magnetic gap.

4,500,410
REINFORCING OR CARRIER ELEMENT FOR STRUCTURAL MATERIAL

Hans Oppitz, Mils, Austria, assignor to Eltac Nogler & Daum KG, Innsbruck, Austria

Filed Aug. 8, 1983, Ser. No. 521,190
Claims priority, application Austria, Aug. 16, 1982, 3101/82
Int. Cl.³ B01D *13/02*; C25B *11/00*
U.S. Cl. 204—299 R 19 Claims

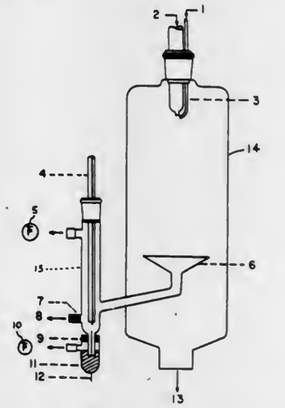
1. An electrically conductive reinforcing or carrier element for structural material, comprising a carrier body constituted by a flexible net comprised of strands having a surface of a conductive synthetic resin in contact with the structural material, the strands of the net including conductive filamentary carrier materials incorporated therein.



4,500,411
AUTOMATICALLY OPERATED POLAROGRAPHIC ANALYZER

Chaim N. Yarnitzky, Haifa, Israel, assignor to Technion Research & Development Foundation Ltd., Haifa, Israel, a part interest

Filed Jun. 1, 1983, Ser. No. 500,098
Claims priority, application Israel, Aug. 1, 1982, 66438
Int. Cl.³ G01N *27/34*
U.S. Cl. 204—413 10 Claims



1. An automatically operated polarographic analyzing system for analyzing discrete samples comprising:

a vessel including in an upper portion means for deaerating each one of said samples comprising a nebulizer and a stream of inert gas;

collector means for collecting successive ones of said deaerated samples and an outlet for the exit of excess substances;

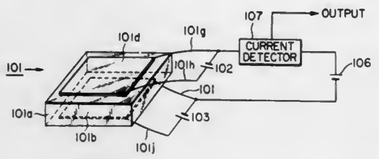
a polarographic cell including a dropping mercury electrode, said cell being external to said vessel and connected to said collector means by means of tubing passing through a wall of said vessel;

first pump means, coupled with said polarographic cell, defining means for moving a sample from said collector means to said polarographic cell for analysis, and second pump means, coupled with said polarographic cell, defining means for removing the sample after its analysis, said removing means being disposed below said dropping mercury electrode;

a platinum wire extending below the dropping mercury electrode of said polarographic cell and passing out of said polarographic cell; and

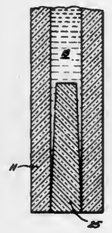
an outlet, close to the bottom end of the polarographic cell, connected to a reference electrode.

4,500,412
OXYGEN SENSOR WITH HEATER
Hideaki Takahashi; Kiyoharu Hayakawa; Haruyoshi Kondo, and Takashi Takeuchi, all of Aichi, Japan, assignors to Kabushiki Kaisha Toyota Chuo Kenkyusho, Aichi, Japan
Filed Aug. 3, 1982, Ser. No. 404,900
Claims priority, application Japan, Aug. 7, 1981, 56-123122; Oct. 9, 1981, 56-160077; Dec. 2, 1981, 56-192744
Int. Cl.³ G01N 27/58
U.S. Cl. 204—425 16 Claims



1. An oxygen sensor comprising an insulating substrate, a heater layer on a part of said substrate, said heater layer having a thickness of 0.2 μm to 20 μm and being made of a material selected from the group consisting of platinum, rhodium, palladium, and mixtures thereof, said insulating substrate having indentations which have a peak-to-peak thickness of up to 5 μm to provide bonding between said heater layer and said insulating substrate, and a further layer which has a thickness of about 0.01 μm to 1 μm and which is made of a material selected from the group consisting of aluminum, titanium, tungsten and molybdenum interposed between said insulating substrate and said heater layer so as to provide additional bonding therebetween.

4,500,413
SINTERED CERAMIC ARTICLE WITH POROUS REGION
Dale F. Taylor, Schenectady, and Louis S. Sammler, Clifton Park, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.
Filed Dec. 20, 1982, Ser. No. 451,501
Int. Cl.³ G01N 27/30
U.S. Cl. 204—435 8 Claims



5. A reference electrode construction comprising a one-piece sintered metallic oxide housing enclosing a sealed electrolyte reservoir containing liquid electrolyte and an electrode spaced from said housing, the liquid electrolyte contained in said reservoir being in flow communication with the exterior of said housing solely through an imperfectly sintered porous metallic oxide region having a preselected effective open cross-sectional area, said porous region being in the general shape of a hollow cylinder extending through the otherwise non-porous sintered metallic oxide wall of said housing.

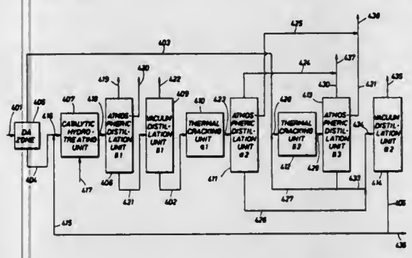
4,500,414
ENHANCED RECOVERY OF HYDROCARBONACEOUS FLUIDS FROM THE OIL SHALE
Costandi A. Audeh, Princeton, N.J., assignor to Mobil Oil Corporation, New York, N.Y.
Continuation of Ser. No. 488,517, Apr. 25, 1983,. This application May 10, 1984, Ser. No. 609,074
Int. Cl.³ C10G 1/00
U.S. Cl. 208—11 R 10 Claims

1. A process for improving the recovery of hydrocarbon liquids and gases from oil shale comprising the steps of:
(a) subjecting the oil shale to retorting, under retorting conditions, to produce liquid and gaseous hydrocarbons and spent shale; and
(b) treating the spent shale with a solution of alkali-methoxide in methanol to recover additional hydrocarbon liquids and gases.

4,500,415
PROCESS OF CONVERTING NON-DISTILLABLE RESIDUES OF MIXED-BASE OR PARAFFIN-BASE CRUDE HYDROCARBON OILS
Thomas Simo, Bad Homburg; Karl-Heniz Eisenlohr, Buchschlag, and Hans-Hermann Puxbaumer, Frankfurt am Main, all of Fed. Rep. of Germany, assignors to Metallgesellschaft Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany
Filed Jan. 27, 1983, Ser. No. 461,294
Claims priority, application Fed. Rep. of Germany, Feb. 10, 1982, 3204546
Int. Cl.³ C10G 65/06, 65/08, 65/12
U.S. Cl. 208—56 12 Claims

1. A process for converting a non-distillable residue of a mixed-base or paraffin-base crude hydrocarbon oil to a distillable precursor for petrochemical products including motor fuels which comprises donor solvent hydrovisbreaking said residue in a hydrovisbreaking zone in the presence of a circulated hydrogen donor solvent at a temperature in the range 380° to 480° C. and at a pressure in the range of 40 to 200 bars and producing a liquid product, separating said liquid product by a first distillation into a naphtha fraction boiling below 200° C., a medium fraction boiling at 200° to 500° C. and a residue fraction boiling above 500° C., subjecting a branch stream of said medium fraction to a catalytic treatment in the presence of molecular hydrogen, said treatment comprising a selective catalytic hydrogenation followed by a selective catalytic cracking, said selective catalytic hydrogenation being conducted to such an extent as to selectively hydrogenate aromatic compounds to naphthenic compounds, the catalyst of said selective cracking being silicalite molecular sieve with a pore diameter in at least one dimension between 4 and 7 Angstroms, by said selective catalytic cracking paraffins are converted to naphtha fractions boiling below the boiling range of said hydrogen donor solvent, separating the product from said catalytic treatment by a second distillation into a naphtha fraction boiling below 200° C. and a higher boiling fraction with a boiling range of 200° to 500° C., said higher boiling fraction being solely used as said hydrogen donor solvent, the bromine number of said hydrogen donor solvent being the same as the bromine number of the fraction boiling at 200° to 500° C. of the product of said selective hydrogenation.

4,500,416
PROCESS FOR THE PREPARATION OF HYDROCARBON OIL DISTILLATES
Robert H. van Dongen, and Willem H. J. Stork, both of Amsterdam, Netherlands, assignors to Shell Oil Company, Houston, Tex.
Continuation of Ser. No. 420,556, Sep. 20, 1982, abandoned. This application Dec. 16, 1983, Ser. No. 562,993
Claims priority, application Netherlands, Dec. 16, 1981, 8105660
Int. Cl.³ C10G 67/04, 69/06
U.S. Cl. 208—86 9 Claims



1. A process for the production of hydrocarbon oil distillates from a hydrocarbon mixture feed stream containing asphaltenes, said process comprising
(a) solvent deasphalting said feed stream in a deasphalting zone to obtain a deasphalted oil fraction and an asphaltic bitumen fraction;
(b) catalytically hydrotreating said asphaltic bitumen fraction in a hydrotreating zone, therein producing a first product stream having a reduced asphaltenes content;
(c) fractionating said first product stream into one or more light distillate fractions and a first heavy distillate fraction;
(d) thermally cracking said first heavy distillate fraction and said deasphalted oil fraction in a thermal cracking zone into a second product stream containing less than 20 percent by weight C_4 to C_1 hydrocarbons;
(e) fractionating said second product stream into one or more light distillate fractions and a second heavy distillate fraction; and
(f) routing said second heavy distillate fraction to said hydrotreating zone wherein said second heavy distillate fraction is catalytically hydrotreated.

4,500,417
CONVERSION OF FISCHER-TROPSCH PRODUCTS
Nai Y. Chen, Titusville; Werner O. Haag; Tracy J. Huang, both of Lawrenceville, all of N.J., and Stephen S. Wong, Langhorne, Pa., assignors to Mobil Oil Corporation, New York, N.Y.
Filed Dec. 28, 1982, Ser. No. 453,970
Int. Cl.³ C10G 47/20
U.S. Cl. 208—111 16 Claims

1. A process for upgrading the heavy oil fraction produced by syntheses of the Fischer-Tropsch type, said fraction having an initial boiling-point of at least about 125° C., said process comprising contacting the fraction and hydrogen gas under a combination of conversion conditions including a temperature of about 200° C. to 500° C., a hydrogen partial pressure of about 500 kPa to 20,000 kPa, and a liquid hourly space velocity of about 0.1 to 20, with a catalyst comprising zeolite beta composited with a hydrogenation metal said combination of conditions being effective to form a product that contains a hydrocarbon distillate fraction and a paraffin-type heavy hydrocarbon fraction suitable for conversion to lubricant oil.

12. A method of upgrading heavy oil fraction boiling above about 150° C. produced by a Fischer-Tropsch conversion of synthesis gas to liquid product, the method comprising contacting said heavy oil fraction and hydrogen under conversion conditions including a temperature of about 200° C. to 500° C. and a liquid hourly space velocity of about 0.1 to 20 with a metal-containing conversion catalyst comprising a large pore crystalline aluminosilicate having a silica to alumina ratio of at least 10:1 and selected from the group consisting of zeolite beta, dealuminized ZSM-20 and dealuminized Y, said conversion conditions being effective to convert a substantial portion of said heavy oil to a distillate boiling range product and a lubricant base stock.

4,500,418
CATALYSIS OVER ACTIVATED INORGANIC OXIDES
Joseph N. Miale, Lawrenceville, and Clarence D. Chang, Princeton, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.
Continuation-in-part of Ser. No. 355,414, Mar. 8, 1982, Pat. No. 4,427,791. This application Nov. 16, 1983, Ser. No. 552,547
Int. Cl.³ C10G 11/04, 11/08, 45/46
U.S. Cl. 208—114 8 Claims

1. A process for converting a feedstock comprising hydrocarbon compounds to conversion products comprising hydrocarbon compounds of lower molecular weight than feedstock hydrocarbon compounds which comprises contacting said feedstock at conversion conditions with a catalyst comprising an inorganic oxide material selected from the group consisting of alumina and gallia treated by a method comprising contacting said material with a fluoride reagent selected from the group consisting of ammonium fluoride and boron fluoride at a temperature of from about 0° C. to about 100° C., contacting said fluoride reagent contacted material with an aqueous ammonium exchange solution and thereafter calcining said material at a temperature of from about 200° C. to about 600° C.

4,500,419
CATALYSIS OVER ACTIVATED ZEOLITES
Joseph N. Miale, Lawrenceville, and Clarence D. Chang, Princeton, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.
Continuation-in-part of Ser. No. 355,413, Mar. 8, 1982, Pat. No. 4,427,787. This application Nov. 16, 1983, Ser. No. 552,541
Int. Cl.³ C10G 11/05, 11/08, 45/54
U.S. Cl. 208—115 19 Claims

1. A process for converting a feedstock comprising hydrocarbon compounds to conversion products comprising hydrocarbon compounds of lower molecular weight than feedstock hydrocarbon compounds which comprises contacting said feedstock at conversion conditions with a catalyst composition comprising a supported crystalline zeolite, said zeolite having an initial silica-to-alumina mole ratio greater than about 100, prepared by a method which comprises compositing said crystalline zeolite with alumina, reacting the composite with a dilute aqueous solution of hydrogen fluoride of from about 0.1 to about 5 Normal at a temperature of from about 0° C. to about 30° C. for a time of less than about 60 minutes, drying the hydrogen fluoride reacted composite, treating the dried hydrogen fluoride reacted composite by contact with an ammonium salt solution, by hydrolysis or ammonolysis, and calcining the resulting material at a temperature of from about 200° C. to about 600° C.

4,500,420
CATALYSIS OVER ACTIVATED ZEOLITES
Joseph N. Miale, Lawrenceville, and Clarence D. Chang, Princeton, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.
Continuation-in-part of Ser. No. 355,416, Mar. 8, 1982, Pat. No. 4,427,789. This application Nov. 16, 1983, Ser. No. 552,543
Int. Cl.³ C10G 11/05, 11/08, 45/54
U.S. Cl. 208—116 16 Claims

1. A process for converting a feedstock comprising hydrocarbon compounds to conversion products comprising hydrocarbon compounds of lower molecular weight than feedstock

hydrocarbon compounds which comprises contacting said feedstock at conversion conditions with a catalyst comprising a zeolite composition prepared by a method which comprises the steps of (1) compositing a porous crystalline zeolite having an initial silica-to-alumina mole ratio greater than about 100 with alumina, (2) impregnating the composite under a vacuum with an aqueous solution of an alkali metal fluoride, (3) contacting the impregnated composite with a warm aqueous solution of an ammonium salt, and (4) calcining the ammonium salt solution contacted material at a temperature of from but 200° C. to about 600° C.

4,500,421

CATALYSIS OVER ACTIVATED ZEOLITES

Clarence D. Chang, Princeton, and Joseph N. Miale, Lawrenceville, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 355,417, Mar. 8, 1982, Pat. No. 4,427,790. This application Nov. 16, 1983, Ser. No. 552,544
Int. Cl.³ C10G *11/05, 11/08, 45/54*
U.S. Cl. 208—116 **18 Claims**

1. A process for converting a feedstock comprising hydrocarbon compounds to conversion products comprising hydrocarbon compounds of lower molecular weight than feedstock hydrocarbon compounds which comprises contacting said feedstock at conversion conditions with a catalyst comprising a zeolite composition prepared by a method comprising reacting a porous crystalline zeolite having an initial silica-to-alumina mole ratio greater than about 100 with a reagent having the formula:

$$L_{(n-m)}(MF_n)_e$$

wherein L is an organic or inorganic ionic moiety, (MF_n) is a fluoroanion moiety comprising the element M, M is an element selected from the group consisting of elements from Groups VB, VIB, VIIB, VIII, IIIA, IVA and VA of the Periodic Table of the Elements and Rare Earth elements, n is the coordination number of M, m is the valence of M and e is the charge associated with L, said reaction of said zeolite with said reagent being conducted at a temperature of from about −70° C. to about 80° C. and a pressure of from about −0.8 psig to about 50 psig.

4,500,422

CATALYSIS OVER ACTIVATED ZEOLITES

Joseph N. Miale, Lawrenceville, and Clarence D. Chang, Princeton, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 355,415, Mar. 8, 1982, Pat. No. 4,427,788. This application Nov. 16, 1983, Ser. No. 552,542
Int. Cl.³ C10G *11/05, 11/08, 45/54*
U.S. Cl. 208—117 **14 Claims**

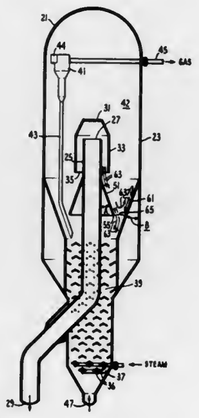
1. A process for converting a feedstock comprising hydrocarbon compounds to conversion products comprising hydrocarbon compounds of lower molecular weight than feedstock hydrocarbon compounds which comprises contacting said feedstock at conversion conditions with a catalyst comprising a zeolite composition prepared by a method which comprises impregnating a zeolite having an initial silica-to-alumina mole ratio of 70 or more with an ammoniacal aluminum fluoride solution at a temperature of from about 0° C. to about 100° C., said solution comprising from about 0.1 to about 5 weight percent of an aluminum fluoride in solution with at least one member selected from the group consisting of ammonium hydroxide and ammonia, contacting the impregnated zeolite with a warm aqueous 0.1 to 2 Normal solution of an ammonium salt, and calcining the ammonium salt solution contacted material at a temperature of from about 200° C. to about 600° C.

4,500,423

SEPARATION OF REACTED HYDROCARBONS AND CATALYST IN FLUIDIZED CATALYTIC CRACKING

Russell R. Krug, San Rafael, and Peter C. Schmidt, Walnut Creek, both of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Continuation-in-part of Ser. No. 238,380, Feb. 26, 1981, abandoned. This application Jun. 13, 1983, Ser. No. 503,781
Int. Cl.³ C10G *11/18*; F27P *15/00*
U.S. Cl. 208—161 **12 Claims**



1. A process for separating hydrocarbon reaction products from catalyst in a fluidized catalytic reaction system comprising the steps of:

(a) conveying an input feed of a fluidized catalytic reaction mixture upwardly within a riser reaction conduit zone arranged generally within a disengaging vessel;

(b) deflecting the catalytic reaction mixture and constraining the resulting mixture of hydrocarbon vapor and catalyst to discharge generally vertically downwardly within an annular outlet zone around said conduit zone into said vessel;

(c) deflecting said downwardly moving mixture radially outwardly from said annular outlet zone toward the wall of said vessel to promote early disengagement of catalyst from hydrocarbon vapor;

(d) directing disengaged catalyst downwardly to a stripping zone arranged in a lower portion of said vessel; and

(e) recovering hydrocarbon vapors separated from catalyst in an upper portion of said vessel.

4,500,424

DESULFURIZATION CATALYST AND PROCESS

Howard D. Simpson, Irvine; Ryden L. Richardson, Whittier, and Kenneth Baron, Diamond Bar, all of Calif., assignors to Union Oil Company of California, Los Angeles, Calif.

Filed Apr. 7, 1983, Ser. No. 482,920
Int. Cl.³ C01G *45/08*
U.S. Cl. 208—216 PP **49 Claims**

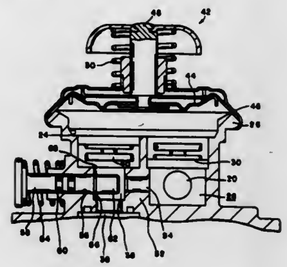
1. A hydrocarbon conversion process comprising contacting a hydrocarbon oil with a particulate catalyst under conditions of elevated temperature above 600° F. and pressure above 500 p.s.i.g. and with hydrogen, said catalyst comprising at least one Group VIB metal component, at least one Group VIII metal component, and at least one phosphorous component on a porous refractory oxide support, said catalyst having at least about 75 percent of the total pore volume in pores of diameter from about 70 to about 130 angstroms and less than about 10 percent of the total pore volume in pores of diameter greater than about 130 angstroms.

4,500,425

PUMP VALVE FOR LIQUID SEPARATOR

Donald I. Thornton, Warwick, R.I., and Richard H. Peyton, Berkley, Mass., assignors to Allied Corporation, Morristown, N.J.

Filed Jun. 13, 1984, Ser. No. 620,215
Int. Cl.³ B01D *27/00*
U.S. Cl. 210—136 **5 Claims**



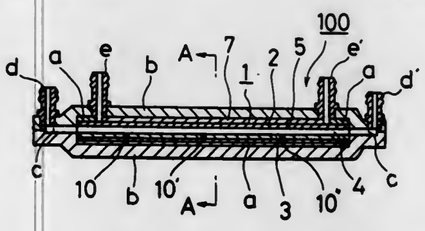
1. Separating device for a liquid flow system for removing material entrained in the liquid flowing through the system comprising a mounting head and a cartridge mounted on said mounting head, said cartridge containing at least one filtering medium for removing at least some of the material entrained in said liquid, said mounting head including an inlet and an outlet for connection with said liquid flow system, an inlet cavity communicated with said inlet, an intermediate cavity communicated with the upstream side of said filtering medium, said outlet being communicated with the downstream side of said filtering medium, a pumping chamber communicating with both said inlet and intermediate cavities, one-way check valve means permitting liquid communication from the inlet cavity into the pumping cavity and from the pumping cavity into the intermediate cavity but preventing communication in the opposite direction, manually-operated pumping means for forcing liquid from said inlet cavity into the pumping cavity and from said pumping cavity into said intermediate cavity, a bypass passage communicating the inlet with the intermediate cavity and bypassing said pumping cavity and said check valve means, and manually-operable means for closing said bypass passage when said pumping means is operated.

4,500,426

SEMIPERMEABLE MEMBRANE ELEMENTS

Kiyoshi Ishii; Masataka Murai, and Hitoshi Yonekawa, all of Saitama, Japan, assignors to Daicel Chemical Industries, Ltd., Sakai, Japan

Continuation of Ser. No. 122,762, Feb. 15, 1980, abandoned. This application Dec. 24, 1981, Ser. No. 334,082
Claims priority, application Japan, Feb. 15, 1979, 54-17572; Jun. 13, 1979, 54-74931
Int. Cl.³ B01D *31/00*
U.S. Cl. 210—321.3 **8 Claims**



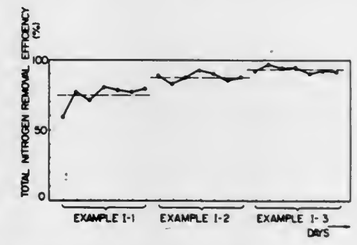
1. A semipermeable membrane element comprising at least one semipermeable membrane having an inlet end and an outlet end, said semipermeable membrane having an active side for being exposed to a feed liquid; a spacer being in contact with said semipermeable membrane and being disposed in a parallel confronting relation to said semipermeable membrane, said spacer being wave-shaped to form between said membrane and said spacer a multiplicity of parallel channels giving a maximum clearance of 35 to 500 microns, said spacer having at least two communicating portions for permitting said parallel channels to communicate with one another, the first communicating portion being disposed near and upstream of the outlet end of the semipermeable membrane and the second communicating portion being disposed near and downstream of the inlet end of said semipermeable membrane, said communicating portions comprising slits extending through the spacer and extending transversely to the spacer and perpendicular to the parallel channels, said slits extending across a major portion of the distance between the edges of the spacer that are parallel to said channels.

4,500,427

ACTIVATED-SLUDGE PROCESS FOR WASTEWATER TREATMENT

Akira Suzuki, Kasukabe; Yasumi Shioya; Norio Watanabe, both of Tokyo, all of Japan, and Keiichi Kimura, deceased, late of Tsuchiura, Japan (by Kazuyoshi Kimura, Toshi Kimura, heirs), assignors to Shinryo Air Conditioning Co., Ltd., Tokyo, Japan

Filed Nov. 5, 1982, Ser. No. 439,578
Claims priority, application Japan, Nov. 9, 1981, 56-179332
Int. Cl.³ C02F *3/12*
U.S. Cl. 210—608 **6 Claims**



1. An activated-sludge process for wastewater treatment comprising the steps of:

(1) feeding raw wastewater to an aeration tank containing mixed liquor;

(2) supplying air in an amount of not more than 3.0 m^3 air/MLSSO-kg/day into the aeration tank to produce aerobic and anaerobic areas in said tank;

(3) concentrating at least part of the return sludge or the mixed liquor to a solids content of at least 4 wt % in a flotation concentrator or a combination of said flotation concentrator and a roll press type dehydrator to thereby produce concentrated sludge and separated water; and

(4) feeding the concentrated sludge into the aeration tank at a SVI of not higher than 120 and maintaining the MLSS concentration in said tank at a value between 7,000 to 15,000 mg/liter, thereby removing the organic matter and nitrogen components from the wastewater within said aeration tank.

4,500,428

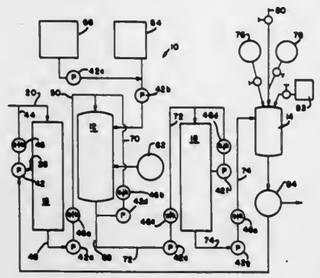
METHOD FOR THE TREATMENT OF WASTEWATER SLUDGE

Joseph M. Lynch, Secaucus; James R. Pfafflin, Gillette, both of N.J.; Calman Pecker, Long Island City; Raúl Cárdenas, Tappan, both of N.Y.; Seamus Cunningham, Secaucus, N.J.; Richard T. Bozzone, Sr., Parsippany, N.J., and Sidney Borg, Hoboken, N.J., assignors to Process Research Development & Management, Inc., Hoboken, N.J.

Division of Ser. No. 429,859, Sep. 30, 1982, Pat. No. 4,464,257. This application Aug. 6, 1984, Ser. No. 637,727

Int. Cl.³ C02F *11/02*

U.S. Cl. 210—609 **4 Claims**



1. A method of treating wastewater sludge, comprising the steps of:

providing a plurality of reaction vessels;

dewatering said wastewater sludge;

admitting the dewatered wastewater sludge into one of said vessels;

pressurizing said one vessel to a pressure taken from a range of pressures of from approximately thirty to approximately sixty pounds per square inch;

introducing a pH depressant into said one vessel to depress the pH of the sludge to a range of about 2 to 2.5; and

introducing an effective amount of an oxidizing agent into said one vessel to stabilize said dewatered sludge; wherein

said admitting step comprises retaining sludge admitted into said one vessel at a given level therewithin;

said pressurizing step comprises aerating said sludge in said one vessel at a location wherewithin which is below the retained, given level of the sludge with an aerating means comprising a vertical multiple-apertured cylinder capped at opposite ends supported within said one vessel below said level; and further including

maintaining a state of turbulence in the sludge retained in said one vessel; wherein

said turbulence-maintaining step comprises discharging stabilized sludge from said one vessel, removing a portion of said sludge from said one vessel and readmitting the same into said one vessel by dispersing said sludge into said one vessel above said level;

dewatering the sludge discharged from said one vessel;

admitting the dewatered sludge, discharged from said one vessel, into another of said reaction vessels;

admitting an effective amount of ozone and air into said another reaction vessel to stabilize said dewatered sludge; and

removing treated sludge from said another reaction vessel.

4,500,429

PROCESS FOR THE BIOLOGICAL PURIFICATION OF WASTE WATER

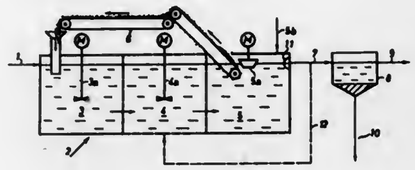
Hans Reimann; Allen Frydman, and Uwe Fuchs, all of Munich, Fed. Rep. of Germany, assignors to Linde Aktiengesellschaft, Wiesbaden, Fed. Rep. of Germany

Filed Jan. 19, 1984, Ser. No. 572,043

Claims priority, application Fed. Rep. of Germany, Jan. 19, 1983, 3301643

Int. Cl.³ C02F *3/08*

U.S. Cl. 210—616 **17 Claims**



1. In a process for the biological purification of phosphate-containing wastewater wherein the wastewater is treated, in the presence of activated sludge, at least a portion of which is attached on a carrier material, and the process comprising treating the wastewater in at least one aerobic, and an anaerobic zone, and discharging a substantially phosphate-free wastewater stream therefrom, the improvement comprising conducting the process with the activated sludge fixed on a movable carrier material, by conveying the carrier material from the anaerobic zone to the aerobic zone, and simultaneously recycling an amount of carrier material sufficient to conduct the process continuously from the aerobic zone to the anaerobic zone to cause the organisms in the sludge to take up phosphates whereby the activated sludge therein becomes enriched with the phosphates, and separating a portion of the thus phosphate-enriched sludge from the discharged treated wastewater to result in a substantially phosphate-free effluent.

4,500,430

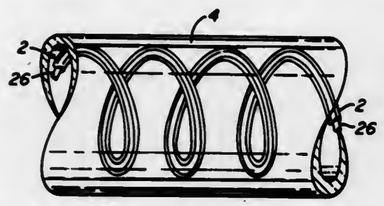
CONTINUOUSLY REJUVENATED ION EXCHANGER

Purnendu K. Dasgupta, 4345 28th St., Lubbock, Tex. 79410

Filed Sep. 22, 1982, Ser. No. 421,082

Int. Cl.³ B01J *47/12*

U.S. Cl. 210—638 **51 Claims**



50. A method of ion exchange chromatography comprising the steps of:

(a) providing an ion exchanging inner tube of a cation exchange membrane comprising a fluorocarbon backbone with pendant sulfonic acid groups as ion exchange sites having:

(1) a length of approximately 50 centimeters;

(2) a helical configuration with a diameter of less than 5 millimeters; and

(3) its terminal ends inserted into entry and exit tubes;

(4) a nylon filament contained therein; and

(b) enclosing the helix in a hollow outer tube having a larger diameter and longer length than the helix and having inlet and outlet apertures;

(c) sealing the ends of the outer tube around the entry and exit tubes leading to the helix;

(d) connecting the entry tube to the vessel containing the solution to undergo ion exchange;

(e) releasing the solution to the helical tube so that a flow rate between 0.5 and 5.0 milliliters per minute is established;

(f) simultaneously directing the flow of an appropriate regenerant solution in the outer tube counter current to the flow of solution in the helix; and

(g) and collecting the ion exchanged solution from the exit tube from the helix.

4,500,431

SEPARATION OF ANALYSIS OF ANIONS

Akiyoshi Miyanaga, and Yukitada Kurihara, both of Yokohama, Japan, assignors to Toyo Soda Manufacturing Co. Ltd., Yamaguchi, Japan

Filed Nov. 4, 1983, Ser. No. 548,828

Claims priority, application Japan, Nov. 9, 1982, 57-195236

Int. Cl.³ B01D *15/08*

U.S. Cl. 210—656 **16 Claims**



1. A separation analysis of anions through liquid chromatography, which is characterized in that a solution prepared by mixing two components A and B is used as an eluent, where the component A is at least one compound selected from the group consisting of an aliphatic polycarboxylic acid, an aliphatic hydroxycarboxylic acid, an aromatic organic acid, a saccharic acid, a sugar and a sulphonate and the component B is at least one compound selected from the group consisting of borax, boric acid and an aliphatic monocarboxylic acid.

4,500,432

AUTOMATED SAMPLE CONCENTRATOR FOR TRACE COMPONENTS

John S. Poole, Wilmington, Del.; Dennis R. Gere, Westchester, Pa.; Raymond J. Bell, Landenberg, Pa., and Mark A. Nickerson, New London, Pa., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Continuation of Ser. No. 282,482, Jul. 13, 1981, abandoned. This application Oct. 4, 1983, Ser. No. 538,832

Int. Cl.³ B01D *15/08*

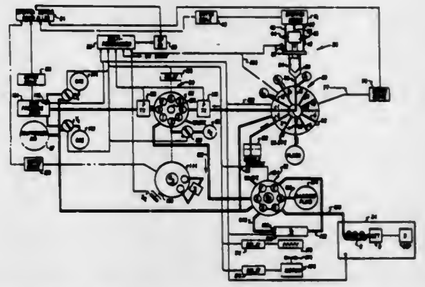
U.S. Cl. 210—659 **24 Claims**

1. A method of concentrating solutes contained in a liquid solvent other than supercritical fluid before they are applied to chromatographic apparatus for analysis, the said method comprising:

passing the liquid solvent to waste through a first trapping means that adsorbs and accumulates at least some of the solutes from the solvent,

passing supercritical fluid through said first trapping means so as to adsorb at least some of the solutes therefrom and carry them into a second trapping means,

reducing the solubility parameter of the supercritical fluid in said second trapping means, and



permitting the fluid of reduced solubility parameter to escape from said second trapping means, thereby leaving at least some of the solutes in said second trapping means.

4,500,433

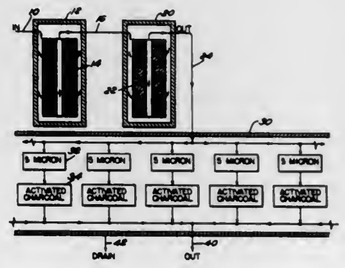
METHOD OF REMOVING SALTS OF THE ALKALI EARTH METAL GROUP FROM WATER

Lee S. Ormsby, 1185 Naragansett Blvd., Suite 305, Cranston, R.I. 02905

Filed Jan. 13, 1984, Ser. No. 570,549

Int. Cl.³ C02F *9/00*

U.S. Cl. 210—669 **2 Claims**



1. The method of removing salts of the alkali earth metal group from water comprising the steps of supplying water in a one-half inch pipe at 75 p.s.i, pre-filtering the water supply with a first five-micron filter to remove contaminants and reduce the flow rate to 4–5 g.p.m., connecting a second five-micron filter to the effluent of the first filter to reduce the flow rate to 3 g.p.m., passing the effluent through at least twelve parallel connected five-micron filter units the effluent of which is passed through at least twelve parallel connected activated charcoal filters, whereby the flow is reduced to approximately 0.5 g.p.m. to allow additional time for the water to contact the charcoal, whereby alkali earth metal salt is adsorbed.

4,500,434

INHIBITING SCALE PRECIPITATION FROM HIGH TEMPERATURE BRINE

John W. Jost, Santa Ana, and Darrell L. Gallup, Ontario, both of Calif., assignors to Union Oil Company of California, Los Angeles, Calif.

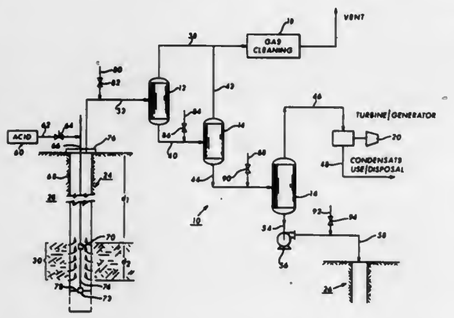
Filed Dec. 2, 1982, Ser. No. 446,489

Int. Cl.³ C02F *5/08*

U.S. Cl. 210—696 **13 Claims**

1. A method for inhibiting the precipitation of iron silicate scale from a pressurized aqueous brine solution having a pH of about 5 to about 6, which solution contains dissolved scale-forming salts, during passage of the said fluid stream through

industrial equipment wherein the pressure is reduced so that at least a portion of the solution flashes to steam and dissolving



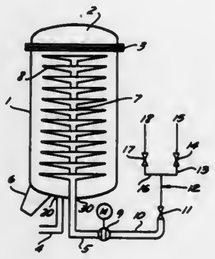
such scale previously formed comprising adding to the solution an amount of water-soluble acid sufficient to lower the pH of the solution by between about 0.1 and 0.3 pH unit.

4,500,435

METHOD AND APPARATUS FOR CLEANING PRESSURE FILTERS

Hans Müller, Erlenbach, Switzerland, assignor to DrM, Dr. Müller AG, Maennedorf, Switzerland

Continuation-in-part of Ser. No. 320,711, Nov. 12, 1981, abandoned, which is a continuation of Ser. No. 175,193, Aug. 8, 1979, abandoned. This application Sep. 6, 1983, Ser. No. 529,537
Claims priority, application Switzerland, Aug. 8, 1979, 7261/79
Int. Cl.³ B01D *29/38*
U.S. Cl. 210—798 **5 Claims**



1. A method of cleaning a pressure filter having a plurality of filtering elements each provided with a filter fabric through which a material to be filtered is passed in a filtration direction and which is subjected to depositing of a filter cake during the filtering process, comprising the steps of intermittently supplying a backwash cleaning medium to said filtering elements, in the direction opposite to said filtration under repeated pulsating shock-like, rhythmic pressure impulses for pushing the cleaning medium through the filter fabric of the filter elements in said opposite direction without causing any vibrations of the latter to thereby efficiently remove the cake from each cleaning element and thus clean the filter fabric without requiring disassembling of the pressure filter, the cleaning medium being supplied with a frequency of approximately 10–160 impulses per minute.

4,500,436

SALTWATER AND HARD WATER BENTONITE MUD

Avtar S. Pabley, 7885 W. Walker Dr., Littleton, Colo. 80123

Continuation-in-part of Ser. No. 197,969, Oct. 17, 1980, abandoned. This application Sep. 20, 1982, Ser. No. 419,946
Int. Cl.³ C09K *7/02*
U.S. Cl. 252—8.5 A **20 Claims**

1. A process for preparing a drilling mud comprising:
(a) measuring a quantity of water selected from the group consisting of saltwater and hard water sufficient to hydrate the mud;
(b) adding a caustic agent to the water of step (a) in an amount sufficient to product a pH in the prepared mud between about 8 and about 12;
(c) adding a filtration control agent to the mixture of step (b); and
(d) adding bentonite to the mixture of step (c) in a quantity sufficient to achieve the desired viscosity.

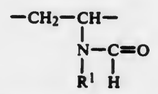
4,500,437

WATER SOLUBLE COPOLYMERS FOR USE IN FRACTURE-ACIDIZING OF WELLS

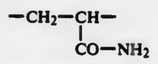
Friedrich Engelhardt, Frankfurt; Klaus Kuhlein, Kelkheim; Ulrich Riegel, Frankfurt; Sigmar von Halasz, Kelkheim, all of Fed. Rep. of Germany; Jeffery C. Dawson, Katy, and Anthony R. Reed, Houston, both of Tex., assignors to Cassella Aktiengesellschaft, Fed. Rep. of Germany and Dresser Industries, Inc., Houston, Tex.

Division of Ser. No. 216,671, Dec. 15, 1980, abandoned. This application Sep. 23, 1982, Ser. No. 422,276
Int. Cl.³ E21B *43/27*
U.S. Cl. 252—8.55 C **9 Claims**

1. In the process for well stimulation by fracture acidizing with an aqueous acidic solution wherein said acidic solution is injected into said well to contact a formation under pressure sufficient to fracture the formation, the improvement wherein said acidic solution contains as a friction reducer a copolymer soluble in water and aqueous acids and having a K-value of from 25 to 250 and which comprises in a statistical distribution in the macromolecule, at least 5% by weight of structural units of the formula



wherein R^1 is hydrogen, methyl or hydroxymethyl; and at least 10% by weight of structural units of the formula



said acidic solution containing said copolymer in an amount of from 0.06 to 0.12% by weight.

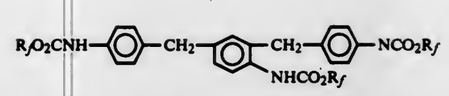
4,500,438

MULTI-RING FLUORINATED CARBAMATES WITH TEXTILE SOIL REPELLENT ACTIVITY

Michael G. Kelly, Coventry, R.I., assignor to American Hoechst Corporation, Somerville, N.J.

Filed Jun. 24, 1983, Ser. No. 507,407
Int. Cl.³ D06M *13/40*; C07C *125/06*
U.S. Cl. 252—8.75 **10 Claims**

1. A compound of the formula



(I)

wherein R_f is a fluorinated radical of the formula $-W(C_nF_{2n})Y$ wherein W has from 1 to 10 carbon atoms and is selected from alkylene and W'—Z—(W")$_b$ where W' and W" are alkylene, Z is O, S, NHCO, or N(R)SO_2 wherein R is H or lower alkyl, and b is 0 or 1, Y is hydrogen, fluoro, or perfluoroalkoxy of 1 to 6 carbon atoms, and n is 2 to 20.

4,500,439

HYDROCARBON-SOLUBLE POLYAMINE-MOLYBDENUM COMPOSITIONS, LUBRICANTS AND GASOLINE CONTAINING SAME

C. Thomas West, and Robert J. Basalay, both of Naperville, Ill., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Continuation of Ser. No. 301,752, Sep. 14, 1981, abandoned, which is a division of Ser. No. 190,590, Sep. 25, 1980, Pat. No. 4,357,149. This application Oct. 14, 1983, Ser. No. 542,011
Int. Cl.³ C10M *1/54*
U.S. Cl. 252—46.4 **3 Claims**

1. An improved hydrocarbon-soluble molybdenum composition which comprises reaction product of a molybdenum compound and a sulfurized hydrocarbon-soluble polyamine compound wherein a hydrocarbon-soluble polyamine compound is reacted with sulfur or a sulfur-yielding compound to produce a sulfurized hydrocarbon-soluble polyamine compound prior to reaction with the molybdenum compound, said reaction product of a molybdenum compound and a sulfurized hydrocarbon-soluble polyamine compound being obtained at a temperature within the range of about 50° C. to 300° C. and a mole ratio within the range of about 0.5 to 10 moles of molybdenum compound per mole of amine in the sulfurized hydrocarbon-soluble polyamine compound, said molybdenum compound being a compound which produces ammonium molybdate, molybdic acid, and/or molybdic oxide under reaction conditions, and said hydrocarbon-soluble polyamine compound being selected from substituted dicarboxylic acid compound-polyamine reaction products, or sulfurized and/or oxidized derivatives thereof, wherein said substituted dicarboxylic acid compound of said substituted dicarboxylic acid compound-polyamine reaction products comprises a hydrocarbyl-substituted succinic acid compound.

2. A lubricant comprising a lubricating base oil and an effective friction modifying amount of the hydrocarbon-soluble molybdenum composition of claim 1.

3. A gasoline containing sufficient hydrocarbon-soluble polyamine molybdenum composition to supply about 0.1–10,000 parts of molybdenum per one million parts of gasoline, wherein said hydrocarbon-soluble polyamine molybdenum composition is a reaction product of a molybdenum compound and a sulfurized hydrocarbon-soluble polyamine compound wherein a hydrocarbon-soluble polyamine compound is reacted with sulfur or a sulfur-yielding compound to produce a sulfurized hydrocarbon-soluble polyamine compound prior to reaction with the molybdenum compound, said reaction product of a molybdenum compound and a sulfurized hydrocarbon-soluble polyamine compound being obtained at a temperature within the range of about 50° C. to 300° C. and a mole ratio within the range of about 0.5 to 10 moles of molybdenum compound per mole of amine in the sulfurized hydrocarbon-soluble polyamine compound, said molybdenum compound being a compound which produces ammonium molybdate, molybdic acid, and/or molybdic oxide under reaction conditions, and said hydrocarbon-soluble polyamine compound being selected from substituted dicarboxylic acid compound-polyamine reaction products, or sulfurized and/or oxidized derivatives thereof, wherein said substituted dicarboxylic acid compound of said substituted dicarboxylic acid compound-polyamine reaction products comprises a hydrocarbyl-substituted succinic acid compound.

4,500,440

REACTION PRODUCTS OF GLYCIDYL DERIVATIZED POLYOLEFINS AND 5-AMINOTETRAZOLES AND LUBRICATING OILS CONTAINING SAME

Benjamin J. Kaufman, Wappingers Falls; Christopher S. Liu, Poughkeepsie, and Rodney L. Sung, Fishkill, all of N.Y., assignors to Texaco Inc., White Plains, N.Y.

Continuation of Ser. No. 439,159, Nov. 4, 1982, abandoned. This application Jul. 6, 1984, Ser. No. 628,536
Int. Cl.³ C10M *1/32*
U.S. Cl. 252—51.5 A **8 Claims**

1. A multi-purpose lubricating oil additive prepared by grafting an oil-soluble ethylene-C_3 to C_{12} olefin hydrocarbon copolymer containing 25 to 55 weight percent of polymerized ethylene units having an average chain length of 2700 to 8800 carbon atoms with glycidyl methacrylate in the presence of a free radical initiator to produce an intermediate reaction product and reacting said intermediate reaction product with a 5-aminotetrazole under condensation reaction conditions to produce said lubricating oil additive.

5. A lubricating oil composition comprising a major amount of an oil of lubricating viscosity and from about 0.5 to 25.0 weight percent of the reaction product of claim 1.

4,500,441

CONTACT LENS CLEANING AND STORAGE COMPOSITION

Kyoichi Tanaka; Akira Tsuzuki, both of Nagoya, and Shunichi Hioki, Ichinomiya, all of Japan, assignors to Toyo Contact Lens Co., Ltd., Japan

Continuation of Ser. No. 375,095, May 5, 1982, abandoned. This application Mar. 9, 1984, Ser. No. 586,883
Claims priority, application Japan, May 13, 1981, 56-70766
Int. Cl.³ C11D *3/48*
U.S. Cl. 252—89.1 **4 Claims**

1. An aqueous water-nonabsorptive contact lens cleaning and storage solution consisting essentially of (1) an anionic surface active agent, (2) a non-ionic surface active agent, and (3) a compound selected from the group consisting of polysaccharides and derivatives thereof, the ratio of the component (1) to the component (2) being from about 32:68 to about 94:6 by weight, the total concentration of the components (1) and (2) being from about 0.05 to about 4.5% by weight, the concentration of the component (3) being from 0.01 to 10% by weight, and said solution having a pH of 4.8 to 8.5,

wherein the anionic surface active agent is selected from the group consisting of a sodium alkylbenzene sulfonate, a sodium alpha-olefin sulfonate, a sodium polyoxyethylene alkylether sulfates, a sodium alkyloylmethyltaurinate, a sodium alkyloylsarcosinate, a sodium polyoxyethylene alkylether phosphate, a sodium di(polyexythylene alkylether)phosphate, and a sodium polyoxyethylene alkylphenylether sulfate; and

wherein the non-ionic surface active agent is selected from the group consisting of a polyoxyethylene higher fatty acid ester, a higher fatty acid ester with a polyoxyalkylene-polyoxyethylene copolymer; a higher fatty acid ester with a polyhydric alcohol; a higher fatty acid ester with a polyoxyethylene polyhydric alcohol including polyoxyethylene glyceryl fatty acid esters and polyoxyethylene sorbitan fatty acid esters; a polyglycerin fatty acid ester; a polyoxyethylene alkyl ether; a polyglycerin ether with an alcohol; a polyoxyethylene fatty acid amide; a polyoxyethylene alkylamine; a polyoxyethylene alkylphenyl ether; a condensate of polyoxyethylene alkylphenol ether with formaldehyde; a polyoxyethylenepolyoxypropylene block copolymer; a phosphate, a polyethyleneglycol adduct of one of a hydrogenated castor oil, castor oil and sterol; and a polyoxyethylene sorbian fatty acid ester.

4,500,442
COMPOSITIONS CONTAINING MOLD RELEASE AGENTS

Louis W. Meyer, Lake Jackson, Tex., assignor to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 462,154, Jan. 28, 1983, Pat. No. 4,451,425.
This application Feb. 10, 1984, Ser. No. 578,926
Int. Cl.³ C09K 3/00
U.S. Cl. 252—182 10 Claims

1. A composition comprising

(A) at least one active hydrogen-containing material having an average of more than one active hydrogen atom per molecule; and

(B) at least one hydroxylated lecithin; and

wherein component (B) is present in a quantity of at least about 0.1 parts per 100 parts by weight of component (A) up to the miscibility limit of the mixture.

4,500,443
BLUE-GREEN EMITTING HALOPHOSPHATE PHOSPHOR

Akira Taya, Kawasaki; Kazuo Narita, Tokyo; Masao Asada, and Yoshio Kimura, both of Yokohama, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Continuation of Ser. No. 413,243, Aug. 30, 1982, abandoned.
This application Jun. 8, 1984, Ser. No. 617,940
Claims priority, application Japan, Sep. 3, 1981, 56-137837
Int. Cl.³ C09K 11/465
U.S. Cl. 252—301.4 P 4 Claims

1. A blue-green emitting halophosphate phosphor activated with divalent europium, which is represented by the formula

$$M_{5-x}X(PO_4)_3:Eu^{2+}{}_{(x)}$$

wherein M consists of about 3 to about 4.5 gram-atom of barium, about 0.5 to about 2 gram-atom of calcium and about 0.01 to about 1 gram-atom of magnesium; X is one or more of fluorine, chlorine and bromine; and x is more than 0.01 and not more than 0.2, said phosphor exhibiting a higher luminescent intensity when irradiated by 254 nm radiation and higher maintenance factors A and B than said phosphor absent magnesium.

4,500,444
PROCESS FOR PREPARING BASIC ALUMINUM CARBONATE GELS SUBSTANTIALLY FREE FROM FOREIGN ANIONS AND FIBROUS COLLOIDAL ALUMINA MONOHYDRATE OF A BOEHMITE CRYSTAL LATTICE STRUCTURE

Stewart M. Beekman, 401 High St., Milton, Pa. 17847

Filed Apr. 22, 1982, Ser. No. 370,898
Int. Cl.³ B01J 13/00; C01F 7/14; A61K 33/08
U.S. Cl. 252—315.7 11 Claims

1. A process for preparing basic aluminum carbonate gels that can be washed to an $SO_4^=/Al_2O_3$ ratio of less than 0.01 and a sodium Na^+/Al_2O_3 ratio of less than 0.01 which comprises reacting in aqueous solution having a pH of about 6.8 ± 0.2 at a temperature within the range from about 10° to about 50° C. sodium aluminate and carbon dioxide, thereby forming a precipitate of basic aluminum carbonate gel, and separating the gel from the reaction medium by filtration.

4,500,445
CORROSION INHIBITED AQUEOUS SLURRIES

Eddie French, Manchester, and Thomas G. Braga, St. Louis, both of Mo., assignors to Petrolite Corporation, St. Louis, Mo.

Filed Mar. 10, 1982, Ser. No. 356,668
Int. Cl.³ C09K 3/00
U.S. Cl. 252—387 21 Claims

1. A non-chromate composition of matter comprising an aqueous oxygen-containing slurry of erosive particulate matter selected from the group consisting of ore and coal containing a corrosion inhibiting amount of a phosphocomposition selected from the group consisting of polyphosphate salts and mixtures thereof.

4. The composition of claim 1 where the phospho-composition is tetrapotassium pyrophosphate.

5. The composition of claim 4 which contains also 2-phosphono-1,2,4-butane tricarboxylic acid.

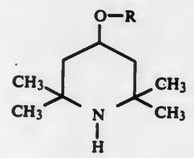
4,500,446
MIXED UNSATURATED MONOCARBOXYLIC ACID ESTERS OF 2,2,6,6-TETRAMETHYL-4-PIPERIDINOL AND OF ITS AMMONIUM CARBOXYLATE AS STABILIZER AGAINST UV IN POLYMERIC MATERIALS

Julius Durmis; Alojz Balogh; Milan Karvas; Maria Hrachovcová; Jan Masek; Pavol Caucik, and Marta Povazancová, all of Bratislava, Czechoslovakia, assignors to Chemicke zavody Juraja Dimitrova, narodny podnik, Bratislava, Czechoslovakia

Filed Sep. 23, 1982, Ser. No. 421,790
Claims priority, application Czechoslovakia, Sep. 23, 1981, 7009-81
Int. Cl.³ C09K 15/22
U.S. Cl. 252—403 3 Claims

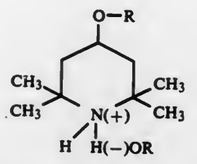
1. Stabilization mixture for polyolefins, styrene polymers and copolymers and polyurethanes comprising

(a) from 80–100%, by weight, of a mixture of 2,2,6,6-tetramethyl-4-piperidinol esters of the formula



wherein R is an acyl residue derived from a straight or branched chain unsaturated monocarboxylic acid of 14–18 carbon atoms and

(b) from 0–20%, by weight, of ammonium carboxylates of the formula



wherein R is as defined above.

4,500,447
ELECTRICALLY CONDUCTIVE SILICONE RUBBER COMPOSITIONS

Hideki Kobayashi, Ichihara, and Mitsuo Hamada, Kisarazu, both of Japan, assignors to Toray Silicone Company, Inc., Tokyo, Japan

Filed Aug. 29, 1983, Ser. No. 527,522
Claims priority, application Japan, Sep. 8, 1982, 57-156123
Int. Cl.³ H01B 1/06
U.S. Cl. 252—511 14 Claims

1. A curable, electrically conductive silicone rubber composition comprising

(A) 100 parts by weight of a polyorganosiloxane having a viscosity of at least 0.1 mm^2/s and an average unit formula $R_aSiO_{4-a/2}$, where R represents a monovalent hydrocarbon radical or a 2-cyanoethyl radical, a has a value of from 1.95 to 2.05, and at least 90 mol % of the R radicals are methyl;

(B) 0 to 100 parts by weight of a finely divided silica filler;

(C) 5 to 100 parts by weight of an electrically conductive carbon black;

(D) 1 to 100 parts by weight of an incompatible polyorganosiloxane having a viscosity of from 0.01 to 10 mm^2/s at 25° C. and an average unit formula

$$R_b^1R_c^2SiO_{(4-b-c)/2},$$

where R^1 is selected from the same group as R, R^2 represents a halogenated hydrocarbon radical, b is from 1 to 3 inclusive, c is from 0.001 to 1 inclusive, the sum of b and c is from 1.95 to 2.95 inclusive and where said incompatible polyorganosiloxane bleeds out at a controlled rate from the surface of said silicone rubber composition following curing of said composition;

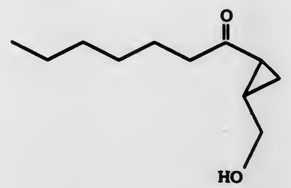
(E) 0.1 to 10 parts by weight of a curing agent for (A), said curing agent being selected from the group consisting of organoperoxides and combinations of a polyorganohydrogensiloxane, a polyorganosiloxane (A) containing alkenyl radicals and an amount of a platinum-containing catalyst sufficient to cure said composition.

4,500,448
1-HYDROXYMETHYL CYCLOPROPANES ORGANOLEPTIC USE OF SAME

Richard M. Boden, Ocean; Marie R. Hanna, Hazlet, and Theodore J. Tyszkiewicz, Sayreville, all of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Division of Ser. No. 422,486, Sep. 23, 1982, Pat. No. 4,435,426.
This application Oct. 12, 1983, Ser. No. 541,275
Int. Cl.³ A61K 7/46
U.S. Cl. 252—522 R 1 Claim

1. A process for augmenting or enhancing the aroma of a consumable material selected from the group consisting of perfume compositions, colognes and perfumed articles comprising the step of adding to said consumable material, an aroma augmenting or enhancing quantity of the compound having the structure:



4,500,449
METHOD FOR SOLIDIFYING BORON-CONTAINING RADIOACTIVE RESIDUES

Klaus Kuhnke; Dietmar Bege, both of Erlangen; Anwer Puthawala, Erlangen-Buckenhof, and Günter Wittrowsky, Erlangen, all of Fed. Rep. of Germany, assignors to Kraftwerk Union Aktiengesellschaft, Mülheim, Fed. Rep. of Germany

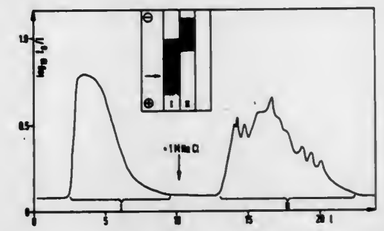
Continuation of Ser. No. 123,445, Feb. 21, 1980, abandoned.
This application Apr. 23, 1982, Ser. No. 371,125
Claims priority, application Fed. Rep. of Germany, Mar. 19, 1979, 2910677
Int. Cl.³ G21F 9/16
U.S. Cl. 252—628 2 Claims

1. Method for the treatment of radioactive concentrates from liquid wastes containing boron of pressurized water reactors, for storage and mixing with a binding agent, which comprises adding sodium hydroxide to said radioactive waste concentrate containing boron to obtain a mole ratio of sodium to boron of about 0.7 with a corresponding pH value in the range of 9.8 to 10.2 to produce a reaction product having approximately the following composition: $2Na_2O\times3B_2O_3\times4H_2O$, said reaction product characterized by being in the molten phase at a temperature within the range of 50° C. to below the temperature at which the concentrate would evaporate, and maintaining the mixture of radioactive waste concentrate containing boron and sodium hydroxide at a temperature of at least 50° C. but below the temperature at which the concentrate would evaporate during said reaction of sodium hydroxide with the radioactive waste and during holding-time prior to mixing with a binding agent to prevent crystallization of boron compounds in the mixture, without further chemical treatment to chemically alter the boron compounds and without prior drying the mixture to cause crystallization of the boron compounds to retain them in the liquid state, and subsequently introducing the mixture into a worm mixing device maintained at an elevated temperature in which the reaction product retains its liquid state upon contacting and mixing with a binding agent also introduced into the worm mixer.

4,500,450
POLYPEPTIDE HAVING AN ACTION ON THE IMMUNOLOGICAL SYSTEM, PROCESS FOR ITS ISOLATION AND PURIFICATION, ITS USE, AGENTS CONTAINING THIS COMPOUND, AND ITS CLEAVAGE PRODUCTS, THEIR USE AND AGENTS CONTAINING THESE PRODUCTS

Gerhard Seipke, Wiesbaden; Dominique Tripier, Eppstein, and Gerd Johnscher, Kelkheim, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Aug. 11, 1983, Ser. No. 522,204
Claims priority, application Fed. Rep. of Germany, Aug. 13, 1982, 3230151
Int. Cl.³ G01N 33/50
U.S. Cl. 260—112 R 2 Claims



1. A polypeptide having an action on the immunological system, which has a molecular weight of 3,480, a UV absorption with a maximum at 205 to 210 nm, an isoelectric point at 3.95 ± 0.15 and the following amino acid composition: 4 aspara-

ginic acid units, 3 threonine units, 3 serine units, 6 glutamic acid units, 1 glycine unit, 4 alanine units, 3 valine units, 1 isoleucine unit, 1 leucine unit, 5 lysine units and 1 arginine unit, the N-terminal, if appropriate, carrying an acyl group having 1 to 6 carbon atoms or an acylglycyl group, the acyl group of which has 1 to 6 carbon atoms, and/or pharmacologically acceptable salts.

4,500,451

NEW PROTEIN PP_{13} EXTRACTED FROM HUMAN PLACENTAL TISSUES AND USE THEREOF

Hans Bohn, Marburg, and Walter Kraus, Cölbe, both of Fed. Rep. of Germany, assignors to Behringwerke Aktiengesellschaft, Marburg, Fed. Rep. of Germany

Filed Aug. 18, 1983, Ser. No. 524,201

Claims priority, application Fed. Rep. of Germany, Aug. 20, 1982, 3230996

Int. Cl.[3] **A23J** *1/06;* **C07K** *7/00;* **C07G** *7/26;* **A61K** *39/00*

U.S. Cl. 260—112 R **3 Claims**

1. A new placental protein PP_{13} extracted from human placental tissue characterized by the following:

(a) an electrophoretic mobility in the same range as albumin,

(b) an isoelectric point of 4.75±0.15,

(c) a sedimentation coefficient $S_{20^0,w}$ of 3.1±0.15,

(d) a molecular weight determined by ultracentrifugation of 30,000±5,000,

(e) a molecular weight determined in a polyacrylamide gel containing sodium dodecyl sulfate (SDS) of 29,000±3,000,

(f) an extinction coefficient $E_{1cm}^{1\%}$ (280 nm) of 9.8±0.3 and

(g) a carbohydrate content of 1% (0.1±0.05% mannose, 0.2±0.1% galactose, 0.1±0.05% xylose, 0.2±0.1% glucosamine, and neuraminic acid not detected).

4,500,452

(AMIDO)N-SUBSTITUTED BLEOMYCINS, SALTS THEREOF AND PROCESS FOR PREPARATION THEREOF

Hamao Umezawa, Tokyo; Akio Fujii, Kamakura; Yasuhiko Muraoka, Kitamoto; Tokuji Nakatani, Saitama; Takeyo Fukuoka, Yono, and Katsutoshi Takahashi, Tokyo, all of Japan, assignors to Nippon Kayaku Kabushiki Kaisha, Tokyo, Japan

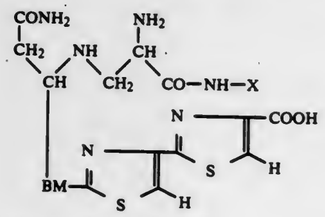
Division of Ser. No. 451,437, Dec. 20, 1982, Pat. No. 4,472,304. This application Jun. 18, 1984, Ser. No. 621,795

Claims priority, application Japan, Dec. 29, 1981, 56-210447

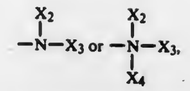
Int. Cl.[3] **C07C** *103/52*

U.S. Cl. 260—112.5 R **1 Claim**

1. An (amido)N-substituted bleomycinic acid represented by the following formula or a salt thereof:



wherein BM represents a moiety of bleomycin skeleton; X represents (1) an alkyl of 1 to 18 carbon atoms, (2) an aminoalkyl of 1 to 12 carbon atoms, (3) a lower alkyl having as substituent (a) 1 to 3 halogen atoms, (b) 1 or 2 phenyl groups, (c) an indolyl group, or (d) a 5- or 6-membered heterocyclic group containing an oxygen, sulfur or nitrogen atom (among the substituent groups, the phenyl or indolyl group may be further substituted by a halogen atom or a lower alkoxy group), (4) X_1-(lower)alkyl, [where X_1 is



X_2 is a hydrogen atom, a lower alkyl or benzyl, X_3 is (a) a lower alkyl, (b) a phenyl(lower)alkyl, or (c) a mono- or di-(lower)alkylamino(lower)alkyl which may be substituted by a phenyl or halophenyl group, X_4 is (a) a lower alkyl or (b) a phenyl(lower)alkyl], (5) naphthyl, (6) thiazolyl, or (7) an N-phenyl(lower)alkylpiperazinyl.

4,500,453

CROSS-LINKED PROTEIN COMPOSITION USING ALUMINUM SALTS OF ACETIC ACID

Joseph L. Shank, Matteson, Ill., assignor to DynaGel Incorporated, Calumet City, Ill.

Filed Jun. 29, 1984, Ser. No. 626,533

Int. Cl.[3] **C09H** *7/00;* **G03C** *1/30*

U.S. Cl. 260—117 **19 Claims**

1. A cross-linked collagen-derived protein composition having improved Bloom gel strength and increased viscosity, said protein composition being the reaction product of a water-soluble collagen-derived protein with an aluminum salt of acetic acid selected from the group consisting of aluminum subacetate, aluminum triacetate and an alkali metal aluminum acetate double salt.

4,500,454

VEGETABLE PROTEIN EVIDENCING IMPROVED SOLUTION VISCOSITY

Pei K. Chang, Montrose, N.Y., assignor to Stauffer Chemical Company, Westport, Conn.

Filed Dec. 3, 1982, Ser. No. 446,825

Int. Cl.[3] **B23J** *1/14*

U.S. Cl. 260—123.5 **16 Claims**

1. A process for treating vegetable protein which comprises subjecting a substantially dry protein composition wherein the moisture content of the composition is less than 8% and which composition contains at least 60% protein which is substantially insoluble at its isoelectric point and substantially soluble above and below its isoelectric point to a heat treatment at a level of up to about 10% relative humidity for a period of time sufficient to modify the protein, said period of time being at least 0.5 days, such that the viscosity of a 10% solution of said treated protein composition is increased over a solution of untreated protein composition by at least 100%.

4,500,455

REACTIVE DISPERSE DIAMINOPYRIDINE AZO DYES CONTAINING A FLUOROSTRIAZINE GROUP

Toshio Niwa; Toshio Hihara, and Yukiharu Shimizu, all of Kanagawa, Japan, assignors to Mitsubishi Chemical Industries, Limited, Tokyo, Japan

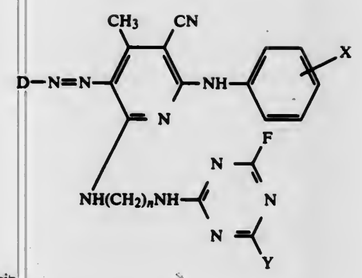
Filed Jul. 21, 1982, Ser. No. 400,533

Claims priority, application Japan, Jul. 21, 1981, 56-114231

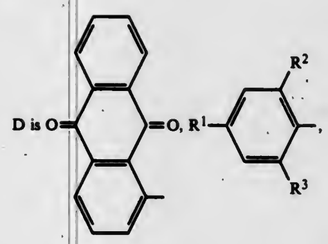
Int. Cl.[3] **C09B** *62/085;* **D06P** *1/382, 3/66, 3/84*

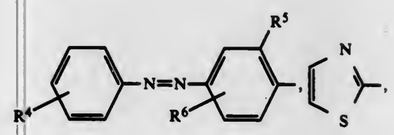
U.S. Cl. 534—635 **3 Claims**

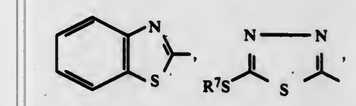
1. A diaminopyridine dye for cellulose-containing fibers, represented by the formula (I):

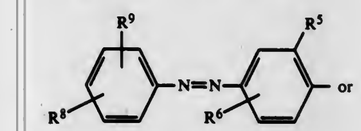


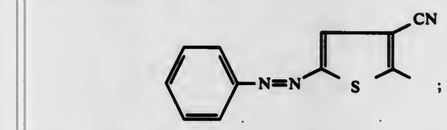
wherein











X is hydrogen or halogen;

Y is alkoxy containing from 1 to 5 carbons, —O—R^{10}—O—R^{11}, or phenoxy; and

n is 2 or 3

wherein R^1 is nitro, cyano, methylsulfonyl, phenylsulfonyl, mono- or di-lower alkylaminosulfonyl, acetyl, or benzoyl; R^2 and R^3 are each hydrogen, trifluoromethyl, halogen, or cyano; R^4 is hydrogen, lower alkyl, mono- or di-lower alkylaminosulfonyl, mono- or di-lower alkylcarbamoyl, or acetylamino; R^5 and R^6 are each hydrogen, halogen, or lower alkyl; R^7 is lower alkyl; R^8 is trifluoromethyl, or halogen; R^9 is hydrogen, or halogen; R^{10} is ethylene, or propylene; and R^{11} is methyl, or an ethyl.

4,500,456

PREPARATION OF 4-FLUOROAZETIDINONES USING $FCLO_3$

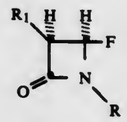
Wayne A. Spitzer, and Theodore Goodson, Jr., both of Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Division of Ser. No. 241,989, Mar. 9, 1981, abandoned. This application Dec. 27, 1982, Ser. No. 453,384

Int. Cl.[3] **C07D** *205/08, 401/04, 403/04;* **C07B** *9/00*

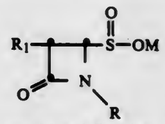
U.S. Cl. 260—239 A **5 Claims**

1. A process for preparing a 4-fluoroazetidinone of the formula



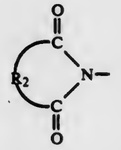
(I)

which comprises mixing in an aprotic inert organic solvent at a temperature between about −80° C. and about −25° C. an azetidinone of the formula



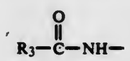
with perchloryl fluoride, where in the above formulae R_1 is

(1) an imido group of the formula



wherein R_2 is C_2–C_4 alkylene or 1,2-phenylene;

(2) an amido group of the formula



wherein R_3 is

(a) hydrogen, C_1–C_4 alkyl, halomethyl, cyanomethyl, benzyloxy, p-nitrobenzyloxy, t-butyloxy, 2,2,2-trichloroethoxy, or p-methoxybenzyloxy;

(b) the group R′, wherein R′ is phenyl or phenyl substituted by 1 or 2 halogens, hydroxy, protected hydroxy, nitro, cyano, C_1–C_4 alkyl, or C_1–C_4 alkoxy;

(c) a group of the formula

R″—(Q)$_m$—CH_2—

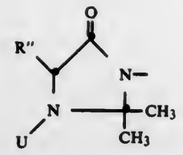
wherein R″ is R′ as defined above, 1,4-cyclohexadienyl, thienyl or furyl; m is 0 or 1; and Q is O or S; with the limitation that when m is 1, R″ is R′;

(d) a group of the formula



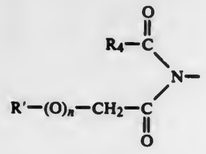
wherein R″ is as defined above, and W is hydroxy, protected hydroxy, carboxy, protected carboxy, amino, or protected amino;

(3) an imidazolidinyl group of the formula



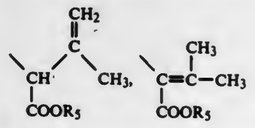
wherein R'' is as defined above and U is nitroso or acetyl; or R_1 is

(4) an imido group of the formula



wherein R' is as defined above, n is 0 or 1, and R_4 is C_1–C_4 alkyl, C_1–C_4 haloalkyl, C_1–C_4 alkoxy, or 2,2,2-trichloroethoxy;

R is a carboxy-substituted or esterified carboxy-substituted butenyl group represented by the formulas



wherein R_5 is hydrogen or a protected carboxy group; and M is hydrogen, sodium or potassium.

4,500,457

PROCESS FOR PREPARING THIA-AZA COMPOUNDS WITH A BETA-LACTAM RING

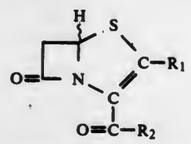
Jacques Gosteli, Basel; Ivan Ernest, Birsfelden, both of Switzerland, and Robert B. Woodward, Cambridge, Mass., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 902,639, May 4, 1978, Pat. No. 4,331,676. This application Mar. 1, 1982, Ser. No. 353,288

Int. Cl.³ C07D *501/02*

U.S. Cl. 260—245.2 R **5 Claims**

1. Process for the manufacture of 2-penem-3-carboxylic acid compounds of the formula



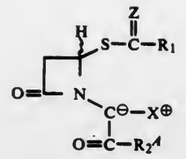
(I)

in which a carbon atom to the ring carbon atom, or an etherified mercapto group

and

R_2 represents hydroxy or a radical R_2' forming together with the carbonyl grouping —C(=O)— a protected carboxyl group,

1-oxides thereof, as well as pharmaceutically acceptable salts of such compounds having salt-forming groups, characterised in that an ylid compound of the formula



(II)

in which

Z represents oxygen or sulphur and

R_1 and R_2' have the meanings given above wherein functional groups in these radicals are preferably in the protected form

and wherein

$X^{\oplus}$ represents triarylphosphonio, tri-lower alkylphosphonio, or a phosphono group esterified twice by lower alkyl together with an alkali metal cation, is ring closed, and, for the production of a compound of the formula I, wherein R_2 represents hydroxy, the protected carboxyl group of the formula —C(=O)—R_2' in a compound of the formula I obtained is converted into the free carboxyl group, or, for the production of a compound of the formula I, wherein R_2 represents a radical R_2', a free carboxyl group or a different protected carboxyl group of the formula —C(=O)—R_2' in a compound of the formula I obtained is converted into the protected carboxyl group of the formula —C(=O)—R_2', or, for the production of a 1-oxide of a compound of the formula I, a compound of the formula I obtained is oxidised with an oxidising agent, or, for the production of a salt, a compound of the formula I obtained having a salt-forming group or a different salt obtained is converted into the salt, or, for the production of a free compound, a salt of a compound of the formula I obtained having a salt-forming group is converted into the free compound.

4,500,458

PROCESS FOR THE PREPARATION OF α-6-DEOXYTETRACYCLINES

Ivan Villax, Lisbon, and Philip R. Page, Parede, both of Portugal, assignors to Pluripharmie Anstalt, Vaduz, Liechtenstein

Filed Jan. 14, 1983, Ser. No. 458,067

Claims priority, application Portugal, Jan. 19, 1982, 74303; Dec. 30, 1982, 76061

Int. Cl.³ C07C *103/19*; B01J *31/04*

U.S. Cl. 260—351.5 **20 Claims**

1. A new improved homogeneous hydrogenation process to prepare α-6-deoxytetracyclines in high yield and purity from a 6-deoxy-6-demethyl-6-methylenetetracycline or salt thereof in the presence or absence of a tertiary phosphine or from a 11a-chloro-6-deoxy-6-demethyl-6-methylenetetracycline or a salt thereof in the presence of a tertiary phosphine by catalytic hydrogenation, characterised in that the catalyst is a tertiary phosphine-hydrazino-chlororhodium obtained by reacting a rhodium salt or a complex with a hydrazine or salt thereof.

4,500,459

TETRACYANOANTHRAQUINODIMETHANE COMPOUNDS

Shu Hotta, Hirakata; Tomiharu Hosaka, Yawata, and Wataru Shimotsuma, Ibaragi, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

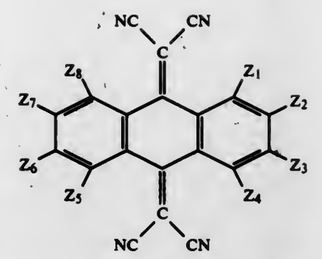
Filed Mar. 12, 1982, Ser. No. 357,664

Claims priority, application Japan, Mar. 13, 1981, 56-36728

Int. Cl.³ C07C *50/20*

U.S. Cl. 260—396 N **1 Claim**

1. A 11,11,12,12-tetracyano-9,10-anthraquinodimethane compound of the general formula



wherein Z_2, Z_3, Z_6 and Z_7 each is H, halogen, alkyl, phenyl, alkylphenyl, hydroxyalkyl, carboxyalkyl, hydroxy, amino or carboxy and Z_1, Z_4, Z_5 and Z_8 is H, Cl, hydroxy or amino; said halogen being F, Cl, Br or I and said alkyl, alkylphenyl, hydroxyalkyl and carboxyalkyl each containing up to 8 carbon atoms with the proviso that at least one of Z_1 to Z_8 must be halogen, hydroxy or amino.

4,500,460

23,23-DIFLUORO-25-HYDROXY-VITAMIN D_3 AND PROCESS FOR PREPARING SAME

Hector F. DeLuca; Yoko Tanaka, both of Madison, Wis.; Nobuo Ikekawa, and Yoshiro Kobayashi, both of Tokyo, Japan, assignors to Wisconsin Alumni Research Foundation, Madison, Wis.

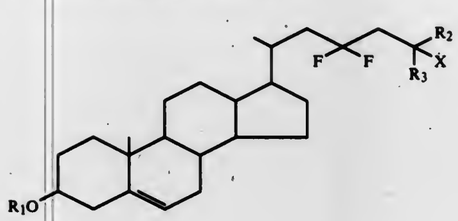
Filed Aug. 18, 1983, Ser. No. 524,269

Int. Cl.³ C07J *9/00*

U.S. Cl. 260—397.2 **7 Claims**

1. 23,23-difluoro-25-hydroxycholecalciferol.

3. Compounds having the formula



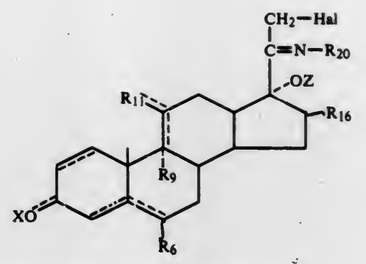
wherein

R_1 is selected from acyl and tetrahydro-pyranyl

X is halogen or hydroxy and

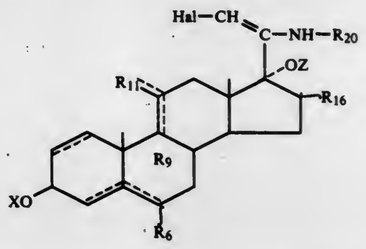
R_2 and R_3 are selected from $COOR_4$, CH_2OH and hydrogen where R_4 is lower alkyl.

and a 21-halo-Δ^{20}-enamide of the formula



(XV A-C)

and



(XX A-C)

and C_3 protected forms thereof where

R_6 is a hydrogen or fluorine atom or methyl group;

R_9 is nothing, a hydrogen, fluorine or oxygen atom which makes the C ring

(a) $\Delta^{9(11)}$ when R_9 is nothing and

(b) 9β,11-epoxide when R_9 is an oxygen atom;

R_{11} is a hydrogen or oxygen atom, two hydrogen atoms, or α- or β-hydroxyl group which makes the C-ring

(a) $\Delta^{9(11)}$ when R_{11} is a hydrogen atom,

(b) 9β,11β-epoxide when R_{11} is an oxygen atom and ···· between C_{11} and R_{11} is a single bond, and

(c) a ketone when R_{11} is an oxygen atom and ···· between C_{11} and R_{11} is a double bond;

R_{16} is a hydrogen atom or methyl group;

R_{20} is —OC—R_{20}' or —R_{20}'';

R_{20}' is alkyl of 1 thru 5 carbon atoms, phenyl, phenyl substituted 0 thru 2 chlorine atoms, methyl or nitro groups;

R_{20}'' is —$Si(CH_3)_3$ or —$SI(CH_3)_2C(CH_3)_3$;

X refers to a hydrogen atom or nothing;

Z is selected from the group consisting of a TMS, THP, methoxymethyl, t-butyl-dimethyl silyl and EEE group;

···· is a single or double bond;

~ indicates that the attached atom or group can be in either the a or β configurations; and

Hal is a chlorine, bromine, iodine, atom.

4,500,461

CYANOHYDRIN PROCESS

Verlan H. VanRheenen, Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Filed Feb. 3, 1984, Ser. No. 576,590

Int. Cl.³ C07J *5/00*

U.S. Cl. 260—397.45 **19 Claims**

1. A steroid selected from the group consisting of a 21-halo-enimide of the formula

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4,500,462

UNSATURATED EICOSANOIC ACIDS

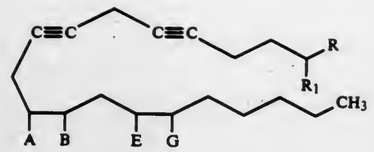
Ka-Kong Chan, Hopatcong; George W. Holland, and Perry Rosen, both of North Caldwell, all of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 278,531, Jun. 29, 1981, Pat. No. 4,345,084. This application Jun. 1, 1982, Ser. No. 383,445

Int. Cl.³ C09F *5/00, 5/06*; C11C *3/02, 1/00*

U.S. Cl. 260—405.5 **10 Claims**

1. A compound of the formula



wherein R is —COOR',

R_1 is hydrogen or fluoro; A and B are individually hydrogen or taken together form a carbon to carbon bond with a cis configuration: E and G are individually hydrogen or taken together form a carbon to carbon bond with a cis configuration with the proviso that at least one of A and B taken together or E and G taken together form a carbon to carbon bond with a cis configuration; and R' is hydrogen or lower alkyl;

or pharmaceutically acceptable salts thereof.

4,500,463

POLYPRENYL CARBOXYLIC ACID DERIVATIVES

Akio Sato; Kenji Nakajima; Yoshimasa Takahara, all of Yatabemachi; Shizumasa Kijima, Niiza; Yuichi Inai, Tokyo; Yoshiyuki Kohara, Gifu; Yoshiyuki Kawakami, Tokyo, and Tomio Tsurugi, Gifu, all of Japan, assignors to Eisai Co., Ltd. and Agency of Industrial Science & Technology, both of Tokyo, Japan

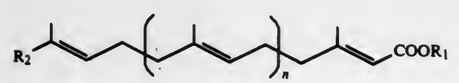
Filed May 1, 1981, Ser. No. 259,772

Claims priority, application Japan, May 19, 1980, 55-66203

Int. Cl.³ C07C *57/13, 59/42, 59/74, 69/602, 69/73, 69/732*

U.S. Cl. 260—406 **14 Claims**

1. A polyprenyl carboxylic acid derivative having the formula (I):



(I)

in which n is an integer of from 2 to 4, R_1 is hydrogen or an ester-forming moiety effective as a protecting group for a carboxyl group selected from the group consisting of alkyl, alkenyl, cycloalkyl and aryl, and R_2 is hydroxymethyl, formyl or carboxyl.

4,500,464

COPPER AND MANGANESE RECOVERY FROM C_5–C_9 SATURATED ALIPHATIC MONOCARBOXYLIC ACIDS

Olan S. Fruchey, Corpus Christi, Tex., assignor to Celanese Corporation, New York, N.Y.

Filed Feb. 15, 1983, Ser. No. 466,447

Int. Cl.³ C11C *1/00*; C07F *1/08, 11/00*

U.S. Cl. 260—413 **9 Claims**

1. A process for removing copper and manganese from a water immiscible organic phase comprising a saturated aliphatic monocarboxylic acid containing from 5 to 9 carbon atoms which comprises adding to said monocarboxylic acid an aqueous formic acid solution containing from about 2 to about 20 weight percent formic acid in a sufficient amount for the substantially complete reaction of the copper and manganese metals with formic acid to cupric formate and manganous formate; extracting said formates from said monocarboxylic acid into the resulting aqueous phase which separates an organic phase containing said monocarboxylic acid; decanting said organic phase and recovering from it said monocarboxylic acid substantially free of copper and manganese.

4,500,465

SOLUBILIZED PLATINUM (II) COMPLEXES

Alan R. Amundsen, Somerville, and Eric W. Stern, Mountainside, both of N.J., assignors to Engelhard Corporation, Iselin, N.J.

Filed Jun. 28, 1982, Ser. No. 392,818

Int. Cl.³ C07F *15/00*

U.S. Cl. 260—429 R **4 Claims**

1. A platinum-amine compound of the formula: cis[Pt$(A)_2(X)_2$] wherein A represents a polyhydroxylated amine and A_2 represents a polyhydroxylated diamine, and A and A_2 are selected from among

2-methyl-2-amino-1,3-propanediol,
tris(hydroxymethyl)methylamine,
2,3-dihydroxypropylamine,
2,2,2-tris(hydroxymethyl)ethylamine,
2-amino-2-ethyl-1,3-propanediol,
2,3,4,5,6-pentahydroxyhexylamine,
3,3,3-tris(hydroxymethyl)propylamine,
1,2-diamino-4,5-dihydroxycyclohexane,
1,2-diamino-3,4,5-trihydroxycyclopentane,
2-(tris(hydroxymethyl)methyl)-1,3-diaminopropane
2,3-bis(hydroxymethyl)ethylenediamine;

and the X radicals are anionic ligands selected from the group consisting of halo, carboxylato or, taken together, the X radicals represent dicarboxylato, sulfato, orthophosphato, or pyrophosphato, or a combination of aquo and sulfato, orthophosphato or pyrophosphato.

4,500,466

METHOD FOR PREPARING A ZINC DIMETHACRYLATE POWDER HAVING A SPECIFIC SURFACE AREA RANGE

Robert A. Hayes, Cuyahoga Falls, and Wendell R. Conard, Kent, both of Ohio, assignors to The Firestone Tire & Rubber Company, Akron, Ohio

Continuation-in-part of Ser. No. 421,012, Sep. 21, 1982, abandoned. This application Oct. 20, 1983, Ser. No. 543,705

Int. Cl.³ C07F *3/06*; C08K *3/04*; C08L *7/00*; C08F *275/00*

U.S. Cl. 260—429.9 **6 Claims**

1. A method of preparing a zinc dimethacrylate powder having a surface area of from about 3.7 to about 5.4 m^2/g which comprises:

(a) reacting under agitation zinc oxide and methacrylic acid in an amount of from about 0.5 to about 0.6 moles of zinc oxide per mole of methacrylic acid in a liquid aliphatic hydrocarbon dispersing medium to produce particles of zinc dimethyacrylate in the liquid medium;

(b) recovering said particles of zinc dimethacrylate from said liquid medium by filtration or evaporation of the liquid medium; and

(c) drying said particles of zinc dimethacrylate to produce said zinc dimethacrylate powder.

4,500,467

BENZOYLTHIO COMPOUNDS, THEIR PREPARATION AND THEIR USE AS DRUGS

Hugo Kubinyi, Weisenheim; Martin Traut, Heidelberg, and Josef Gries, Wachenheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellscaft, Ludwigshafen, Fed. Rep. of Germany

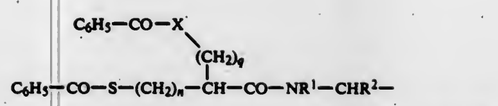
Filed Nov. 21, 1983, Ser. No. 554,098

Claims priority, application Fed. Rep. of Germany, Nov. 24, 1982, 3243370

Int. Cl.³ C07C *153/00, 103/52*; C01B *25/10*

U.S. Cl. 514—2 **5 Claims**

1. An angiotensin converting enzyme inhibitor which is selected from the group consisting of benzoylthio compounds of the formula



wherein

R^1 and R^3 are identical or different and are each hydrogen or C_1–C_4alkyl;

R^2 and R^4 are identical or different and are each hydrogen; C_1–C_6 alkyl which is unsubstituted or substituted by hydroxyl, mercapto, C_1–C_4 alkylthio, a carboxylic ester group, carboxamido, or acylamino;

aryl;

hetaryl;

arylakylene; or

hetarylalkylene radical which is unsubstituted or substituted in the aryl moiety by hydroxyl,

C_1–C_4 alkoxy, arylalkoxy, or halogen; with the proviso that R^1 and R^4 together or R^3 and R^4 together may furthermore be a radical selected from

$—(CH_2)_p—$, wherein p is 2–4,

$—CH_2—S—CH_2—$, or

ortho—$CH_2—C_6H_4—CH_2—$;

X is NH or sulfur;

m and n are identical or different and are each 0 or 1; and

q is 0;

or a salt of said inhibitor with a physiologically acceptable base.

4,500,468

CATALYTIC DIMERIZATION OF ACRYLONITRILE

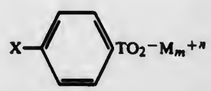
James D. Burrington, Richmond Hts., and Marc W. Blachman, Lyndhyrst, both of Ohio, assignors to The Standard Oil Company, Cleveland, Ohio

Filed Nov. 21, 1983, Ser. No. 554,088

Int. Cl.³ C07C *121/30, 120/00*

U.S. Cl. 260—465.8 D **23 Claims**

1. A process for making α-methyleneglutaronitrile which comprises dimerizing acrylonitrile in the presence of a catalytic amount of a sulfinate or selenate catalyst having the formula



where M is an alkali metal or an alkaline earth metal, T is S or Se, n is 1 or 2, m is 0.5 or 1, n×m=1, and X is selected from H—, nitro, methyl, methoxy and halo.

4,500,469

METAL ION CONTROL COMPOUNDS BASED ON NORBORNANE

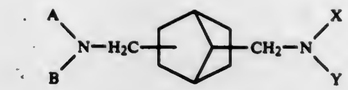
Jaime Simon, Angleton; Druce K. Crump, Lake Jackson, and David A. Wilson, Richwood, all of Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed Feb. 27, 1984, Ser. No. 584,071

Int. Cl.³ C07F *9/38*; C07C *143/21, 61/12, 87/40*

U.S. Cl. 260—502.5 E **11 Claims**

1. Compounds having the structural formula:



wherein substituents A, B, X and Y each are independently selected from radicals consisting of hydrogen, hydroxyalkyl (wherein the alkyl group contains 2–6 carbon atoms), methylenephosphonic; methylene-, ethylene- and propylenesulfonic 2-hydroxypropyl-sulfonic and alkylcarboxylic acid radicals (having 2–4 carbon atoms) and the alkali, alkaline earth metal, ammonium and amine salts of any of the phosphonic, sulfonic or carboxylic acid derivatives, and wherein at least one of the substituents is other than hydrogen.

4,500,470

METAL ION CONTROL AGENTS BASED ON DICYCLOPENTADIENE DERIVATIVES

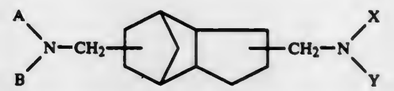
David A. Wilson, Freeport, Tex., assignor to The Dow Chemical Company, Midland, Mich.

Filed Apr. 18, 1983, Ser. No. 486,122

Int. Cl.³ C07C *143/21*; C07F *9/38*

U.S. Cl. 260—502.5 E **11 Claims**

1. Compounds having the structural formula:



wherein substituents A, B, X and Y each are independently selected from radicals consisting of hydrogen, hydroxyalkyl (wherein the alkyl group contains 2–6 carbon atoms) hydroxyethyl- and hydroxypropyl sulfonic, methylenephosphonic, methylene-, ethylene- and propylenesulfonic, alkylcarboxylic acid radicals (having 2–4 carbon atoms) and the alkali or alkaline earth metal, ammonia and amine salts thereof and wherein at least one A, B, X and Y is other than hydrogen.

4,500,471

PREPARATION OF TRIFLUOROMETHYL-BENZOYL HALIDES

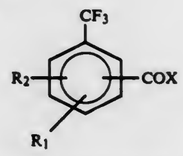
Byron R. Cotter, Grand Island, and David Y. Tang, Amherst, both of N.Y., assignors to Occidental Chemical Corporation, Niagara Falls, N.Y.

Filed Apr. 16, 1980, Ser. No. 140,894

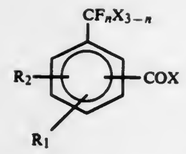
Int. Cl.³ C07C *63/10*

U.S. Cl. 260—544 D **17 Claims**

1. A process for the preparation of trifluoromethylbenzoyl halides of the formula



wherein X is chlorine or bromine and R_1 and R_2 are independently selected from the group consisting of hydrogen, fluorine, chlorine, bromine, alkyl, aryl, haloaryl, alkoxy, fluoroalkoxy, aryloxy, haloaryloxy, nitro, cyano, sulfonyl, and carboxylic acid chloride, which comprises reacting a compound of the formula



wherein X, R_1 and R_2 are as stated above, and n is 0 to 2 with about three moles or less of hydrogen fluoride in the presence of a halogen transfer catalyst.

4,500,472

PROCESS FOR PREPARING IMIDAZOBENZOTHIADIAZEPINES

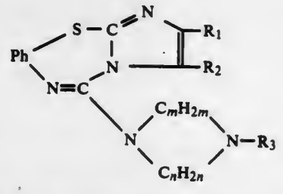
Isidoros Vlattas, Summit, N.J., assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 259,261, May 11, 1981, Pat. No. 4,391,808, which is a continuation-in-part of Ser. No. 158,671, Jun. 12, 1980, abandoned. This application Aug. 9, 1982, Ser. No. 406,760

Int. Cl.³ C07D *513/07*

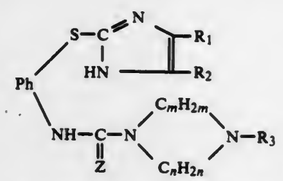
U.S. Cl. 260—245.5 **3 Claims**

1. A process for the preparation of a compound of the formula



(I)

wherein each of R_1 and R_2 is hydrogen, lower alkyl or alkanoyl, halogeno, cyano, carboxy, lower carbalkoxy, carbamoyl, sulfamoyl, mono- or di-lower alkyl-(carbamoyl or sulfamoyl); Ph is 1,2-phenylene, unsubstituted or substituted by up to two members selected from lower alkyl, lower alkoxy, lower alkylthio, halogeno, trifluoromethyl, sulfamoyl, mono- or di-lower alkylsulfamoyl; each of C_mH_{2m} and C_nH_{2n} is lower alkylene separating both nitrogen atoms by 2 or 3 carbon atoms; and R_3 is hydrogen, lower (alkyl, alkanoyl, alkoxycarbonyl, phenylalkoxycarbonyl or hydroxyalkyl wherein the hydroxy group is separated from the nitrogen atom by at least 2 carbon atoms); consisting of ring-closing a compound of formula V



(V)

wherein z is oxygen and the other symbols have the above-given meaning, under dehydrating conditions using dehydrating agents comprising phosphorous halides and phosphorous oxyhalides.

4,500,473

PREPARATION OF CARBOXYLIC ACID ANHYDRIDES

Jean Gauthier-Lafaye, Lyons; Robert Perron, Charly; Jacques Gallucci, Oullins, and Philippe Leconte, Lyons, all of France, assignors to Rhone-Poulenc Chimie de Base, Courbevole, France

Filed Mar. 23, 1983, Ser. No. 478,033

Claims priority, application France, Mar. 23, 1982, 82 05268

Int. Cl.³ C07C *51/56*

U.S. Cl. 260—548 **20 Claims**

1. A process for the preparation of a carboxylic acid anhydride having the general formula:

RCO—O—COR′ (I)

in which R is a linear alkyl radical having at most 4 carbon atoms and R′ independently is a linear or branched chain alkyl radical having from 1 to 12 carbon atoms, a phenyl radical (C_6H_5-), a radical $C_6H_5—C_xH_{2x}—$ or a radical $C_xH_{2x+1}—C_6H_4—$, with x being an integer ranging from 1 to 6, which process comprises:

reacting, in an essentially anhydrous, liquid phase containing an aprotic organic solvent:

(i) a compound of the formula:

RX (II)

in which R is as above-defined and X is an iodine atom or a group R″—SO_3—, with R″ being an alkyl, aryl or aralkyl radical having at most 10 carbon atoms;

(ii) a carboxylate of the formula:

$(R'COO^-)_nA^{n+}$ (III)

in which R′ is as above-defined, n is an integer ranging from 1 to 4, and A^{n+} is an alkali metal cation, an alkaline earth metal cation, a cation $N^+R^1R^2R^3R^4$ or a cation $P^+R^1R^2R^3R^4$, in which R^1 to R^4, which may either be identical or different, each have the definition given above for R′, or may be a cycloalkyl radical having from 3 to 8 carbon atoms, the cation Mn^{++}, the cation Zn^{++}, or a cation of a metal from the lanthanide or actinide group of the Periodic Table; and

(iii) carbon monoxide; said reaction being carried out in the presence of a catalyst comprising a salt of cobalt tetracarbonyl hydride, at a temperature ranging from 0° and 200° C., and under a pressure which is less than or equal to 600 bars.

4,500,474

CARBONYLATION OF METHYL ACETATE

Jean Gauthier-Lafaye, Lyons, and Robert Perron, Charly, both of France, assignors to Rhone-Poulenc Chimie de Base, Courbevoie, France

Filed Jun. 11, 1982, Ser. No. 387,467

Claims priority, application France, Jun. 12, 1981, 81 11787

Int. Cl.³ C07C *51/12*

U.S. Cl. 260—549 **20 Claims**

2. In a process for the carbonylation of methyl acetate to produce acetic anhydride in homogeneous liquid phase, the improvement which comprises conducting such carbonylation in a virtually anhydrous medium, in the presence of:

(a) a cobalt source;

(b) a rutheium source;

(c) an ionic iodide of the formula:

$A^{m+}I_m^-$

in which A^{m+} is a nitrogen group quaternary onium cation, an alkali metal cation, an alkaline earth metal cation, a cation of a lanthanide group metal or a cation of an actinide group metal, with m being 1, 2, 3 or 4;

(c′) a carboxylate of the formula:

$A'^{n+}(OCOR)_n^-$

in which n is 1, 2, 3 or 4 and A'^{n+} is defined as was A^{m+}, with A'^{n+} and A^{m+} being the same or different, an R is an alkyl, aralkyl or aryl radical having a maximum of 8 carbon atoms; and

(d) hydrogen, as an amount of at least about 1 mole percent of the combined gases hydrogen and carbon monoxide;

with the total amount of halogen compounds present in the reaction medium, expressed in gram atoms of halogen and designated by X_T, being such that the atomic ratio $X_T/(A^{m+}+n.A'^{n+})$ is less than or equal to 1.

4,500,475

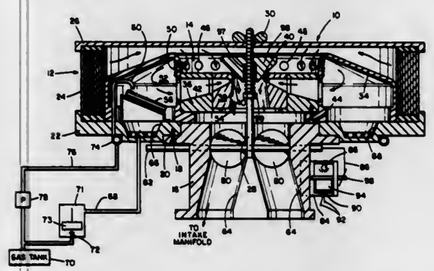
CARBURETION SYSTEM

Gabor Csaszar, 8414 Russell Dr., Cary, Ill. 60013; Gernot F. Oehley, 6650 Harts Rd., Niles, Ill. 60648, and Fred M. Goldman, 624 Huber Ln., Glenview, Ill. 60025

Filed Nov. 30, 1983, Ser. No. 556,462

Int. Cl.³ F02M *27/08*

U.S. Cl. 261—36 A **9 Claims**



1. A combination gas vaporizer-air filter comprising a housing, fuel supply means for fluid to be vaporized, an ultrasonic transducer in the housing for vaporizing fluid from said fuel supply means, air inlet means in the housing, outlet means in the housing, an air filter in said housing adjacent the air inlet means, the vaporized fluid and air in the housing being intimately mixed prior to discharge from the outlet means, duct means communicating said housing to the intake manifold of an internal combustion engine, the outlet means communicating with said duct means, whereby the mixture of vaporized fluid and air may pass from the outlet means to said duct and then to said intake manifold, venturi means in said housing, said venturi means being disposed in the air passage through said housing downstream from said ultrasonic transducer, and a gas collector body in said housing, said gas collector body having ports in the internal walls thereof and a central opening therethrough, said venturi means including a venturi housing disposed in said central opening.

4,500,476

VARIABLE VENTURI TYPE CARBURETOR

Mitsuyoshi Teramura; Masatami Takimoto, both of Toyota; Norihiko Nakamura, Mishima; Takaaki Itoh, Mishima; Takashi Katou, Mishima, and Yukinori Isoya, Nagoya, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota and Aisan Industry Co., Ltd., Obu, both of, Japan

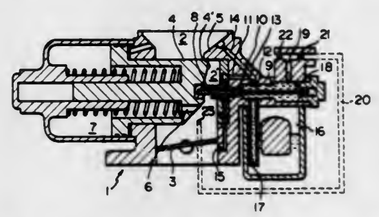
Filed Sep. 29, 1982, Ser. No. 428,034

Claims priority, application Japan, Dec. 24, 1981, 56-207989

Int. Cl.³ F02M *9/06*

U.S. Cl. 261—44 C **2 Claims**

1. A variable-venturi-type carburetor having an intake passage therethrough; a suction piston movable in the intake passage; a substantially horizontally extending main fuel passage having a first end and a second blind end, said second blind end located at a position in said main fuel passage opposite to said first end; a metering jet arranged adjacent to the first end of said main fuel passage for interconnecting the main fuel passage to the intake passage; a slow fuel passage having a fuel inlet which is open to the main fuel passage near said metering jet, said slow fuel passage having a fuel outlet which is open to the intake passage; a metering needle fixed onto the suction piston and extending into the metering jet for metering fuel fed into the intake passage from the main fuel passage; said main fuel passage having a vertically enlarged portion formed between the inlet of the slow fuel passage and the second blind



end; a fuel vapor conduit, said fuel vapor conduit having a fuel vapor outlet which is open to the intake passage; and an upwardly oriented, T-shaped inlet port for said fuel vapor conduit, said inlet port being open to the main fuel passage at said vertically enlarged portion, one lateral port of said T-shaped inlet port being connected to the fuel vapor conduit, the other lateral port being connected to atmospheric pressure.

4,500,477

SLIDING THROTTLE VALVE TYPE CARBURETOR

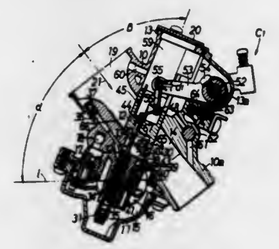
Katsuyuki Zaita, Kawagoe, and Michio Tahata, Niiza, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 28, 1983, Ser. No. 546,502

Claims priority, application Japan, Nov. 4, 1982, 57-193809

Int. Cl.³ F02M *9/06*

U.S. Cl. 261—44 B **23 Claims**



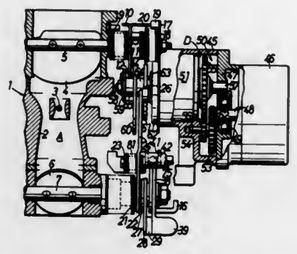
1. A sliding throttle valve type carburetor comprising a sliding throttle valve, an air intake passage and a fuel float chamber, said sliding throttle valve extending along a line of intersection with said intake passage and being disposed at an acute angle relative to the portion of said intake passage upstream from said sliding throttle valve, said sliding throttle valve forming an angle of intersection with the portion of the fuel surface in said float chamber upstream from said sliding throttle valve which is greater than said acute angle.

4,500,478

SUPPORTING APPARATUS FOR CARBURETOR CONTROLLING CAM PLATE

Nobuyuki Furukawa, Asaka, and Mitsuhiro Sanbe, Kiyose, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 30, 1983, Ser. No. 537,807
Claims priority, application Japan, Oct. 5, 1982, 57-174744
Int. Cl.³ F02M *1/10*
U.S. Cl. 261—52 **16 Claims**



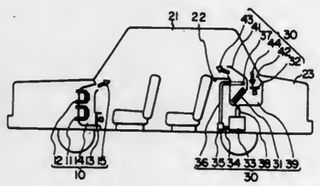
1. Apparatus comprising a carburetor including a choke valve and a throttle valve, a controlling prime mover, a driving shaft rotated by said prime mover, first and second cam plates for controlling the opening of said choke valve, a third cam plate for controlling the opening of said throttle valve, each said cam plate being supported on said driving shaft, a displacement detection plate on said driving shaft for detecting rotational displacement of said cam plates, and a phase shift preventing means, said cam plates for the choke valve, said cam plate for the throttle valve and said displacement detection plate being fixed to each other by said phase shift preventing means so as to avoid producing a relative phase shift between the same.

4,500,479

HUMIDIFIER

Akira Fukami, Okazaki; Hiroki Noguchi, Oobu, and Hiroshi Hamaguchi, Aichi, all of Japan, assignors to Nippon Soken, Inc., Nishio, Japan

Filed Aug. 2, 1982, Ser. No. 404,488
Claims priority, application Japan, Sep. 9, 1981, 56-142008
Int. Cl.³ B01F *3/04*
U.S. Cl. 261—98 **4 Claims**



1. An automobile humidifier mounted behind the passenger compartment of an automobile provided with conventional air conditioning means having air heating and cooling functions, said humidifier comprising:

an air duct mounted behind the passenger compartment of an automobile and having an air inlet and an air outlet from and to, respectively, the compartment;

a humidifier element in said duct having air passages therethrough, the walls of which are constructed of high water absorbing material, said passages being adapted to be inclined downward, said element having a laminated structure comprising alternating non-corrugated sheet material and corrugated spacer sheet material of highly water absorbable paper containing activated carbon fibers;

a blower disposed in said duct for blowing air through said passages;

nozzle means for applying water into the upper ends of said passages; and

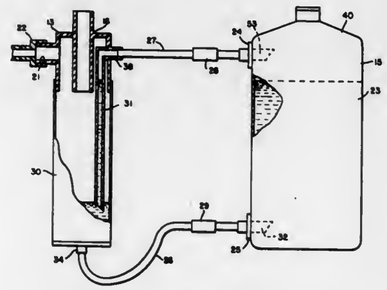
means for supplying said nozzle means with water.

4,500,480

PEDIATRIC CARTRIDGE HUMIDIFIER

Orlando D. Cambio, Jr., Bristol, Wis., assignor to Respiratory Care, Inc., Arlington Heights, Ill.

Continuation of Ser. No. 410,626, Aug. 23, 1982, abandoned. This application Nov. 7, 1983, Ser. No. 549,075
Int. Cl.³ B01F *3/04*; A61M *15/00*
U.S. Cl. 261—104 **12 Claims**



1. A feeder circuit for delivering a liquid from a reservoir to a cartridge module, said cartridge module having a top portion and a bottom portion, comprising, in combination:

support means for securing said reservoir in fixed relationship to said cartridge module;

a first conduit connecting said bottom portion of said cartridge module to said reservoir;

first valve means interconnected in said first conduit for permitting passage of fluid from said reservoir to said cartridge module;

a fluid level sensing tube extending into said cartridge module through said top portion and extending therein towards said bottom portion, said fluid level sensing tube having a first end external to said cartridge module and a second end within said cartridge module, said second end of said fluid level sensing tube substantially defining a fluid control level within said cartridge module;

a second conduit connecting said first end of said fluid level sensing tube and said reservoir; and

second valve means interconnection in said second conduit for permitting passage of fluid from said cartridge module to said reservoir;

said support means, said first conduit, said first valve means, said fluid level sensing tube, said second conduit, and said second valve means cooperatively defining fluid level means for maintaining the level of said liquid within said cartridge module substantially at said fluid control level.

4,500,481

METHODS FOR CONTROLLING VINYL PLASTIC EXTRUDATE

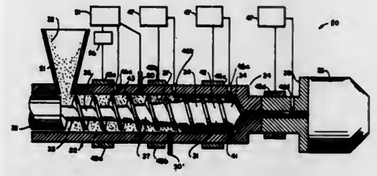
Morris F. Marx, III, Dunwoody, Ga., assignor to AT&T Technologies, Inc., New York, N.Y.

Filed Apr. 25, 1983, Ser. No. 488,312
Int. Cl.³ B29F *3/08*
U.S. Cl. 264—40.6 **6 Claims**

1. A method of providing a substantially homogenous extrudate of a plastic material which comprises a polyvinyl chloride composition having a fusion characteristic which may vary between supplies thereof, said method comprising the steps of:

feeding pellets of the polyvinyl chloride plastic material into a feed section of an extruder screw and barrel arrangement;

rotating the screw to convey the pellets from the feed section through a compression section and a metering section to an extruder crosshead where the plastic material is caused to be extruded into a predetermined cross-sectional shape; while



heating the plastic material;

measuring the melt pressure of the heated plastic material between the feed section and the metering section of the extruder screw; and

in response to the measured melt pressure, adjusting the heat energy which is imparted to the plastic material at least prior to the compression section to cause the plastic material that is moved from the barrel to the crosshead to be substantially homogenous.

4,500,482

METHOD OF MANUFACTURE SILICON NITRIDE CERAMIC MOLDED ARTICLES

Werner Hüther, Karlsfeld, Fed. Rep. of Germany, assignor to Motoren-Und Turbinen-Union Munchen GmbH, Munich, Fed. Rep. of Germany

Filed Mar. 11, 1980, Ser. No. 129,452
Claims priority, application Fed. Rep. of Germany, Mar. 20, 1979, 2910943
Int. Cl.³ C04B *35/64*
U.S. Cl. 264—65 **6 Claims**

1. A method of manufacturing silicon nitride ceramic molded articles comprising the steps of:

(a) providing a powdery mixture of silicon, α-silicon nitride, and a sintering agent,

(b) molding a blank from the powdery mixture,

(c) nitriding the silicon content of the blank, and

(d) thereafter subjecting the blank to hot isostatic pressing.

4,500,483

MANUFACTURE OF HOLLOW CVD SILICON NITRIDE ARTICLES

Richard D. Veltri, East Hartford; Francis S. Galasso, Manchester, both of Conn., and Mel I. Mendelson, Palm Beach Gardens, Fla., assignors to United Technologies Corporation, Hartford, Conn.

Filed Mar. 19, 1982, Ser. No. 379,827
Int. Cl.³ B29C *13/00*
U.S. Cl. 264—81 **5 Claims**

1. In the manufacture of a hollow article of silicon nitride the steps of:

making a carbon pattern for the article;

heating the pattern to between 1400° and 1500° C. in a gaseous atmosphere of silicon tetrafluoride and ammonia to combine with the silicon tetrafluoride and to deposit a coating of silicon nitride on the pattern;

removing the pattern and coating from the gaseous atmosphere;

removing an area of the coating to form an opening to expose the pattern; and

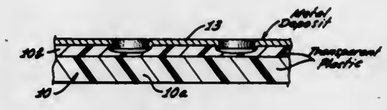
burning out the pattern by heating the coated pattern to between 650° and 750° C. in an oxidizing atmosphere for several hours to cause reaction of the carbon with the oxygen in the atmosphere.

4,500,484

PROCESS FOR MAKING A VIDEO RECORD DISC

David P. Gregg, Los Angeles, Calif., assignor to Discovision Associates, Costa Mesa, Calif.

Continuation of Ser. No. 936,982, Aug. 25, 1978, abandoned, which is a division of Ser. No. 812,157, Jul. 1, 1977, abandoned, which is a division of Ser. No. 571,259, Apr. 24, 1975, abandoned, which is a continuation-in-part of Ser. No. 735,007, Jun. 6, 1968, abandoned. This application Jul. 16, 1982, Ser. No. 399,075
Int. Cl.³ B29D *17/00*
U.S. Cl. 264—107 **18 Claims**



1. A method for forming a plastic record disc having a spiral-shaped recording track that includes a succession of alternating regions of optical contrast having variable lengths, the method comprising the steps of:

providing a disc-shaped unitary structural die member having a planar surface for carrying an information signal in an information track formed by a plurality of circumferentially spaced rasied members extending away from the plane of the planar surface and terminating in a common plane spaced from said planar surface, and wherein said information track is in the form of a spiral having a plurality of turns, each of said turns is separated from an adjacent one of said turns by an intertrack portion of said planar surface, the information track includes a plurality of alternately positioned first and second regions arranged in sequential order, each of said first regions is formed from a portion of said planar surface such that each of said first regions is coplanar with said intertrack portions of said planar surface, each of said first regions is located intermediate two of said second regions, each of said second regions is defined by one of said spaced members and formed with a constant dimension in the radial direction of the disc-shaped member and a constant maximum dimension in the direction perpendicular to said first surface, and each of said second regions is formed with a variable length representative of the information signal;

heating said die member;

moving a body of heated plastic into compressive engagement against said die to form a record disc having a planar recording surface with a spiral-shaped recording track that includes a succession of alternating regions of optical contrast having variable lengths;

cooling the die during said period of compressive engagement such that the record disc retains the recording track in the disc when removed from said die; and

releasing said compressive engagement.

4,500,485

METHOD FOR THE PRODUCTION OF A HOSE OF A SHAPE-CURED ELASTOMERIC MATERIAL, SUCH AS VULCANIZED RUBBER, ESPECIALLY AN AUTOMOTIVE RADIATOR COOLANT HOSE

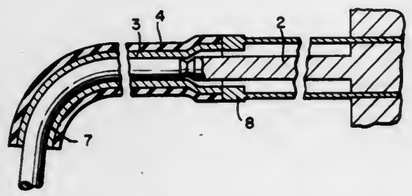
Henricus P. Willemsen, Aarle-Rixtel; Leonardus M. A. Vaessen, and Rudolf J. G. A. van der Hoorn, both of Nuenen, all of Netherlands, assignors to Vredestein N.V., Velp, Netherlands

Filed Jul. 28, 1983, Ser. No. 518,223

Claims priority, application Netherlands, Aug. 2, 1982, 8203075

Int. Cl.³ B29H *5/01*

U.S. Cl. 264—313 **3 Claims**



1. A method for the production of a hose of a shape-cured elastomeric material, such as vulcanized rubber, especially an automotive radiator coolant hose, said method comprising:
   (a) sliding a flexible mandrel comprising a helically wound thread onto a straight auxiliary mandrel;
   (b) bringing a hose of non-cured material on said flexible mandrel;
   (c) sliding the combination of the hose of non-cured material and said flexible mandrel off the straight auxiliary mandrel and onto an inner mandrel portion having the finally desired configuration of the hose;
   (d) curing said hose present on the flexible mandrel and on the inner mandrel portion;
   (e) sliding the flexible mandrel together with the cured hose off said inner mandrel portion;
   (f) bringing the flexible mandrel together with the cured hose onto a straight auxiliary mandrel; and
   (g) sliding the hose off said flexible mandrel.

4,500,486

METHOD FOR REMOVAL OF A DATA CARRIER DISK AFTER MOLDING

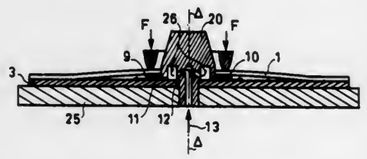
Roger Rascle, and Francois Lange, both of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Sep. 2, 1982, Ser. No. 414,310

Claims priority, application France, Oct. 6, 1981, 81 18788

Int. Cl.³ B29C *7/00;* **B29D** *31/00, 11/00, 17/00*

U.S. Cl. 264—335 **7 Claims**



1. A method for removal from a planar disk-shaped clamping die a molded record disk made of a planar substrate coated with a layer of hardened molding agent sticking both to said substrate and to a recorded surface of said stamping die, carrying in an annular area a relief impression of surface irregularities which are copied into said layer prior to said removal and wherein said molding agent is arranged intermediate between said substrate and said stamping die, said method comprising the steps of:
   (a) clamping an outer annular portion of the molded record disk against the recorded surface to form a seal at said outer portion and to thereby establish, between said recorded surface and one surface of said substrate, an airtight inflatable chamber which includes said annular area;
   (b) establishing fluid communication with said inflatable chamber by means of a duct having an opening which terminates at a position in said inflatable chamber;
   (c) establishing a gap between a cover plate and the other surface of said substrate by positioning said cover plate in confronting relationship to said other surface;
   (d) maintaining the seal formed according to step (a) to prevent the escape of gas from the inflatable chamber while simultaneously inflating said chamber by introducing pressurized gas through the duct to cause the annular area of said disk to bend into said established gap to thereby effect an annular loss of contact between said annular area and said molded record disk; and
   controlling the amount of said bending by maintaining the gap formed according to step (c).

4,500,487

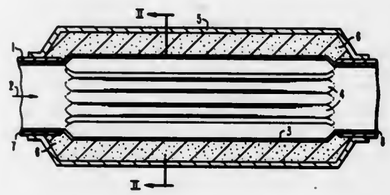
PRESSURE SURGE ATTENUATOR

Alan M. Christie, Swissvale, and Kurt I. Snyder, Murrysville, both of Pa., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Feb. 26, 1982, Ser. No. 352,603

Int. Cl.³ G21C *9/00;* **F16L** *9/04, 9/18*

U.S. Cl. 376—283 **4 Claims**



1. A pressure surge attenuating system for piping which carries liquid coolant for a nuclear reactor and which attenuating system is operable to attenuate maximum expected pressure surges while maintaining the integrity of said piping to prevent escape of coolant from said piping, said attenuating system comprising:
   a pipe section of said piping having a wall portion with a fluted cross-sectional configuration which can deform by radially expanding without plastic deformation under pressure surges which could be hazardous;
   an enlarged container surrounding said fluted wall pipe section and spaced from said fluted wall pipe section; and
   a crushable metal foam filling the space between said fluted wall pipe section and said surrounding container, said crushable metal foam exhibiting controlled energy absorption upon crushing thereof, and said pressure surge attenuating system operable to attenuate the maximum expected pressure surges which may be encountered while limiting the expansion of said fluted wall section so that it does not exhibit plastic deformation.

4,500,488

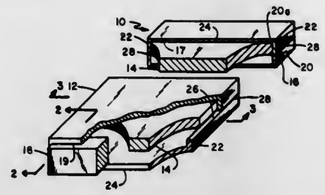
ENCAPSULATED FUEL UNIT AND METHOD OF FORMING SAME

Edward F. Groh, Naperville, Ill.; Dale A. Cassidy, Valparaiso, Ind., and Edward F. Lewandowski, Westmont, Ill., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Sep. 7, 1982, Ser. No. 415,117

Int. Cl.³ G21C *3/04*

U.S. Cl. 376—409 **8 Claims**



1. An encapsulated nuclear fuel unit having very low thickness-to-width and thickness-to-length ratios, comprising a piece of nuclear fuel sized approximately between 1 and 2 inches in width, 1 and 4 inches in length, and only 1/64 and ¼ of an inch in thickness; and a rigid housing virtually enclosing and encapsulating the fuel piece, said housing having an open-ended body section defining an interior opening just slightly larger than the cross section of the fuel piece thereby being operable to receive the fuel piece and being elongated lengthwise to extend beyond the fuel piece, the body section being formed as two C-shaped channel pieces each having an intermediate wall and two short legs angled substantially normal thereto and welded together along opposite butted edges extended along the narrow sides of the body section and being of an impervious material between 0.002 and 0.01 of an inch thick, and said housing having rigid but porous end caps secured across and closing the open ends of the body section outwardly of the fuel piece.

4,500,489

HIGH TEMPERATURE PROTECTIVE COATING ALLOY

Andrew R. Nicoll, Oftersheim, Fed. Rep. of Germany, assignor to BBC Aktiengesellschaft Brown, Boveri & Cie, Baden, Switzerland

Filed Nov. 30, 1982, Ser. No. 445,714

Claims priority, application Fed. Rep. of Germany, Dec. 5, 1981, 3148198

Int. Cl.³ C22C *19/05*

U.S. Cl. 420—445 **2 Claims**

1. A high temperature protective coating alloy consisting essentially of aluminum in 4–5.1 % by weight, silicon in 1.1–3.2% by weight, chromium in 17.2–17.8% by weight, iron at about 4.5% by weight, boron at about 3.5% by weight, the balance being nickel.

4,500,490

CATALYTIC ALKYLATION OF HYDROCARBONS

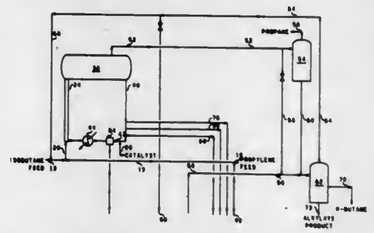
Thomas Hutson, Jr., Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 027,322, Apr. 5, 1979, Pat. No. 4,304,947. This application Aug. 26, 1981, Ser. No. 296,090

Int. Cl.³ G01N *33/00, 14/00*

U.S. Cl. 422—62 **17 Claims**

1. Apparatus for alkylating at least one alkylatable hydrocarbon with two different alkylating agents in the presence of an acid-type catalyst comprising:
   (a) a first alkylation reactor system, including;
      (1) a first alkylation reactor means;
      (2) alkylatable hydrocarbon introduction means adapted to introduce an alkylatable hydrocarbon into said first reactor;
      (3) first alkylating agent introduction means adapted to introduce a first alkylating agent into said first reactor;
      (4) first separator means operatively connected to the effluent end of said first reactor and adapted to separate said effluent into a first alkylate phase and a first acid phase; and
      (5) first catalyst recycle means operatively connected to said first separator to receive said first acid phase and pass said first acid phase from said first separator to said first reactor;
   (b) a second alkylation reactor system, including;
      (1) second alkylation reactor means;
      (2) alkylatable hydrocarbon introduction means adapted to introduce an alkylatable hydrocarbon into said second reactor;
      (3) second alkylating agent introduction means separate from said first alylating agent introduction means and adapted to introduce a second alkylating agent into said second reactor;
      (4) second separator means operatively connected to the effluent end of said second reactor and adapted to separate said effluent into a second alkylate phase and a second acid phase; and
      (5) second catalyst recycle means operatively connected to said second separator means to receive said second acid phase and pass said second acid phase from said second separator means to said second reactor means;



   (c) at least one catalyst exchange means operatively connecting said first catalyst recycle means and said second catalyst recycle means;
   (d) acid soluble oil generation means operatively connected to at least one of said first catalyst recycle means, said second catalyst recycle means and said catalyst exchange means;
   (e) said acid soluble oil generation means, includes; a third alkylating agent introduction means, operatively connected to said acid soluble oil generation means and a source of alkylating agent, olefinic hydrocarbon introduction means, operatively connected to said acid soluble oil generation means and a source of at least one olefinic hydrocarbon, other than said first and second alkylating agents, and acid-type catalyst introduction means, operatively connected to said acid soluble oil generation means and a source of supply of acid-type catalyst, said third alkylating agent introduction means, said olefinic hydrocarbon introduction means and said acid-type catalyst introduction means being the only means for introducing reactants to said acid soluble oil generation means;
   (f) heating means operatively connected to said acid-soluble oil generation means; and
   (g) control means to alternatively (1) open said third alkylating agent introduction means, close said olefinic hydrocarbon introduction means and actuate and increase the heat output of said heating means to a temperature significantly above the temperature of said first acid phase, said second acid phase or the acid present in said catalyst exchange means, to thereby produce acid soluble oil at a rate greater than that produced in said first and second alkylation

reactor means, and (2) open said olefinic hydrocarbon introduction means, close said third alkylating agent introduction means and actuate and increase the heat output of said heating means to a temperature sufficient to produce acid soluble oil in greater quantities than that produced in said first and second alkylation reactor means.

4,500,491

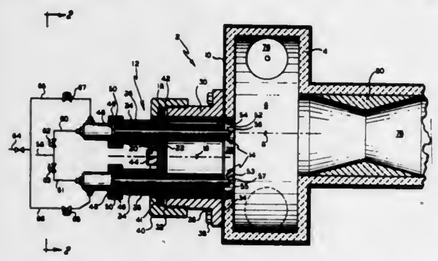
CHANGING OIL TUBES IN A CARBON BLACK REACTOR

Willie Tillman, Vinton, La., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 383,371, May 28, 1982, Pat. No. 4,418,049. This application Jun. 13, 1983, Ser. No. 533,913

Int. Cl.³ C01B *31/02*; C09C *1/48*

U.S. Cl. 422—150 **5 Claims**



1. In a carbon black reactor comprising a generally cylindrical reaction chamber having a longitudinal axis, said chamber being bounded at its upstream end by an upstream end wall,

the improvement comprising, in association with the upstream end wall,

a means for positioning at least two feedstock tubes each having a longitudinal axis with the longitudinal axis of each tube being parallel to the longitudinal axis of the generally cylindrical reaction chamber, said means for positioning at least two feedstock tubes being rotatable about a longitudinal axis generally equidistant from and generally parallel to the longitudinal axes of the at least two feedstock tubes and being positioned so that each feedstock tube is revolvable into axial alignment with the longitudinal axis of the generally cylindrical reaction chamber.

4,500,492

APPARATUS AND METHOD TO KEEP THE WALLS OF A FREE-SPACE REACTOR FREE FROM DEPOSITS OF SOLID MATERIALS

Kazuo A. Yamakawa, Monterey Park, Calif., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Sep. 8, 1982, Ser. No. 415,879

Int. Cl.³ B08B *5/02*; C09C *1/28*

U.S. Cl. 422—199 **10 Claims**

1. An apparatus for producing a solid substance such as silicon by reaction of a precursor gas composition, said apparatus comprising:

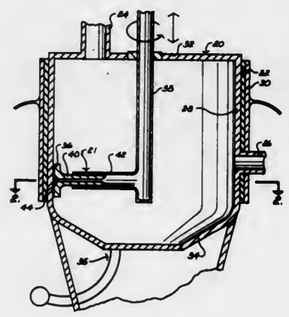
a reaction vessel having interior walls for containing the precursor gas composition;

gas inlet means for introducing the precursor gas composition into the reaction vessel;

gas outlet means for permitting excess gas composition and by-product gases to leave the reaction vessel;

solid substance removal means for permitting at least intermittent removal of the solid substance from the reaction vessel, and

wall cleaning means supported within the reaction vessel, said cleaning means including at least one rotating, telescopic head and means for ejecting a stream of cleaning gas from said at least one rotating, telescopic head so as to impinge upon the interior walls of the vessel, the impinging cleaning gas stream keeping at least a portion of the



surface of the interior walls substantially free of deposits of the solid substance and further acting in combination with the static gas pressure to bias the rotating, telescopic head into close proximity to the interior walls.

4,500,493

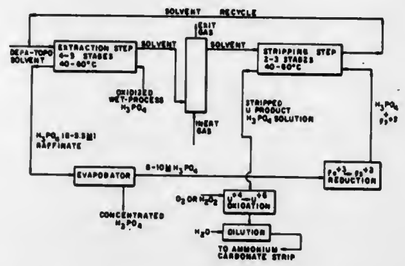
REDUCTIVE STRIPPING PROCESS FOR URANIUM RECOVERY FROM ORGANIC EXTRACTS

Fred J. Hurst, Jr., Oak Ridge, Tenn., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jun. 16, 1983, Ser. No. 504,904

Int. Cl.³ C01G *43/00*

U.S. Cl. 423—10 **2 Claims**



1. A process for the recovery of uranium from a wet-process phosphoric acid solution derived from the acidulation of uraniferous phosphate ores, comprising:

(1) contacting said phosphoric acid solution with an organic extractant consisting essentially of di(2-ethylhexyl) phosphoric acid and trioctylphosphine oxide dissolved in an organic diluent, to thereby extract uranium from said phosphoric acid solution into said organic extractant;

(2) reductively stripping uranium from said organic extractant with a H_3PO_4 strip solution containing ferrous ions which reduce uranyl ions in the extractant to uranous ions in the strip solution, the concentration of H_3PO_4 in said strip solution being at least 8 molar;

(3) disengaging said strip solution from the organic extractant;

(4) contacting said strip solution with an oxidizing reagent which converts quadrivalent uranium to hexavalent form; and

(5) diluting the said phosphoric acid strip solution with water to a level at which the hexavalent uranium contained therein is efficiently extractable into said organic

extractant, and passing the thus-diluted hexavalent uranium-containing solution through a second liquid-liquid solvent extraction cycle in which the uranium is stripped from the organic phase with an aqueous solution of an ammonium carbonate to produce a product consisting essentially of ammonium uranyl tricarbonate.

4,500,494

MICROENCAPSULATED CHELATING AGENTS AND THEIR USE IN REMOVING METAL IONS FROM AQUEOUS SOLUTIONS

Herbert B. Scher, Moraga, Calif., assignor to Stauffer Chemical Company, Westport, Conn.

Continuation of Ser. No. 467,702, Feb. 18, 1983, abandoned, which is a continuation of Ser. No. 278,309, Jun. 29, 1981, abandoned. This application Dec. 12, 1983, Ser. No. 560,771

Int. Cl.³ B01D *15/00*; C01G *5/00*

U.S. Cl. 423—24 **14 Claims**

1. A process for the purification of an aqueous solution containing metal ion impurities which comprises contacting said solution with a plurality of microcapsules, each comprising a liquid core material, which is substantially insoluble in water, consisting essentially of a metal ion chelating agent selected from the group consisting of -diketones, 8-hydroxyquinolines, and oximes, enclosed within a solid permeable shell of a material selected from the group consisting of polyurea and ureaformaldehyde resins, wherein said metal ion impurities pass through said shell of said microcapsules and are chelated by said chelating agents, and subsequently separating said microcapsules from said solution.

4,500,495

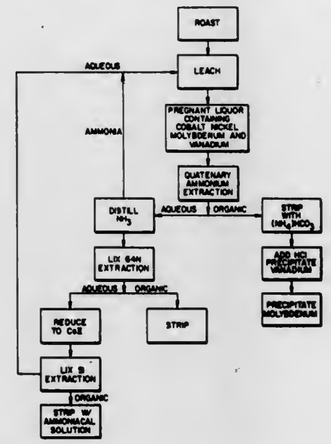
RECOVERING METALS FROM SPENT HYDROPROCESSING CATALYSTS

Gale L. Hubred, Richmond, and Dean A. Van Leirsburg, Petaluma, both of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Continuation-in-part of Ser. No. 422,813, Sep. 24, 1982, Pat. No. 4,432,953, and a continuation-in-part of Ser. No. 422,814, Sep. 24, 1982, Pat. No. 4,434,140, and a continuation-in-part of Ser. No. 422,987, Sep. 24, 1982, Pat. No. 4,434,141. This application Aug. 1, 1983, Ser. No. 519,180

Int. Cl.³ C01G *31/00, 39/00, 41/00, 51/00*

U.S. Cl. 423—53 **8 Claims**



1. A process to recover the metal values from spent hydroprocessing catalyst particles, said values including:

(i) at least one metal value selected from the Group consisting of cobalt and nickel; and

(ii) at least one metal value selected from the Group consisting of vanadium, molybdenum and tungsten; comprising:

(a) roasting the particles in an atmosphere containing molecular oxygen at a temperature in the range of between 400° C. and 600° C.;

(b) leaching the particles with a first aqueous solution of ammonia and an ammonium salt at a temperature less than the atmospheric boiling point of said first aqueous solution, forming a first pregnant liquor and once-leached particles;

(c) separating the once-leached particles from the first pregnant solution;

(d) leaching the once-leached particles with a second aqueous solution containing sulfur dioxide, forming a second pregnant liquor and twice-leached particles;

(e) separating the second pregnant liquor from the twice-leached particles;

(f) precipitating metal sulfides from the second pregnant liquor by the addition of hydrogen sulfide; and

(g) roasting said precipitated metal sulfides with fresh spent catalyst in step (a);

(h) transferring said molybdenum, tungsten and vanadium metal values from said first pregnant liquor into a first organic solution by means of a first organic liquid extractant comprising a quaternary ammonium compound;

(i) stripping said first organic solution with a first aqueous ammonium bicarbonate stripping solution to form an aqueous solution containing said molybdenum, tungsten and vanadium metal values;

(j) transferring nickel values from said first pregnant liquor into a second organic solution by means of an organic nickel extractant comprising an oxime;

(k) reducing cobalt metal values in said pregnant liquor to divalent cobalt;

(l) transferring cobalt metal values from said pregnant liquor into a third organic solution by means of an organic cobalt extractant selected from the group consisting of dioximes, hydroxy-oximes, and beta-diketones;

(m) stripping each of said second and third organic solutions with aqueous stripping solutions to form a cobalt-containing aqueous solution and a nickel-containing aqueous solution.

4,500,496

PROCESS FOR PURIFYING MOLYBDENITE CONCENTRATES

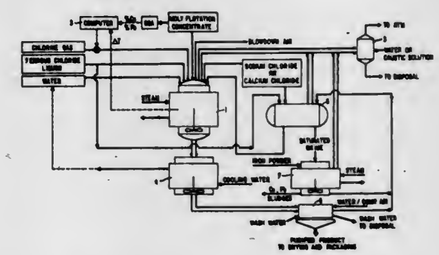
James W. Austin, Kelowna; Ronald G. Bradburn, Westbank; Clarence A. Cromwell, Peachland; Eitan Gratch, Toronto; Erich Groiss, Westbank; Derek Perkins, and Robert A. Walker, both of Kelowna, all of Canada, assignors to Brenda Mines Ltd., Peachland, Canada

Filed Sep. 30, 1982, Ser. No. 428,607

Claims priority, application Canada, Apr. 20, 1982, 401298

Int. Cl.³ C01G *39/00, 21/16*

U.S. Cl. 423—55 **14 Claims**



1. A process for purifying molybdenite concentrate for the removal of impurities therefrom, which comprises: providing a reactor with heating and agitator means, which reactor is made

of a material that can withstand leaching with the use of ferric chloride containing brine at elevated temperatures and pressures; introducing into said reactor ferrous chloride liquor and make-up water to give a predetermined iron concentration such that, upon chlorination, a sufficient amount of ferric ion will be formed to leach the impurities present in the molybdenite concentrate from their initial to desired final concentrations; sealing the reactor; insuring that the solution temperature in the reactor is between about 40° C. and 60° C.; injecting chlorine gas into the reactor while agitating the solution until the temperature rises to a point which, due to the exothermicity of the chlorination reaction, indicates through the temperature difference between the initial value and the final value, that the chlorination has produced the required amount of ferric ion in the solution to leach the impurities from their initial concentrations, determined from an assay of the molybdenite concentrate to be leached, to the desired final concentrations; upon completion of the chlorination resulting in the formation of a batch of brine suitable for leaching the molybdenite concentrate, venting the reactor to a scrubber and adding a predetermined amount of the molybdenite concentrate to be leached; thereafter sealing the reactor and heating its contents to a temperature suitable for leaching and continuing the leaching operation under agitation until the desired reduction in the impurities' concentrations has been achieved and the ferric ion essentially fully consumed; upon completion of the leaching operation, filtering and washing the resulting pulp to obtain the desired purified product.

4,500,497

REMOVAL OF TOXIC METALS FROM AQUEOUS SOLUTION

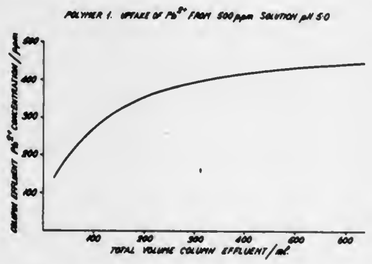
Alan G. Rowley, Loanhead, Scotland, and Fiona M. Husband, Rushey Mead, England, assignors to National Research Development Corporation, London, England

Filed Jun. 2, 1982, Ser. No. 384,256

Claims priority, application United Kingdom, Jun. 3, 1981, 8116974

Int. Cl.³ C01G *17/00*

U.S. Cl. 423—89 **16 Claims**



1. A process for removing a heavy metal from a fluid medium comprising

(1) bringing a fluid medium containing at least one heavy metal selected from the group consisting of lead, mercury, zinc, iron, cadmium and mixtures thereof into contact with a heavy-metal-absorbing medium, and

(2) allowing said absorbing medium to absorb at least some of said heavy metal from said fluid medium,

said absorbing medium being capable of selectively absorbing said heavy metal over relatively innocuous metals and comprising a poly(maleic anhydride) polymer having IR absorption maxima at 3,480–3,500 cm^{-1}, 1,670–1,690 cm^{-1} and 1,190–1,210 cm^{-1}, said polymer having been rendered insoluble and non-swellable by polymerization in the presence of a Lewis base polymerization initiator bound to a support material which is insoluble in aqueous and organic media.

4,500,498

AMMONIUM CHLORIDE-AMMONIUM HYDROXIDE STRIP FOR THE RECOVERY OF ANHYDROUS ZINC CHLORIDE

Paul R. Kruesi, and William H. Kruesi, both of Golden, Colo., assignors to Cato Research, Inc., Wheat Ridge, Colo.

Filed Jan. 19, 1984, Ser. No. 571,935

Int. Cl.³ C01G *9/04*

U.S. Cl. 423—100 **8 Claims**

1. A process for recovering zinc chloride from a solution comprising zinc chloride solubilized in an organic solvent comprising:

(a) stripping zinc chloride from said solution comprising zinc chloride solubilized in an organic solvent with a stripping agent comprising an aqueous solution of at least about 75 g/l ammonium chloride and ammonium hydroxide;

(b) allowing a crystalline zinc chloride ammine compound to form in the stripping solution;

(c) separating the formed zinc chloride ammine compound from the stripping solution; and

(d) recovering zinc chloride from the zinc chloride ammine compound.

4,500,499

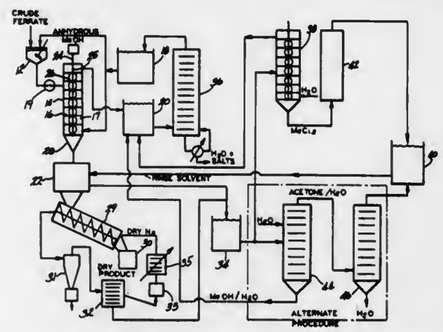
PRODUCTION OF HIGH PURITY STABLE FERRATE SALTS

Jerry J. Kaczur, and John E. Coleman, both of Cleveland, Tenn., assignors to Olin Corporation, Cheshire, Conn.

Filed Jun. 1, 1983, Ser. No. 500,126

Int. Cl.³ C01G *49/00*; C01D *13/00*

U.S. Cl. 423—139 **19 Claims**



1. A process for producing stable, high purity alkali metal or alkaline earth metal ferrate salts from a crude ferrate reaction mixture containing impurities comprising precipitated process components and residual water, said process comprising:

a. chilling said crude ferrate mixture to between about −20° and about +20° C.;

b. admixing said chilled crude ferrate mixture into a substantially anhydrous water miscible extraction solvent capable of dissolving said impurities at a temperature of between about −5° and about 20° C., said extraction solvent selected from the group consisting of primary alcohols having from 1 to about 4 carbon atoms and secondary alcohols having from 3 to about 5 carbon atoms;

c. separating an intermediate product which is essentially free of said water and said process components from a contaminated extraction solvent containing said impurities;

d. admixing said intermediate product with a substantially anhydrous, oxidation resistant rinse solvent which is miscible with said extraction solvent, said rinse solvents selected from the group consisting of ketones having from 3 to about 5 carbon atoms, tertiary alcohols having from 4 to about 6 carbon atoms, and halogenated aliphatic compounds having from 1 to about 7 carbon atoms;

e. washing said extraction solvent from said intermediate product with said rinse solvent to form a combined solvent;

f. separating said rinse solvent from said intemediate product to produce a purified dampened ferrate salt having a residue of combined extraction solvent and rinse solvent; and

g. drying said final dampened product in a warm dehumidified gas to vaporize said combined solvent, thereby producing a purified, stable, dry ferrate salt product.

4,500,500

SELECTIVE REMOVAL OF H_2S FROM STEAM ALSO CONTAINING CO_2

H. Hunter Paalman, Walnut Creek, and Denis Drapeau, San Francisco, both of Calif., assignors to The Dow Chemical Company, Midland, Mich.

Filed Jul. 22, 1983, Ser. No. 516,025

Int. Cl.³ B01D *53/31*

U.S. Cl. 423—224 **10 Claims**

1. An improvement in a known method of removing H_2S from a flow of steam which also contains up to 30 ppm of CO_2 per ppm of said H_2S,

said method comprising counter-currently contacting the steam flow with a sulfide-containing stream of an aqueous base, in which said base is an alkali metal hydroxide or carbonate and is present in a concentration equivalent to about 0.5 molar NaOH, in an absorption tower, thereby absorbing as much as about 50 percent of the H_2S in the aqueous base; discharging the aqueous stream from the tower as a sulfide-loaded effluent, treating the effluent with an oxidant, thereby converting a portion of the dissolved sulfide species to sulfite and/or sulfate species; discarding a part of the oxidized effluent as a bleed, adding makeup water and base to the remainder of the effluent and recycling the resultant mixture to the tower as said sulfide-containing stream of aqueous base;

said improvement making it possible, when the contacting means in said tower is equivalent to at least 6 equilibrium stages, to absorb essentially all of the H_2S from the steam without consuming more than about 0.18 pound of makeup water per pound of steam treated and without consuming more than about 4 mols of said hydroxide or about 2 mols of said carbonate per mol of said H_2S removed, and

said improvement being effected by:

(a) maintaining the base concentration in the liquid feed to the tower at a level substantially less than that equivalent to 0.5 molal NaOH but sufficient to maintain a pH therein of at least 12,

(b) operating the tower at liquid to steam weight ratio of about 0.18 or more, under autogenous pressure and at a temperature sufficiently in excess of 155° C. so that the acid strength of the H_2S is at least about equal to that of the CO_2, and

(c) employing said oxidant in an amount such that the proportion of the sulfide species in the effluent which are returned, unconverted, to the tower ranges from a maximum of about 7% when said liquid to steam weight ratio is 0.18 to a minimum of 0% when said weight ratio is about 0.6 or more.

4,500,501

METHOD OF REMOVING SULFUR OXIDES AND NITROGEN OXIDES BY DRY PROCESS

Takeshi Hamada, Ichikawa, and Yoshinobu Komatsubara, Kitakyushu, both of Japan, assignors to Mitsui Mining Company Ltd., Tokyo, Japan

Continuation of Ser. No. 412,974, Aug. 27, 1982, abandoned. This application Dec. 22, 1983, Ser. No. 564,462

Claims priority, application Japan, Sep. 10, 1981, 56-141701

Int. Cl.³ B01J *8/00*; C01B *21/00, 17/00*

U.S. Cl. 423—239 **14 Claims**

1. In a method of removing sulfur and nitrogen oxides by a dry process comprising passing a waste gas containing sulfur and nitrogen oxides through a moving bed or beds formed of a carbonaceous adsorbent in a direction transverse thereto to remove the sulfur oxides and adding ammonia to remove the nitrogen oxides, the improvement which comprises passing the waste gas containing sulfur and nitrogen oxides through n number of moving beds each formed of carbonaceous materials moving downward in a piston flow in such a manner that the waste gas is allowed to flow upward, said waste gas being directed through each of the moving beds in a transverse direction and in an opposite direction to the movement of the waste gas in the next adjacent moving bed, so that the waste gas alternately crosses and criss-crosses each moving bed successively from the lowest to the highest moving bed, said moving beds being arranged vertically and in series, wherein n is an integer of at least 2, said waste gas being passed through a first moving bed, mixed with ammonia outside the bed and then fed to a second moving bed, said process being repeated successively through the series of n moving beds until the waste gas exits from the n-th moving bed, while the carbonaceous material is transported from the n-th to the first moving bed.

4,500,502

PROCESS FOR REMOVING IMPURITIES FROM WET PROCESS OF PHOSPHORIC ACID

Daniel P. McDonald, and James C. Wade, both of Yazoo City, Miss., assignors to Mississippi Chemical Corporation, Yazoo City, Miss.

Filed Jun. 28, 1983, Ser. No. 508,469

Int. Cl.³ C01B *25/16*

U.S. Cl. 423—321 R **26 Claims**

1. A method of preparing a purified ammoniated phosphoric acid composition, comprising:

reacting an aqueous wet process phosphoric acid having a P_2O_5 content of 23–62% with an ammonium ion source at a N/P_2O_5 weight ratio ranging from about 0.06 to about 0.15 in the presence of solid phase metal ion containing impurities for a time sufficient to precipitate the majority of the metal impurities in said acid, said impurity precipitation comprising at least several complex metal salts, one of which contains magnesium, aluminum and fluoride ions; and

obtaining said purified ammoniated phosphoric acid by separating said precipitated impurities therefrom.

4,500,503

PROCESS FOR THE PREPARATION OF MORDENITE UTILIZING TRANSITION METAL COMPLEXES DURING CRYSTALLIZATION

Lillian A. Rankel, Princeton, N.J., and Ernest W. Valyocsik, Yardley, Pa., assignors to Mobil Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 493,462, May 11, 1983, abandoned, which is a division of Ser. No. 320,285, Nov. 12, 1981, Pat. No. 4,388,285. This application Jul. 20, 1983, Ser. No. 515,718

Int. Cl.³ C01B *33/28*

U.S. Cl. 423—329 **5 Claims**

1. In the process for the synthesis of mordenite from a form-

ing solution containing a mixture of alumina, silica, alkali metal oxide and water, the improvement which comprises adding a metal complex selected from the group consisting of cobalt phthalocyanine; (o-phenanthroline)$_3$FeClO$_4$; Ru(-bipyridyl)$_3$Cl$_2$ and Ni(bipyridyl)$_3$ClO$_4$ to the reaction mixture and maintaining the same at a temperature of from 100° F. to about 400° F. until crystals of mordenite are formed with the proviso that when cobalt phthalocyanine is used the OH^-/SiO_2 ratio of the forming solution is 0.6.

4,500,504

PROCESS FOR PREPARING SILICON CARBIDE WHISKERS

Akira Yamamoto, Nagoya, Japan, assignor to Tokai Carbon Co., Ltd., Tokyo, Japan

Filed Jan. 25, 1983, Ser. No. 460,796
Claims priority, application Japan, Feb. 25, 1982, 57-28146
Int. Cl.^{3} C01B *31/36*
U.S. Cl. 423—345 **10 Claims**



1. A process for preparing silicon carbide whiskers comprising mixing 100 parts by weight of a silica gel, containing 6.0 to 25.0% by weight with respect to a silicon of a water-soluble compound of at least one metal selected from the group consisting of iron, nickel and cobalt, with 110 to 400 parts by weight of a furnace carbon black having a structure indicated by a DBP absorption number of not lower than 50 ml/100 g, and reacting the resultant mixture by heating at a temperature ranging from 1,300° to 1,700° C. in a non-oxidizing atmosphere.

4,500,505

PROCESS FOR THE PRODUCTION OF HYDROGEN AND CARBONYL SULFIDE FROM HYDROGEN SULFIDE AND CARBON MONOXIDE USING A MULTI-METAL OXIDE/SULFIDE CATALYST

Mary G. Jevnikar, Cleveland, and Philip L. Kuch, Aurora, both of Ohio, assignors to The Standard Oil Company, Cleveland, Ohio

Filed Dec. 10, 1982, Ser. No. 448,578
Int. Cl.^{3} C01B *31/26, 1/03*
U.S. Cl. 423—416 **23 Claims**

1. A process for the production of hydrogen and carbonyl sulfide, the process comprising contacting gaseous hydrogen sulfide with gaseous carbon monoxide in the presence of a catalytic amount of a composition of the formula:

$$M_aO_xS_yM'_bM''_c \quad (I)$$

where

M is at least one of Mo, W, Fe, Cr and V;

M' is at least one of Li, Na, K, Rb, Cs, Cu, Co, and Al when b is greater than 0;

M'' is at least one of Sn, Mn, Pb, Ge, Si, Mg, Ca, Sr, Ba, Zn, Ti, Hf and Zr when c is greater than 0;

a is a number of about 0.1–2;

b is a number of 0 to about 3;

c is a number of 0 to about 10; and

the sum of x+y is a number that satisfies the valence requirements of the other elements present;

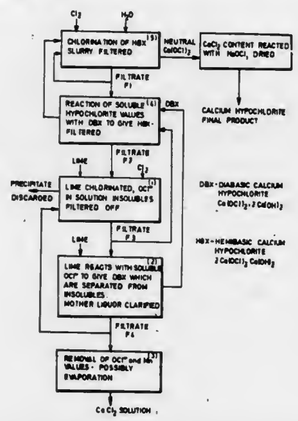
with the proviso that at least one of b and c is greater than zero.

4,500,506

PRODUCTION OF CALCIUM HYPOCHLORITE

David L. Morgan, Johannesburg, South Africa, assignor to Klipfontein Organic Products Corporation Limited, Transvaal, South Africa

Continuation of Ser. No. 459,728, Jan. 20, 1983, abandoned, which is a continuation of Ser. No. 356,537, Mar. 9, 1982, abandoned. This application Sep. 30, 1983, Ser. No. 538,066
Claims priority, application South Africa, Mar. 9, 1981, 81/1550
Int. Cl.^{3} C01B *11/06*
U.S. Cl. 423—474 **5 Claims**



1. A method of making neutral calcium hypochlorite including the steps of:

(i) chlorinating a slurry of lime which contains impurities including iron, other heavy metals, manganese, silica and alumina to form a mother liquor and separating the insoluble impurities from the mother liquor to give a solution containing hypochlorite ions and free of insoluble impurities;

(ii) reacting lime which contains impurities including iron, other heavy metals, manganese, silica and alumina with the solution of step (i) in the presence of seed crystals to produce large crystals of dibasic calcium hypochlorite, together with mother liquor and insoluble impurities in a slurry; the crystals of dibasic hypochlorite being large and easily separable, thereby enabling said crystals to be separated from the fine insoluble impurities that are finer than the large crystals of dibasic calcium hypochlorite; and

(iii) without treating the slurry at any stage to precipitate out the iron impurities; separating the large crystals of dibasic calcium hypochlorite from the mother liquor and also separating the large dibasic calcium hypochlorite crystals from the fine insoluble impurities;

(iv) reacting the dibasic calcium hypochlorite with the solution of step (i) to produce hemibasic calcium hypochlorite crystals;

(v) separating the crystals of hemibasic calcium hypochlorite from the mother liquor; and

(vi) converting the hemibasic calcium hypochlorite crystals into neutral calcium hypochlorite.

4,500,507

DIAGNOSTIC COMPOSITION FOR RADIOLOGIC IMAGING OF NEOPLASMS IN THE BODY AND METHOD OF PREPARATION

Dennis W. Wong, 2853 Sunnyglen Rd., Torrance, Calif. 90505

Filed Oct. 30, 1981, Ser. No. 316,957
Int. Cl.^{3} A61K *49/00, 49/00*
U.S. Cl. 424—1.1 **25 Claims**

1. A method of labeling porphyrin compounds, related analogs, derivatives and substances containing porphyrin with the radionuclides of Technetium(Tc) at physiologic pH 7–8 condition which comprises the sequential steps of:

a. treating the radionuclide of technetium with a reducing agent at room temperature for 1–10 minutes;

b. raising the pH of the acidic mixture of step (a) to 7.4 with a sufficient amount of alkaline citrate complexing reagent;

c. binding of the radionuclide of technetium to the porphyrin ligand by adding 1–10 ml of an aqueous solution of the porphyrin compound desired to be labeled to the admixture of step (b) and incubating the admixture at room temperature for 30 minutes.

4,500,508

RADIONUCLIDE LABELED LYMPHOCYTES FOR THERAPEUTIC USE

Suresh C. Srivastava, Setauket; Rashid A. Fawwaz, Pelham, and Powell Richards, Bayport, all of N.Y., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed May 3, 1983, Ser. No. 491,132
Int. Cl.^{3} A61K *49/00, 43/00*
U.S. Cl. 424—1.1 **21 Claims**

1. Lymphocytes labeled with a therapeutically effective amount of a β-emitting radionuclide selected from the group consisting of ^{109}Pd, ^{67}Cu, ^{66}Ni, ^{55}Co, ^{69}Zn and ^{90}Y.

4,500,509

METACHROMATIC DYE SORPTION AND FLUORESCENT LIGHT EMMISIVE MEANS FOR DIFFERENTIAL DETERMINATION OF DEVELOPMENTAL STAGES OF NEUTROPHILIC GRANULOCYTIC CELLS AND OTHER LEUKOCYTES

Lawrence Kass, 3229 Sheatham Ct., Toledo, Ohio 43615

Continuation-in-part of Ser. No. 242,662, Mar. 11, 1981, Pat. No. 4,400,370, which is a continuation-in-part of Ser. No. 129,680, Mar. 12, 1980,. This application Mar. 9, 1982, Ser. No. 356,578
The portion of the term of this patent subsequent to Aug. 23, 2000, has been disclaimed.
Int. Cl.^{3} G01N *31/00, 1/00*
U.S. Cl. 424—3 **13 Claims**

1. In analysis of human blood cells present in a donor specimen in a fixative-free aqueous environment under influence of a fluorescent light emissive energy source, the improvement in identification, enumeration and study of monocytes present in said specimen which comprises staining said specimen with an aqueous solution of a basic, cationic, quaternary organic dyestuff selected from the group consisting of basic orange #21, basic red #13, basic red #36, basic red #49, basic violet #7, basic violet #15, basic violet #16 basic violet #36, basic violet #39 basic violet #40 and carboeyanine; K-5 subjecting said dye stained specimen to emissive wave energy to thereby stimulate fluorescence of said dye exposed cells, emitted fluorescence light providing means for differentiation of monocytes present in the specimen from all other blood cells.

4,500,510

DAMAGED FISH TISSUE TREATING METHOD AND COMPOSITION CONTAINING *ALOE VERA* EXTRACT

Joel Goldstein, Ambler, Pa., assignor to Aquarium Pharmaceuticals, Inc., Perkasie, Pa.

Continuation-in-part of Ser. No. 426,351, Sep. 29, 1982, abandoned. This application Jun. 7, 1983, Ser. No. 501,990
Int. Cl.^{3} A61K *31/79, 35/78*
U.S. Cl. 424—80 **11 Claims**

1. A process for treating damaged tissue of fish comprising topically administering to the fish an aloe vera extract selected from the group consisting of the liquid extract or gel obtained directly from the inner central zones of the leaves of the Aloe Vera plant and the gel reconstituted from powdered aloe vera extract, in an amount effective to promote healing of the damaged tissue.

8. An aqueous composition for treating damaged tissue of fish in which at least a portion of a slime coating on the fish has been removed, comprising an aloe vera extract selected from the group consisting of the liquid extract or gel obtained directly from the inner central zones of the leaves of the aloe vera plant and the gel reconstituted from powdered aloe vera extract, in an amount effective to promote healing of the damaged tissue, at least one slime-replacing compound in an amount effective to promote slime replacement of at least a portion of the missing fish slime coating, a dechlorinator selected from the group consisting of sodium thiosulfate and ascorbic acid in an amount effective to neutralize the chlorine in the water, a tris(hydroxymethyl)aminomethane buffer in an amount effective to maintain the pH of the composition at least about 9.0, and a diazolidinyl urea preservative in an amount effective to prevent the inactivity of the aloe vera gel.

4,500,511

ANTIINFLAMMATORY AND ANALGESIC GEL

Kazuo Kigasawa; Hideaki Ohtani, both of Tokyo, and Toshiyuki Kanezuka, Kawasaki, all of Japan, assignors to Grelan Pharmaceutical Co., Ltd., Tokyo, Japan

Filed Sep. 13, 1983, Ser. No. 531,745
Claims priority, application Japan, Sep. 14, 1982, 57-158938
Int. Cl.^{3} A61U *31/19, 31/78*
U.S. Cl. 424—81 **9 Claims**

1. An antiinflammatory and analgesic gel composition for extermnal use which comprises 0.03 to 1.5 percent by weight of clidanac or a pharmacologically acceptable salt thereof as a pharmacologically active ingredient and 0.5 to 5.0 percent by weight of a gelling agent, which is at least one selected from the group consisting of a carboxyvinyl polymer, a cellulose derivative and an alginic acid propylene glycol ester, 0.3 to 4.0 percent by weight of a neutralizer, 30 to 60 percent by weight of a solubilizer and 35 to 65 percent by weight of water.

4,500,512

STABILIZING AGENTS FOR LIVE VIRUSES FOR PREPARING VACCINES, AND STABILIZED VACCINES CONTAINING SAID STABILIZING AGENTS

Michel Barme, Paris, France, assignor to Institut Pasteur, Paris, France

Filed May 5, 1982, Ser. No. 375,086
Claims priority, application France, May 13, 1981, 81 09490
Int. Cl.^{3} A61K *39/275*
U.S. Cl. 424—89 **3 Claims**

1. Stabilized vaccine containing attenuated live yellow fever virus

said attenuated live yellow fever virus being essentially constituted by a suspension of live attenuated yellow fever virus in a stabilizing agent constituted by a phosphate buffer solution (PBS) containing calcium and magnesium ions, about 4% lactose, about 2% sorbitol and aboutn a 0.005M to 0.05M final concentration of at least one amino acid, said stabilized vaccine being lyophilised.

4,500,513

INFLUENZA VACCINE PRODUCTION IN LIQUID CELL CULTURE

Karen K. Brown, Kansas City, Mo., and Richard C. Stewart, Merriam, Kans., assignors to Miles Laboratories, Inc., Elkhart, Ind.

Continuation-in-part of Ser. No. 39,236, May 15, 1979, abandoned. This application Sep. 29, 1982, Ser. No. 428,495
Int. Cl.³ A61K *39/12*; C12N *7/00, 7/02, 7/04*
U.S. Cl. 424—89 **15 Claims**

1. A method of preparing an influenza virus vaccine which comprises the steps of:

(a) infecting a portion of the cells of a liquid cell culture substantially free of proteolytic enzyme with an influenza virus;

(b) incubating the infected culture in the presence of a proteolytic enzyme under conditions sufficient to assure further infection and replication of the virus in cells other than the originally infected cells and an EID_{50}/ml titer of at least about 10^7;

(c) harvesting the virus from the culture, and;

(d) preparing a vaccine from the harvested virus.

4,500,514

PROCESS FOR PREPARING A HEAT-STABLE AQUEOUS SOLUTION OF HUMAN URINE KALLIKREIN AND PRODUCT PREPARED

Koichiro Nakanishi, Ashiya, and Hajime Hiratani, Sennan, both of Japan, assignors to Japan Chemical Research Co., Ltd., Kobe, Japan

Filed Dec. 1, 1983, Ser. No. 557,107
Claims priority, application Japan, Dec. 2, 1982, 57-212532
Int. Cl.³ A61K *37/553*
U.S. Cl. 424—94 **9 Claims**

1. A process for preparing a heat-stable aqueous solution of human urine kallikrein, which comprises contacting an effective amount of a pharmaceutically acceptable citric acid salt with human urine kallikrein in the form of aqueous solution.

7. A heat-stable human urine kallikrein composition comprising an aqueous solution of human urine kallikrein and a stabilizing effective amount of a pharmaceutically acceptable salt of citric acid.

4,500,515

METHOD FOR TREATING ALCOHOL AND DRUG ADDICTS

Alfred F. Libby, P.O. Box 4179, San Clemente, Calif. 92672

Continuation of Ser. No. 253,712, Apr. 13, 1981, abandoned. This application Mar. 28, 1983, Ser. No. 479,713
Int. Cl.³ A61U *31/365*; A61K *33/06*; A01N *43/78*
U.S. Cl. 424—154 **13 Claims**

1. In a method for detoxifying a patient from an alcohol or drug dependence, wherein the patient is caused to discontinue further ingestion of alcohol or the dependency-inducing drug, thereby to induce the patient to undergo withdrawal from alcohol or the dependency-inducing drug, until the patient is detoxified,

an improved method for detoxifying such a patient, where, upon causing the patient to discontinue further ingestion of alcohol or the dependency-inducing drug, the improved method comprises:

administering at least about 30 grams sodium ascorbate to the patient thereby to detoxify the patient, by:

orally giving a portion of the sodium ascorbate to the patient, and

intravenously infusing the remainder of the sodium ascorbate into the patient; and

intravenously infusing sufficient fluid into the patient with the infusing sodium ascorbate to prevent dehydration.

4,500,516

ANTIBACTERIAL PHARMACEUTICAL COMPOSITION

Grigory M. Grinberg, Moscow; Oleg N. Akifiev, Riga; Jury A. Pytel, Moscow; Anatoly P. Gilev, and Monika Y. Paberza, both of Riga, all of U.S.S.R., assignors to Institut Organicheskogo Sinteza Akademii Nauk Latviiskoi SSR, Riga, U.S.S.R.

Filed Oct. 22, 1982, Ser. No. 436,019
Int. Cl.³ A61K *33/10*
U.S. Cl. 424—156 **6 Claims**

1. An antibacterial composition comprising an antibacterially effective amount of an active agent consisting of the potassium salt of N-[β-(5'-nitrofuryl-2')-acrylidene]-1-amino hydantoin and an equivalent amount by weight of basic magnesium carbonate, in combination with a pharmaceutically acceptable filler.

4,500,517

ANTIMICROBIAL COMPOSITION FOR A SEMIPERMEABLE MEMBRANE

V. Gerold Luss, Minneapolis, Minn., assignor to H. B. Fuller Co., St. Paul, Minn.

Filed Dec. 7, 1981, Ser. No. 327,796
Int. Cl.³ A01N *59/02*
U.S. Cl. 424—162 **19 Claims**

1. An antimicrobial composition, which prevents the growth of or destroys microorganisms in and on semipermeable membranes, which comprises an aqueous solution of an effective antimicrobial amount of sulfurous acid or a sulfurous acid-yielding compound and an effective concentration of a buffer sufficient to maintain the pH of the aqueous solution less than about 4.5.

9. The antimicrobial composition of claim 1 wherein the aqueous solution also contains an effective wetting amount of a surfactant.

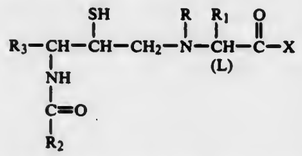
4,500,518

AMINO THIOL DIPEPTIDES

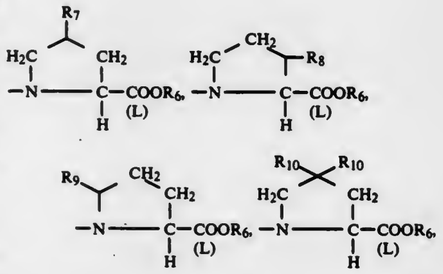
Eric M. Gordon, Pennington, and Jollie D. Godfrey, Jr., Lawrenceville, both of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Apr. 19, 1984, Ser. No. 602,030
Int. Cl.³ H61K *37/00*; A01N *43/50, 43/36*; C07D *231/00, 211/60, 217/00*; C07C *103/52*
U.S. Cl. 514—2 **18 Claims**

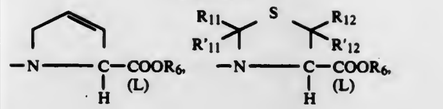
1. A compound of the formula

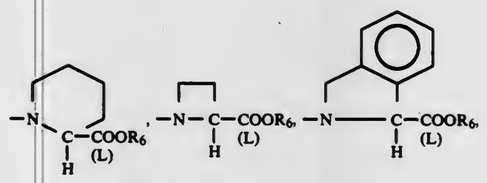


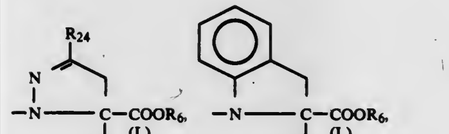
or a pharmaceutically acceptable salt thereof wherein X is

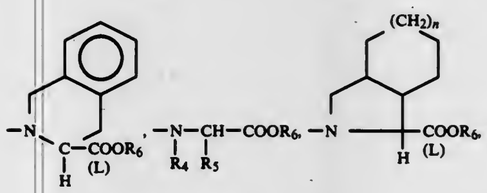


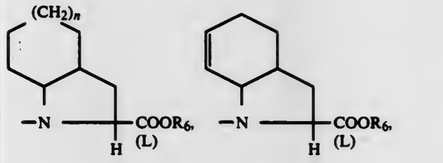
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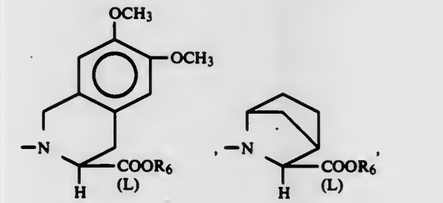


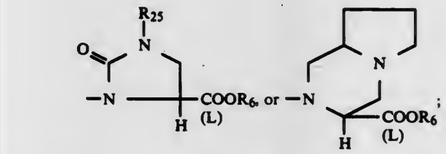






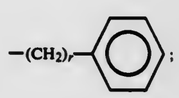




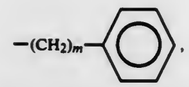


n is zero, one, or two.

R_{25} is lower alkyl of 1 to 4 carbons or

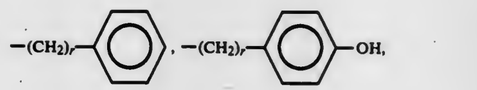


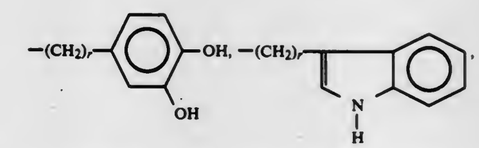
R is hydrogen, lower alkyl, cycloalkyl,

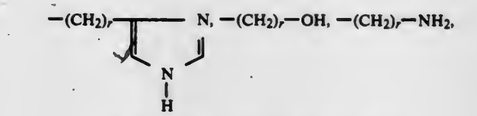


$-(CH_2)_2-NH_2$, $-(CH_2)_3-NH_2$, $-(CH_2)_4-NH_2$, $-(CH_2)_2-OH$, $-(CH_2)_3-OH$, $-(CH_2)_4-OH$, $-(CH_2)_2-SH$, $-(CH_2)_3-SH$, or $-(CH_2)_4-SH$;

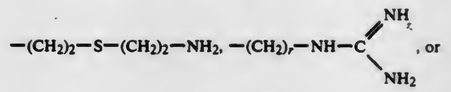
R_1 is hydrogen, lower alkyl, halo substituted lower alkyl,

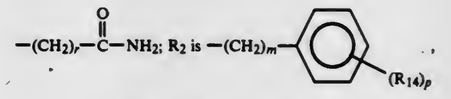


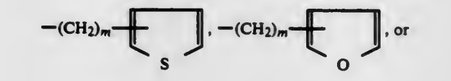


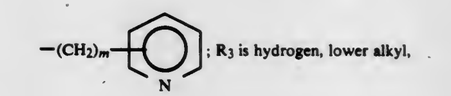


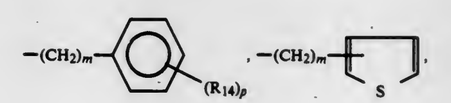
$-(CH_2)_r-SH$, $-(CH_2)_r-S-$lower alkyl,

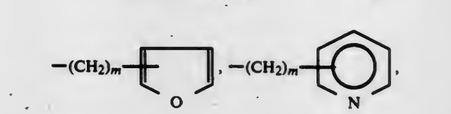


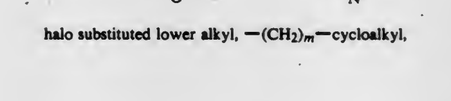






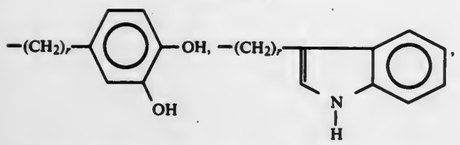


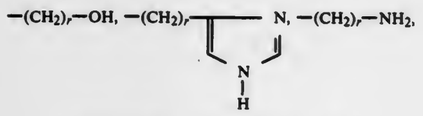


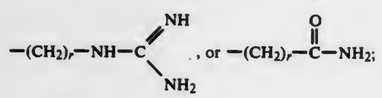


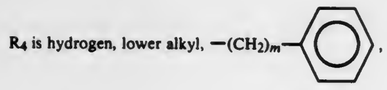
halo substituted lower alkyl, $-(CH_2)_m-$cycloalkyl,

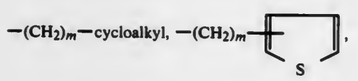
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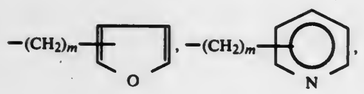


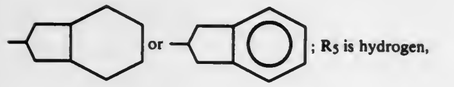


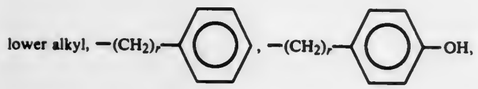


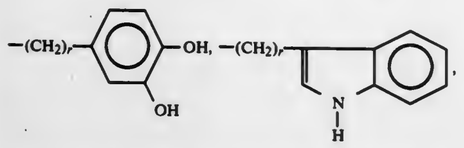
R_4 is hydrogen, lower alkyl, 

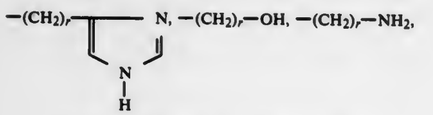


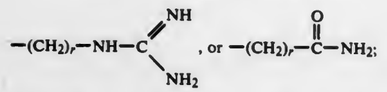


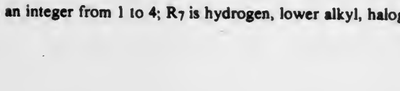

; R_5 is hydrogen,

lower alkyl, 



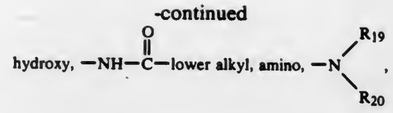


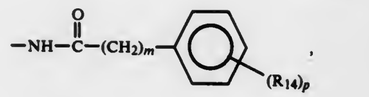


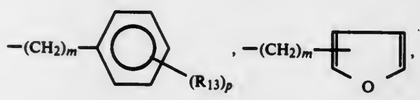


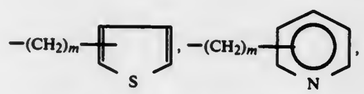
r is an integer from 1 to 4; R_7 is hydrogen, lower alkyl, halogen,

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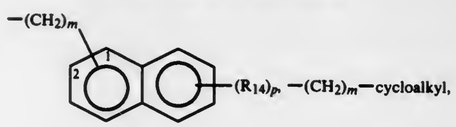
hydroxy, 

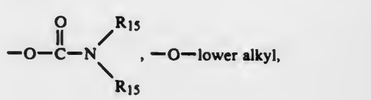


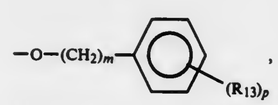




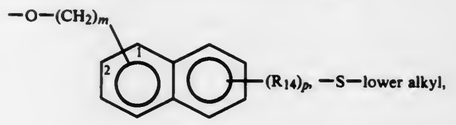
a 1- or 2-naphthyl of the formula

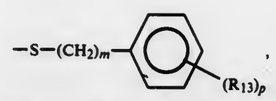




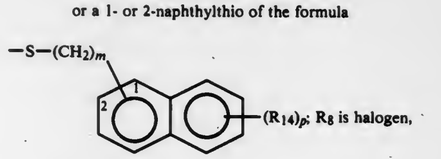


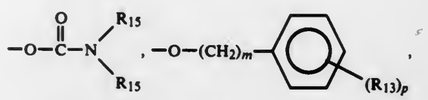
a 1- or 2-naphthyloxy of the formula

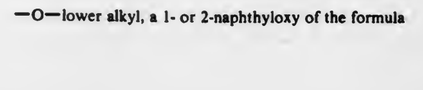




or a 1- or 2-naphthylthio of the formula

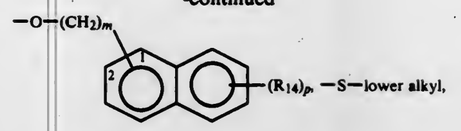


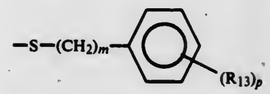




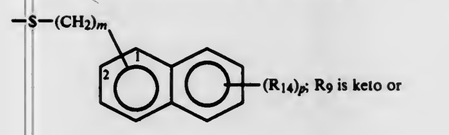
—O—lower alkyl, a 1- or 2-naphthyloxy of the formula

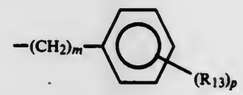
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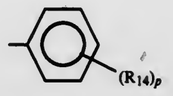


or a 1- or 2-naphthylthio of the formula

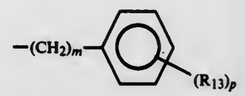




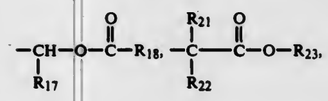
R_{10} is halogen or —Y—R_{16};
R_{11}, R'_{11}, R_{12} and R'_{12} are independently selected from hydrogen and lower alkyl or R'_{11}, R_{12} and R'_{12} are hydrogen and R_{11} is



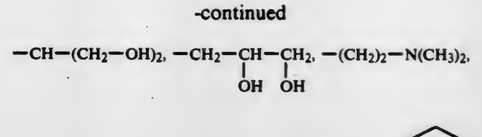
R_{13} is hydrogen, lower alkyl of 1 to 4 carbons, lower alkoxy of 1 to 4 carbons, lower alkylthio of 1 to 4 carbons, chloro, bromo, fluoro, trifluoromethyl, hydroxy, phenyl, phenoxy, phenylthio, or phenylmethyl;
R_{14} is hydrogen, lower alkyl of 1 to 4 carbons, lower alkoxy of 1 to 4 carbons, lower alkylthio of 1 to 4 carbons, chloro, bromo, fluoro, trifluoromethyl, or hydroxy;
m is zero, one, two, three, or four;
p is one, two or three provided that p is more than one only if R_{13} or R_{14} is hydrogen, methyl, methoxy, chloro, or fluoro;
R_{15} is hydrogen or lower alkyl of 1 to 4 carbons;
Y is oxygen or sulfur;
R_{16} is lower alkyl of 1 to 4 carbons,

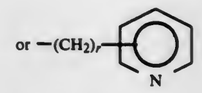


or the R_{16} groups join to complete an unsubstituted 5- or 6-membered ring or said ring in which one or more of the carbons has a lower alkyl of 1 to 4 carbons or a di(lower alkyl of 1 to 4 carbons) substituent;
R_{19} is lower alkyl, benzyl, or phenethyl;
R_{20} is hydrogen, lower alkyl, benzyl or phenethyl;
R_6 is hydrogen, lower alkyl, p-methoxybenzyl, benzhydryl,



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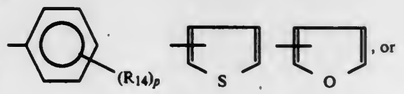


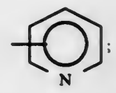
or 

R_{17} is hydrogen, lower alkyl, cycloalkyl or phenyl;
R_{18} is hydrogen, lower alkyl, lower alkoxy, phenyl, or R_{17} and R_{18} taken together are —$(CH_2)_2$—, —$(CH_2)_3$—, —CH=CH, or



R_{24} is hydrogen, lower alkyl,


, or


;

R_{21} and R_{22} are independently selected from the group consisting of hydrogen and lower alkyl; and
R_{23} is lower alkyl.

4,500,519

MUCOPOLYSACCHARIDES HAVING BIOLOGICAL PROPERTIES, PREPARATION AND METHOD OF USE

Jean-Claude Lormeau, Maromme; Maurice Petitou, and Jean Choay, both of Paris, all of France, assignors to Choay S.A., Paris, France

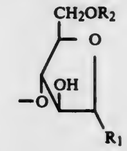
Continuation-in-part of Ser. No. 204,505, Nov. 6, 1980, , which is a continuation of Ser. No. 91,164, Nov. 5, 1979, abandoned. This application Nov. 20, 1981, Ser. No. 323,567

Claims priority, application France, Mar. 20, 1980, 78 31357

Int. Cl.[3] **A61K** *31/725;* **C08B** *37/10*

U.S. Cl. 514—56 **42 Claims**

20. Mucopolysaccharide heparinic fractions which have the L-iduronosyl-2-O-sulfate-(1-alpha-4)-N-sulfo-D-glucosamine-6-O-sulfate disaccharide structural units of heparin with the O-sulfated iduronic component of heparin, which mucopolysaccharide heparinic fractions do not differ from heparin with respect to the unsulfated iduronic acid component and are further defined by having a terminal structure as follows



wherein R_1 is selected from the groups consisting of an alcohol and a carboxylic acid and R_2 is selected from the group consisting of hydrogen or —SO_3, which fractions have a molecular

weight in the range of about 2,000 to 8,000 daltons and the physiologically acceptable salts thereof.

4,500,520

ANTIINFLAMMATORY AND/OR ANALGESIC SILYLFURANS

Stephen B. Haber, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

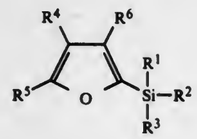
Filed Mar. 1, 1983, Ser. No. 471,201

The portion of the term of this patent subsequent to Feb. 21, 2001, has been disclaimed.

Int. Cl.³ A61K *31/725*; C07F *7/18*

U.S. Cl. 514—63 **8 Claims**

1. A compound having the formula:

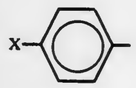


(I)

wherein

R^1, R^2 and R^3 are independently H, alkoxy of 1–2 carbon atoms, alkyl of 1–7 carbon atoms optionally substituted with halogen, alkenyl of 2–7 carbon atoms, phenyl or benzyl, with the proviso that the sum of the number of carbon atoms in R^1, R^2 and R^3 must be at least 1 and not greater than 9 with the additional proviso that no more than 2 of R^1, R^2 and R^3 are alkoxy;

R^4 and R^5 are independently pyridyl or

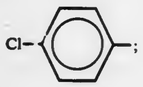


where X is H, F, Cl, Br, R^7, OR^7, $S(O)_nR^7$, NO_2, or



where n=0, 1 or 2; R^7=alkyl of 1–2 carbon atoms and R^8=alkyl of 1–2 carbon atoms;

with the proviso that R^4 and R^5 cannot both be



and

R^6 is H, or alkyl of 1–2 carbon atoms; or a pharmaceutically suitable salt thereof.

8. A method of treating inflammation, pain or both in a mammal which comprises administering to the mammal an effective antiinflammatory or analgesic amount of at least one compound of claim 1, claim 2, claim 3, claim 4, claim 5, or claim 6.

4,500,521

PESTICIDAL COMPOSITION CONTAINING A SYNERGISTIC COMBINATION OF AN OXAZOLO-PYRIDINE THIOPHOSPHATE DERIVATIVE AND CYPERMETHRIN

Volker Dittrich, Zeiningen, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Jun. 2, 1983, Ser. No. 500,491

Claims priority, application Switzerland, Jun. 7, 1982, 3505/82

Int. Cl.³ A01N *37/34*, *57/00*

U.S. Cl. 514—81 **4 Claims**

1. A composition for control of insects and acarids which comprises an insecticidally and acaricidally effective amount of a mixture of (i) S-[6-chloroxazolo[4,5-b]pyridin-2(3H)-on-3-ylmethyl]-O,O-dimethylthiophosphate and (ii) α-cyano-3-phenoxybenzyl 3-(2,2-dichlorovinyl)-2,2-dimethylcyclopropane carboxylate in a weight ratio of from about 2000:1 to about 6:1 in a carrier therefor.

4,500,522

7α-ACYLTHIO-15,16-METHYLENE-3-OXO-17α-PREGNA-1,4-DIENE-21,17-CARBOLACTONES, THEIR PREPARATION AND USE AS MEDICINAL AGENTS

Klaus Nickisch; Dieter Bittler; Henry Laurent; Rudolf Wiechert, and Wolfgang Losert, all of Berlin, Fed. Rep. of Germany, assignors to Schering Aktiengesellschaft, Berlin and Bergkamen, Fed. Rep. of Germany

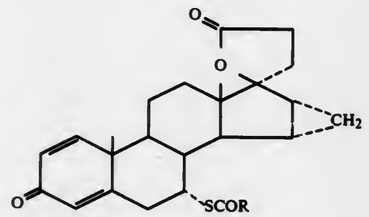
Filed Jul. 22, 1983, Ser. No. 516,391

Claims priority, application Fed. Rep. of Germany, Jul. 22, 1982, 3227598

Int. Cl.³ A61K *31/58*

U.S. Cl. 514—173 **12 Claims**

1. A 7α-acylthio-15,16-methylene-3-oxo-17α-pregna-1,4-diene-21,17-carbolactone of the formula



wherein

the 15,16-methylene group can be in the α- or β-configuration, and

R is C_{1-5}-alkyl.

11. A method of achieving an antialdosterone effect in a patient in need of such treatment comprising administering an amount of a compound of claim 1 effective as an antialdosterone agent.

4,500,523

SUPPRESSION OF PREMATURE LABOR BY USE OF AROMATASE INHIBITORS

Nathanielsz, Ithaca, N.Y., assignor to Cornell Research Foundation, Inc., Ithaca, N.Y.

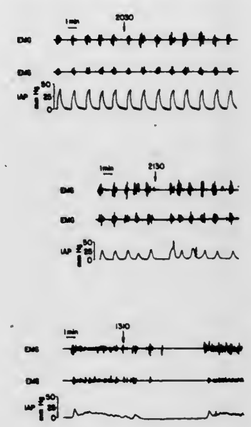
Continuation-in-part of Ser. No. 475,576, Mar. 15, 1983, abandoned. This application Apr. 9, 1984, Ser. No. 597,876

Int. Cl.³ A61K *31/56*

U.S. Cl. 514—178 **14 Claims**

1. A method of suppression or managing premature labor in a pregnant female mammal which is undergoing or which has undergone fetal surgery, and is therefore susceptible to premature labor which method comprises:

administering a Type I myometrial contraction reducing amount of a placental aromatase inhibitor to said female



mammal to thereby suppress or manage said premature labor.

4,500,524

TRANQUILIZING AND REDUCING OR PREVENTING SEIZURES

Nicholas Catsimpoolas, Newton Centre, Mass., assignor to Trustees of Boston University, Boston, Mass.

Continuation-in-part of Ser. No. 418,240, Sep. 15, 1982, abandoned. This application Aug. 11, 1983, Ser. No. 522,134

Int. Cl.³ A61K *31/33*, *31/525*

U.S. Cl. 514—250 **6 Claims**

1. A method for inhibiting convulsions in an animal caused by abnormalities of the benzodiazepine receptors in the central nervous system of the animal or tranquillizing an animal which comprises introducing an inhibitor selected from the group consisting of riboflavin and folic acid into the central nervous system of said animal in an amount to inhibit convulsions or to tranquillize said animal.

6. A composition of matter comprising (a) riboflavin or folic acid and (b) a benzodiazepine in a weight ratio of between about 2:1 and 1000:1 wherein the total milligram dose is between about 10 and 1000 mg.

4,500,525

PHARMACOLOGICALLY ACTIVE PYRAZOLO/4,3-C/PYRIDINES

Giorgio Winters, Milan; Alberto Sala, Monza, and Domenico Barone, Milan, all of Italy, assignors to Gruppo Lepetit S.p.A., Italy

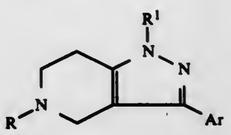
Filed Feb. 15, 1983, Ser. No. 466,701

Claims priority, application United Kingdom, Feb. 17, 1982, 8204722

Int. Cl.³ A61K *31/435*; C07D *471/04*

U.S. Cl. 514—210 **5 Claims**

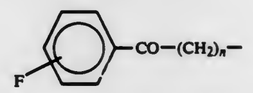
1. A pyrazolo/4,3-c/pyridine having the formula



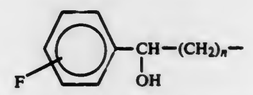
and a physiologically acceptable acid addition thereof, wherein R represents hydrogen, $(C_1–C_{10})$alkyl, $(C_3–C_7)$cycloalkyl, $(C_1–C_6)$alkanoyl, halogen$(C_1–C_6)$alkyl, $(C_1–C_4)$alkoxycarbonyl, hydroxy$(C_1–C_6)$alkyl, phenyl, phenyl substituted with from 1 to 3 substituents independently selected from chloro bromo, fluoro, cyano, nitro, hydroxy, thio, trifluoromethyl, $(C_1–C_4)$alkyl, $(C_1–C_4)$alkenyl, $(C_2–C_4)$alkynyl, $(C_3–C_7)$cycloalkyl, $(C_1–C_4)$alkoxy, $(C_1–C_2)$alkylthio, $(C_1–C_4)$alkoxycarbonyl, $(C_1–C_4)$alkylsulfinyl or a group of formula



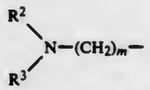
wherein R^6 and R^7 independently represent hydrogen, $(C_1–C_6)$alkyl, $(C_1–C_6)$hydroxyalkyl, $(C_1–C_4)$alkoxy, $(C_2–C_4)$alkyl, or R^6 and R^7 taken together with the adjacent nitrogen atom represent a (4–7) membered saturated heterocyclic ring which can optionally contain a further heteroatom selected from N, S, and O, and can bear a $(C_1–C_4)$alkyl group or a phenyl group optionally substituted as above, or R represents phenyl$(C_1–C_6)$alkyl, substituted phenyl$(C_1–C_6)$alkyl wherein the phenyl group is substituted as above, phenyl$(C_1–C_6)$alkanoyl, substituted phenyl$(C_1–C_6)$alkanoyl, wherein the phenyl group is substituted as above, a group of formula



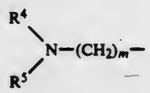
wherein n is an integer from 1 to 5 inclusive, or a group



wherein n is as above; or R is a group of formula:



wherein m is an integer from 2 to 4 inclusive, R^2 and R^3 independently represent hydrogen, $(C_1–C_{10})$alkyl, $(C_1–C_6)$hydroxyalkyl, $(C_1–C_4)$alkoxy, $(C_2–C_4)$alkyl, or R^2 and R^3 taken together with the adjacent nitrogen atom represent a (4–7) membered saturated heterocyclic ring which can optionally contain a further heteroatom selected from N, S, and O, and can bear a $(C_1–C_4)$alkyl group or a phenyl group optionally substituted as above R^1 represents hydrogen, $(C_1–C_6)$alkyl, $(C_3–C_6)$cycloalkyl, phenyl, substituted phenyl wherein the phenyl ring is substituted as above, phenyl$(C_1–C_6)$alkyl, substituted phenyl$(C_1–C_6)$alkyl, wherein the phenyl group is substituted as above, or R^1 represents a group of formula



wherein m is an integer from 2 to 4 inclusive, R^4 and R^5 are as defined above for R^2 and R^3, and Ar represents a phenyl group optionally substituted as above, or Ar is a 5–6 membered heteroaromatic ring selected from the group consisting of pyrrolyl, pyridyl, 4-aminopyridyl, 4-alkylaminopyridyl, thienyl, thiazolyl, oxazolyl, pyrazolyl and furanyl, which can bear a $(C_1–_6)$alkyl or phenyl substituent.

5. A CNS depressant, neuroleptic, cardiotonic, antihypertensive, analgesic or antiinflammatory composition in dosage unit form which comprises from 0.01 to 2.0 grams of a pyrazolo[4,3-c]pyridine according to claim 1 in combination with a pharmaceutically acceptable carrier.

4,500,526

CEPHALOSPORIN DERIVATIVES

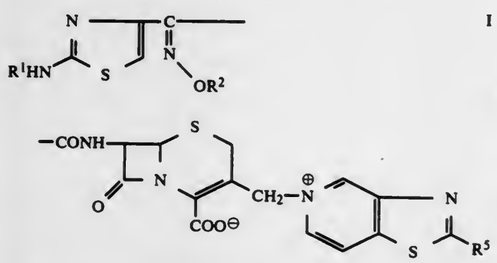
Kiyoto Imae, Ichikawa; Shimpei Aburaki, Tokyo; Yukio Narita; Jun Okumura, both of Yokohama, and Takayuki Naito, Kawasaki, all of Japan, assignors to Bristol-Myers Company, New York, N.Y.

Continuation-in-part of Ser. No. 392,866, Jun. 28, 1982, abandoned. This application Oct. 13, 1983, Ser. No. 541,593

Int. Cl.³ C07D *501/36;* **A61K** *31/545*

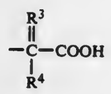
U.S. Cl. 514—226 **23 Claims**

1. A compound of the formula

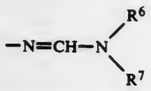


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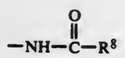
wherein R^1 is hydrogen or a conventional amino-protecting group, R^2 is a straight or branched chain alkyl group containing from 1 to 4 carbon atoms, allyl, propargyl, 2-butenyl, 2-butynyl, 3-butenyl, 3-butynyl, cyclo(lower)alkyl or a group of the formula



in which R^3 and R^4 each are independently hydrogen, methyl or ethyl, or R^3 and R^4, taken together with the carbon atom to which they are attached, may be a cycloalkylidene ring containing from 3 to 5 carbon atoms, and R^5 is hydrogen, carboxy, formyl, amino, carbamoyl, (lower)alkylamino, di(lower)alkylamino, guanidino, amidino, (lower)alkyl, (lower)alkoxy, (lower)alkylthio or a group of the formula



in which R^6 and R^7 each are independently hydrogen or (lower)alkyl, or when taken together with the nitrogen atom to which they are attached, R^6 and R^7 represent a 5 to 7-membered saturated ring optionally containing an additional hetero atom selected from N, O and S, or R^5 is a group of the formula



in which R^8 is hydrogen, (lower)alkyl, amino(lower)alkyl, (lower)alkoxy, amino, (lower)alkylamino or



in which R^9 and R^{10} are each (lower)alkyl or, when taken together with the nitrogen atom to which they are attached, R^9 and R^{10} represent a 5 to 7-membered saturated ring optionally containing an additional hetero atom selected from N, O and S; or a nontoxic pharmaceutically acceptable salt, physiologically hydrolyzable ester or solvate thereof.

4,500,527

ANTIHYPERTENSIVE 4[(3-ALKYLAMINO-2-HYDROXYPROPYL)-OXYIMINOMETHYL PHENYL]-1,4-DIHYDROPYRIDINES

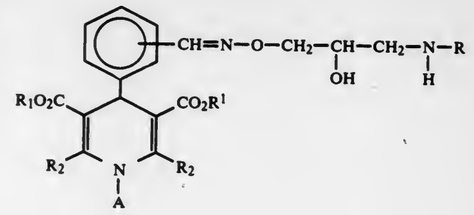
Bernard Loev, Scarsdale, N.Y.; James R. Shroff, Riverside, Conn., and Rohit Desai, Millwood, N.Y., assignors to USV Pharmaceutical Corporation, Tarrytown, N.Y.

Filed Jun. 22, 1983, Ser. No. 506,732

Int. Cl.³ A61K *31/54, 31/455;* **C07D** *211/82, 417/00*

U.S. Cl. 514—223 **12 Claims**

1. A compound of the formula



wherein

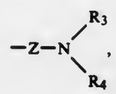
R is C_1–C_{10} alkyl,

each R_1 is independently H, C_1–C_4 alkyl, or C_1–C_4 alkoxy C_1–C_4 alkyl;

each R_2 is independently H, C_1–C_4 alkyl, formyl, CN, CH_2OH, or di C_1–C_4 alkylamino C_1–C_4 alkyl;

A is H, C_1–C_{10} alkyl, or X;

X is



Z is C_1–C_{15} alkylene;

R_3 and R_4 are independently H, C_1–C_4 alkyl, C_3–C_4 cycloalkyl, hydroxy C_1–C_4 alkyl, C_1–C_4 alkoxy C_1–C_4 alkyl, or phenyl C_1–C_4 alkyl, or R_3 and R_4 together with the nitrogen to which they are attached form pyrrolyl, imidazolyl, pyrazolyl, dihydropyrazinyl, indolyl, isoindolyl, purinyl, carbazolyl, β-carbolinyl, phenthiazinyl, phenoxazinyl, pyrrolinyl, pyrazolinyl, (o) or (p) isoxazinyl, imidazolinyl, or morpholino; or a pharmaceutically acceptable salt thereof.

12. A method for treating hypertension in mammals requiring said treatment, wherein the method comprises the administration of an effective amount of a compound of claim 1.

4,500,528

N-SUBSTITUTED 1,4-DIHYDROPYRIDINES AND PHARMACEUTICAL COMPOSITIONS

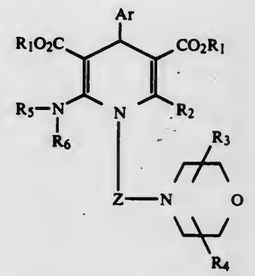
Bernard Loev, Scarsdale; Howard Jones, Ossining, both of N.Y., and James R. Shroff, Riverside, Conn., assignors to USV Pharmaceutical Corporation, Tarrytown, N.Y.

Filed Mar. 3, 1983, Ser. No. 471,593

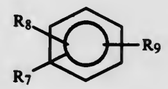
Int. Cl.³ A61K *31/535;* **C07D** *413/06*

U.S. Cl. 514—228 **23 Claims**

1. A compound of the formula:



wherein Ar is heteroaryl, cycloalkyl or



wherein each of R_7, R_8 and R_9 is H, alkyl, aryl, halo, lower alkoxy, nitro, amino, alkylmercapto, cyano, carboxy, carbalkoxy, sulfamyl, trifluoromethyl, hydroxy, acyloxy, methanesulfonyl, alkylamino or acylamino; and R_7 and R_8, when taken together, form a methylenedioxy; Z is alkylene containing 1 to about 5 carbon atoms in the principal chain; R_3 and R_4 are each H or alkyl; and each R_1, R_2, R_5 and R_6 is alkyl; and acid addition salts thereof.

8. An anti-hypertensive composition comprising a compound according to claim 1 and pharmaceutically acceptable carrier.

4,500,529

METHOD OF TREATING CARDIAC DISORDERS WITH N-(ARYLOXYALKYL)-N'-(AMINOALKYL)UREAS

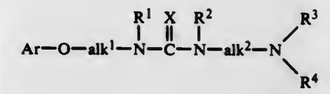
James R. Shanklin, Jr., and Christopher P. Johnson, III, both of Richmond, Va., assignors to A. H. Robins Company, Incorporated, Richmond, Va.

Continuation-in-part of Ser. No. 265,510, May 20, 1981, abandoned. This application May 9, 1983, Ser. No. 492,534

Int. Cl.³ A61K *31/535, 31/17*

U.S. Cl. 514—235 **65 Claims**

1. A method for treating cardiac arrhythmia in an animal which comprises administering to said animal an effective amount of a compound having the formula:



wherein;

Ar is 1 and 2-naphthyl, 2,3-dihydro-1H-inden-4(or 5)yl, 3-pyridinyl, phenyl or phenyl substituted by 1–3 radicals which may be the same or different selected from the group consisting of loweralkyl, loweralkoxy, halogen, trifluoromethyl, amino, cyano, aminocarbonyl, nitro, loweralkylthio, loweralkylsulfinyl, loweralkylsulfonyl, loweralkanoyl, benzoylamino or loweralkanoylamino;

R^1 and R^2 are selected from the group consisting of hydrogen, loweralkyl, cycloalkyl containing 3 to 9 carbon atoms, phenyl, phenyl substituted by halogen, loweralkyl or loweralkoxy, or phenyl-loweralkyl wherein phenyl may also be substituted by halogen, loweralkyl or loweralkoxy;

X is selected from oxygen or sulfur;

R^3 and R^4 are selected from the group consisting of hydrogen, loweralkyl, phenyl and phenyl-loweralkyl and may be the same or different or R^3 and R^4 taken together with the adjacent nitrogen form a heterocyclic residue selected from the group consisting of pyrrolidino, piperidino, 4-phenylpiperidino, 2,6-loweralkyl-piperidino, 4-hydroxy-4-phenylpiperidino, 4-cyano-4-phenylpiperidino, 4-phenyl-1,2,3,6-tetrahydropyridino, piperazino, 4-loweralkyl-piperazino, 4-phenyl-piperazino, 4-phenylloweralkyl-piperazino or morpholino radicals;

alk^1 and alk^2 are selected from the group consisting of loweralkylene or loweralkylene-loweralkyl and may be the same or different, or a pharmaceutically acceptable addition salt or hydrate thereof.

4,500,530

METHOD OF TREATING HORSES TO INHIBIT OR REDUCE INCREASES IN CRENATED RED BLOOD CELLS DURING EXERCISE

John H. Boucher, 2106 Salisbury Rd., Silver Spring, Md. 20910

Division of Ser. No. 210,591, Nov. 26, 1980, Pat. No. 4,383,997. This application Sep. 23, 1982, Ser. No. 421,803

The portion of the term of this patent subsequent to May 17, 2000, has been disclaimed.

Int. Cl.³ A61K *31/495*

U.S. Cl. 514—255 **2 Claims**

1. A method of treating a horse to prevent or reduce the increase in crenated red blood cells which occurs in the blood of said animal after exercise sufficient to induce said increase of crenated red blood cells, the blood of said animal having a normal content of crenated red blood cells prior to said exercise, which comprises administering to said animal immediately prior, during or subsequent to said exercise an effective amount of a compound which inhibits influx of extracellular Ca^{++} ions into red blood cells.

2. A method according to claim 1 wherein the compound is lidoflazine.

4,500,531

THERAPEUTICAL USE OF (1-CINNAMOYL OR 1-PHENETHYLCARBONYL) PIPERAZINE DERIVATIVES

Alain Y. Platel, Rueil Malmaison; Alain P. Lacour, La Varenne, and Guy R. Bourgery, Colombes, all of France, assignors to Delalande S.A., Courbevoie, France

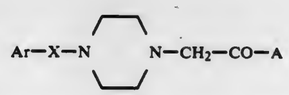
Filed Jul. 27, 1983, Ser. No. 461,701

Claims priority, application Italy, Feb. 4, 1982, 19457 A/82

Int. Cl.³ A61K *31/495*

U.S. Cl. 514—255 **6 Claims**

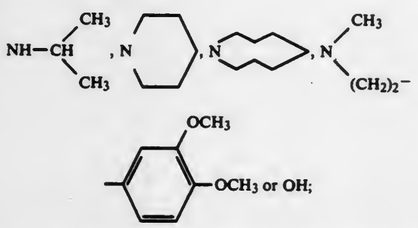
1. The method of stimulating or protecting cerebral function in a human being in order to increase mental alertness and capacity and to improve the focus on and performance of mental tasks, which comprises administering internally to a human being requiring such treatment a therapeutically effective amount of a compound of the formula



wherein Ar is selected from the group consisting of 3,4,5-

trimethoxyphenyl and 3,5-dimethoxy-4-hydroxyphenyl, and, when Ar is 3,4,5-trimethoxyphenyl, the pair X and A are selected from the group consisting of

(a) X is trans-CH=CH—CO— linked to Ar through its carbon atom 3, and A is

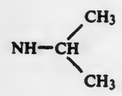


(b) X is cis-CH=CH—CO— linked to Ar through its carbon atom 3 and A is

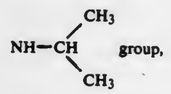


and

(c) X is $-CH_2-CH_2-CO-$ linked to Ar through its carbon atom 3, and A is



and when Ar is 3,5-dimethoxy 4-hydroxy phenyl group, X is trans—CH=CH—CO— linked to Ar through its carbon atom 3 and A is the



or a pharmacological acceptable acid addition salt of said compound.

4,500,532

1-(SUBSTITUTED AMINOALKYL)-1,4-DIHYDROPYRIDINES

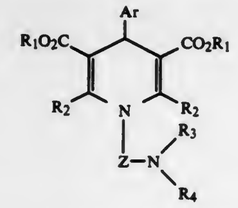
Bernard Loev, Scarsdale; Howard Jones, Ossining, both of N.Y., and John T. Suh, Greenwich, Conn., assignors to USV Pharmaceutical Corporation, Tarrytown, N.Y.

Filed Mar. 3, 1983, Ser. No. 471,592

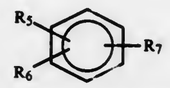
Int. Cl.³ A61K *31/505, 31/455;* **C07D** *211/82, 401/04*

U.S. Cl. 514—256 **4 Claims**

1. A member selected from compounds of the formula



wherein Ar is heteroaryl selected from the group consisting of thiophene, furan, pyridine, thiazole, pyrimidine, pyrrole, benzofuran, quinoline and benzothiophene, cycloalkyl having from 3 to 7 carbon atoms, naphthyl, indanyl, indenyl, tetrahydronaphthyl, or a radical of the formula



wherein each of R_5, R_6 and R_7 is independently H, alkyl, phenyl, tolyl, naphthyl, halo, lower alkoxy, nitro, amino, alkylmercapto, cyano, carboxy, carbalkoxy, sulfamyl, trifluromethyl, hydroxy, methanesulfonyl, or alkylamino; and R_5 and R_6 when taken together, form a methylenedioxy; Z is alkylene containing 1 to about 5 carbon atoms in the principal chain; each R_1 is independently hydrogen, alkyl or alkoxyalkyl, with the proviso that only one R_1 may be hydrogen; R_2 is lower alkyl; R_3 is aminoalkyl containing 2 to 4 carbon atoms and R_4 is hydroxyalkyl containing 2 to 4 carbon atoms in the alkyl moiety; wherein the alkyl, and alkoxy groups contain up to 10 carbon atoms, and pharmaceutically-acceptable salts thereof.

4. An anti-hypertensive composition comprising, as an active ingredient, an effective anti-hypertensive amount of a compound according to claim 1 in a pharmaceutically acceptable carrier.

4,500,533

2,4,5-TRIARYL PYRIMIDINES AND A METHOD OF TREATING PAIN, FEVER, THROMBOSIS, INFLAMMATION AND ARTHRITIS

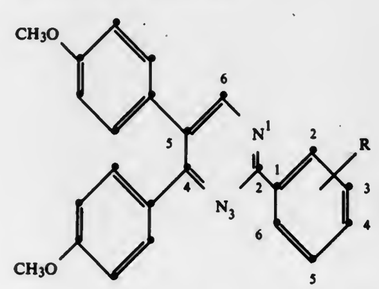
Ken Matsumoto, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Filed Jun. 22, 1983, Ser. No. 506,932

Int. Cl.³ A61K *31/505;* **C07D** *239/02*

U.S. Cl. 514—256 **14 Claims**

1. A compound of the formula



I

and pharmaceutically acceptable salts thereof, wherein R is hydrogen, trifluoromethyl, fluoro, chloro, bromo, or iodo.

5. A method of treating pain, fever, thrombosis, inflammation, or arthritis which comprises administering to a mammal in need of such treatment an effective amount of a compound of claim 1.

4,500,534

THIENO-PYRIDINONE DERIVATIVES, PROCESS FOR ITS PREPARATION, AND ANTI-BLOOD-PLATELET AND ANTI-THROMBOTIC APPLICATIONS THEREOF

Daniel Frehel, Toulouse; Jean-Pierre Maffrand, Portet, and Eric Vallee, Tournefeuille, all of France, assignors to Sanofi, S.A., Toulouse, France

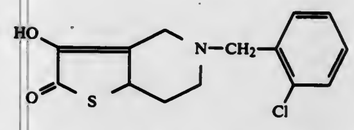
Filed Jun. 15, 1983, Ser. No. 504,524

Claims priority, application France, Jun. 16, 1982, 82 10926

Int. Cl.³ A61K *31/435;* **C07D** *495/04*

U.S. Cl. 514—301 **8 Claims**

1. 5,6,7,7*a*-Tetrahydro-4H-thieno(3,2-c)pyridin-2-one derivative, having the following structural formula (I):



(I)

and its pharmaceutically acceptable inorganic or organic acid addition salts.

6. Therapeutic composition having in particular anti-blood-platelet aggregation and anti-thrombosis activities, said composition comprising, an effective amount of the derivative as claimed in claim 1 and a suitable pharmaceutical carrier.

4,500,535

METHOD OF REGULATING THE IMMUNE RESPONSE WITH PYRIDINE DERIVATIVES

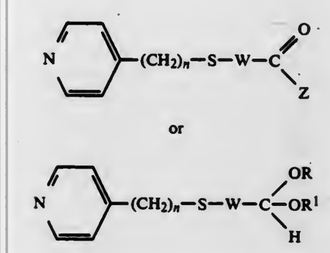
Joseph G. Lombardino, Niantic, and Charles A. Harbert, Waterford, both of Conn., assignors to Pfizer Inc., New York, N.Y.

Continuation-in-part of Ser. No. 428,588, Sep. 30, 1982, abandoned, which is a division of Ser. No. 276,242, Jun. 26, 1981, Pat. No. 4,371,696, which is a continuation of Ser. No. 168,127, Jul. 14, 1980, abandoned, which is a division of Ser. No. 85,011, Oct. 15, 1979, Pat. No. 4,246,263. This application Mar. 7, 1983, Ser. No. 470,813

Int. Cl.³ A61K *31/44;* **C07D** *213/48, 213/51*

U.S. Cl. 514—277 **15 Claims**

1. A method for regulation of the immune response in a mammal which comprises administering to said mammal in an immune response regulating amount of a compound of the formula:



wherein

n is 1 or 2;

W is methylene, unsubstituted or substituted with either a methyl or a phenyl group;

Z is hydroxy, (C_1-C_4)alkoxy or hydrogen;

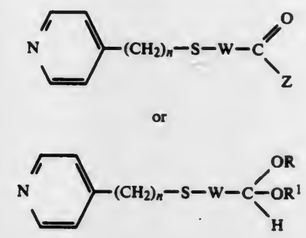
R and R^1 when taken separately are the same and are each (C_1-C_4)alkyl; and

R and R^1 when taken together are ethano or propano;

a pharmaceutically-acceptable acid addition salt thereof; or

a pharmaceutically-acceptable cationic salt thereof when Z is hydroxy.

10. A composition of matter suitable for regulating the immune response in a mammal comprising, in the form of a capsule or tablet, a compound of the formula



wherein

n is 1 or 2;

W is methylene, unsubstituted or substituted with either a methyl or a phenyl group;

Z is hydrogen;

R and R^1 when taken separately are the same and are each (C_1-C_4)alkyl;

and R and R^1 when taken together are ethano or propano;

a pharmaceutically-acceptable acid addition salt thereof; or

a pharmaceutically-acceptable cationic salt thereof when Z is hydroxy and a solid pharmaceutically acceptable carrier, said compound being present in an amount sufficient to supply a dosage in the range of about 0.25 to about 100 mg./kg. of body weight of said mammal per day in single or divided dosage.

4,500,536

DERIVATIVES OF N,N'-SUBSTITUTED AZOLECARBOXAMIDE AND AGRICULTURAL AND HORTICULTURAL FUNGICIDAL OR NEMATICIDAL COMPOSITION CONTAINING SAME AS ACTIVE INGREDIENTS

Hiroshi Yoshida, Urawa; Kengo Koike, Ageo; Shizuo Shimano, Ageo; Taizo Nakagawa, Ageo, and Kaoru Ohmori, Okegawa, all of Japan, assignors to Nippon Kayaku Kabushiki Kaisha, Tokyo, Japan

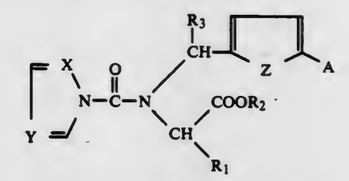
Filed Mar. 3, 1983, Ser. No. 471,963

Claims priority, application Japan, Mar. 4, 1982, 57-33040; Jul. 30, 1982, 57-132023; Jan. 20, 1983, 58-6691

Int. Cl.³ A01N *43/50, 43/56, 43/64;* **C07D** *231/10, 233/54, 249/08*

U.S. Cl. 514—397 **12 Claims**

1. A derivative of N,N-substituted azolecarboxamide represented by the formula:



(I)

wherein R_1 represents a hydrogen atom, methyl group or ethyl group or propyl group; R_2 represents an alkyl group of 1 to 6 carbon atoms; R_3 represents a hydrogen atom or methyl group; A represents a hydrogen atom or methyl group; X and Y represent respectively a carbon atom or nitrogen atom, provided that when X represents a nitrogen atom, Y represents a nitrogen atom or a carbon atom and when X represents a carbon atom, Y represents a nitrogen atom; and Z represents an oxygen atom or sulfur atom, provided that when Z represents a sulfur atom, A represents only a hydrogen atom.

11. A method for preventing diseases of agricultural or horticultural plants caused by fungi, comprising applying to

soil or said plants a fungicidally effective amounts of a compound of the formula (I).

12. A method for combatting nematodes, comprising applying to soil or plants a nematocidally effective amount of a compound of the formula (I).

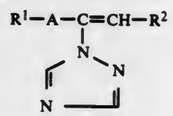
4,500,537

COMBATING FUNGI WITH TRIAZOLYL-VINYL KETONES AND CARBINOLS

Hans-Ludwig Elbe, Wuppertal; Karl H. Büchel, Burscheid; Paul-Ernst Frohberger, Leverkusen, and Wilhelm Brandes, Leichlingen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Continuation of Ser. No. 259,303, Apr. 30, 1981, abandoned.
This application May 13, 1983, Ser. No. 494,216
Claims priority, application Fed. Rep. of Germany, May 19, 1980, 3019046
Int. Cl.³ A01N *43/64, 55/02;* C07D *249/08;* C07F *1/08*
U.S. Cl. 514—383 **9 Claims**

1. A triazolyl-vinyl ketone or carbinol of the formula



in which

A represents the keto group or a CH(OH) grouping,

R^1 is tert.-butyl, chloro-tert.-butyl, fluoro-tert.-butyl, dichloro-tert.-butyl or difluoro-tert.-butyl, and

R^2 is n-butyl or n-heptyl, is benzyl, optionally substituted on the phenyl with halogen, alkyl with 1 to 4 carbon atoms, alkoxy or alkylthio with 1 to 4 carbon atoms or halogenoalkoxy or halogenoalkylthio with 1 to 4 carbon atoms and 1 to 5 halogen atoms, or is phenylethynyl,

or an addition product thereof with a physiologically acceptable acid or a metal salt.

7. A fungicidal composition comprising a fungicidally effective amount of a compound according to claim 1 in admixture with a diluent.

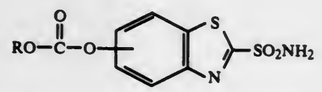
4,500,538

BENZOTHIAZOLESULFONAMIDE DERIVATIVES FOR THE TOPICAL TREATMENT OF ELEVATED INTRAOCULAR PRESSURE

Otto W. Woltersdorf, Chalfont, Pa., assignor to Merck & Co., Inc., Rahway, N.J.

Filed Mar. 14, 1983, Ser. No. 474,860
Int. Cl.³ A61K *31/675, 31/44;* C07D *263/58, 85/48*
U.S. Cl. 514—367 **16 Claims**

1. A compound of the formula:



where R is C_1 to C_{18} alkyl; C_3 to C_6 cycloalkyl; C_3 to C_6 cycloalkyl-C_1 to C_{18} alkyl; C_1 to C_{18} alkyl-C_3 to C_6 cycloalkyl; C_1 to C_{18} haloalkyl; aryl where the aryl group can be substituted with one or more substituents selected from the group consisting of C_1 to C_{10} alkyl, halo, and C_1 to C_4 alkoxy; arylalkyl where the alkyl moiety has from 1 to 4 carbon atoms and the aryl moiety can be unsubstituted or substituted with halogen or C_1 to C_3 alkyl; C_2 to C_6 alkenyl; C_2 to C_6 alkynyl and aryl C_2 to C_6 alkenyl.

5. A method for treating glaucoma and ocular hypertension and for lowering intraocular pressure which comprises topically applying to an affected eye an effective intraocular pressure lowering amount of the compound of claim 1.

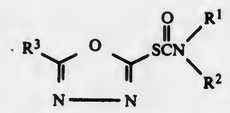
4,500,539

INSECTICIDAL 5-THIOCARBAMOYL-1,3,4-OXADIAZOLES

Laroy H. Edwards, Napa, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Jul. 15, 1983, Ser. No. 514,067
Int. Cl.³ A01N *43/76;* C07D *271/10*
U.S. Cl. 514—364 **12 Claims**

1. A compound the formula:



wherein R^1 and R^2 are independently lower alkyl having from 1 to 4 carbon atoms; and R^3 is lower cycloalkyl having from 3 to 6 carbon atoms optionally substituted with methyl or ethyl, lower alkoxyalkyl having up to a total of 8 carbon atoms or lower alkylthioalkyl having up to a total of 8 carbon atoms.

5. A method for killing insects which comprises contacting said insects or their habitat with an insecticidally effective amount of the compound of the formula defined in claim 1.

4,500,540

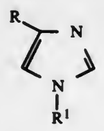
THROMBOXANE SYNTHASE INHIBITORS AS INSULIN LOWERING AGENTS AND ANTIOBESITY AGENTS

James G. Hamilton, Nutley; Ann C. Sullivan, Cedar Grove; Lawrence D. Tobias, Glen Ridge, and Joseph Triscari, Bloomfield, all of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Continuation of Ser. No. 107,484, Dec. 26, 1979, abandoned.
This application Jun. 11, 1982, Ser. No. 387,721
Int. Cl.³ A61K *31/415, 31/305, 31/44, 31/40*
U.S. Cl. 514—397 **33 Claims**

1. A method for reducing body weight in obese mammals which comprises orally administering, to the mammal to be treated, an amount effective for reducing body weight of a thromboxane synthase inhibitor of the formula:

FORMULA I



wherein R is H, NO_2, or $—C_2–C_4$ alkenyl; R^1 is H, $C_1–C_{11}$ alkyl, acetyl, propionyl, butyryl, phenyl, phenyl substituted by one or two substituents independently selected from the group consisting of $C_1–C_3$ alkoxy, $C_1–C_4$ alkyl, Cl, F, Br, NO_2, acetyl, propionyl, butyryl or hydroxy, phenylalkyl, or 3-indolo optionally substituted at the two position by $C_1–C_4$ straight or branched chain alkyl.

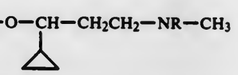
4,500,541

PHARMACOLOGICALLY ACTIVE CYCLOPROPANE DERIVATIVES

Hans-Heinrich Hausberg, Ober-Ramstadt; Jürgen Uhl; Christoph Seyfried, both of Seeheim-Jugenheim, and Klaus-Otto Minck, Ober-Ramstadt, all of Fed. Rep. of Germany, assignors to Merck Patent Gesellschaft Mit Beschränkter Haftung, Darmstadt, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 261,820, May 8, 1981, abandoned. This application Jun. 17, 1983, Ser. No. 505,558
Claims priority, application Fed. Rep. of Germany, May 9, 1980, 3017812
Int. Cl.³ A61K *31/36, 31/135;* A01N *9/20;* C07C *93/06*
U.S. Cl. 514—466 **11 Claims**

1. A cyclopropane derivative of the formula



wherein Ar is phenyl or phenyl monosubstituted or polysubstituted by F, Cl, Br, C_{1-4} alkyl, C_{1-4} alkoxy, C_{2-4} alkenyloxy, C_{1-4} alkylthio, OH, SH, CN, methylenedioxy or CF_3; and R is H, C_{1-4} alkyl or benzyl, or a physiologically acceptable acid addition salt thereof.

8. 1 Dimethylamino-3-cyclopropyl-3-p-trifluoromethylphenoxy-propane, a compound of claim 1, and its hydrochloride.

9. A pharmaceutical composition for treating depression, comprising an antidepressantly effective amount of a compound of claim 1 and a pharmaceutically acceptable adjuvant.

11. A method of treating depression in a patient in need of such treatment comprising administering an antidepressantly effective amount of a compound of claim 1 to the patient.

4,500,542

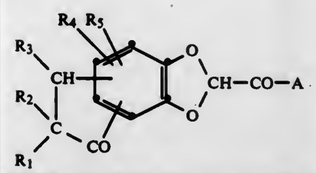
DIOXAHETEROCYCLIC COMPOUNDS

Ernst Habicht, Oberwil, and Paul Zbinden, Witterswil, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation of Ser. No. 369,787, Apr. 19, 1982, abandoned. This application Nov. 8, 1983, Ser. No. 550,060
Claims priority, application Switzerland, Apr. 24, 1981, 2697/81
Int. Cl.³ A61K *31/36, 31/44;* C07D *401/00, 317/70*
U.S. Cl. 514—465 **22 Claims**

1. A dioxaheterocyclic compound of the formula I

(I)



in which R_1 represents phenyl or pyridyl each of which is unsubstituted or substituted by lower alkyl, lower alkoxy or halogen, R_2 represents primary lower alkyl, each of R_3 and R_4 represents, independently of the other, hydrogen or lower alkyl, R_5 represents hydrogen and A represents the radical —O—R_6 in which R_6 represents hydrogen or an unsubstituted or substituted aliphatic or araliphatic hydrocarbon radical or the radical



in which each of R_7 and R_8, independently of the other, represents hydrogen or lower alkyl, or, R_7 and R_8 are bonded to one another and, together with the adjacent nitrogen atom, represent unsubstituted or lower alkyl-substituted tetra- to hexamethylene-imino or 4-morpholinyl, and the divalent radical in formula I is either in the 4,5- or the 5,6-position and correspondingly R_4 and R_5 are in positions 6 and 7, or 4 and 7, respectively, of the benzodioxole skeleton, in the form of a mixture of racemates, of racemates, diastereoisomeric antipode mixture or optical antipodes, and the pharmaceutically acceptable salts of such a compound in which A represents OR_6 wherein R_6 represents hydrogen, with bases.

14. A pharmaceutical composition having diuretic activity comprising a diuretically effective amount of a compound according to claim 1 or of a pharmaceutically acceptable salt of a compound according to claim 1 capable of salt formation, together with at least one pharmaceutical carrier.

19. A method for treating oedema or hypertension in a mammal comprising administering to said mammal an amount effective against oedema or hypertension of a compound according to claim 1 or of a pharmaceutically acceptable salt of a compound according to claim 1 that is capable of salt formation.

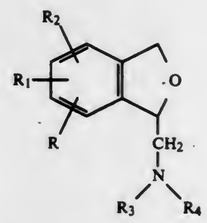
4,500,543

SUBSTITUTED 1-AMINOMETHYL-PHTHALANS

John F. Debernardis, Lake Villa, and David L. Arendsen, Libertyville, both of Ill., assignors to Abbott Laboratories, North Chicago, Ill.

Filed Jun. 1, 1982, Ser. No. 383,632
Int. Cl.³ A61K *31/34;* C07D *307/78*
U.S. Cl. 514—469 **7 Claims**

1. A compound of the formula



wherein R, R_1, and R_2 are independently selected from hydrogen, hydroxy, thiomethyl, or

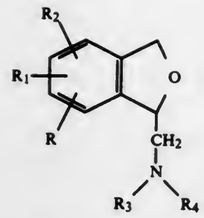


wherein R_5 and R_6 are independently selected from hydrogen, loweracyl of 1 to 4 carbon atoms or sulfonyl of the formula



wherein R_7 is loweralkyl of 1 to 4 carbon atoms; and wherein no more than one of R, R_1 or R_2 is hydrogen; and R_3 and R_4 are independently selected from hydrogen; loweralkyl of 1 to 4 carbon atoms; or halo-substituted loweralkyl of 1 to 4 carbon atoms; and the pharmaceutically acceptable salts thereof.

7. A composition in pharmaceutical dosage form for the treatment of hypertension comprising an anti-hypertensive effective amount of a compound of the formula



wherein R, R_1, and R_2 are independently selected from hydrogen, hydroxy, thiomethyl, or



wherein R_5 and R_6 are independently selected from hydrogen, loweracyl of 1 to 4 carbon atoms or sulfonyl of the formula



wherein R_7 is loweralkyl of 1 to 4 carbon atoms; and wherein no more than one of R, R_1, or R_2 is hydrogen; and R_3 and R_4 are independently selected from hydrogen; loweralkyl of 1 to 4 carbon atoms; or halo-substituted loweralkyl of 1 to 4 carbon atoms; and the pharmaceutically acceptable salts thereof and a pharmaceutically acceptable carrier or diluent.

4,500,544

ASCOCHLORIN DERIVATIVES, AND PHARMACEUTICAL COMPOSITION CONTAINING THE SAME

Tomoyoshi Hosokawa, Kanagawa; Ikutoshi Matsuura; Hidenori Takahashi, both of Saitama; Kunio Ando, Kanagawa, and Gakuzo Tamura, Tokyo, all of Japan, assignors to Chugai Seiyaku Kabushiki Kaisha, Ukima, Japan

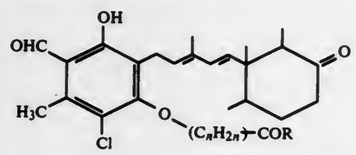
Filed Aug. 27, 1982, Ser. No. 412,075

Claims priority, application Japan, Sep. 10, 1981, 56-141660; Oct. 23, 1981, 56-168821

Int. Cl.³ C07C *59/92, 69/738;* **A61K** *31/19, 31/215*

U.S. Cl. 514—543 **24 Claims**

1. An ascochlorin derivative of the formula:



(I)

(wherein R is a hydroxyl group; an alkoxy group having carbon atoms of from 1 to 6; a phenoxyalkyl group which may have a halogen atom, an alkyl group having carbon atoms of from 1 to 4, or an alkoxy group having carbon atoms of from 1 to 4 in the nucleus; or a phenyl group which may have a halogen atom, an alkyl group having carbon atoms of from 1 to 4, an alkoxy group having carbon atoms of from 1 to 4 or an alkoxycarbonyl group having carbon atoms of from 2 to 5 in the nucleus; and n is an integer of 0 to 5).

2. An ascochlorin derivative according to claim 1 which is 4-O-ethoxycarbonylmethyl ascochlorin.

4,500,545

HYDROXYAMINOTETRALINCARBOXAMIDES

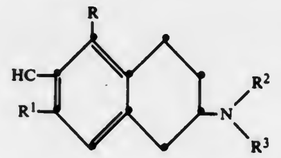
Nicholas J. Bach; Edmund C. Kornfeld, and Robert D. Titus, all of Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Division of Ser. No. 442,074, Nov. 16, 1982, Pat. No. 4,448,990. This application Mar. 12, 1984, Ser. No. 588,180

Int. Cl.³ A61K *31/165*

U.S. Cl. 514—619 **12 Claims**

1. A method for reducing elevated blood pressure in a mammal having high blood pressure and in need of treatment which comprises administering to said mammal a hypotensive dose of a drug of the formula



wherein one of R and R^1 is H and the other is $CONH_2$, R^2 and R^3 are individually H, methyl, ethyl or n-propyl, and a pharmaceutically-acceptable acid addition salt thereof formed with a non-toxic acid.

4,500,546

SUSPENSIONS CONTAINING MICROFIBRILLATED CELLULOSE

Albin F. Turbak, Convent Station; Fred W. Snyder, Wharton, both of N.J., and Karen R. Sandberg, Shelton, Wash., assignors to International Telephone and Telegraph Corporation, New York, N.Y.

Division of Ser. No. 202,740, Oct. 31, 1980, Pat. No. 4,378,381. This application Nov. 15, 1982, Ser. No. 441,686

Int. Cl.³ A61K *47/00*

U.S. Cl. 514—781 **4 Claims**

1. A cosmetic base comprising a suspension of a finely divided cosmetic material in a liquid suspending medium which swells cellulose, said suspension containing microfibrillated cellulose in an amount ranging from 0.25% to an amount such that it is present as the major ingredient of the suspension, said proportions being based on the weight of cellulose solids present as microfibrillated cellulose as compared to the total weight of the suspension, said amount being sufficient to produce a stable, homogeneous suspension, said microfibrillated cellulose having a settling volume after 60 minutes in a 0.5% by weight suspension in water of greater than 60%.

4,500,547

REDUCED-SHRINK BUBBLE GUM

Wayne J. Puglia, Bayville, N.Y.; Gary S. Kehoe, Ridgefield, Conn., and K. Warren Clark, Brewster, N.Y., assignors to Nabisco Brands, Inc., Parsippany, N.J.

Continuation-in-part of Ser. No. 413,053, Aug. 30, 1982, abandoned. This application Mar. 15, 1984, Ser. No. 589,968

Int. Cl.³ A23G *3/30*

U.S. Cl. 426—3 **20 Claims**

1. In a non-styrene-butadiene based chewing gum composition having high film-forming characteristics,

a high inorganic filler content in an amount of from about 12% to about 44% based on the weight of said overall chewing gum composition,

a non-styrene-butadiene gum base in an amount of from about 15% to about 30% by weight of said chewing gum composition, and water-soluble sweeteners, the improvement comprising adding said filler in an amount from about 20% to about 35% by weight of said gum base, and adding the remainder of said filler step-wise as a component of the overall gum composition in an amount of from about 10% to about 30% by weight based on the weight of said gum composition, whereby said improvement provides said gum with increased softness without loss of film-forming characteristics, high cud volume retention during chewing, and a reduced requirement for water-soluble sweeteners without loss of perceived sweetness.

4,500,548

FERMENTATION AID FOR CONVENTIONAL BAKED GOODS

Roy F. Silva, Norwalk, Conn., assignor to Stauffer Chemical Company, Westport, Conn.

Filed Mar. 15, 1982, Ser. No. 358,407

Int. Cl.³ A21D *2/22, 8/02*

U.S. Cl. 426—19 **24 Claims**

1. A method for preparing a fermentation aid for yeast-raised bakery goods containing volatile flavor and aroma components comprising: fermenting a mixture of flour, sugar in an amount ranging from 0 to about 10% by weight based on the weight of the flour, from about 55 to about 250 parts water per 100 parts flour and a yeast of the species *Saccharomyces cerevisiae* in an amount sufficient and for a minimum of 12 hours, said period of time being sufficient to decrease the pH of the mixture to a pH below 4.75: and drying the fermented mixture to a moisture content of from about 4.5% to about 9.0% under conditions such that a major amount of the volatile components of the mixture with the exception of water remain in the fermentation aid product after drying.

4,500,549

USE OF WHEY-DERIVED PRODUCTS AS CHEESE FLAVORING AGENTS OR ENHANCERS

Tommy L. Crossman, Corning, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed Mar. 7, 1983, Ser. No. 472,735

Int. Cl.³ A23C *21/02*

U.S. Cl. 426—33 **17 Claims**

1. A cheese flavoring agent comprising hydrolyzed, enzymatically modified whole whey, said whole whey having had an initial lactose content of from about 2 percent to about 90 percent on a dry weight basis, said hydrozylate resulting from enzymatically modifying the whole whey with lipase, protease, or a combination of lipase and protease, and lactose hydrolyzing at least 30% of the initial lactose content.

4,500,550

CHEESE WITH MICRO-ORGANISM—CAUSED DECORATION ON ITS RIND AND PROCESS FOR PRODUCING SAME

Bernard Chauvin, Bauge, France, assignor to Bongrain S.A., Guyancourt, France

Filed Mar. 29, 1983, Ser. No. 480,145

Claims priority, application France, Mar. 31, 1982, 82 05571

Int. Cl.³ A23C *9/12*

U.S. Cl. 426—38 **11 Claims**

1. A permanently and indelibly decorated cheese, characterized in that its decoration, forming an integral part of the rind and inseparable therefrom, has at least two different colorations obtained by growth of different micro-organisms said micro-organisms being caused to develope on said cheese in a predetermined pattern.

3. The cheese according to claim 1, characterized in that at least one of its faces and/or its peripheral surface comprises a substantially flat surface in which is incorporated a sunken or relief graphic pattern and in that the substantially flat surface and the graphic pattern are coloured differently by growth of different micro-organisms.

6. A process for manufacturing the cheese of claim 3 which comprises impressing, before the cheese matures, a graphic pattern on at least one substantially flat surface and/or a peripheral surface of the cheese and then producing different colorations on the surface of the cheese and on the graphic pattern by the growth of different colored micro-organisms during maturing.

4,500,551

AGENTS FOR IMPROVING BREAD IN QUALITY AND BREAD CONTAINING SAME

Kenji Tanaka, Kawagoe, and Shigeru Endo, Tokyo, both of Japan, assignors to Nisshin Flour Milling Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 359,134, Mar. 17, 1982, abandoned. This application Apr. 28, 1983, Ser. No. 489,592

Int. Cl.³ A21D *2/06, 2/22*

U.S. Cl. 426—62 **6 Claims**

1. An agent for improving bread in quality, said agent containing L-ascorbic acid, cystine and aspartic acid or glutamic acid in the proportion of 1 part by weight of ascorbic acid, 2.5 to 10 parts by weight of cystine based on the ascorbic acid used and 0.5 to 2 parts by weight of aspartic acid or glutamic acid based on the ascorbic acid used, said agent being present as 30–120 ppm of the weight of the flour.

4,500,552

GELATIN DESSERT PRODUCT

Sylvan Kadison, and David Scheiner, both of Chicago, Ill., assignors to Kadison Laboratories, Inc., Chicago, Ill.

Filed Jun. 13, 1983, Ser. No. 503,816

Int. Cl.³ A23L *1/04*

U.S. Cl. 426—96 **7 Claims**

1. A gelatin dessert product in the form of a dry pulverulent mixture capable, when dissolved in hot water and then chilled, of providing a flavored gelatin dessert having two clearly demarcated layers, each having a distinctly different color, comprising, as essential ingredients: about 50% to about 70%, by weight, sugar; about 15% to about 40%, by weight, of a dry edible oil component in the form of a dry mixture of an edible oil and an edible inert carrier wherein the edible oil comprises about 40% to about 60%, by weight, of the dry mixture; about 5% to about 15% gelatin; about 1% to about 3% of a quick setting agent in the form of a water soluble organic dibasic acid, for the gelatin; and about 0.5% to about 1.5% of a food grade acid.

4,500,553

METHOD OF PRODUCING A FROZEN DUAL-TEXTURED CONFECTION

Louis G. Liggett, Brooklyn, N.Y.; Kevin W. Lang, River Vale; Clement R. Wyss, Hillsdale, both of N.J., and Richard A. Williams, Plymouth, Minn., assignors to General Foods Corporation, White Plains, N.Y.

Filed Aug. 1, 1983, Ser. No. 519,353

Int. Cl.³ A23G *9/00, 9/26*

U.S. Cl. 426—101 **31 Claims**

1. A method of producing a frozen, dual-textured confection comprising a cream and gelatin-containing aerated phase and a fruit phase which comprises the steps of:

(a) dispersing the gelatin in water;

(b) combining the gelatin dispersion with the cream, milk solids, an emulsifier, a sweetener, and a gum stabilizer and homogenizing the combination so as to form a uniform emulsion having a gelatin content of from 0.8% to 2.5% by weight;

(c) passing the emulsion of (b) through a freezer in which the emulsion is simultaneously cooled, aerated and agitated to produce a partially frozen, aerated composition having ice crystals within the range of 10 to 150 microns and an overrun from 5% to 300%.

(d) combining pureed fruit and/or synthetic fruit flavor, water, a sweetener and a gum stabilizer to form a fluid, fruit phase component having a solids content between about 20% and 40% by weight;

(e) passing the partially-frozen, aerated composition in (c) together with a fruit component of (d) through a filler

head and into a mold or contaner at a ratio of from 99:1 to 1:1 by weight so that upon filling, the mold or container contains a cream and gelatin-containing phase and a fruit phase; and

(f) thoroughly freezing the contents of the mold or container.

4,500,554

WINE STABILIZATION USING IMMOBILIZED TANNIC ACID

Howard H. Weetall, Big Flats, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed Feb. 14, 1983, Ser. No. 466,309
Int. Cl.³ A23L *3/36*; C12H *1/04*
U.S. Cl. 426—323 **2 Claims**

1. A process for stabilizing wine comprises:

(a) copolymerizing formaldehyde and tannic acid attached to an insoluble carrier to form an immobilized tannic acid composite;

(b) contacting a wine, having components which cause haze formation upon heating, with the immobilized tannic acid for a period sufficient to remove the desired amount of haze components; and

(c) separating the treated wine from the immobilized tannic acid composite.

4,500,555

FISH SKINNING PROCESS

Wayne S. Chu, Agoura, Calif., assignor to Ralston Purina Company, St. Louis, Mo.

Filed Nov. 7, 1983, Ser. No. 549,110
Int. Cl.³ A22C *25/17*
U.S. Cl. 426—479 **14 Claims**

1. A process of skinning fish comprising:

a. applying an aqueous dispersion of an at least partially hydrolyzed starch to the skin of a fish;

b. drying the skin with the applied dispersion thereby causing the skin to at least partially peel away from the fish, and

c. removing the skin.

4,500,556

ANTHOCYANIN COLORANT FROM GRAPE POMACE

Metty S. K. Langston, Ossining, N.Y., assignor to General Foods Corporation, White Plains, N.Y.

Continuation-in-part of Ser. No. 363,759, Mar. 31, 1982, abandoned. This application Apr. 19, 1983, Ser. No. 486,599
Int. Cl.³ A23L *1/277, 1/272*
U.S. Cl. 426—540 **11 Claims**

1. A method for producing highly colored anthocyanin colorant from grape pomace which comprises:

Contracting grape pomace with an aqueous extractor solvent containing HSO_3 ions at room temperature to extract anthocyanin to form an unchanged anthocyanin-(HSO_3) complex;

Removing said aqueous extraction solvent from said grape pomace;

Removing undissolved solids from said aqueous extraction solvent;

Contacting said aqueous extraction solvent with a non-ionic adsorbent to adsorb said anthocyanin pigment from said aqueous extraction solvent;

Separating said aqueous extraction solvent and said adsorbent;

Contacting the separated adsorbent with water having a temperature ranging from 10° to 20° C. to remove water soluble non-pigmented material;

Contacting the separated adsorbent with an eluent acidifed with an acid having a pH ranging from 1 to 4, thereby breaking the anthocyanin-(HSO_3) complex, to produce a product solution comprising monomeric anthocyanin in its cationic form (free of said HSO_3 ions) which dissolves in said organic eluent; and

Separating said product solution from said adsorbent to produce a high tinctorial strength monomeric anthocyanin pigment.

4,500,557

LEAVENING ACID COMPOSITION

Thomas E. Edging, Nashville, Tenn., assignor to Stauffer Chemical Company, Westport, Conn.

Filed Jan. 18, 1982, Ser. No. 340,133
Int. Cl.³ A21D *2/00*; C01B *15/16*
U.S. Cl. 426—563 **16 Claims**

1. A method for preparing a leavening acid composition comprising heating a potassium modified 1:3:8 sodium aluminum phosphate at a temperature above 200° C. for a period of time sufficient to reduce the L.O.I. to within the range of from about 11 to about 14, said time being insufficient to reduce the neutralizing value of said phosphate below 90, said composition being characterized by a baking powder rate of reaction ranging from about 15 c.c. to about 30 c.c. evolved CO_2 at 2 minutes, from about 18 c.c. to about 44 c.c. evolved CO_2 at 4 minutes and from about 24 c.c. to about 60 c.c. evolved CO_2 at 10 minutes.

4,500,558

MODIFICATION OF BRAN BY EXTRUSION

Charles V. Fulger, Millwood, and Allan G. Bradbury, Tarrytown, both of N.Y., assignors to General Foods Corporation, White Plains, N.Y.

Continuation-in-part of Ser. No. 457,993, Jan. 14, 1983, abandoned. This application May 18, 1984, Ser. No. 611,651
Int. Cl.³ A23L *1/10*; A23P *1/00*
U.S. Cl. 426—622 **6 Claims**

1. A process for the modification of bran comprising:

(a) combining bran with water to form a feed having a bran to water ratio of from 5.5:1 to 10:1; said bran containing from 10% to 25% starch on a dry weight basis, said starch either being naturally present in the said bran or admixed therewith;

(b) introducing the feed into a counter-rotating twin screw extruder;

(c) extruding the feed at a temperature of from 150° C. to 180° C.; and

(d) developing a shear rate of from 500 to 2000 seconds^{-1} in said extruder through which the said feed is extruded.

4,500,559

METHOD OF INCREASING THE ORGANOLEPTIC ACCEPTABILITY OF SHANK MEAT

Fredric G. Bender, Houston; Charles W. Everson, McMurray, and William E. Swartz, Upper St. Clair, all of Pa., assignors to Stauffer Chemical Company, Westport, Conn.

Filed Oct. 14, 1983, Ser. No. 541,949
Int. Cl.³ A23L *1/31*
U.S. Cl. 426—646 **7 Claims**

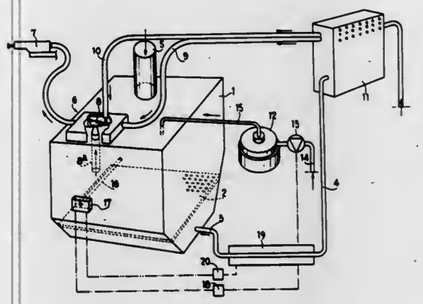
1. A method for increasing the organoleptic acceptability of a meat product containing meat and fat, said meat consisting of shank meat, which comprises blending with said meat product a composition of autolyzed yeast extract and sodium tripolyphosphate hydrated with a solution containing citrus juice solids.

4,500,560

PROCESS FOR ENAMELLING OBJECTS ELECTROSTATICALLY BY MEANS OF A GUN

Gerard Guffroy, Vendome, France, assignor to De Dietrich & Cie, France

Filed Aug. 11, 1982, Ser. No. 407,036
Claims priority, application France, Feb. 9, 1982, 82 02038
Int. Cl.³ B05D *1/06*
U.S. Cl. 427—8 **7 Claims**



1. A process for electrostatic enamelling objects and in particular hollow metallic objects by gun means and powdered enamel, comprising:

(a) generating a first air flow for conveying said powdered enamel towards said gun means;

(b) generating a second air flow for fluidizing said powdered enamel in a fluidization vessel and applying said second air flow into the bottom of said vessel;

(c) generating a steam flow second from said first or second air flows;

(d) applying said steam flow into the top of said vessel so as to moisten the fluidized powdered enamel contained therein; and

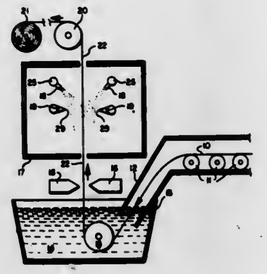
(e) conveying said fluidized moistened powdered enamel into said gun means by means of said first air flow.

4,500,561

MINIMIZATION OF SPANGLING ON HOT DIP GALVANIZED STEEL STRIP

Yong-Wu Kim; Phillip L. Coduti, both of Munster; Brian A. Sok, Cedar Lake, and William A. Carter, Munster, all of Ind., assignors to Inland Steel Company, Chicago, Ill.

Filed Jul. 25, 1983, Ser. No. 516,997
Int. Cl.³ B05D *1/04, 1/18*
U.S. Cl. 427—25 **23 Claims**



1. A method for minimizing spangle size on a hot dip galvanized steel strip, said method comprising the steps of:

withdrawing, from a bath of molten zinc, a steel strip having at least one exterior surface portion comprising molten zinc;

moving said withdrawn strip away from said bath in a direction having a vertical component;

providing said coated strip with an electrostatic charge having a first polarity;

providing particles of nucleating agent for initiating solidification of said molten zinc on said exterior surface portion, said particles having a mixed size range comprising small and large particles;

directing said particles, in relation to said vertically moving strip, so that at least the large particles in said size range move along a particle path which avoids impingement on said exterior surface portion;

and charging said particles of nucleating agent with an electrostatic charge having a second polarity opposite said first polarity to divert the small particles from said particle path toward said molten exterior surface portion for impingement substantially thereon only to initiate solidification thereof, while permitting said large particles to continue along a non-impinging particle path;

the continuation along said non-impinging particle path being limited to substantially said large particles.

4,500,562

DI-P-XYLYLENE POLYMER AND METHOD FOR MAKING THE SAME

Randy K. Jahn, and Raimond Liepins, both of Los Alamos, N. Mex., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Mar. 2, 1983, Ser. No. 471,393
Int. Cl.³ B05D *1/04, 1/06*
U.S. Cl. 427—27 **10 Claims**

1. A method of making a polymerized p-xylylene film, comprising the steps of:

subliming a solid di-p-xylylene at a first temperature to produce a sublimed di-p-xylylene vapor;

pyrolyzing said sublimed di-p-xylylene vapor at a second temperature higher than said first temperature to produce a p-xylylene vapor;

introducing said p-xylylene vapor into a deposition region wherein a low-temperature, low-pressure plasma is generated by means of an alternating electrical field applied to an inert gas in said region at a frequency of between approximately 30 and 300 hertz; and

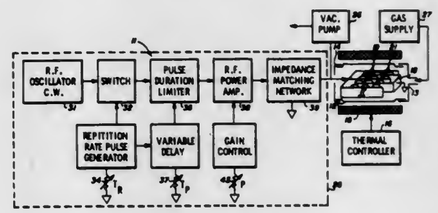
condensing said p-xylylene vapor onto a solid substrate located within said deposition region.

4,500,563

INDEPENDENTLY VARIABLY CONTROLLED PULSED R.F. PLASMA CHEMICAL VAPOR PROCESSING

Charles E. Ellenberger; George L. Bower, both of Elko, Nev., and William R. Snow, Sunnyvale, Calif., assignors to Pacific Western Systems, Inc., Mountain View, Calif.

Filed Dec. 15, 1982, Ser. No. 434,859
Int. Cl.³ C23C *13/08*; H01L *21/306*
U.S. Cl. 427—38 **8 Claims**



1. In a method for plasma enhanced chemical vapor processing of semiconductive wafers wherein an evacuable envelope contains first and second sets of interleaved electrodes, one set

being electrically insulated relative to the other, for establishing an electrical plasma discharge within said evacuable envelope in processing gaps defined between the interleaved electrodes, the steps of:

loading semiconductive wafers into the processing gaps;

evacuating said envelope to subatmospheric pressure;

introducing a vapor at subatmospheric pressure into said envelope;

applying pulsed radio frequency power to said first and second sets of interleaved electrodes to establish an electrical plasma discharge at subatmospheric pressure in the processing gaps to produce chemically active vapor products of said plasma discharge;

chemically interacting said chemically active vapor products with said wafers within said processing gaps for processing of said wafers; and

variably controlling the peak power level of the radio frequency power pulses essentially independently of the pulse duration and pulse repetition rate of said pulsed radio frequency power to variably control the distribution of the plasma discharge within said processing gaps for variably controlling the uniformity of the processing of the semiconductive wafers within the processing gaps.

6. In a plasma enhanced chemical vapor processing apparatus for processing semiconductive wafers within an evacuable envelope for containing the plasma enhanced chemical vapor and semiconductive wafers at subatmospheric pressure;

first and second sets of electrode means for disposition within the envelope, one set of said electrodes means being electrically insulated from the other, and said first and second sets of electrode means being interleaved with each other for establishing, when energized with electrical potential, an electrical plasma discharge within said evacuable envelope in the processing gaps defined between adjacent ones of said interleaved electrode means;

means for holding semiconductive wafers in said processing gaps;

means for applying pulsed radio frequency power to said first and second sets of interleaved electrodes to establish an electrical plasma discharge at subatmospheric pressure in said processing gaps to produce chemically active vapor products of said plasma discharge for chemically interacting with said wafers within said processing gaps for processing of said wafers; and

means for variably controlling the peak power level of the radio frequency power essentially independently of the pulse duration and the pulse repetition rate of said pulses for variably controlling the distribution of the plasma discharge within said processing gaps for variably controlling the uniformity of the processing of the semiconductive wafers within said processing gaps.

4,500,564

METHOD FOR SURFACE TREATMENT BY ION BOMBARDMENT

Yuji Enomoto, Ibaraki, Japan, assignor to Agency of Industrial Science & Technology and Ministry of International Trade & Industry, both of Tokyo, Japan

Filed Jan. 25, 1983, Ser. No. 460,937

Claims priority, application Japan, Feb. 1, 1982, 57-14638; Mar. 23, 1982, 57-45994

Int. Cl.³ B05D *3/06*

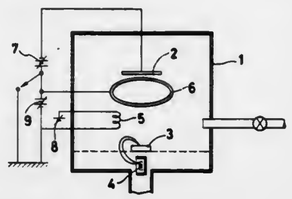
U.S. Cl. 427—39 **3 Claims**

1. A method for the ion bombardment treatment of the surface of an article on which a metallic compound is to be vapor deposited by reactive ion plating, which comprises the steps of:

placing the article under treatment in a reaction gas at a pressure within the range of 10^{-3} to 10^{-4} Torr;

causing a hot filament to release thermoionic electrons in said reaction gas, thereby inducing electric discharge;

applying a negative voltage to the article; and



bombarding the article under treatment with ions of the reaction gas ionized by said electric discharge.

4,500,565

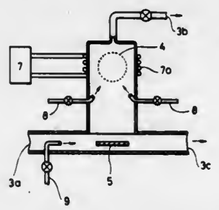
DEPOSITION PROCESS

Tatsumi Hiramoto, Machida, Japan, assignor to Ushio Denki Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 28, 1983, Ser. No. 536,517

Int. Cl.³ B05D *3/06*

U.S. Cl. 427—39 **8 Claims**



1. A deposition process which comprises, in an air-tight reaction vessel, generating through a discharge gas by means of a discharge system a light-radiating plasma producing species, disposing a substrate at a position spaced from the plasma by a distance greater than the mean free path of the species produced by the plasma such that the substrate is exposed directly to light radiated from the plasma, feeding a carrier gas and photoreactive gas in such a manner that said carrier gas and photoreactive gas flow along the substrate, and causing the photoreactive gas to undergo a reaction by the light from the plasma to produce a reaction product, and to deposit the reaction product on the substrate.

4,500,566

BUBBLE PRESSURE BARRIER AND ELECTRODE COMPOSITE

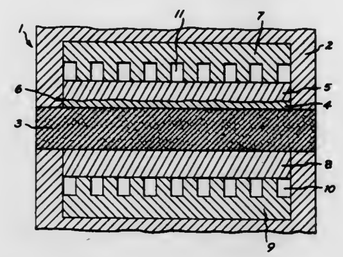
Bradley R. Karas, Clifton Park, and Charles E. Baumgartner, Schenectady, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Oct. 7, 1982, Ser. No. 433,314

Int. Cl.³ H01M *4/88, 8/00*

U.S. Cl. 427—115 **3 Claims**

1. A process for producing a porous bubble pressure barrier having metal oxide distributed substantially uniformly throughout its pores and having at least one face free of any significant amount of said metal oxide which comprises providing a porous sintered blank in the form of a plaque comprised of a metal selected from the group consisting of nickel, copper, an alloy of nickel and copper, and an alloy of nickel and up to about 10 weight % chromium, said blank having a median pore size ranging from about 1 micron to about 10 microns, and a pore volume ranging from about 40% to about 75% by volume of the total volume of said blank, immersing said blank in a fluid organometallic precursor for a metal oxide selected from the group consisting of aluminum oxide, titanium oxide, iron oxide, zinc oxide and cerium oxide, subjecting said fluid to a vacuum sufficient to at least substantially evacuate the pores of said immersed blank and at least significantly fill said evacuated pores with said fluid, retrieving the resulting precursor-filled blank, removing said precursor from at least one face of said blank leaving no significant amount thereof, infiltrating said precursor-filled-blank with water or steam hydrolyzing said precursor within the pores of said blank producing a hydrolyzed product, first firing the resulting hydrolyzed pro-



duct-containing-blank to convert said hydrolyzed product to said metal oxide leaving no significant amount of said hydrolyzed product therein at a temperature ranging from the temperature at which said product decomposes to said metal oxide to less than about 600° C., and second firing the resulting metal oxide-containing-blank to remove any water which may be present therein at a temperature ranging from about 600° C. to about 700° C., said first and second firings being carried out at or about atmospheric pressure in a reducing atmosphere, said first and second firings having no significant deleterious effect on said bubble pressure barrier.

4,500,567

METHOD FOR FORMING TIN OXIDE COATING

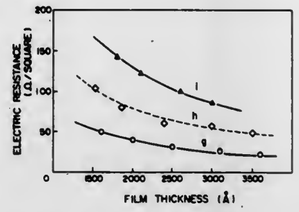
Yukihiro Kato, Nishinomiya; Hideo Kawahara, Toyonaka, and Masato Hyohdou, Itami, all of Japan, assignors to Nippon Sheet Glass Co., Ltd., Osaka, Japan

Filed Dec. 19, 1983, Ser. No. 562,726

Claims priority, application Japan, Dec. 23, 1982, 57-230376; Mar. 7, 1983, 58-37136

Int. Cl.³ C23C *11/00, 13/00*

U.S. Cl. 427—255.3 **4 Claims**



1. In a method for forming a fluorine-containing tin oxide coating on the surface of a substrate selected from the group consisting of glass, ceramics and metals which comprises contacting the heated surface of the substrate with a mixed vapor of a tin compound and a doping agent composed of a fluorine-containing compound to oxidize and decompose the mixed vapor thermally and deposit fluorine-containing tin oxide thereon; the improvement wherein monobutyltin trichloride is used as the tin compound, and a fluorine compound of the following formula

$$XCHF_2$$

wherein X represents a fluorine atom, a chlorine atom, or a hydrocarbon group consisting only of carbon and hydrogen atoms, is used as the doping agent.

4,500,568

PRESERVATION OF STRUCTURES

Leonard L. Pearson, Slough, and John Litchfield, Croydon, both of England, assignors to Cole Polymers Limited, Surrey, England

Filed Dec. 7, 1981, Ser. No. 328,432

Claims priority, application United Kingdom, Dec. 6, 1980, 8039210

Int. Cl.³ B05D *3/02*

U.S. Cl. 427—294 **14 Claims**

1. A method of in situ strengthening, without discoloring, a pre-existing structure made of stone, brick, concrete, concrete reinforced with metal reinforcement, wood, or the like, and existing in an ambient environment, comprising the steps of: drawing a vacuum in a portion of the structure and while maintaining the vacuum drawing into the structure a liquid of low viscosity, the liquid comprising a monomer and a polymer, the liquid polymerised to a degree of polymerisation between about 8 percent and about 12 percent w/w/; and curing the liquid at ambient temperature.

4,500,569

PALLADIUM (II) BIS (HEXAFLUOROACETYLACETONATE), ADDUCTS DERIVED THEREFROM AND USES THEREOF

Allen R. Siedle, Lake Elmo, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 351,505, Feb. 23, 1982, Pat. No. 4,410,569, which is a division of Ser. No. 159,367, Jun. 13, 1980, Pat. No. 4,424,352. This application Jun. 30, 1983, Ser. No. 509,956

Int. Cl.³ B05D *3/04*

U.S. Cl. 427—304 **9 Claims**

1. A method comprising the steps:

(1) coating a solution of an adduct of palladium(II) bis(hexafluoroacetylacetonate) onto a basic substrate, said adduct of palladium(II) bis(hexafluoroacetylacetonate) having the formula

$$Pd(F_6ACAC)_2.L_n$$

wherein

F_6ACAC is the hexafluoroacetylacetonate anion,

L is a Lewis base and n is an integer 1 to 4, with the provisos that

when n is 1, 2, 3 or 4, L is dimethylethylamine, benzylamine, imidazole, pyrazine, pyrazole, triphenylstibine, benzothiazole, or tert-butylisocyanide,

when n is 1, 2, or 3, L is ammonia, methylamine, dimethylamine, or pyridine,

when n is 1 or 2, L is trimethylamine, triphenylphosphine, triphenylarsine, 1,4-dithiane, alumina, silica, or aluminosilicates,

when n is 4, L is benzoselenazole,

when n is 2, L is 1,2-bis(diphenylphosphino)ethane, phenothiazine, or phenoselenazine,

when n is 1, L is phenazine, trimethylpyridine, bis(2-diphenylphosphinoethyl)phenylphosphine, phenoxathiin, tetrathianaphthalene, tetrathiatetracene, benzylmethylsulfide, diethylsulfide, or bis(diphenylphosphino)acetylene,

(2) evaporating the solvent from the resulting coating, and

(3) reducing the resulting solvent-free coating to provide a catalytically active surface of palladium.

4,500,570

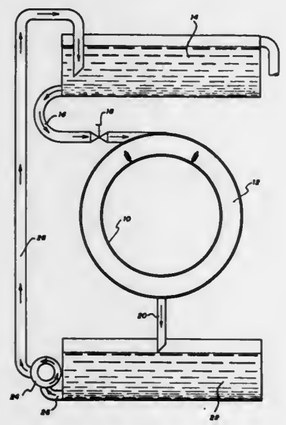
PIPELINE PRIMING METHOD AND SYSTEM

Robert G. Goekler, London, England, assignor to Crutcher Resources Corporation, Houston, Tex.

Continuation of Ser. No. 949,860, Oct. 10, 1978, abandoned, which is a continuation of Ser. No. 795,207, May 9, 1977, abandoned. This application Sep. 8, 1980, Ser. No. 185,285

Int. Cl.³ B05D *1/28, 1/30*

U.S. Cl. 427—345 **10 Claims**



1. A method of applying a primer coating to a pipeline, comprising the steps of:

moving a cylindrical body of liquid primer along said pipeline while contacting said pipeline fore and aft of said body by non-metallic bristle rings which serve to confine and define said body;

wiping to a predetermined thickness the primer on said pipe aft of said rings while moving excess primer forward for collection and recirculation to said body; and

establishing an inert gas flow in the zones occupied by said primer.

4,500,571

PICTURE

William A. Jones, P.O. Box 189, Everett, Wash. 98201

Continuation-in-part of Ser. No. 284,939, Jul. 20, 1981,. This application Sep. 29, 1982, Ser. No. 426,604

Int. Cl.³ B44C *5/04*

U.S. Cl. 428—13 **8 Claims**



1. A picture comprising,

a transparent panel having continuous, regular, and uniform opposite surfaces,

transparent substances on a selected one of said surfaces contrasting in color with the panel forming particles in form raised from that surface, the particles being distributed on that surface, and being selectively and individually so dimensioned and proportioned and positioned relative to each other as to form a predetermined picture independently of and separate from that portion of that surface devoid of said substances,

said substances being uncovered and exposed and constituting the sole means of forming the picture, and

means enclosing one side of the panel with light absorbing material,

the transparency of the substances enabling light to enter thereinto from the uncovered side of the panel, and the substances being capable of reflecting light from the front side thereof and from the rear side thereof.

4,500,572

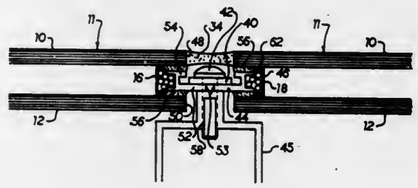
STRUCTURAL SPACER GLAZING WITH CONNECTING SPACER DEVICE

Geoffrey V. Francis, 14 Woodgarden Ct., St. Catharines, Ontario, Canada (L2M 7C9)

Filed Jun. 30, 1983, Ser. No. 509,652

Int. Cl.³ E06B *3/24*

U.S. Cl. 428—34 **36 Claims**



1. A glass insulating sealed unit capable of being mounted on a building without the use of exterior stops comprising at least two spaced-apart glass plates and spacer means to join and seal the edge portions of said glass plates arranged about the entire periphery of said plates and between said plates, said spacer means including at least one connecting spacer device extending along at least one side of said unit, projecting therefrom, and adapted for the connection of said unit to an adjoining support member in order to support and fix said unit so that the exterior glass suface thereof is the outermost point of the unit and adjacent surrounding surfaces of said building.

4,500,573

PROCESSES FOR MANUFACTURING SPECIFIC PRODUCTS SUITABLE FOR THE STORAGE, TRANSPORT, PREPARATION AND CONSUMPTION OF FOOD, AND DRINKS AND PRODUCTS OBTAINED BY SAID PROCESSES, SUCH AS PLATES, SOUP PLATES, VESSELS, CUPS, GLASSES AND THE LIKE

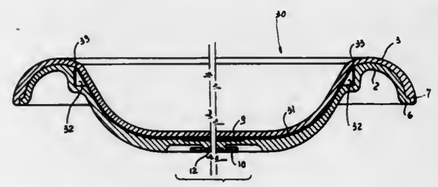
Alberto Piaggi, 542 Residenza delle Querce, Milano Due, Segrate (Milan), Italy

Filed Nov. 16, 1982, Ser. No. 442,033

Claims priority, application Italy, Nov. 18, 1981, 25161 A/81

Int. Cl.³ B29C *27/08;* **B65D** *11/16*

U.S. Cl. 428—35 **14 Claims**



1. A process for peparing a multi-layered decorative plastic article for holding food comprising

injection molding a second element having an inner surface,

an outer surface and an outer lip, said second element being injection molded from plastic which is adapted to hold food, and said outer surface being shaped to be in contact with said food,

injection molding a first base element having an inner surface, an outer surface and an outer lip, said base element inner surface and outer lip being molded so that it is substantially complementary with the second element inner surface and outer lip,

providing a decorative insert, said decorative insert having at least one surface thereof with a decoration thereon,

injection molding at least one of the first or second elements inner surfaces to accomodate said decorative insert therebetween and provide a complementary fit between the inner faces of the first and second elements,

injection molding at least one of the first and second elements with plastic material that forms a transparent plastic after molded,

inserting the decorative insert between the inner faces of the first and second elements,

ultrasonically welding the first element to the second element to thereby provide the desired multilayered food holder.

8. A multilayered plastic food holder comprising:

a second injection molded plastic element having an inner surface, an outer surface and an outer lip, said outer surface being the surface to hold or be in contact with food,

a first injection molded plastic base element having an inner surface, an outer surface and an outer lip,

a separate decorative insert being positioned between the inner surfaces of said first and second elements,

said inner surfaces of said first and second elements being adapted to hold said decorative insert and being complementary with each other,

at least one of said first and second elements being formed of transparent plastic to enable the decorative layer to be visible therethrough,

said first and second elements being joined together by ultrasonic welding.

4,500,574

END CLOSURE FOR SAUSAGE CASINGS

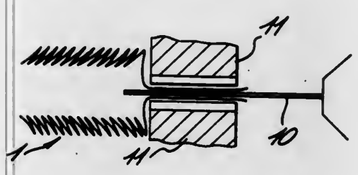
Allan J. Hanlon, Stirling, Scotland, assignor to Devro, Inc., Somerville, N.J.

Filed Feb. 4, 1983, Ser. No. 463,767

Claims priority, application United Kingdom, Feb. 9, 1982, 8203687

Int. Cl.³ A22C *13/00*

U.S. Cl. 428—35 **2 Claims**



1. A shirred strand of sausage casing closed at one end by an end-closure constituted by a crimped end portion of the strand which is deshirred to remove transverse folds and in which opposite sides of the casing are adhesively secured together around a removable pin so as to form a partial seal having a precisely sized restricted air passage having a diameter of from 0.25 to 1 mm therethrough.

4,500,575

HOT-MELT ADHESIVE OF A COPOLYESTER OF A DIBASIC ACID WITH A POLYHYDRIC ALCOHOL

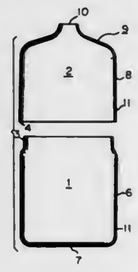
Kazuo Taira, Tokyo; Akihiko Morofuji, Yokohama; Hiroshi Ueno, Yokosuka, and Seishichi Kobayashi, Yokohama, all of Japan, assignors to Toyo Seikan Kaisha, Ltd., Tokyo, Japan

Filed Oct. 18, 1983, Ser. No. 543,148

Claims priority, application Japan, Oct. 28, 1982, 57-188141

Int. Cl.³ B65D *0/00;* **C08G** *63/02*

U.S. Cl. 428—35 **7 Claims**



7. In a bottle-shaped metal vessel having a circumferential side seam formed by lap-bonding circumferential open ends of cup-shaped upper and lower members obtained by draw forming or draw-ironing forming of a metal blank through an adhesive, the improvement wherein said adhesive comprises a copolyester of a dibasic acid component comprising 70 to 97 mole % of terephthalic acid and 3 to 30 mole % of other dibasic acid with a polyhydric alcohol component comprising 70 to 97 mole % of 1,4-butane-diol, 3 to 30 mole % of diethylene glycol and up to 20 mole % of other polyhydric alcohol having 2 to 5 carbon atoms, said copolyester having a reduced viscosity of at least 0.6 dl/g as measured at a temperature of 30° C. in a phenol/tetrachloroethane mixed solvent having a phenol/tetrachloroethane weight ratio of 60/40 at a polymer concentration of 0.25 g/100 ml, a glass transition temperature of at least 31° C. and a crystallinity of 15 to 40%.

4,500,576

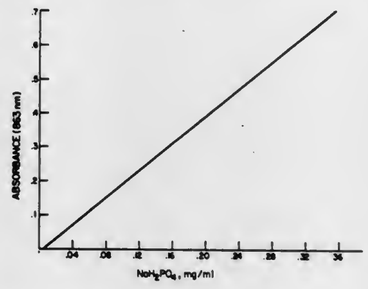
INHIBITION OF DISCOLORATION ON CELLULOSE FOOD CASINGS

Myron D. Nicholson, Lockport, and Herman Chiu, Chicago, both of Ill., assignors to Union Carbide Corporation, Danbury, Conn.

Filed Feb. 14, 1983, Ser. No. 466,302

Int. Cl.³ F16L *11/00*

U.S. Cl. 428—36 **31 Claims**



1. A cellulosic food casing treated with a composition for inhibiting the formation of discoloration and black spots upon said casing, said casing containing a liquid smoke solution derived from natural wood and containing smoke color, odor

and flavor constituents, said composition comprising an agent having the ability to prevent the progressive oxidation of metals; said agent being selected from the group consisting of a coordination compound and a reducing agent, wherein said reducing agent is selected from the group consisting of hydrogensulfide, sulferdioxide, and sodium hydrosulfite.

4,500,577

METAL PIPE COATED WITH THERMOPLASTIC SYNTHETIC RESIN

Jiro Satake; Tetsuzo Arai, both of Amagasaki; Kivokazu Tanaka; Eiji Mikami, both of Ibaraki; Tsuneo Moriyasu, and Tadasu Nakagawa, both of Neyagawa, all of Japan, assignors to Sumitomo Kinzoku Kogyo Kabushiki Kaisha and Nippon Paint Kabushiki Kaisha, both of Osaka, Japan

Continuation of Ser. No. 371,854, Apr. 26, 1980, abandoned, which is a continuation of Ser. No. 148,338, May 9, 1980, abandoned, which is a continuation-in-part of Ser. No. 026,382, Apr. 2, 1979, abandoned. This application Dec. 1, 1983, Ser. No. 557,388

Claims priority, application Japan, Apr. 7, 1978, 53-41594

Int. Cl.³ B32B *1/08*

U.S. Cl. 428—36 **2 Claims**

1. A coated metal pipe having the exterior surface thereof coated with a protective film of a thermoplastic synthetic resin through an adhesive material consisting essentially of:

(a) about 10% by weight of an oil soluble alkyl phenol resin

(b) about 30% by weight of an ethylene-ethylacrylate resin having a melt index of 25

(c) about 25% by weight butyl rubber and

(d) about 30% of aliphatic petroleum resin having a softening point of 130° C.,

the balance being inorganic filler material.

4,500,578

ENDLESS LOOP ARTICLES OF MANUFACTURE, STRAPS SHAPED THEREFROM, AND MATS MADE FROM SUCH STRAPS

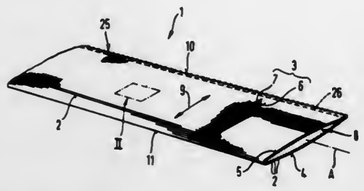
Dieter van de Kamp, Bad Pyrmont, Fed. Rep. of Germany, assignor to Spanset Inter AG, Basel, Switzerland

Filed Feb. 21, 1984, Ser. No. 581,900

Claims priority, application Fed. Rep. of Germany, Feb. 22, 1983, 8304806[U]

Int. Cl.³ B32B *7/00*

U.S. Cl. 428—36 **23 Claims**



1. An endless loop article of manufacture comprising a core consisting essentially of at least one skein and a protective substantially toroidal covering consisting essentially of hose fabric, having a central loop axis and loosely enclosing said core,

said hose fabric comprising a warp threading and a weft threading,

said weft threading comprising at least one monofilament thread extending transverse to said central loop axis.

4,500,579

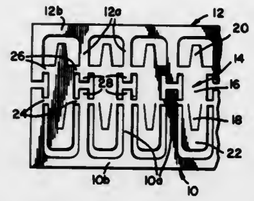
STICKS OF PARTS AND THEIR USE

Alexander R. Norden, 350 Central Park West, New York, N.Y. 10025

Filed Sep. 29, 1982, Ser. No. 428,382

Int. Cl.³ B32B *1/04, 15/00*

U.S. Cl. 428—43 **18 Claims**



1. A strip of parts for gang-assembly to companion portions of a receptor, said strip of parts being a sheet-metal stamping including a row of mutually spaced-apart parts and a break-away strip extending alongside the row of parts and having projecting portions disposed in the spaces between said parts and joined to those parts by a row of connections that extends along the row of parts, said connections being weakened by incisions transverse to the row of connections, to the break-away strip and to the row of parts, so that rocking of the break-away strip relative to the row of parts about an axis along the row of connections tends to tear the connections.

4,500,580

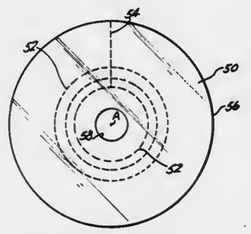
TAPING DOUGHNUT

Wayne Luciani, 1797 Litchfield Tpke., Woodbridge, Conn. 06525

Filed Jul. 11, 1983, Ser. No. 512,351

Int. Cl.³ B32B *3/10, 29/00*

U.S. Cl. 428—43 **10 Claims**



1. In a building construction system, a taping paper used for sealing a gap formed by a piece of wallboard and an object piercing said wallboard comprising a substantially flat surface having a central axis and an outer peripheral surface and a plurality of continuous concentric tear lines spaced at different radial distances from said central axis, said plurality of continuous tear lines being adapted to be torn so as to define an opening through which said object piercing said wallboard fits and further including a non-continuous tear line extending from said outer peripheral surface of said substantially flat surface in the direction of said central axis wherein said non-continuous tear line intersects said plurality of continuous concentric tear lines wherein said non-continuous tear line is adapted to be torn so as to define an opening for fitting said taping paper over said object such that said object fits into said opening defined by the torn continuous tear line.

4,500,581

MATERIAL FOR PROTECTING HUMAN BODIES FROM HARMFUL OR POISONOUS CHEMICAL SUBSTANCE

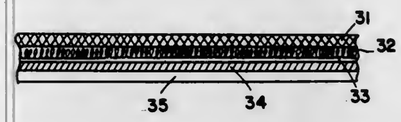
Takeshi Mitomi; Eiji Yoshimura, and Hideki Komagata, all of Otsu, Japan, assignors to Boseki Kabushiki Kaisha, Japan

Filed Mar. 19, 1982, Ser. No. 360,083

Claims priority, application Japan, Mar. 20, 1981, 56-41048

Int. Cl.³ B32B *3/02*

U.S. Cl. 428—85 **21 Claims**



1. A protective material, adapted to protect human bodies from chemical substances, comprising (A) a cloth layer having a buffed or piled surface layer which is adapted to prevent a chemical substance in a liquid state from penetrating the cloth layer and which has an apparent density (according to the formula: $D=W/100\times T$, where D is the apparent density of the layer being measured (g/cm^3), W is the weight of the layer being measured, and T is the thickness of the layer being measured (mm)) smaller than that of the entire body of the cloth layer, and (B) an active carbon layer adapted to absorb a chemical substance in a gaseous state integrally provided on the other surface of the cloth layer.

4,500,582

MODIFIED AMINE HARDENER SYSTEMS

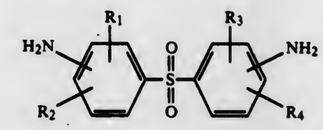
John J. King, East Haven, Conn.; Ralph F. Sellers, Somerset, N.J., and Richard N. Castonguay, Danbury, Conn., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 267,117, May 26, 1981, Pat. No. 4,330,659, which is a continuation-in-part of Ser. No. 194,094, Oct. 6, 1980, abandoned. This application Feb. 5, 1982, Ser. No. 346,358

Int. Cl.³ C08G *59/50*; B32B *3/12*

U.S. Cl. 428—116 **16 Claims**

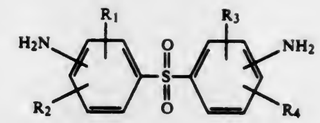
1. A honeycomb structure comprising skins bonded to each side of a honeycomb core, said skins comprising the cured product of a wound yarn impregnated with a curable mixture comprising a polyepoxide compound and a hardener comprising the adduct obtained from the reaction of a diamino diphenylsulfone corresponding to the formula



wherein R_1, R_2, R_3 and R_4 are independently hydrogen, straight and branched chain alkyl of 1 to 12 carbon atoms or halogen,

and a diglycidyl ether of a polyhydric phenol; said hardener having from about 2.5 to 100 equivalents of aminohydrogen per equivalent of epoxy.

9. A laminate structure comprising the cured, compression molded product of a wound yarn impregnated with a curable mixture comprising polyepoxide compound and a hardener comprising the adduct obtained from the reaction of a diamino diphenylsulfone corresponding to the formula



wherein R_1, R_2, R_3 and R_4 are independently hydrogen, straight and branched chain alkyl of 1 to 12 carbons or halogen,

and a diglycidyl ether of a polyhydric phenol; said hardener having from about 2.5 to 100 equivalents of aminohydrogen per equivalent of epoxy.

4,500,583

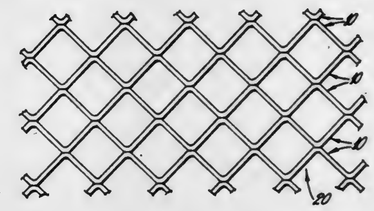
HONEYCOMB STRUCTURE

George M. Naul, Granville, Ohio, assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Sep. 12, 1983, Ser. No. 531,101

Int. Cl.³ B32B *3/12*

U.S. Cl. 428—116 **6 Claims**



1. Honeycomb structure comprising corrugated sheet units molded of resin impregnated glass wool and adhered together to form a cellular core.

4,500,584

TRANSPARENT MEMBRANE STRUCTURES

Frank J. Modic, Scotia, N.Y., assignor to General Electric Company, Waterford, N.Y.

Filed Jul. 7, 1983, Ser. No. 511,704

Int. Cl.³ B32B *5/02*

U.S. Cl. 428—145 **42 Claims**

1. A roofing fabric membrane structure article of manufacture comprising:

(a) a base fabric material,

(b) a base coating composition applied to at least one surface of said base fabric material, and

(c) a silicone coating composition applied to at least one surface of said base fabric material already having thereon said base coating composition which is resistant to dirt pickup comprising:

(i) 100 parts of a liquid vinyl chainstopped polysiloxane having the formula,



where R and R^1 are monovalent hydrocarbon radicals free of aliphatic unsaturation with at least 50 mole percent of the R^1 groups being methyl, and where n has a value sufficient to provide a viscosity up to about 2,000,000 centipoise at 25° C.;

(ii) 100–200 parts of a resinous organopolysiloxane copolymer comprising:
(i) $(R^2)_3SiO_{0.5}$ units and SiO_2 units,
(ii) $(R^3)_3SiO_{0.5}$ units, $(R^3)_2SiO$ units and SiO_2 units, or
(iii) mixtures thereof, where R^2 and R^3 are selected from the group consisting of vinyl radicals and monovalent hydrocarbon radicals free of aliphatic unsaturation, where from about 1.5 to about 10 mole percent of the silicon atoms contain silicon-bonded vinyl groups, where the ratio of monofunctional units to tetrafunctional units is from about 0.5:1 to about 1:1, and the ratios of difunctional units to tetrafunctional units ranges up to about 0.1:1;
(iii) a platinum or platinum-containing catalyst; and
(iv) a liquid organohydrogenpolysiloxane having the formula,

$$(R)_a(H)_bSiO_{\frac{4-a-b}{2}}$$

sufficient to provide from about 0.5 to about 1.0 silicon-bonded hydrogen atoms per silicon-bonded vinyl group, R is a monovalent hydrocarbon radical free of aliphatic unsaturation, a has a value of from about 1.0 to about 2.1, b has a value of from about 0.1 to about 1.0, and the sum of a and b is from about 2.0 to about 2.7, there being at least two silicon-bonded hydrogen atoms per molecule.

4,500,585

CREPED ABSORBENT COMPOSITES

Robert E. Erickson, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed May 3, 1982, Ser. No. 373,930
Int. Cl.³ B32B *3/28, 27/10*
U.S. Cl. 428—152 **17 Claims**

1. A creped hydrophilic absorbent composite which has a rapid absorption rate and has a soft hand at low relative humidities which comprises the product produced by
(a) reducing the moisture content of a composite of a water-swellable hydrophilic polymer with wicking substrates to less than 8% by weight by passing said composite through a drying zone, and
(b) passing said dried composite through a creping zone wherein said polymer is fractured and broken into pieces which remain essentially laminated to said substrates.

4,500,586

BILLOWED FILLING ELEMENTS FOR PACKAGING

Harry Bussey, Jr., P.O. Box 115 Serpentine Rd., Navesink, N.J.

Continuation of Ser. No. 230,113, Feb. 28, 1981, abandoned. This application Oct. 28, 1982, Ser. No. 441,331
Int. Cl.³ B32B *1/00, 27/00*
U.S. Cl. 428—174 **9 Claims**

1. A loose fill packing element of expanded resilient thermoplastic material, said element having a shell-like body defining a hollow billowed shape with a free inturned peripheral edge



defining an open mouth of lesser extent than the surrounding portions of said body.

4,500,587

GRAPHIC ARTS FILM AND METHOD OF PREPARING SAME

Tadami Kamaishi, Otsu, and Takao Kitagawa, Shiga, both of Japan, assignors to Toray Industries, Incorporated, Tokyo, Japan

Filed Oct. 12, 1982, Ser. No. 433,668
Claims priority, application Japan, Oct. 14, 1981, 56-162696
Int. Cl.³ B32B *3/18, 9/04;* **B41M** *5/20*
U.S. Cl. 428—204 **20 Claims**

1. A graphic arts film having an image thereon created by electrophotography, said film comprising;
(a) a light transmitting base sheet having a light transmittance of not less than 70%,
(b) a toner-adhesive and ink-repellent, transparent coating layer formed from an elastomeric silicon resin, said layer being formed on said base sheet,
(c) a toner bonded imagewise onto said transparent coating layer by electrophotography, with the contrast between said nonimaged base sheet and said image defined by said toner being enhanced by,
(d) a permanently cured ink layer formed selectively on only the toner image area, wherein the combined optical density of the image area on the film with said ink layer adhered thereto is not lower than 2.5.

4,500,588

CONVEYOR FELT FOR PAPER MAKING AND A METHOD OF MANUFACTURING SUCH A FELT

Kristian Lundström, Pirkkala, Finland, assignor to Tamfelt Oy AB, Tampere, Finland

Filed Dec. 3, 1982, Ser. No. 446,623
Claims priority, application Finland, Oct. 8, 1982, 823431
Int. Cl.³ B32B *7/02*
U.S. Cl. 428—212 **14 Claims**



1. A conveyor felt for supporting and conveying a fibre web through a press section of a paper machine, said conveyor felt comprising at least one needled fibre bat layer, wherein said fibre bat layer, except for a surface portion thereof facing the web, includes a resinous or elastomeric air impermeable filling material filling pores of the bat between individual fibres thereof so that the bat layer is substantially entirely air impermeable, said filling material tending to prevent rewetting of the felt and eliminate compressibility of the conveyor felt to prevent the occurrence of blowing as the felt is compressed in a press nip so that the fibre web does not lift off the felt.

4,500,589

LAMINATE OF ALUMINUM SHEET MATERIAL AND ARAMID FIBERS

Jacobus Schijve, Pijnacker; Laurens B. Vogelesang, Nieuwkoop, both of Netherlands, and Roelof Marissen, Cologne, Fed. Rep. of Germany, assignors to Technische Hogeschool Delft, Delft, Netherlands

Continuation of Ser. No. 388,037, Jan. 8, 1982, abandoned. This application Sep. 20, 1983, Ser. No. 533,883
Claims priority, application Netherlands, Jan. 9, 1981, 8100087
Int. Cl.³ B32B *15/08*
U.S. Cl. 428—213 **14 Claims**



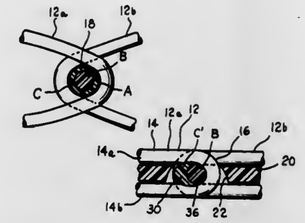
1. A fiber-reinforced laminate adapted for use as a structural component of an aircraft, comprising:
at least two sheets of an aluminum alloy, each of said sheets having a thickness of less than 1 mm and a tensile strength of greater than 350 N/mm^2;
an adhesive layer located between each adjacent pair of said sheets, said adhesive layer comprising a thermohardening material disposed between the sheets to bond an adjacent pair of the sheets together;
aromatic polyamide fibers disposed in each said adhesive layer to reinforce the laminate, said fibers comprising polyparaphenylene terephthalamide yarns made up of endless filaments formed from a material having a modulus of elasticity in the range of 5×10^4 to 25×10^4 N/mm^2 and an elongation at breakage of at least 2%, said yarns being disposed in substantially straight parallel lines in the adhesive layer and being present in an amount of 20 to 80% by weight based on the combined weight of the thermohardening material and the yarns,
the thickness of each of the sheets being greater than the thickness of each said adhesive layer containing said fibers.

4,500,590

DRYER FABRIC HAVING REDUCED PERMEABILITY IN THE AREA OF THE PINTLE JOINT

Richard W. Smith, Greenville, S.C., assignor to Wangner Systems Corporation, Greenville, S.C.

Filed Jun. 25, 1984, Ser. No. 624,114
Int. Cl.³ D04H *3/07;* **D21F** *1/10*
U.S. Cl. 428—222 **25 Claims**



1. A permeable dryer belt fabric for use in drying paper in the dryer section of a paper making machine comprising:
a plurality of polymeric helix strips comprised of windings and winding arcs;
said helix strips being intermeshed together so that the winding arcs of adjacent helix strips intermesh with one another to define a pintle channel through said arcs;
a polymeric pintle core extending through said pintle channel to form a pintle joint and join adjacent helix strips together to form a mesh fabric having an open mesh pattern;
said pintle core having a crimped configuration with alternated bends engaged by a bight of alternating winding arcs of adjacent helix strips; and
a low-melt polymeric material carried generally around said pintle core which has been heat softened so that said material flows and exhibits a flow profile projecting generally in the direction of said bends in said crimped pintle core to fill void areas in said mesh pattern in an area of said pintle joint, said low-melt material retaining its solid properties in said flow profile.

7. A method for producing a permeable dryer belt fabric for use in drying paper in the dryer section of a papermaking machine wherein the dryer belt fabric is of the type which is produced by providing a plurality of helix strips having windings with winding arcs which have been joined together by intermeshing the winding arcs of adjacent helix strips with one another to define a pintle channel and inserting a pintle through said pintle channel to form a pintle joint which joins said helix strips together resulting in formation of a mesh fabric having an open mesh pattern, heat setting said joined intermeshing helix strips to cause said pintle to be crimped and exhibit alternating side bends due to the fabric being placed under a tension and said windings of the helix strips being caused to pull on said pintle in opposing directions, wherein said method comprises selecting a composite pintle having a polymeric core material and an outer sheath material which has a lower melt point than the core material so that said sheath material softens preferentially to flow in the direction of said alternating bends of said pintle core during heat treatment of said fabric whereby a profiled flow of said sheath material projects into a portion of the void spaces of said mesh pattern in an area of said pintle joint.

4,500,591

FOAM RUBBER BACKINGS FOR COMPOSITE MATERIALS HAVING GLASS FIBER SUBSTRATES COATED WITH PVC

Gerard Peltier, Schiltigheim; Michel Longuet, Haguenau, both of France, and Charles A. Midgley, Sarnia, Canada, assignors to Polysar International S.A., Fribourg, Switzerland

Filed Jun. 21, 1983, Ser. No. 506,318
Claims priority, application France, Jun. 21, 1982, 82 10802
Int. Cl.³ B32B *7/00*
U.S. Cl. 428—251 **14 Claims**

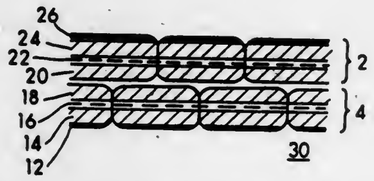
1. A composite material comprising a woven or non-woven glass fiber substrate which is coated with a gelled plastisol of a co- or homo-polymer of vinyl chloride having formed on one surface of said glass substrate and integrally bonded thereto during the process of its formation a foam formed from a compound comprising a latex having a bulk polymer composition comprising
(a) from about 0 to about 30 percent by weight of a vinyl or vinylidene monoaromatic monomer which may be unsubstituted or substituted by a C_{1-4} aliphatic radical or a bromine or chlorine radical;
(b) from about 60 to about 85 percent by weight of a C_{4-6} aliphatic conjugated diene monomer; and
(c) from about 3 to about 40 percent by weight of a polar monomer selected from the group consisting of C_{2-9} ethylenically unsaturated amide, aldehyde, carboxylic acid, and nitrile monomers, and C_{1-6} esters of said carboxylic acid monomers.

4,500,592

COMPOSITE THERMAL INSULATION LINER

Calvin K. Lee, Needham, and Deirdre T. Rapacz, Natick, both of Mass., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jun. 22, 1984, Ser. No. 623,755
Int. Cl.³ B32B 7/00
U.S. Cl. 428—251 **15 Claims**



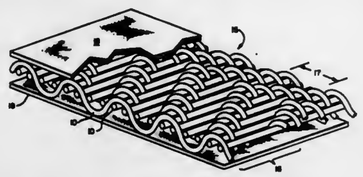
1. A thermal insulation liner comprising a plurality of reflective film plies, a plurality of fibrous flame retardant batting plies and two outer woven glass fabric cover plies wherein at least one batting ply lies between each of said outer cover plies and said reflective plies.

4,500,593

PROTECTIVE FABRIC AND FIRE CURTAIN WITH A METALLIC LAMINATE

John W. Weber, 1929 Gravers Rd., Norristown, Pa. 19401

Continuation-in-part of Ser. No. 211,815, Dec. 1, 1980,. This application Aug. 22, 1983, Ser. No. 525,328
Int. Cl.³ B32B 7/00
U.S. Cl. 428—257 **20 Claims**



1. A high temperature resistant fabric comprised of yarns, having a core of high temperature resistant refractory material silica and covering of a second high temperature resistant fiber selected from the group consisting essentially of aramid, phenolic, polyacrylonitrile and polybenzimidazole fibers, and a metallic laminate.

4,500,594

PROCESS FOR PREPARING MULTILAYER FIBROUS STRUCTURES AND PRODUCT

Lino Credali, Casalecchio di Reno; Emilio Martini, Pontecchio Marconi, and Domenico Lori, Ferrara, all of Italy, assignors to Montedison S.p.A., Milan, Italy

Continuation of Ser. No. 407,277, Aug. 11, 1982, abandoned. This application Mar. 12, 1984, Ser. No. 588,775
Claims priority, application Italy, Aug. 14, 1981, 23519 A/81
Int. Cl.³ D21H 1/02; B32B 21/06, 23/06
U.S. Cl. 428—284 **13 Claims**

1. A process for bonding, by means of thermoadhesion, sheets or layers of cellulosic fibres, which comprises the following steps:

(1) preparing composite waterlaid sheets consisting of at least two layers, one consisting essentially of cellulosic fibres and the other, adjacent to the first one, formed by fibres of a thermoplastic synthetic polymer, or of blends of such fibres with up to 95% by weight of cellulosic fibres;

(2) superimposing two of such sheets on the side of the essentially cellulosic fibre layer, with inserted between them a film of at least a thermoplastic polymer having the following characteristics:

(a) a melting temperature lower than the melting temperature of the polymer constituting the thermoplastic synthetic fibres contained in the layer adjacent to the one consisting of cellulosic fibres;

(b) a viscosity in the molten state, measured in a capillary viscosimeter, at a velocity gradient lower than or equal to 10^{-1} seconds and at a temperature comprised between a temperature higher by 10° C. than the melting temperature of such thermoplastic polymer and a temperature higher by 20° C. than the melting temperature of the polymer forming such thermoplastic synthetic fibres, lower than 1.10^8 poises;

(c) a surface tension not exceeding by more than 5 dynes/cm the one of the polymer constituting such thermoplastic synthetic fibres, measured at the same temperature;

(d) a solubility parameter which is in a ratio to the solubility parameter of the thermoplastic polymer constituting such synthetic fibres ranging from 0.85 to 1.15, extremes included, at a temperature of 25° C.;

(3) heating the aggregate of the so superimposed sheets and film at a temperature ranging from a temperature exceeding by 10° C. the melting temperature of the polymer forming the film to a temperature exceeding by 20° C. the melting temperature of the polymer forming such thermoplastic fibres;

(4) compressing the aggregate at a temperature within such range.

13. Bonded articles obtained by the process according to claim 1.

4,500,595

STAINLESS STEEL FIBER-THERMOSPLASTIC GRANULES AND MOLDED ARTICLES THEREFROM

Steven R. Gerteisen; Richard M. Wenger, and Glenn M. Cannavo, all of Evansville, Ind., assignors to Plastic Specialties and Technologies, Inc., Barrington, Ill.

Filed Jul. 22, 1982, Ser. No. 400,779
Int. Cl.³ B32B 5/06
U.S. Cl. 428—294 **11 Claims**

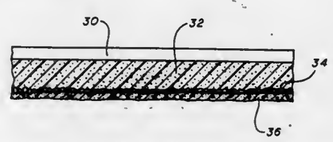
1. A thermoplastic resin elongated granule providing improved electromagnetic interference shielding properties comprising a thermoplastic resin elongated granule having incorporated therein a fiber constituent comprised of continuous strands of stainless steel fibers, said fibers extending substantially parallel to each other and substantially parallel to a length of the elongated granule.

4,500,596

POLYURETHANE FOAMED IN-SITU AGAINST SKIN TERPOLYMER COMPRISING ETHYLENE AND PROPYLENE

Jimmy D. Lee, 14914 Sellers Rd., Houston, Tex. 77060

Filed Jul. 18, 1983, Ser. No. 514,646
Int. Cl.³ B32B 27/40
U.S. Cl. 428—317.5 **7 Claims**



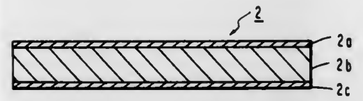
1. A laminate composition produced by the process of (a) dispensing a continuous sheet of polymeric material comprising a terpolymer of ethylene and propylene as the principal monomers and a monomer of 1,4-hexadiene, norbornene, dicyclopentadiene or 1,5-cyclooctadiene, which is spaced away from and substantially parallel to a substrate, said substrate being part of a building structure and (b) dispensing a foamable polyurethane into the enclosure formed by said substrate and said continuous polymeric material whereby said polyurethane foams to fill said enclosure, contacting and bonding to said substrate and said continuous polymeric material to form a monolithic structure.

4,500,597

COMPOSITE HEAT-INSULATING MATERIAL AND PROCESS FOR THE PRODUCTION THEREOF

Takao Yazaki; Kazuhide Hattori; Satoru Hattori; Kazuhide Hayama, and Isao Itoh, all of Mie, Japan, assignors to Mitsubishi Petrochemical Co., Ltd. and Mitsubishi Yuka Fine Chemicals Co., Ltd., both of Tokyo, Japan

Filed Jul. 26, 1984, Ser. No. 634,842
Claims priority, application Japan, Jul. 26, 1983, 58-136344; Nov. 2, 1983, 58-206807
Int. Cl.³ B32B 27/34, 3/26
U.S. Cl. 428—317.7 **6 Claims**



1. A composite heat-insulating material of the structure that an olefin- or styrene-based resin sheet and a urethane foam are laminated on each other with an adhesive containing:

(A) 20 to 100% by weight of a water-soluble polyimine compound selected from the group consisting of polyethyleneimine, poly(ethyleneimine-urea), and a polyaminepolyamide/ethyleneimine adduct; and

(b) 80 to 0% by weight of a nitrogen atom-containing cationic or amphoteric polymer.

4,500,598

DRAFTING FILM

Klaus Thoese, Wiesbaden, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Feb. 18, 1983, Ser. No. 467,907
Claims priority, application Fed. Rep. of Germany, Feb. 27, 1982, 3207122
Int. Cl.³ B32B 27/08, 27/36
U.S. Cl. 428—331 **17 Claims**

1. A drafting film, comprising

a plastic base;

an adhesive layer applied to a least one side of said plastic base; and

a pigmented coating system including a top layer and a pigmented layer applied to said adhesive layer, said top layer comprising:

a first component selected from the group consisting of a homopolymer or copolymer of vinyl acetate;

a second component selected from the group consisting of an acrylate or methacrylate copolymer comprising at least about 50% by weight of an ester monomer having at least four carbon atoms in the alcohol component thereof; and

an antistatic agent comprising a salt of a polymeric sulfonic acid, and

said pigmented layer comprising:

a delusterant, and

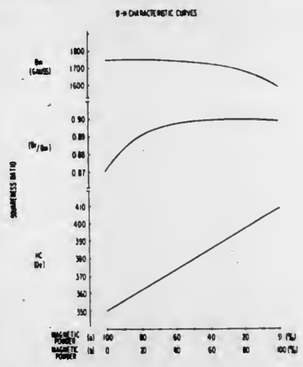
a pigmented material, whereby said drafting film can be written on with pencil and with aqueous ink.

4,500,599

MAGNETIC RECORDING MEDIUM

Hiroshi Ogawa; Chiaki Mizuno; Kouichi Masaki; Masaaki Suzaki, and Yasuo Tamai, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Continuation of Ser. No. 384,121, Jun. 1, 1982, abandoned. This application May 23, 1984, Ser. No. 613,748
Claims priority, application Japan, May 29, 1981, 56-82160
Int. Cl.³ G11B 5/70; B32B 5/16
U.S. Cl. 428—336 **3 Claims**



1. A magnetic recording medium comprising a non-magnetic base having formed thereon a single magnetic layer containing a fine particulate ferromagnetic material dispersed in a binder, said ferromagnetic material being a mixture of two fine ferromagnetic material being a mixture of two fine ferromagnetic powders (a) and (b) in a weight ratio of from 90/10 to 30/70, powder (a) consisting essentially of γ-Fe_2O_3 particles having a coercivity (Hc) of 330 to 390 Oe and a saturation magnetization (σs) of 68 to 80 emu/g at a maximum magnetizing force (Hm) of 5 KOe, and a specific surface area of 18 to 25 m^2/g, and powder (b) consisting essentially of γ-Fe_2O_3 particles having a coercivity (Hc) of 400 to 450 Oe and a saturation magnetization (σs) of 65 to 78 emu/g at a maximum magnetizing force (Hm) of 5 KOe, and a specific surface area of 22 to 30 m^2/g, wherein the magnetic layer is from 2.5 to 8 μm thick.

4,500,600

SIZE COMPOSITION FOR GLASS FIBERS

Robert Wong; Martin C. Flautt, both of Granville, and Richard M. Haines, Warsaw, all of Ohio, assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Continuation of Ser. No. 790,786, Apr. 25, 1977, abandoned. This application Jan. 8, 1979, Ser. No. 1,793
Int. Cl.³ B32B 9/00
U.S. Cl. 428—391 **11 Claims**

1. A glass fiber at least a portion of the surface of which is in contact with a residue produced by removing water from an aqueous composition comprising gamma-aminopropyltriethoxysilane and another alkoxysilane selected from methyltrimethoxysilane, phenyltrimethoxysilane, methylphenyldimethoxysilane and diphenyldimethoxysilane.

6. An aqueous size composition for glass fibers comprising gamma-aminopropyltriethoxysilane and another alkoxysilane selected from methyltrimethoxysilane, phenyltrimethoxysilane, methylphenyldimethoxysilane and diphenyldimethoxysilane.

9. A method for producing glass fiber reinforced plastics which comprises coating glass fibers with an aqueous composition comprising gamma-aminopropyltriethoxysilane and another alkoxysilane selected from methyltrimethoxysilane, phenyltrimethoxysilane, methylphenyldimethoxysilane and diphenyldimethoxysilane, and incorporating the resulting coated fibers into an organic polymer matrix.

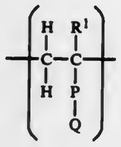
4,500,601

CHELATING POLYMERS FOR MODIFYING METAL SURFACE PROPERTIES

David R. Whitcomb, Maplewood, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Aug. 29, 1983, Ser. No. 527,332
Int. Cl.³ B32B *15/08, 27/14*
U.S. Cl. 428—403 13 Claims

1. A composite structure comprising a metal surface of polyvalent metal atoms and ions, said metal surface comprising a metal chosen from the group consisting of (a) transition metals, (b) metals of Groups IIA, IIIA, and IVA of the Periodic Table, and (c) alloys of metals selected from (a) and (b), and applied thereto at least one linear, film-forming polymer or random copolymer having a hydrocarbon backbone, said polymer or copolymer having 99.99 to 0 mole percent of units derived from one or more ethylenically-unsaturated monomers, and between 0.01 and 100 mole percent of at least one monomer unit which contributes to the polymer or copolymer pendent bidentate chelating groups, said bidentate chelating monomer units having the formula



in which

R^1 is hydrogen, lower alkyl (1 to 4 carbon atoms), chlorinated lower alkyl, CN, or Cl

P is a connecting linkage of chain length up to about 75 atoms, and providing that P does not react with Q, nor enter into any chelating action with Q, nor has polymerizing units within it, and

Q is a bidentate chelating moiety chosen from groups having a high affinity for the polyvalent metal ion defined above, and the solvating ability of the bidentate group for the metal surface is given by the expression

$\log K_1+n(14-pH)-(pKs+pKa)$ is algebraically less than 0.0, wherein

K_1 is the first stepwise stability constant of the chelate and metal,

n is the relevant valency of the metal,

pH is the acidity relevant under the conditions of test,

pKs is the solubility product of the metal hydroxide, and

pKa is the stability constant of H^+ with the chelate moiety.

5. The composite structure according to claim 1 wherein said metal surface is selected from (a) the surface on a self-supporting metal, (b) a thin metal layer on a support, and (c) small particles of metal.

4,500,602

COMPOSITE PROTECTIVE COATING FOR CARBON-CARBON SUBSTRATES

James W. Patten; Ronald W. Moss, both of Richland, Wash., and Brennan A. Forcht, Arlington, Tex., assignors to LTV Aerospace and Defense Co., Dallas, Tex.

Filed Aug. 10, 1981, Ser. No. 291,729
Int. Cl.³ B32B *9/00*
U.S. Cl. 428—408 12 Claims

1. A composite protective coating for preventing carbonaceous substrates from degrading in oxygen containing environments comprising:

(a) a first coating layer applied to the surface of the substrate comprising a silicon carbide type coating; and

(b) a second coating layer applied to the surface of said first coating layer, said second coating layer comprising a sputter deposited, phase stabilized zirconium oxide having a columnar microstructure.

4,500,603

ELECTRICAL GRADE EXTRUDED FILLED THERMOPLASTIC SHEET MATERIAL AND PROCESS FOR THE MANUFACTURE THEREOF

Richard A. Freundlich, Summit, N.J., assignor to Celanese Corporation, N.Y.

Continuation of Ser. No. 63,003, Aug. 2, 1979, abandoned. This application Feb. 2, 1981, Ser. No. 230,918
Int. Cl.³ B32B *17/04, 5/08*
U.S. Cl. 428—409 15 Claims



1. An extruded, filled thermoplastic sheet material, comprising a crystalline thermoplastic polymer selected from the group consisting of polyolefins; polyoxymethylene homopolymers and copolymers; polyphenylene oxide polymers; polyamides; polyesters; mixtures thereof; and mixtures thereof with minor amounts of other thermoplastic polymers; containing from about 5 to 60 percent by weight of a reinforcing filler material, the reinforcing filler consisting essentially of fibrous materials, and having a polymer-rich surface which is substantially free of exposed reinforcing filler material and comprises substantially a layer of non-filled thermoplastic polymer; said surface having a gloss value of at least about 15, and a maximum surface roughness of about 150 microinches.

8. An extruded, glass-filled polyalkylene terephthalate continuous sheet material comprising a polyalkylene terephthalate polymer, mixtures of polyalkylene terephthalate polymers; and mixtures of polyalkylene terephthalate polymers; with minor amounts of other thermoplastic polymers; from about 5 to 60 percent by weight of glass fibers; essentially no particulate reinforcing material; and having a surface which is substantially free of exposed reinforcing filler material and comprises substantially a layer of non-filled thermoplastic polymer; said surface having a gloss value of at least 15, and a maximum roughness of about 150 microinches.

4,500,604

BONDINGS AND COMPOSITE FILMS

Julius Herold, Monheim; Werner Gruber, Korschenbroich, and Guenter Henke, Neuss, all of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf, Fed. Rep. of Germany

Filed Feb. 16, 1983, Ser. No. 466,996
Claims priority, application Fed. Rep. of Germany, Feb. 18, 1982, 3205733
Int. Cl.³ B32B *27/38;* C08L *63/00, 75/00;* C09J *5/00*
U.S. Cl. 428—414 20 Claims

1. A two component adhesive system wherein the components are maintained separately prior to mixing the components together to achieve bonding consisting essentially of:

(a) about 0.9 to about 2.5 equivalents of a first component which is a prepolymer containing an epoxy group wherein the prepolymer is the reaction product of (i) a polyether urethane or a polyester urethane, said urethane having at least two terminal isocyanate groups, and (ii) an equivalent quantity of glycidol; and

(b) 1.0 equivalent of a second component which is at least one member of the group consisting of a polyether containing at least two terminal primary amino groups and a polyamide containing at least two terminal primary amino groups, and wherein said polyether and polyamide have a number-average molecular weight in the range of from about 200 to about 1800.

4. A process for bonding at least one material together comprising applying thereto a two component adhesive system which consists essentially of:

(a) about 0.9 to about 2.5 equivalents of a first component which is a prepolymer containing an epoxy group wherein the prepolymer is the reaction product of (i) a polyether urethane or a polyester urethane, said urethane having at least two terminal isocyanate groups, and (ii) an equivalent quantity of glycidol; and

(b) 1.0 equivalent of a second component which is at least one member of the group consisting of a polyether containing at least two terminal primary amino groups and a polyamide containing at least two terminal primary amino groups, and wherein said polyether and polyamide have a number-average molecular weight in the range of from about 200 to about 1800.

13. A composite film bonded together with a two component adhesive system consisting essentially of:

(a) about 0.9 to about 2.5 equivalents of a first component which is a prepolymer containing an epoxy group wherein the prepolymer is the reaction product of (i) a polyether urethane or a polyester urethane, said urethane having at least two terminal isocyanate groups, and (ii) an equivalent quantity of glycidol; and

(b) 1.0 equivalent of a second component which is at least one member of the group consisting of a polyether containing at least two terminal primary amino groups and a polyamide containing at least two terminal primary amino groups, and wherein said polyether and polyamide have a number-average molecular weight in the range of from about 200 to about 1800.

17. A composite film in accordance with claim 13 wherein the composite film contains at least two films selected from the group consisting of a plastic film, a metal foil, a viscose, paper, a fleece composed of an aromatic polyamide, and a fleece composed of an aromatic polyester.

4,500,605

ELECTRICAL COMPONENT FORMING PROCESS

Julius C. Fister, Hamden, and John F. Breedis, Trumbull, both of Conn., assignors to Olin Corporation, New Haven, Conn.

Filed Feb. 17, 1983, Ser. No. 467,616
Int. Cl.³ C23C *11/00, 11/10*
U.S. Cl. 428—469 15 Claims

1. The process of forming a composite, comprising the steps of:

(a) providing an alloy comprising a first alloy component of about 0.5 to 12% aluminum and the balance being selected from a material from the group consisting of copper, iron or nickel;

(b) heating said alloy at a temperature below about 350° C. in an oxygen-rich atmosphere to form an oxide layer of said material on a surface of said alloy; and

(c) heating said alloy at a temperature between approximately 500° to 850° C. in a reducing atmosphere to reduce said oxide layer of said material into a layer of said material and to simultaneously form an aluminum oxide layer between said layer of said material and the surface of said alloy.

11. An article of manufacture formed by the process of claim 10.

4,500,606

SEALER FOR POLYESTER AND METHOD OF USE TO OBTAIN LAMINATES

Thomas G. Rabito, Ashland; Stephen M. Oswalt, Mansfield, and Richard L. Cline, Ashland, all of Ohio, assignors to Ashland Oil, Inc., Ashland, Ky.

Filed Nov. 16, 1983, Ser. No. 552,635
Int. Cl.³ B32B *9/04*
U.S. Cl. 428—480 2 Claims

1. A polyester composition laminate having an improved bond between the adhesive, which is one selected from the class consisting of isocyanate, epoxy and acrylic due to the surface of the polyester composition having a seal coat against evolution of gases at 190° C. for one hour, said seal coat comprising a coat of a sealer comprising a mixture of 100 to 1000 parts of a phenol-formaldehyde resin, 90 to 110 parts of a flexibilizer film former selected from the class of resins consisting of polyvinyl acetal, polyvinyl chloride, polyvinyl alcohol, saturated polyesters, polyacrylates, polyvinyl acetates and butyrals and 10 to 40 parts of epoxy resins which were dried at least 10 minutes at a temperature of at least 120° C.

4,500,607

FLAT PAPER AND METHOD OF MANUFACTURING INVOLVING CONTROLLED DRYING CONDITIONS

William G. Louden, c/o Louden and Company, Erwinna, Pa. 18920, and William S. Louden, Erwinna, Pa., assignors to William Gordon Louden, Erwinna, Pa.

Filed Jul. 28, 1982, Ser. No. 402,750
Int. Cl.³ B05D *3/02;* D21H *1/40, 1/48*
U.S. Cl. 428—511 30 Claims

1. A paper manufactured in a continuous process on a conventional paper making machine having a downstream dryer section, said paper, comprising: a web of cellulosic fibers and a polymeric material carried by the web, said paper comprising not less than about 3%, by weight, of said polymeric material, said weight being based on the finished dry weight of the paper, said finished paper having been dried in said dryer section to a moisture content in a range of 1% to about 4%, by weight, based on the finished weight of said paper.

19. A method of manufacturing paper on a conventional paper making machine having a downstream dryer section, comprising the steps of:

forming a web of cellulosic fibers,

advancing said web in said machine,

applying to both sides of said web as it advances an aqueous dispersion including a polymeric material in an amount sufficient to constitute atleast about 3%, by weight, of the dry weight of the finished paper, and

drying said advancing web in said downstream dryer section to a moisture level in a range of 1% to about 4%, by weight, based on the dry weight of the finished paper,

whereby the finished paper is characterized by a flatness which tends to remain even after the paper has been subjected to moisture and redried.

4,500,608

ANAEROBICALLY-CURING COMPOSITIONS

Anthony J. Rametta, White Bear Lake, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 289,703, Aug. 3, 1981, Pat. No. 4,447,588, which is a continuation-in-part of Ser. No. 203,682, Nov. 3, 1980, abandoned. This application Dec. 9, 1983, Ser. No. 559,953
Int. Cl.³ B32B *27/30*
U.S. Cl. 428—522 33 Claims

1. A method for bonding air-impermeable substrates using an adhesive composition which is cured anaerobically, said method comprising the steps of:

(a) applying said adhesive composition to at least one substrate to be bonded;

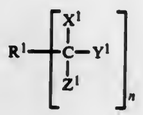
(b) bringing the substrates into abutting relation in a manner

to provide an anaerobically-curable environment for said adhesive composition; and

(c) maintaining said substrates in said abutting relation until said adhesive composition polymerizes and bonds said substrates together; wherein said adhesive composition comprises:

(1) a polymerizable monomer having at least one α,β-unsaturated carboxyl functionality per molecule of monomer;

(2) an effective amount of a halogen-containing compound as a first initiator component and selected from the group consisting of compounds of the formula



wherein:

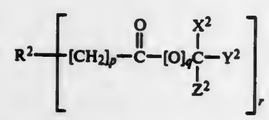
X^1 is selected from the group consisting of H, CH_3, Cl, and Br;

Y^1 and Z^1 are each selected independently from the group consisting of Cl and Br;

R^1 is selected from the group consisting of aromatic and heteroaromatic residues; and

n is an integer from 1 to 3 inclusive;

and compounds of the formula



wherein:

X^2 is selected from the group consisting of H, Cl, Br and CN;

Y^2 and Z^2 are each selected independently from the group consisting of Cl and Br;

R^2 is selected from the group consisting of amino residues and organic radicals comprising 1 to about 10 carbons;

p is 0 or 1;

q is 0 or 1; and

r is 1 or 2;

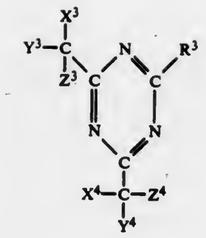
(3) an effective amount of a second initiator component selected from compounds of the group consisting of secondary amines, tertiary amines, organic sulfimides, and perfluoroalkyl sulfonanilides;

(4) a sufficient amount of an inhibitor of free-radical polymerization to retard polymerization of said composition while in the presence of air.

19. An anearobically-curing composition, comprising:

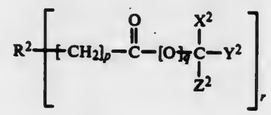
(A) a polymerizable monomer having at least one α, β-unsaturated carboxyl functionality per molecular of monomer;

(B) an effective amount of a halogen-containing compound as a first initiator component and selected from the group consisting of halogenated triazines of the formula



wherein:

X^3 and X^4 are each selected independently from the group consisting of H, CH_3, Cl, and Br; Y^3, Y^4, Z^3 and Z^4 are each independently selected from the group consisting of Cl and Br; and R^3 is selected from the group consisting of H and organic radicals comprising 1 to about 10 carbons; and compounds of the formula



wherein:

X^2 is selected from the group consisting of H, Cl, Br and CN;

Y^2 and Z^2 are each selected independently from the group consisting of Cl and Br;

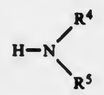
R^2 is selected from the group consisting of amino residues and organic radicals comprising 1-to about 10 carbons;

p is 0 or 1;

q is 0 or 1; and

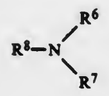
r is 0 or 2;

(C) an effective amount of a second initiator component selected from organic sulfimides, perfluoroalkyl sulfonanilides, secondary amines of the formula



wherein:

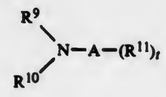
R^4 and R^5 are each hydrocarbon groups comprising 1 to about 12 carbons, tertiary amines of the formula



wherein:

R^6, R^7 and R^8 are each hydrocarbon groups comprising 1 to about 12 carbons;

and tertiary amines of the formula



wherein:

R^9 and R^{10} are each hydrocarbon groups comprising up to about 12 carbons;

A is a carbocyclic aromatic nucleus selected from the group consisting of phenyl and naphthyl radicals;

R^{11} is an organic radical group comprising up to about 5 carbons and is selected from the group consisting of alkyl and alkoxy radicals; and t is from 0 to 3 inclusive;

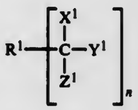
(D) a sufficient amount of an inhibitor of free-radical polymerization of retard polymerization of said adhesive composition while in the presence of air, and

(E) a modifying polymer.

32. An anaerobically-curing composition comprising:

(A) a polymerizable monomer having at least one α, β-unsaturated carboxyl functionality per molecule of monomer;

(B) an effective amount of a halogen-containing compound as a first initiator component and selected from compounds of the formula



wherein:

X^1 is selected from the group consisting of H, CH_3, Cl, and Br;

Y^1 and Z^1 are each selected independently from the group consisting of Cl and Br;

R^1 is selected from the group consisting of aromatic and heteroaromatic residues; and

n is an integer from 1 to 3 inclusive;

(C) an effective amount of a second initiator component selected from compounds of the group consisting of organic sulfimides and perfluoroalkyl sulfonanilides;

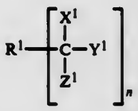
(D) a sufficient amount of an inhibitor of free-radical polymerization to retard polymerization of said composition while in the presence of air; and

(E) a modifying polymer.

33. A bonded article comprising two air-impermeable substrates, said substrates being bonded together using an adhesive composition which has been cured anaerobically, said adhesive composition comprising:

(A) a polymerizable monomer having at least one α, β-unsaturated carboxyl functionality per molecule of monomer;

(B) an effective amount of a halogen-containing compound as a first initiator component and selected from the group consisting of compounds of the formula



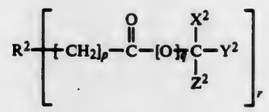
wherein:

X^1 is selected from the group consisting of H, CH_3, Cl, and Br;

Y^1 and Z^1 are each selected independently from the group consisting of Cl and Br;

R^1 is selected from the group consisting of aromatic and heteroaromatic residues; and n is an integer from 1 to 3 inclusive;

and compounds formula



wherein:

X^2 is selected from the group consisting of H, Cl, Br and CN;

Y^2 and Z^2 are each selected independently from the group consisting of Cl and Br;

R^2 is selected from the group consisting of amino residues and organic radicals comprising 1 to about 10 carbons;

p is 0 or 1;

q is 0 or 1; and

r is 1 or 2;

(C) an effective amount of a second initiator component selected from compounds of the group consisting of secondary amines, tertiary amines, organic sulfimides, and perfluoroalkyl sulfonanilides;

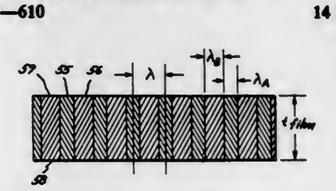
(D) a sufficient amount of an inhibitor of free-radical polymerization to retard polymerization of said adhesive composition while in the present of air.

4,500,609

THIN FILM BINARY METALLIC EUTECTICS

Harvey E. Cline, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Mar. 20, 1981, Ser. No. 245,764
Int. Cl.³ B32B 5/14, 15/00
U.S. Cl. 428—610 14 Claims



1. A fault-free and cell-free thin film of a binary metallic eutectic having an aligned lamellar periodic geometric array of a first type lamella and a second type lamella located between lamellae of said first type, the composition of said first and second type lamellae corresponding substantially to the terminal solid solutions of the binary metallic eutectic, said lamellae extending between and terminating in top and bottom substantially parallel and generally planar major opposed surfaces of said thin film and being substantially perpendicular to the planes of said top and bottom major surfaces, the perpendicular distance between said major opposed surfaces being the thickness of said film, the distance from the centerline of one lamella to the next closest lamella of the same type in said array being the interlamellar spacing, said thickness being less than or equal to about 8 microns, and said interlamellar spacing being less than or equal to about 1 micron.

4,500,610

CORROSION RESISTANT SUBSTRATE WITH METALLIC UNDERCOAT AND CHROMIUM TOPCOAT

Walter H. Gunn, 45 Virginia Dr., Painesville, Ohio 44077, and Alexander W. Kennedy, 11857 Auburn Rd., Chardon, Ohio 44024

Filed Mar. 16, 1983, Ser. No. 475,734
Int. Cl.³ C25D 5/10
U.S. Cl. 428—624 33 Claims

1. A coated metal substrate having enhanced corrosion resistance and protected by a coating composite comprising a thin metallic undercoating layer of combined metals in metallic

form at least one of which is selected from the group consisting of zinc, nickel, iron, chromium, aluminum and cobalt, and a heat-curable, substantially resin free, as well as phosphate free, topcoat layer from composition curable to a water resistance protective coating, said topcoat layer being free from particulate metals while containing above 10 milligrams per square foot of coated metallic undercoating of chromium, as chromium, in non-elemental form, said composition containing hexavalent-chromium-providing-substance in liquid medium.

4,500,611

SOLDERABLE LAYER SYSTEM

Friedrich W. Nickol, and Holm Baeger, both of Schwalbach, Fed. Rep. of Germany, assignors to VDO Adolf Schindling AG, Frankfurt am Main, Fed. Rep. of Germany

Filed Jul. 22, 1981, Ser. No. 286,102

Claims priority, application Fed. Rep. of Germany, Jul. 24, 1980, 3028044

Int. Cl.³ C23C *17/00*

U.S. Cl. 428—686 **11 Claims**

1. In a corrosion-resistant solderable layer system, produced in a manufacturing stage of a transparent display device, said corrosion-resistant solderable layer system being connected at least indirectly to an unsolderable layer, the layer system and the unsolderable layer being applied to a support, and the layer system comprises a solderable layer and an anti-corrosion layer which covers the solderable layer and protects the latter against oxidation, the improvement in the layer system wherein

the anti-corrosion layer is made of an oxidizable metal.

4,500,612

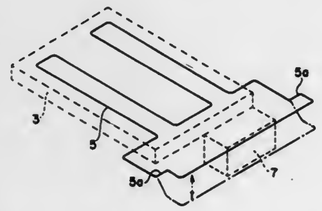
TEMPERATURE CONTROL DEVICE FOR A FUEL CELL

Masao Fujii, Takarazuka, and Enju Nishiyama, Kawanishi, both of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 21, 1982, Ser. No. 370,548

Int. Cl.³ H01M *8/12, 10/50*

U.S. Cl. 429—26 **2 Claims**



1. A temperature control device for a fuel cell, comprising:

a pair of confronting temperature control plates having reaction gas conduit means on surfaces opposite to the confronting surfaces thereof;

circulation piping adapted for circulation therein of sealed-in liquid heat medium in the inside space thereof, with a portion of said space being left for a gaseous phase of the heat medium, said circulation piping including heat exchanger piping positioned between said temperature control plates, and including outside piping located externally of said temperature control plates hermetically connected to said heat exchanger piping to form a closed piping system therewith; and

heat exchanger means, provided in said outside piping, for effecting heat exchange with the heat medium in said circulation pipe; said outside piping including shiftable connection piping interposed between said heat exchanger piping and said heat exchanger means for vertically shifting said heat exchanger means with respect to said heat exchanger piping.

4,500,613

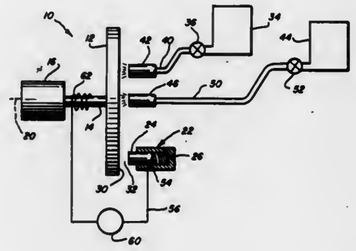
ELECTROCHEMICAL CELL AND METHOD

Andrew D. Galbraith, Los Altos, Calif., assignor to Lockheed Missiles & Space Company, Inc., Sunnyvale, Calif.

Filed Mar. 14, 1984, Ser. No. 589,308

Int. Cl.³ H01M *2/38*

U.S. Cl. 429—69 **15 Claims**



13. A method of producing high current electrical energy comprising the steps of:

moving an electrically conductive, electrochemically non-reactive low resistance cathode surface transversely to a lithium anode;

spacing said anode from said cathode surface to form a thin electrochemical junction between said anode and said cathode surface;

introducing to said electrochemical junction an aqueous electrolyte reactive with lithium;

introducing to said electrochemical junction an acid oxidizing agent capable of dissolving the products of the reaction between lithium and said electrolyte; and

drawing electrical current in an external electrical circuit connecting said anode and said cathode.

14. In a rotating cathode cell having means for moving the surface of an electrically conductive, electrochemically non-reactive low resistance cathode transversely to an alkali metal anode, means for spacing said anode from said cathode surface to form a thin electrochemical junction between said anode and said cathode surface, means for introducing to said electrochemical junction an aqueous electrolyte reactive with said alkali metal, and an external electrical circuit connecting said anode and said cathode, the improvement wherein said alkali metal is lithium and said cell includes means for introducing to said electrochemical junction an acid oxidizing agent capable of dissolving the products of the reaction between lithium and said electrolyte.

4,500,614

ALKALINE CELL

Akio Nagamine; Akira Hayashi, both of Tokyo; Kazumasa Yoshida, Samukawa, and Kojiro Miyasaka, Tokyo, all of Japan, assignors to Toshiba Battery Co., Ltd., Tokyo, Japan

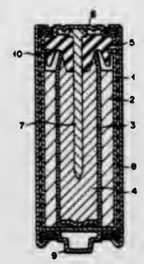
Filed Jun. 1, 1983, Ser. No. 499,884

Claims priority, application Japan, Jun. 11, 1982, 57-100154; Jun. 11, 1982, 57-100155

Int. Cl.³ H01M *6/04*

U.S. Cl. 429—206 **3 Claims**

1. An alkaline cell comprising an anode prepared by forming on the particles of a zinc powder an alloy layer made of mercury and at least two metals selected from the group consisting of gallium, indium and thallium, wherein an amount of mercury is 0.05 to 1.80% by weight based on a weight of the zinc powder.



4,500,615

WAFER EXPOSURE METHOD AND APPARATUS

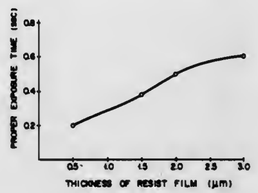
Hiroshi Iwai, Tokyo, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

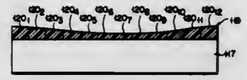
Filed Sep. 22, 1982, Ser. No. 421,070

Claims priority, application Japan, Sep. 22, 1981, 56-149866

Int. Cl.³ G03C *5/00;* G01B *11/02*

U.S. Cl. 430—30 **12 Claims**





1. A wafer exposure method comprising the steps of:

measuring the thicknesses of a portion of a resist film for each of a plurality of separate and discrete chip forming regions of a wafer;

exposing said resist film covering said wafer by a step and repeat method to transfer a pattern to each of the chip forming regions; and

controlling the exposure of said chip forming regions on the basis of the measured thickness of said resist film of the chip forming region being exposed during transfer of said pattern.

4,500,616

EXTRACTION DEVELOPING METHOD FOR ELECTROSTATIC LATENT IMAGES

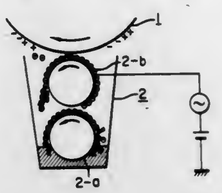
Satoshi Haneda; Masahiko Itaya, and Minoru Tanaka, all of Hachioji, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Sep. 20, 1982, Ser. No. 419,940

Int. Cl.³ G03G *13/08, 13/09*

U.S. Cl. 430—45 **18 Claims**

1. A method of develping an electrostatic latent image on a charge receptor, said image having a first charge, comprising selectively extracting, in the presence of an alternating field, first colored grains having a second charge of polarity opposite that of sid first charge from a mixture of colored grains of



different polarities, and thereafter developing said latent image with said extracted colored grains.

4,500,617

METHOD FOR PREPARING A LITHOGRAPHIC PRINTING PLATE AND A LIGHT-SENSITIVE MATERIAL USED THEREFOR

Takao Nakayama, Shizuoka, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Mar. 3, 1983, Ser. No. 471,605

Claims priority, application Japan, Mar. 3, 1982, 57-32214; Mar. 31, 1982, 57-51064

Int. Cl.³ G03G *13/26*

U.S. Cl. 430—49 **10 Claims**

1. In a method for preparing a lithographic printing plate using a light-sensitive material comprising an aluminum or aluminum alloy support having a hydrophilic aluminum oxide surface provided thereon, in order, a light-sensitive layer and a photoconductive insulating layer, said method comprising the steps of:

electrophotographically forming an electrostatic latent image on the photoconductive insulating layer;

developing the latent image with toners which are opaque to the light to which the light-sensitive layer is sensitive, thereby forming toner image;

exposing the light-sensitive layer through the toner image; and

separating the exposed and unexposed areas of the light-sensitive layer;

wherein said aluminum oxide layer is present in an average amount of from 0.2 to 2.8 g/m^2.

4,500,618

ELECTROPHOTOGRAPHIC PROCESS FOR PRODUCING PRINTING PLATE AND PLATE MAKING MACHINE

Keisuke Shiba, Shizuoka; Hiromi Yazawa, Kanagawa; Chikashi Ohishi, and Sho Nakao, both of Shizuoka, all of Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jun. 28, 1983, Ser. No. 508,754

Claims priority, application Japan, Jun. 30, 1982, 57-112759

Int. Cl.³ G03G *13/26*

U.S. Cl. 430—49 **8 Claims**

1. A process for producing a printing plate, comprising the steps of:

providing an electrophotographic plate making material comprised of a base having a photoconductive layer thereon;

electrically charging the plate making material;

imagewise exposing the material;

subjecting the material to liquid toner development in a toner containing a solvent;

substantially removing the solvent by heating to a temperature sufficient to cause evaporation of the solvent;

moving the material to a fixation area; and

fixing a toner image on the plate making material by heating the material to a temperature higher than the temperature sufficient to cause evaporation of the solvent.

4,500,619

ELECTROPHOTOGRAPHIC PHOTOSENSITIVE MEMBER WITH OXADIAZOLE CONTAINING DISAZO COMPOUND

Shozo Ishikawa, Sayama; Kazuharu Katagiri, Mitaka; Katsunori Watanabe, Yamato; Kiyoshi Sakai, Mitaka, and Makoto Kitahara, Yokohama, all of Japan, assignors to Copyer Kabushiki Kaisha and Canon Kabushiki Kaisha, both of Tokyo, Japan

Continuation of Ser. No. 395,323, Jul. 6, 1982, abandoned. This application Mar. 22, 1984, Ser. No. 591,909

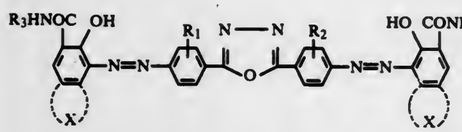
Claims priority, application Japan, Jul. 22, 1981, 56-113563

Int. Cl.³ G03G *5/06, 5/14*

U.S. Cl. 430—59 **11 Claims**

1. An electrophotographic photosensitive member having a conductive support and a layer containing a charge transport material and a layer containing at least one disazo pigment represented by the following Formula (I):

(I)



wherein each of R_1 and R_2 is selected from the group consisting of hydrogen, halogen, lower alkyl, or lower alkoxy; R_3 is selected from the group consisting of methyl, ethyl or C_3–C_{10} linear alkyl; and X is selected from the group of residues necessary to complete an aromatic hydrocarbon ring or heterocyclic ring, substituted or unsubstituted.

4,500,620

ELECTROPHOTOGRAPHIC ELEMENT WITH COPOLYMER INTERLAYER

Chikashi Ohishi, Shizuoka, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jul. 14, 1983, Ser. No. 513,587

Claims priority, application Japan, Jul. 14, 1982, 57-121279

Int. Cl.³ G03G *5/14*

U.S. Cl. 430—60 **7 Claims**

1. An electrophotographic light-sensitive material, comprising:

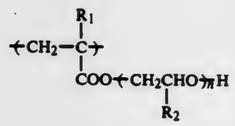
a support base having a conductive surface, having formed thereon;

an interlayer; and

a photoconductive layer formed on the interlayer;

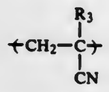
said interlayer comprising a polymer having constitutional units represented by the following formulae I and II and having an acid value of 10 to 100 as the main component:

I



wherein R_1 is a hydrogen atom or a methyl group; R_2 is a hydrogen atom, a methyl group, an ethyl group, or a chloromethyl group; and n is an integer of 1 to 10

II



wherein R_3 is a hydrogen atom or a methyl group, wherein the polymer includes constitutional unit II in an amount in the range of 5 to 60% by weight and the constitutional unit I in an amount in the range of 30 to 80% by weight, wherein the interlayer is present in an amount in the range of 0.1 g/m^2 to 10 g/m^2 and wherein both surfaces of the conductive support are laminated by polyethylene containing 5 to 25% carbon at a thickness of 10 to 45 μm.

4,500,621

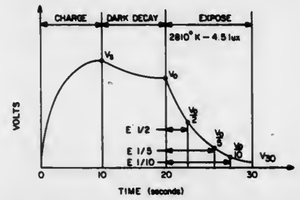
SENSITIVE ELECTROPHOTOGRAPHIC PLATES CONTAINING SQUARIC ACID METHINE DYES SUSPENDED IN A BINDER

Herbert K. Wurster, Los Gatos, Calif., assignor to Ricoh Systems, Inc., San Jose, Calif.

Filed Apr. 11, 1983, Ser. No. 483,888

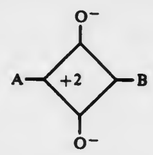
Int. Cl.³ G03G *5/06*

U.S. Cl. 430—72 **8 Claims**

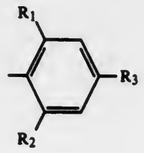


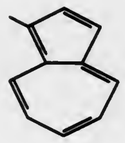
1. A single layer photoreceptor plate comprising a solid continuous photoconductor layer of uniform thickness in the range of 1–60 microns consisting essentially of a noncharge-transporting binder material and a charge-generating, charge-transporting squaric acid methine dye selected from the group consisting of compounds of the Formula I:

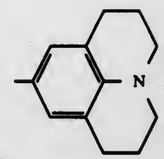
(I)



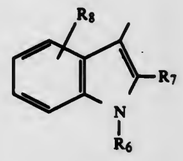
wherein A and B are independently,



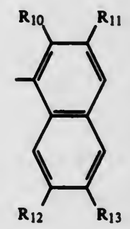




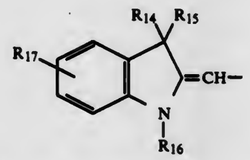
wherein R_1, R_2, R_3 are independently H, OH or alkyl of 1 to 6 carbon atoms, NR_4R_5, wherein R_4 and R_5 are independnetly alkyl of 1 to 6 carbon atoms;



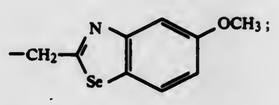
R_6 and R_7 are independently alkyl of 1 to 6 carbon atoms; and R_8 is independently H, OR_9 or halogen, wherein R_9 is alkyl of 1 to 6 carbon atoms;



wherein R_{10}, R_{11}, R_{12} and R_{13} are independently H, OH or alkyl of 1 to 6 carbon atoms;



wherein R_{14}, R_{15} and R_{16} are independently alkyl of 1 to 6 carbon atoms; and R_{17} is independently H, OR_{18} or halogen, wherein R_{18} is alkyl of 1 to 6 carbon atoms; or



wherein the proportion of said dye to said binder material in said photoconductor is in the range of 1:1 to 1:40.

4,500,622

ELECTROPHOTOGRAPHIC LIGHT-SENSITIVE PRINTING MATERIALS

Seiji Horie; Junji Nakano; Masayoshi Nagata, and Hideo Sato, all of Saitama, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa

Filed Mar. 9, 1982, Ser. No. 356,541

Claims priority, application Japan, Mar. 9, 1981, 56-33579

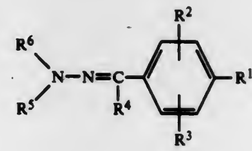
Int. Cl.³ G03G *5/00, 5/14, 5/04, 5/06*

U.S. Cl. 430—78 **8 Claims**

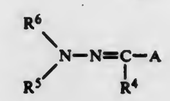
1. An electrophotographic light-sensitive printing material comprising a conductive base plate having formed thereon an electrophotographic light-sensitive layer containing (a) a hydrazone compound, (b) at least one compound selected from a barbituric acid derivative, a thiobarbituric acid derivative, and other charge generating materials, and (c) a resin binder,

wherein said hydrazone compound is one member selected from the group consisting of the following general formulas (I), (II), (III), (IV), (V), and (VI):

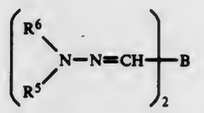
(I)



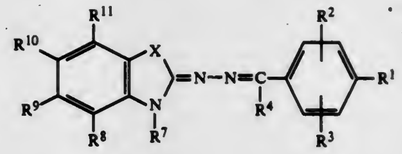
(II)



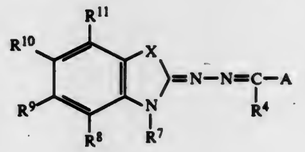
(III)



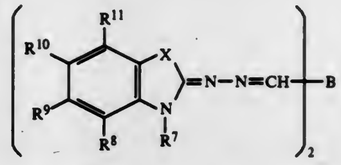
(IV)



(V)



(VI)



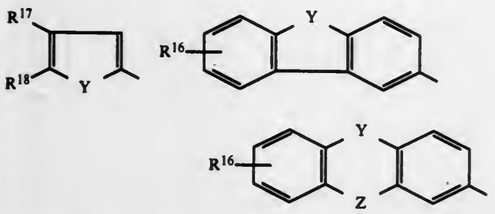
wherein X represents an oxygen atom, a sulfur atom, a selenium atom, an unsubstituted or substituted imino group, or a methylene group; R^1 represents an alkoxy group, an aralkoxy group, or a substituted amino group shown by



wherein R^{12} and R^{13}, which may be the same or different, each represents an unsubstituted or substituted alkyl or phenyl group or R^{12} and R^{13} may represent groups which are combined with each other to form a heterocyclic ring including nitrogen atom; R^2 and R^3, which may be the same or different, each represents a hydrogen atom, a halogen atom, an alkyl group, or a lower alkoxy group; R^4 represents a hydrogen atom, an alkyl group, an unsubstituted or substituted phenyl group; R^5 and R^6, which may be the same or different, each represents an unsubstituted or subtituted straight chain or branched alkyl group having 1 to 12 carbon atoms, an unsubstituted or substituted straight chain or branched aralkyl group having 7 to 20 carbon atoms, or a monovalent group, aryl group, formed by removing one hydrogen atom from an unsubstituted or substituted monocyclic or 2 to 4 cyclic condensed aromatic hydrocarbon, or R^5 and R^6 my form a carbazole ring; R^7 represents an unsubstituted or substituted alkyl group; R^8, R^9, R^{10}, and R^{11} which may be the same or different, each represents a hydrogen atom, a halogen atom, an unsubstituted or substituted alkyl group or phenyl group, an alkoxy group, an aralkoxy group, or an amino group shown by

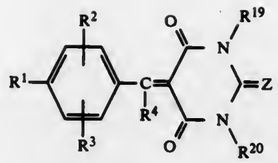


wherein R^{14} and R^{15} represent a hydrogen atom or the same groups as shown by R^{12} and R^{13} described above, or may combine with each other to form a condensed carbon ring or a condensed heterocyclic ring; A represents a monocyclic or condensed heterocyclic 5-membered ring or condensed heterocyclic 6-membered ring shown by the following structural formula:

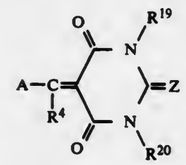


wherein Y and Z, which may be the same or different, each represents a sulfur atom, an oxygen atom, or N–$R^{17'}$ wherein $R^{17'}$ is an alkyl group having 1 to 4 carbon atoms, R^{16} represents a hydrogen atom, an alkyl group, an alkoxy group, an aryloxy group, an acyl group, an alkoxycarbonyl group, an aryloxycarbonyl group, a halogen atom, a monoalkylamino group, a dialkylamino group, an amido group or a nitro group, R^{17} and R^{18}, which may be the same or different, represent a hydrogen atom, an alkyl group or an alkoxy group, or may be groups which combine with each other to form a benzene ring or a naphthalene ring; and B represents an unsubstituted or substituted aryl group; and

wherein said barbituric acid derivative or thiobarbituric acid derivative is at least one member selected from the group consisting of the following general formulas (VII) and (VIII):



(VII)



(VIII)

wherein Z represents an oxygen atom or a sulfur atom; R^1, R^2, R^3, R^4 and A are the same as defined above; and R^{19} and R^{20}, which may be the same or different, each represents an alkyl group, an aralkyl group, or an unsubstituted or substituted phenyl group.

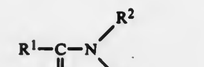
4,500,623

PHOTOCONDUCTIVE COMPOSITIONS COMPRISING AN ORGANIC PHOTOCONDUCTOR AND A THIOAMIDE COMPOUND AND ELECTROPHOTOGRAPHIC LIGHT-SENSITIVE MATERIALS USING THE COMPOSITIONS

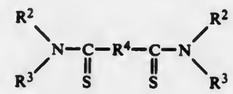
Kenji Sano; Syunichi Kondo, and Hideo Sato, all of Saitama, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Dec. 14, 1982, Ser. No. 449,725
Claims priority, application Japan, Dec. 14, 1981, 56-201307
Int. Cl.³ G03C 5/04
U.S. Cl. 430—83 **8 Claims**

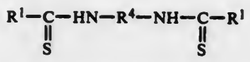
1. A photoconductive composition, comprising: in combination, an organic photoconductor and a thioamide compound for sensitizing the organic photoconductor, wherein said thioamide compound is a compound represented by following general formula I to III;



I



II



III

wherein R^1 represents an alkyl group, a substituted alkyl group, an alkoxy group, a substituted alkoxy group, a substituted or unsubstituted monocyclic or bicyclic condensed aryl group, a substituted or unsubstituted monocyclic or bicyclic condensed aryloxy group, or a monovalent group induced from a substituted or unsubstituted heterocyclic ring; said two R^1s in general formula III may be the same or different; R^2 and R^3, which may be the same or different, each represents a hydrogen atom, an alkyl group, a substituted alkyl group, a substituted or unsubstituted monocyclic or bicyclic condensed aryl group, or a monovalent group induced from a substituted or unsubstituted heterocyclic ring; and R^4 represents a methylene group, a polymethylene group, a branched alkanediyl group, or an arylene group; said R^1 and R^2 or said R^3 and R^3 in general formula I, R^2 and R^3, or R^2 or R^3 and R^4 in general formula II and R^1 and R^4 in general formula III may combine with each other.

4,500,624

HEAT-DEVELOPABLE DIFFUSION TRANSFER COLOR PHOTOGRAPHIC MATERIAL WITH MICROCAPSULES

Toshiaki Aono; Hiroshi Hara, and Hideki Naito, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Apr. 7, 1983, Ser. No. 483,063
Claims priority, application Japan, Apr. 7, 1982, 57-57781
Int. Cl.³ G03C 5/54, 1/40
U.S. Cl. 430—138 **64 Claims**

1. A heat-developable diffusion transfer color photographic material comprising a heat-developable color photographic element containing a light-sensitive silver halide, an organic silver salt oxidizing agent and a color image forming substance containing a color image forming dye which does not contain a group having a charge and an image receiving element capable of accepting a dye which is formed or released in the heat-developable color photographic element, the heat-developable color photographic element and the image receiving element being provided on a support having further provided thereon microcapsules comprised of a water-immiscible core material compound which is liquid at a temperature of not less than 120° C. and a water-insoluble polymer, wherein the color image forming substance is a compound containing a dye selected from the group consisting of an azo dye, an azomethine dye, an anthraquinone dye, a naphthoquinons dye, a nitro dye, a styryl dye, a quinophthalone dye, a triarylmethane dye, a phthalocyanine dye and a precursor thereof.

4,500,625

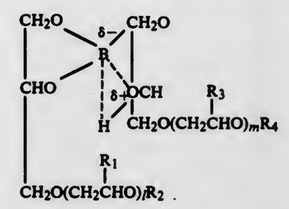
DEVELOPER FOR LIGHT-SENSITIVE LITHOGRAPHIC PRINTING PLATE PRECURSOR

Nobuyuki Kita; Hiroshi Matsumoto, and Hitoshi Hagiwara, all of Shizuoka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Nov. 4, 1983, Ser. No. 548,808
Claims priority, application Japan, Nov. 5, 1982, 57-194203
Int. Cl.³ G03C 5/24, 5/00; G03F 7/08
U.S. Cl. 430—149 **8 Claims**

1. A developer for a light-sensitive lithographic printing plate having an o-quinonediazide-containing light-sensitive layer, comprising an aqueous solution;

the aqueous solution containing an alkali silicate containing an organic boron compound represented by the formula:



wherein R_1 and R_3, which may be the same or different, each represents H or CH_3; R_2 and R_4, which may be the same or different, each represents H, COR_5 and $CONHR_6$, R_5 and R_6 each represents an alkyl group, an aryl group, an alkenyl group, or an alkynyl group; and l and m each represents an integer of 1 to 100, wherein the organic boron compound is present in the developer in an amount in the range of 0.0001 to 3% by weight based on the weight of the developer.

4,500,626

HEAT-DEVELOPABLE COLOR PHOTOGRAPHIC MATERIAL

Hideki Naito; Hiroshi Hara; Toshiaki Aono; Kozo Sato, and Shinsaku Fujita, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Sep. 30, 1982, Ser. No. 431,861
Claims priority, application Japan, Oct. 2, 1981, 56-157798
The portion of the term of this patent subsequent to Jul. 31, 2001, has been disclaimed.
Int. Cl.³ G03C 5/54, 1/40
U.S. Cl. 430—203 **40 Claims**

1. A heat-developable color photographic material comprising a support having thereon at least a light-sensitive silver halide, an organic silver salt oxidizing agent, a hydrophilic binder, a dye releasing activator and a dye releasing compound represented by the following general formula and which is capable of reducing the organic silver salt oxidizing agent and/or the silver halide and which releases a hydrophilic dye, wherein said dye releasing compound is immobilized in a hydrophilic binder:

$$R—SO_2—D \quad (I)$$

wherein R represents a reducing group capable of being oxidized by the organic silver salt oxidizing agent; and D represents a dye portion for forming an image.

32. A heat-developable color photographic material as claimed in claim 1, wherein the color photographic material further comprises an image receiving layer capable of receiving the hydrophilic diffusible dye.

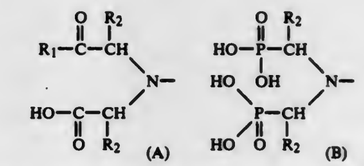
4,500,627

HEAT DEVELOPEMENT OF SILVER HALIDE ELEMENT WITH REDOX DYE RELEASER AND FOG REDUCER

Hideki Naito, and Yoshiharu Yabuki, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Mar. 16, 1984, Ser. No. 590,387
Claims priority, application Japan, Mar. 16, 1983, 58-43862
Int. Cl.³ G03C 1/40, 5/54, 5/26
U.S. Cl. 430—203 **8 Claims**

1. A process for forming an image which comprises heating a light-sensitive material comprising a support having thereon at least a light-sensitive silver halide, a binder and a dye releasing redox compound which is reductive to the light-sensitive silver halide and capable of releasing a hydrophilic dye upon reaction with the light-sensitive silver halide by heating, after imagewise exposure or simultaneously with imagewise exposure, in a substantially water-free condition in the presence of a compound having at least one group represented by the formula (A) or (B):



wherein R_1 represents a hydroxyl group, an alkoxy group, an alkenyloxy group, an aryloxy group, or amino group, an N-alkylamino group, an N,N-dialkylamino group or an N-anilino group, and R_2 represents a hydrogen atom or an alkyl group, to imagewise form a mobile dye.

4,500,628

PROCESS OF MAKING SOLID STATE DEVICES USING SILICON CONTAINING ORGANOMETALLIC PLASMA DEVELOPED RESISTS

Gary N. Taylor, Bridgewater, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Division of Ser. No. 256,604, Apr. 22, 1981, Pat. No. 4,396,704. This application Jun. 27, 1983, Ser. No. 507,929
Int. Cl.³ G03C *5/00, 5/24;* H05K *3/00*
U.S. Cl. 430—311 **11 Claims**

1. In a method of producing a solid state device that includes at least one pattern delineation steps, the steps comprising:

(a) selectively irradiating a resist film on a substrate with actinic radiation, wherein said film comprises a polymer and at least one type of monomer;

(b) treating said film to reduce the amount of said at least one type of monomer in the unirradiated portion of said film; and

(c) developing said film in a plasma comprising oxygen, thereby removing the unirradiated portion of the film at a faster rate than the irradiated portion, thereby producing a negative resist pattern, the invention CHARACTERIZED in that said at least one type of monomer includes at least one type of silicon-containing organometallic monomer selected from the group consisting of bis-acryloxybutyltetramethyldisiloxane, bis-methacryloxybutyltetramethyldisiloxane, m-dimethylphenylsilylphenyl acrylate or methacrylate.

4,500,629

METHOD OF FORMING IMAGES FROM LIQUID MASSES

Edward Irving, Burwell, and Terence J. Smith, Royston, both of England, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Jul. 25, 1983, Ser. No. 517,095
Claims priority, application United Kingdom, Apr. 8, 1982, 8222467
Int. Cl.³ G03C *5/00*
U.S. Cl. 430—325 **20 Claims**

1. A process for the production of an image which comprises

(1) maintaining in a substantially oxygen-free environment a layer, supported on a substrate, of a liquid composition containing

(a) an anaerobically polymerisable material and

(b) a photopolymerisable material for a sufficient period for the layer of liquid composition to solidify,

(2) exposing imagewise to actinic radiation the solidified layer, and

(3) treating the layer with a developer to remove those parts of the layer which have not been exposed to the actinic radiation in (2).

4,500,630

METHOD FOR FORMING MAGENTA COLOR IMAGE

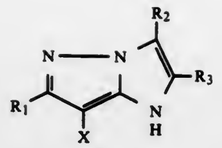
Tadahisa Sato; Toshio Kawagishi, and Nobuo Furutachi, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Feb. 15, 1984, Ser. No. 580,303
Claims priority, application Japan, Feb. 15, 1983, 58-23434
Int. Cl.³ G03C *7/16, 7/40*
U.S. Cl. 430—386 **16 Claims**

1. A method of forming a magenta color image, comprising the steps of:

exposing a silver halide photosensitive material; and

developing the material to form an image, using a developing solution containing an aromatic primary amine, the developing being carried out in the presence of a coupler represented by the following general formula (I):



(I)

wherein R_1, R_2 and R_3 independently represent a hydrogen atom or a substituent group, and X represents a hydrogen atom or a coupling eliminable group.

4,500,631

RADIOGRAPHIC IMAGE FORMING PROCESS

Eiichi Sakamoto; Mikio Kawasaki; Kouji Ono; Kakujulo Fuknoji, and Noboru Fujimori, all of Hino, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Aug. 5, 1983, Ser. No. 520,829
Claims priority, application Japan, Aug. 12, 1982, 57-140743
Int. Cl.³ G03C *5/24, 5/16*
U.S. Cl. 430—413 **22 Claims**

1. A radiographic image forming process comprising exposing a negative type silver halide photographic light-sensitive material, in combination with a fluorescent intensifying screen, imagewise to radiation rays, and treating said exposed material with a processing solution, said material comprising a support bearing on both sides thereof constituent layers, said constituent layers containing

(a) light-sensitive silver halide particles,

(b) metallic salt particles which are more readily soluble than said light-sensitive silver halide particles but whose surfaces are modified by a dissolution retarder so that said modified salt particles are rendered less soluble than said light-sensitive silver halide particles,

(c) physical development nuclei, and

(d) compounds comprising at least one kind of water-soluble dye having an absorption maximum in an aqueous solution from 400 to 600 nm, or a compound comprising said water-soluble dye coupled to a non-diffusive mordant, and

said processing solution containing

(i) at least one reducing agent, and

(ii) at least one substance capable of dissolving said metallic salt particles.

4,500,632

PROCESS FOR STABILIZING SILVER IMAGES

Kunioki Ohmura, Tokyo; Masaaki Torigoe, Kanagawa; Isamu Itoh, Kanagawa, and Katsumi Hayashi, Kanagawa, all of Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Continuation of Ser. No. 416,521, Sep. 9, 1982, abandoned. This application Mar. 5, 1984, Ser. No. 584,301
Claims priority, application Japan, Sep. 9, 1981, 56-142022
Int. Cl.³ G03C *5/24, 5/38*
U.S. Cl. 430—428 **6 Claims**

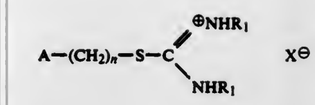
1. A process for stabilizing a black-and white silver image comprising the steps of:

providing a photographic material comprised of a water impermeable support having a light-sensitive silver halide emulsion layer thereon;

exposing the material;

subjecting the exposed material to development processing to obtain a developed image; and

processing the developed image with an aqueous solution containing a compound represented by the following general formula (I) or (II):



(I)

wherein:

A is —OH, $-SO_3\ominus$ or



R_1 is H, an alkyl group having 1 to 5 carbon atoms, a substituted alkyl group or a phenyl group,

R_2 is an alkyl group having 1 to 5 carbon atoms or a substituted alkyl group,

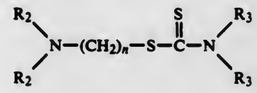
$X\ominus$ is a halogen atom or a p-toluenesulfonate, and

n is an integer of 2 to 5,

however, general formula (I) includes an HX salt when A is



(wherein X are the same as $X\ominus$ described above);



(II)

or an HX salt thereof

wherein:

R_3 is H, an alkyl group having 1 to 5 carbon atoms, a substituted alkyl group or a phenyl group, and

n, R_2 and X are the same as in the general formula (I).

4,500,633

SILVER HALIDE PHOTOGRAPHIC MATERIAL

Hiroshi Meajo, Hachioji, and Yoshikazu Watanabe, Akishima, both of Japan, assignors to Konishiroku Photo Industry Co., Ltd., Japan

Filed Feb. 15, 1983, Ser. No. 466,590
Claims priority, application Japan, Feb. 15, 1982, 57/23296
Int. Cl.³ G03C *1/46*
U.S. Cl. 430—505 **8 Claims**

1. A silver halide photographic material comprising a support and two or more light-sensitive layers provided thereon that are sensitive to substantially the same spectral region and have different light sensitivities, wherein the light-sensitive layer having the highest light sensitivity contains only a compound of formula (I) and at least one of the remaining layers contains at least one compound of formula (II):

A—TIME—Z (I)

A—Z (II)

wherein A is a coupling component capable of reaction with the oxidized product of a color developing agent to release the group TIME—Z (wherein TIME represents a timing group and Z represents a development inhibitor).

4,500,634

SILVER HALIDE COLOR PHOTOGRAPHIC MATERIAL

Kei Sakanoue; Morio Yagihara; Seigi Ichijima, and Kimitoshi Nagao, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Aug. 24, 1983, Ser. No. 526,171
Claims priority, application Japan, Aug. 24, 1982, 57-146712
Int. Cl.³ G03C *7/26*
U.S. Cl. 430—544 **9 Claims**

1. A silver halide color photographic material which contains both a coupler capable of releasing a diffusible development restrainer upon coupling and a polymer coupler latex, said silver halide color photographic material having improved visual sharpness in a high spatial frequency region and in a low spatial frequency region due to the combined use of said coupler capable of releasing a diffusible development restrainer upon coupling and said polymer coupler latex.

4,500,635

COLOR PHOTOGRAPHIC SILVER HALIDE LIGHT-SENSITIVE MATERIAL

Kozo Aoki; Akira Ogawa, and Osami Tanabe, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

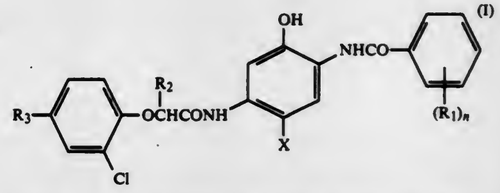
Filed Mar. 14, 1984, Ser. No. 589,294
Claims priority, application Japan, Mar. 14, 1983, 58-42671
Int. Cl.³ G03C *7/26*
U.S. Cl. 430—552 **12 Claims**

1. A color photographic silver halide light-sensitive material, comprising:

a support base having thereon:

a silver halide emulsion layer comprised of silver halide particles dispersed in a binder; and

a cyan dye-forming coupler represented by general formula (I):



(I)

wherein R_1 is a hydrogen atom, a halogen atom, or an alkyl or alkoxy group having 1 to 20 carbon atoms, R_2 is an alkyl group having 1 to 20 carbon atoms, R_3 is a hydrogen atom, a halogen atom, or an alkyl group, X is a member to be released at the time of oxidative coupling with a developing agent, and n is an integer of 1 or 2.

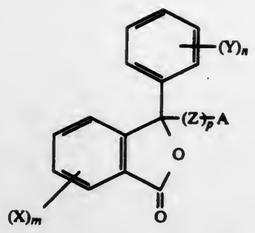
4,500,636

SILVER HALIDE PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL

Mitsunori Ono; Isamu Itoh; Keiji Mihayashi, and Yukio Karino, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jan. 27, 1984, Ser. No. 574,432
Claims priority, application Japan, Jan. 27, 1983, 58/11676
Int. Cl.³ G03C *1/02*
U.S. Cl. 430—566 **25 Claims**

1. A silver halide photographic light-sensitive material which comprises a light-sensitive silver halide emulsion layer having associated therewith a blocked photographic agent, said blocked photographic agent being represented by the following general formula (I):



wherein A represents a photographic agent moiety which is attached to a blocking moiety through a hetero atom; Z represents a divalent linkage group; p represents 0 or 1; X and Y each represents a halogen atom, an alkyl group, an alkenyl group, an aryl group, an alkoxy group, an aryloxy group, an acyloxy group, a carboxylic acid ester group, an amino group, a carbonamido group, a sulfonamido group, an ureido group, an aminosulfonamido group, a carbamate group, a carboxy group, an alkoxycarbonyl group, an aryloxycarbonyl, a carbamoyl group, an acyl group, a sulfo group, an alkylsulfonyl group, an arylsulfonyl group, a sulfamoyl group, a cyano group or a nitro group, and they may be the same as or different from each other; m represents an integer of 0 to 4; and n represents an integer of 0 to 5.

4,500,637

PREVENTION OF GRAFT VERSUS HOST DISEASE FOLLOWING BONE MARROW TRANSPLANTATION

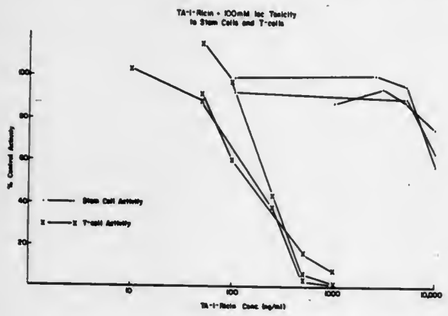
David M. Neville, Jr., Bethesda, Md., and Richard J. Youle, Washington, D.C., assignors to The United States of America as represented by the Department of Health and Human Services, Washington, D.C.

Filed Jul. 19, 1982, Ser. No. 399,257

The portion of the term of this patent subsequent to Nov. 16, 1999, has been disclaimed.

Int. Cl.³ A61K *39/00*; A01N *1/02*; C12N *15/00*

U.S. Cl. 435—2 **2 Claims**



1. The method for treating graft versus host disease in humans comprising covalently linking an antibody TA:1 which specifically binds to human T:lymphocytes to intact ricin toxin in order to form a human T-cell specific hybrid; incubating said hybrid with human donor bone marrow cells prior to injecting said bone marrow cells into irradiated recipients, said TA:1 antibody is an antibody of the IgG2 subclass exhibiting an affinity for human T-cells of $10^{-9}M^{-1}$.

4,500,638

INFECTIOUS BRONCHITIS VIRUS STRAIN

Peter Apontowell, Leersum, and Manfred M. Krasselt, De Bilt, both of Netherlands, assignors to Gist-Brocades N.V., Delft, Netherlands

Division of Ser. No. 209,583, Nov. 24, 1980, Pat. No. 4,357,320. This application Oct. 29, 1982, Ser. No. 437,517

Claims priority, application Netherlands, Nov. 30, 1979, 7908687; Sep. 9, 1980, 8005063

Int. Cl.³ C12N *7/00*

U.S. Cl. 435—235 **4 Claims**

1. A serotype virus strain of infectious bronchitis viruses selected from the group consisting of culture Nos. CNCTC A 07/80, CNCTC A 08/80, CNCTC A 09/80, CNCTC A 010/80, CNCTC A 011/80, CNCTC A 013/80, CNCTC A 014/80, CNCTC A 015/80 and CNCTC A 016/80 deposited at the Czechoslovak National Collection of Type Cultures with the Institute of Hygiene and Epidemiology in Prague, Czechoslovia.

4,500,639

CULTURING BORDETELLA IN MEDIA CONTAINING ETHERIFIED CYCLODEXTRIN

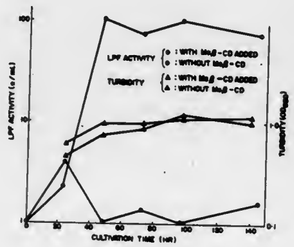
Yoji Suzuki; Atsushi Imaizumi; Hisao Yamaguchi; Masaharu Kanesaki, all of Hino, and Shoji Ono, Kodaira, all of Japan, assignors to Teijin Limited, Tokyo, Japan

Filed Sep. 29, 1982, Ser. No. 427,039

Claims priority, application Japan, Oct. 15, 1981, 56-163477; Oct. 15, 1981, 56-163478

Int. Cl.³ C12N *1/38*; C12P *21/00*; C12Q *1/04*; C12R *1/01*

U.S. Cl. 435—244 **7 Claims**



1. A method of culturing microbes which belong to the genus Bordetella comprising culturing said microbes in a culture medium useful for cultivating said microbes wherein said culture medium comprises etherified cyclodextrin as an additional component.

4,500,640

PLASMIDS

Ryoichi Katsumata, Machida; Tetsuo Oka, Yokohama, and Akira Furuya, Kawasaki, all of Japan, assignors to Kyowa Hakko Kogyo Co., Ltd., Tokyo, Japan

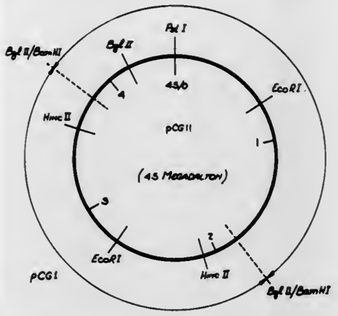
Filed Apr. 13, 1982, Ser. No. 368,035

Int. Cl.³ C12N *1/20, 15/00, 1/00*; C12R *1/13*

U.S. Cl. 435—253 **9 Claims**

1. An isolated plasmid pCG 4 characterized by a molecular weight of about 19 megadaltons, a number of cleavage sites for the restriction endonucleases, Eco RI, Bam HI, Hind III, Pst I and Sal I of 4, 7, 9, 6 and 6 respectively, and carrying a gene for resistance to a least one of streptomycin and spectinomycin.

9. A biologically pure culture of a microorganism selected from the group consisting of *Corynebacterium herculis* ATCC 13868/pCG 4, *Brevibacterium flavum* ATCC 14067/pCG 4 and *Brevibacterium lactofermentum* ATCC13655/pCG 4 having the identifying characteristics of ATCC 31837, 31838 and 31839 respectively and carrying the plasmid pCG 4.



4,500,641

FLOW CYTOMETER FOR IDENTIFYING ALGAE BY CHLOROPHYLL FLUORESCENCE

Gerrit J. van den Engh; Barbara J. Trask, both of Bodegraven, and Johannes W. M. Visser, Zevenhuizen, all of Netherlands, assignors to Nederlandse Centrale Organisatie voor Toegepast Natuurwetenschappelijk Onderzoek, The Hague, Netherlands

Filed Mar. 22, 1982, Ser. No. 360,430

Claims priority, application United Kingdom, Mar. 23, 1981, 8109068

Int. Cl.³ C12M *1/34*; C12Q *1/29, 1/04*; G01J *3/30*

U.S. Cl. 435—291 **6 Claims**

1. Flow cytometer for identifying algae by chlorophyll fluorescence comprising:

one high intensity light source comprising two independent lasers having parallel light paths one of which is operated in a UV range and the other in an all lines mode,

a prism in the light path of the laser operated in the all lines mode,

means for passing the algae through the light paths,

detector means aligned with the light paths for detecting forward scatter and producing a signal,

detector means for detecting backward scatter and producing a signal,

means aligned perpendicularly to the light paths for detecting perpendicular scatter comprising a lens, a dichroic mirror, a chlorophyll fluorescence detector receiving light passing the dichroic mirror, a yellow fluorescence detector receiving light reflected by the dichoric mirror, and band pass filters in front of each detector; each detector producing a signal, and

means for displaying the signals.

4,500,642

INFRARED ABSORBING QUARTZ GLASS WITH IRON AND ALUMINUM

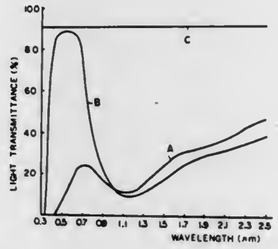
Oguma Reiji, Hatano, and Hirai Akihiro, Odawara, both of Japan, assignors to Toshiba Ceramics Co., Ltd., Tokyo, Japan

Division of Ser. No. 331,901, Dec. 18, 1981, Pat. No. 4,419,118. This application Mar. 4, 1983, Ser. No. 472,272

Claims priority, application Japan, Dec. 23, 1980, 55-181294

Int. Cl.³ C03C *3/06, 3/24*

U.S. Cl. 501—54 **14 Claims**



1. An infrared-absorbing and visible light-transmitting quartz glass consisting essentially of 0.01 to 5% by weight iron, 0.01 to 10% by weight aluminum and the balance being silicon oxide.

4,500,643

SHAPED REFRACTORY METAL BORIDE ARTICLES AND METHOD OF MAKING THEM

Adam J. Gesing, and Graham Stratford, both of Kingston, Canada, assignors to Alcan International Limited, Montreal, Canada

Filed Dec. 27, 1983, Ser. No. 565,622

Claims priority, application United Kingdom, Dec. 30, 1982, 8236995

Int. Cl. C04H *35/58*

U.S. Cl. 501—96 **18 Claims**

1. A shaped refractory article of group IV b, V b, or VI b metal boride, which article has a microstructure with a weight average grain diameter of from 0.5 to 5 microns and substantially no grains larger than 10 microns diameter, from 10% to 45% by volume being made up of interconnected pores the majority having a diameter not substantially greater than 5 microns, porosity and grain size being substantially uniform throughout the microstructure, the article containing not more than about 0.2% by weight of oxygen and not more than about 0.5% by weight of carbon.

4,500,644

PREPARATION AND COMPOSITION OF SIALON GRAIN AND POWDER

Howard M. Winkelbauer, West Mifflin, Pa.; Kenneth W. Hill, Lynchburg, Va., and Ke-Chin Wang, Pittsburgh, Pa., assignors to Dresser Industries, Inc., Dallas, Tex.

Filed Dec. 19, 1983, Ser. No. 562,770

Int. Cl.³ C04B *35/58*

U.S. Cl. 501—98 **8 Claims**

1. A method for producing nitride bonded ceramic grain comprising the steps of:

mixing, a composition consisting essentially of, by weight, 62–90% micronized silicon powder and about 10 to 38% fine grain alumina powder;

ball milling the composition to thoroughly disperse the silicon and alumina powders;

compacting the composition to increase the density thereof; and

burning the composition at an elevated temperature in a nitriding atmosphere to form the nitride bond.

4,500,645

HYDROCRACKING CATALYST COMPOSITION AND METHOD OF MAKING SAME

Jun Fuchikami, Koga; Hidehiro Higashi, Kitakyushu; Takashi Inoue, Kitakyushu, and Hiroyuki Oba, Kitakyushu, all of Japan, assignors to Catalysts & Chemicals Industries Co., Ltd., Tokyo, Japan

Filed Jun. 7, 1982, Ser. No. 385,357
Claims priority, application Japan, Jun. 13, 1981, 56-91109
Int. Cl.³ B01J *29/10, 29/16*
U.S. Cl. 502—65 12 Claims

1. A hydrocracking catalyst composition comprising one or more metals selected from the metals of Group VIb and Group VIII of the Periodic Table deposited on a carrier material, said carrier material consisting essentially of Y-zeolite and one or more members selected from the group consisting of alumina-zinc oxide, alumina-boria and alumina-silica-magnesia, said catalyst composition having a porous structure satisfying the requirements (A) and (B):

(A) when measured by the nitrogen adsorption method, pores whose diameters are in the range of 25–600 Å have an average diameter of 70–110 Å, the volume occupied by pores whose diameters are 60–120 Å is at least 40% of that occupied by pores whose diameters are 25–600 Å, and the volume occupied by pores whose diameters are 25–600 Å is 30% or less of that occupied by pores whose diameters are 25–600 Å, and

(B) when measured by means of a porosimeter under pressure, pores whose diameters are in the range of 62–600 Å have an average diameter of 70–110 Å, the volume occupied by pores whose diameters are in the range of average diameter±20 Å is at least 40% of that occupied by pores whose diameters are 62–600 Å, and the volume occupied by pores whose diameters are in the range of average diameter+20 Å or higher is 40% or less of that occupied by pores whose diameters are 62–600 Å.

4. A catalyst composition according to claim 1 wherein the Y-zeolite is ion-exchanged by both rare earth and ammonium.

9. A method of making a hydrocracking catalyst which comprises the steps of preparing an amorphous alumina hydrate slurry containing pseudo-boehmite having a crystal size grown to 40–80 Å; dehydrating said amorphous alumina hydrate slurry to obtain an alumina cake; mixing Y-zeolite and one or more members selected from the group consisting of a precursor of zinc oxide, a precursor of boria and silica-magnesia, with said alumina cake; molding the resulting mixture to obtain a crrier material having the desired shape and size, and thereafter depositing, on said carrier material, one or more metals selected from the metals of Group VIb and Group VIII of the Periodic Table.

4,500,646

CONVERSION CATALYSTS FOR SYNTHESIS GAS

Bernard Denise, Rillieux; Christian Hamon, Saint Nazaire; Michel Sénès, La Baule, and Raymond Sneeden, Villefontaine, all of France, assignors to Societe Chimique de la Grande Paroisse, Azote et Producits Chimiques, Paris, France

Filed Jan. 12, 1983, Ser. No. 457,411
Claims priority, application France, Jan. 14, 1982, 82 00498; Jun. 25, 1982, 82 11134
Int. Cl.³ B01J *29/18, 29/24*
U.S. Cl. 502—78 7 Claims

1. A catalyst for the conversion of synthesis gas into organic compounds, in particular saturated and unsaturated hydrocarbons, consisting essentially of:

a first component comprising a mixture of the reduced form of least two transition metals selected from the group consisting of copper, zinc and chromium, one of said selected transition metals being zinc;

a second component comprising an active mordenite selected from the group consisting of mordenites derived from the chemical de-aluminization of mordenite by successive treatments in a concentrated acid medium and doubly de-aluminized mordenites derived from hydrothermic de-aluminization consisting of a series of alternate acid and hydrothermic treatments, beginning and terminating in an acid treatment, from the sodium form, NaZ, or ammonium form, NH_4Z, of mordenite, said first and second components being in intimate admixture.

4,500,647

THREE LAYER LAMINATED MATRIX ELECTRODE

Frank Solomon, Great Neck, N.Y., assignor to Diamond Shamrock Chemicals Company, Dallas, Tex.

Division of Ser. No. 202,585, Oct. 31, 1980, abandoned. This application Sep. 28, 1982, Ser. No. 425,444
The portion of the term of this patent subsequent to Oct. 19, 1999, has been disclaimed.
Int. Cl.³ C25B *11/00*
U.S. Cl. 502—101 8 Claims

1. A method for making a laminated electrode comprising preparing an active layer by intimately mixing carbon black particles with an aqueous dispersion of polytetrafluoroethylene particles, drying the resultant mixture at temperatures in the range of from about 250° to 325° C., thoroughly incorporating into the thus dried PTFE/carbon black mixture enough deashed active carbon particles which have been impregnated with a minor amount of a precious metal catalyst to form an intimate mix containing about 40 to 80% of said active carbon particles based upon the combined weight of same and the dried PTFE/carbon black, fibrillating said intimate mix and forming the resultant fibrillated mix into an active layer, and laminating the working surface of said active layer to a current distributor and the opposite surface thereof to a porous, coherent, hydrophobic polytetrafluoroethylene-containing wet-proofing layer.

4,500,648

LONG CHAIN BRANCHING IN POLYOLEFINS FROM ZIEGLER-NATTA CATALYSTS

Dennis B. Malpass, LaPorte, Tex., assignor to Exxon Research & Engineering Co., Florham Park, N.Y.

Filed Apr. 25, 1983, Ser. No. 488,321
Int. Cl.³ C08F *4/62, 4/64, 4/68, 4/70*
U.S. Cl. 502—115 10 Claims

1. An ethylene polymerization catalyst comprising:

(a). a Group 4B to 8 transition metal compound,

(b). an organoaluminum compound of the general formula $R_1R_2AlR_p$ wherein R_1 and R_2 are the same or different hydrocarbyl groups having from 1 to 18 carbon atoms and R_p is a polymeric hydrocarbyl group having a weight average molecular weight in the range of about 1000 to about 100,000 and a long chain branching frequency of about 0.0005 to about 0.005 per unit molecular weight, and

(c). an aluminum alkyl cocatalyst.

4. The ethylene polymerization catalyst of claim 1 wherein the Group 4B to 8 transition metal compound is a titanium halide.

5. The ethylene polymerization catalyst of claim 4 wherein the titanium halide is obtained from the reaction product of titanium tetrachloride with an organomagnesium compound or complexes thereof.

4,500,649

PROCESS FOR PRODUCING AQUEOUS SUSPENSION CONTAINING ORGANIC AZO COMPOUND AS POLYMERIZATION INITIATOR

Motoaki Tanaka, Urawa; Takanori Toyama, Kawagoe; Hitoshi Ohba, Saitama, and Osamu Yamaguchi, Sayama, all of Japan, assignors to Wako Pure Chemical Industries, Ltd., Japan

Filed Oct. 12, 1982, Ser. No. 433,690
Claims priority, application Japan, Oct. 12, 1981, 56-162190
Int. Cl.³ B01J *31/06*
U.S. Cl. 502—167 19 Claims

17. An aqueous suspension comprising an organic azo compound as polymerization initiator in fine particles; water; a dispersing agent A, the dispersing agent A being a synthetic high polymer, a cellulose derivative, an animal protein, a vegetable mucilage, a material derived from seaweeds, a starch or fabricated starch; and a dispersing agent B selected from the group consisting of a nonionic surface active agent, a cationic surface active agent, and an anionic surface active agent.

4,500,650

THREE-WAY CATALYSTS FOR PURIFICATION OF EXHAUST GAS AND METHOD FOR THE PREPARATION OF THE CATALYSTS

Michael Wyatt, Wallingford; Gary M. Leach, and Ashley M. Gould, both of Reading, all of England, assignors to Johnson Matthey Public Limited Company, London, England

Filed Jan. 18, 1982, Ser. No. 340,046
Claims priority, application United Kingdom, Jan. 20, 1981, 8101603
Int. Cl.³ B01J *23/64*
U.S. Cl. 502—204 10 Claims

1. A three-way catalyst suitable for the purification of exhaust gas from an internal combustion engine in a motor vehicle, the catalyst comprising:

a. a monolithic substrate through which exhaust gas may flow,

b. a refractory oxide layer deposited on the substrate,

c. at least one platinum group metal component selected from the group consisting of platinum, rhodium and palladium, and

d. a tungsten component selected from the group consisting of tungsten metal and a tungsten-containing compound the amount of platinum group metal present being from 300 to 3500 g per m^3 of the volume of the monolithic substrate with the refractory oxide layer deposited thereon, the amount of tungsten present being at least from 2650 to 22,000 g per m^3 of said volume of substrate and deposited oxide layer, and the weight ratio of tungsten to platinum group metal being from 2.3 to 18.8:1, the catalyst being further characterized by its ability to oxidize carbon monoxide and hydrocarbon, and to reduce nitrogen oxides with a reduced tendency to form ammonia.

4,500,651

TITANIUM-CONTAINING MOLECULAR SIEVES

Brent M. T. Lok, New City; Bonita K. Marcus, Rye, and Edith Flanigen, M., White Plains, all of N.Y., assignors to Union Carbide Corporation, Danbury, Conn.

Filed Mar. 31, 1983, Ser. No. 480,738
Int. Cl.³ B01J *27/14, 31/02*
U.S. Cl. 502—208 22 Claims

1. Crystalline molecular sieves comprising pores having nominal diameters of greater than about 3 Angstroms and whose chemical composition in the as-synthesized and anhydrous form is represented by the unit empirical formula:

$$mR:(Ti_xAl_yP_z)O_2$$

wherein "R" represents at least one organic templating agent present in the intracrystalline pore system; "m" represents the moles of "R" present per mole of $(Ti_xAl_yP_z)O_2$ has a value of between zero and about 5.0; and "x", "y" and "z" represent the mole fractions of titanium, aluminum and phosphorus, respectively, present as tetrahedral oxides, said mole fractions being such that they are within the pentagonal compositional area defined by points A, B, C, D and E of the ternary diagram which is FIG. 1 of the drawings, said points A, B, C, D and E representing the following values for "x", "y" and "z":

Point	Mole Fraction x	y	z
A	0.001	0.45	0.549
B	0.88	0.01	0.11
C	0.98	0.01	0.01
D	0.29	0.70	0.01
E	0.001	0.70	0.299.

4,500,652

PROCESS FOR PRODUCING CATION EXCHANGE RESINS WITHOUT SWELLING DURING SULPHONATION PROCESS

Yoshiharu Misaka; Takeshi Teraue, and Masamiti Hatae, all of Fukuoka, Japan, assignors to Mitsubishi Chemical Industries, Limited, Tokyo, Japan

Filed Aug. 23, 1982, Ser. No. 410,682
Claims priority, application Japan, Aug. 21, 1981, 56-131356
Int. Cl.³ L08F *8/36*; B01J *1/08*
U.S. Cl. 521—33 6 Claims

1. A process for producing particles of a cation exchange resin which comprises suspension polymerizing a monomeric mixture consisting essentially of (1) styrene, (2) 0.8 to 55 mole % of divinylbenzene per mole of styrene and (3) 2 to 20 mole % of at least one compound selected from the group of acrylic acid, methacrylic acid and lower alkyl ester thereof, per mole of styrene and sulfonating the resulting copolymer particles substantially in the absence of a swelling agent consisting of organic solvent, wherein said particles have a particle size within the range of from about 0.1 to 1.0 mm and wherein the number of cation exchange resin particles having cracks present per 100 resin particles is 10 or less.

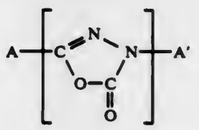
4,500,653

BLOWING AGENTS FOR THERMOPLASTIC COMPOSITIONS

Manfred Schmidt; Mark W. Witman, both of Krefeld, Fed. Rep. of Germany; Gerard E. Reinert, McMurray, and In C. Lim, Pittsburgh, both of Pa., assignors to Mobay Chemical Corporation, Pittsburgh, Pa.

Filed Sep. 14, 1983, Ser. No. 531,982
Int. Cl.³ C08J *9/10*
U.S. Cl. 521—90 12 Claims

1. A molding composition comprising (a) a thermoplastic resin and (b) about 0.1 to about 25% relative to the weight of said (a) plus (b) of a chemical blowing agent characterized in that its molecular structure contains at least one pentatomic heterocyclic ring and conforms to



wherein A and A' are moieties which do not negate the foaming ability of said (b) and which do not contribute to the degradation of said (a) upon foaming.

4,500,654

CATALYST SYSTEM AND PROCESS FOR THE PRODUCTION OF POLYURETHANES

Russell O. Carlsen, Barrington; Francois M. Casati, Highland Park, and Daniel S. Raden, Hawthorn Woods, all of Ill., assignors to Abbott Laboratories, North Chicago, Ill.

Filed Nov. 1, 1983, Ser. No. 547,691
Int. Cl.³ C08G 18/20, 18/14; B01J 27/24
U.S. Cl. 521—129 20 Claims

1. A catalyst for use in reacting an organic isocyanate with an organic polyol to produce a polyurethane, the catalyst comprising an at least mono-N-substituted alkoxyalkyl piperazine.

15. A process for producing a polyurethane comprising reacting an organic isocyanate with an organic polyol in the presence of a catalyst comprising effective amount of an at least mono-N-substituted alkoxyalkyl piperazine.

4,500,655

ALKOXYLATED MODIFIED MANNICH CONDENSATES AND MANUFACTURE OF RIGID POLYURETHANE FOAMS THEREWITH

Michael E. Brennan, Austin, Tex., assignor to Texaco Inc., White Plains, N.Y.

Filed Dec. 29, 1983, Ser. No. 566,756
Int. Cl.³ C08G 18/14
U.S. Cl. 521—163 21 Claims

1. A polyol composition prepared by reacting an alkoxylation product of a Mannich condensate with about 3 to about 10 percent by weight of melamine based on the alkoxylation product and with about 1 to about 6 moles of a lower alkylene carbonate per mole of melamine at about 80° to about 150° C. for about 1 to 5 hours, said alkoxylation product having been prepared by reacting an alkylene oxide component comprising from about 90 to 100 wt.% of propylene oxide and 0 to about 10 wt.% of ethylene oxide with a Mannich condensate, said Mannich condensate having been prepared by reacting a phenolic compound with formaldehyde and diethanolamine in the molar ratios of about 1 to about 3 moles of formaldehyde and about 1 to about 3 moles of diethanolamine per mole of said phenolic compound, said phenolic compound being selected from the group consisting of phenol and phenol substituted with an alkyl group containing 1 to 12 carbon atoms.

4,500,656

PROCESS FOR THE PREPARATION OF A CELLULAR POLYURETHANE

Werner Rasshofer, Cologne, and Ernst-Christoph Prolingheuer, Herne, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Mar. 28, 1984, Ser. No. 594,054
Claims priority, application Fed. Rep. of Germany, Apr. 5, 1983, 3312215
Int. Cl.³ C08G 18/14, 18/32
U.S. Cl. 521—164 12 Claims

1. A process for the preparation of a cellular polyurethane which comprises reacting

(A) a polyisocyanate with

(B) an isocyanate-reactive component containing

(1) at least one component in the molecular weight range of from about 60 to 2000 containing isocyanate-reactive groups and having a functionality of 2 to 8,

(2) optionally at least one component in the molecular weight range of from about 2000 to 12000 containing isocyanate-reactive groups and having a functionality of 2 to 8,

(3) about 0.1–30 parts, based on 100 parts of B(1)+B(2), of a liquid adduct of an amine and carbon dioxide, and

(4) optionally water, blowing agents, foam stabilizers, catalysts and other auxiliary agents and additives,

wherein the liquid amine-carbon dioxide adduct is a liquid adduct at 20° C., optionally containing water, based on carbon dioxide and an amine which has at least one amino group and contains at least one primary, secondary or tertiary hydroxyl group, which amine is solid or liquid at 20° C.

4,500,657

DENTAL RESTORATIVE COMPOSITIONS HAVING IMPROVED MECHANICAL PROPERTIES AND HYDROLYTIC STABILITY

Narayan G. Kumar, Freehold, N.J., assignor to Johnson & Johnson Dental Products Company, East Windsor, N.J.

Continuation-in-part of Ser. No. 404,262, Aug. 2, 1982, abandoned. This application Jul. 1, 1983, Ser. No. 509,770
Int. Cl.³ A61K 5/06
U.S. Cl. 523—116 20 Claims

1. A dental restorative composition consisting essentially of:

(a) a polymerizable composition containing at least one compound having at least two olefinically unsaturated groups, wherein, when said polymerizable composition is polymerized in the unfilled state, the resulting cured material has a water absorption as determined by ADA Specification No. 27 at 37° C. for one week, of less than 1 milligram per square centimeter;

(b) a polymerization initator for said polymerizable composition; and

(c) a hydrophobic inorganic filler having a volume average particle size below 15 microns, at least 30 percent of the particles of said filler having a size of less than 5 microns, said filler being present in an amount within the range of from about 35 to about 70 volume percent, based on weight of said polymerizable composition plus said filler, and said filler being selected from the group consisting of quartz and acid-washed and heat treated barium or strontium glass, wherein the heat treatment is carried out at a temperature below the sintering temperature of the glass, and at a temperature and for a period of time sufficient to effect at least a 50 percent reduction in the specific surface area of the glass.

4,500,658

RADIOPAQUE ACRYLIC RESIN

Adrian S. Fox, Denver, Conn., assignor to Austenal International, Inc., Chicago, Ill.

Filed Jun. 6, 1983, Ser. No. 501,590
Int. Cl.³ C08K 3/10, 5/54, 5/06; A61K 5/06
U.S. Cl. 523—117 9 Claims

1. A process for preparing a radiopaque acrylic particle in bead form comprising:

(a) substantially uniformly dispersing in an acrylic monomer from about 5 to 50 wt.% of a radiopaque inorganic pigment having an average particle size of from about 0.1 to 20 microns, an effective amount of a surfactant and an effective amount of a free radical-forming polymerization initiator; and

(b) contacting drops of the resulting monomer-pigment dispersion with an aqueous solution containing an effective amount of a dispersant at a temperature of from about 50° to 125° C. to polymerize said monomer.

4,500,659

EXTRUDABLE, CURABLE POLYORGANOSILOXANE COMPOSITIONS

Loretta A. Kroupa, Midland, and Elton H. Relyea, Gladwin, both of Mich., assignors to Dow Corning Corporation, Midland, Mich.

Filed Aug. 5, 1983, Ser. No. 520,794
Int. Cl.³ C08K 3/36
U.S. Cl. 523—213 14 Claims

1. An extrudable, curable silicone elastomer composition exhibiting a viscosity of at least 100 Pa·s at 25° C. and comprising a product obtained by mixing

(A) 100 parts by weight of a liquid triorganosiloxy-endblocked polydimethylsiloxane wherein the triorganosiloxy units are dimethylvinylsiloxy or methylphenylvinylsiloxy and the polydimethylsiloxane exhibits a viscosity of from 1 to 100 Pa·s at 25° C.;

(B) from 10 to 85 parts by weight of a reinforcing silica filler having a surface area of at least 50 m^2/g, said filler having been reacted with a liquid or solubilized treating agent wherein at least a portion of said treating agent is a liquid, hydroxyl endblocked polyorganosiloxane wherein at least 50% of the silicon atoms are bonded to a fluorine-substituted hydrocarbon radical;

(C) a liquid methylhydrogensiloxane in an amount sufficient to provide from 1 to 3 silicon-bonded hydrogen atoms per vinyl radical present in said curable elastomer composition, said methylhydrogensiloxane having an average of at least three silicon-bonded hydrogen atoms per molecule and consisting essentially of units selected from the group consisting of methylhydrogensiloxane, dimethylsiloxane, dimethylhydrogensiloxy, trimethylsiloxy and $SiO_{4/2}$ units; and

(D) a platinum-containing catalyst in sufficient amount to provide at least 0.1 part by weight of platinum per million parts by weight of said triorganosiloxy endblocked polydimethylsiloxane.

4,500,660

EPOXY RESIN COMPOSITION

Tsuyoshi Minamisawa; Yasuo Kogo, and Yasuhisa Nagata, all of Shizuoka, Japan, assignors to Toho Belson Co., Ltd., Tokyo, Japan

Filed Apr. 18, 1983, Ser. No. 486,177
Claims priority, application Japan, Apr. 21, 1982, 57-66504
Int. Cl.³ C08K 7/06; C08L 63/02, 63/04, 63/10
U.S. Cl. 523—428 26 Claims

1. An epoxy resin composition comprising:

(A) a condensation product of bisphenol A and epichlorohydrine present in an amount of at least 45 wt % of the total epoxy resin

(B) a reaction product of novolak resin and epichlorohydrine present in an amount of at least 8 wt % of the total epoxy resin;

(C) an epoxy resin having at least one N,N-diglycidylamine group in a molecule of the epoxy resin (including the one used in (D)) present in an amount of at least 15 wt % of the total epoxy resin; (D) a reaction product of a butadiene-acrylonitrile copolymer having carboxyl groups on at least both ends of the molecule and an epoxy resin having at least one N,N-diglycidylamine group in a molecule of the epoxy resin, said butadiene-acrylonitrile copolymer being present in an amount of 1.5 to 15 parts by weight per 100 parts by weight of the total epoxy resin; (E) nitrile rubber present in an amount of 2 to 8 parts by weight per 100 parts by weight of the total epoxy resin; wherein the total epoxy resin is the total amount of epoxy resins (A), (B) and (C), as well as the epoxy resin having at least one N,N-diglycidylamine group in a molecule of the epoxy resin used in preparing component (D);

(F) a curing agent consisting of dicyandiamide; (G) a curing accelerator, and (H) a reinforcing carbon fiber.

4,500,661

ADHESIVE COMPOSITION

Pallavoor R. Lakshmanan, Houston, Tex., assignor to Gulf Oil Corporation, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 848,285, Nov. 3, 1977, abandoned. This application Nov. 24, 1980, Ser. No. 209,375
The portion of the term of this patent subsequent to Sep. 11, 1996, has been disclaimed.
Int. Cl.³ C08L 93/00
U.S. Cl. 524—77 20 Claims

1. A novel adhesive composition effective in bonding low-energy plastic surfaces to each other which provides a tensile lap shear strength in excess of about 520 pounds per square inch gauge which comprises (1) one ethylene-vinyl ester copolymer having from about four to about 30 wieght percent of a vinyl ester and a melt index of about 0.5 to about 75; (2) a tackifier selected from the group consisting of (a) a rosin, (b) a rosin ester, (c) a terpene resin, (d) a terpene-phenolic resin and (e) a rosin-modified phenolic resin; and (3) a polyethylene wax having a molecular weight of about 750 to about 3000, a penetration of about 0.25 to about 1.5, a density of about 0.93 to about 0.97, a melting point of at least about 110° C. and a linearity of at least about 70 percent, said novel adhesive composition having a Ring and Ball softening point of at least about 110° C.

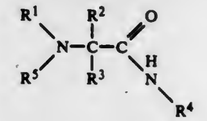
4,500,662

POLYSUBSTITUTED α-AMINOACETAMIDES

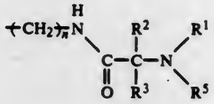
John T. Lai, Broadview Heights, Ohio, assignor to The B. F. Goodrich Company, Akron, Ohio

Continuation-in-part of Ser. No. 250,826, Apr. 3, 1981, abandoned. This application Sep. 29, 1982, Ser. No. 427,347
Int. Cl.³ C08K 5/20; C07C 103/727, 103/50; C07D 211/00
U.S. Cl. 524—99 5 Claims

1. An α-aminoacetamide of the formula



wherein R^1 is tert-alkyl of 4 to 12 carbons; R^4 is selected from the group consisting of alkyl of 1 to 8 carbons; phenyl; alkyl-, alkoxy-, alkylamine-, dialkylamine- or halo-substituted phenyl having 1 to 3 said substituents wherein alkyl groups have 1 to 12 carbons; cycloalkyl of 4 to 8 carbons; piperidinyl; 2,2,6,6-tetra(lower alkyl)piperidinyl; alkenyl of 2 to 6 carbons, and a group



wherein n is 1 to 6; R^2 and R^3 are independently selected from the group consisting of hydrogen and alkyl of 1 to 6 carbons; and R^5 is hydrogen.

4. A synthetic polymeric material subject to degradation caused by ultraviolet light, containing an effective amount of a compound of claim 1 as a stabilizer.

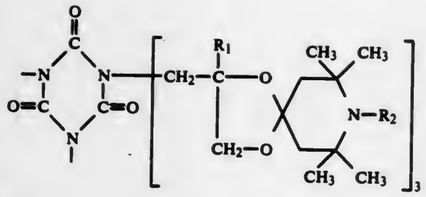
4,500,663

LIGHT STABILIZING N,N,N-TRIS(2,2,6,6-TETRAMETHYL-4-PIPERIDONE KETAL)-1,3,5-TRIAZINE DERIVATIVES AND LIGHT STABILIZED SYNTHETIC RESIN COMPOSITIONS

Motonobu Minagawa, Koshigaya; Naohiro Kubota, Ageo; Toshihiro Shibata, Omiya, and Ryozo Arata, Urawa, all of Japan, assignors to Adeka Argus Chemical Co., Ltd., Urawa, Japan

Filed Mar. 25, 1983, Ser. No. 478,609
Claims priority, application Japan, Mar. 31, 1982, 57-53270
Int. Cl.³ C07D 405/14
U.S. Cl. 524—101 22 Claims

1. An N,N,N-tris(2,2,6,6-tetramethyl-4-piperidone ketal)-1,3,5-triazine having the formula:



wherein:

R_1 is selected from the group consisting of hydrogen and alkyl having from one to about four carbon atoms; and

R_2 is selected from the group consisting of hydrogen; oxyl O·; alkyl, hydroxy alkyl and epoxyalkyl having from one to about eighteen carbon atoms; alkanoyl having from one to about eighteen carbon atoms; cycloalkyl having from three to about eighteen carbon atoms; phenyl; phenalkyl and alkylphenyl having from seven to about twenty-four carbon atoms.

4,500,664

STABILIZED CARBOXYL-CONTAINING ETHYLENE INTERPOLYMERS

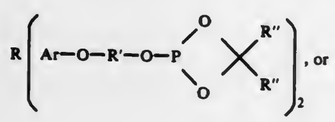
Osborne K. McKinney, and David P. Flores, both of Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 321,668, Nov. 16, 1981, abandoned. This application Aug. 31, 1983, Ser. No. 528,024

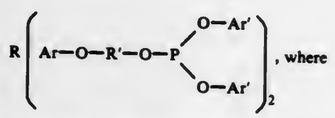
Int. Cl.³ C08K 5/52

U.S. Cl. 524—119 **16 Claims**

1. A composition of matter comprising an ethylene/acrylic acid or ethylene/methacrylic acid interpolymer having incorporated therein a minor amount of at least one aromatic bis(organophosphorous) compound selected from those conforming to the formulae



I.



II.

R' is an alkylene or alkylidene of C_1–C_8,

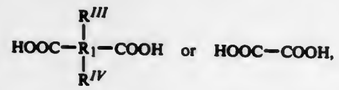
R is an alkylene or alkylidene of C_1–C_8, including those having one or more ether or thioether groups in the molecule,

Ar represents biphenylene or phenylene, whether substituted or not,

Ar' represents, independently of each other, any of the Ar groups described above,

R'' represents alkyl groups of C_1–C_8, including those represented by R and R' described above,

and, in addition thereto, a minor amount of at least one hindered phenolic antioxidant and/or a minor amount of at least one dicarboxylic acid of the formula



where R_1 represents an aliphatic or aromatic grouping containing C_1 to C_{24}, R^{III} and R^{IV} each, independently, represent amino, mercapto, phosphate, carboxyl, or hydroxyl group or hydrogen.

4,500,665

CODISPERSED PARTICULATE LUBRICANT STABILIZER COMPOSITIONS FOR SYNTHETIC RESINS

Lawrence R. Brecker, Brooklyn, and Charles Keeley, Wantagh, both of N.Y., assignors to Argus Chemical Corporation, Brooklyn, N.Y.

Filed Jun. 27, 1983, Ser. No. 507,851

Int. Cl.³ C08K 5/20

U.S. Cl. 524—227 **16 Claims**

1. Codispersed particulate lubricant stabilizer compositions for synthetic resins, the particles consisting essentially of the product prepared by blending from about 4 parts to about 1 part polyvalent metal fatty acid soap with from about 1 part to about 4 parts alkylene-bis-(fatty acid amide), and heating until water of reaction is no longer released.

11. Polyvinyl chloride resin compositions comprising a polyvinyl chloride resin and a codispersed particulate lubricant stabilizer composition according to claim 1.

4,500,666

RUBBER COMPOSITION CONTAINING NON-TACKINESS-IMPARTING AGENT AND CONVEYOR BELT HAVING SURFACE LAYER MADE OF VULCANIZATE OF SAID COMPOSITION

Noriaki Wada, Kobe, Japan, assignor to Bando Chemical Industries, Ltd., Kobe, Japan

Filed May 12, 1983, Ser. No. 494,052

Claims priority, application Japan, May 16, 1982, 57-82796; May 16, 1982, 57-82797; May 16, 1982, 57-82798

Int. Cl.³ C08K 5/20; C08L 7/00, 9/00, 83/04

U.S. Cl. 524—232 **11 Claims**

1. A rubber composition comprising:

(1) 100 parts by weight of a rubber mixture of 98 to 80% by weight of at least one organic rubber selected from the group consisting of natural rubber and organic synthetic diene rubbers and 2 to 20% by weight ofa silicone raw rubber comprising an organo polysiloxane of the formula $-R_2SiO-$, wherein R is alkyl, alkenyl, arlkyl, haloalkyl or cyanoalkyl; said organopolysiloxane having a molecular weight of 100,000 to 1,000,000, and

(2) 0.5 to 50 parts by weight of at least one non-tackiness-imparting agent selected from the group consisting of fatty acid amides.

4,500,667

POLYMER BLENDED MEMBRANES

Anthony J. Polak, Lake Zurich, and Allyson J. Beuhler, Indian Head Park, both of Ill., assignors to UOP Inc., Des Plaines, Ill.

Filed Oct. 26, 1983, Ser. No. 545,704

Int. Cl.³ C08K 3/10

U.S. Cl. 524—406 **7 Claims**

1. A thin film membrane which comprises a blend of: (1) from about 10% to about 70% by weight of a heteropoly acid and salts thereof having the generic formula:

$$A_m[X_xY_yO_z].nH_2O$$

in which X is selected from the group consisting of boron, aluminum, gallium, silicon, germanium, tin, phosphorus, arsenic, antimony, bismuth, selenium, tellurium, iodine, and metals of the first, second, third and fourth transitional metal series of the Periodic Table and where Y is dissimilar from X and is selected from at least one metal of the first, second, third and fourth transitional metal series of the Periodic Table, A is selected from the group consisting of hydrogen, ammonium, sodium, potassium, lithium, rubidium, cesium, beryllium, magnesium, calcium, strontium and barium, m is an integer of from about 1 to 10, y is an integer of from 6 to 12 based on x being equal to 1, z is an integer of from 30 to 80 and n is an integer of from 3 to 100 and, (2) from about 90% to about 30% by weight of a polymer compatible with said compound selected from the group consisting of poly (vinyl alcohol), poly(vinyl fluoride), polyethylene oxide, polyethyleneinine, polyvinylmethylethyl ether and phenol formaldehyde resins.

4,500,668

RESIN COMPOSITION FOR MOLDING MATERIALS

Senzo Shimizu, Odawara; Isao Nomura, Hiratsuka; Kazuo Yamamiya, Chigasaki, and Tsuneaki Masuda, Hiratsuka, all of Japan, assignors to Mitsubishi Gas Chemical Company, Inc., Tokyo, Japan

Filed Sep. 21, 1983, Ser. No. 534,149

Claims priority, application Japan, Sep. 24, 1982, 57-166303

Int. Cl.³ C08K 3/40, 3/26

U.S. Cl. 524—427 **6 Claims**

1. A resin composition for molding materials, said composition comprising

(I) 100 parts by weight of a resin composition composed of

(A) 5 to 95 parts by weight of a polyamide resin composed of 1 to 99% by weight of a polyamide resin obtained from xylylenediamine and an alpha, omega-linear aliphatic dibasic acid and 99 to 1% by weight of nylon 66, and

(B) 95 to 5 parts by weight of a styreneacrylonitrile copolymer containing 5 to 50 mole % of acrylonitrile as a copolymer component, and

(II) 5 to 150 parts by weight of an inorganic filler.

4,500,669

TRANSPARENT, ABRASION RESISTANT COATING COMPOSITIONS

L. T. Ashlock, Lake Forest; Harold Mukamal, Seal Beach, and William H. White, La Puente, all of Calif., assignors to Swedlow, Inc., Garden Grove, Calif.

Continuation of Ser. No. 845,915, Oct. 27, 1977, abandoned. This application Apr. 3, 1980, Ser. No. 136,757

Int. Cl.³ C08K 3/08; C08L 83/06

U.S. Cl. 524—440 **18 Claims**

1. A coating composition which forms a transparent, abrasion-resistant coating upon curing, said coating composition consisting essentially of an effective abrasion-resisting amount of a colloidal dispersion of a water insoluble dispersant in a water-alcohol solution of the partial condensate of R Si $(OH)_3$ where R is an organic radical, and said dispersant is a metal or a metal alloy selected from the group consisting of antimony, aluminum, gold, silver, copper, tin, cadmium, indium and mixtures thereof.

4,500,670

COMPOSITE MIXTURES FOR IMPROVING GEL STRENGTH OF WATER ABSORBENT GELS

Mark J. McKinley, Linwood, and Dan P. Sheridan, Saginaw, both of Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Nov. 22, 1983, Ser. No. 554,156

Int. Cl.³ C08K 3/34

U.S. Cl. 524—445 **22 Claims**

1. An improved water absorbent composition comprising (1) a water absorbing amount of a lightly crosslinked, water-swellable hydrophilic polymer and (2) an inorganic powder in an amount sufficient to increase gel strength exhibited by said water absorbent composition, wherein said composition is prepared by physically blending said inorganic powder with said polymer and wherein said powder is blended with said polymer after the polymer has been polymerized and crosslinked.

4,500,671

REINFORCED POLYURETHANE THERMOPLASTIC CHEMICAL MATERIALS AND PROCESSES FOR THEIR PREPARATION

Wilhelm Goyert, Cologne; Wolfgang Grimm, Leverkusen; Albert Awater, Odenthal; Hans Wagner, Dormagen, and Bruno Krüger, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Bayerwerk, Fed. Rep. of Germany

Continuation of Ser. No. 103,003, Dec. 13, 1979, abandoned. This application Jun. 1, 1984, Ser. No. 616,452

Claims priority, application Fed. Rep. of Germany, Dec. 16, 1978, 2854406

Int. Cl.³ C08K 3/40; C08L 75/04, 55/02

U.S. Cl. 524—494 **20 Claims**

1. Thermoplastic chemical material comprising

(A) from 60 to 97%, by weight, based on (A)+(B), of a thermoplastic polyurethane; and

(B) from 40 to 3%, by weight, based on (A)+(B), of glass fiber reinforcing material; and

(C) from 36 to 3 parts, by weight, based on 100 parts of (A)+(B), of a polar polymer containing at least 30% by weight of butadiene, isoprene and/or acrylic acid ester units which is a graft polymer having a rubbery polymer backbone containing butadiene, isoprene and/or acrylic ester units and grafted polar monomer selected from the group consisting of acrylic acid alkyl esters, methacrylic acid alkyl ester and/or acrylonitrile, styrene, α-methyl styrene and mixtures thereof in which the proportion, by weight of graft polymer backbone to graft monomer is in the range from 50:50 to 95:5.

4,500,672

RUBBER COMPOSITION COMPRISING FURNACE CARBON BLACK

Hiroaki Suzuki, and Shinji Misono, both of Aichi, Japan, assignors to Tokai Carbon Co., Ltd., Tokyo, Japan

Filed Nov. 2, 1983, Ser. No. 548,128

Claims priority, application Japan, Oct. 11, 1982, 57-196022

Int. Cl.³ C08K 3/04

U.S. Cl. 524—496 **5 Claims**

1. A rubber composition prepared by compounding 100 parts by weight of a rubber component with 25 to 250 parts by weight of carbon black which belongs to a furnace carbon black having the property range of an electron-microscopic average particle diameter (dn) of above 31 millimicron, an iodine adsorption number of 35 to 60 mg/g, and a dibutyl phthalate absorption number (DBP) of 90 to 150 ml/100 g, and which has a selected property in that the Dst mode diameter (mμ) is below the value obtained from the following equation:

$$Dst = 2.65 \times dn + 0.64 \times DBP - 27.56.$$

4,500,673

VINYLIDENE CHLORIDE AND STYRENE-CONTAINING COPOLYMER LATICES

James E. Devona, Mount Prospect, and Martin L. Essigmann, Palatine, both of Ill., assignors to DeSoto, Inc., Des Plaines, Ill.

Filed Nov. 21, 1983, Ser. No. 553,566

Int. Cl.³ C08L 39/00

U.S. Cl. 524—548 **8 Claims**

1. An aqueous latex comprising an aqueous emulsion copolymer of monomers consisting essentially of from 10% to 30% of vinylidene chloride together with a mixture of 20% to about 50% of styrene, and from 40% to 60% of monoethylenic ester, said mixture of monomers providing the copolymer with a glass transition temperature in the range of −10° C. to +10° C., and from about 0% to 10.0% of a monomer promoting adhesion, said proportions being based on the total weight of monomers copolymerized.

4,500,674

HIGH TEMPERATURE POLYMER CONCRETE COMPOSITIONS

Jack J. Fontana, and Walter Reams, both of Shirley, N.Y., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed May 29, 1984, Ser. No. 614,508
Int. Cl.³ C04B 7/02; C08K 3/34
U.S. Cl. 524—650 **5 Claims**

1. A composition for preparing a polymer concrete consisting of two components, (a) Component A, the aggregate, consisting essentially of silica sand, silica flour, and portland cement in the following concentrations:

Silica sand	60–77	wt. %
Silica flour	5–10	wt. %
Portland cement	15–20	wt. %
Acrylamide	1–5	wt. %

and (b) Component B, the monomer system, consisting essentially of styrene and trimethylolpropane trimethacrylate in the following concentrations:

Styrene	50–60 wt. %
Trimethylolpropane trimethacrylate	35–40 wt. %

and necessary initiators, accelerators, and surfactants.

4,500,675

STABLE DISPERSIONS OF POLYMERS IN POLYFUNCTIONAL COMPOUNDS HAVING A PLURALITY OF ACTIVE HYDROGENS

Thomas E. Fisk, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Mar. 7, 1983, Ser. No. 472,533
Int. Cl.³ C08K 5/05, 5/06; C08J 3/08; C08L 75/04
U.S. Cl. 524—762 **11 Claims**

1. a stable improved copolymer dispersion which comprises:
(A) a polyahl having dispersed therein;
(B) an addition copolymerizate of (1) a monomeric adduct of (a) an active ethylenically unsaturated N-(halosulfonyl)-carbamyl monomer or an active ethylenically unsaturated N-(halocarbonyl)carbamyl monomer and (b) a monoahl or a polyahl with (2) at least one other ethylenically unsaturated monomer; or
(C) (1) an addition copolymer of a carbamyl monomer with at least one other ethylenically unsaturated monomer and (2) a monoahl or polyahl; or
(D) a mixture of (B) and (C); or
(E) a mixture of (B) and/or (C) and a polymer of at least one other ethylenically unsaturated monomer;
provided that in the copolymer dispersion, the mole ratio of polymerized carbamyl monomer to monoahl or polyahl is at least about 0.001:1 and less than an amount at which gelation occurs.

4,500,676

HYALURONATE MODIFIED POLYMERIC ARTICLES

Endre A. Balazs, Riverdale, and Adolf Leshchiner, Brooklyn, both of N.Y., assignors to Biomatrix, Inc., Ridgefield, N.J.

Filed Dec. 15, 1983, Ser. No. 561,816
Int. Cl.³ C08F 8/00
U.S. Cl. 525—54.2 **23 Claims**

1. A composition of matter comprising a polymeric material modified by the inclusion therein of hyaluronic acid or a salt thereof.

4,500,677

RESIN COMPOSITION EXCELLENT IN DRAWABILITY

Yoshitsugu Maruhashi; Fumio Kano, both of Yokohama; Muneki Yamada, Fujisawa, and Sadao Hirata, Kamakura, all of Japan, assignors to Toyo Seikan Kaisha, Ltd., Tokyo, Japan

Filed Jan. 25, 1983, Ser. No. 460,757
Claims priority, application Japan, Jan. 29, 1982, 57-11741
Int. Cl.³ C08L 23/08, 29/04, 77/00
U.S. Cl. 525—57 **9 Claims**

1. A resin composition excellent in the drawability, which comprises (A) a saponified ethylene-vinyl ester copolymer having an ethylene content of 20 to 55 mole % and a saponification degree of at least 95%, (B) a saponified ethylene-vinyl ester copolymer having an ethylene content of 25 to 60 mole % and a saponification degree of at least 90%, the ethylene content of the saponified copolymer (B) being higher by at least 3 mole % than the ethylene content of the saponified copolymer (A), and (C) a polyamide having a film-forming molecular weight, wherein the weight ratio of the saponified copolymer (A) to the saponified copolymer (B) is in the range of from 90/10 to 10/90 and the weight ratio of the sum of the saponified copolymers (A) and (B) to the polyamide (C) is in the range of from 95/5 to 5/95.

4,500,678

LUBRICANT COMPRISING A PARTIALLY DEFLUORINATED GRAPHITE FLUORIDE

Yasushi Kita; Shirou Morol; Akira Sakanone, and Hisaji Nakano, all of Ube, Japan, assignors to Central Glass Co., Ltd., Yamaguchiken, Japan

Filed Jul. 18, 1983, Ser. No. 514,792
Claims priority, application Japan, Jul. 19, 1982, 57-125370
Int. Cl.³ C10M 7/04, 1/10
U.S. Cl. 252—58 **14 Claims**

1. A lubricant comprising a partially defluorinated graphite fluoride obtained by a process comprising dispersing a graphite fluoride in a dispersion medium to obtain a dispersion, exposing the dispersion to electromagnetic radiation to effect partial degradation of the graphite fluoride in the dispersion so that the fluorine atoms in the graphite fluoride are partially removed, and separating the resulting partially degraded graphite fluoride from the dispersion.

4,500,679

POLYBLENDS OF THERMOPLASTIC COPOLYETHERESTERS STYRENE-MALEIC ANHYDRIDE POLYMERS, AND ACRYLONITRILE-BUTADIENE-STYRENE POLYMERS

Daniel L. DuFour, Longmeadow, Mass., assignor to Monsanto Company, St. Louis, Mo.

Filed Aug. 9, 1982, Ser. No. 406,407
Int. Cl.³ C08L 67/02, 51/04, 55/02
U.S. Cl. 525—64 **15 Claims**

1. A polyblend consisting essentially of:
A. from 3 to 90% by weight of a thermoplastic copolyether-ester elastomer;
B. from 5 to 70% by weight of a polymer of a vinylaromatic monomer and an unsaturated dicarboxylic acid anhydride monomer and optionally a termonomer, selected from the group consisting of C_1 to C_3 acrylates and methacrylates and unsaturated nitriles, wherein the relative amounts by weight of the monomers in the polymer are 50 to 85% of the vinylaromatic monomer, 15 to 35% of the dicarboxylic acid anhydride and 0 to 20% of the termonomer; and wherein the monomers are polymerized in the presence of 0 to 25% by weight of a rubber having a glass transition temperature below 0° C.; and
C. from 5 to 70% by weight of a grafted polymer composition comprising a graft polymer of from 20 to 40 parts by weight of a monomer selected from the group consisting of methyl methacrylate and acrylonitrile and 80 to 60 parts by weight of a vinyl aromatic monomer, the polymer being grafted onto a substrate rubber having a glass transition temperature below 0° C. wherein the monomers are polymerized in the presence of and grafted onto the substrate rubber, wherein the weight percent of the rubber is in the range from 5 to 60% by weight based on the weight of the composition;
and wherein the weight percent for Components (A), (B) and (C) is based on the total amount of Components (A), (B) and (C) in the polyblend.

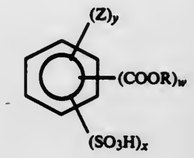
4,500,680

AROMATIC ACID CATALYSTS PROVIDING IMPROVED HUMIDITY RESISTANCE

Debra L. Singer, Pittsburgh; Gregory J. McCollum, Glenshaw; Rostyslaw Dowbenko, and James B. O'Dwyer, both of Gibsonia, all of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Nov. 14, 1983, Ser. No. 551,389
Int. Cl.³ C08L 61/20, 67/00, 75/00
U.S. Cl. 525—143 **12 Claims**

1. In a curable composition comprising an active hydrogen-containing resin which is essentially free of glycidyl groups, a curing agent present externally and/or internally as a part of the active hydrogen-containing resin, and an acid catalyst, wherein the improvement comprises using as the acid catalyst a catalytic amount of a sulfonic acid having a molecular weight of less than 500 and represented by the following structural formula:



wherein:
Z is a radical independently selected from C_1 to C_{20} alkyl, C_3 to C_{20} cylcoalkyl, C_6 to C_{18} aryl, halogen, alkoxy, hydroxyl, and aryloxy;
R is independently selected from C_1 to C_{20} alkyl, C_3 to C_{20} cycloalkyl and C_6 to C_{18} aryl;
y is an integer from 0 to 4;
w is an integer from 0 to 2;
x is an integer from 1 to 3, with the proviso that when w is 0, y is an integer from 1 to 4 and x is an integer from 2 to 3 and when y is 0, w is an integer from 1 to 2 and x is an integer from 1 to 2.

4,500,681

THERMOPLASTIC BLEND OF POLYOLEFIN, ISOBUTYLENE-BACKBONE ELASTOMER AND ETHYLENE COPOLYMER

Cindy B. Shulman, Cliffside Park, N.J., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Dec. 27, 1982, Ser. No. 453,727
Int. Cl.³ C08L 23/22, 23/10, 31/04, 33/08
U.S. Cl. 525—222 **23 Claims**

1. A thermoplastic elastomeric blend composition comprising:
(a) from about 20 to about 65 weight percent isotactic polypropylene or polypropylene reactor copolymer containing about 1 to about 20 weight percent of an alpha-olefin comonomer or mixtures thereof,
(b) from about 20 to about 60 weight percent of an isobutylene-backbone elastomer component, and
(c) from about 7 to about 40 weight percent of a copolymer component of ethylene and an unsaturated ester of a lower carboxylic acid.

4,500,682

HIGH MELT-VISCOELASTIC POLYPROPYLENE FOR POST-PROCESSED SHEETS AND FOR BLOW MOLDING

Hiromasa Chiba; Kenjiro Obama; Shunji Kawazoe; Takahiro Oka, and Akihiro Sato, all of Chibaken, Japan, assignors to Chisso Corporation, Osaka, Japan

Filed May 18, 1983, Ser. No. 495,655
Claims priority, application Japan, May 19, 1982, 57-84447
Int. Cl.³ C08L 23/12, 23/16
U.S. Cl. 525—240 **4 Claims**

1. A polypropylene for post-processed sheets and for blow molding which is characterized in that
(1) said polypropylene is obtained by polymerizing propylene at multiple stages by the use of a catalyst comprising a titanium trichloride composition and an organoaluminum compound and a molecular weight modifier;
(2) the resulting final polymer comprising a higher molecular weight portion and a lower molecular weight portion has a melt flow index (MI) of 0.03 to 2.0 g/10 minutes, and between this melt flow index and a melt flow index (HMI) (10.2 kg/10 minutes, 230° C.) as measured under 5 times the load applied in the measurement of the former melt flow index, there is a relationship

$$\log HMI \geqq 0.922 \log MI + 1.44 \quad (1);$$ and

(3) said final polymer consists of 40 to 60% by weight of a polypropylene portion corresponding to said higher molecular weight portion and 60 to 40% by weight of a polypropylene portion corresponnding to said lower molecular weight portion, the intrinsic viscosity of the higher molecular weight portion, $[\eta]_H$, and that of the lower molecular weight portion N_L, having the relationship: $3.0 \leqq [\eta]_H - [\eta]_L \leqq 6.5$.

4,500,683

PRESSURE-SENSITIVE ADHESIVE COMPOSITION

Yutaka Hori; Makoto Sunakawa; Kikuo Takayama; Naoki Matsuoka, and Yutaka Moroishi, all of Osaka, Japan, assignors to Nitto Electric Industrial Co., Ltd., Osaka, Japan

Continuation of Ser. No. 177,046, Aug. 11, 1980, abandoned.
This application Jun. 8, 1984, Ser. No. 618,329
Claims priority, application Japan, Aug. 11, 1979, 54-102532
Int. Cl.³ C08L 51/04, 33/08, 33/10
U.S. Cl. 524—533 **17 Claims**

1. A pressure-sensitive adhesive composition containing as a polymer component an addition-polymerization polymer of an acrylate or methacrylate polymer having sticking properties at room temperature and one or more ethylenically unsaturated monomers capable of forming a homo- or co-polymer having a glass transition point of at least 273° K., said addition-polymerization polymer being produced by polymerizing one or more ethylenically unsaturated monomers in the presence of the acrylate or methacrylate polymer having sticking properties at room temperature, wherein the ethylenically unsaturated monomer is selected from at least one member of the group consisting of (a) styrene and a styrene derivative, (b) vinyl acetate, (c) acrylonitrile, (d) methacrylonitrile, (e) an acrylate derivative, and (f) a methacrylate derivative, each being capable of forming a homopolymer having a glass transition point of at least 273° K.

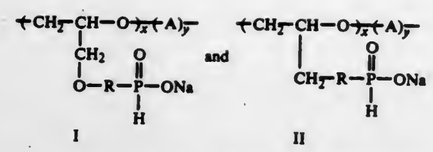
4,500,684

HYDROPHOSPHONYLATED DERIVATIVES OF GLYCIDYL ETHER POLYMERS

Harold A. Tucker, Shaker Heights, Ohio, assignor to The B. F. Goodrich Company, Akron, Ohio

Filed Dec. 30, 1983, Ser. No. 567,287
Int. Cl.³ C08F 8/42
U.S. Cl. 525—327.3 **6 Claims**

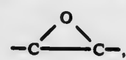
1. A water soluble hydrophosphonylated polymeric compound having the structure selected from the group consisting of:



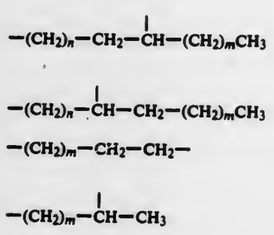
I

II

wherein x ranges from about 5 to about 10^6, y ranges from 0 to about 10^6, A is interpolymerized units of one or more epoxides having the oxirane group



and R is



n is 0 to 19, and m is 0 to 20.

4,500,685

METHOD OF MODIFYING VULCANIZED RUBBER SURFACE WITH HALOGENATING AGENTS

Masaki Ogawa, Kodaira, and Yasuro Shiomura, Higashimurayama, both of Japan, assignors to Bridgestone Tire Company Limited, Tokyo, Japan

Filed Oct. 25, 1983, Ser. No. 545,287
Claims priority, application Japan, Oct. 29, 1982, 57-190517
Int. Cl.³ C08F *8/22, 8/20*
U.S. Cl. 525—343 **4 Claims**

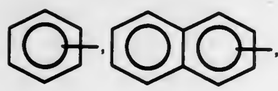
1. A method of modifying a surface of vulcanized rubber, comprising the steps of:

(a) applying a surface modifying composition to the surface of a vulcanized rubber selected from at least one member of the group consisting of natural rubber, polyisoprene rubber, polybutadiene rubber, polychloroprene rubber, styrene-butadiene copolymer rubber, isoprene-butadiene copolymer rubber, isobutylene-isoprene copolymer rubber, ethylene-propylenediene terpolymer rubber, halogenated isobutylene-isoprene copolymer rubber and acrylonitrile-butadiene copolymer rubber, wherein said surface modifying composition comprises:

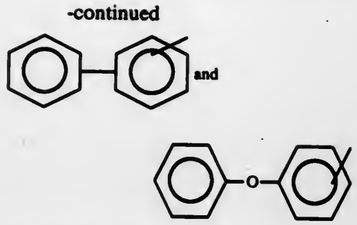
(i) a halogen-releaseable halogenoid represented by the general formula:

$$R—SO_2NX_2 \text{ or } R'_m—(Ar)—(SO_2NX_2)_n$$

wherein X is a halogen atom, R and R' represent an aliphatic hydrocarbon residue having 1–6 carbon atoms and further R' may be a hydrogen atom or a halogen atom, Ar is a residue selected from the group consisting of:



-continued



and m and n are an integer of 1-3, respectively, and

(ii) a non-solvent type waxy substance having a melting point of not more than 100° C.;

(b) modifying the thus coated surface of the vulcanized rubber by heating at 60°–150° C.

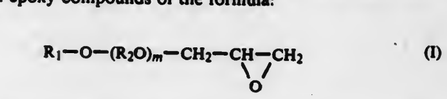
4,500,686

POLYESTER TYPE BLOCK COPOLYMER COMPOSITION

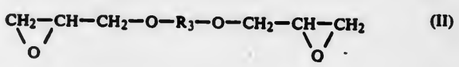
Takuma Kobayashi; Hironobu Kitagawa, and Shigeo Kobayashi, all of Otsu, Japan, assignors to Toyo Boseki Kabushiki Kaisha, Osaka, Japan

Filed Mar. 18, 1983, Ser. No. 476,652
Claims priority, application Japan, Mar. 19, 1982, 57-44908
Int. Cl.³ C08L *67/02, 67/04*
U.S. Cl. 525—408 **2 Claims**

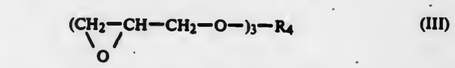
1. A polyester type block copolymer which comprises a polyester type block copolymer obtained from a crystalline aromatic polyester and a lactone in the ratio of 95/5 to 30/70 by weight, in melt-admixture with at least one epoxy compound, said epoxy compound being incorporated in an amount of 0.1 to 20% by weight based on the weight of the polyester type block copolymer, said epoxy compound being a member selected from the group consisting of mono-, di- and tri-functional epoxy compounds of the formula:



(I)



(II)



(III)

wherein R_1 is a hydrocarbon group having 1 to 10 carbon atoms, R_2 is an alkylene group having 1 to 4 carbon atoms, R_3 is a divalent hydrocarbon group having 1 to 20 carbon atoms or $—(R_2O)m—R_2—$, R_4 is a trivalent hydrocarbon group having 3 to 20 carbon atoms, and m is an integer of 0 to 20.

4,500,687

ELASTOMERIC POLYETHER-CONTAINING IMPACT POLYMER PRODUCTS

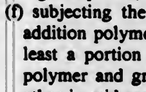
David L. Wolfe, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Jun. 18, 1981, Ser. No. 275,071
Int. Cl.³ C08F *283/06*
U.S. Cl. 525—412 **54 Claims**

1. A process to prepare polyether elastomer-modified impact-resistant polymer product(s) comprising the steps of:

(a) at least one major monomer an ethylenically unsaturated, addition-polymerizable monomer which is graft-copolymerizable with epoxy monomers of formula (II) and polyether polymers of such epoxy monomers and

(b) dissolving in said major monomer of step (a) a minor proportion of at least one monomer copolymerizable with the major monomer of the formula:



(II)

wherein Y is R_1 or CH_2OR_2; R_1 is H, an aliphatic hydrocarbyl group of 1 to about 20 carbon atoms, a chloromethyl or a bromomethyl group; and R_2 is is with or without ethylenic unsaturated a acyl residue of a carboxylic acid containing from 1 to about 30 carbon atoms or a hydrocarbyl group of from 1 to about 20 carbon atoms which may bear other inert substituents; and at some point from said step (a) to after completion of said step (b);

(c) adding to the monomer a catalytically effective quantity of a coordination catalyst for polymerization of monomers of the formula (II) the catalyst comprising the product of contacting:

(i) component A which is a compound of the formula:

$$RR'AlX, \text{ (III)}$$

wherein R and R' each independently are an alkyl group of 1 to about 4 carbon atoms and X is hydrogen, an alkyl or alkoxy group of 1 to about 4 carbon atoms;

(ii) component B, an organic nitrogen-based compound selected from secondary nitrogen-containing compounds that have a basicity which is about equal to or less than the basicity of dimethylamine and no active hydrogen atoms therein other than those of the secondary nitrogen;

(iii) component C, a β-diketone; and

(iv) component D which is water the contacting being done employing the following molar ratios:

B:A—about 0.01–2.5:1
C:A—about 0.1–1.5:1
D:A—about 0.1–1.2:1

all provided that when the molar ratio sum of (C+2D):A is greater than about 3:1, then the B:A molar ratio must at least be about 1:1;

(d) polymerizing the monomer of the formula (II) until at least a portion of said formula (II) monomer are converted and pre-formed in situ in a reaction mixture of the components (a), (b) and (c), to a polyether;

(e) deactivating any unconsumed catalyst in said reaction mixture by addition of an active hydrogen atom containing compound; after any one of the steps (d), (f) and (g);

(f) subjecting the said major monomer defined in (a) to addition polymerization in said reaction mixture until at least a portion of the major monomer is converted to polymer and graft-polymers with said pre-formed polyether in said reaction mixture; and

(g) removing from said reaction mixture, a polyether elastomer-modified, impact-resistant polymer material.

4,500,688

CURABLE SILICONE CONTAINING COMPOSITIONS AND METHODS OF MAKING SAME

Barry C. Arkles, Oreland, Pa., assignor to Petrarch Systems Inc., Levittown, Pa.

Filed Apr. 20, 1982, Ser. No. 370,000
Int. Cl.³ C08L *59/00, 69/00, 75/06, 77/06*
U.S. Cl. 525—431 **22 Claims**

1. A melt processable composition comprising a silicone component which will be vulcanized by the reaction of a hydride-containing silicone within a polymeric thermoplastic matrix to form a silicone pseudointerpenetrating polymer network, said vulcanization of said silicone component by reaction of said hydride-containing silicone being initiated during thermoplastic melt-mixing of said component with said matrix.

4,500,689

LOW COST POLYESTER MODIFIED PHENOLIC RESIN CONTAINING A COMBINATION OF LONG AND SHORT CHAIN ALKYLPHENOLS

Charles H. Thomas, Monroeville, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Dec. 30, 1983, Ser. No. 567,449
Int. Cl.³ C08L *67/08*
U.S. Cl. 525—442 **8 Claims**

1. A resinous insulating solution comprising:

(A) polyester resin solution, and

(B) a solution of a reaction product of a combination of:

(1) long chain alkyl phenol, where alkyl contains from 8 to 10 carbon atoms, combined with short chain alkyl phenol, where alkyl contains from 3 to 6 carbon atoms, where the combination contains from about 20 wt.% to about 75 wt.% of long chain alkyl phenol,

(2) crosslinking agent selected from the group consisting of cresylic acid, phenol, and mixtures thereof,

(3) aldehyde, and

(4) alkali catalyst, where polyester resin solids comprise from about 25 solids weight percent to about 75 solids weight percent of the insulating solution.

4,500,690

THERMOSETTING POLYMERS FROM AROMATIC ALDEHYDES, AZINES AND ISOPROPENYL PHENOLS

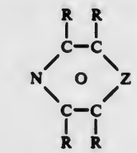
Randy J. LaTulip, Lake Jackson, Tex., assignor to The Dow Chemical Company, Midland, Mich.

Filed May 11, 1984, Ser. No. 609,156
Int. Cl.³ C08G *14/06, 14/12*
U.S. Cl. 525—502 **10 Claims**

1. A thermosetting prepolymer which comprises the resinous reaction product of

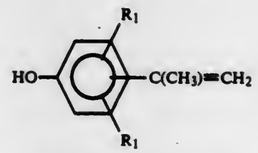
(A) one or more aromatic dialdehydes,

(B) one or more azine compounds having the formula



where Z is N, C—CH_3, or C—CH_2—CH_3, or C—H R is hydrogen, methyl, or ethyl, whereby the total number of methyl groups substituted on the ring is in the range from 2–4, and

(C) a member of the group consisting of (1) monomeric para or meta ispropenyl phenols having the formula



wherein R_1 is hydrogen, or a group inert to the polymerization reaction, (2) dimers of said phenols, and (3) mixtures thereof.

4,500,691

PHENOL-NOVOLAKS CONTAINING AMINO GROUPS

Friedrich Stockinger, Hölstein, and Theobald Haug, Frenkendorf, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Jan. 6, 1984, Ser. No. 568,685

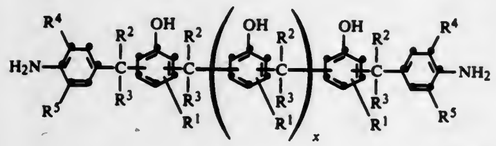
Claims priority, application Switzerland, Jan. 13, 1983, 173/83

Int. Cl.³ C08L *61/14, 61/16;* C08G *8/16, 8/28*

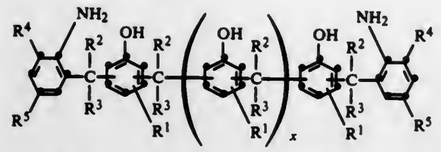
U.S. Cl. 525—503 3 Claims

1. A phenol-novolak, containing amino groups, having the formula VI or VII

(VI)



(VII)



in which R^1 is bonded in the o- or position relative to the phenolic OH group and is a halogen atom, a nitro group, linear or branched alkyl having not more than 6 C atoms, alkoxy having not more than 6 C atoms or phenyl, R^2 is a hydrogen atom, linear or branched alkyl having not more than 8 C atoms, cycloalkyl having 5 or 6 C atoms, phenyl or furfuryl, R^3 is a hydrogen atom or linear or branched alkyl having not more than 8 C atoms, R^4 and R^5 independently of one another are each linear or branched alkyl which has not more than 6 C atoms in the alkyl radical and is unsubstituted or substituted by halogen atoms, nitro or cyano groups or alkoxy having not more than 4 C atoms, or a halogen atom or a nitro or cyano group, and x has an average value from 1 to 8.

4,500,692

PROCESS FOR BEAD SIZE CONTROL IN VINYL AROMATIC SUSPENSION POLYMERIZATION USING SODIUM POLYSTYRENESULPHONATE

Harold A. Wright, Murrysville, Pa., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed Sep. 13, 1982, Ser. No. 417,306

Int. Cl.³ C08F *2/20*

U.S. Cl. 526—201 9 Claims

1. In a process for producing polymer beads from a vinyl aromatic monomer, by suspending the monomer containing a monomer-soluble, free radical-producing catalyst in an aqueous medium, with the aid of from 0.1 to 4.0 percent by weight based on monomer of a finely divided, difficultly water-soluble phosphate suspending agent and subjecting the suspension to an elevated temperature to cause said monomer to polymerize; the improvement of producing large sized spherical polymer beads having an average particle size greater than 1000 microns and having a narrow distribution of bead diameter sizes which consists of adding to said suspension between 0.0001 to 0.0040 percent by weight, based on monomer, of a sodium polystyrenesulfonate.

4,500,693

WATER SOLUBLE COPOLYMER METHOD FOR MANUFACTURE THEREFORE AND USE THEREOF

Hidetoshi Takehara, Tatsuno; Shorbu Shioji, and Yohichi Nakagawa, both of Himeji, all of Japan, assignors to Nippon Shokubai Kagaku Kogyo Co., Ltd., Osaka, Japan

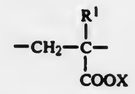
Continuation of Ser. No. 395,883, Jul. 7, 1982, abandoned. This application May 25, 1984, Ser. No. 614,695

Claims priority, application Japan, Jul. 7, 1981, 56-105027; Jul. 8, 1981, 56-105635; Feb. 26, 1982, 57-28863; Mar. 9, 1982, 57-35854

Int. Cl.³ C08F *220/04*

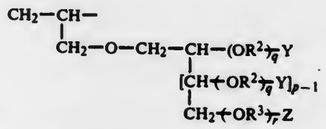
U.S. Cl. 526—240 22 Claims

1. A water-soluble copolymer, comprising 50 to 99.5 mol% of repeating units represented by the general formula I:



(I)

wherein, R^1 denotes A hydrogen atom or methyl group and X a hydrogen atom, alkali metal atom, alkaline earth metal atom, ammonium group or organic amine group, and 50 to 0.5 mol% of repeating units represented by the general formula II:



(II)

wherein, p denotes an integer of the value of 1 to 4, q and r independently denote O or an integer of the value of 1 to 100, R^2 and R^3 independently denote an alkylene group of 2 to 4 carbon atoms, Y denotes a hydroxyl group, and Z denotes a monovalent sulfonic acid group or an alkali metal salt thereof.

4,500,694

OPTICAL MATERIALS

Akira Ohmori, Ibaraki; Nobuyuki Tomihashi, Takatsuki, and Takahiro Kitahara, Settsu, all of Japan, assignors to Daikin Kogyo Co., Ltd., Japan

Filed May 3, 1983, Ser. No. 491,234

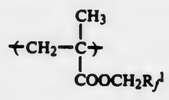
Claims priority, application Japan, May 7, 1982, 57-76936

Int. Cl.³ C08F *214/18*

U.S. Cl. 526—245 5 Claims

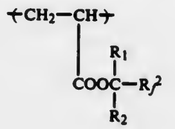
1. An optical material comprising a thermal resisting fluoroalkylmethacrylate copolymer which essentially consists of:

(a) about 70 to about 99 mol % of fluorine-containing methacrylate monomer unit of the formula



wherein R_f^1 represents a fluoroalkyl group having 1 to 3 carbon atoms and

(b) about 1 to about 30 mol % of a fluorine-containing acrylate monomer unit of the formula



wherein R_1 and R_2 are the same or different and represents a hydrogen atom or a lower alkyl group and R_f^2 represents a fluoroalkyl group having 1 to 3 carbon atoms.

4,500,695

SILICONE-VINYL ACETATE COMPOSITION FOR CONTACT LENSES

Edward J. Ivani, 2360 E. 74th St., Brooklyn, N.Y. 11234

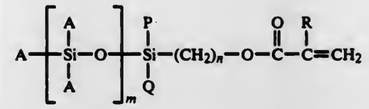
Continuation-in-part of Ser. No. 322,266, Nov. 17, 1981, Pat. No. 4,410,674. This application Jun. 13, 1983, Ser. No. 503,904

The portion of the term of this patent subsequent to Oct. 18, 2000, has been disclaimed.

Int. Cl.³ C02C *7/04;* C08F *218/08, 230/08*

U.S. Cl. 526—279 8 Claims

1. A composition specially adapted for the manufacturing of contact lenses having increased oxygen permeability, consisting essentially of a copolymer of comonomers consisting of about 2-98 parts by weight of a vinyl siloxane monomer copolymerized with 98-2 parts by weight of vinyl acetate, the vinyl siloxane monomer being a polysiloxanylalkyl ester having as its structure:



wherein P and Q are selected from the group consisting of (C_1-C_7) alkyl, phenyl and Z groups; Z is



wherein A is selected from the group consisting of (C_1-C_7) alkyl and phenyl groups; R is selected from the group consisting of methyl, ethyl, and butyl groups and hydrogen; m and n are integers of at least 1 and less than 8.

8. As a new article of manufacture, a contact lens having an increased oxygen permeability, consisting essentially of the compositions of claim 1 or 2.

4,500,696

POWDER SURFACE COATINGS

Rainer Gras, Bochum, Fed. Rep. of Germany, assignor to Chemische Werke Huls Aktiengesellschaft, Marl, Fed. Rep. of Germany

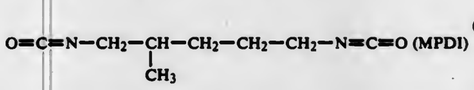
Filed Jun. 19, 1984, Ser. No. 622,178

Claims priority, application Fed. Rep. of Germany, Jun. 24, 1983, 3322719

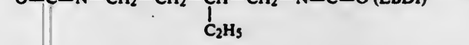
Int. Cl.³ C08G *18/80*

U.S. Cl. 528—45 14 Claims

1. Powder surface coatings comprising polyols and a polyisocyanate component, wherein said polyisocyanate component comprises blocked adducts of 2-methyl-1,5-pentanediisocyanate, 2-ethyl-1,4-butanediisocyanate or a mixture thereof according to formulas (I) and (II):



(I)



(II)

wherein the diisocyanate mixture of (I) and (II) has about 88 to 99% by weight of (I) and about 12 to 1% by weight of (II), and wherein the latent NCO content of said blocked adducts is about 7 to 18% by weight, and the free NCO content is less than or equal to 2% by weight.

4,500,697

MIXTURE OF SUBSTANCES SUITABLE FOR USE AS A POWDER VARNISH OR BINDER FOR POWDER VARNISHES

Josef Disteldorf, Herne, and Rainer Gras, Bochum, both of Fed. Rep. of Germany, assignors to Chemische Werke Huls Aktiengesellschaft, Marl, Fed. Rep. of Germany

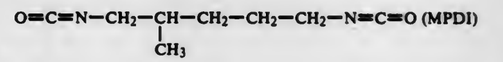
Filed Jun. 19, 1984, Ser. No. 622,180

Claims priority, application Fed. Rep. of Germany, Jun. 24, 1983, 3322718

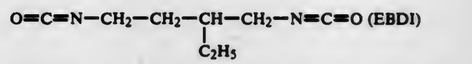
Int. Cl.³ C08G *18/80*

U.S. Cl. 528—45 12 Claims

1. A mixture of substances suitable as a powder varnish or a binder for powder varnishes consisting essentially of an isocyanate component with partially or totally blocked isocyanate groups, and a polyhydroxyl component, wherein mixed trimers or mixtures of individual trimers are used as the isocyanate component from a mixture consisting essentially of 2-methyl-1,5-diisocyanatopentane (MPDI) and 2-ethyl-1,4-diisocyanatobutane (EBDI) having the formulas:



(MPDI)



(EBDI)

in the amounts of about 88 to 99% by weight of (MPDI) and about 12 to 1% by weight of (EBDI), in combination with 3-isocyanato-3,5,5-trimethyl-cyclohexylisocyanate (IPDI) or mixed urethane adducts or a mixture of individual urethane adducts obtained from the reaction of the MPDI/EBDI mixture in combination with IPDI with diols or triols or a mixture thereof.

4,500,698

ONE-COMPONENT BAKING ENAMELS

Josef Disteldorf, Herne, and Rainer Gras, Bochum, both of Fed. Rep. of Germany, assignors to Chemische Werke Huls Aktiengesellschaft, Marl, Fed. Rep. of Germany

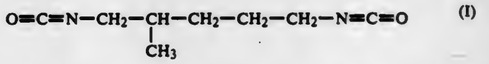
Filed Jun. 19, 1984, Ser. No. 622,196

Claims priority, application Fed. Rep. of Germany, Jun. 24, 1983, 3322721

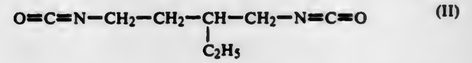
Int. Cl.³ C08G *18/80*

U.S. Cl. 528—45 11 Claims

1. One-component baking enamels comprising polyesters, which contain hydroxyl groups, and a polyisocyanate component, wherein the polyisocyanate component is a totally or partially blocked adduct or adducts of a mixture of 2-methyl-1,5-diisocyanatopentane (I) and 2-ethyl-1,4-diisocyanatobutane (II) according to the formulas (I) and (II):



(I)



(II)

wherein said mixture of diisocyanates comprises about 88 to 99% by weight of totally or partially blocked 2-methyl-1,5-diisocyanatopentane and about 12 to 1% by weight of totally or partially 2-ethyl-1,4-diisocyanatobutane.

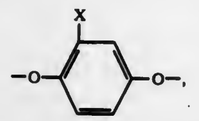
4,500,699

OPTICALLY ANISOTROPIC MELT FORMING COPOLYESTERS

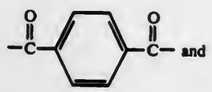
Robert S. Irwin, Wilmington, and Francis M. Logullo, Sr., Hockessin, both of Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jun. 26, 1984, Ser. No. 624,829
Int. Cl.³ C08G *63/18*
U.S. Cl. 528—128 **8 Claims**

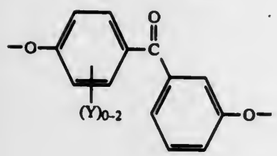
1. A copolyester consisting essentially of Units I, II and III, said units having the structural formulas:



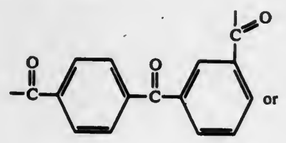
I



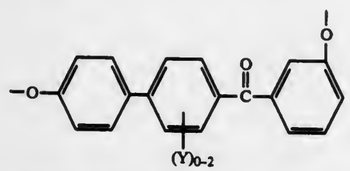
II



III



or



where X is chloro, bromo, methyl, ethyl or phenyl, and Y is chloro or methyl with the proviso that Y substituents are not in both 2' and 6' positions; in the proportions of from about 30 to 50 mol % of Unit I, from about 30 to 50 mol % of Unit II and from about 10 to 20 mol % of Unit III.

4,500,700

ELASTOMERIC COMPOSITE MATERIAL COMPRISING A POLYPENTAPEPTIDE HAVING AN AMINO ACID OF OPPOSITE CHIRALITY IN POSITION THREE

Dan W. Urry, Birmingham, Ala., assignor to The Board of Trustees of the University of Alabama for the University of Alabama in Birmingham, Birmingham, Ala.

Continuation-in-part of Ser. No. 308,091, Oct. 2, 1981, Pat. No. 4,474,851. This application Dec. 23, 1982, Ser. No. 452,801
Int. Cl.³ C08G *69/10*
U.S. Cl. 528—328 **9 Claims**

1. An elastomeric material, comprising:

an elastomeric polypeptide, wherein said polypeptide comprises pentapeptide repeating units consisting of a first amino carboxylic acid residue, a second amino carboxylic acid residue, a third amino carboxylic acid residue, a fourth amino carboxylic acid residue and a fifth amino carboxylic acid residue, wherein said repeating units comprise amino carboxylic acid residues selected from the group consisting of hydrophobic amino carboxylic acid and glycine residues wherein said residues are amino carboxylic acids which are missing a hydrogen of an amino group and a hydroxyl of a carboxyl group, wherein the third amino carboxylic acid residue of at least one repeating unit of said polypeptide has a D configuration if the first, second, fourth and fifth hydrophobic amino carboxylic acid residues which are not glycine residues have the L configuration or the L configuration if the first, second, fourth and fifth hydrophobic amino carboxylic acid residues which are not glycine residues have the D configuration and wherein said repeating units exist in a conformation having a β-turn.

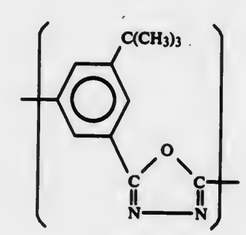
4,500,701

CO-POLYOXADIAZOLES BASED ON 5-T-BUTYLISOSPHTHALIC ACID

James R. Stephens, Naperville, Ill., assignor to Standard Oil Company (Indiana), Chicago, Ill.

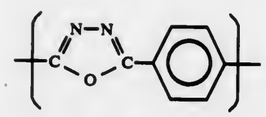
Continuation-in-part of Ser. No. 424,607, Sep. 27, 1982, abandoned. This application Dec. 19, 1983, Ser. No. 563,294
Int. Cl.³ C08G *73/08*
U.S. Cl. 528—363 **42 Claims**

1. A moldable copolyoxadiazole comprising the following structure:



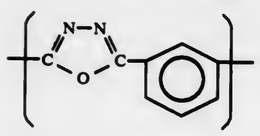
(A)

and



(B)

and



(C)

wherein the ratio A units to a mixture of B units and C units is about 1:99 to about 99:1 and the ratio of B units to C units is about 1:99 to about 99:1.

4,500,702

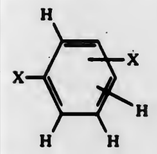
ANHYDROUS PREPARATION OF POLYARYLENE SULFIDE IN ONE VESSEL REACTION SYSTEM

Edgar Ostlinning, Duesseldorf, and Karsten Idel, Krefeld, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Nov. 14, 1983, Ser. No. 550,871
Claims priority, application Fed. Rep. of Germany, Nov. 23, 1982, 3243189
Int. Cl.³ C08G *75/14*
U.S. Cl. 528—388 **13 Claims**

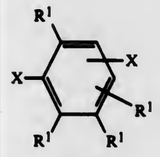
1. A process for the production of high molecular weight polyarylene sulphide under anhydrous conditions from

(a) 100 to 0 Mol % of dihalogen aromatic compound corresponding to the formula



(I)

and from 0 to 100 Mol % of dihalogen aromatic compound corresponding to the formula



(II)

wherein

X represents meta- or para-positioned chlorine or bromine relative to each other, and

R^1 is the same or different and represents hydrogen, alkyl, cyloalkyl, aryl, alkylaryl, arylalkyl, and two orthopositioned radicals R^1 relative to each other are linked together through a N, O or S atom to form an aromatic ring or linked together through a N, O or S atom to form a heterocyclic ring, and one R^1 is different from hydrogen, and from 0 to 5 mol %, based on the total of components (a) and (b), of a tri- or tetra-halogen aromatic compound corresponding to the formula

$$ArX_n \quad \text{(III)},$$

wherein

Ar represents an aromatic or heterocyclic radical,

X represents chlorine or bromine, and

n represents 3 or 4, and

(c) at least one alkali sulphide the molar ratio of (a+b):c ranging from 0.85 to 1.15:1, and

(d) an organic solvent with the molar ratio of alkali sulphide (c) and organic solvent (d) ranging from 1:2 to 1:15, and wherein the process is conducted in a one-vessel reaction and water which distills off azeotropically is removed from the reaction mixture.

4,500,703

REACTIVE ADHESIVE DISPERSION AND METHOD OF USE

James L. Guthrie, Ashton, and Ronald T. Wojcik, Ellicott City, both of Md., assignors to W. R. Grace & Co., New York, N.Y.

Continuation-in-part of Ser. No. 481,802, Apr. 4, 1983, abandoned. This application Dec. 28, 1983, Ser. No. 566,414
Int. Cl.³ C08G *59/50*; C08L *63/02*
U.S. Cl. 523—400 **11 Claims**

1. A one part, storage stable, thermosettable, heat reactive, adhesive composition comprising an insoluble dispersion of a solid epoxy resin containing more than one epoxy group and a solid, sterically unhindered, tertiary amine catalyst in a liquid vehicle in which said solids are at least partially soluble when melted.

4,500,704

CARBON DIOXIDE OXIRANE COPOLYMERS PREPARED USING DOUBLE METAL CYANIDE COMPLEXES

William J. Kruper, Jr., and Daniel J. Swart, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Aug. 15, 1983, Ser. No. 523,217
Int. Cl.³ C08G *63/62*
U.S. Cl. 528—405 **22 Claims**

1. A process for the preparation of a carbon dioxide oxirane copolymer wherein the process comprises contacting carbon dioxide with an oxirane in the presence of (1) an organic coordination compound and (2) a catalytic amount of a double metal cyanide complex under conditions such that an oxirane carbon dioxide copolymer is prepared.

4,500,705

METHOD FOR REDUCING OLIGOMERIC CYCLIC ETHER CONTENT OF A POLYMERIZATE

Harry B. Copelin, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jan. 9, 1984, Ser. No. 569,572
Int. Cl.³ C08J *3/00*; C07C *43/11*
U.S. Cl. 528—417 **3 Claims**

1. A method for reducing the oligomeric cyclic ether content of a tetrahydrofuran-, an alkylene oxide-, or a tetrahydrofuran/alkylene oxide polymerizate, the method comprising bringing the polymerizate into contact with an aliphatic- or cycloaliphatic hydrocarbon of 6–8 carbon atoms, or an aliphatic- or cycloaliphatic hydrocarbon of 6–8 carbon atoms substituted with one or more methyl or ethyl groups, for a time sufficient to bring the oligomeric cyclic ether content of the polymerizate to the desired level, and then separating the polymerizate and the hydrocarbon.

4,500,706

METHOD OF PRODUCING EXTRUSION GRADE POLY(ARYLENE SULFIDE)

Ronald D. Mathis; Jerry O. Reed, both of Bartlesville, Okla., and Gerald E. Hagler, Simpsonville, S.C., assignors to Phillips Petroleum Company, Bartlesville, Okla.

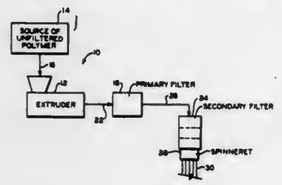
Filed Aug. 9, 1982, Ser. No. 406,155
Int. Cl.³ C08J *5/00*; C08G *75/02*
U.S. Cl. 528—502 **62 Claims**

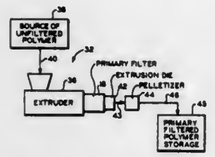
1. A method of processing a polymer comprising poly(arylene sulfide), comprising the steps of:

forcing molten polymer comprising poly(arylene sulfide) through primary filter means comprising a depth type filter comprising metallurgically bonded metal fibers and having an absolute micron rating in the range from about 45 to about 125 to provide molten primary filtered polymer; and

forcing said molten primary filtered polymer through sec-

ondary filter means having a maximum absolute micron rating of no more than about 80 or a substantially equivalent filtration capability to provide molten secondary filtered polymer.





4,500,707

NUCLEOSIDES USEFUL IN THE PREPARATION OF POLYNUCLEOTIDES

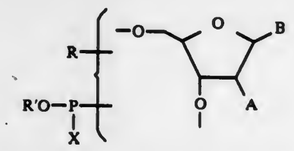
Marvin H. Caruthers, Boulder, Colo., and Mark D. Matteucci, San Francisco, Calif., assignors to University Patents, Inc., Westport, Conn.

Continuation-in-part of Ser. No. 247,144, Mar. 24, 1981, Pat. No. 4,458,066, which is a continuation-in-part of Ser. No. 126,025, Feb. 29, 1980, abandoned. This application Mar. 16, 1982, Ser. No. 358,877

Int. Cl.³ C07H *19/06, 19/10, 19/16, 19/20*

U.S. Cl. 536—27 **16 Claims**

1. A compound of the formula:



wherein B is a nucleoside or deoxynucleoside base; R is H or a blocking group, A is H or OR; R' is a hydrocarbyl radical containing up to 10 carbon atoms and X is a amino group formed by removal of the hydrogen atom from a ring nitrogen of a nitrogen heterocyclic compound which contains unsaturation in the ring structure.

4,500,708

BENZOTHIAZINE DERIVATIVES

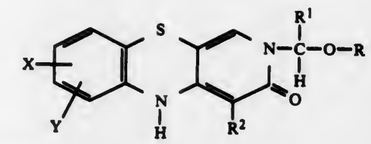
Robert J. Chorvat, Arlington Heights; George R. Lenz, and Suzanne Evans Radak, both of Glenview, all of Ill., assignors to G. D. Serle & Co., Skokie, Ill.

Filed Apr. 23, 1984, Ser. No. 602,782

Int. Cl.³ C07D *513/04*

U.S. Cl. 544—34 **13 Claims**

1. A compound of the formula



wherein

R is hydrogen or a



group wherein R^3 is C_1–C_{15} alkyl;

R^1 is hydrogen or C_1–C_3 alkyl;

R^2 is phenyl or substituted phenyl containing one or two substituents selected from the class consisting of halo, hydroxy, trifluoromethyl, methoxy, cyano and C_1–C_4 alkyl; and

X and Y are independently hydrogen, halo, nitro, trifluoromethyl, amino or C_1–C_4 alkoxy.

4,500,709

THIINYL AND OXOTHIOLYL DERIVATIVES

Takao Takaya, Sakai; Takashi Masugi, Kitamachi; Takashi Ogino, Kobe, and Kiyoshi Tsuji, Osaka, all of Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

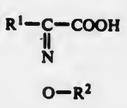
Division of Ser. No. 178,898, Aug. 18, 1980, Pat. No. 4,371,531, which is a division of Ser. No. 916,858, Jun. 19, 1978, Pat. No. 4,242,510, which is a continuation-in-part of Ser. No. 863,923, Dec. 23, 1977, abandoned. This application Sep. 30, 1982, Ser. No. 428,658

Claims priority, application Japan, Dec. 27, 1976, 51-160698; Dec. 5, 1977, 52-146327

Int. Cl.³ C07D *279/10, 327/06, 339/06, 339/08*

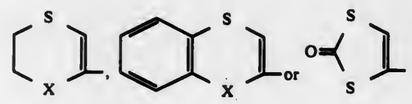
U.S. Cl. 544—58.1 **13 Claims**

1. A compound of the formula:



wherein

R^1 is a group of the formula:



in which X is sulfur, oxygen, imino or lower alkanoyl-substituted imino, and

R^2 is lower alkyl or lower alkenyl, ester thereof, and salt thereof.

4,500,710

QUINOPHTHALONE DYES FOR CELLULOSE-CONTAINING FIBERS

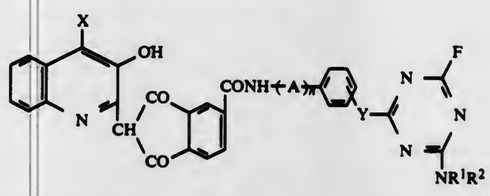
Toshio Niwa, and Toshio Hihara, both of Kanagawa, Japan, assignors to Mitsubishi Chemical Industries, Limited, Tokyo, Japan

Filed Jun. 16, 1983, Ser. No. 505,127

Int. Cl.³ C07D *401/10, 401/14*

U.S. Cl. 544—113 **3 Claims**

1. A quinophthalone dye for cellulose-containing fibers represented by the following formula:



wherein X represents a hydrogen atom, a chlorine atom or a bromine atom, —A— represents a methylene group, an ethylene group, a propylene group or a 1,3-butylene group, n represents 0 or 1, —Y— represents a linkage group of —O— or —S—, R^1 and R^2 each represents a hydrogen atom, an alkyl or alkenyl group which may optionally be substituted with a cyano group, a hydroxy group, a lower alkoxy group or by a dialkylamino group, or R^1 and R^2 may be combined together with the adjacent nitrogen atom to form a 5- or 6-membered, nitrogen-containing heterocyclic ring having the total carbon atom number in R^1 and R^2 of up to 18.

4,500,711

SYNTHESIS OF LEUCOVORIN

James C. Wisowaty, Chapel Hill; Roy A. Swaringen, Durham, and David A. Yeowell, Chapel Hill, all of N.C., assignors to Burroughs Wellcome Co., Research Triangle Park, N.C.

Continuation of Ser. No. 942,408, Sep. 14, 1978, abandoned, which is a continuation of Ser. No. 779,545, Mar. 21, 1977, abandoned. This application Dec. 22, 1980, Ser. No. 218,554

Int. Cl.³ C07D *475/04*

U.S. Cl. 544—258 **8 Claims**

1. The method of preparing calcium leucovorin which comprises the steps of forming a mixture by mixing together anhydroleucovorin, an aqueous solvent, and a sufficient amount of a water soluble organic amine base to bring the pH of the mixture to 5 to 7, heating the mixture at a pH of 5–7 adding to the mixture an amount of a water-soluble calcium salt substantially equimolar to anhydroleucovorin, and isolating calcium leucovorin.

4,500,712

ERGOLINE DERIVATIVES

Luigi Bernardi; Aldemio Temperilli; Daniela Ruggieri; Giuliana Arcari, and Patricia Salvati, all of Milan, Italy, assignors to Farmitalia Carlo Erba S.p.A., Milan, Italy

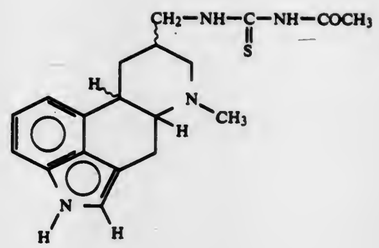
Filed Nov. 1, 1982, Ser. No. 438,259

Claims priority, application United Kingdom, Nov. 6, 1981, 8133631

Int. Cl.³ C07D *457/04;* **A61K** *31/48*

U.S. Cl. 546—67 **3 Claims**

1. The compound 6-methyl-8β-(3-acetylthio-ureidomethyl)-ergoline having the formula:



4,500,713

THERAPEUTIC DIPEPTIDES

John T. Suh, Greenwich, Conn.; Jeffrey N. Barton, New York, and John R. Regan, Mamaroneck, both of N.Y., assignors to USV Pharmaceutical Corporation, Tarrytown, N.Y.

Filed Sep. 23, 1982, Ser. No. 421,921

Int. Cl.³ C07D *215/00;* **C07C** *103/52*

U.S. Cl. 546—165 **1 Claim**

1. (3S)-2-N-[(1S)-1-Ethoxycarbonyl-1-(2,3-dihydro-1H-inden-2-yl)-methyl]-L-alanyl-1,2,3,4-tetrahydroisoquinoline-3-carboxylic acid.

4,500,714

3-SUBSTITUTED-UREIDO-N-PYRIDYL BENZAMIDES

Masamitsu Honda, Tokyo; Hideaki Nagai, Saitama; Shoko Takishima, Tokyo; Akinori Kawamura; Noriko Kawamura, both of Saitama; Takashi Dan, Tokyo; Masuo Koizumi, Tokyo; Yasushi Murakami, Tokyo; Yoshikazu Hinohara, Gunma; Hideki Nakano, Chiba, and Yoshio Takagaki, Tokyo, all of Japan, assignors to Chugai Seiyaku Kabushiki Kaisha, Tokyo, Japan

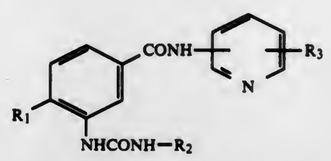
Filed Oct. 7, 1982, Ser. No. 435,541

Claims priority, application Japan, Oct. 15, 1981, 56-163495; Oct. 15, 1981, 56-163496

Int. Cl.³ C07D *213/75*

U.S. Cl. 546—309 **8 Claims**

1. A benzamide derivative of the formula:



wherein R_1 is a hydrogen atom, a methyl group or a methoxy group; R_2 is a hydrogen atom, a straight-chain or branched-chain alkyl group having 1 to 6 carbon atoms or a cyclic alkyl group having 5 or 6 carbon atoms or an unsubstituted phenyl group or a phenyl group substituted with a halogen atom, an alkyl group having 1 to 4 carbon atoms or an alkoxy group having 1 to 4 carbon atoms on the nucleus; and R_3 is a hydrogen atom or one or two alkyl groups having 1 to 4 carbon atoms.

4,500,715

2,5-DIAMINO-1,3,4-THIADIAZOLE DERIVATIVES

Hauke Fürstenwerth, Cologne, Fed. Rep. of Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

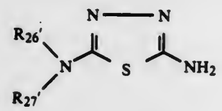
Division of Ser. No. 20,161, Mar. 13, 1979, Pat. No. 4,268,438. This application Jan. 26, 1981, Ser. No. 228,489

Claims priority, application Fed. Rep. of Germany, Mar. 15, 1978, 2811258

Int. Cl.³ C07D *285/12*; C09B *29/22*

U.S. Cl. 548—140 **1 Claim**

1. Thiadiazole derivatives of the general formula



wherein

R_{26}' denotes a C_1–C_8-alkyl radical which is optionally substituted by hydroxyl, halogen, cyano, C_1–C_4-alkoxy, carboxyl, aminocarbonyl or C_1–C_4-alkoxycarbonyl, a C_2–C_4-alkenyl radical, a cyclohexyl radical which is optionally substituted by C_1–C_4-alkyl, a phenyl, benzyl or phenylethyl radical which is optionally substituted by halogen, C_1–C_4-alkyl or C_1–C_4-alkoxy, a C_1–C_2-alkylcarbonyl, C_1–C_4-alkoxycarbonyl, mono- or di-C_1–C_4-alkylaminocarbonyl, aminocarbonyl, mono- or di-C_1–C_4-alkylaminosulphonyl, 2-thienyl, 2-furyl, 2-tetrahydrofuryl, amino, C_1–C_4-alkylamino or di-(C_1–C_4-alkyl)-amino radical or a phenylamino or benzylamino radical which is optionally substituted by C_1–C_4-alkyl or C_1–C_4-alkoxy and R_{27}' denotes a C_1–C_8-alkyl radical which is optionally substituted by hydroxyl, halogen, cyano, C_1–C_4-alkoxy, carboxyl, aminocarbonyl- or C_1–C_4-alkoxycarbonyl, a C_2–C_4-alkenyl radical or a benzyl or phenylethyl radical which is substituted by halogen, C_1–C_4-alkyl or C_1–C_4-alkoxy.

4,500,716

INTERMEDIATE PRODUCTS FOR THE PREPARATION OF Z-CEPHALOSPORINS

Günther Kinast, Wuppertal, Fed. Rep. of Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

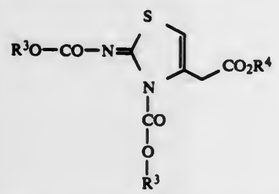
Filed Nov. 1, 1982, Ser. No. 438,189

Claims priority, application Fed. Rep. of Germany, Nov. 19, 1981, 3145727

Int. Cl.³ C07D *277/48*

U.S. Cl. 548—196 **8 Claims**

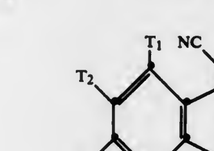
1. A compound of the formula



in which

R^3 and R^4 each independently is an optionally substituted alkyl radical with 1 to 15 carbon atoms, an optionally substituted alkenyl radical with 3 to 15 carbon atoms, an optionally substituted cycloalkyl radical with 3 to 10 carbon atoms, an optionally substituted cycloalkenyl radical with 5 to 10 carbon atoms, an optionally substituted carbocyclic aryl radical with 1 to 3 rings or an optionally substituted heterocyclyl radical with 1 to 3 rings which can contain up to 5 heteroatoms selected from nitrogen, sulphur and oxygen, the optional substituents on the alkyl, alkenyl, cycloalkyl and cycloalkenyl radicals being alkyl or alkoxy with 1 to 4 carbon atoms, halogen, optionally substituted phenyl, CN and/or tri-(C_1 to C_5 alkyl)-silyl, the optional substituents on the aryl and heterocyclyl radicals being alkyl, alkoxy, alkylthio and/or alkoxycarbonyl with 1 to 4 carbon atoms per alkyl goup, halogen, phenyl, nitro and/or CN.

5. A process for the production of a compound according to claim 1, comprising reacting a thiazole derivative of the formula



with a pyrocarbonic acid ester of the formula

$$R^3—O—CO—O—CO—O—R^3$$

in a solvent for the reactants.

4,500,717

PROCESS FOR PREPARATION OF 2-OXAZOLIDINONES

Frank T. Cook; Michael O. Nutt, and Hsin H. Hsieh, all of Baton Rouge, La., assignors to The Dow Chemical Company, Midland, Mich.

Filed Mar. 28, 1983, Ser. No. 479,400

Int. Cl.³ C07D *263/22*

U.S. Cl. 548—229 **15 Claims**

1. A process for the preparation of 2-oxazolidinones which comprises contacting a 2-hydroxyalkyl carbamate with an alkylene carbonate in the presence of a catalytic amount of a quaternary ammonium halide, quaternary phosphonium halide, a group I metal carbonate, hydroxide, oxide or halide, or a group II metal carbonate, hydroxide, oxide or halide under conditions such that a 2-oxazolidinone is prepared.

4,500,718

PROCESS FOR PRODUCING BISMETHINE ISOINDOLINES

Alain C. Rochat, Basel, and Luigi Cassar, Kaiseraugst, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation of Ser. No. 362,580, Mar. 29, 1982, Pat. No. 4,426,533. This application Sep. 23, 1983, Ser. No. 535,127

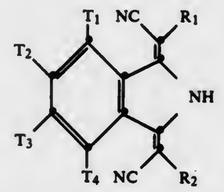
Claims priority, application Switzerland, Apr. 6, 1981, 2338/81

The portion of the term of this patent subsequent to Jan. 17, 2001, has been disclaimed.

Int. Cl.³ C09B *57/04*

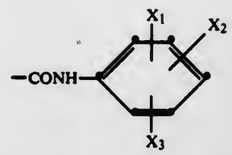
U.S. Cl. 548—471 **10 Claims**

1. A process for producing bismethine isoindolines of the formula

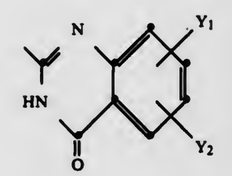


(I)

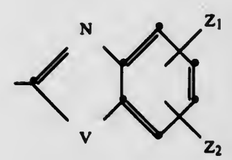
wherein T_1 to T_4 are hydrogen or halogen, or one or two of the radicals T_1 to T_4 are alkyl, alkoxy or phenoxy, and R_1 and R_2 independently of one another are each cyano, alkyl- or arylcarbonyloxy, carbamoyl, alkylcarbamoyl, or radicals of the formulae II to IV



(II)

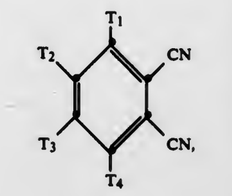


(III)

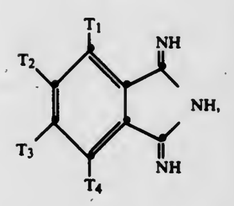


(IV)

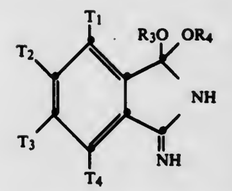
wherein X_1 is a non-solubilising group, and X_2 and X_3 are hydrogen, halogen, alkyl, alkoxy, or alkoxycarbonyl, or together form an —NR′—CO—NR″— group, in which R′ and R″ independently of one another are hydrogen or C_1–C_4-alkyl, and Y_1 and Y_2 are hydrogen, halogen, alkyl or alkoxy, or together form a fused-on benzene ring, V is oxygen, sulfur, imino or alkylimino having 1 to 4 C atoms, and Z_1 and Z_2 have the meanings of Y_1 and Y_2, in which process the condensation of 1 mol of a compound of the formula V, VI or VII or of the salts of VI or VII



(V)



(VI)



(VII)

wherein T_1 to T_4 have the meanings defined above, and R_3 and R_4 are identical or different and are C_1–C_4-alkyl, or together form the group —CH_2—CH_2—, with 2 mols of a cyanomethylene compound of the formula NC—CH_2—R_1 (VIII) or NC—CH_2—R_2 (IX), or with 1 mol of a cyanomethylene compound of the formula VIII and 1 mol of a cyanomethylene compound of the formula IX, wherein R_1 and R_2 have the meanings defined above, is performed in a polar solvent in the presence of a strong base, and the bismethine isoindoline obtained is isolated from the reaction mixture by hydrolysis in the presence of water without acid.

4,500,719

PROCESS FOR THE PREPARATION OF N-ALKENYLPHENYLMALEIMIDES AND N,N′-[ALKENYLENEPHENYLENE]BISMALEIMIDES

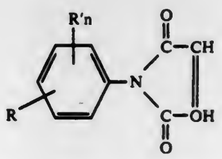
Masayuki Oba, Tokyo; Motoo Kawamata, Yokohama; Hikotada Tsubol, Yokohama, and Nobuhito Koga, Yokohama, all of Japan, assignors to Mitsui Toatsu Chemicals, Incorporated, Tokyo, Japan

Division of Ser. No. 131,804, Mar. 19, 1980, Pat. No. 4,376,206. This application Aug. 13, 1982, Ser. No. 408,042

Int. Cl.³ C07D *207/40*

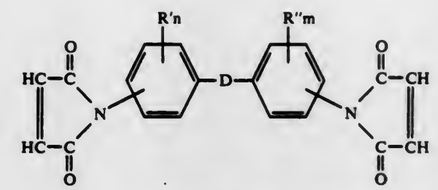
U.S. Cl. 548—522 **20 Claims**

1. Process for the preparation of an alkenylphenylmaleimide having the formula:



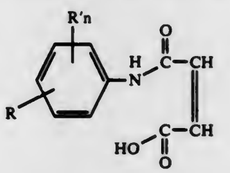
(I)

wherein R is alkenyl having 3 to 12 carbon atoms, R′ is hydrogen, halogen or alkyl having 1 to 4 carbon atoms, and n is a whole number of 1 to 4, or a bismaleimide having the formula:



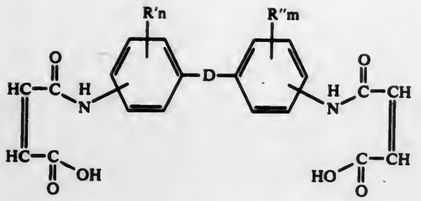
(II)

wherein R′ and R″ can be the same or different and are hydrogen, halogen or straight-chain or branched alkyl having 1 to 4 carbon atoms, n and m are whole numbers of 1 to 4, and D is an ethylenically unsaturated hydrocarbon group having 6 to 24 carbon atoms, which comprises the step of effecting reaction of an alkenylphenylmaleic acid derivative having the formula:



(III)

wherein R, R′ and n are as defined above for formula (I), or a linear dimer of like or different alkenylphenylmaleamic acid derivatives having the formula:



(IV)

wherein R', R'', n, m and D are as defined above for formula (II), with at least one dehydrating agent which is a carboxylic acid anhydride in the presence of a tertiary amine, an organic solvent and a catalyst, the catalyst being selected from the group consisting of: sodium sulfate, sodium carbonate, sodium phosphate, potassium sulfate, potassium carbonate, potassium phosphate, lithium sulfate, lithium carbonate, lithium phosphate, iron sulfate, iron carbonate, iron phosphate, nickel sulfate, nickel carbonate, nickel phosphate, cobalt sulfate, cobalt carbonate, cobalt phosphate, copper sulfate, copper carbonate, copper phosphate, manganese sulfate, manganese carbonate, manganese phosphate, sodium nitrate, sodium acetate, sodium butyrate, potassium nitrate, potassium acetate, potassium butyrate, lithium nitrate, lithium acetate, lithium butyrate, iron nitrate, iron acetate, iron butyrate, nickel nitrate, nickel acetate, nickel butyrate, cobalt nitrate, cobalt acetate, cobalt butyrate, manganese nitrate, manganese acetate, manganese butyrate, copper nitrate, copper acetate, copper butyrate, sodium pyrophosphate, nickel pyrophosphate, potassium pyrophosphate, lithium pyrophosphate, manganese pyrophosphate, iron pyrophosphate, copper pyrophosphate, acetylacetone complex of iron, acetylacetone complex of nickel, acetylacetone complex of cobalt, acetylacetone complex of copper and acetylacetone complex of manganese, to form the corresponding alkenylphenylmaleimide or bismaleimide.

4,500,720

TETRAHYDROFURAN-2-ONES

Jacques Martel, Bondy; Jean Tessier, Vincennes, and Jean-Pierre Demoute, Montreuil-sous-Bois, all of France, assignors to Roussel Uclaf, Paris, France

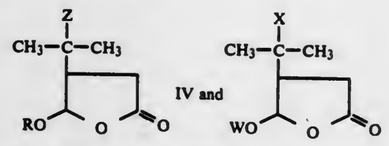
Division of Ser. No. 394,457, Jul. 1, 1982, Pat. No. 4,386,210, which is a division of Ser. No. 153,338, May 27, 1980, Pat. No. 4,288,434. This application Jan. 19, 1984, Ser. No. 571,995

Claims priority, application France, Jun. 6, 1979, 79 14425

Int. Cl.³ C07D *307/32*

U.S. Cl. 549—313 **1 Claim**

1. A compound selected from the group consisting of compounds of the formulae



IV and

wherein Z is an electro-attractive group selected from the group consisting of $-NO_2$, —OH, aryl sulfonyl and triarylphosphonio halo, R is the residue of an ROH alcohol selected from the group consisting of aliphatic alcohol of 1 to 12 carbon atoms and 3-phenoxy-benzyl alcohol, X is a halogen and W is selected from the group consisting of hydrogen and R_1, R_1 is derived from a chiral or achiral alcohol R_1OH selected from the group consisting of aliphatic alcohol of 1 to 12 carbon atoms, 3-phenoxy-benzyl alcohol and α-methyl 3-phenoxy-benzyl alcohol.

4,500,721

PROCESS FOR PRODUCING BENZALDEHYDES

Hiroshi Yamachika, and Hirotoshi Nakanishi, both of Osaka, Japan, assignors to Sumitomo Chemical Company Limited, Osaka, Japan

Filed Feb. 23, 1983, Ser. No. 468,909

Claims priority, application Japan, Feb. 23, 1982, 57-28264; Feb. 24, 1982, 57-29181

Int. Cl.³ C07C *45/44*

U.S. Cl. 549—362 **11 Claims**

1. A process for producing a benzaldehyde by catalytic reduction using hydrogen gas of a benzonitrile in a water-soluble organic solvent in the presence of an inorganic acid using a Raney nickel catalyst pretreated with a copper salt.

4,500,722

VOLATILE METAL COMPLEXES

David A. Thompson, Horseheads, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed Sep. 15, 1982, Ser. No. 418,061

Int. Cl.³ C07D *307/04*

U.S. Cl. 549—429 **1 Claim**

1. A THF adduct of a β-diketone complex of 1,1,1,5,5,5-hexafluoro-2,4-pentanedione with the metal magnesium, the adduct having the molecular formula:

$$Mg(hfa)_2.nTHF$$

wherein n has a value of 2 or 4.

4,500,723

7-OXABICYCLOHEPTAINE PROSTAGLANDIN INTERMEDIATES AND METHOD FOR PREPARING SAME

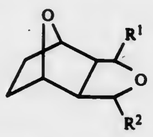
Peter W. Sprague, Pennington, and James E. Heikes, East Windsor, both of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed May 13, 1983, Ser. No. 494,235

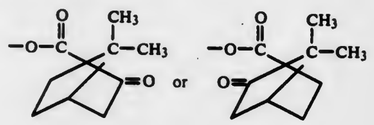
Int. Cl.³ C07D *307/88*

U.S. Cl. 549—459 **8 Claims**

1. An optically active cis exo isomer having the structure

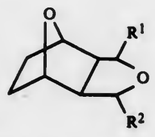


wherein one of R^1 and R^2 is

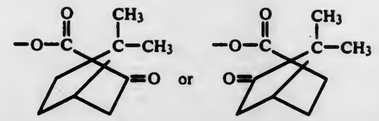


and the other is H.

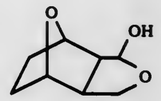
8. A method for preparing an optically active ketopinate ester of the structure



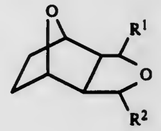
wherein one of R^1 and R^2 is



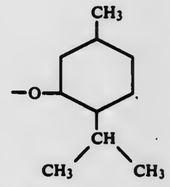
and the other is H which comprises esterifying a hemiacetal of the formula



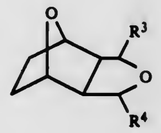
by reacting same with d or l-menthol to form a mixture of diastereomers, resolving the above mixture to recover 90% optically pure diastereomer of the structure



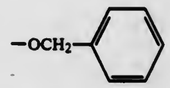
wherein R^2 is



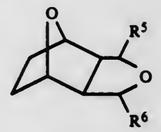
and R^1 is H, reacting the above hemiacetal with benzyl alcohol to form the optically active compound



wherein R^4 is



and R^3 is H, hydrogenating the benzyloxy compound to form a hemiacetal of the structure



wherein R^6 is OH and R^5 is H, reacting the hemiacetal with l or d-ketopinic acid halide to form the optically active ketopinate ester.

4,500,724

METHOD FOR MAKING ALKYLHALOSILANES

William J. Ward, III, Schenectady; Alan Ritzer, Sand Lake; Kenneth M. Carroll, Albany, and John W. Flock, Schenectady, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Jul. 28, 1983, Ser. No. 518,236

Int. Cl.³ C07C *7/16*

U.S. Cl. 556—472 **28 Claims**

27. A method for making methylchlorosilanes which substantially enhances the rate of dimethyldichlorosilane formation while substantially reducing the weight ratio of methyltrichlorosilane to dimethyldichlorosilane and maintaining or reducing the percent by weight of products in the resulting methylchlorosilane crude having a boiling point of greater than 70° C. at atmospheric pressure, which comprises effecting reaction between methyl chloride and powdered silicon in the presence of an effective amount of a copper-zinc-tin catalyst where the copper-zinc-tin catalyst comprises from 0.5 to 10% by weight of copper relative to silicon and 200–3000 ppm of tin and 0.01 part to 0.5 part of zinc per part of copper.

4,500,725

SILANE DERIVATIVE AND FRAGRANT ARTICLE

Jiichiro Yemoto, Kumamoto; Ryokichi Tarao, Kanagawa, and Yoshio Yamamoto, Kumamoto, all of Japan, assignors to Chisso Corporation, Osaka, Japan

Filed Jul. 28, 1982, Ser. No. 402,811

Claims priority, application Japan, Jul. 30, 1981, 56-119641; Nov. 24, 1981, 56-187950

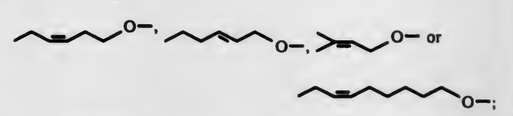
Int. Cl.³ C07F *7/04, 7/08, 7/18*

U.S. Cl. 556—482 **7 Claims**

1. A silane compound of the formula:

$$R_sSi(-OR')_t(-OR'')_{4-s-t}$$

wherein R represents CH_3—, CH_3CH_2— or CH_2=CH—; R'O represents



R''O represents CH_3O— or CH_3CH_2O—; s represents 0 or 1; and t represents an integer of from 1 to 4.

4,500,726

METHOD FOR PREPARING N-BENZYLOXYCARBONYL AMINO ACIDS CONTAINING ADDITIONAL FUNCTIONALITY

James A. Krogh, Mount Prospect, Ill., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed May 23, 1984, Ser. No. 613,136

Int. Cl.³ C07C *125/065*

U.S. Cl. 56—160 **24 Claims**

1. In the method wherein alkali metal salt of an amino acid which is devoid of tertiary amino groups and quaternary ammonium groups, and which contains in addition to a primary amino group and at least one carboxylate anion, at least one functional group selected from the class consisting of hydroxyl, additional primary amino, secondary amino, primary imido, and primary amido, is reacted with benzylhaloformate selected from the class consisting of ring-substituted benzylchloroformate, ring-unsubstituted benzylchloroformate, ring-substituted benzylbromoformate, and ring-unsubstituted benzylbromoformate in a polyphase reaction mixture comprising

an organic liquid phase and an aqueous liquid phase to produce alkali metal salt of an N-benzyloxycarbonyl amino acid in which the benzyl is substituted or unsubstituted and which contains said functional group, the improvement comprising conducting the reaction in the presence of a phase-transfer reagent comprising poly(oxyalkylene)glycol, polymer-supported poly(oxyalkylene)alcohol, or a mixture thereof.

4,500,727

PROCESS FOR PRODUCING METHYL LACTATE

Takanori Kitamura; Mitsuo Matsumoto, and Masuhiko Tamura, all of Kurashiki, Japan, assignors to Kuraray Co., Ltd., Kurashiki, Japan

Filed Mar. 18, 1982, Ser. No. 359,414
Claims priority, application Japan, Mar. 23, 1981, 56-42755; Jun. 19, 1981, 56-95478; Jun. 19, 1981, 56-95479
Int. Cl.³ C07C *69/68, 67/03*
U.S. Cl. 560—179 **10 Claims**

1. A process for producing methyl lactate, which comprises the steps of:

(I) hydroformylating vinyl acetate or vinyl propionate with a gaseous mixture of hydrogen and carbon monoxide in an organic solvent in the presence of a substantially water-insoluble rhodium complex and a trisubstituted phosphine to form α-acetoxy- or propionyloxypropionaldehyde; '(II) extracting the reaction mixture obtained in step (I) with an aqueous medium, thereby obtaining an aqueous layer contaning α-acetoxy- or propionyloxy-propionaldehyde and an extraction residue containing the catalyst components, and recycling the extraction residue to the hydroformylation step (I);

(III) separating α-acetoxy- or propionyloxy-propionaldehyde from the aqueous layer containing the same as obtained in step (II);

(IV) oxidizing α-acetoxy- or propionyloxy-propionaldehyde obtained in step (III) in the liquid phase with oxygen gas or an oxygen-containing gas in the presence of an oxidation catalyst to form α-acetoxy- or propionyloxy-propionic acid; and

(V) reacting α-acetoxy- or propionyloxy-propionic acid obtained in step (IV) with methanol in the presence of an acid catalyst, and recovering the resultant methyl lactate by distillation.

4,500,728

PROCESS FOR PREPARING 2-AMINOETHYL METHACRYLATE SALTS OF HIGH PURITY

Michael J. Fazio, Midland, Mich., and Kirk E. Paisley, Newark, Ohio, assignors to The Dow Chemical Company, Midland, Mich.

Filed Apr. 8, 1980, Ser. No. 138,622
Int. Cl.³ C07C *69/54*
U.S. Cl. 560—222 **8 Claims**

1. A process for preparing 2-aminoethyl methacrylate of high purity comprising introducing 2-isopropenyl-2-oxazoline to a liquid aqueous medium containing an acid selected from the group consisting of hydrobromic acid, phosphoric acid, sulfuric acid, nitric acid, organic carboxylic acids, sulfonic acids and mixtures thereof; at a rate to maintain a continuous concentration of no greater than about 0.12 weight percent 2-isopropenyl-2-oxazoline in its free form in the medium.

4,500,729

2-METHYL-2-BUTEN-1-YL TIGLATE

Dietmar Lamparsky, Wangen, Switzerland, and Roman Kaiser, Clifton, N.J., assignors to Givaudan Corporation, Clifton, N.J.

Filed Jun. 26, 1979, Ser. No. 52,175
Claims priority, application Switzerland, Jun. 28, 1978, 7037/78
Int. Cl.³ C07C *69/533*
U.S. Cl. 560—225 **1 Claim**

1. Substantially pure 2-methyl-2-buten-1-yl tiglate.

4,500,730

PROCESS FOR PRODUCING AROMATIC POLYCARBOXYLIC ACID

Toru Tanaka; Masanori Hataya; Kazuo Tanaka; Yukio Sakai, and Yasufumi Hamada, all of Kurashiki, Japan, assignors to Mitsubishi Gas Chemical Company, Inc., Japan

Filed Jan. 3, 1983, Ser. No. 454,982
Claims priority, application Japan, Jan. 18, 1982, 57-5749
Int. Cl.³ C07C *51/235, 51/265*
U.S. Cl. 562—416 **10 Claims**

1. In a process for producing an aromatic polycarboxylic acid by oxidizing an alkyl-substituted aromatic aldehyde or an alkyl-substituted aromatic carboxylic acid with molecular oxygen in water as a solvent in the presence of bromine ions or bromine ions and heavy metal ions as a catalyst, the improvement, which comprises conducting the oxidation in a reactor using a zirconium material whose surface is coated with an oxide layer formed from the zirconium material having a thickness of at least 0.05 μm as a material of construction.

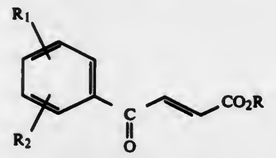
4,500,731

DERIVATIVES OF 4-PHENYL-4-OXOBUTEN-2-OIC ACID, PHARMACEUTICAL COMPOSITIONS CONTAINING THEM, AND THERAPEUTIC USES FOR THEM

Mario Bianchi, and Fernando Barzaghi, both of Milan, Italy, assignors to Roussel Uclaf, Romainville, France

Filed Oct. 20, 1982, Ser. No. 435,464
Claims priority, application Italy, Oct. 22, 1981, 49547 A/81
Int. Cl.³ C07C *59/90*
U.S. Cl. 514—452 **17 Claims**

1. A compound of formula I:



(I)

in which R represents a hydrogen atom or an alkyl group containing from 1 to 8 carbon atoms, and R_1 and R_2 in any position on the benzene ring are different from each other and independently represent a hydroxy group or an alkoxy group containing from 1 to 8 carbon atoms, or else R_1 and R_2 together form an $—OCH_2CH_2O—$radical, as well as the alkali metal, alkaline earth metal, ammonium or amine salts of the said product of formula I when R represents a hydrogen atom.

4,500,732

PROCESS FOR REMOVAL AND RECYCLE OF P-TOLUIC ACID FROM TEREPHTHALIC ACID CRYSTALLIZER SOLVENT

Bruce C. Petty-Weeks, and Martin A. Zeitlin, both of Naperville, Ill., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Filed Sep. 15, 1983, Ser. No. 532,461
Int. Cl.³ C07C *51/43*
U.S. Cl. 562—486 **7 Claims**

1. A continuous process for removal of p-toluic acid from a liquid water solution substantially saturated with terephthalic acid wherein the terephthalic acid content in water is in the range of about 5 to about 35 weight percent at a temperature of about 400° to about 550° F. and wherein the water solution comprises about 500 to about 6,000 ppm of p-toluic acid said process comprising, after continuously charging such liquid water solution to the first of two or more series-connected flash solvent evaporators wherein each crystallization zone is operated at a successively lower temperature with at least the last zones operated at a temperature within and below the range of about 375° F. to about 300° F., crystallizing decreasing proportions of originally dissolved terephthalic acid, extracting the terephthalic acid of its p-toluic acid between any two continuous crystallization zones with paraxylene, removing the flash evaporated solvent from each zone while retaining temperature of recovery of terephthalic acid product the same as the temperature of the last zone and removing the paraxylene containing p-toluic acid from a multistage extraction zone.

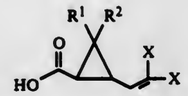
4,500,733

PROCESS FOR PREPARING DIHALOVINYLCYCLOPROPANECARBOXYLIC ACIDS

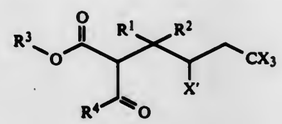
Kiyoshi Kondo, and Kiyohide Matsui, both of Kanagawa, Japan, assignors to Sagami Chemical ResearchCenter, Tokyo, Japan

Continuation of Ser. No. 935,190, Aug. 21, 1978, abandoned, and Ser. No. 731,195, Oct. 12, 1976, abandoned. This application Feb. 14, 1983, Ser. No. 466,182
Claims priority, application Japan, Oct. 30, 1975, 50-131254
Int. Cl.³ C07C *69/743*
U.S. Cl. 562—506 **11 Claims**

1. A process for preparing a 2-(2,2-dihalovinyl)cyclopropanecarboxylic acid of the formula



wherein R^1 and R^2 each independently is hydrogen or a hydrocarbon group, and X is halogen, which comprises reacting an α-acyl-γ-halocarboxylic acid derivative of the formula



wherein R^1, R^2 and X are as defined above, R^3 is hydrogen or lower alkyl, X' is halogen of atomic number equal to or higher than X, and R^4 is a hydrogen, or lower alkyl; with an alkali metal hydroxide or alkaline earth metal hydroxide in an ether type solvent.

4,500,734

PROCESS FOR THE PRODUCTION OF UREA

Vincenzo Lagana', Milan, and Virginio Cavallanti, Vallate, both of Italy, assignors to Snamprogetti S.p.A., Milan, Italy

Continuation of Ser. No. 215,168, Dec. 11, 1980, abandoned. This application Apr. 12, 1982, Ser. No. 367,792
Int. Cl.³ C07C *126/02*
U.S. Cl. 564—72 **1 Claim**

1. A process for the production of urea starting from ammonia and carbon dioxide in a NH_3/CO_2 ratio of from 5/1 to 8/1 comprising the synthesis and decomposition of the ammonium carbamate contained in the solution of urea in two steps, the first providing for ammonia and the second for carbon dioxide as strippers, characterized by the fact that the synthesis and decomposition in the first decomposition step are carried out at a pressure equal or substantially equal and comprised between 180 and 250 atm, and where from the first decomposition zone a solution of urea containing from 5 to 25% of carbamate is discharged with a gaseous phase containing a quantity of ammonia in excess with regard to the stoichiometric quantity for forming ammonium carbamate, said excess ammonia being from 50% and 90% of the total gas throughput, while the decomposition in the second step is carried out at a pressure 30–50 atm. lower than the pressure in the first step and the gases leaving the reactor being fed to the bottom of the decomposer in the second decomposition step.

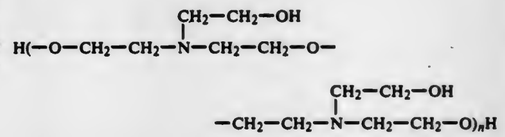
4,500,735

QUATERNARY CROSSLINKED PRODUCTS OF XYLYLENE DICHLORIDES AND TRIETHANOLAMINE CONDENSATES AND THEIR USE

Helmut Diery, Kelkheim, Fed. Rep. of Germany, and Bernhard Mees, Charlotte, N.C., assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed Feb. 18, 1983, Ser. No. 467,738
Claims priority, application Fed. Rep. of Germany, Feb. 23, 1982, 3206459
Int. Cl.³ C07C *91/12*
U.S. Cl. 564—286 **3 Claims**

1. Quaternary crosslinked products obtained by reacting, at about 70 to about 160 degrees C., a triethanolamine condensate of the formula



wherein n is an integer from 1 to 3, with a xylylene dichloride, the ratio of triethanolamine condensate to xylylene dichloride being from about 1:0.5 to about 1:0.05.

4,500,736

HYDROGENATION OF 3-TRICHLOROVINYLNITROBENZENE

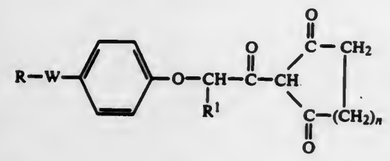
Jean M. Wyvratt, Mountainside, N.J., assignor to Merck & Co., Inc., Rahway, N.J.

Continuation-in-part of Ser. No. 414,116, Sep. 2, 1982, abandoned. This application Jun. 28, 1983, Ser. No. 508,063
Int. Cl.³ C07C *85/11*
U.S. Cl. 564—417 **9 Claims**

1. A process for preparing 3-trichlorovinyl aniline and acid addition salts thereof which comprises hydrogenating in an alcoholic acidic medium 3-trichlorovinylnitrobenzene under an atmosphere of hydrogen at from 15 to 105 psig in the presence of from 0.2 to 2.0% supported palladium catalyst containing from 5 to 10% palladium on a substrate.

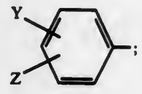
4,500,737
COMPOSITIONS
Clive A. Henrick, Palo Alto, Calif., assignor to Zoecon Corporation, Palo Alto, Calif.
Division of Ser. No. 408,291, Aug. 16, 1982, Pat. No. 4,448,965.
This application Mar. 2, 1984, Ser. No. 585,485
Int. Cl.³ C07C 49/657
U.S. Cl. 568—329 5 Claims

1. A compound of the following formula (A):



(A)

wherein,
n is zero, one, two or three;
R is



R¹ is hydrogen or lower alkyl;
W is oxygen, sulfur or amino; and
each of Y and Z is independently selected from hydrogen, lower haloalkyl, halogen and nitro.

4,500,738
PREPARATION OF ALKOXY METHYL ETHERS
Henry G. Schouten, West Chester, Pa., assignor to American Home Products Corporation, New York, N.Y.
Filed Dec. 8, 1983, Ser. No. 560,011
Int. Cl.³ C07C 41/14, 45/64
U.S. Cl. 568—433 5 Claims

1. A process for the production of an alkoxymethyl oxyether of a phenolic hydroxyl group which comprises reacting methylal or ethylal with said phenolic hydroxyl group in the presence of dimethylformamide and phosphorus oxychloride.

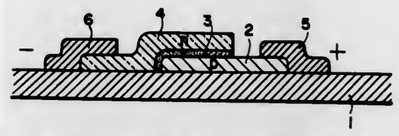
4,500,739
PROCESS FOR THE INSERTION OF PERFLUOROOLEFINES ON PERFLUOROPOLYETHERS AND CORRESPONDING PRODUCTS
Gerardo Caporiccio, Milan; Gian T. Viola, Paullo, and Costante Corti, Milan, all of Italy, assignors to Montedison S.p.A., Milan, Italy
Filed Mar. 18, 1983, Ser. No. 476,518
Claims priority, application Italy, Mar. 19, 1982, 20270 A/82
Int. Cl.³ C07C 43/12, 41/01, 55/40
U.S. Cl. 568—677 3 Claims

1. Perfluoropolyether consisting of recurring $-CF_2-$, $-CF_2CF_2-$ units and a third recurring at least partially fluorinated alkylenic unit containing at least three carbon atoms and comprising acid or neutral terminal groups selected from the group consisting of $-CF_3$, C_2F_5, $-CF_2H$, $-COF$ and $-CF_2-COF$, said recurring $-CF_2-$, $-CF_2CF_2$ and alkylenic units being joined to each other through oxygen atoms with etheric bonds, and being arranged in a random distribution along the polymeric chain.

4,500,740
HYDROLYSIS OF WATER-INSOLUBLE ORGANIC HALIDES
David W. House, Arlington Heights, Ill., assignor to UOP Inc., Des Plaines, Ill.
Filed Dec. 30, 1983, Ser. No. 567,204
Int. Cl.³ C07C 37/02
U.S. Cl. 568—796 4 Claims

1. A method of hydrolyzing a water-insoluble organic halide, other than a fluoride, where the organic halide is a secondary or tertiary alkyl halide whose alkyl moiety contains up to about 20 carbon atoms, an arylmethyl halide, or an activated aryl halide where said aryl moiety bears at the 2- or 4-position relative to the halogen at least one strongly electron withdrawing moiety selected from the group consisting of trialkylammonium, nitro, nitrilo, carboxyl, carbonyl, fluorine, and nitroso, comprising heating the organic halide in dimethylsulfoxide at a temperature between about 50° and 100° C., contacting the resulting mixture with at least a stoichiometric quantity of water, and recovering the hydrolysis product formed thereby.

4,500,741
ENERGY CONVERSION ELEMENT
Kiyoshi Morimoto, Mobara, and Toshinori Takagi, Nagaoka-kyo, both of Japan, assignors to Futaba Denshi Kogyo K.K., Mobara, Japan
Filed May 25, 1983, Ser. No. 498,168
Claims priority, application Japan, Jun. 4, 1982, 57-94877
Int. Cl.³ H01L 35/00, 37/00
U.S. Cl. 136—206 29 Claims



1. An energy conversion element comprising a thermoelectric material having a thermoelectric effect and a photoelectric material having a photoelectric effect which materials are different in kind from each other and which are directly contacting each other, wherein a positively ionized donor or a negatively ionized acceptor generated due to the flow of a carrier corresponding to a temperature gradient across the thermoelectric material forms an acceleration electrical field with respect to electrons or positive holes generated in the photoelectric material at the junction between said thermoelectric and photoelectric materials.

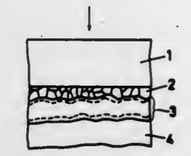
4,500,742
IRON SILICIDE THERMOELECTRIC CONVERSION ELEMENT
Kiyoshi Morimoto, Mobara, and Toshinori Takagi, Nagaoka-kyo, both of Japan, assignors to Futaba Denshi Kogyo K.K., Mobara, Japan
Filed Jan. 26, 1984, Ser. No. 574,145
Claims priority, application Japan, Feb. 9, 1983, 58-18848
Int. Cl.³ H01L 35/00, 37/00
U.S. Cl. 136—206 4 Claims



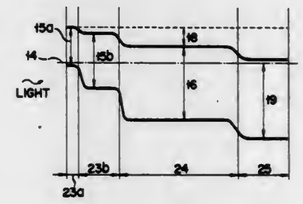
1. An iron silicide thermoelectric conversion element comprising a compound consisting of iron and silicon wherein a part of one of components of said compound forming said element is substituted by oxygen atom to provide said element with one of n-type conductivity and p-type conductivity.

4,500,743
AMORPHOUS SEMICONDUCTOR SOLAR CELL HAVING A GRAINED TRANSPARENT ELECTRODE
Yutaka Hayashi; Mithuyuki Yamanaka, both of Sakura; Hideyo Iida, Ueno; Nobuyasu Shiba, Ueno; Hideyuki Karasawa, Ueno; Toshio Mishuku, Ueno, and Atsuo Itou, Ueno, all of Japan, assignors to Kogyo Gijutsuin and Taiyo Yuden Kabushiki Kaisha, both of Tokyo, Japan
Filed Sep. 30, 1982, Ser. No. 428,712
Claims priority, application Japan, Oct. 1, 1981, 56-154749
Int. Cl.³ H01L 31/04
U.S. Cl. 136—258 5 Claims

1. An amorphous semiconductor solar cell comprising a glass substrate, a transparent electrode means coated on said substrate, an amorphous semiconductor layer coated on said transparent electrode means, and a rear electrode on said amorphous semiconductor layer, wherein the average grain diameter of the surface of the transparent electrode means which faces the amorphous semiconductor layer ranges from 0.1 μm to 2.5 μm, and wherein said transparent electrode means has a rough and uneven surface facing said amorphous semiconductor layer for causing diffusion of the incident light.



4,500,744
PHOTOVOLTAIC DEVICE
Hidetoshi Nozaki, Yokohama; Takaaki Kamimura, Kawasaki; Tamothu Hatayama, Matsudo, and Tadashi Utagawa, Yokohama, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan
Filed Jul. 13, 1983, Ser. No. 513,390
Claims priority, application Japan, Jul. 16, 1982, 57-122940
Int. Cl.³ H01L 31/06
U.S. Cl. 136—258 15 Claims

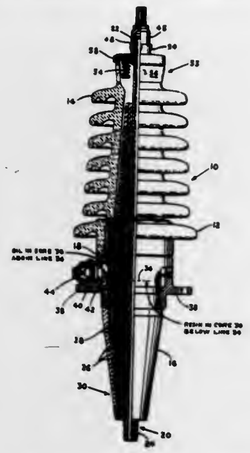


1. A photovoltaic device comprising a transparent substrate, an amorphous silicon layer structure of a p-i-n type formed on the substrate and comprised of a p-layer, i-layer and n-layer, and an electrode formed on the amorphous silicon layer, in which, of said p-layer and said n-layer of the amorphous silicon layer structure, that layer on which light is incident is constituted such that the optical forbidden band gap is greater on the i-layer side than on the substrate side.

4,500,745
HYBRID ELECTRICAL INSULATOR BUSHING
Michael R. Miggins, LeRoy, N.Y., assignor to Interpace Corporation, Purchase, N.Y.
Filed Mar. 3, 1983, Ser. No. 471,780
Int. Cl.³ H01B 17/28, 17/34
U.S. Cl. 174—31 R 10 Claims

1. An electrical bushing comprising:
a core formed of sheets of electrically conducting material separated by electrically insulating material, said sheets of electrically conducting material being interleaved with and, coaxially disposed with the electrically insulating material;
an insulating casing enclosing an end of said core;
an electrically conducting rod traversing said core, and extending from an end of said core to form a terminal; and wherein
said insulating material includes a cured resin at one end of

said core, and an insulating oil at a second end of said core within said casing; said resin being absent from said sec-



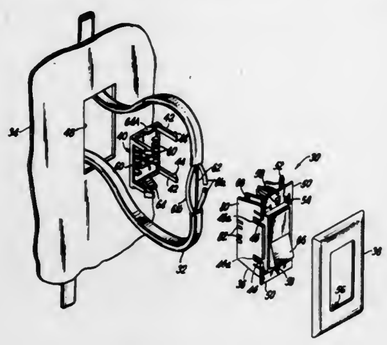
ond end of said core, and said oil being absent from said one end of said core.

4,500,746

SELF-CONTAINED ELECTRICAL WIRING DEVICE

James E. Meehan, Levittown, N.Y., assignor to Slater Electric Inc., Glen Cove, N.Y.

Continuation of Ser. No. 130,224, Mar. 14, 1980, abandoned. This application Sep. 13, 1982, Ser. No. 417,082
Int. Cl.³ H02G *3/08*
U.S. Cl. 174—48 **17 Claims**



1. An electrical component for coupling to an electrical cable and adapted to be mounted through an opening in a supporting base, said component comprising:

an enclosure having a front face and side walls projecting rearwardly therefrom to form an opening along their rear edges opposite said front face, said side walls including apertures therein generally adjacent said front face;

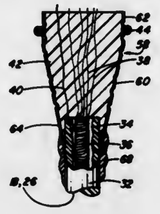
a cover adapted to be secured to said enclosure generally adjacent said rear edges so as to be spaced apart from said front face by said side walls, said cover having a set of flexible legs extending from edges thereof and terminating in tabs adapted to be received in said apertures for securing said cover directly to said enclosure yet permit removal of the cover when desired by removing said tabs from said apertures, such that said cover closes the rear edges of said side walls by locking engagement between said tabs and said apertures generally adjacent said front face.

4,500,747

GAS PRESSURIZABLE CABLE WITH COMPRESSED PLUG SEAL AND METHOD OF MAKING IT

Luc Dubreuil, St. Placide, and Phillip J. Reed, Dorval, both of Canada, assignors to Northern Telecom Limited, Montreal, Canada

Filed Mar. 30, 1983, Ser. No. 480,258
Int. Cl.³ H02G *15/23, 15/25*
U.S. Cl. 174—76 **9 Claims**



1. A method of providing a plug seal for gas pressurizable cable having a core of insulated conductors and core surrounding material including a jacket, the method comprising:

(a) removing all core surrounding material from an end section of the cable so as to provide a certain length of the cable at its end which is devoid of core surrounding material and which has a jacket end region adjacent to the devoid length;

(b) locating an inwardly deformable sleeve around and contacting the jacket end region, the sleeve extending along and surrounding the devoid length and being radially spaced from the insulated conductors of the devoid length;

(c) causing a flowable plugging compound to flow into the sleeve, between the insulated conductors so as to surround them and engage the insulation of individual conductors intimately, around the jacket end regions, and into intimate engagement with the inner surface of the sleeve;

(d) allowing the compound to harden into a plug which causes it to seal to the sleeve; and

(e) after hardening of the plug and with the sleeve sealed to the jacket end region, placing the plug in radial compression in at least one axial position along said devoid length by moving a radially resilient spring into a position surrounding the sleeve, the spring being in a permanently resiliently expanded condition when around the sleeve so as to compress the sleeve radially inwards to improve its seal against the plug and to compress the plug radially inwards in order to compress the insulation of the conductors onto the conductors.

6. A cable having a core of insulated conductors and core surrounding material including a jacket, and a plug seal in which the cable has a certain length at one of its ends which is devoid of core surrounding material, the plug seal comprising:

(a) a plug formed by hardened plugging compound which surrounds the core along said devoid length at the cable end and surrounds and is sealed against end regions of the jacket lying adjacent to the devoid length, the plug in said devoid length extending around and in intimate engagement with the insulation of each individual conductor of the core;

(b) an inwardly deformable sleeve surrounding and sealed to the plug along both said devoid length and the end regions of the jacket, the sleeve extending beyond the plug to form a junction with the jacket and having a seal at its junction with the jacket;

(c) a radially resilient spring surrounding the sleeve in at least one axial position of said devoid length, the spring being in a permanently resiliently expanded condition

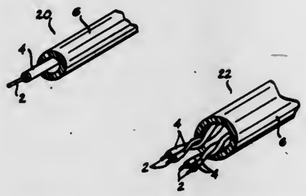
permanently to place a radially inward compressive force upon the sleeve to improve its seal against the plug and permanently to place a radially inward compressive force upon the plug, the plug being compressed radially inwards to cause the plug to compress the insulation of the individual conductors onto the conductors.

4,500,748

FLAME RETARDENT ELECTRICAL CABLE

Gary S. Klein, Cleveland, Ohio, assignor to Eaton Corporation, Cleveland, Ohio

Filed Apr. 8, 1983, Ser. No. 483,360
Int. Cl.³ H01B *7/28*
U.S. Cl. 174—121 A **2 Claims**



1. A flame retardant electrical cable comprising at least one elongate electrical conductor having a layer of electrical insulation disposed thereabout within a protective jacket that is able to meet or exeed the flame spread requirements of Underwriters Laboratories Tunnel Flame Test UL 910 as a result of at least one of said conductor insulation and jacket being made from a first melt processible, non-fluorocarbon, polymer and the other of said conductor insulation and jacket being made from a second melt processible polymer selected from the class consisting of fluorocarbon and non-fluorocarbon polymers, said cable satisfying the condition that the composite Steiner Index of the first and second polymers is less than about 3500 according to the formula:

$$\frac{\text{(mass of first polymer) (S.I. of first polymer)}}{\text{(total mass of first and second polymers)}} + \frac{\text{(mass of second polymer) (S.I. of second polymer)}}{\text{(total mass of first and second polymers)}} = S.I.\text{ (composite)};$$

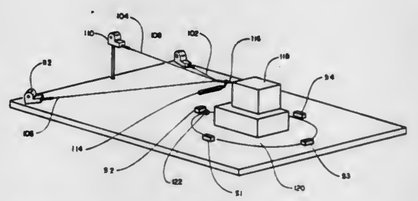
where S.I. (Steiner Index) is (A) (B) (C) (1−O.I.);
wherein:
mass is the respective number of pounds of the first and second polymers included in the cable subjected to the UL 910 Flame Test;
(A) is the respective specific heat of the first and second polymers in Btu/lb;
(B) is the respective specific gravity of the first and second polymers;
(C) is the respective percent by molecular weight of non-halogenated elements of the first and second polymers to the respective total molecular weight thereof expressed in decimal form; and
O.I. is the respective Limiting Oxygen Index of the first and second polymers under ASTM D2863 expressed in decimal form;
and said cable devoid of any component disposed as a barrier intermediate the conductor insulation and the jacket having at least a portion thereof made from a polymer having more than about 35% by molecular weight of fluorine to the total molecular weight of the polymer.

4,500,749

INCREMENTAL DIGITIZER FOR ENCODING GEOMETRICAL FORMS

Behrokh Khoshnevis, 2-102G Montasello Village, Athens, Ohio 45701

Filed Dec. 14, 1982, Ser. No. 449,589
Int. Cl.³ G01B *7/28; G08C 21/00*
U.S. Cl. 178—18 **13 Claims**



8. A digitizer for digitally encoding a three-dimensional body mounted to a support into coordinate system data representing the body, the digitizer comprising:

(a) a stylus having a data tip;

(b) three retractable, flexible cords each extending from a different, spaced cord supply into attachment with said stylus and all substantially intersecting said data tip each of said cords being biased in tension toward retraction at least one spaced cord supply being positioned above a reference plane defined by a point on said body and the other two of said cord supplies; and

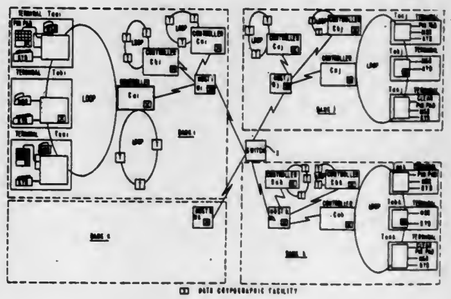
(c) a different linear encoder means linked to each of said cords for generating digital data signals representing the linear displacement of its associated cord.

4,500,750

CRYPTOGRAPHIC APPLICATION FOR INTERBANK VERIFICATION

Robert C. Elander; Richard E. Lennon, both of Saugerties; Stephen M. Matyas; Carl H. W. Meyer, both of Kingston; Robert E. Shuck, West Hurley, all of N.Y., and Walter L. Tuchman, Boulder, Colo., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 30, 1981, Ser. No. 335,974
Int. Cl.³ H04L *9/02*
U.S. Cl. 178—22.08 **25 Claims**



24. In a system providing data communication between a terminal and one of a plurality of data processing systems, each having cryptographic apparatus and said terminal being provided with a first transfer key, a process for verifying the identity of a terminal user provided with a secret personal identification number comprising the steps of:

encrypting said personal identification number at said terminal under said first transfer key to obtain a first encrypted personal identification number,

transmitting a message including at least said first encrypted personal identification number from said terminal to a first one of said plurality of data processing systems,

providing a first host parameter at said first data processing system representing said first transfer key encrypted under a first system master key of said first data processing system,

providing a second host parameter at said first data processing system representing a first authentication key encrypted under a second system master key of said first data processing system, with said first and second master keys being different from each other,

performing a first operation at said first data processing system in accordance with said first and second host parameters to translate said personal identification number from encryption under said first transfer key to encryption under said first authentication key, said re-encrypted personal identification number representing a first authentication parameter,

providing an authentication parameter of reference at said first data processing system, and

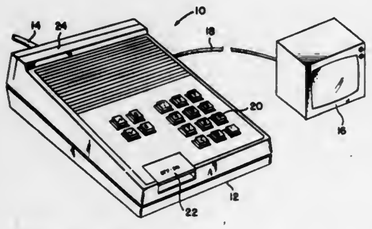
comparing said first authentication parameter with said authentication parameter of reference at said first data processing system to provide an indication representing a verification of the identity of the terminal user.

4,500,751

DATA COMMUNICATION SYSTEM

Michael L. Darland; Donald L. Stoner; James W. Baker, Jr., and Michael A. Sponhnholtz, all of King County, Wash., assignors to Microperipheral Corporation, Redmond, Wash.

Filed Jul. 20, 1982, Ser. No. 400,060
Int. Cl.³ H04M *11/00*
U.S. Cl. 179—2 DP **18 Claims**



1. A system for communicating over a telephone line between a host station and one of a plurality of remote stations, said system comprising:

a remote terminal connected to said telephone line at said remote station, said remote terminal including frequency-shift-keyed decoder means connected to said telephone line for generating a data signal corresponding to a frequency-shift-keyed signal received from said telephone line, a visual display generator producing a visual signal corresponding to a visual representation that displays information received in the form of said frequency-shift-keyed signal and visual display means for receiving said visual signal and displaying said visual representation, said remote terminal further including a keypad having a plurality of keys and a two-tone signal generator connected to said telephone line for applying to said telephone line pairs of tones, each uniquely corresponding to one of said keys, card reader means for generating a digital signal indicative of information recorded on a card adapted for insertion in said card reader means, and a frequency-shift-keyed modulator connected to said card reader means and said telephone line applying a frequency-shift-keyed signal to said telephone line corresponding to the digital signal received from said card reader means; and

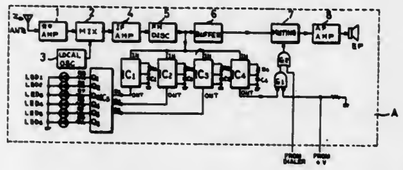
a host terminal connected to said telephone line at said host station, said host terminal including a frequency-shift-keyed modulator connected to said telephone line applying a frequency-shift-keyed signal to said telephone line corresponding to a data signal received from an external source and a two-tone decoder connected to said telephone line, said decoder generator a data byte identifying the tone pair being received, said host terminal further including a frequency-shift-keyed decoder connected to said telephone line generating a digital signal corresponding to the frequency-shift-keyed signal received from said remote terminal, thereby identifying the information recorded on said card.

4,500,752

TELECONTROL SYSTEM FOR AN AUDIO RECORDER OF A RADIO TELEPHONE

Kyung-Suk Lee, Seoul, Rep. of Korea, assignor to Daewoo Electronic Co., Seoul, Rep. of Korea

Filed Sep. 29, 1982, Ser. No. 426,730
Claims priority, application Rep. of Korea, Jun. 8, 1982, 2550[U]
Int. Cl.³ H04M *11/10*
U.S. Cl. 179—2 EA **4 Claims**



1. A base remote control system for remotely controlling a tape recorder coupled to the main base unit of a cordless telephone, said recorder being actuated by a recorder control signal, said main base unit including means for receiving and demodulating a transmitted signal from a handset of said cordless telephone, and means for transmitting to said handset a received telecommunications signal from a telephone line upon actuation of a switching means, said main base unit including a transformer coupling means to couple the received demodulated signal with said means for transmitting, the remote control system comprising:

a base tone decoding means coupled to the output of said means for receiving and demodulating, said base tone decoding means having a group of outputs at which are applied a received and tone decoded control signal for said recorder from said handset;

a plurality of base tone oscillators, one base tone oscillator coupled to a respective output of said group of outputs of said base tone decoding means to generate a respective frequency control signal corresponding to the input tone decoded control signal, the outputs of said base tone oscillators coupled together to generate a multi-frequency control signal;

means for combining the multi-frequency control signal with any additional signal to be transmitted by said main base unit to said handset; and

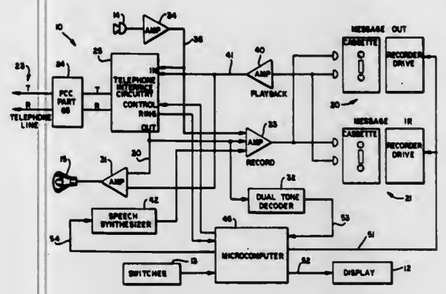
a decoder interface device coupling a respective output of said group of outputs of said base tone decoding means with the corresponding input of said recorder to actuate said recorder by said recorder control signal corresponding to the tone decoded control signal.

4,500,753

TELEPHONE ANSWERING APPARATUS WITH RECORDED TIME OF DAY AND DATE

Luther C. Plunkett, Jr., Atlanta, Ga., assignor to Lanier Business Products, Inc., Atlanta, Ga.

Filed Aug. 25, 1982, Ser. No. 411,529
Int. Cl.³ H04M *11/00*
U.S. Cl. 179—6.03 **10 Claims**



1. In an apparatus for automatically recording on a recording media audio incoming message signals received over a telephone line including means responsive to a ring signal on the telephone line for generating an outgoing message signal for transmission over the telephone line to the caller and means responsive to detection of the end of said outgoing message signal for conditioning a recorder to record said incoming message signals, the improvement comprising:

clock means for continuously maintaining the time of day by storing digital time signals representative of the time of day;

call received means responsive to said ring signal for automatically retrieving said stored digital time signals upon receipt of a call and for providing output digital time signals associated with the time of day at which a call was received;

speech generation means responsive to being provided said output digital time signals for generating audio speech time signals characteristic of said output digital time signals; and

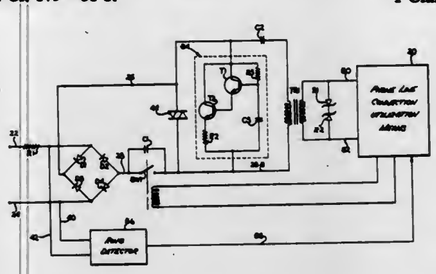
means for recording said audio time signals on said recording media contiguous to said incoming message signals to associate each message received with the time of day at which such message was received.

4,500,754

SOLID STATE OFF HOOK PHONE LINE LOAD

Richard C. Mackey, Woodland Hills, Calif., assignor to Novation, Inc., Chatsworth, Calif.

Filed Jan. 15, 1981, Ser. No. 225,310
Int. Cl.³ H04M *1/00, 11/00*
U.S. Cl. 179—81 R **1 Claim**



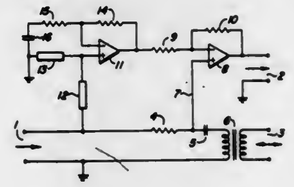
1. A solid state of hook phone line load comprising a diode bridge for coupling between a pair of phone lines to provide a predetermined polarity between a second pair of lines whereby a first line will be positive with respect to a second line, a low frequency filter consisting only of a resistor connected to said first line and a capacitor connected between said resistor and said second line, said low frequency filter being a means for providing a control signal at the junction between said resistor and said capacitor which is responsive to a DC voltage on the phone line, and a first transistor having a collector connected to said first line, a base, and an emitter connected to said second line through a resistive load, said base of said first transistor being coupled to said junction between said resistor and said capacitor through a second transistor also having an emitter, a base and a collector, said emitter of said second transistor being connected to said base of said first transistor, said base of said second transistor being connected to said junction between said resistor and said capacitor, and said collector of said second transistor being connected to said first line, whereby a relatively low impedance is imposed between said first and second lines for DC and very low frequencies and a relatively high impedance is imposed at phone line signaling frequencies.

4,500,755

ELECTRIC HYBRID CIRCUITS

Tapio H. Murto, Nepean, Canada, assignor to Northern Telecom Limited, Montreal, Canada

Filed Nov. 20, 1981, Ser. No. 323,540
Int. Cl.³ H04B *1/58*
U.S. Cl. 179—170 NC **9 Claims**



1. An electronic hybrid circuit comprising:

an input port and an output port for connection to a 4-wire path;

a differential amplifier having an inverting input, a non-inverting input and an output coupled to the output port;

a first resistor coupled between the output and the inverting input of the differential amplifier;

a second resistor coupled between the input port and the non-inverting input of the differential amplifier;

means for coupling a 2-wire path to a junction between the second resistor and the non-inverting input of the differential amplifier;

an active state having an input, coupled to the input port, and an output; and

a third resistor coupled between the output of the active stage and the inverting input of the differential amplifier;

the active stage including amplifying means and impedance means for compensating for the impedance of the 2-wire path whereby the level of signals transmitted from the input port to the output port is controlled.

4,500,756

KEYBOARD SWITCH HAVING A DEFORMABLE MEMBRANE FORMED OF CELLULAR URETHANE

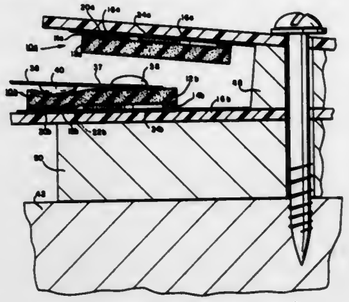
Frederick C. Feagans, Central, S.C., and Albert W. Nordquist, Ivoryton, Conn., assignors to Pratt-Read Corporation, Ivoryton, Conn.

Filed Mar. 19, 1982, Ser. No. 359,827
Int. Cl.³ H01H *9/00*
U.S. Cl. 200—5 A **14 Claims**

1. A keyboard switch having a nonresilient actuator comprising

a substrate having at least one fixed contact thereon, a deformable membrane having disposed directly thereon a movable electrically conductive coating, said coating positioned adjacent said fixed contact and adapted for movement into and out of electrical connection with said fixed contact for completing a circuit therebetween,

means for actuating said nonresilient actuator to engage and push against said deformable membrane and thereby to move said movable coating, and



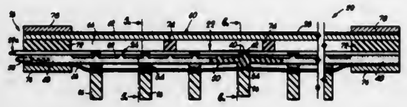
said deformable membrane being formed of mechanically frothed open cell cellular urethane foam whereby (1) upon actuation of the actuator said deformable membrane distributes and absorbs the actuation force without damage to the keyboard switch while the movable coating engages the fixed contact and (2) upon release of the actuator the deformable membrane springs back without taking a compression set to its undeformed shape retracting the movable coating from the fixed contact.

4,500,757

MOMENTARY DIGITAL ENCODING DEVICE FOR KEYBOARDS

Craig E. Rooney, Prairie Village, Kans., assignor to Engineering Research Applications, Inc., Prairie Village, Kans.

Filed Jul. 7, 1982, Ser. No. 396,039
Int. Cl.³ H01H *13/70*; G08C *9/00*
U.S. Cl. 200—5 A **22 Claims**



1. A keyboard output device, comprising:

a plurality of elongated, electrically conductive strands each having a number of axially spaced apart impact zones along the length thereof, certain of said zones being covered with electrically insulative material, to thereby render them insulated, and other of said zones being free of insulative material and thereby electrically conductive;

means mounting said strands in juxtaposed relationship with each other, and with the impact zones of certain of said strands being in proximal relationship with corresponding impact zones on other of said strands, to thereby cooperatively define a number of spaced part sets of impact zones each made up of corresponding impact zones on a plurality of said strands;

each of said impact zone sets having a characteristic, individual pattern of insulated and conductive impact zones;

an elongated, electrically conductive engagement member for each impact zone set respectively;

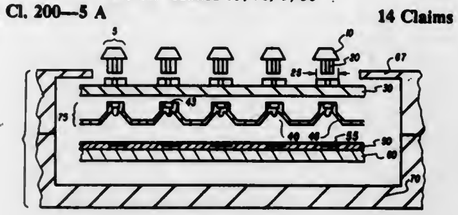
means mounting said members adjacent their associated sets, with the longitudinal axes of the members being generally transverse relative to the longitudinal axes of said strands, each of said members being selectively shiftable toward and into momentary impact engagement with at least certain of the impact zones making up the associated impact zone set, in order that said conductive impact members, upon said shifting thereof, will make momentary electrical contact with the conductive impact zones forming a part of the impact zone sets respectively associated therewith.

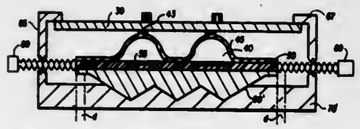
4,500,758

KEYBOARD SWITCH ASSEMBLY HAVING SENSORY FEEDBACK

Peter U. Guckenheimer, Campbell, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Jul. 5, 1983, Ser. No. 510,526
Int. Cl.³ H01H *13/70, 9/00*
U.S. Cl. 200—5 A **14 Claims**





1. A switch apparatus comprising:

membrane means having an activable switch area for providing a switch output signal in response to activation of said switch area by a predetermined stimulus;

dome means directly coupled to said membrane means, said dome means having a resiliently deformable dome-like portion having a spring force, said dome-like portion positioned in proximity to said activable switch area, said dome means for providing said predetermined stimulus to said activable switch area in response to deformation of said dome-like portion; and

adjustment means coupled to act directly on said membrane means, said adjustment means having:

a base having an inclined bottom surface;

a housing coupled to said base having an inclined upper surface for mating with said inclined bottom surface;

a displacement means coupled to said housing and said base for causing relative movement between said housing and said base; and

a keymount affixed to said housing, said adjustment means for deforming said dome-like portion against said keymount, thereby adjusting the spring force of said dome-like portion.

4,500,759

FLUID FLOW SWITCH

Craig R. deFasselle, 38411 Wood Rd., Willoughby, Ohio 44094, and Robert J. deFasselle, Timberidge Trail, Gates Mills, Ohio 44040

Filed Sep. 28, 1983, Ser. No. 536,694
Int. Cl.³ H01H *35/40*
U.S. Cl. 200—81.9 R **17 Claims**

1. A flow switch, comprising in combination:

a body member;

a fluid inlet defined by said body member;

a fluid outlet defined by said body member;

an outer core tube disposed within said body member and having a first and a second end;

an inner core tube disposed coaxial to and within said outer core tube and having a first and a second end;

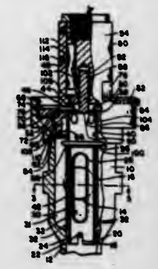
said first ends of said inner and outer core tubes being disposed adjacent said fluid inlet;

at least one of said inner and outer core tubes being in fluid communication with said fluid inlet;

said body member defining a body flow path between said outer core tube and said body member in communication with said fluid outlet;

a first aperture defined by said inner core tube;

a second aperture defined by said outer core tube;



securing means for securing one of said core tubes to be non-rotatable relative to said body member;

means for rotatably mounting the other of said core tubes relative to said body member enabling said first aperture to register with said second aperture for defining a first orifice of variable size to provide a variable flow bypass path to said body flow path in accordance with the relative rotational position between said inner and said outer core tubes;

a cylindrical chamber defined by said rotatable core tube;

a piston slidably disposed within said cylindrical chamber for movement in accordance with the fluid flow through said fluid inlet; and

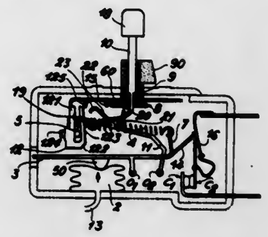
switch means disposed proximate said piston for providing a switching output in response to fluid flow through said fluid inlet exceeding a preselected level.

4,500,760

THERMOSTAT-CONTROLLED ELECTRIC SWITCH

Yves Malbec; Yves Boisot; Daniel Bontemps, and Georges Duhamel, all of Paris, France, assignors to Thomson-CSF, France

Filed Sep. 21, 1982, Ser. No. 420,839
Claims priority, application France, Sep. 29, 1981, 81 18348
Int. Cl.³ H01H *35/24*
U.S. Cl. 200—83 C **5 Claims**



1. A thermostatic switch for a refrigerator comprising:

a housing;

a pair of switch contacts within said housing and movable between an open and closed position for causing operation of a compressor in a first position to cool said refrigerator and interrupting operation in a second position to permit said refrigerator to warm;

a first lever pivotably mounted within said housing engaging said switch contacts for moving said contacts between said positions;

a bellows engaging said first lever and containing an expandable fluid and provided with a hermetic tube acting as a thermometer for producing a force urging said first lever to pivot in a first direction so as to move said switches to said first position as said fluid expands;

a manually operable handle extending into said housing and mounted to be rotatable and movable into and out of said housing between first and second positions;

a cam mounted on said handle for rotation therewith;

a cam follower operatively associated with said cam and displaceable in response to rotation of said cam;

a spring connecting said cam follower to said first lever for urging said first lever to pivot in a direction opposite said first direction, the amount of force applied varying with the position of said cam follower and determining the force required by said bellows to cause said first lever to pivot and move said switch contacts to said first position;

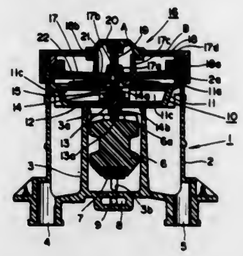
a second lever pivotably mounted within said housing and engaging said handle for pivotable movement in response to movement of said handle from said first position to said second position to engage said first lever and pivot said first lever in said direction opposite said first direction to move said switch contacts to said second position, said second lever also engaging said cam follower when said handle is in said second position so that the force required by said bellows to cause said first lever to pivot and move said switch contacts to said first position is greater when said handle is in said second position and the refrigerator is defrosted when said handle is in said second position.

4,500,761

FLUID RESERVOIR WITH FLUID-LEVEL SENSOR

Hitoshi Kubota, Minami-ashigara; Seiji Hamamatsu, Kawasaki; Teluo Yambe, Yokosuka, and Toshiyuki Takahashi, Miura, all of Japan, assignors to Nissan Motor Company, Limited, Yokohama; Tokico Ltd., Kawasaki and Nippon Air Brake Co., Ltd., Kobe, all of, Japan

Filed May 26, 1983, Ser. No. 498,476
Claims priority, application Japan, Jun. 1, 1982, 57-92103
Int. Cl.³ H01H *35/18*; G01F *1/00*; G08B *29/00, 21/00*
U.S. Cl. 200—84 C **5 Claims**



1. A fluid reservoir, comprising:

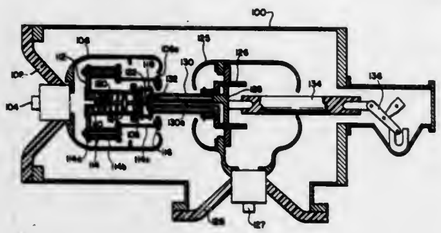
(a) a fluid retainer having an upper opening for retaining a supply of a working fluid, the quantity of said working fluid being indicated by the vertical level of said working fluid within the retainer;

(b) a float free to move vertically within the retainer and of a lower density than the working fluid;

(c) a fluid-level sensor disposed at the bottom of said retainer and sensitive to the vertical position of the float for caus-

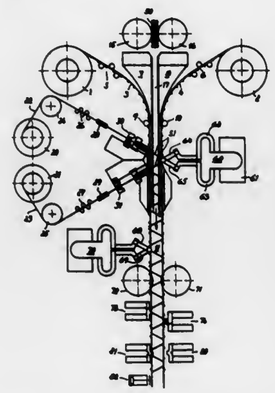
ing a low fluid-level alarm when the float is lower than a predetermined level;
(d) a cover for removably covering the upper opening of the retainer;
(e) a first rod supported by the retainer so as to be free to move vertically between a first position permitting free vertical movement of the float and a second position causing the float to be lower than said predetermined level; and
(f) a second rod supported by and contained within the cover so as to be vertically movable manually from a third position permitting the first rod to assume the first position and a fourth position causing the first rod to assume the second position.

4,500,762
RESISTOR-TYPE DISCONNECTING SWITCH FOR CIRCUIT BREAKER
Toshiaki Yoshizumi, Minoo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Filed Mar. 25, 1983, Ser. No. 479,072
Claims priority, application Japan, Mar. 25, 1982, 57-49610
Int. Cl.³ H01H *33/16*
U.S. Cl. 200—144 AP **3 Claims**



1. A disconnecting switch, comprising:
an electrically conductive member;
an electrically conductive shield having a circular opening therein;
a main contact and an arcing contact within said shield electrically connected to said electrically conductive member;
a movable contact member insertable through said opening into said shield into physical and electrical contact with each of said main contact and said arcing contact inside said shield and retractable out of said shield through said opening so as to separate from said main contact before separating from said arcing contact;
a resistive electrode in the shape of a toroid, disposed between a portion of said shield defining said circular opening and said movable contact member, said toroid having a curved surface externally protruding beyond said opening; and
a resistor inside said shield connecting said resistive electrode to said electrically conductive member, so as to define a first current path from said movable contact member across a first gap between said movable contact member and said resistive electrode and through said resistive electrode and said resistor, said first path being electrically in parallel to a second current path across a second gap between said movable contact member and said arcing contact upon disengagement of said movable contact member from said arcing contact.

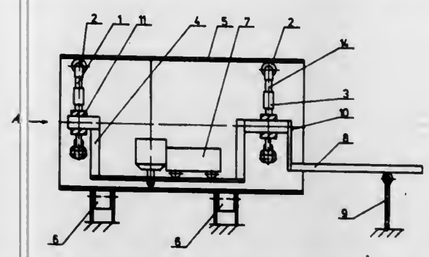
4,500,763
METHOD AND APPARATUS FOR THE PRODUCTION OF WELDED GRID BODIES
Gerhard Schmidt; Klaus Ritter, and Gerhard Ritter, all of Graz, Austria, assignors to EVG Entwicklungs- u. Verwertungs-Gesellschaft m.b.H., Graz, Austria
Filed Apr. 28, 1982, Ser. No. 372,478
Claims priority, application Austria, May 14, 1981, 2158/81
Int. Cl.³ B23K *11/32*
U.S. Cl. 219—58 **8 Claims**



6. A method of producing a welded grid body comprising two parallelgrid mat portions separated by a slab of heat insulating material, and spacer wires cut to length and welded at each end to one of said grid mat portions, said method comprising the steps of
(a) drawing off said grid mat portions from stock coils thereof;
(b) straightening said grid mat portions and aligning said grid mat portions so that they are spaced apart by a distance corresponding to the desired thickness of said welded grid body;
(c) introducing a slab of heat-insulating material into the space between said grid mat portions;
(d) simultaneously drawing a plurality of spacer wires from stock coils thereof, straightening said spacer wires, and passing said spacer wires laterally through one of said grid mat portions and said slab of heat insulating material so that each of said spacer wires lies close to both of said grid mat portions; and
(e) welding leading edges of said spacer wires to one of said grid mat portions at a first location along said production channel and welding trailing edges of said spacer wires to the other of said grid mat portions at a second location along said production channel.

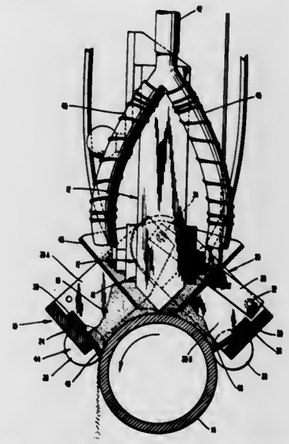
4,500,764
DEVICE FOR INTERNAL WELDING OF PIPES OR THE LIKE
Erich Girodi; Günter Bornowski; Eberhard Dejmek, all of Hoyerswerda; Andreas Knabe, Bernsdorf; Roland Koch, Weisswasser; Bernd Urbach, Mühlhausen, and Arnold Weisselberg, Halle, all of German Democratic Rep., assignors to VEB Gaskombinat Schwarze Pumpe, Schwarze Pumpe, German Democratic Rep.
Filed Aug. 9, 1983, Ser. No. 521,734
Claims priority, application German Democratic Rep., Nov. 4, 1982, 244551
Int. Cl.³ B23K *37/02, 31/06*
U.S. Cl. 219—59.1 **10 Claims**

1. A device for internal welding of elongated objects, such as pipes, tanks or the like, particularly pipes of greater diameters and lengths, comprising means for rotating an object being welded about a central axes thereof; a car carrying welding equipment and positioned within an object to be welded; at least two subframes spaced from each other in the direction of elongation of said object and each carrying a plurality of tread rollers, said subframes being positioned within said object, said tread rollers being provided with locking means adapted to lock said tread rollers against an inner surface of said object; and at least one shaft arranged to be positioned along the



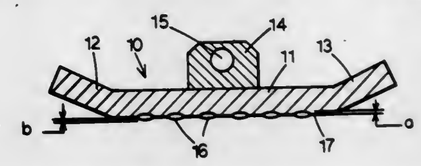
central axis of the object and pivotally mounted in said subframes, said shaft being rigidly connected to said subframes so that upon rotation of said object about the central axis thereof said car is able to pivot freely about the central axis of the object and is permanently hung downwardly by its own weight, whereby a complete welding of an internal circumferential seam of said object is produced upon a complete rotation of the object by said rotating means.

4,500,765
FLUX RETAINER
Donald J. Trotter, Carbondale, Pa., assignor to Santrade Ltd., Lucerne, Switzerland
Filed Apr. 18, 1983, Ser. No. 486,237
Int. Cl.³ B23K *9/18*
U.S. Cl. 219—73.21 **5 Claims**



1. A flux retainer for use in retaining a granular flux upon a rotating cylindrical pipe to which a metal reinforcement layer is applied by a submerged arc welder which includes a welder head and a conduit for delivering granular flux, said flux retainer comprising:
a generally rectangular frame comprising a pair of end plates and a pair of side plates;
a plurality of supports carried by said frame for supporting said frame upon an upper portion of the pipe surface as the pipe rotates about its longitudinal axis, with said end plates generally parallel to the pipe axis and said side plates extending generally perpendicular to the pipe axis;
said supports being spaced apart to engage an upper portion of the pipe surface at locations disposed above the longitudinal axis of the pipe;
arm means joined to said frame for releasably securing said frame to the welder head;
a pair of metal brushes connected to and extending across said end plates and projecting therebelow to bear against the pipe surface and resist leakage of granular flux;
said side plates each comprising a plurality of plate segments pivotably interconnected for rotation about an axis extending generally parallel to the pipe axis in order to change the angular relationship between the plate segments and vary the distance separating said end plates; and
fastener means for securing said plate segments in selected angular relationships to adapt the retainer to pipes of different diameter.

4,500,766
METHOD OF FUSION OF INSERTS TO SNOW PLOW RUNNERS
Paige J. Reinhardt, St. Paul, Minn., assignor to Paper, Calmenson & Co., St. Paul, Minn.
Filed Feb. 4, 1982, Ser. No. 345,725
Int. Cl.³ B23K *9/04*
U.S. Cl. 219—76.1 **3 Claims**

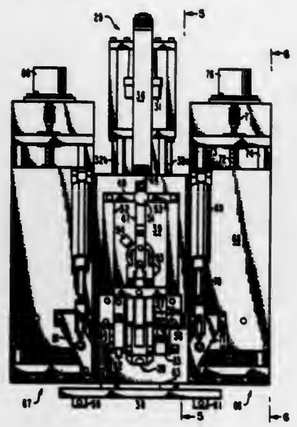


1. The method of making a wear runner comprising the steps of:
forming a runner having a wear resistant surface from a first material having a predetermined melting temperature and a predetermined hardness;
selecting an insert for applying to the runner with the insert characterized by having a greater hardness than the runner and a melting temperature on the same order as the runner; and
embedding the insert into the runner approximately ¼ inch through melting of both the runner and the insert through electrical fusion of the insert to the runner so that the insert projects approximately ¼ inch from said runner.

4,500,767
SHADOW MASK WASHER/SPRING WELDING APPARATUS
Leonard P. Wilbur, Jr., Lancaster, and Marinus Van Renssen, Leola, both of Pa., assignors to RCA Corporation, New York, N.Y.
Filed Jul. 27, 1983, Ser. No. 517,840
Int. Cl.³ B23K *11/10*
U.S. Cl. 219—78.01 **18 Claims**

1. A welding apparatus adapted for welding a washer to a frame retaining spring while said washer and said spring are in engagement with a stud affixed to a sidewall of a kinescope panel, said spring having an aperture for loosely receiving said stud and said washer having an aperture for snugly receiving said stud whereby said washer and said spring retain a frame at a predetermined spaced relationship within said panel, said welding apparatus comprising:
moveable carrier means for receiving said panel in a centered position and for moving said panel to a preselected weld location;
frame support means;

means for positioning said frame support means in the vicinity of said frame;
frame sensing means;
means responsive to said frame sensing means for moving said frame support means into contact with said frame whereby said frame support means supports said frame at said predetermined location;
a welding head including at least one welding electrode and at least one ground electrode, said welding electrode



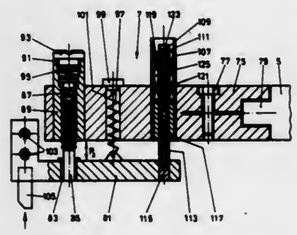
including an aperture dimensioned in accordance with the diameter of said stud;
means for moving said welding head to said preselected weld location whereby said washer and said spring are positioned between said welding electrode and said ground electrode; and
means for closing said electrodes against said frame retaining spring and said washer with said aperture engaging said stud, whereby welding current can be passed through said electrodes to weld said washer to said spring.

4,500,768

ELECTRODE MOUNTING SUPPORT

Jame Rossell, Lausanne, Switzerland, assignor to Rossell Electronique SA, Switzerland

PCT No. PCT/CH81/00050, § 371 Date Jan. 8, 1982, § 102(e) Date Jan. 8, 1982, PCT Pub. No. WO81/03299, PCT Pub. Date Nov. 26, 1981
PCT Filed May 11, 1981, Ser. No. 339,441
Claims priority, application Fed. Rep. of Germany, May 14, 1980, 3018426
Int. Cl.³ B23K *11/10*
U.S. Cl. 219—86.25 **5 Claims**



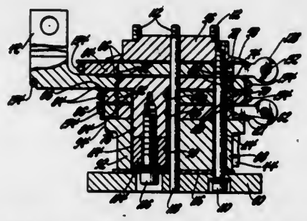
5. A method for adjusting the work force acting between an electrode and a workpiece to accommodate different electrode requirements in an apparatus which includes a spring means for providing said force, and force measuring means including displacement measuring means, said method comprising the steps of:
selecting a desired electrode for use;
selecting a corresponding spring means for use, said spring means being predetermined as being suitable for providing a force appropriate for use in conjunction with said electrode;
replacing a previously positioned electrode and spring means with said selected electrode and said selected spring means and employing the same in combination, employment of said selected spring means causing said force measuring means to be calibrated to said selected electrode.

4,500,769

ROTARY WELD GUN SUPPORT WITH ELECTRICAL COUPLING

Jon D. Tincher, Troy, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Mar. 9, 1983, Ser. No. 473,666
Int. Cl.³ B23K *11/10*
U.S. Cl. 219—86.33 **4 Claims**



1. In a resistance welding device, means for rotatably supporting a weld gun and coupling electrical current to a weld gun comprising:
an arbor assembly rotatable about a central axis and having adaptor means for supporting a weld gun and drive means for rotatably driving the assembly;
the arbor assembly comprising an array of axially spaced segments, each segment having a cylindrical outer periphery and each being electrically connected to the weld gun, and means mechanically securing the segments, the adaptor means and the drive means into a load bearing member,
a nonrotatable supply ring surrounding each segment, and
means for urging the supply rings into intimate conductive engagement with the outer periphery of the segments to allow current flow between the rings and segments, and for releasing the rings from the segments to permit rotation of the arbor assembly within the supply rings.

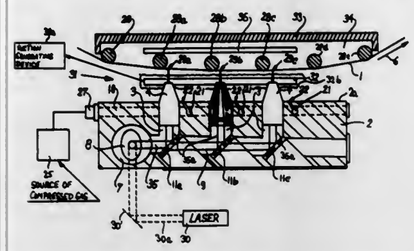
4,500,770

APPARATUS FOR MAKING PERFORATIONS IN RUNNING WEBS OF PAPER OR THE LIKE

Jürgen Vock, Hamburg; Peter Pinck, Gross-Hansdorf; Norbert Lange, Glinde; Erwin Schmalfeld, Reinbek, and Kurt-Eckard Petersen, Wentorf, all of Fed. Rep. of Germany, assignors to Hauni-Werke Körber & Co. KG, Hamburg, Fed. Rep. of Germany

Filed Jun. 23, 1982, Ser. No. 391,478
Claims priority, application Fed. Rep. of Germany, Jul. 10, 1981, 3127206
Int. Cl.³ B23K *27/00*
U.S. Cl. 219—121 LK **26 Claims**

1. Apparatus for perforating sheet-like material, particularly a moving wrapping material for rod-shaped articles of the tobacco processing industry, comprising a source of coherent radiation; at least one energy-directing perforating unit which is spaced apart from the material to be perforated and has a marginal portion beyond which radiant energy which is used to make perforations and is supplied by said source propagates itself against the material with attendant separation of solid matter in the regions of impingement of radiant energy upon the material, said marginal portion having an end face and a rim surrounding said end face and said perforating unit having a passage for the propagation of radiant energy against the material to be perforated, said passage having an outlet and said rim surrounding said outlet; means for transporting the



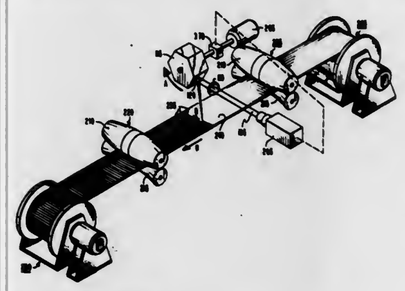
material during impingement of radiant energy thereon; a source of pressurized gaseous fluid; and means for conveying at least one stream of gaseous fluid which is supplied by the respective source against the exterior of said portion of said perforating unit to thus reduce the likelihood of accumulation of solid matter thereon, said conveying means comprising at least one nozzle receiving fluid from the respective source and arranged to direct such fluid against at least a part of said rim.

4,500,771

APPARATUS AND PROCESS FOR LASER TREATING SHEET MATERIAL

Richard A. Miller, North Huntingdon, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Oct. 20, 1982, Ser. No. 435,443
Int. Cl.³ B23K *27/00*
U.S. Cl. 219—121 LH **21 Claims**



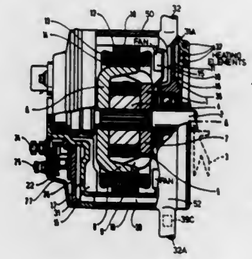
1. A process comprising:
translating ferromagnetic sheet metal;
curving said translating ferromagnetic sheet metal; and
scribing magnetic domain refining lines on the translating curved ferromagnetic sheet metal.

4,500,772

COMBINED LIQUID-COOLED ON-BOARD NETWORK GENERATOR AND HEATER FOR MOBILE VEHICLES

Peter Ahner, Ludwigsburg; Helmut Härer, Remseck, and Siegfried Schustek, Immenstaad, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Sep. 27, 1982, Ser. No. 424,535
Claims priority, application Fed. Rep. of Germany, Mar. 3, 1982, 3207605
Int. Cl.³ H05B *1/00*; H02K *9/08*
U.S. Cl. 219—209 **19 Claims**



1. A combined on-board electric network and heat supply generator system for vehicles having engines and passenger compartments, comprising
a closed housing structures (52);
an armature (10) mounted within the housing;
at least one alternating current coil (13,14) supported on the armature;
a rotor shaft (2) mounted in the housing;
a claw-pole rotor (6–9) mounted on the rotor shaft (2) and driven by the engine of the vehicle;
means (19) for circulating a cooling medium inside the housing, said cooling medium streaming over the alternating current coils (13,14) and the rotor;
having at least one part of the housing formed as a heat exchange element which is cooled by the cooling medium, and an externally closed heat exchange liquid circuit, including entrance and exit ports (32,32*a*) formed on the housing for heating the passenger compartment of the vehicle, and having a portion of the liquid circuit in heat exchange relation to the heat exchange element, and
having at least one electric heating element (37) mounted in at least one of the parts of the housing (52), and a switch (38,40,41,42,43) connecting the heating element with at least one alternating current coil (13,14), the heating element (37) being positioned in heat exchange relation with the fluid circuit.

4,500,773

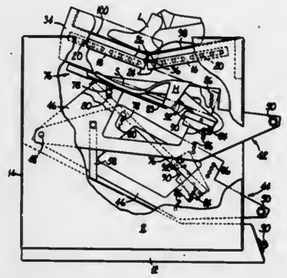
METHOD AND APPARATUS FOR USE IN HEATING SHOE PARTS

Raymond Hanson, Rearsby, and Malcolm Tillyard, Leicester, both of England, assignors to USM Corporation, Farmington, Conn.

Filed Nov. 27, 1981, Ser. No. 325,384
Claims priority, application United Kingdom, Nov. 29, 1980, 8038412
Int. Cl.³ A43D *95/10*; H05B *1/00*
U.S. Cl. 219—215 **13 Claims**

5. An apparatus suitable for use in heating shoe parts to activate adhesive on a surface thereof, comprising:
a single continuous plate comprising a pair of articulated portions, each having upper and lower surfaces, and each having electrical heaters embedded therein which are operable to heat the plate;
control means operable to control the heaters so that they bring both the upper and lower heating surfaces of the

plate to a temperature of between 300° C. and 450° C. and maintain them substantially at that temperature; and



adjustable support means for shoe parts, on which shoe parts can be positioned in opposed relationship with and close proximity to the upper and the lower heating surfaces of the single continuous articulated plate.

4,500,774

CAR CIGAR LIGHTER

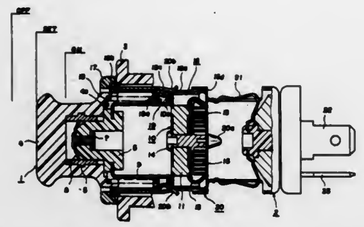
Kazumi Honjo, Tokyo, Japan, assignor to Niles Parts Company, Limited, Tokyo, Japan

Filed Jan. 5, 1984, Ser. No. 568,405

Claims priority, application Japan, Nov. 16, 1983, 58-177313[U]

Int. Cl.³ F23Q *7/00*

U.S. Cl. 219—265 **5 Claims**



1. A car cigar lighter substantially comprising a plug assembly having a knob and a socket assembly having as bimetal, wherein a flange is fitted to the front end of a cylindrical shell portion of a plug housing, said knob of the plug assembly with a ringed groove provided almost at the center of said shell portion of the plug, a ringed projection provided at a skirt portion of the shell of said plug with a heat insulating resin ring covering the periphery of the opening edge of said flange formed at the edge as an integral piece, a spring controlling the movement of the foregoing knob and supported by a spring bearing seat having one end coming in contact with the inner wall of said knob and the other end contacting the inner wall of the aforesaid ringed groove, and at a SET position, a positioning projection provided on the inner wall of a socket contacts the tip of said ringed projection to control the inserting position of the plug and, at the same time, a holder in the socket grips the outer wall of said plug with pressure, at an ON position, the outer circumference of a heater cap of the foregoing plug assembly is retained engaging with said bimetal of the socket assembly and further, at an OFF position, said plug assembly pops out because of the resilient force of said spring and because said holder in the socket comes into contact with the outer wall of said ringed projection to halt thereat.

4,500,775

METHOD AND APPARATUS FOR DETECTING AN OPEN CIRCUIT IN A GLOW PLUG GROUP FOR COMBINATION WITH A GLOW PLUG HEATING CONTROL CIRCUIT

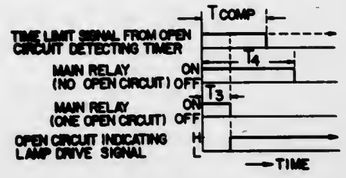
Osamu Sangu, Toyota, and Seiko Hotta, Oobu, both of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Mar. 31, 1983, Ser. No. 480,923

Claims priority, application Japan, Apr. 2, 1982, 57-55702

Int. Cl.³ H05B *1/02*

U.S. Cl. 219—497 **7 Claims**



1. A method for detecting an open circuit occurring in a glow plug group including a plurality of glow plugs connected in parallel, for combination with a glow plug heating control circuit for controlling the supply of electric powe to said glow plug group on the basis of an output signal indicative of a change of the composite resistance of said glow plug group produced from a detecting element connected in series with said glow plug group while detecting a heating condition of said glow plug group, after a power supply switch is turned on, comprising the steps of:

generating a heating time signal indicative of a time length in which the heating condition of said glow plug group detected by said detecting element reaches a predetermined heating condition after the start of the supply of electric power to said glow plug group initiated by the turning-on of said power supply switch;

generating a time limit signal indicative of a preset time-length starting in response to the turning-on of said power supply switch;

comparing the heating time signal with the time limit signal; and

producing an open circuit detection signal for indicating the occurrence of an open circuit in said glow plug group only when the time length indicated by the heating time signal is shorter than the preset time-length.

4,500,776

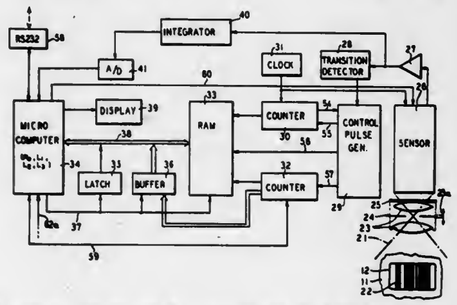
METHOD AND APPARATUS FOR REMOTELY READING AND DECODING BAR CODES

Vadim Laser, 994 Twincrest Ct., Cincinnati, Ohio 45231

Filed Nov. 8, 1982, Ser. No. 439,988

Int. Cl.³ G06K *7/10*

U.S. Cl. 235—162 **18 Claims**



1. A remote continuous bar code reading apparatus comprising:

a non-coherent light means for continuously illuminating a bar code, said bar code being remotely disposed with respect to said camera;

a light-sensitive image sensor;

an optical means havinga rectangular aperture for focusing light reflected from said bar code onto said image sensor;

a data loading means connected to said image sensor;

a data decoding means; and

a random access memory connected to said data loading means and to said decoding means and being timeshared by said data loading means and said decoding means such that data from said image sensor is initially loaded into said random access memory, said data being utilized by said decoding means for decoding said bar code, and said random access memory subsequently functioning as a working memory for said decoding means.

4,500,777

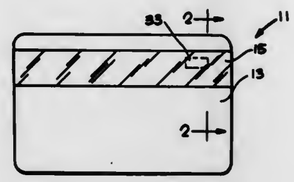
HIGH DATA CAPACITY, SCRATCH AND DUST RESISTANT, INFRARED, READ-WRITE DATA CARD FOR AUTOMATIC TELLER MACHINES

Jerome Drexler, Los Altos Hills, Calif., assignor to Drexler Technology Corporation, Mountain View, Calif.

Continuation of Ser. No. 492,691, May 11, 1983, , which is a continuation of Ser. No. 238,833, Feb. 22, 1981, abandoned. This application Dec. 29, 1983, Ser. No. 566,966

Int. Cl.³ G06K *19/00*

U.S. Cl. 235—487 **3 Claims**



1. A system for sequentially recording transaction data by means of a laser comprising,

a wallet size card with a transparent plastic laminating material protectively bonded to a strip of high resolution direct-read-after-write reflective laser recording material adhered to one side of the card being laser recordable in place on said card and having a minimal laser recording capacity of 250,000 binary bits, the reflectivity of said strip greater than 25% at near infrared wavelengths and having laser created pits therein, representing transaction data, with a dimension of between several microns and 25 microns and with reflectivity of less than 10%, and

laser means having a beam disposed in laser writing relation with respect to said strip for writing said pits, representing transaction data, the pits having a size of between several microns and 25 microns, and

a light detector means disposed in reading relation with respect to said strip for reading said pits, and

means providing relative motion between the laser beam and the card for sequentially reading transaction data on the card and writing transaction data onto said card in a permanent manner.

4,500,778

IMAGE PLANE DEVIATION AMOUNT DETECTING DEVICE

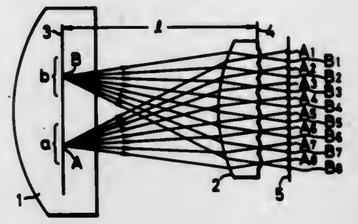
Yosuke Kusaka, Kawasaki, and Toru Fukuhara, Isehara, both of Japan, assignors to Nippon Kogaku K.K., Tokyo, Japan

Continuation of Ser. No. 366,113, Apr. 6, 1982, abandoned. This application Jun. 4, 1984, Ser. No. 617,133

Claims priority, application Japan, Apr. 7, 1981, 56-51121

Int. Cl.³ G03B *3/10*

U.S. Cl. 250—204 **5 Claims**



1. In a device having means for making a first image and a second image by an imaging lens from light beams passing through first and second areas of the exit pupil of said imaging lens, and driving said imaging lens to be coincident with an image of an object formed by said imaging lens and a predetermined focal plane on the basis of the amount of relative displacement of said first and second images, the improvement comprising:

means for obtaining the distance between said predetermined focal plane and an imaging plane of the image of said object formed by said imaging lens from the following relation:

$$\Delta x = \frac{d \cdot l}{l \cdot \tan\theta - d}$$

where l is the distance between a plane adjacent to said exit pupil and perpendicular to the optical axis of said imaging lens and said predetermined focal plane, 2d is the amount of relative displacement of said first and second images, 2θ is the angle formed by two light rays passing from substantially the centers of the first and second areas of said exit pupil to the point of intersection between said predetermined focal plane and said optical axis, and Δx is the distance between said predetermined focal plane and said imaging plane.

4,500,779

METER ENCODING REGISTER HAVING IMPROVED ZEROING MECHANISM

Emmett D. Killingsworth, Raleigh, N.C., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Mar. 1, 1982, Ser. No. 353,139

Int. Cl.³ G01D *5/34*; G06C *15/42*

U.S. Cl. 250—231 SE **25 Claims**

21. A multiple shaft meter encoding register for a utility meter having a metering movement responsive to a metered quantity, comprising:

a frame;

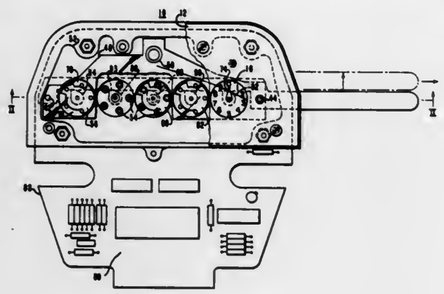
a plurality of shafts rotatably mounted in said frame;

means for generating electrical signals responsive to the angular position of said shafts, said generating means comprising a plurality of code members each fixedly mounted to a separate one of said shafts;

means for interconnecting said shafts with the associated metering movement for concurrently rotating said shafts at different predetermined rates in response to actuation by the associated metering movement;

means for releasing any of said shafts from said interconnecting means;

a plurality of shaft alignment members, each of said plurality of shaft alignment members being connected to a preselected one of said plurality of shafts in a predetermined angular relationship, each of said shaft alignment members having a fixed angular relationship to the one of said plurality of code members that is fixedly mounted to the same shaft; and



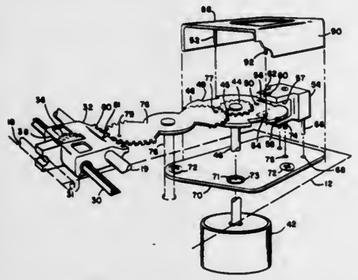
each of said plurality of shaft alignment members comprises a cam surface, said cam surface being shaped to align with a reference alignment member, said reference alignment member being operable between a first position and a second position with respect to said frame, said reference alignment member being separable from said frame.

4,500,780

APPARATUS AND METHOD FOR ALIGNING POSTAGE METER COMPONENTS WITH AN OPTICAL SENSOR

Danilo P. Buan, Easton, and Alton B. Eckert, Norwalk, both of Conn., assignors to Pitney Bowes Inc., Stamford, Conn.

Filed Jan. 3, 1983, Ser. No. 455,163
Int. Cl.³ G01D *5/34*
U.S. Cl. 250—231 SE **8 Claims**



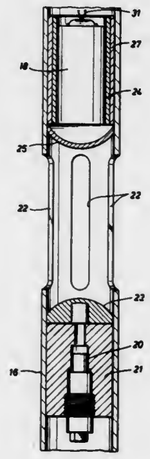
5. A setting apparatus for selecting the position of a slidable carriage which has a home position, the combination comprising: a mounting bracket having a plurality of openings therein, an optical sensor having a pair of opposed walls extending therefrom to form a channel therebetween, a pair of alignment pins extending from one side of said optical sensor, said alignment pins being received with openings of said mounting bracket, a pair of lights mounted on one of said walls on the side of said channel, a pair of photocells mounted in the second of said walls and addressing said lights, a mark located on the side of said optical sensor opposite said projections and intermediate the location of said lights, an encoder disk having a plurality of slots therein mounted on the output shaft of one stepper motor, said encoder disk having an alignment mark thereon, a stepper motor gear integral with said encoder disk, a transfer gear being in engagement with said stepper motor gear and in driving engagement with the slidable carriage, whereby upon said slidable carriage being in the home position, said optical sensor mark and said encoder disk mark will be aligned with one another.

4,500,781

METHOD AND APPARATUS FOR DETERMINING NEUTRON CHARACTERISTICS OF BOREHOLE FLUIDS

Richard B. Culver, and Donald W. Oliver, both of Houston, Tex., assignors to Dresser Industries, Inc., Dallas, Tex.

Filed May 28, 1982, Ser. No. 383,052
Int. Cl.³ G01V *5/10*
U.S. Cl. 250—269 **6 Claims**



1. Apparatus for evaluating the absorption cross-section of fluids within a borehole, comprising:

an elongated housing member having a cavity formed therein, said cavity being in fluid communication with said borehole;

a source of high energy neutrons, located at one end of said cavity, for irradiating at least a portion of the fluid contents of said borehole contained within said cavity;

a neutron detector, located at the other end of said cavity, for detecting radiations emanating from said irradiated fluid;

a source mounting block of shielding material substantially surrounding said source for collimating said source output into a beam of radiation traversing said cavity;

a layer of radiation shielding material substantially surrounding said detector;

a layer of radiation moderating material substantially surrounding said detector;

means for generating first electrical signals representative of the count rate of said detected radiation; and

means for converting said first electrical signals into second electrical signals functionally related to the absorption cross-section of said irradiated borehole fluid.

4,500,782

METHOD OF CALIBRATING ION CYCLOTRON RESONANCE SPECTROMETERS

Martin Allemann, Ottikon, and Hanspeter Kellerhals, Uster, both of Switzerland, assignors to Spectrospin AG, Zürich-Fällanden, Switzerland

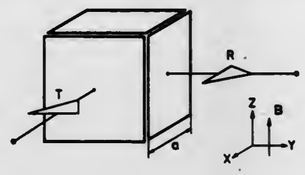
Filed Aug. 5, 1982, Ser. No. 405,558
Claims priority, application Fed. Rep. of Germany, Aug. 11, 1981, 3131669
Int. Cl.³ H01J *49/36*; G01D *18/00*
U.S. Cl. 250—291 **5 Claims**

1. A method of measuring the charge-to-mass ratio q/m of

an ionized sample substance in a cyclotron resonance spectrometer,

in which the ionized sample substance is contained in a trapped ion cell and is exposed therein to a homogeneous magnetic field of constant strength,

comprising the steps of initially introducing a known ionized



substance having a known charge-to-mass ratio into said ion cell,

measuring the first upper sideband frequency ω_R of the resonance frequency of said known ionized substance,

deriving the calibration factor B of the spectrometer by introducing the known value of q/m and the measured value of ω_R into the approximate relation

$$\frac{q}{m} = \frac{\omega_R}{B};$$

thereafter introducing an unknown sample substance into said cell,

measuring the first upper sideband frequency ω_R of the resonance frequency thereof,

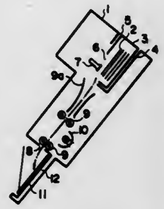
and deriving the unknown value of q/m by introducing the measured value of ω_R and the calibration value of B into the same approximate relation.

4,500,783

NOISE ERASING APPARATUS FOR STIMULABLE PHOSPHOR SHEET

Hisatoyo Kato, Minami-ashigara, Japan, assignor to Fuji Photo Film Co., Ltd., Japan

Filed Oct. 18, 1982, Ser. No. 434,884
Claims priority, application Japan, Oct. 21, 1981, 56-168119
Int. Cl.³ G03C *5/16*
U.S. Cl. 250—327.2 **11 Claims**



1. In an arrangement wherein stimulable phosphor sheets for use in a radiation image recording and reproducing system are taken up one at a time out of a stimulable phosphor sheet reservoir containing stimulable phosphor sheets and each is loaded into a cassette used for the recording of a radiation image,

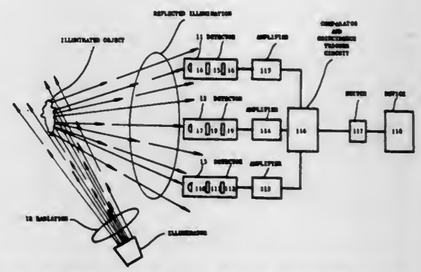
a noise erasing apparatus for stimulable phosphor sheets comprising an irradiation means for emitting noise erasing light, which is provided between the aperture of said stimulable phosphor sheet reservoir from which said stimulable phosphor sheets are taken up and the section at which said stimulable phosphor sheets are loaded into said cassettes, said irradiation means having an exposure amount of 500,000 lx.sec. or more.

4,500,784

AUTOMATIC HUMAN BODY DETECTOR

Michael Hacskaylo, 3327 Prince Charles Ct., Falls Church, Va. 22044

Filed Sep. 29, 1982, Ser. No. 428,072
Int. Cl.³ G01J *5/00*
U.S. Cl. 250—341 **4 Claims**



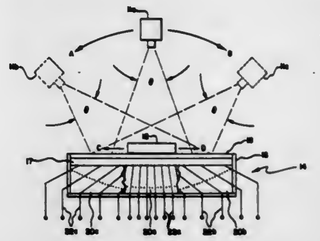
1. A method of identifying an object as that of a human body by illuminating the object with infrared radiation and detecting specific bands of reflected radiation from said object, whereby the simultaneous coincidence of specific bands of reflected radiation defines the signature of the detected object as that of a human body.

4,500,785

RADIATION DETECTOR HAVING A MULTIPLICITY OF INDIVIDUAL DETECTING ELEMENTS

Nathan R. Whetten, Burnt Hills, and John E. Kelley, Albany, both of N.Y., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed May 26, 1982, Ser. No. 382,329
Int. Cl.³ H01J *47/06*
U.S. Cl. 250—385 **14 Claims**



1. A radiation detector fixedly positioned relative to the location at which an object to be examined is to be located, and used with a radiation source movable to each sequential one of a plurality N of different positions relative to the fixedly-positioned radiation detector, said detector converting differentially-absorbed radiation from said movable source to electrical signals, comprising:

a housing having a cavity;

a medium contained within said cavity for conversion of radiation quanta to charged particles;

means within said cavity for establishing a plurality N of electric fields; and

a plurality N of different linear detector arrays each located in a plane parallel to and spaced from the plane of all other arrays and each having a multiplicity of elongated detector elements, each detector element in a particular one of said arrays being disposed substantially coplanar with all other detector elements of that array and with the elongated direction thereof substantially directed at the associ-

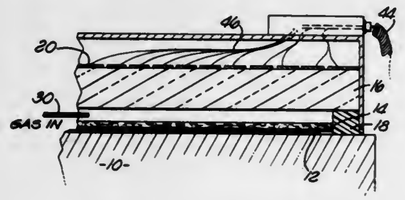
ated one of said plurality N of locations of said source, each detector element cooperating with only one associated different one of said plurality of field-establishing means for collection of charged particles formed in an associated portion of said cavity to provide an associated one of said electrical signals.

4,500,786

LARGE AREA SPARK CHAMBER AND SUPPORT, AND METHOD OF RECORDING AND ANALYZING THE INFORMATION ON A RADIOACTIVE WORK PIECE

Roy J. Britten, Costa Mesa, and Eric H. Davidson, Pasadena, both of Calif., assignors to California Institute of Technology, Pasadena, Calif.

Filed Apr. 21, 1982, Ser. No. 370,333
Int. Cl.³ G01T *1/185*
U.S. Cl. 250—389 **18 Claims**



1. A novel large area spark chamber and support comprising:

(a) a support for carrying a generally planar radioactive work piece;

(b) positioned in superposed relationship to said support a spark chamber including a thin window in the form of an essentially rigid plastic sheet carrying a thin layer of an electrically conductive material on the surface thereof, said thin window being capable of passing beta rays therethrough;

positioned in superposed relationship to said thin window, a layer of semi-conducting glass which is maintained in spaced-apart relationship from said thin window by a resilient insulating seal to form an enclosed gas retaining chamber between the layer of semi-conductive glass and said thin window; and

an electrically conducting surface adhered to the upper surface of said layer of semi-conducting glass, said electrically conducting surface being in the form of a series of generally uniform parallel strips;

(c) mechanical means for moving said spark chamber toward and away from said support;

(d) means for maintaining a desired predetermined gas composition within said spark chamber;

(e) an electrically conductive path between said thin layer of electrically conductive material on said thin window and said electrically conducting surface on said semiconducting glass, said path including a high voltage supply;

(f) means for detecting the location of sites of impingement of radiation on said electrically conducting surface of said semi-conducting glass; and

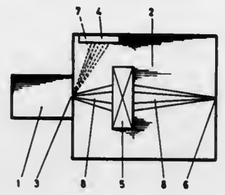
(g) means for recording and analyzing the information present in the work piece.

4,500,787

METHOD AND A DEVICE FOR FURNISHING AN ION STREAM

Jan B. Le Poole, Voorschoten, and Pieter Krult, Amsterdam, both of Netherlands, assignors to Nederlandse Centrale Organisatie Voor Toegepast Natuurwetenschappelijk Onderzoek, The Hague, Netherlands

Continuation of Ser. No. 187,525, Sep. 15, 1980, abandoned. This application Aug. 2, 1982, Ser. No. 404,044
Claims priority, application Netherlands, Sep. 17, 1979, 7906913
Int. Cl.³ H01J *27/00*
U.S. Cl. 250—427 **8 Claims**



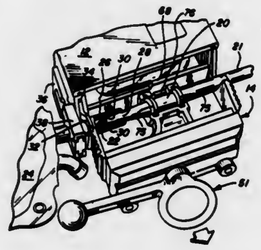
1. A method for furnishing an ion stream by causing gas to flow through a discharge aperture having a diameter of at most 20 μm into an evacuated chamber and ionizing said gas by means of one or a plurality of focused electron beams downstream of said aperture characterized in that the ionization is effected at the location where the diameter of the gas stream is the smallest immediately downstream of said discharge aperture.

4,500,788

DEVICE FOR PROVIDING ANTIBACTERIAL RADIATION

Ralph Kulin, Marengo; Daniel B. Granzow, Ingleside, and Brant R. Danielsen, Round Lake Beach, all of Ill., assignors to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Filed Aug. 19, 1983, Ser. No. 524,704
Int. Cl.³ A61L *2/10*; A61M *31/00*
U.S. Cl. 250—455.1 **22 Claims**



1. In apparatus for automatically connecting and disconnecting a pair of connectors, including a housing; means within said housing for providing radiation for antibacterial effect therein; first and second means for respectively holding said connectors, said first and second means being relatively movable between first and second positions, to cause connectors carried in the first and second means to be separated from each other in the first position, and to cause said carried connectors to be joined together in the second position; rack and gear means for relatively moving said first and second means between said first and second positions, the gear of said rack and gear means defining gear teeth of increasing pitch from its center of rotation about at least a portion of its periphery, the rack of said rack and gear means defining mating teeth correspondingly

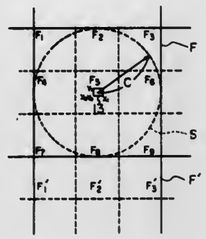
spaced along its length in positions to permit relatively linear motion between said rack and gear as the gear rolls along the rack, whereby the mechanical advantage of the rack and gear means varies with the position of the gear along the rack.

4,500,789

ELECTRON BEAM EXPOSING METHOD

Yasutaka Ban, Yokohama, and Toshihiko Osada, Ebina, both of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Aug. 25, 1982, Ser. No. 411,316
Claims priority, application Japan, Aug. 26, 1981, 56-134598
Int. Cl.³ A61K *27/02*
U.S. Cl. 250—492.2 **3 Claims**



1. An electron beam exposing method for projecting an electron beam, having an accerleration voltage, onto a desired region of a resist layer having a predetermined region having an area and having patterns, comprising the steps of:

(a) setting the acceleration voltage of the electron beam to a value at which a distribution of scattered electrons in the predetermined region of the resist layer is substantially uniform;

(b) projecting the electron beam onto the resist layer at an exposure dosage determined according to a ratio between a total area of the patterns onto which the electron beam is projected in the predetermined region with respect to the area of the predetermined region, said projecting step comprising the substeps of:

(i) determining an exposure dosage time in dependence upon a dose amount and an electron beam current;

(ii) calculating a correction factor to obtain a corrected exposure dosage time, comprising the substeps of:

(aa) determining a radius and center for a circle including the patterns;

(bb) calculating a sum of the areas of the patterns in the circle; and

(cc) calculating the correction factor for the exposure dosage time in dependence upon electrons reflected from the entire surface of the resist layer, the radius of the circle and the sum of the areas of the patterns in the circle; and

(iii) correcting the exposure dosage time in dependence upon the correction factor to obtain the corrected exposure dosage time.

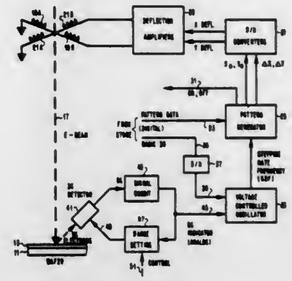
4,500,790

SYSTEM FOR IMPROVING THE UNIFORMNESS OF PATTERNS GENERATED BY ELECTRON BEAM LITHOGRAPHY

Erwin Bretscher, Rapperswil, and Peter Vettiger, Langnau am Albis, both of Switzerland, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 19, 1982, Ser. No. 435,174
Claims priority, application European Pat. Off., Nov. 30, 1981, 81110007.2
Int. Cl.³ G01N *23/00*
U.S. Cl. 250—492.2 **7 Claims**

1. A method of improving the uniformness of patterns generated by electron beam lithography in a covering layer over a substrate or base layer, comprising the steps of; generating an indication signal of the quantity of backscattered electrons obtained during electron beam exposure; applying a control signal as a function of said indication signal for adjusting the electron beam stepping rate such that the exposure dose per unit length is kept substantially constant despite variations in the material or topography of the substrate or base layer, and obtaining prior to an exposure process, an offset value and a



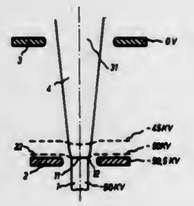
gain value of at least one backscatter detector to obtain the indication signal; said offset and gain values selected by the steps of prescanning a sample comprising two materials having the largest expected difference in backscatter characteristics, and individually adjusting during said prescanning the offset value and the gain value until the indication signal used for controlling the stepping rate remains within given limits.

4,500,791

HIGH STABILITY ELECTRON BEAM GENERATOR FOR PROCESSING MATERIAL

Siegfried Beisswenger, Preetz, Fed. Rep. of Germany, assignor to Dr. -Ing. Rudolf Hell GmbH, Fed. Rep. of Germany

PCT No. PCT/DE80/00086, § 371 Date Feb. 8, 1982, § 102(e) Date Feb. 8, 1982, PCT Pub. No. WO81/03579, PCT Pub. Date Dec. 10, 1981
PCT Filed Jun. 7, 1980, Ser. No. 348,064
Int. Cl.³ H01J *3/02, 37/063*
U.S. Cl. 250—493.1 **6 Claims**



1. An electron beam generating system comprising a heated cathode, a perforated anode spaced from said cathode, an auxiliary electrode surrounding the cathode and the electron beam shape and the beam intensity are determined because a slightly more negative constant voltage is applied to the auxiliary electrode than is applied to the cathode, means for controlling the heating of the cathode to a constant temperature, including means for measuring the actual emission current of

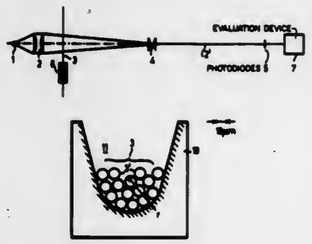
the cathode and supplying an output to said means for controlling the heating current of the cathode.

4,500,792

APPARATUS FOR CONTROLLING THE TITER OF SYNTHETIC FIBER TOWS

Kurt Aeppli, Uster, Switzerland, assignor to Zellweger Uster Ltd., Uster, Switzerland

Filed Jul. 2, 1982, Ser. No. 394,765
Int. Cl.³ G01B *11/10*
U.S. Cl. 250—560 **9 Claims**



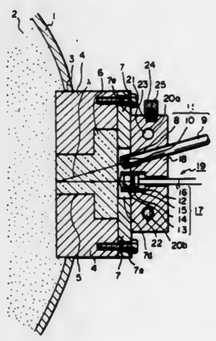
1. An apparatus for controlling the titer of synthetic fiber tows, comprising light source means for projecting a light beam along a beam path through which at least one fiber tow is passed; photosensitive receiver means for receiving said light beam after it passes said tow, including at least one row of a predetermined number of photodiode elements upon which the shadow projected by the tow impinges and leaves unexposed to the light beam a number of photodiode elements indicative of the cross section of the tow; means for orienting the fibrils of said tow at least in the area of said beam path so as to provide said tow with a regular cross section at least along the length thereof which is intercepted by said light beam; and evaluation means responsive to said receiver means for producing an output signal to control the titer of the tow being formed on the basis of the detected cross section of the tow.

4,500,793

APPARATUS FOR MONITORING INSIDE OF TREATING COLUMN

Kenji Kuramoto, Atsugi, Japan, assignor to Ebara Corporation, Tokyo, Japan

Filed Feb. 11, 1982, Ser. No. 348,084
Int. Cl.³ G01N *15/06*
U.S. Cl. 250—574 **15 Claims**



1. An apparatus for monitoring the interior of a treating column containing two types of materials, said apparatus comprising:

a viewing window provided on a side wall of the column;

a color sensor having a light projecting portion placed to face the window for projecting light to materials in an area within the column to be monitored through the viewing window and a light reception portion for receiving a light reflected from the materials and converting the light to a reflection signal corresponding to the color of the materials;

driving means for driving the color sensor to move along the viewing window whereby the movement of the color sensor produces a scanned reflection signal indicating the color profile of the materials;

position sensing means for successively producing position signals each indicating the passing of the color sensor by one of a plurality of predetermined color detection positions spaced along the viewing window as the color sensor is moved by the driving means;

reference means for providing a reference signal for differentiation of the colors of the two types of materials contained in the column;

means for comparing the scanned reflection signal from the moving color sensor with the reference signal from the reference means to produce a color difference signal for identification of the type of the materials; and

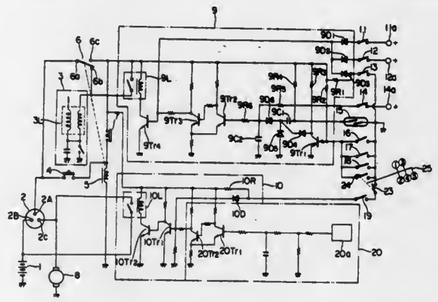
means for position-defining the color difference signal in accordance with the successively sensed position signals from the position sensing means to develop a series of color difference samples each identifying the type of materials dominantly present at one of the successive detection areas within the column and spaced generally in the vertical axis thereof, whereby said series of samples indicates the distribution of the materials over the vertically scanned areas within the column.

4,500,794

APPARATUS FOR AUTOMATICALLY STARTING AND STOPPING ENGINE

Isao Hamano; Akira Morishita; Yoshifumi Akae, and Toshinori Tanaka, all of Himeji, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 28, 1983, Ser. No. 555,679
Claims priority, application Japan, Dec. 2, 1982, 57-183862[U]; Dec. 2, 1982, 57-183863[U]; Dec. 2, 1982, 57-183864
Int. Cl.³ H02P *9/04*
U.S. Cl. 290—38 C **3 Claims**



1. An apparatus for automatically starting and stopping an engine comprising:

a clutch switch for detecting that the depression of a clutch pedal of a vehicle is completely performed,

a neutral switch for detecting the neutral position of a transmission,

a vehicle speed sensor for generating a travel signal by detecting the travel of the vehicle,

condition detecting means for detecting the operation maintaining condition of the engine, and

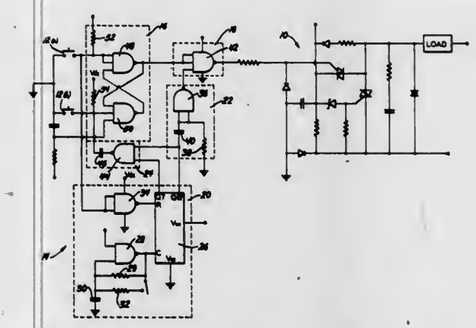
control means for automatically stopping the engine by interrupting the energization of an ignition circuit when receiving a detection signal of said neutral switch and not receiving the detection signals of said vehicle speed sensor and said condition detecting means and automatically starting the engine by energizing the ignition circuit and a starter when receiving a detection signal of said clutch switch and not receiving the detection signals of said neutral switch, said vehicle speed sensor and said condition detecting means.

4,500,795

ELECTRICAL TIMING CONTROL SWITCH

Peter A. Hochstein, 14020 Fifteen Mile Rd., Sterling Heights, Mich. 48077, and Kelvin Shih, 908 Devonshire Rd., Brighton, Mich. 48116

Filed Sep. 30, 1982, Ser. No. 430,832
Int. Cl.³ H05B *37/02*
U.S. Cl. 307—141 **7 Claims**



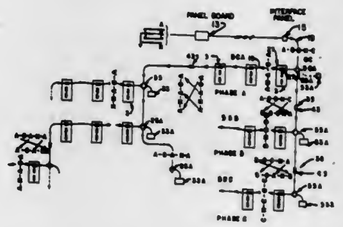
1. An electrical timing circuit for controlling the activation and deactivation of an electrical load comprising: a manually operable on-off control means, switch means having an on-state for placing the load in an activated mode and an off-state for placing the load in a deactivated mode, circuit means responsive to operation of said control means for placing said switch means in said on-state a predetermined time period and in said off-state upon the expiration of said predetermined time period and for momentarily placing said switch means in said off-state for a warning time period prior to said expiration of said predetermined time period so that momentary deactivation of the load indicates impending expiration of said predetermined time period and for reinitiating said predetermined time period in response to operation of said control means, said circuit means including a signaling circuit responsive to operation of said control means and having on and off modes for placing said switch means in said on-state when in said on mode and for placing said switch means in said off-state when in said off mode, a timing circuit responsive to operation of said control means for providing a plurality of time spaced signals to establish said predetermined and warning time periods respectively, and a transfer circuit for transferring said signaling circuit to said off mode during said warning time period and at said expiration of said predetermined time period in response to said time spaced signals, said signaling circuit including a set-reset circuit responsive to input signals from said control means and said transfer circuit for alternatively establishing on and off output signals and during said predetermined time period and for reestablishing said predetermined time period upon initial operation of said control means during the period between the initiation of said warning period and the expiration of said predetermined time period.

4,500,796

SYSTEM AND METHOD OF ELECTRICALLY INTERCONNECTING MULTIPLE LIGHTING FIXTURES

Murray L. Quin, deceased, late of Tupelo, Miss. (by Dorothy L. Quin, administratrix), assignor to Emerson Electric Co., St. Louis, Mo.

Filed May 13, 1983, Ser. No. 494,257
Int. Cl.³ H05B *37/00*
U.S. Cl. 307—147 **19 Claims**



1. An electrical interconnect system for multiple lighting fixtures comprising:

a source of three phase alternating current electrical power;

a plurality of lighting fixtures;

a first switching cable assembly between said power source and successive lighting fixtures;

a plurality of power cables, each cable having a first, a second, a third, a fourth, and a fifth lead, one of said power cables extending from said power source to said first switching cable assembly;

said first switching cable assembly having internal circuit connections for connecting a first series of lighting fixtures to at least said first, second, and fourth leads with said fixtures of said first series of fixtures being energized by at least a first phase of said three phase electrical power;

a first switch connected to said first switching cable assembly for selectively energizing and de-energizing said first series of lighting fixtures;

a second switching cable assembly electrically connected to said first switching cable assembly via others of said power cables;

means between said first and second switching cable assemblies for cross-connecting the leads of said power cables from said first switching cable assembly to said cross-connecting means with other leads in said power cables from said cross-connecting means to said second switching cable assembly such that said first lead from said first switching cable assembly becomes the third lead to said second switching cable assembly, said third lead from said first switching cable assembly becomes said fifth lead to said second switching cable assembly, and said fifth lead from said first switching cable assembly becomes said first lead to said second switching cable assembly;

said second switching cable assembly having internal circuit connections for connecting a second series of lighting fixtures to said third, second and fourth leads relative to said first switching cable assembly with the lighting fixtures of said second series of lighting fixtures being energized by a second phase of said three phase electrical power; and

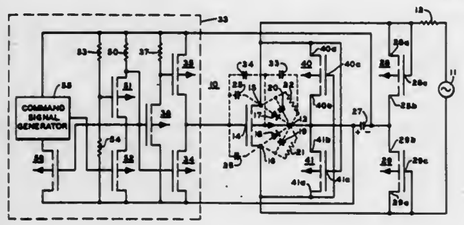
a second switch connected to said second switching cable assembly with said first switch being operable to control energization and de-energization of said first series of fixtures without interference with the operation of said second series of lighting fixtures and with said second switch being operable to control energization and de-energization of said second series of lighting fixtures without interference with the operation of said first series of lighting fixtures.

4,500,797

ALTERNATING POLARITY POWER SUPPLY CONTROL APPARATUS

Ikuo Nishimoto, Hennepin County, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Apr. 26, 1979, Ser. No. 33,585
Int. Cl.³ H03K *3/01*
U.S. Cl. 307—296 R **57 Claims**



1. An electronic switching circuit for controlling transfer of electrical power from an electrical power supply means to a load means, said switching circuit comprising:

a primary control means having first and second terminating regions and having a control region therein by which said primary control means is capable of being directed to effectively provide a conductive path of a selected conductivity between said primary control means first and second terminating regions, said primary control means first terminating region being electrically connected to a first terminal means adapted for electrical connection to a first circuit portion arrangement which includes both said electrical power supply means and said load means, and said primary control means second terminating region being electrically connected to a second terminal means adapted for electrical connection to said first circuit portion arrangement;

a rectifying means having first and second alternating polarity regions and having first and second constant polarity regions such that said rectifying means is capable of providing a constant polarity voltage between said first and second constant polarity regions if supplied with an alternating polarity voltage between said first and second alternating polarity regions, said first alternating polarity region being electrically connected to said first terminal means and said second alternating polarity region being electrically connected to said second terminal means;

an energy storage means having first and second polarity regions between which said energy storage means is capable of providing electrical energy storage, said energy storage means first polarity region being electrically connected to said first rectifying means first constant polarity region and said energy storage means second polarity region being electrically connected to said rectifying means second constant polarity region;

a primary control signal generating means having first and second energization regions and an output region, said primary control signal generating means being capable, upon electrical energization of said primary control signal generating means first and second energization regions, of providing a signal at said primary control signal generating means output region indicating occurrence of one or more selected conditions in said primary control signal generating means, there being one of said primary control signal generating means first and second energization regions electrically connected to one of said rectifying means first and second constant polarity regions;

a control signal coupling means having at least a first input region and a first output region, and which permits, at least selectively, communication to said control signal coupling means first output region concerning signals occurring at said control signal coupling means first input region, said first control signal coupling means first input region being electrically connected to said primary control signal generating means output region and said control signal coupling means output region being electrically connected to said primary control means control region;

a power conservation means having first and second terminating regions and having a control region therein by which said power conservation means is capable of being directed to effectively provide a conductive path of a selected conductivity between said power conservation means first and second terminating regions, said power conservation means first terminating region being electrically connected to that one of said primary control signal generating means first and second energization regions opposite that one connected to one of said rectifying means first and second constant polarity regions as aforesaid, said power conservation means second terminating region being electrically connected to that one of said rectifying means first and second constant polarity regions opposite that one connected to one of said primary control signal generating means first and second energization regions as aforesaid, and said power conservation means control region being electrically connected to said control signal coupling means in such a manner that no substantially conductive path will occur between said power conservation means first and second terminating regions whenever a signal appears at said control signal coupling means output region capable of permitting said primary control means to provide a relatively low conductivity path between said primary control means first and second terminating regions; and

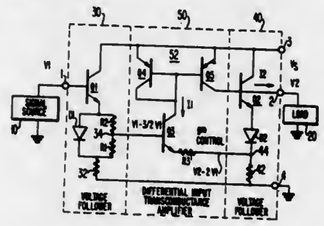
a secondary control signal generating means having first and second energization regions and having an output region, said secondary control signal generating means being capable, upon electrical energization of said secondary control signal generating means first and second energization regions, of providing a signal at said secondary control signal generating means output region indicating occurrence of one or more selected condition in said secondary control signal generating means, said secondary control signal generating means first energization region being electrically connected to said rectifying means first constant polarity region and said secondary control signal generating means second energization region being electrically connected to said rectifying means second constant polarity region, said secondary control signal generating means output region being electrically connected to said signal coupling means in such a manner that the occurrence of a substantially conductive path between said primary control means first and second terminating regions can be ended by said one or more conditions occurring in said secondary control signal generating means.

4,500,798

DIODE SIMULATOR CIRCUIT

Winthrop S. Pike, Princeton, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Sep. 27, 1982, Ser. No. 424,138
Int. Cl.³ H03K *3/26;* **G06G** *7/12*
U.S. Cl. 307—317 R **20 Claims**



19. In combination:

first means for providing a signal voltage and a load voltage which may differ from said signal voltage;

second means for translating said voltages by unequal amounts;

third means responsive to the translated voltages to provide an output current when the difference between said signal and load voltages is of a given polarity and exceeds a given value, said value being equal to a fraction, less than unity, of the threshold voltage of a semiconductor device in said second means, said output current being substantially zero otherwise; and

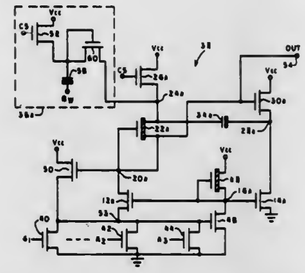
fourth means for applying said output current to said first means in a sense to reduce said difference.

4,500,799

BOOTSTRAP DRIVER CIRCUITS FOR AN MOS MEMORY

Rahul Sud, Colorado Springs, and Kim C. Hardee, Manitou Springs, both of Colo., assignors to Inmos Corporation, Colorado Springs, Colo.

Filed Jul. 28, 1980, Ser. No. 172,766
Int. Cl.³ H03K *19/094, 17/284, 17/10, 19/017*
U.S. Cl. 307—449 **29 Claims**



1. An address decoder comprising, in combination,

first and second enhancement mode field effect transistors each having a gate connected for receiving a digital input signal which varies between high and low levels, said transistors being connected to turn on and off in response to high and low levels, respectively, of the input signal;

a high impedance field effect transistor having its gate coupled to its source and its source coupled to the drain of said first transistor so as to define a first node at their mutual connection;

a low impedance field effect transistor having its drain coupled to a source of operating voltage and its source coupled to the drain of said high impedance transistor to define a second node between said high impedance transistor and said low impedance transistor, the latter transistor receiving a voltage at its gate for coupling a high level voltage to said second node;

a third enhancement mode field effect transistor having its drain coupled to a source of operating voltage, having its source coupled to the drain of said second enhancement mode transistor to define a third node thereat, and having its gate coupled to said first node; and

a capacitor connected between said second and third nodes such that, when the input signal goes low, said first and second enhancement mode transistors turn off, said first node is pulled high, said third enhancement mode transistor turns on, said third node is pulled high, the voltage transition at said third node is capacitively coupled to said second node and via said high impedance transistor back to the gate of said third enhancement mode transistor so as to increase the conduction in said third enhancement mode transistor and pull said first and third nodes to a high level for use as one or more inverted output signals;

a plurality of grounded-source field effect transistors whose gates are connected to receive memory address signals and whose drains are coupled to a common node;

means for coupling said common node to the source of said first enhancement mode field effect transistor; and

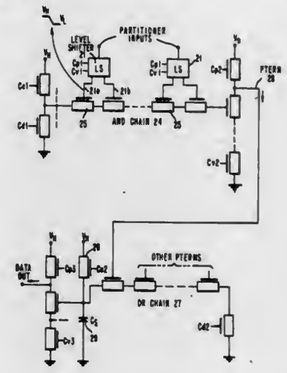
transistor means coupled to said common node for inverting the signal thereat and for coupling the latter inverted signal as a delayed input signal to the gates of said first and second enhancement mode transistors such that said second transistor remains momentarily conductive to provide a discharge path for said third node in response to a low level memory address signal in order to maintain a differential voltage across said capacitor.

4,500,800

LOGIC PERFORMING CELL FOR USE IN ARRAY STRUCTURES

Moises Cases, Delray Beach; Wayne R. Kraft; William L. Stahl, Jr., both of Coral Springs, and Nandor G. Thoma, Boca Raton, all of Fla., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 30, 1982, Ser. No. 413,043
Int. Cl.³ H03K *19/017, 19/096, 17/16, 19/177*
U.S. Cl. 307—468 **4 Claims**



1. In a programmed logic array structure having successive stages for performing bit partitioning, logical ANDing and logical ORing operations, with serially chained FET devices in the ANDing and ORing stages, the improvement for speeding up transfers of charges representing bits of information through said structure without loss of operational integrity comprising:

level shifting circuit means contained in said bit partitioning stages for reducing voltage swings occurring at transfer interfaces between outputs of respective bit partitioning stages and inputs to corresponding FET device chains in said ANDing stages, thereby reducing magnitudes of spurious charge coupling effects produced at the devices in said ANDing stages while also facilitating fast clearing of charges previously accumulated by devices in said ANDing stages;

charge reinforcing circuit means coupled to outputs of FET device chains in said ORing stages for sustainably reinforcing charge conditions acquired and held in respective device chains during transfers of outputs of said ORing stage; and

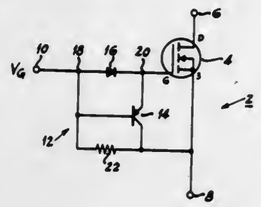
clocking circuit means providing a plurality of coordinated and cyclically repetitive timing control signals to said array stages for causing device chains in said stages to charge and discharge in a predetermined "tightly coordinated" manner, whereby charges representing information bits are moved successively and rapidly through devices in said partitioning, ANDing and ORing stages, and yet devices in said device chains in said ANDing and ORing stages are effectively kept isolated from spurious

charge conditions created by transitional discharging and charging actions occurring at devices in respective preceding stages.

4,500,801
SELF-POWERED NONREGENERATIVE FAST GATE TURN-OFF FET

William J. Janutka, West Allis, Wis., assignor to Eaton Corporation, Cleveland, Ohio

Filed Jun. 21, 1982, Ser. No. 390,481
Int. Cl.³ H03K *17/04, 17/687*
U.S. Cl. 307—570 **4 Claims**

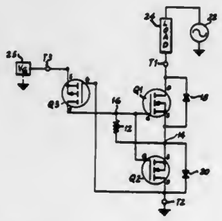


1. A fast turn-off FET circuit having drain, source and gate terminals, comprising;
an enhancement mode FET having a drain connected to said drain terminal, a source connected to said source terminal, and a gate operatively coupled to said gate terminal;
nonregenerative switch means comprising transistor means connected to said FET gate and source and driven into conduction by residual stored charge in the gate to source capacitance of said FET upon turn-off of the latter due to removal of gate drive, such that conduction of said switch means provides faster discharge therethrough of said FET gate, whereby to facilitate faster FET turn-off;
gate biasing voltage source means for supplying gate drive to said gate terminal for carrying gate drive to said FET gate;
wherein said transistor means comprises auxiliary FET means connected between said gate of said first mentioned FET and said source of said first mentioned FET, and biased OFF in response to gate drive to said first mentioned FET to prevent draining of said gate drive away from said first mentioned FET.

4,500,802
THREE TERMINAL BIDIRECTIONAL SOURCE TO SOURCE FET CIRCUIT

William J. Janutka, West Allis, Wis., assignor to Eaton Corporation, Cleveland, Ohio

Filed Jun. 21, 1982, Ser. No. 390,472
Int. Cl.³ H03K *17/04, 17/66*
U.S. Cl. 307—571 **15 Claims**

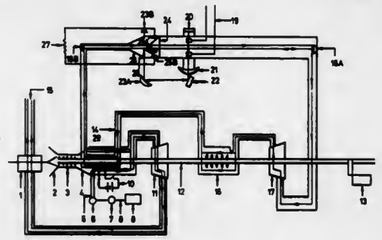


1. A bidirectional FET circuit comprising:
first and second enhancement mode FETs connected source to source in series relation between first and second power switching terminals, current conduction in one direction traversing through the series connection of the drain-source current path of said first FET and the forward biased substrate-drain pn junction of said second FET, and current conduction in the opposite direction traversing through the series connection of the drain-source current path of said second FET and the forward biased substrate-drain pn junction off said first FET; and
current source means for supplying a constant fixed level of current independent of input voltage, and including resistance means, connected to the gates of said FETs for driving them into conduction;
wherein said resistance means comprises a resistor having one end connected to a node connecting said FET sources, and having the other end connected to a node connecting said current source and a node connecting said FET gate, such that the gate to source potential for each FET is the product of the current through said resistor from said current source means and the resistance value of said resistor, regardless of the polarity of the corresponding power switching terminal.

4,500,803
SELF INDUCED LASER MAGNETOHYDRODYNAMIC (MHD) ELECTRIC GENERATOR

James C. Hayes, 1900 Lincoln Apt. 62, Montreal, Quebec, Canada H3H 1H7

Filed Sep. 14, 1982, Ser. No. 417,886
Claims priority, application Canada, Sep. 23, 1981, 393713
Int. Cl.³ H02N *4/02*
U.S. Cl. 310—11 **11 Claims**

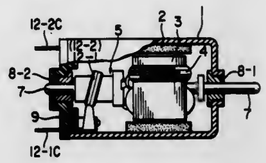


1. In a magneto-hydrodynamic electric generator of the type comprising:
a laser light source generating a laser light capable of photo-ionizing a gas;
means for passing said photo-ionized gas through a magnetic field to produce electricity between a pair of electrodes perpendicular to the flow of gas and to the magnetic field, and
means for recycling the gas having passed through the magnetic field, thereby making said gas to flow through the generator in a closed cycle,
the improvement:
wherein the MHD generator further comprises a heat-exchanger for heating the gas prior to passing through the electrodes, and a compressor for circulating the gas through the closed cycle;
wherein the laser light source is a gas laser;
wherein the gas of said gas laser is the one flowing through the generator and its magnetic field; and
wherein said gas laser comprises a divergent nozzle forming part of the closed cycle to make the gas passing therethrough to laser by expansion, a radio frequency generator to make the gas to laser by electric stimulation, and an optical system for collecting the laser light and focusing it onto the flow of gas upstream the electrodes and magnet field,
said optical system including a first pair of mirrors upstream and downstream the gas flow respectively, for focusing the laser light in the axial direction of the gas flow, an optical sub-system for collecting the laser light in a direction transversal to the gas flow and another pair of focusing mirrors for focusing the laser light collected by the sub-system in a direction transversal to the gas flow.

4,500,804
SMALL ELECTRIC MOTOR

Takeshi Akiyama, Matsudo, Japan, assignor to Mabuchi Motor Co., Ltd., Japan

Filed Oct. 7, 1982, Ser. No. 433,365
Claims priority, application Japan, Oct. 28, 1981, 56-160602[U]
Int. Cl.³ H02K *13/06*
U.S. Cl. 310—40 MM **5 Claims**

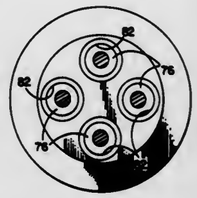


1. A small electric motor having a permanent magnet, a rotor having a shaft, a commutator fixedly fitted to the rotor shaft and having a lubricant coated on a contact surface thereof, and brushes for making sliding contact with said commutator, characterized in that said brushes are disposed at a predetermined angle of from 5° to 30° with respect to the direction normal to said shaft, each of said brushes comprising a single-piece slide contact portion and a brush arm; said slide contact portion being bent to said predetermined angle with respect to the direction normal to said shaft and having a V-shaped cross-section.

4,500,805
ELECTROMECHANICAL LINEAR ACTUATOR

Richard G. Swanson, West Hartford, Conn., assignor to Esco Design, Inc., West Hartford, Conn.

Filed Feb. 7, 1984, Ser. No. 577,864
Int. Cl.³ H02K *7/06*
U.S. Cl. 310—80 **10 Claims**

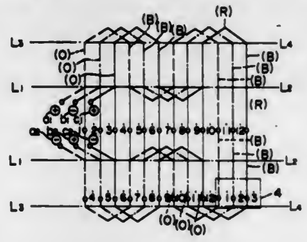


1. An electromechanical linear actuator comprising an electric motor adapted for connection with a source of electrical power and having a rotary mechanical output element, rotary mechanical motion transmission means connectable with the electric motor output element and operated thereby and in unison therewith, an elongated housing having one end portion open and in communication with said motor transmission means and an opposite end portion remote therefrom, an elongated lead screw disposed within said housing and having one end portion at said one end portion of the housing in operative connection with and rotatably driven by said motion transmission means, first and second bearing means in said housing respectively at said one and opposite end portions thereof supporting said lead screw for rotation by said motion transmission means, means retaining said lead screw against axial movement relative to said bearing means and housing, a drive nut operatively associated with and about said lead screw for axial movement therealong in one and an opposite direction in response to rotation of the screw in one and an opposite direction, and an actuator assembly telescopically received within said housing at its said opposite end portion and movable linearly relative thereto in one and an opposite direction for projection from said opposite end portion in varying degree, said actuator being operatively connected with and driven by said drive nut and comprising a plurality of similar elongated acutating rods circumaxially arranged about said lead screw within said housing and an actuating head connected with each of said rods at end portions thereof adjacent said opposite end portion of the housing.

4,500,806
THREE-PHASE FLAT COILS

Kenji Kanayama, Kariya, and Hidekuni Sugi, Nagoya, both of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Apr. 4, 1983, Ser. No. 481,949
Claims priority, application Japan, Apr. 5, 1982, 57-57041
Int. Cl.³ H02K *3/00*
U.S. Cl. 310—198 **4 Claims**



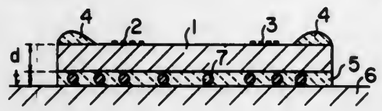
1. A three-phase flat coil comprising:
a disc-like insulating plate having an opening at its center portion;
three-phase coil windings including a-phase, b-phase and c-phase windings, each wound in a wave form around said plate in the same direction, each of said windings including front and back portions extending on front and back sides, respectively, of said plate in a radial direction, selected front and back portions of said windings being connected by transition portions wrapped around inner and outer peripheries of said plate, the number of said transition portions being a multiple of three, each of said windings having a first half with a first end on said front side of said plate and a second end on said back side of said plate, and a second half with a first end on said front side of said plate and a second end on said back side of said plate;
a plurality of output terminals disposed on the outer periphery of said front side of said plate, each connected to one of said first ends, respectively, ends of said b-phase winding at said output terminals being different in polarity from the ends of a-phase and c-phase windings at said output terminals; and
bridging wiring means positioned at substantially one point on the outer periphery of said back side of said insulating plate for three-dimensionally interconnecting said second ends of each said a-phase, b-phase and c-phase coil winding, respectively.

4,500,807

SURFACE ACOUSTIC WAVE TRANSMISSION DEVICE FOR A LOW FREQUENCY SIGNAL BELOW 30 MHZ

Akitsuna Yuhara; Norio Hosaka; Yuji Fujita; Kiyoharu Kishimoto, and Jun Yamada, all of Yokohama, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jan. 3, 1983, Ser. No. 455,280
Claims priority, application Japan, Jan. 11, 1982, 57-1826
Int. Cl.[3] H03H *9/25*
U.S. Cl. 310—313 B 31 Claims



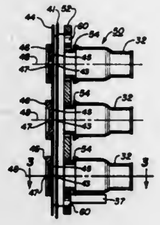
1. A surface acoustic wave transmission device comprising:
a piezoelectric substrate having two opposing main surfaces and provided on one of the surfaces an input transducer for transforming an electrical signal into a surface acoustic wave signal and an output transducer for transforming said surface acoustic wave signal into an electrical signal, said substrate propagating said surface acoustic wave signal from said input transducer to said output transducer;
a base body for mounting said piezoelectric substrate with the other surface thereof being adjacent to said body; and
an adhesion layer for fixing said other surface of said substrate to said base body, said adhesion layer having a thickness at least 1/2.6 times the wave length of said surface acoustic wave signal.

4,500,808

MULTIBEAM ELECTRON GUN WITH COMPOSITE ELECTRODE HAVING PLURALITY OF SEPARATE METAL PLATES

Harry E. McCandless, Lancaster, Pa., assignor to RCA Corporation, New York, N.Y.

Filed Apr. 2, 1982, Ser. No. 364,688
Int. Cl.[3] H01J *29/46, 29/50*
U.S. Cl. 313—409 4 Claims



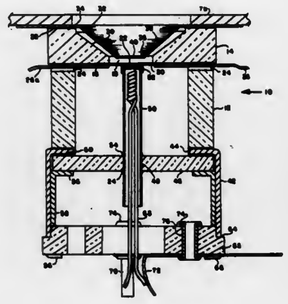
1. In a multi-beam electrode gun comprising at least two spaced successive electrodes individually held in position from a common support, one of said electrodes comprising a single metal first plate having at least three electron-beam-defining first apertures therein,
the improvement wherein said other electrode is a composite structure comprising (a) a single metal second plate having a window therein opposite each of said first apertures and (b) a plurality of separate metal third plates attached to said metal second plate, with one of said plurality of third plates closing each of said windows, each of said third plates having a single beam-defining second aperture therein separately aligned to one of said beam-defining first apertures.

4,500,809

ELECTRON GUN HAVING A LOW CAPACITANCE CATHODE AND GRID ASSEMBLY

Conrad J. Odenthal, Portland, and Dennis D. Askew, Gresham, both of Oreg., assignors to Tektronix, Inc., Beaverton, Oreg.

Continuation of Ser. No. 273,829, Jun. 15, 1981, abandoned, which is a continuation of Ser. No. 28,473, Apr. 9, 1979, abandoned. This application Sep. 13, 1982, Ser. No. 417,298
Int. Cl.[3] H01J *29/48*
U.S. Cl. 313—444 5 Claims



1. An electrode assembly for an electron discharge device, comprising:
an annular dielectric support member having a front face, a rear face, and a central passage formed by a frusto-conical major interior surface extending between a circular front opening adjacent said front face and a substantially smaller circular rear opening adjacent said rear face,
a first, disk-shaped grid electrode, of a size not substantially exceeding that of said smaller opening, disposed overlying the smaller opening and bonded at its periphery to the support member's rear face,
a second nonplanar grid electrode bonded to the support member's front face, said second electrode including a recessed portion extending into said front opening to position a central region of the second electrode in closely-spaced relation to said first grid electrode, said recessed portion having a frusto-conical surface disposed in axially-aligned, closely-spaced relation to said frust-conical interior surface of the support member,
a cathode electrode having an activated, electron-emissive surface, and
means, including a dielectric member bonded to the rear surface of said annular support member, mounting said cathode electrode with its electron-emissive surface closely adjacent said first grid electrode,
said first and second grid electrodes each including a central aperture, the apertures of said electrodes and the electron-emissive surface of said cathode being arranged in mutual alignment.

4,500,810

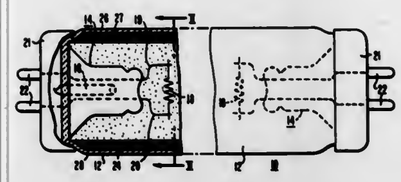
FLUORESCENT LAMP HAVING INTEGRAL LIGHT-FILTERING MEANS AND STARTING AID

Eugene A. Graff, Cedar Grove, N.J., assignor to North American Philips Lighting Corporation, New York, N.Y.

Continuation of Ser. No. 210,428, Nov. 25, 1980, abandoned. This application Jul. 13, 1983, Ser. No. 513,258
Int. Cl.[3] H01J *1/62*
U.S. Cl. 313—486 10 Claims

1. A low-pressure fluorescent lamp having a visible selected color light output, comprising
an elongated outer sealed light-transmitting envelope,
a respective electrode adjacent each end of said envelope,
an electric discharge-sustaining ionizable medium contained within said envelope, and

at least outermost, next, and innermost separate layers of material arranged on the inner elongated surface of said envelope,
said outermost layer being electrically conductive and having a thickness selected such that the outermost layer is substantially transparent to visible light, and having a thickness and layer composition selected to function as a starting aid for the lamp,
said next layer being substantially non-conductive electrically and having a composition and thickness selected to transmit visible light rays of said selected color and to absorb visible light rays of at least another color, and
said innermost layer being substantially non-conductive electrically and having a composition and thickness selected such that, when irradiated by an electric discharge sustained in said medium, said innermost layer emits visible light radiations outwardly, said visible light radiations comprising primarily said selected color and said at least another color.

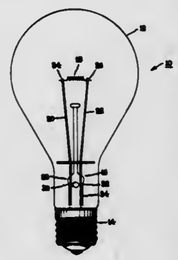


4,500,811

ELECTRIC LAMP WITH EXTERNAL FUSE LEAD

John E. McMillan, Kirtland, Ohio, assignor to General Electric Company, Schenectady, N.Y.

Filed Mar. 28, 1983, Ser. No. 479,786
Int. Cl.[3] H01J *7/44, 17/34;* H01H *85/04*
U.S. Cl. 315—58 9 Claims



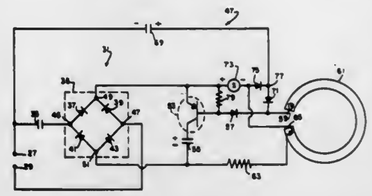
1. An electric lamp having a transparent envelope with a stem press seal region at one end which contains a resistive incandescent filament physically connected to a pair of conductive inlead wires of dispersion-strengthened copper alloy serving as the sole means of physical support for said resistive incandescent filament, said inlead wires extending through said stem press seal, and one of said inlead wires further being electrically connected to a fuse lead of a copper solution alloy with nickel and tin external of said stem press seal region.

4,500,812

ELECTRONIC BALLAST CIRCUIT

William J. Roche, Merrimac, Mass., assignor to GTE Products Corporation, Stamford, Conn.

Filed Feb. 14, 1983, Ser. No. 466,247
Int. Cl.[3] H05B *37/00*
U.S. Cl. 315—171 13 Claims



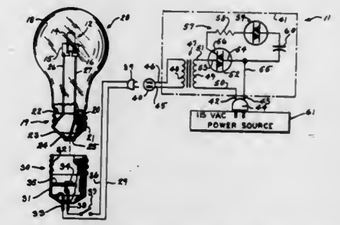
1. An electronic ballast circuit for a fluorescent lamp comprising:
a voltage divider network including a series-connected capacitor and rectifier means formed for connection to an AC voltage source;
starter circuit means including a capacitor coupled to a voltage source and to a first electrode of said fluorescent lamp and a glow starter means coupled to said rectifier means and to said first electrode of said fluorescent lamp;
ballast means coupled to said rectifier means and to a second electrode of said fluorescent lamp; and
auxiliary voltage means including a series connected switch and storage capacitor shunting said rectifier with a switch bias resistor coupled to the junction of said rectifier means and glow starter means and to the junction of said switch and first electrode of said fluorescent lamp whereby said storage capacitor is charged during operation of said fluorescent lamp.

4,500,813

LIGHTING SYSTEM

Dennis L. Weedall, 695 W. Calumet Rd., River Hills, Wis. 53217

Filed Jul. 28, 1982, Ser. No. 402,785
Int. Cl.[3] H05B *41/16*
U.S. Cl. 315—276 6 Claims



1. A lighting system for use with an electrical power source having a first predetermined power rating, comprising
a remote light assembly to be energized by a second predetermined power rating different than said first power rating and including a light bulb connected to an input circuit through a manually operable switch, and
an electronic control mechanism interconnecting said power source to said remote light assembly, said control mechanism including
a transformer having a first winding electrically connected to said manual switch for completing the lamp circuit and a second winding inductively coupled to said first winding and electrically connected to said power source through a gatable triac having a gate circuit operatively connected through capacitive means

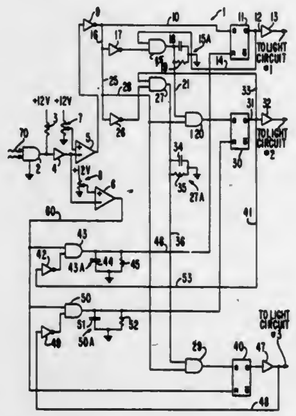
to said power source, closing of said remotely located manual switch changing the impedance of said transformer which changes the current phase and enables said gate circuit to gate said triac into conduction to conduct electrical energy from said power source to said transformer for energizing said bulb.

4,500,814

LIGHTING CIRCUIT CONTROL APPARATUS

Frederick H. Blake, 226 W. Edith Ave., No. 28, Los Altos, Calif. 94022

Filed Jun. 20, 1983, Ser. No. 505,986
Int. Cl.³ H05B *37/00*
U.S. Cl. 315—323 **11 Claims**



1. A light circuit control apparatus for turning on and turning off a plurality of lighting circuits in a first and a second predetermined sequence, respectively, comprising:

control means responsive to the intensity of ambient light in an area illuminated by said lighting circuits for turning on a succeeding one of said lighting circuits in said first predetermined sequence each time the intensity of the light in said area decreases to a first predetermined intensity and for turning off a succeeding one of said lighting circuits in said second predetermined sequence each time the intensity of the light in said area increases to a second predetermined intensity.

4,500,815

SYSTEM FOR SEGMENTALLY REFRESHING THE STORED ELECTRON GUN DRIVE VOLTAGES OF A FLAT PANEL DISPLAY DEVICE

Loren B. Johnston, Jr., Princeton, N.J., assignor to RCA Corporation, New York, N.Y.

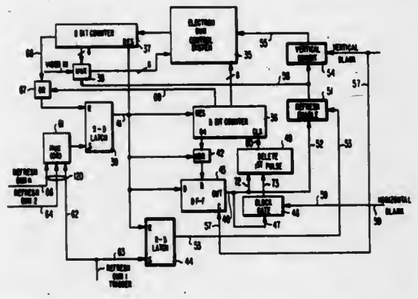
Filed Nov. 17, 1981, Ser. No. 322,171
Int. Cl.³ H01J *29/70, 29/72*
U.S. Cl. 315—366 **11 Claims**

1. In a brightness control system for controlling brightness uniformity on the display screen of a modular flat panel display device, said system including a digital memory for storing electron gun control voltages in accordance with the transfer characteristics of the electron guns within said display device, an incremental voltage counter for providing incremental voltages to said memory, a reference voltage counter for providing reference voltages to said system whereby selected ones of said incremental voltages are stored in said memory in accordance with said reference voltages; an improvement for sequentially refreshing stored voltages representative of segments of said transfer characteristic comprising:

clock gate means for applying clock pulses to said incremental voltage counter;

means for enabling and inhibiting said clock gate, said means for enabling and inhibiting being responsive to said incremental voltage counter whereby said clock gate is inhibited when said incremental voltage counter receives a predetermined number of clock pulses;

set/reset means for receiving gun refresh signals from said brightness control system and for enabling said counters and readying said means for enabling and inhibiting



whereby said clock gate is enabled in response to said set/reset means, and

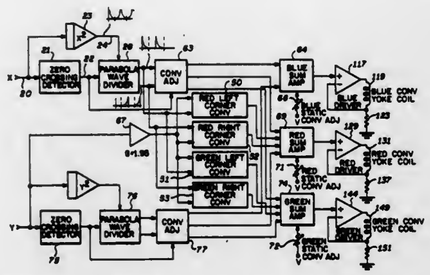
refresh enable means responsive to said set/reset means and to said means for enabling and inhibiting whereby said brightness control system is in a refresh mode when said clock gate is enabled and in a different mode when said clock gate is inhibited.

4,500,816

CONVERGENCE CONTROL APPARATUS FOR COLOR CATHODE RAY TUBE DISPLAY SYSTEMS

Charles J. Murphy, Glendale, Ariz., assignor to Sperry Corporation, New York, N.Y.

Filed Mar. 21, 1983, Ser. No. 477,209
Int. Cl.³ H01J *29/70, 29/76*
U.S. Cl. 315—368 **9 Claims**



1. An improved conveyance correction apparatus for a color cathode ray tube display system of the shadow mask type having a display screen, blue, red, and green electron guns arranged in a delta configuration within the tube neck for producing blue, red and green electron beams and horizontal and vertical deflection means responsive to corresponding deflection signals for deflecting said beams horizontally and vertically across said display screen, each electron gun having convergence correction pole pieces for further deflecting each of said beams in accordance with convergence correction signals, said correction apparatus including signal responsive coil means coupled with each of said pole pieces for producing blue, red and green convergence correction magnetic fields, each of said coil means comprising an inductor with a generally C-shaped core responsive to combined horizontal and vertical components of said convergence correction magnetic fields; squaring means responsive to said horizontal and vertical deflection signals, said signals comprising at least random stroke vector signals, for producing corresponding generally parabolic waveshape convergence correction signals, wherein said squaring means comprises means for producing signals proportional to the square of each of said horizontal and vertical deflection signals; wave splitter means also responsive to said horizontal and vertical deflection signals for splitting each of said parabolic waveshape signals into half parabolic waveshape signals corresponding to the left and right and top and bottom half sectors of said display screen respectively; means for separately adjusting the amplitudes of each half of each of said split parabolic waveform signals and for supplying left and right and top and bottom half blue, red and green convergence correction signals; means for respectively recombining each half of each of said blue, red and green convergence correction signals, and for combining horizontal and vertical components thereof to provide composite blue, red and green convergence correction signals; and means for supplying said composite convergence correction signals to said signal responsive coil means; wherein said wave splitter means is characterized by:

(a) horizontal and vertical zero crossing detection means for providing signals dependent upon whether said beams are deflected into said right and left top and bottom halves of said display screen, and

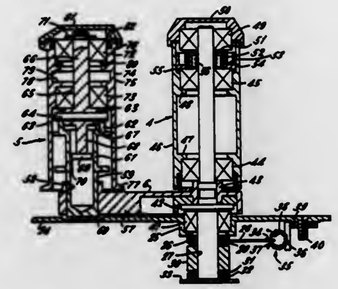
(b) switch means responsive to said horizontal and vertical squaring means and said zero crossing detector means for splitting said horizontal and vertical parabolic waveshape signals.

4,500,817

TAPE TENSION SENSOR AND SERVO EMBODYING SAME

Stefan Kudelski, Le Mont-sur-Lausanne, Switzerland, assignor to Kudelski, S.A., Lusanne, Switzerland and Ampex Corporation, Redwood City, Calif.

Filed Sep. 15, 1983, Ser. No. 533,163
Claims priority, application United Kingdom, Sep. 17, 1982, 8226569
Int. Cl.³ B65H *59/38*
U.S. Cl. 318—7 **13 Claims**



1. A tape tension sensor for a magnetic tape transport apparatus, comprising:

a guide member for engaging the tape;

means mounting the guide member for movement in response to a change in the tension of the tape;

a core member which includes a gap;

a sensing coil disposed on the core member;

a plate member mounted for movement conjointly with the guide member, said plate member extending into said gap; and

at least one shaped strip of lossy material carried in the plate member, the said strip being capable of varying the quality factor of the coil as the guide member moves.

6. A tape loop sensor for a tape transport apparatus, the sensor comprising:

a guide member for engaging a loop of tape;

a pivoted arm carrying said guide member and capable of pivoted movement in response to changes of the length of said loop;

a sensing coil; and

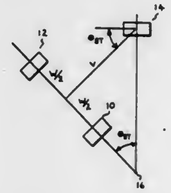
carrier means mounted for movement with said arm in a position to extend adjacent said coil, the said carrier means including a 'shaped member, said shaped member comprises a tapered strip extending in a direction of relative movement between the carrier and the coil for varying the quality factor of said coil.

4,500,818

DUAL MOTOR PROPORTIONING CONTROL

Charles E. Konrad, Roanoke; Ronald E. Gareis, and Amratlal C. Lodhia, both of Charlottesville, all of Va., assignors to General Electric Company, Charlottesville, Va.

Filed Dec. 22, 1983, Ser. No. 564,176
Int. Cl.³ H02P *7/68*
U.S. Cl. 318—52 **6 Claims**



1. A control system for an electrically powered vehicle of the type having dual drive motors with series connected armature windings and separately excited field windings, said dual motors being arranged such that one motor thereof is provided for each of two driven wheels on a common axle line for which one wheel assumes a radially inside position and the other a radially outside position with respect to a turning radius of the vehicle, comprising:

means providing a tractive effort signal representative of a desired tractive effort to be exerted by said driven wheels;

armature regulating means providing current to said series connected armatures in proportion to said tractive effort signal;

field regulating means providing a first excitation signal according to which excitation of each field winding is regulated;

means providing a turning radius signal representative of a selected turning radius for said vehicle;

means responsive to said turning radius signal to provide an inside wheel signal and an outside wheel signal, said signals being related to each other such that an increase or decrease in one signal value results in a corresponding decrease or increase in the other, the sum of said values being a constant; and

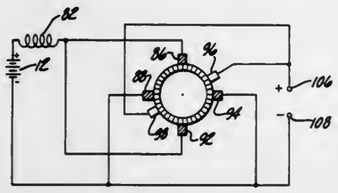
means adjusting one corresponding field winding excitation in accordance with the outside wheel signal and the other field winding excitation in accordance with the inside wheel signal.

4,500,819

AUXILIARY ELECTRIC POWER SUPPLY FOR ELECTRIC WORK VEHICLES

George J. Trusock, Battle Creek; James J. Bauer, Richland, and Bhupen Gandhi, Battle Creek, all of Mich., assignors to Clark Equipment Company, Buchanan, Mich.

Filed Nov. 9, 1983, Ser. No. 550,245
Int. Cl.[3] H02K 47/16
U.S. Cl. 318—106 3 Claims



1. In an electrical system for a work vehicle of the type comprising an electric traction motor, a storage battery for energizing the traction motor, a hydraulic system including a pump and a DC motor for driving the pump,

said traction motor and said DC motor being connected with said battery for energization thereby, and an auxiliary electrical load circuit which requires a lower voltage than that of said battery, said DC motor having an armature winding, a commutator connected with the armature winding and at least one pair of motor brushes coacting with the commutator,

and an auxiliary brush coacting with said commutator at a location between said pair of motor brushes,

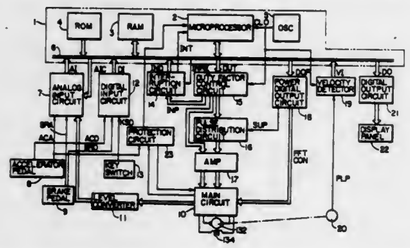
said auxiliary load circuit being connected between said auxiliary brush and one of said pair of motor brushes, said auxiliary brush being fixed at a location which produces the voltage required by said auxiliary load circuit.

4,500,820

PROTECTIVE CONTROL APPARATUS FOR ELECTRICAL VEHICLE

Yasuo Noto; Shotaro Naito, both of Katsuta, and Tsutomu Ohmae, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Nov. 4, 1981, Ser. No. 318,109
Claims priority, application Japan, Nov. 6, 1980, 55-155206
Int. Cl.[3] H02P 5/06
U.S. Cl. 318—139 5 Claims



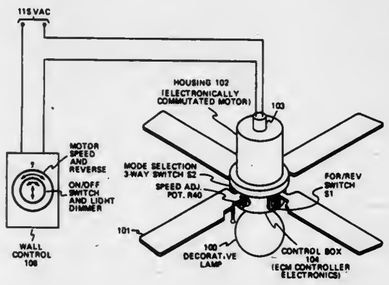
1. In a control apparatus for electric vehicles comprising a d-c power supply, a d-c motor to be selectively connected to said power supply, a chopper circuit which periodically applies the voltage of said power supply to said motor in response to the amount of actuation of the accelerator pedal, a current detector which detects the current that flows into said motor, a computer for controlling said chopper circuit based upon an instruction signal from said accelerator pedal and a detection current from said current detector, and an interrupt signal generator which generates an interrupt signal for starting said computer in synchronism with the control signal which controls said chopper circuit, the improvement comprising means for generating a predetermined signal, means for adding output signals from said signal generating means to the instruction signal of said accelerator pedal, means for comparing said added signal with a signal that corresponds to the output of said current detector, and means for resetting said computer to stop normal operation of said d-c motor when the signal corresponding to the output of said current detector is greater than said added signal and for initializing said computer a predetermined time after said resetting to start again the normal operation of said d-c motor after said predetermined period of time has passed.

4,500,821

SPEED OR TORQUE CONTROL CIRCUIT FOR AN ELECTRONICALLY COMMUTATED MOTOR (ECM) AND METHOD OF CONTROLLING THE TORQUE OR SPEED OF AN ECM

Ricky F. Bitting, Raleigh, N.C., and William Peil, North Syracuse, N.Y., assignors to General Electric Company, Fort Wayne, Ind.

Filed Jun. 9, 1983, Ser. No. 502,599
Int. Cl.[3] H02P 6/02
U.S. Cl. 318—254 26 Claims



1. In a motor speed control circuit for an electronically commutated motor adapted to be energized from a DC power source, said motor having a multistage winding assembly and a magnetic assembly, the two arranged for mututl relative rotation upon application of a multi-stage energization sequence, the combination comprising:

power input terminals for connection to a supply suitable for motor operation;

a waveform generator for supplying a repetitive low voltage waveform of substantially constant repetition rate, amplitude and configuration, said characteristics being substantially free of dependence on said motor, said waveform having a first slope of a first duration and a second slope of a second duration and of opposite sense to said first slope, and a repetition rate which is high in relation to the commutation rate:

means for producing a substantially smooth adjustable control voltage;

a modulating comparator having a first input to which said repetitive voltage waveform is supplied and a second input to which said adjustable control voltage is supplied, to produce output pulses when intersections occur between said inputs, said output pulses having an "active" on time equal to the interval between alternate pairs of intersections and occurring at said constant repetition rate; and

control logic means responsive to the "active" on time of said modulator pulses for providing pulse width modulated signals for control of the energization of the winding states in said multistate energization sequence

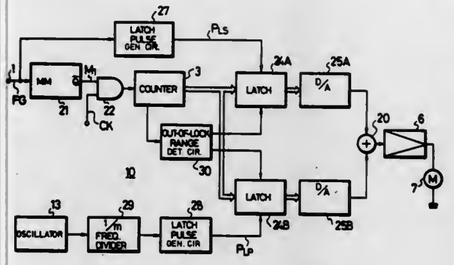
whereby adjustment of said control voltage, adjusts the active on time of each pulse and thereby the rate at which electrical energy is supplied to the motor for determination of the motor speed or torque.

4,500,822

DIGITAL CAPSTAN SERVO CIRCUIT

Shigeru Tajima; Hiroshi Okada, and Kenji Nakano, all of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Sep. 21, 1983, Ser. No. 534,508
Claims priority, application Japan, Sep. 28, 1982, 57-146850[U]; Sep. 30, 1982, 57-148915[U]
Int. Cl.[3] G05B 5/00
U.S. Cl. 318—314 6 Claims



1. A digital servo circuit for controlling the rotational speed and phase of a rotating motor in a magnetic recording/reproducing apparatus to a desired speed and desired phase relative to a fixed phase by supplying a control signal to said motor, said digital servo circuit comprising:

a source of FG pulse signals generated in synchronism with the rotation of said motor;

means for generating a periodic pulse signal in response to each FG pulse signal, respectively, having the same period as said respective FG pulse signal and divided into first and second durations;

a source of clock pulses having a predetermined frequency;

means for cyclically counting said clock pulses during said second duration and producing a counted output in response thereto, said counted output being reset to zero after a cyclic period in which a maximum counted number of clock pulses have been counted;

said frequency of said clock pulses and said maximum counted number being preselected such that, when said motor rotates at said preselected speed, the number of clock pulses occurring during said second duration exceeds said maximum counted number, whereby said second duration is divided into at least one complete cyclic period and a final incomplete period;

first latch pulse generating means for producing a first latch pulse in response to said FG pulse signals during said first duration at a first timing position when said counted output is proportional to the rotational speed of the motor;

first latch means for latching said counted output in response to said first latch pulse to produce a first counted value;

second latch pulse generating means for producing a second latch pulse during said second duration at a second timing position when said counted output corresponds to the phase of said motor;

second latch means for latching said counted output in response to said second latch pulse to produce a second counted value;

means for generating said control signal in response to said first and second latched counted values, and

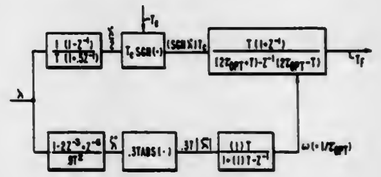
means for supplying said control signal to said motor for controlling the phase and speed of said motor.

4,500,823

ELECTRO-OPTICAL TRACKING SYSTEM WITH ADAPTIVE BEARING FRICTION COMPENSATION

Craig D. Walrath, Catonsville, Md., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Feb. 25, 1983, Ser. No. 469,876
Int. Cl.[3] G05D 23/275
U.S. Cl. 318—632 6 Claims



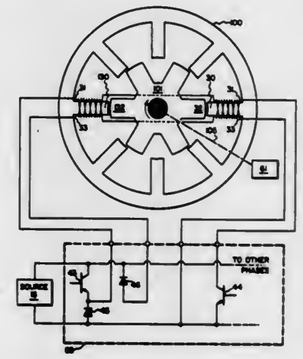
1. A system for adaptively compensating for gimbal bearing friction in an electro-optical system in which an optical sensor is aimed and maintained directed along a desired line-of-sight, with the optical sensor mounted on a gimbal having at least one axis of rotation relative to a gimbal bearing axis for aiming the sensor along the line-of-sight, which electro-optical system includes synchro means for sensing angular motion of the gimbal axis relative to a stable base frame of reference with feedback means coupled to a gimbal rotational drive means for stabilizing the angular motion of the gimbal axis, and wherein compensation signal means generates a real-time adaptive compensation signal which is predictive of gimbal bearing friction torque, which compensation signal is added to the gimbal rotational drive signal to negate bearing friction by producing a component of rotational torque which is equal and opposite to the torque from bearing friction.

4,500,824

METHOD OF COMMUTATION AND CONVERTER CIRCUIT FOR SWITCHED RELUCTANCE MOTORS

Timothy J. E. Miller, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed May 21, 1984, Ser. No. 612,517
Int. Cl.[3] H02K 29/02
U.S. Cl. 318—701 10 Claims



1. A method for controlling the flux-linkage/current trajectory in a phase winding of a switched reluctance drive wound on two angularly-spaced stator poles, said drive including a rotor with a plurality of pairs of spaced rotor poles, each pair of rotor poles having the same angular spacing as said stator poles, said method comprising the steps of:

(1) increasing the current in said phase winding to a predetermined value in order to build up flux in said stator poles

while said stator poles and a selected pair of rotor poles are unopposed but within a predetermined distance;

(2) short-circuiting said phase winding from approximately the time that said stator poles and said selected pair of rotor poles are first overlapped until they are nearly aligned, to provide a period of substantially constant flux linkage and decreasing phase winding current;

(3) decreasing said current in said phase winding by freewheeling to decrease said flux linkage substantially to zero by the time that said stator poles and said selected pair of rotor poles are aligned; and

(4) repeating steps (1)–(3) for a newly selected pair of rotor poles.

5. A method for controlling the flux-linkage/current trajectory in a phase winding of a switched reluctance drive wound on two angularly spaced stator poles, said drive including a rotor with a plurality of pairs of spaced rotor poles, said method comprising the steps of:

(1) increasing the current in said phase winding to a predetermined value in order to build up flux in said stator poles while said stator poles and a selected pair of rotor poles are unopposed but within a predetermined distance;

(2) removing the current from said phase winding through a nonlinear device across said phase winding to provide substantially constant voltage across said winding, beginning said removal at approximately the time that said stator poles and said selected pair of rotor poles are first overlapped, said non-linear device causing said flux to decrease substantially to zero by the time that said poles are aligned; and

(3) repeating steps (1)–(2) for a newly selected pair of rotor poles.

4,500,825

SELF-STARTING SINGLE-PHASE SYNCHRONOUS MOTOR

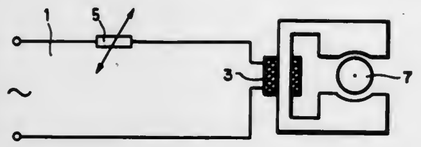
Hugo Schemmann, Schaesberg, Netherlands, and Leo Bertram, Stolberg, Fed. Rep. of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Aug. 17, 1982, Ser. No. 408,583

Claims priority, application Fed. Rep. of Germany, Jan. 29, 1982, 3202965

Int. Cl.³ H02P *1/42*

U.S. Cl. 318—792 **10 Claims**



1. A single-phase synchronous motor of the type that is self-starting without a start winding and which comprises: a diametrically magnetized permanent magnet rotor and a two-pole stator provided with exciter coils, a pair of input terminals for connection to a source of AC supply voltage, a positive temperature coefficient (PTC) resistor, means connecting the PTC resistor and the motor exciter coils in series circuit across the input terminals, and wherein the PTC resistor is proportioned so that at start-up of the motor the PTC resistor has a relatively low resistance value such that a start-up current is applied to the exciter coils of a value larger than the permissible current flow during normal motor operation and sufficient to accelerate the motor to its normal running speed within approximately 0.5 to 1 second after said AC voltage is applied to the input terminals and the resistance of the PTC resistor will increase to a continuously permissible load resistance value within said approximately 0.5 to 1 sec.

4,500,826

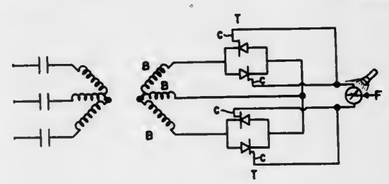
VARIABLE SPEED ELECTRIC INDUCTION MOTORS WITHOUT BRUSHES

Fausto L. Espinosa, and Cesar L. Nunez, both of Braque 4284, Miravalle, Gaudalajara, Jalisco, Mexico

Filed Jun. 14, 1983, Ser. No. 504,373

Int. Cl.³ H02P *5/40*

U.S. Cl. 318—820 **2 Claims**



1. An improved variable speed, electric induction motor comprising

a triphasic stator;

a rotor shaft;

a rotor mounted on said shaft, said rotor having longitudinal grooves on an outer face thereof; and

three induction coils carried in said rotor grooves; wherein the improvement comprises

a light-dependent resistance mounted on an end of said rotor shaft;

four controlled diodes mounted in two pairs on said rotor, each of said diodes having a control electrode and each pair of said diodes being electrically connected to one of said induction coils;

said light-dependent resistance being electrically connected to said control electrodes whereby current flowing to said control electrodes is dependent on the light incident on said light-dependent resistance.

4,500,827

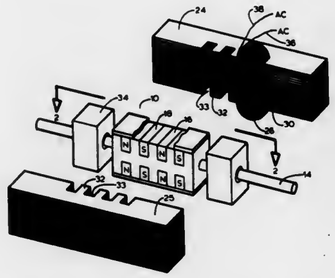
LINEAR RECIPROCATING ELECTRICAL GENERATOR

Thomas D. Merritt, and Mario J. Pasichinskyj, both of 9025 Hawthorne St., Surfside, Fla. 33154

Filed Jun. 11, 1984, Ser. No. 619,080

Int. Cl.³ H02K *35/00*

U.S. Cl. 322—3 **5 Claims**



1. An electric generator, comprising:

(a) a linear reciprocating armature mechanically coupled to a source of relative motion, said armature comprising a plurality of magnet means defining north-south poles in alternately opposite pole direction, the axis of said poles being orthogonal to the direction of reciprocation of said armature, each of said pole magnet means mounted parallel to each other at relative distances equal to their widths in the direction of armature reciprocation;

(b) a stator comprising a plurality of groups of continuous windings, each winding group corresponding to a physically adjacent pair of magnet means, each winding group wound parallel to a plane defined by the direction of reciprocation of said armature and a center point of the axis of the poles of said magnet means, each winding having a width equal to the width of each magnetic pole in the direction of armature reciprocation, and each side of each winding group separated from the next winding group by a space equal to the width of a pole of each magnet means in the direction of armature reciprocation;

(c) means for limiting the advance and reverse of the armature to three times the width of the pole of each magnet means in the direction of armature reciprocation;

(d) means for taping the induced current in each coil group and for providing such current to a load; and

(e) housing means for positioning the stator magnetically adjacent to the armature to minimize the air gap between the poles and the windings.

4,500,828

AC GENERATOR

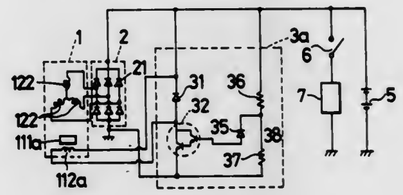
Teruyoshi Nishihara, Yokohama, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

Filed May 11, 1983, Ser. No. 493,763

Claims priority, application Japan, May 24, 1982, 57-87615

Int. Cl.³ H02P *9/14*

U.S. Cl. 322—46 **6 Claims**



1. An AC generator comprising:

a stator coil;

a pole core, comprising a permanent magnet for creating a magnetic field which produces an output voltage in the stator coil;

a reverse field coil disposed to reduce the magnetic field when a field current flows therethrough; and

a voltage regulator responsively connected to the stator coil and connected to the reverse field coil, the voltage regulator having means in series with the reverse field coil for permitting the field current flow through the reverse field coil only when the output voltage is above a predetermined value.

4,500,829

ADVANCE AND RETARD PHASE-SHIFT TRANSFORMER

Theodore R. Specht, Sharon, Pa., and Edward J. Cham, Howland, Ohio, assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Oct. 3, 1983, Ser. No. 538,391

Int. Cl.³ H02J *3/00*; G05F *3/00*

U.S. Cl. 323—215 **9 Claims**

1. A phase-shift transformer circuit adapted for connection to a three-phase power system for providing a phase-shifted ac signal at a predetermined advance or retard phase shift angle, said phase-shift transformer circuit comprising:

a magnetic core;

electrical winding means disposed in inductive relation with said magnetic core, for establishing a magnetic flux therein;

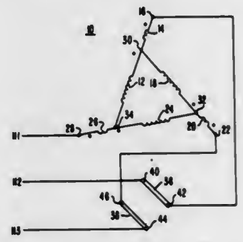
said electrical winding means including a primary winding, having first, second, and third input terminals connected to first, second, and third phase coils respectively, and including a secondary winding having a plurality of output terminals;

each of said first, said second, and said third phase coils of said primary winding including first and second portions;

each of said first and said second portions of said first, and second, and said third phase coils having a predetermined number of turns and wound on said magnetic core to obtain the predetermined phase shift angle;

said first input terminal being adapted for connection to a first selected phase of the power system;

switchable means having first and second configurations,



wherein in said first configuration said second input terminal is adapted for connection to a second selected phase of the power system and said third input terminal is adapted for connection to a third selected phase of the power system to provide an advance phase-shifted ac signal at said plurality of output terminals, and wherein in said second configuration said second input terminal is adapted for connection to the third selected phase of the power system and said third input terminal is adapted for connection to the second selected phase of the power system to provide a retard phase-shifted ac signal at said plurality of output terminals.

4,500,830

CURRENT CONTROL CIRCUIT FOR A PLURALITY OF LOADS

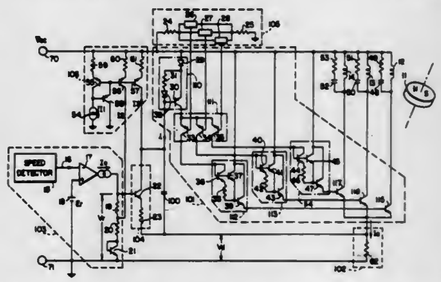
Makoto Gotou, Nishinomiya, and Hiroshi Okamoto, Suita, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Aug. 17, 1982, Ser. No. 408,771

Claims priority, application Japan, Aug. 18, 1981, 56-130025

Int. Cl.³ H02P *5/16*; G05F *1/56*

U.S. Cl. 323—267 **4 Claims**



1. An electronic control circuit for distributing a load current to a plurality of loads and controlling the load current correspondingly to a reference signal in a wide range, comprising:

a current detecting means for detecting a magnitude of the load current flowing through said plurality of loads;

a reference signal generating means for generating said reference signal which varies continuously with time;

a comparator means for providing a current signal in core-

spondence with the difference between an output signal of said current detecting means and said reference signal;

a distributing means having pre-amplifying means for amplifying the current signal provided by said comparator means, a switching means for distributing an output current of said pre-amplifying means, and a plurality of current amplifying means for respectively amplifying and supplying distributed currents from said switching means to said plurality of loads; and

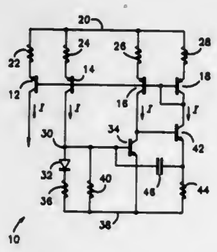
a capacitor coupled between an output terminal of said current detecting means and an output terminal of said comparator means for stabilizing a feedback loop formed by said current detecting means, said comparator means and said distributing means irrespective of variations in gains of said pre-amplifying means, said switching means and said plurality of current amplifying means.

4,500,831

CURRENT SOURCE

M. Faheem Akram, Mesa, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 27, 1982, Ser. No. 453,329
Int. Cl.³ G05F *3/08*
U.S. Cl. 323—315 **1 Claim**



1. A current source circuit having a first supply voltage terminal and a second supply voltage terminal, comprising:

biasing means for establishing a bias voltage comprising a first transistor having a first current conducting electrode coupled to said first supply voltage terminal, a first resistor coupled to said second supply voltage terminal, and a diode coupled between said first resistor and a second current conducting electrode of said first transistor;

a second transistor having a first current conducting electrode coupled to said first supply voltage terminal;

a third transistor having a control electrode coupled to said second current conducting electrode of said first transistor, a first current conducting electrode coupled to a second current conducting electrode of said second transistor, and a second current conducting electrode coupled to said second supply voltage terminal;

a fourth transistor having a control electrode coupled to said first current conducting electrode of said third transistor, and a first current conducting electrode coupled to said first supply voltage terminal;

a capacitor coupled between said control electrode of said third transistor and a second current conducting electrode of said fourth transistor;

resistive means coupled between said second current conducting electrode of said fourth transistor and said second supply voltage terminal; and

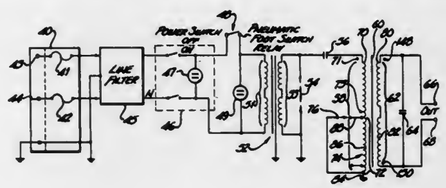
a fifth transistor having a first current conducting electrode coupled to said first supply voltage terminal, a control electrode coupled to a control electrode of both said first and said second transistor, and a second current conducting electrode supplying an output current.

4,500,832

ELECTRICAL TRANSFORMER

Stanley Mickiewicz, Stoughton, Mass., assignor to Codman & Shurtleff, Inc., Randolph, Mass.

Filed Feb. 28, 1983, Ser. No. 470,641
Int. Cl.³ G05F *1/14*
U.S. Cl. 323—340 **10 Claims**



1. A transformer comprising

an annular secondary coil support member;

support means for supporting said secondary coil support member and for permitting said secondary coil support member to move along its axis with respect to said support means;

means for locking said secondary coil support member in a specific axial location with respect to said support means;

a secondary coil wire wound on said secondary coil support member into a coil and having first and second voltage divider segments arranged 180° out of phase and having equal inductance, said secondary coil wire being heavily insulated with a high dielectric material;

primary coil support means disposed coaxially with said secondary coil support member and fixed to said support means;

a primary coil wire supported by said primary coil support member and wound into a coil and having an axis coaxial with the axis of said secondary coil;

said primary coil including first and second voltage divided segments arranged in phase and having equal inductance;

a plurality of taps for said second segment of said primary coil;

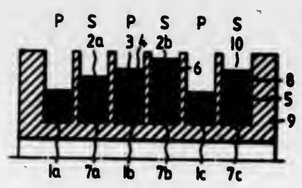
a multi-position switch having a plurality of contacts each of which is connected to a separate one of said plurality of taps in series for selectively grounding a selected one of said taps to vary the effective length of said second segment of said primary coil.

4,500,833

SWITCHED MODE POWER SUPPLY TRANSFORMER

Gerhard Napp, Hemmingen; Ulrich Bieringer, Hanover; Heinz Kreismer, Hanover, and Walter Goseberg, Hanover, all of Fed. Rep. of Germany, assignors to Licentia Patent-Verwaltungs-G.m.b.H., Frankfurt am Main, Fed. Rep. of Germany

Filed Jul. 26, 1982, Ser. No. 402,041
Claims priority, application Fed. Rep. of Germany, Jul. 25, 1981, 3129381
Int. Cl.³ H01F *27/28*
U.S. Cl. 323—359 **15 Claims**



1. A switched mode power supply transformer, particularly for a television receiver, comprising in combination:

a primary winding and a secondary winding, with said primary winding being subdivided into three partial windings and said secondary winding being subdivided into two partial windings;

a chamber coil body having a plurality of chambers;

said partial windings of said primary winding being disposed only in a first group of said chambers, and said partial windings of said secondary winding being disposed only in a second group of said chambers, with each of said partial windings being disposed in a respective one of said chambers;

said chambers of said first group being interleaved with said chambers of said second group such that they alternate in sequence with said primary partial windings and said secondary partial windings being alternatingly disposed in five successive said chambers, so as to generate the major operating voltage at said secondary winding;

an additional secondary winding for generating a further operating voltage, said additional secondary winding likewise being subdivided into a plurality of partial windings; and,

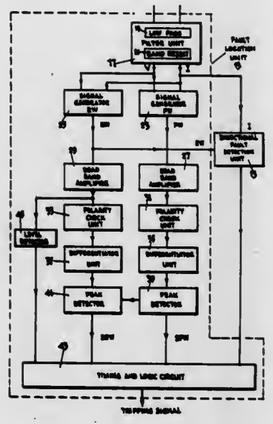
said partial windings of said additional secondary winding are disposed only in respective said chambers of said second group below any of said partial windings of said secondary winding.

4,500,834

APPARATUS AND METHOD FOR LOCATING THE POSITION OF A FAULT OCCURRING IN AN ELECTRIC POWER TRANSMISSION SYSTEM WITH RESPECT TO A MONITORING POINT

Yu M. Ko, Hung Hom, Hong Kong, and Keith Cornick, Manchester, England, assignors to The General Electric Company, p.l.c., England

Filed Mar. 29, 1982, Ser. No. 362,625
Claims priority, application United Kingdom, Apr. 3, 1981, 8110508
Int. Cl.³ G01R *31/08*; H04B *3/46*
U.S. Cl. 324—52 **18 Claims**



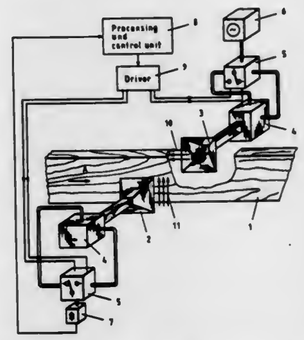
1. A method of locating the position of a fault occurring in an electric power transmission system with respect to a monitoring point comprising: determining the time taken for a transient component of a fault signal to travel from said monitoring point to the fault and back to said monitoring point after reflection at the fault; and comparing said time taken with the time that a transient signal would take to travel from said monitoring point to the end of a zone of the system to be protected by a protective relay equipment associated with the system and back to the monitoring point, thereby to determine whether the fault lies within said zone.

4,500,835

METHOD AND APPARATUS FOR DETECTING GRAIN DIRECTION IN WOOD, PARTICULARLY IN LUMBER

Sakari Heikkila, Espoo, Finland, assignor to A. Ahlstrom Osakeyhtio, Karhula, Finland

Continuation-in-part of Ser. No. 042,517, May 25, 1979, abandoned. This application Jun. 1, 1982, Ser. No. 383,588
Claims priority, application Finland, Jun. 1, 1978, 781738
Int. Cl.³ G01R *27/04*
U.S. Cl. 324—58.5 R **15 Claims**



1. A method for detecting grain direction in wood, particularly in lumber, by means of high frequency microwave radiation energy which is impinged onto the piece of wood to be measured, comprising the steps of:

transmitting radiation energy by means of at least one transmitting antenna and by employing two mutually orthogonal directions of polarization;

transmitting said radiation energy by said transmitting antenna with two mutually orthogonal directions of polarization whereby the dielectric anisotropy of the wood through which the radiation energy is transmitted induces a change in the direction of the polarization; and

receiving the radiation energy impinged onto the wood by means of at least one receiving antenna and by employing two mutually orthogonal directions of polarization among which directions at least one is as such characteristically perpendicular to any one direction of the polarization of the transmitting field;

obtaining two signals by detecting the microwave power collected by the receiving antenna with each polarization direction after impinging on said wood; and

calculating a measure of grain direction from said two signals.

4,500,836

AUTOMATIC WAFER PROBER WITH PROGRAMMABLE TESTER INTERFACE

George E. Staudacher, Los Gatos, Calif., assignor to Pacific Western Systems, Inc., Mountain View, Calif.

Filed Oct. 31, 1980, Ser. No. 202,499
Int. Cl.³ G01R *31/02*
U.S. Cl. 324—73 AT **4 Claims**

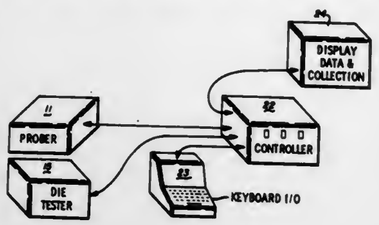
1. In a method for interfacing an automatic wafer prober with any one of a number of different die testers for probing and testing circuit die on a semiconductor wafer and for correlating the results of the test with respective tested die on the wafer, the steps of;

storing in memory associated with the wafer prober a plurality of sets of data there being one set of data for each of a plurality of different die testers, each set of data defining the sense of a plurality of test result output signals derived from the particular die tester to be interfaced to the prober after test of the respective die under test;

selecting the particular set of stored data corresponding to

the particular die tester to be interfaced to the wafer prober; and

employing the selected set of data for modifying the sense of the test result output signals derived from the die tester



after test of a respective die under test as fed into the wafer prober so that the sense of the die tester result output signals as fed into the wafer prober are the same for any one of the plurality of different die testers.

4,500,837

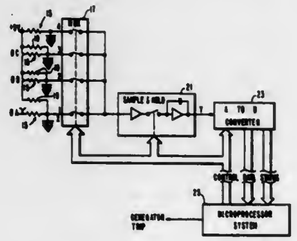
DETECTION OF DC CONTENT IN AN AC WAVEFORM

Kenneth C. Shuey, Cridersville, and Charles L. Doughman, Shawnee Township, Allen County, both of Ohio, assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jan. 15, 1981, Ser. No. 225,226

Int. Cl.³ G01R *19/00*; H04B *15/00*; H02P *13/20*

U.S. Cl. 324—102 **8 Claims**



1. A method for determining the DC content of a plural phase periodically time varying waveform including:

successively measuring the instantaneous value of each phase of the waveform at a first point in each phase,

storing signals representative of said first instantaneous value of each phase of the waveform,

successively measuring the instantaneous value of each phase of said plural phase waveform at respective second points each spaced substantially an exact odd number of half-cycles of said waveform from the respective first point, wherein said instantaneous values of each phase of said waveform at said first and second points are equally and oppositely displaced from the midvalue of the associated phase of said waveform,

storing signals representative of the instantaneous value of each phase of the waveform at each of said respective second points,

generating a signal equal to the DC content of each phase by averaging the signals representative of the instantaneous value of the associated phase of the waveform at said associated first and second points,

selecting the largest one of said DC content signals,

comparing said largest one of said DC content signals with a preselected threshold signal level, and

generating an output signal if said largest one of said DC content signals exceeds said threshold signal level.

4,500,838

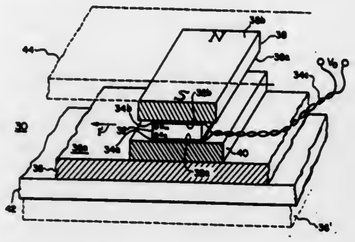
CURRENT SENSOR

Milton D. Bloomer, Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Jan. 24, 1983, Ser. No. 460,427

Int. Cl.³ G01R *33/00*

U.S. Cl. 324—117 R **12 Claims**



1. A sensor having an output responsive to the first power of a sensed current, comprising:

a piezoelectric element having first and second opposed surfaces;

first and second electrodes fabricated upon said piezoelectric element first and second surfaces, said sensor output being provided between said first and second electrodes;

conductor means positioned adjacent to one piezoelectric element surface for carrying a current to be measured therepast; and

a permanent magnet member positioned adjacent to the remaining surface of the piezoelectric element and having the north-south poles thereof aligned normal to the direction of current flow in said conductor means.

4,500,839

METHOD AND APPARATUS FOR MONITORING WEAR PARTICLES IN A LIQUID MEDIUM

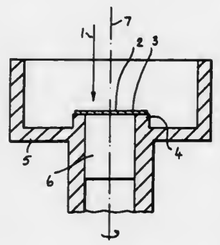
David G. Jones, P.O. Box 9531, Dharan, Saudi Arabia, and Oh K. Kwon, KIST Labs, P.O. Box 13, Dongdaemum, Seoul, Rep. of Korea

Filed Jul. 9, 1982, Ser. No. 396,689

Claims priority, application United Kingdom, Jul. 9, 1981, 8121183

Int. Cl.³ G01N *27/74*; G01R *33/12*

U.S. Cl. 324—204 **15 Claims**



1. A method of monitoring one of magnetically polarized, magnetically polarizable, electrically polarized and electrically polarizable particles carried in a liquid medium and comprising the steps of:

impinging a flow of the liquid medium onto an upper surface of a substrate located in a magnetic or electric force field respectively, having a component extending substantially at right angles to the surface for attracting the particles thereonto;

rotating the substrate about an axis which passes through the substrate and is disposed substantially parallel to the force field, the force field remaining fixed with respect to the substrate during said rotation instead of having relative motion between the two during the rotation of said rotating substrate, and said rotation being at an angular speed sufficient to modify the flow of the medium across the surface and permit the force field to precipitate the particles onto the surface; and monitoring optically the precipitated particles.

4,500,840

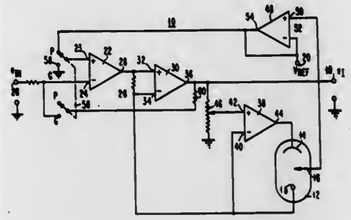
HIGH SPEED, POWER POTENTIOSTAT/GALVANOSTAT WITH IR COMPENSATION FOR USE WITH AN ELECTROCHEMICAL CELL

Ronald K. Galwey, Los Gatos, and Kay K. Kanazawa, San Jose, both of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 28, 1982, Ser. No. 437,412

Int. Cl.³ G01N *27/42*

U.S. Cl. 324—425 **6 Claims**



1. An electronic circuit for analyzing the operation of electrochemical cells of the type having a counter electrode, a reference electrode, and a working electrode in terms of potential and current modes of operation selectively, said circuit comprising

first and second instrument output terminals;

an input differential amplifier circuit having a first input terminal to which a test potential waveform is applied having a second input terminal, and having an output terminal;

a resistor connected between the output terminal of the input amplifier circuit and the working electrode of the cell;

an output differential amplifier circuit having input terminals individually connected across the resistor and having an output terminal connected to a first instrument output terminal;

a control differential amplifier circuit having a first input terminal connected to the working electrode of the cell, having a second input terminal and having an output terminal connected to the counter electrode of the cell;

electric circuitry connecting the second input terminal of the control amplifier to the first instrument output terminal; a reference differential amplifier circuit having a first input terminal to the reference electrode of the cell, having a second input terminal connected to the second instrument output terminal and having an output terminal connected to the second input terminal of the input differential amplifier circuit; and

a double-pole, double-throw switch means for selectively connecting the second input terminal of the input amplifier circuit to the output terminal of the reference amplifier circuit or to ground and in the latter case for connecting the first input terminal through a resistor to the first instrument output terminal.

4,500,841

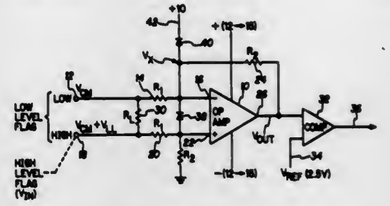
UNIVERSAL INSTRUMENT FLAG RECEIVER

William A. Morey, Marion, Iowa, assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Sep. 13, 1982, Ser. No. 417,007

Int. Cl.³ H03K *5/153*

U.S. Cl. 328—146 **4 Claims**



1. A flag receiver circuitry operable to provide a flag activating output in response to a differential low-level flag input being applied to first and second receiver input terminals and in response to a single-ended high level flag input being applied to said first receiver input terminal; comprising an operational amplifier connected in differential configuration with common-mode input rejection capability, a flag load resistor connected between said first and second receiver input terminals, said first and second receiver input terminals connected through like-valued input resistors to the respective non-inverting and inverting inputs of said operational amplifier, said operational amplifier, in response to said low-level flag input being applied to said first and second receiver input terminals, developing a trip point definitive output in response to a predetermined low-level flag input level;

means for clamping the voltage level on the inverting input to said operational amplifier, said operational amplifier being responsive to said high level flag input being applied to said first receiver input terminal to develop said trip point definitive output, said clamping being effected at a level in excess of the level on said inverting input when said low-level flag input is applied to said first and second receiver input terminals.

4,500,842

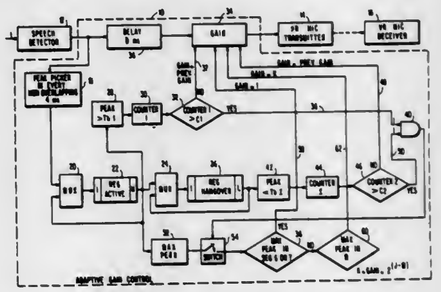
ADAPTIVE GAIN VARIABLE BIT RATE NIC PROCESSOR

Krishnamoorthy Virupaksha, Brookeville, and Henri G. Suyderhoud, Potomac, both of Md., assignors to Communications Satellite Corporation, Washington, D.C.

Filed Mar. 30, 1982, Ser. No. 363,699

Int. Cl.³ H03K *17/00, 5/00*; G06G *7/14*

U.S. Cl. 328—150 **9 Claims**



1. A signal processing apparatus comprising:

gain control means for receiving input signals and providing said input signals as gain-adjusted output signals, the gain

of said gain control means being adjusted in response to a gain adjustment signal;

first means for determining the highest value of samples of said input signals during each of several first time periods:

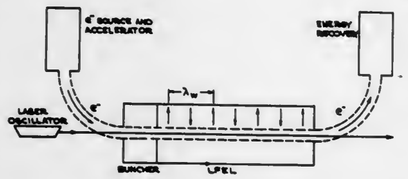
second means for determining the highest value of samples of said input signals during each of several time periods which precede said first time periods; and

control means responsive to output signals from said first and second means for providing said gain adjustment signal to said gain control means in response to the number of said highest values of said input signals within a range of amplitudes as determined by said first and second means.

4,500,843
MULTIFREQUENCY, SINGLE PASS FREE ELECTRON LASER

Abraham Szoke, Fremont, and Donald Prosnitz, Walnut Creek, both of Calif., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jan. 26, 1982, Ser. No. 342,680
Int. Cl.³ H01S *3/14*
U.S. Cl. 330—4.3 **2 Claims**



1. A method for increasing the efficiency of a free electron laser, the method comprising the steps of:

providing a relativistic beam of electrons, each having electrical charge e, with a plurality of associated energies grouped around a sequence of energy values $E_i=mc^2\gamma_r(i)$ $(i=1,2,\ldots,n)$ where mc^2 is the rest mass of an electron and $1<\gamma_r(1)<\gamma_r(2)\ldots\gamma_r(n)$;

providing a transversely oriented wiggler magnetic field having an associated wiggler wavelength $\lambda_w=2\pi/k_w$ and field strength $B_w=\sqrt{2mcb_w}/e$ through which the electron beam passes;

providing a sequence of substantially monochromatic light beams with associated photon energies

$$H_i=\frac{hc\,k_w(\gamma_r(i))^2}{\pi\left(1+\frac{b_w^2}{2k_w^2}\right)}$$

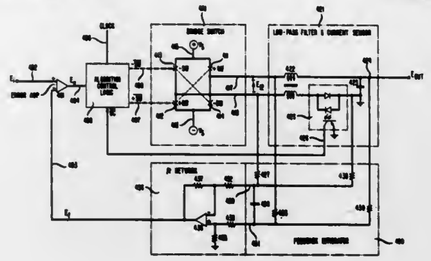
where $hc=2\times10^{-16}$ erg-cm; and

allowing each light beam to propagate parallel to and in timed relationship with the electron beam in the wiggler magnetic field region so that, as the electron beam decelerates in the magnetic field, the energy of the decelerated electrons is partially converted to and augments energy of one or more of the co-propagating light beams.

4,500,844
RINGING SIGNAL GENERATOR EMPLOYING DELTA-MODULATION POWER AMPLIFICATION TECHNIQUES

Richard J. Lisco, Whippany, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed May 20, 1983, Ser. No. 496,559
Int. Cl.³ H03F *3/38*
U.S. Cl. 330—10 **23 Claims**



21. A method for linearly amplifying an analog reference signal of variable amplitude, said method comprising the steps of

developing an indicator signal having binary magnitudes which are indicative of the direction of amplitude variation in said reference signal,

generating, in response to said indicator signal, a control signal having different logic states including, at each indicator signal binary magnitude transition, a unique logic state of predetermined duration and different from logic states otherwise produced in response to said indicator signal,

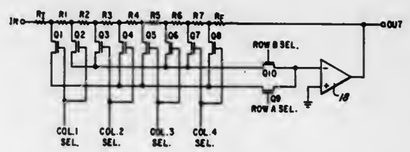
selecting, in response to said different logic states, other than said unique logic state, one or the other of two polarities of a voltage supply having at either polarity magnitude substantially greater than any magnitude of said reference signal, and selecting, in response to said unique logic state, neither of said two polarities, and

filtering an output of said selecting step to integrate such output and remove high-frequency components therefrom.

4,500,845
PROGRAMMABLE ATTENUATOR

George J. Ehni, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Mar. 15, 1983, Ser. No. 475,573
Int. Cl.³ H03G *3/30*
U.S. Cl. 330—86 **12 Claims**

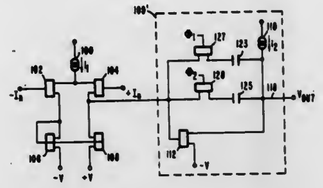


4. The attenuator of claim 3 wherein said selective coupling means comprises row select means and column select means.

4,500,846
CIRCUIT FOR EFFECTING IMPROVED SLEW RATE OF OPERATIONAL AMPLIFIERS

Lanny L. Lewyn, Palo Alto, and Charles H. Lucas, Newport Beach, both of Calif., assignors to Hughes Aircraft Company, El Segundo, Calif.

Filed Apr. 20, 1983, Ser. No. 486,644
Int. Cl.³ H03F *3/16, 3/45*
U.S. Cl. 330—253 **8 Claims**



1. In an operational amplifier, including an output stage amplifier and a stabilization capacitor connected between the output terminal of said output stage amplifier and a terminal of said output stage amplifier which is utilized for receiving input signals, said operational amplifier controlled by a clock pulse train so as to output a first signal in a first operating mode and to output a second signal in a second operating mode, the improvement comprising:

a first switch connected in series with, and to one terminal of, said stabilization capacitor;

a second switch;

a second capacitor connected serially to said second switch at one terminal of said second capacitor;

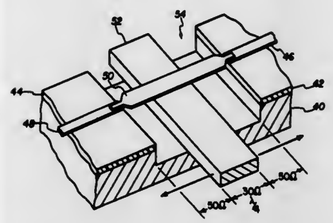
said second switch and connected second capacitor being connected in parallel, with said first switch and stabilization capacitor, between said terminal for receiving input signals and the output terminal of said output stage amplifier; and

at least one external clock pulse train coupled to and controlling said first and second switches.

4,500,847
TRANSISTOR AMPLIFIER VARIABLE MATCHING TRANSFORMER APPARATUS

Ben R. Halliford, Wylie, Tex., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Jun. 14, 1982, Ser. No. 388,291
Int. Cl.³ H03F *3/16*
U.S. Cl. 330—277 **8 Claims**



1. Apparatus for matching a transmission line to a transistor input impedance comprising, in combination:

signal supply means;

transistor means including signal input means;

transmission line means connecting said signal supply means to said signal input means;

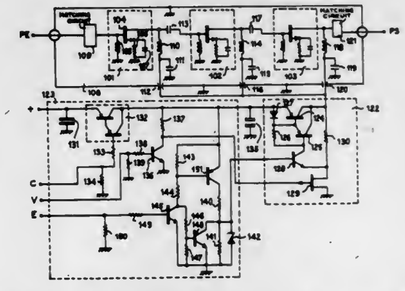
quarter-wavelength signal reflection means adjacent said transmission line means; and

means for moving said reflection means in a direction parallel to an axis of said transmission line while remaining adjacent said transmission line to adjust the relative values of resistive and reactive impedances as seen by said signal input means of said transistor means the reflection means being designed whereby the reflection coefficient angle increases with increases in frequency of operation.

4,500,848
FIELD EFFECT TRANSISTOR MICROWAVE AMPLIFIER

Maurice Marchand, and Yan Haëntjens, both of Boulogne Billancourt, France, assignors to LMT Radio Professionnelle, Billancourt, France

Filed Aug. 20, 1982, Ser. No. 409,852
Claims priority, application France, Aug. 25, 1981, 81 16215
Int. Cl.³ H03G *3/10*; H03F *3/16*
U.S. Cl. 330—285 **4 Claims**



1. A microwave amplifier for Doppler radar, comprising:

an input matching circuit for receiving an input signal to be amplified;

at least one pre-amplifier stage connected to said input matching circuit, said at least one pre-amplifier stage having a self-biassed field effect transistor whose standing wave ratio is substantially constant under a variable supply voltage;

an output matching circuit connected to said at least one pre-amplifier stage for delivering the amplified output signal; and

an adjustable voltage regulator for supplying said at least one pre-amplifier stage with a variable voltage which modifies the gain of the amplifier, said voltage regulator comprising: a transistor operating as a variable resistor, depending on the signal received at its gate, for regulating the output voltage of the regulator; and an amplifier for receiving an analog modulation signal and applying this amplified signal to the gate of the transistor operating as a variable resistor.

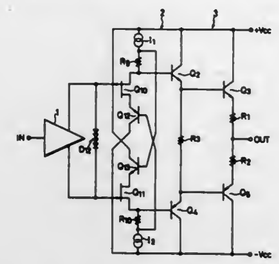
4,500,849
LOW NOISE POWER AMPLIFIER CIRCUIT

Kazuaki Nakayama, Tokyo, Japan, assignor to Pioneoer Electronic Corporation, Tokyo, Japan

Filed Feb. 4, 1983, Ser. No. 463,764
Claims priority, application Japan, Feb. 5, 1982, 57-17930
Int. Cl.³ H03F *3/16, 3/26*
U.S. Cl. 330—300 **3 Claims**

1. A low noise power amplifier circuit comprising: an NPN first transistor having a collector connected to a positive terminal of a power supply; a first resistor coupled between an emitter of said first transistor and an output terminal; a PNP second transistor having a collector connected to a negative terminal of said power supply; a second resistor connected between an emitter of said second transistor and said output terminal; an NPN third transistor having a collector connected to said positive terminal and an emitter connected to a base of said first transistor; a PNP fourth transistor having a collector

connected to said negative terminal and an emitter connected to a base of said second transistor; a third resistor connected between said bases of said first and second transistors; an NPN fifth transistor having a collector connected to said positive terminal; a first constant current source connected between said positive terminal and a base of said fifth transistor; a fourth resistor connected between said base of said fifth transistor and a base of said third transistor; a PNP sixth transistor having a collector connected to said negative terminal; a second constant current source connected between said negative terminal and a base of said sixth transistor; a fifth resistor connected between said base of said sixth transistor and said base of said fourth transistor; a first multi-junction diode connected between said bases of said third and fourth transistors; an N-channel FET seventh transistor having a drain connected to an emitter of said fifth transistor and a source connected to said base of said third transistor; a P-channel FET eighth transistor having a drain connected to an emitter of said sixth transistor and a source connected to said base of said fourth transistor; a sixth resistor connected between gates of said seventh and eighth transistors; a voltage amplifier having positive and negative outputs; a seventh resistor connected between said positive output of said voltage amplifier and said gate of said seventh transistor; an eighth resistor connected between said negative output of said voltage amplifier and said gate of said eighth transistor; and a second multi-junction diode connected between said positive and negative outputs of said voltage amplifier.

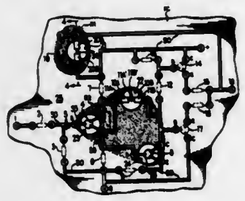


4,500,850

AUDIO AMPLIFIER APPARATUS WITH MINIMUM NON-LINEAR DISTORTION

Robert Grodinsky, 4448 W. Howard St., Skokie, Ill. 60076

Filed Oct. 22, 1981, Ser. No. 313,658
Int. Cl.³ H03F *3/04*
U.S. Cl. 330—307 **9 Claims**



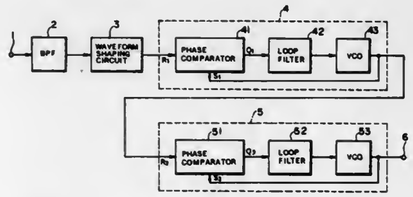
1. In an audio amplifier apparatus including an audio amplifier circuit formed by impedance and amplifying elements supported on an insulating circuit board including spaced conductive strips on at least one side of said board defining current paths to and from said discrete elements, said discrete elements having terminal leads connected between otherwise disconnected spaced conductive strips, one of said amplifying elements having at least one pair of terminals at the ends of the leads extending therefrom where the capacitance effect therebetween is enhanced by the Miller effect, said circuit board having applied thereto on the side thereof containing said conductive strips an insulating coating which covers and insulates said conductive strips except at the points where said lead connections to the conductive strips are made, the improvement in means for reducing distortion introduced by non-linearities in the stray capacitance between said lead ends where said Miller effect is operative, said means being the placement of said amplifying elements having said terminals where the capacitance effect is enhanced by the Miller effect and the portions of the conductive strips to which they are connected within the confines of one or more regions of the circuit board which are free of said coating for a sufficient distance back from the ends of the strips that it does not contribute to said Miller effect enhanced capacitance non-linearity.

4,500,851

PLURAL PHASE LOCK LOOP SIGNAL REGENERATION CIRCUIT

Buntaro Sawa, Sagamihara, and Naoto Honda, Hino, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Dec. 22, 1982, Ser. No. 452,100
Claims priority, application Japan, Dec. 23, 1981, 56-206974
Int. Cl.³ H03L *7/00*
U.S. Cl. 331—2 **4 Claims**



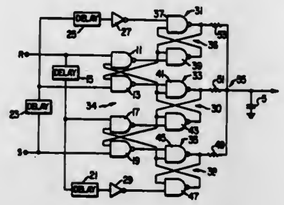
1. A signal regeneration circuit comprising:
a first phase-locked loop including a first phase comparator serially coupled to a first loop filter and a first voltage controlled oscillator serially coupled to said filter, said first phase-locked loop having a predetermined, wide loop band-width capable of avoiding the influence of any temporary phase error between an input signal and an output signal of said voltage controlled oscillator, said first phase comparator receiving at one input terminal thereof a signal to be regenerated and receiving at a second input terminal thereof said output signal of said voltage controlled oscillator, said first phase comparator detecting a first phase difference between said signal to be regenerated and the output signal of said voltage controlled oscillator to produce a train of pulses each having a width corresponding to said first phase difference; and
a second phase-locked loop including a second phase comparator serially coupled to a second loop filter and a second voltage controlled oscillator serially coupled to said second filter, said second phase-locked loop having a predetermined, narrow loop bandwidth capable of attenuating noise superposed on said signal to be regenerated, said second phase comparator being a phase frequency comparator receiving at one input terminal thereof the output signal of said first voltage controlled oscillator of said first phase-locked loop and receiving at a second input terminal thereof an output signal from said second voltage controlled oscillator, said second phase comparator detecting a second phase difference between the output signal of said first voltage controlled oscillator and the output signal of said second voltage controlled oscillator to produce a train of pulses whose logic level can be "HIGH" or "LOW" and whose width is proportional to said second phase difference, and to produce a signal whose logic level is neither "HIGH" nor "LOW" during a period when said output signals from said first and second voltage controlled oscillators are in the same phase, whereby the output signal of said second voltage controlled oscillator is a regeneration signal.

4,500,852

WIDE RANGE PHASE DETECTOR UTILIZING A PLURALITY OF STACKED DETECTOR MODULES

Donald E. Phillips, Cedar Rapids, Iowa, assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Dec. 13, 1982, Ser. No. 449,121
Int. Cl.³ H03L *7/06*
U.S. Cl. 331—12 **5 Claims**



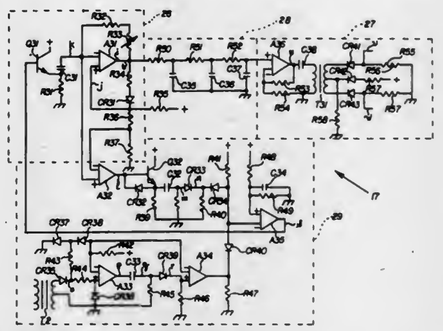
5. A phase detector comprising:
a first terminal coupled to receive a first pulse stream;
a second terminal coupled to receive a second pulse stream;
a first delay circuit having an input coupled to receive said first pulse stream and an output providing a first delayed output of said first pulse stream;
a second delay circuit having an input coupled to the output of said first delay circuit and an output providing a second delayed output of said first pulse stream;
a third delay circuit having an input coupled to receive said second pulse stream and an output providing a first delayed output of said second pulse stream;
a fourth delay circuit having an input coupled to the output of said third delay circuit and an output providing a second delayed output of said second pulse stream;
a first inverter having an input coupled to the output of said fourth delay circuit and an output providing an inversion of said second delayed output of said second pulse stream;
a second inverter having an input coupled to the output of said second delay circuit and an output providing an inversion of said second delayed output of said first pulse stream;
a first NAND gate having first and second inputs and an output, the first input of said first NAND gate being coupled to the output of said first inverter;
a second NAND gate having first and second inputs and an output, the first input of said second NAND gate being coupled to the output of said first NAND gate, and the output of said second NAND gate being coupled to the second input of said first NAND gate;
a third NAND gate having first and second inputs and an output, the first input of said third NAND gate being coupled to said first terminal and the output of said third NAND gate being coupled to the second input of said second NAND gate;
a fourth NAND gate having first and second inputs and an output, the first input of said fourth NAND gate being coupled to the output of said first NAND gate and the second input of said fourth NAND gate being coupled to the output of said third delay circuit;
a fifth NAND gate having first and second inputs and an output, the first input of said fifth NAND gate being coupled to the output of said fourth NAND gate;
a sixth NAND gate having first and second inputs and an output, the first input of said sixth NAND gate being coupled to the output of said fifth NAND gate and the output of said sixth NAND gate being coupled to the second input of said fifth NAND gate and third NAND gate;
a seventh NAND gate having first and second inputs and an output, the first input of said seventh NAND gate being coupled to the output of said first delay circuit and the output of said seventh NAND gate being coupled to the input of said sixth NAND gate;
an eighth NAND gate having first and second inputs and an output, the first input of said eighth NAND gate being coupled to the output of said fifth NAND gate and the second input of the eighth NAND gate is coupled to said second terminal;
a ninth NAND gate having first and second inputs and an output, the first input of said ninth NAND gate being coupled to the output of said eighth NAND gate;
a tenth NAND gate having first and second inputs and an output, the first input of said tenth NAND gate being coupled to the output of said ninth NAND gate, the second input of said tenth NAND gate being coupled to the output of said second inverter, and the output of said tenth NAND gate being coupled to the second input of said ninth and seventh NAND gates; and
said outputs of said first, fifth and ninth NAND gates being coupled in common as a phase detector output.

4,500,853

OSCILLATOR PHASE LOCK SYSTEM

Francis J. Stifter, Natick, Mass., assignor to Electronic Specialists, Natick, Mass.

Division of Ser. No. 548,517, Nov. 3, 1983,. This application Mar. 19, 1984, Ser. No. 590,899
Int. Cl.³ H03L *7/08*
U.S. Cl. 331—18 **15 Claims**



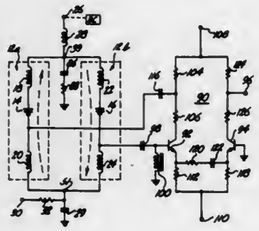
1. A phase-lock system comprising:
oscillator means providing a switching output that continuously switches between first and second states;
a trigger circuit for inducing said switching of said oscillator means;
a sensing circuit monitoring said switching output and providing an anticipating indication of an imminent switching thereof from said first to said second state;
primary voltage source means providing a variable voltage that periodically varies from and returns to a given voltage level;
a detector circuit monitoring said variable voltage and detecting the presence of said given voltage level; and
a synchronizing circuit responsive to said sensing and detector circuits and providing an input to said trigger circuit, said synchronizing circuit operative to cause switching of said oscillator means in response to the simultaneous provision of said anticipating indication by said sensing circuit and detection of said given level by said detector circuit.

4,500,854

VOLTAGE-CONTROLLED RF OSCILLATOR EMPLOYING WIDEBAND TUNABLE LC RESONATOR

Donald G. Meyer, Sultan, Wash., assignor to John Fluke Mfg. Co., Inc., Everett, Wash.

Filed Apr. 20, 1981, Ser. No. 255,675
Int. Cl.³ H03H 7/12; H03B 5/18; H01P 7/08
U.S. Cl. 331—117 R **17 Claims**



1. An LC resonant circuit wherein the value of capacitance employed is not substantially greater than the value of stray capacitance associated with the inductive structure utilized in said resonant circuit, comprising first and second circuit branches connected in parallel with each other, each of said circuit branches comprising, in series, a voltage variable capacitive element and first and second inductors, said first and second inductors having substantially equal values of inductance and said capacitive element being connected between said inductors to establish voltages of equal magnitude and opposite phase at opposite ends of said capacitive element when said circuit branch resonates;

first circuit means for applying a source of DC bias at the nodes interconnecting said first and second circuit branches to control said voltage variable capacitive elements;

input signal means for applying an input signal to one of said first and second circuit branches; and

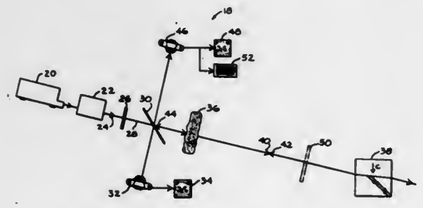
output circuit means for obtaining an output signal from the other one of said first and second circuit branches.

4,500,855

PHASE CONJUGATION USING INTERNAL REFLECTION

Jack Feinberg, Manhattan Beach, Calif., assignor to University of Southern California, Los Angeles, Calif.

Filed Jun. 10, 1982, Ser. No. 387,068
Int. Cl.³ H01S 3/098, 3/23, 3/30
U.S. Cl. 332—7.51 **21 Claims**



1. A method of producing a phase conjugate replica of an incoming light beam using a body of mixing material which lacks inversion symmetry and has an optical coupling strength of at least approximately one per millimeter, comprising the steps of:

causing the incoming beam to enter the mixing material; and

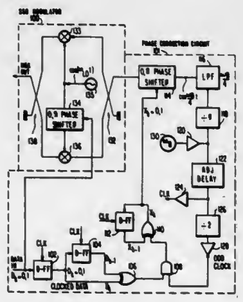
adjusting the orientation of the mixing material relative to the incoming beam such that at least one auxiliary beam splits off from the incoming beam within the material, is internally reflected by the surface of the material and returns to the incoming beam within the material for scattering as an oppositely directed phase conjugate replica thereof.

4,500,856

SIMPLIFIED MINIMUM SHIFT KEYING MODULATOR

William H. Childs, Gaithersburg, Md., assignor to Communications Satellite Corporation, Washington, D.C.

Filed Dec. 15, 1981, Ser. No. 330,917
Int. Cl.³ H03C 3/02; H04L 27/12
U.S. Cl. 332—9 R **11 Claims**



1. An MSK modulator comprising:

a single-sideband modulator receiving an input data signal as a modulating signal;

a source of an IF signal; and

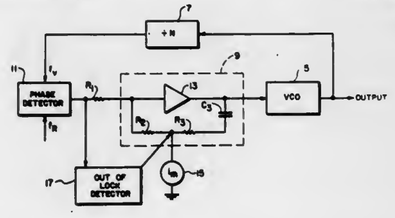
means for coupling said IF signal to an IF signal input of said single sideband modulator with a phase such that an output signal from said single sideband modulator has phase continuity for all bit combinations of said input data signal.

4,500,857

FREQUENCY MODULATED PHASE LOCKED LOOP

Robert J. Bosselaers, Winchester, and Richard B. Elder, Acton, both of Mass., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Feb. 24, 1983, Ser. No. 469,333
Int. Cl.³ H04L 27/12
U.S. Cl. 332—9 R **4 Claims**



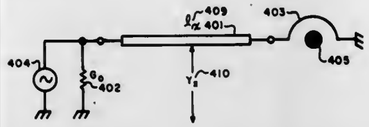
1. A phase locked loop adapted for frequency modulation by means of a digital modulation signal, comprising a phase detector to which a reference signal and a signal related to the output frequency of a voltage controlled oscillator are applied, a loop filter connecting the output of said phase detector to the control input of said voltage controlled oscillator, means to apply a digital modulation signal to said loop filter in such a way that a desired modulation characteristic for square wave frequency modulation results and wherein said phase locked loop also has a time constant which results in a desired short loop settling time.

4,500,858

METHOD FOR ENHANCING FERROMAGNETIC COUPLING

John A. Mezak, San Jose, Calif., assignor to Eaton Corporation, Cleveland, Ohio

Filed Dec. 10, 1982, Ser. No. 448,689
Int. Cl.³ H01P 1/20, 5/02, 1/218
U.S. Cl. 333—202 **2 Claims**



1. A method for reducing the change in input and output resonator bandwidth of a loop coupled ferromagnetic resonator filter by compensating for variations in coupling over multi-octave tuning ranges comprising:

determining the variation in bandwidth due to the coupling loop acting as a transmission line transformer transforming respective source or load admittance G_o to an equivalent conductance G_ρ;

determining bandwidth variation selectively as a function of frequency; and

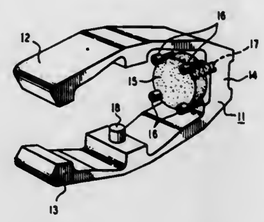
compensating said bandwidth variation with a frequency selective compensating transmission line providing a variation in bandwidth determined by said second step oppositely to and compensating said variation in bandwidth due to said coupling loop acting as a transmission line transformer, whereby to compensate coupling variation with frequency, and provide a substantially constant passband over multi-octave ranges.

4,500,859

FILTER FOR EXISTING WAVEGUIDE STRUCTURES

Chung-Li Ren, Andover; Matthew V. Thompson, Bradford, and Han-Chiu Wang, Andover, all of Mass., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Apr. 5, 1983, Ser. No. 482,056
Int. Cl.³ H01P 1/207, 7/10, 1/00
U.S. Cl. 333—208 **5 Claims**



1. A device for holding a cylindrical resonator rigidly in a predetermined position within a waveguide comprising

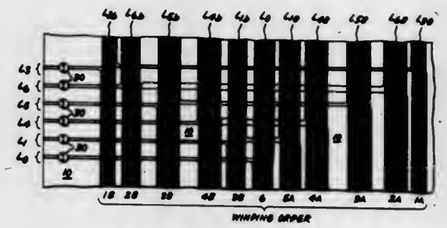
a resilient unitary body bifurcated into two portions connected by a bridging portion, the bridging portion bearing against the central region of a first wall of the waveguide and maintaining a predetermined distance between said resonator and the first wall, the bridging portion of the bifurcated body accommodating a metal screw whose axis is colinear with the axis of the cylindrical resonator for tuning its resonant frequency, each of said two portions having a centrally located bearing surface each resting against a central region of one of two opposite walls each intersecting opposite ends of said first wall of the waveguide, and said two portions having end bearing surfaces contacting the central region of the remaining wall of said waveguide opposite said first wall.

4,500,860

WINDING SUPPORT AND METHOD FOR NMR MAGNET AXISYMMETRIC CORRECTION COILS

Mark E. Vermilyea, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Jul. 5, 1984, Ser. No. 628,077
Int. Cl.³ H01F 7/22
U.S. Cl. 335—216 **22 Claims**



1. A coil form, especially for supporting superconductive windings for axial NMR magnetic field correction coils, said form comprising:

an insulative cylinder;

said cylinder having at least two circumferential slots therein at a depth of approximately h from the surface of said cylinder;

said cylinder also having a first axial groove therein at a depth of approximately h+d from the surface of said cylinder, said groove extending at this depth for a substantial portion of the length of said first groove, said first axial groove extending between said circumferential slot, said first axial groove also having two ramped transition portions from the depth of said first groove to the depth of said circumferential slots, said ramped transition portions each being disposed adjacent to one of said circumferential slots, said coil forms also exhibiting two rounded corners at the junction of said first axial groove and said circumferential slots;

said cylinder also having a second axial groove therein at a depth of approximately h+d from the surface of said cylinder, said second axial groove extending at this depth for a substantial portion of the length of said second groove, said second axial groove extending at said depth of h+d across all of a first one of said circumferential slots, said second axial groove extending at said depth of h+d across almost all of the second of said circumferential slots, said second axial groove also having a ramped transition portion from the depth of said second groove to the depth of the second of said circumferential slot, said ramped portion extending in the circumferential direction, said coil form also exhibiting a rounded corner at the junction of said second axial groove and the ramped portion of said second axial groove at the point where said second axial groove changes direction.

4,500,861

SECTOR MOTOR HAVING LATCHING MEANS FOR ROTOR IN MULTIPLE POSITIONS

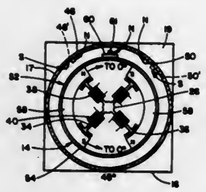
Victor H. Nelson, 10 Redwood Dr., Dix Hills, N.Y. 11746

Filed Feb. 17, 1983, Ser. No. 467,244
Int. Cl.³ H01V 7/08
U.S. Cl. 335—253 **10 Claims**

1. In a three position sector motor of the type having a housing an armature having a plurality of magnetic arms, each arm carrying a coil winding adapted to be selectively energized and a pair of cylindrically curved permanently magnetized pole pieces of opposite polarity circumferentially spaced apart and surrounding said armature the improvement comprising:

a mechanical stop means for limiting angular rotation of said motor; and

a latching means for holding said motor in stopped positions



at opposite ends of angular rotation of said motor and in a central position midway between said ends of angular rotation of said motor, when said rotor is stopped in any of said positions and said windings are de-energized.

4,500,862

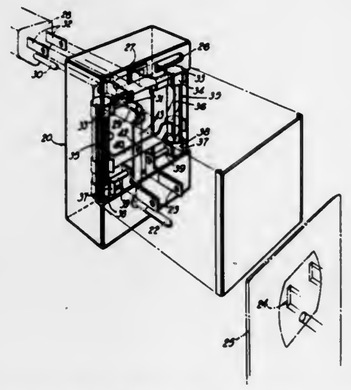
POWER SOURCE ISOLATOR

Harold E. Shedd, Rte. 1, Box 242, Nicholson, Ga. 30565

Filed Feb. 18, 1983, Ser. No. 467,947

Int. Cl.³ H01H *39/00*

U.S. Cl. 337—32 **9 Claims**



1. A power surge isolator and grounding device for the protection of electrical appliances comprising an insulating casing having male conducting prongs projecting from one side thereof for entry into a wall outlet and also having on its opposite side a female receptacle to receive the pronged plug of an appliance power cable, at least a pair of fuses in the casing through which normal operating current required by an appliance can be delivered and which fuses will blow when subjected to current significantly above said normal appliance current, said fuses having opposite end electrical terminals, conducting clips in the casing embracing corresponding end terminals of the fuses and being electrically connected with said male conducting prongs, additional conducting clips in the casing embracing the other end terminals of the fuses and being electrically connected with contact elements of the female receptacle, a grounding conductor element within the casing electrically connected to ground elements of the female receptacle and male conducting prongs, and a power stop conductor within the casing electrically connected to said grounding conductor and having clips embracing the glass envelopes of the fuses in relatively closely spaced relationship to corresponding end terminals of the fuses and relatively distantly spaced relationship to the opposite end terminals of the fuses.

4,500,863

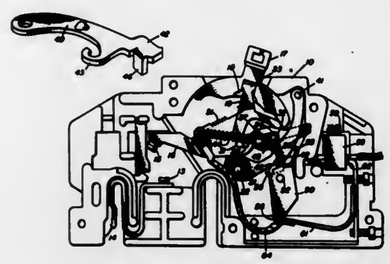
CIRCUIT BREAKER HAVING AN INTEGRATED POWER TRAP ARM

Luis F. Sepulveda, Fajardo, P.R., assignor to Challenger Caribbean Corporation, Canovanas; Challenger Zinsco, Inc., Rio Piedras, both of, P.R. and Commander Electrical Equipment, Inc., Scarborough, Canada

Filed Jun. 24, 1983, Ser. No. 507,609

Int. Cl.³ H01H *73/24*

U.S. Cl. 337—70 **3 Claims**



1. In a circuit breaker of the type including a contact carrier pivoted for movement between circuit-closing and -opening positions respectively, a tension spring connected at one end to the contact carrier, a latch pivoted to swing between a latching and a release position, and a thermostatic element that normally restrains the latch from movement to its release position and deflects in the presence of an overload current to free the latch for movement to its release position, the improvement comprising a one-piece, generally flat trip arm one end of which provides a pivot axis about which the arm is swingable between retracted and tripping positions respectively, the trip arm having a midportion connected to the other end of the spring, the spring being tensioned to bias the trip arm toward the contact carrier, the trip arm at its other end having an end portion formed for engagement with the latch when the trip arm and latch are in their retracted and latching positions respectively, the trip arm being further integrally formed at said other end thereof with an impact lug extending perpendicularly to the general plane of the arm in a direction such that when the trip arm swings to its tripping position with the contact carrier in its circuit closing position, the carrier will be in the path of the lug and will be impacted thereby and driven to its circuit-opening position.

4,500,864

PRESSURE SENSOR

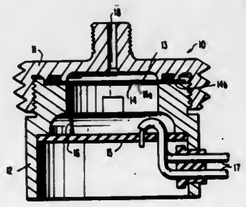
Takeshi Nakane, Okazaki, and Katsumi Nakagawa, Kariya, both of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Jul. 5, 1983, Ser. No. 511,029

Claims priority, application Japan, Jul. 5, 1982, 57-116423

Int. Cl.³ G01L *1/22*

U.S. Cl. 338—4 **6 Claims**



1. A pressure sensor having a strain gauge for converting fluid pressures into electrical signals comprises a diaphragm adapted to be tensioned under pressure, a casing member supporting said diaphragm and resistance body means of amorphous metal material comprised of nickel, silicon and boron for operating said strain gauge formed on said diaphragm by means of a physical vapor deposition process.

4,500,865

FLUID LEAKAGE DETECTING ELEMENT

Yoshito Tanaka; Ken Ichiryu, both of Ibaraki, and Naohiko Iwata, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jan. 19, 1983, Ser. No. 459,211

Claims priority, application Japan, Feb. 26, 1982, 57-29018

Int. Cl.³ H01C *7/00, 1/012;* **G01N** *25/72*

U.S. Cl. 338—13 **8 Claims**



1. A fluid leakage detecting element comprising a substrate of electrical insulating material having a high thermal conductivity and having two opposing surfaces, one of which is adopted to be attached to a portion of a subject where a fluid contained in said subject may leak, a heat generating resistive member, said member being provided in thick film form on the other surface of said substrate and made of tungsten which has a high temperature coefficient, a high thermal conductivity and a melting point higher than the baking temperature of said substrate, wherein an insulating coating of alumina is provided covering the surface of said resistive member and wherein said substrate is bonded to said tungsten resistive member, and a heat insulator of a material which is sufficiently resistive to chemicals and heat and has a low thermal conductivity is disposed on said attachable surface of said substrate.

4,500,866

ELECTRIC POTENTIOMETER

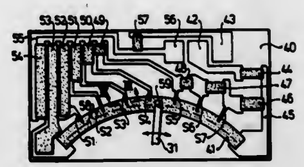
Peter Romann, Stuttgart; Rudolf Sauer, Benningen, and Heinrich Steinrücken, Ludwigsburg, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Apr. 25, 1983, Ser. No. 488,316

Claims priority, application Fed. Rep. of Germany, Jul. 24, 1982, 3227805

Int. Cl.³ H01C *10/16*

U.S. Cl. 338—126 **1 Claim**



1. An electric potentiometer comprising a pickup wiper means and a resistor pad, said resistor pad having a plurality of metallic connections for parallel resistors distributed over the displacement range of said pickup means and serving as connection support points, with which the partial resistance established by said pickup means can be varied to a predetermined nonlinear value in accordance with the displacement of the pickup, and said connection support points extending in a direction crosswise to but not extending past a contact track of said pickup means sliding along said resistor pad, said connection support points extending beneath said resistor pad and terminating thereunder a distance removed from said contact track of said pickup means.

4,500,867

JOYSTICK CONTROLLER USING MAGNETOSENSITIVE ELEMENTS WITH BIAS MAGNETS

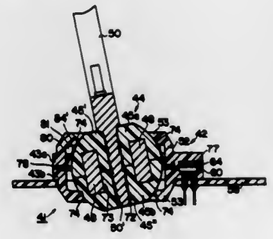
Yoshimitsu Ishitobi; Kouhei Fujii, and Fumio Nakatsuji, all of Shiga, Japan, assignors to NEC Kansai, Ltd., Otsu, Japan

Continuation-in-part of Ser. No. 420,745, Sep. 21, 1982,. This application Jun. 11, 1984, Ser. No. 619,719

Claims priority, application Japan, Jan. 13, 1982, 57-4438; May 31, 1982, 57-81537[U]

Int. Cl.³ H01C *9/00, 9/02, 10/16*

U.S. Cl. 338—128 **7 Claims**



1. A joystick controller having a control handle, comprising a stator casing (**42**) of non-magnetic material, magnetosensitive elements operatively arranged in said stator casing, rotor means (**44**) having a central axis and being operatively arranged in said stator casing, said rotor means having two substantially semispherical members (**45***a*, **45***b*) of non-magnetic material and a permanent magnet (**48**) operatively mounted in said semispherical members, said stator casing having two casing shells (**43***a*, **43***b*), each casing shell including inwardly reaching surface means (**74**) for slidingly supporting said rotor means (**44**) in said stator casing and for providing a spacing (**81**) between at least one of said shells (**43***a*, **43***b*) and said rotor means, and frustum shaped spring means (**80**) surrounding said rotor means in said spacing, said frustum shaped spring means (**80**) having tongues (**84**) extending at such an angle relative to a plane dividing said stator casing and toward said central axis, that said spring tongues (**84**) exert on said rotor means forces which are directed substantially toward the center of said rotor means for providing a certain resistance of said rotor means against rotation of the rotor means without any force components tending to separate said casing shells.

4,500,868

AUTOMOTIVE DRIVING INSTRUCTION SYSTEM

Naoki Tokitsu, Chiryu; Toshitaka Fujiwara, Toyota; Toranosuke Kato, Nagoya, and Toshihiko Uno, Toyota, all of Japan, assignors to Nippondenso Co., Ltd., Kariya and Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, both of, Japan

Filed Nov. 24, 1981, Ser. No. 324,488

Claims priority, application Japan, Nov. 26, 1980, 55-166150

Int. Cl.³ B60Q *1/00*

U.S. Cl. 340—52 F **10 Claims**

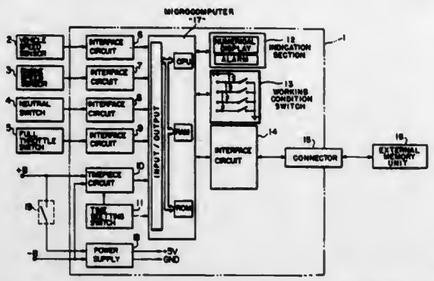
1. An automotive driving instruction system comprising:

a plurality of sensors disposed at various parts of the automobile for detecting the driving conditions of the automobile;

a computer for reading the outputs of said sensors, calculating a plurality of values representing the driving conditions of the automobile, and controlling issuance of an alarm when any of the results of the calculations of said values becomes equal to the corresponding one of predetermined settings associated with the values;

a replaceable external memory unit for storing the accumu-

lated values of said alarm, and the accumulated values of said alarm for respective causes by the processing opera-



tion of said computer, said external memory being adapted to indicate the stored data by the processing operation of a data processing unit.

4,500,869

METHOD FOR CONVERSION OF LINEARLY ENCODED INTO NON-LINEARLY ENCODED DIGITAL SIGNALS

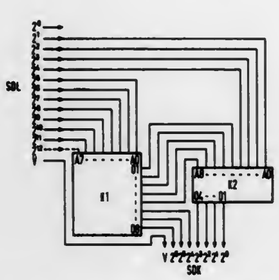
Rolf Zeitraeg, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Aug. 15, 1980, Ser. No. 178,531

Claims priority, application Fed. Rep. of Germany, Sep. 26, 1979, 2938984

Int. Cl.³ H03K *13/24*

U.S. Cl. 340—347 DD **8 Claims**



1. A method for converting a linearly encoded digital signal (SDL) into a non-linearly encoded digital signal (SDK) in accordance with a multiple segment characteristic obeying the A law or the μ law, said digital signals SDL and SDK having a sign bit (V) in the highest order position, said method comprising the steps of:

(a) supplying to a first memory (K1), as an address, at least as many higher order bits of said signal SDL, exclusive of the said sign bit V, as are necessary for identifying the segment of the characteristic into which the respective signal value falls, said first memory having stored therein a plurality of first digital words, each having a first plurality of bits defining the highest order bits of the corresponding signal SDK following the sign bit V which indicate the segment of the characteristic on which this signal value lies, plus a second plurality of bits defining a partial memory address;

(b) supplying to a second memory (K2), as a first partial address, said second plurality of bits;

(c) supplying to said second memory K2, as a second partial address, the lower order bits of said signal SDL, exclusive of the lowest order bit which is disregarded in the conversion, said second memory having stored therein a plurality of second digital words which identify the corresponding levels of the segments of the characteristic to which the values of said signal SDK are correlated;

(d) presenting the sign bit V of said signal SDL as the highest order bit of said signal SDK;

(e) reading said first plurality of bits from said memory K1 as the next highest order bits of said signal SDK; and

(f) reading said second digital words from said memory K2 as the lowest order bits of said signal SDK.

4,500,870

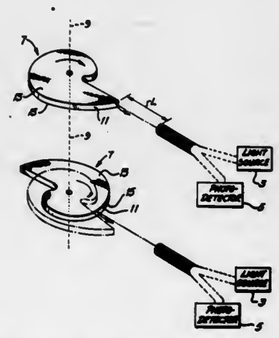
METHOD AND COMPONENTS FOR REMOTE READING OF UTILITY METERS

David A. Krohn, Hamden; Louis A. Buffone, Shelton, and Edmond I. Vinarub, Cheshire, all of Conn., assignors to Eotec Corporation, West Haven, Conn.

Filed Sep. 29, 1981, Ser. No. 306,901

Int. Cl.³ H03K *13/02*

U.S. Cl. 340—347 P **31 Claims**



1. In an angular position sensor:

means for mounting a light transmitter in a first fixed position;

means for mounting a light receiver in a second fixed position; and

an element mounted for rotation about a fixed axis and having a light reflecting track, the track being so constructed on the element that points along the track progressively define a point of light incidence assuming a predefined sequence of positions as the element is rotated through a single rotation, such that each position in said sequence is at a different distance from at least one of said transmitter and said receiver, light from the transmitter being reflected from the light reflecting track onto the light receiver along an optical path having a path length that assumes unique values as the element rotates through a single rotation, whereby the amplitude of received light is uniquely related to the angular position of said element.

4,500,871

METHOD FOR CODING BINARY DATA AND A DEVICE DECODING CODED DATA

Max Ratigalas, Paris, France, assignor to Thomson-CSF, Paris, France

Continuation of Ser. No. 192,940, Oct. 1, 1980, Pat. No. 4,394,641. This application Apr. 7, 1983, Ser. No. 482,886

Claims priority, application France, Oct. 1, 1979, 79 24419

Int. Cl.³ H03K *13/24*

U.S. Cl. 340—347 DD **2 Claims**

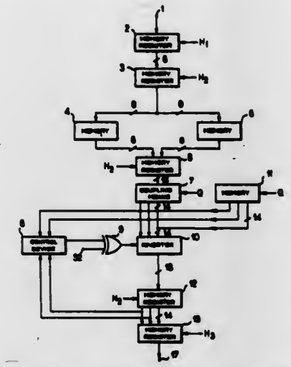
1. A method for preparing an input signal for transmission, said input signal having a sequence of groups selected from a set of all possible groups, each of said groups having n binary digits having a repetition frequency F, said method comprising the steps of:

generating for each of said groups in said set a unique binary word each of said words being defined by n bits having a "0" state and n bits having a "1" state and having a repetition frequency 2F, each of the bits of said words being

adjacent to a bit having the same state except end bits of said words which can be adjacent a bit in said word of opposite state;

generating the complement of at least some of said words; and

forming a transmission signal by replacing the n bits of each



of said groups in said input signal with the 2n bits of one of the word and the complement of the word uniquely corresponding to said group which ensures that both the last bit of the word previously generated and the first bit of the word presently generated are adjacent bits of the same state when both said previously generated word and said presently generated word are considered together.

4,500,872

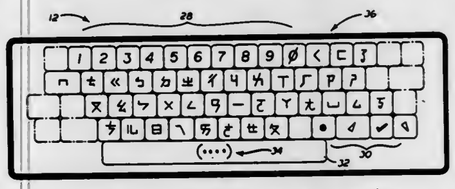
METHOD FOR ENCODING CHINESE CHARACTERS

Timothy D. Huang, Portland, Oreg., assignor to DAI-E Systems, Inc., Portland, Oreg.

Filed Mar. 18, 1982, Ser. No. 359,374

Int. Cl.³ G06F *3/02*; B41J *5/00*

U.S. Cl. 340—365 R **7 Claims**



1. A method of encoding, uniquely, different characters in the Chinese language comprising

associating with a selected character a phonetic tag therefor formed with no less than one, and no more than three, recognized Chinese phonetic symbols,

associating with such selected character a tone tag therefor comprising but a single recognized Chinese tone symbol,

associating with such selected character a two-digit-only number tag, each digit of which is associated, respectively, with two different ones only of the four recognized corner configurations in the character, and

assembling such tags in a preselected sequence.

4,500,873

TESTING DEVICE FOR AN INTRUSION DETECTION SYSTEM

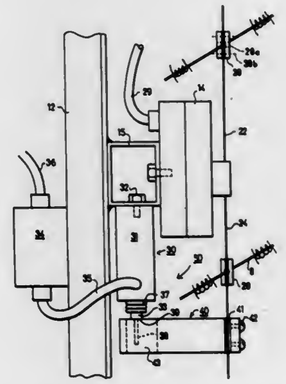
Chaim Porat, and Yaacov Sadeh, both of Beer-Sheva, Israel, assignors to Beta Engineering & Development Ltd., Beer Sheva, Israel

Filed Sep. 15, 1982, Ser. No. 418,455

Claims priority, application Israel, Feb. 3, 1982, 64923

Int. Cl.³ G08B *29/00*

U.S. Cl. 340—515 **10 Claims**



1. An intrusion detection system including at least one sensor wire coupled to a detector for detecting an attempted intrusion by producing an electrical signal when sensing an external force applied to the sensor wire, characterized in that said system further includes:

a testing device adapted to be actuated from a central station to apply a mechanical force to said sensor wire in order to cause same to simulate an intrusion;

and a testing circuit including means at said central station for actuating said testing device, and an indicator at said central station connected to receive the signal from said detector and thereby to indicate the actual response of said detector to said mechanical force.

4,500,874

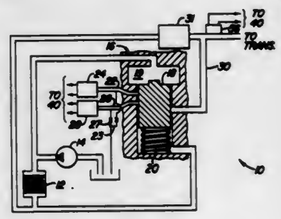
FILTER MONITORING SYSTEM

Stephen F. Jacobi, Cedar Falls; Robert E. Haight, Waterloo; John W. Schletzbaum, Hudson; Yolanda E. Martin, Cedar Falls, and Stephen P. Lang, Waterloo, all of Iowa, assignors to Deere & Company, Moline, Ill.

Filed Jun. 17, 1982, Ser. No. 378,703

Int. Cl.³ G08B *21/00*

U.S. Cl. 340—607 **4 Claims**



1. A system for monitoring the condition of a filter in a hydraulic circuit, comprising:

first and second pressure-responsive switches operable in response to first and second levels, respectivley, of restriction in the filter;

first and second indicators energizable to produce first and

second sensibly dissimilar operator-detectable warning signals; and

a monitor circuit coupled to the switches and to the indicators, the monitor circuit including means for energizing both indicators in response to operation of only one of the switches and for preventing energization of both indicators unless the one switch is operated continuously for a certain time period, the monitoring circuit also including means for energizing one of the indicators and de-energizing the other of the indicators in response to operation of the second switch and for preventing energization of the one indicator unless the second switch is operated continuously for a predetermined time period.

4,500,875

DEVICE FOR DISPLAYING DIGITAL INFORMATION INCORPORATING SELECTION OF PICTURE PAGES AND/OR RESOLUTION ENHANCEMENT

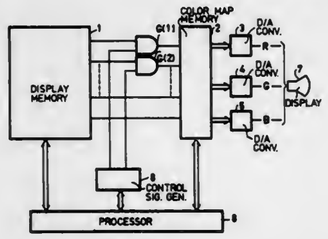
Herman J. R. Schmitz, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Feb. 8, 1982, Ser. No. 346,702

Claims priority, application Netherlands, Mar. 19, 1981, 8101339

Int. Cl.³ G09G *1/28*

U.S. Cl. 340—703 **8 Claims**



1. A device for arranging digital information as a set of pixels which are displayed according to a line pattern in a two-dimensional area, said device comprising:

a display memory for the storage of said digital information, an m-bit (m>1) information word being stored for each of said pixels to be displayed, said display memory comprising a data output for outputting said m-bit information words;

a programmable color map memory for the storage of color information, said color map memory having a data output for outputting color information and an address input;

means for generating control signals;

means for connecting said data output of said display memory to said address input of said programmable color map memory, said connecting means comprising at least one connection line having a gate circuit including a first gate input connected to said data output of said display memory, a gate output connected to said address input of said programmable color map memory, and a control input connected to said generating means for receiving control signals, said gate circuit passing to said gate output, under the control of a first control signal applied at said control input, a first address comprising the m-bit information word to be displayed, said gate circuit also passing to said gate output, under the control of a second control signal applied at said control input, a second address comprising a selectable part of the m-bit information word to be displayed.

4,500,876

CONTROL SYSTEM FOR POSITIONING A MARKER ON A CATHODE-RAY TUBE DISPLAY

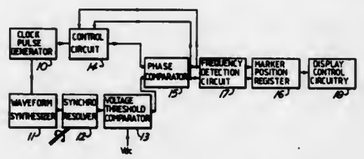
Brian B. English, Edinburgh, and Hamish W. M. Gray, Lothian, both of Scotland, assignors to Ferranti plc, Cheadle, England

Filed Mar. 18, 1982, Ser. No. 359,310

Claims priority, application United Kingdom, Mar. 23, 1981, 8108547

Int. Cl.³ G09G *1/00*

U.S. Cl. 340—709 **17 Claims**



1. A control system for positioning a marker on a cathode-ray display, said system comprising:

at least one position register operable to store a number identifying the position of the marker on the display;

at least one synchro resolver having rotor and stator elements, a pair of input windings on one of said rotor and stator elements and an output winding on the other of said rotor and stator elements;

means for applying a sinewave energising signal to one of said pair of input windings and a cosinewave energising signal to the other of said pair of input windings such that the output winding delivers a signal having a sinusoidal waveform differing in phase from one of the energising signals by an extent dependent upon the angular position of said rotor relative to said stator;

circuitry responsive to the output winding signal for producing an output pulse corresponding to each predetermined increment of rotation of said rotor; and

circuitry for changing the number stored in said position register as a function of the output pulses.

4,500,877

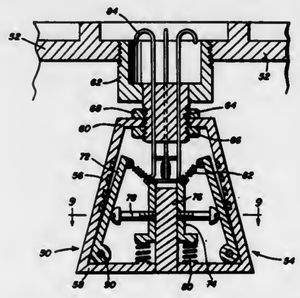
CHANGEABLE CIRCUIT CONTROLLING SWITCH ASSEMBLY

Joseph H. Molat, Stratford 36C, West Palm Beach, Fla. 33409

Division of Ser. No. 165,227, Jul. 1, 1980, Pat. No. 4,384,720. This application Feb. 8, 1983, Ser. No. 464,976

Int. Cl.³ G09F *9/30*; H01H *17/14*

U.S. Cl. 340—711 **5 Claims**



1. In a control board assembly, a display panel divided into a plurality of zones, manually operable means displaceable between inactive and active positions at each of said zones for registration of selected ones of the zones, indicator means operatively connected to the manually operable means for signifying registration of a group of the zones in a predetermined pattern, means cooperating with the manually operable means for holding thereof in the inactive position at each of said zones, and changeable means associated with the holding means and the manually operable means at each of the zones for changing the predetermined pattern signified by the indicator means, said manually operable means including a switch housing mounted in underlying relation to said display panel having a contact mounting wall depending from the panel in angular relation thereto, a pivoted contact element biased to the inactive position, slidable means mounted within the switch housing and engageable with the contact element for displacement thereof toward the contact mounting wall from the inactive position, actuator means connected to the slidable means for displacement thereof, and guide means through which the actuator means extends for exposing the actuator means above the display panel, additional contact mounting walls, and associated contact elements, and a plurality of actuator rods associated with said actuator means.

4,500,878

THERMOELECTRICALLY CONTROLLED ELECTROCHROMATIC VISUALIZATION DEVICE

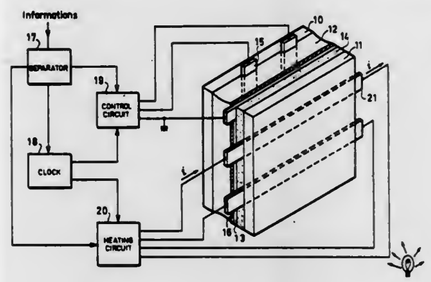
Michel Hareng, and Paul Moutou, both of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Sep. 27, 1982, Ser. No. 424,762

Claims priority, application France, Dec. 15, 1981, 81 23437

Int. Cl.³ G09G *3/34*

U.S. Cl. 340—713 **6 Claims**



1. A electrically controlled visualization device comprising:

an electrochromatic material placed between a first electrode means and a second electrode means wherein said first and second electrode means are each supported respectively by two plates with at least one of said plates being transparent;

a voltage source connected to said first electrode means;

heating current generating means for producing an electric heating current provided for said second electrode means whereby said voltage source and said heating current generating means produce a displacement of ions by diffusion which modifies the nature of said material;

control means connected to said voltage source and said heat current generating means for controlling the application of said voltage and said current from said heat current generating means in order to provide for control of an electrochromatic effect caused by said displacement of ions by diffusion.

4,500,879

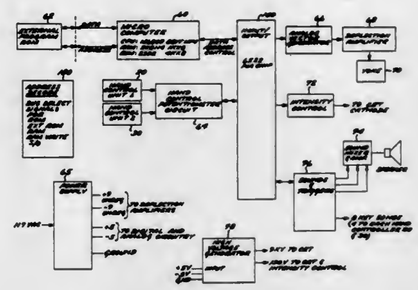
CIRCUITRY FOR CONTROLLING A CRT BEAM

Jay Smith, III, Pacific Palisades, and Gerald S. Karr, Venice, both of Calif., assignors to Smith Engineering, Culver City, Calif.

Filed Jan. 6, 1982, Ser. No. 337,332

Int. Cl.³ G06F *3/14*; H01J *29/70*

U.S. Cl. 340—739 **2 Claims**



1. Apparatus for drawing vectors on a CRT display, comprising:

digital-to-analog converter (DAC) means having an output;

first storing means having an input and an output for sampling a signal presented to said input and holding the sample as said output;

a second storing means having a second input and a second output; p1 first integrator means including a first differential amplifier means having a first input and a second input, the second input being connected to the output of said second storing means;

a second integrator means including a second differential amplifier means having a first input and a second input, the second input being connected to the output of said second storing means;

first switch means responsive to a first control signal to selectively couple the output of the first storing means to said first integrator means;

second switch means responsive to a second control signal to selectively couple the DAC output to said second integrator means;

a selector means responsive to at least a third control signal for selectively coupling the analog output of said DAC means to the input of said first storing means or to the input of said second storing means;

control means for supplying said first, second and at least a third control signal to control the operation of said DAC means, said selector means and said first and second switch means, said control means being operative to cause said first switch means to close for a predetermined time after said first storing means has stored an output of the DAC means and to cause said selector means to couple said DAC output to said second storing means only when said DAC is at a zeroing point; and

deflection circuit means for coupling said integrator outputs to first and second CRT deflection coils for causing the CRT to deflect in accordance with the integrator output signals.

4,500,880

REAL TIME, COMPUTER-DRIVEN RETAIL PRICING DISPLAY SYSTEM

Earl R. Gomersall, Inverness, and Arthur F. Cipolla, Chicago, both of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jul. 6, 1981, Ser. No. 280,663

Int. Cl.³ G09G *3/00*

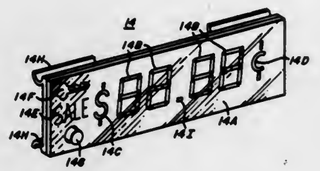
U.S. Cl. 340—825.35 **12 Claims**

1. A computer-driven informational display arrangement for

displaying selected information in real time, said arrangement comprising in combination:

a source of computer based information in the form of at least an address code in standard UPC format and information to be displayed;

a plurality of low current drain display units at selected locations, each having externally programmable memory means settable to a particular address in the form of a UPC formatted address code, said display units being responsive to said programmed address code to process and



selectively display said information following said address code;

means for applying said source of the computer based information to said plurality of display units;

means for supplying operating power to each of said plurality of display units; and

means including optical scanning means for externally programming said memory of any of said plurality of display units with a stored address code while at its said selected location.

4,500,881

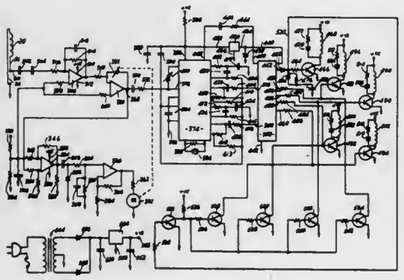
INDUCTIVELY-COUPLED SIGNALLING SYSTEM

Michael J. Beane, Apollo Beach, Fla., assignor to Liquidometer Corporation, Tampa, Fla.

Filed Sep. 23, 1982, Ser. No. 422,366

Int. Cl.³ H04Q *9/12*; H01R *11/30*

U.S. Cl. 340—825.73 **41 Claims**



16. A signalling system to provide information from a carrier vehicle to a storage facility, comprising in combination with said vehicle and facility:

(a) a device at said vehicle, for generating waveforms,

(b) means for selecting two of said waveforms to correspond to a predetermined signal,

(c) a two-part coupling, one part comprising means connected to said generating device for radiating the waveform energy therefrom, and the other part comprising means closely coupled to said radiating means, to pick up said radiated waveform energy,

(d) holding means for normally maintaining said radiating and pick up means in close, operative proximity,

(e) said holding means enabling a non-destructive separation of said waveform radiating and pick up means in response to the application of sufficient force to said coupling parts,

(f) a cable connected to said pick up means, for carrying said picked up waveforms,

(g) a waveform decoder at the said storage facility, associated with said cable for decoding the waveforms carried by the cable, and

(h) a control device at said storage facility, responsive to said decoded waveforms.

4,500,882

ANTENNA SYSTEM

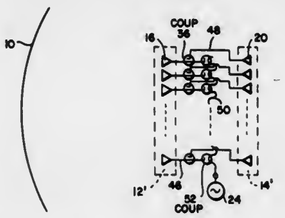
Takashi Katagi, Kanagawa, and Seiji Mano, Fujisawa, both of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 3, 1981, Ser. No. 317,847

Claims priority, application Japan, Nov. 5, 1980, 55-155536; Nov. 5, 1980, 55-155654; Nov. 5, 1980, 55-155655; Nov. 5, 1980, 55-155656; Nov. 5, 1980, 55-155657

Int. Cl.³ H01Q *3/22, 3/24, 3/26*

U.S. Cl. 343—372 **12 Claims**



12. An antenna system comprising a reflector, an array antenna used as a primary radiator and positioned in front of an aperture of said reflector so as to block one portion of said aperture of said reflector, said array antenna having a plurality of radiating elements, and a subsidiary array antenna which is disposed back-to-back with respect to said array antenna, said subsidiary array antenna having subsidiary radiating elements whose number is not greater than that of said radiating elements of said array antenna and said subsidiary radiating elements being supplied with one portion of an electrical power which is supplied to said radiating elements of said array antenna through a coupler means, each of said subsidiary radiating elements being formed of a short backfire antenna having: a reflecting ground plate, a reflecting peripheral wall extending from the periphery of the reflecting ground plate, a small reflecting plate disposed above said reflecting ground plate and a dipole antenna disposed between said small reflecting plate and said reflecting ground plate; wherein a radiation pattern of said subsidiary array antenna compensates for a portion of a radiation pattern of said reflector which is blocked by said array antenna.

4,500,883

ADAPTIVE MULTIPLE INTERFERENCE TRACKING AND CANCELLING ANTENNA

Frank S. Gutleber, Little Silver, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Mar. 7, 1983, Ser. No. 472,793

Int. Cl.³ G01S *3/06*

U.S. Cl. 343—383 **25 Claims**

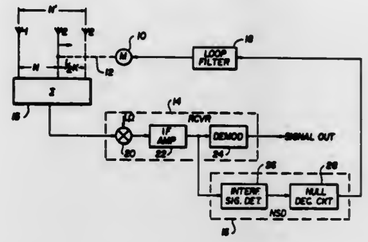
1. An adaptive array antenna for cancelling undesired signals received thereby, comprising:

a plurality of antenna elements;

means for varying the space coded positions of said plurality of antenna elements in response to a control signal to provide a 180° phase difference between one half of the number of said plurality of antenna elements with respect to the other half of the number of said antenna elements

for an undesired signal arriving at a certain space angle relative to an axis of said antenna;

receiver means coupled to said antenna elements and including means for detecting and providing an output signal of said undesired signal; and



means responsive to the amplitude of said undesired output signal for generating said control signal whereby said varying means varies said spacing between said halves of antenna elements until a null of said output signal occurs and said undesired signal is cancelled.

4,500,884

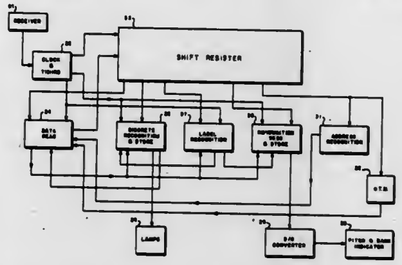
DATA LINK TIMING

Henry Naubereit, Maple Shade, N.J.; Henry R. Beyer, Chalfont, Pa.; Richard G. DeSipio, Philadelphia, Pa., and Salvatore R. Picard, Hatboro, Pa., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 11, 1965, Ser. No. 455,672

Int. Cl.³ G01S *3/02*

U.S. Cl. 343—456 **10 Claims**



1. In an automatic aircraft carrier landing system having a carrier provided with a radio transmitter for transmitting a predetermined sequence of digital information and a plurality of aircraft each having a radio receiver for receiving said sequence, a data link in each aircraft for translating said sequence into aircraft guidance information comprising:

a shift register connected to said receiver to receive said sequence;

a clock connected to advance said register at the rate of said sequence;

means to read from said register at predetermined intervals portions of said sequence; and

timing means to control the operation of said shift register and reading means;

wherein said means to read comprises:

means at the first of said predetermined intervals to determine by the condition of a portion of said register if the aircraft is being addressed and to issue an address recognize signal thereupon; and

means in response to said signal to determine by the condition of another portion of said register the nature of information in subsequent portions of said sequence.

4,500,885

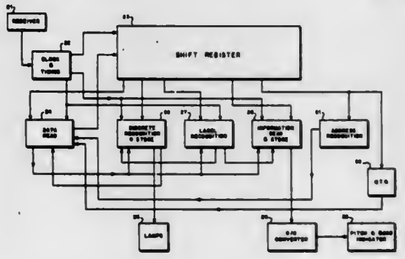
DATA LINK DATA AND ADDRESS RECOGNITION

Henry R. Beyer, Chalfont; Richard G. DeSipio, Philadelphia; Thomas F. Long, Warminster, and Joseph Ritz, Hatboro, all of Pa., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 11, 1965, Ser. No. 455,673

Int. Cl.³ G01S *3/02*

U.S. Cl. 343—456 **10 Claims**



1. In an automatic aircraft carrier landing system having a carrier provided with a radio transmitter for transmitting a predetermined sequence of digital information and a plurality of aircraft each having a radio receiver for receiving said sequence, a data link in each aircraft for translating said sequence into aircraft guidance information comprising:

a shift register connected to said receiver to receive said sequence;

a clock connected to advance said register at the rate of said sequence;

means to read from said register at predetermined intervals portions of said sequence; and

timing means to control the operation of the shift register and reading means, comprising:

means operable during a first portion of said sequence comprising synchronization bits to clear and lock said register, said register being unlocked by reception of a first data bit;

a plurality of cycle means operable after successive predetermined portions of said sequence to send timing signals to said read means to read the contents of said register, each of said cycle means being responsive to a predetermined condition of said register.

4,500,886

DATA LINK SHIFT REGISTER OPERATION

Henry Naubereit, Maple Shade, N.J.; Thomas F. Long, Warminster; Salvatore R. Picard, and Joseph Ritz, both of Hatboro, all of Pa., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 11, 1965, Ser. No. 455,674

Int. Cl.³ G01S *3/02*

U.S. Cl. 343—456 **10 Claims**

1. In an automatic aircraft carrier landing system having a carrier provided with a radio transmitter for transmitting a predetermined sequence of digital information and a plurality of aircraft each having a radio receiver for receiving said sequence, a data link in each aircraft for translating said sequence into aircraft guidance information, comprising:

a shift register connected to said receiver to receive said sequence;

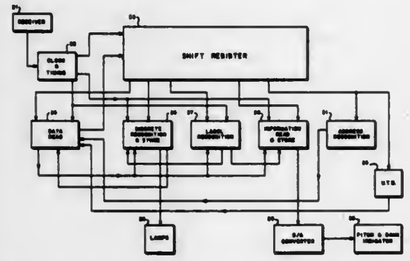
a clock connected to advance said register at the rate of said sequence;

means to read from said register at predetermined intervals portions of said sequence; and

timing means to control the operation of the shift register and reading means;

said shift register comprising:

a plurality of stages each connected to transfer its condition to the next succeeding stage upon occurrence of a pulse from said clock; and



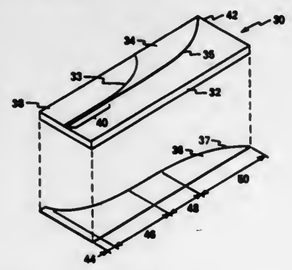
means to reset all of said stages, one of said stages having its output inverted with respect to the next succeeding stage to insert a false set bit into said register when said register is reset.

4,500,887

MICROSTRIP NOTCH ANTENNA

William H. Nester, Liverpool, N.Y., assignor to General Electric Company, Syracuse, N.Y.

Filed Sep. 30, 1982, Ser. No. 428,762
Int. Cl.³ H01Q 1/38
U.S. Cl. 343—700 MS **8 Claims**



1. A notch antenna comprising:

a planar dielectric substrate; and

a two-sided metallization comprising

a first metallization layer disposed on one major surface of said substrate;

a second metallization layer disposed on the major surface of said substrate opposite said first major surface; and

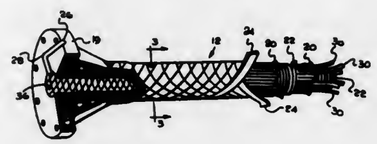
said first and second metallizations being configured to form a two-sided microstrip region at one end of said substrate, a two-sided flared notch antenna region at the opposite end of said substrate, and a continuously two-sided transmission line in a longitudinally center region interconnecting said regions, the longitudinal edges of said first and second metallization layers transitioning smoothly from said microstrip region to said two-sided, flared notch antenna region.

4,500,888

ANTENNA CONSTRUCTION

Don E. Brandigampola, Guelph, Canada, assignor to Valcom Limited, Guelph, Canada

Filed Feb. 25, 1983, Ser. No. 469,946
Int. Cl.³ H01Q 1/40
U.S. Cl. 343—873 **4 Claims**



1. Free standing antenna for use in severe climatic conditions, such antenna being attached at its base, but being otherwise free of attachment or support, and said antenna being formed with an elongated tubular body portion, having one or more sections, and an enlarged base portion at its lower end for mounting thereof, and said body portion comprising;

a plurality of layers of reinforcing filaments, some of said layers of reinforcing filaments comprising bundles of longitudinal filament rovings running lengthwise along such body portion, and others of said layers of reinforcing filaments comprising generally circumferential windings of filament rovings, said layers of reinforcing filaments being bonded together by resin material;

electrically conductive means embedded in said elongated tubular structure, and running generally from end to end thereof, and terminating adjacent said lower end thereof;

a generally annular electrically conductive member, connected to said electrically conductive means, adjacent said lower end of said tubular structure;

a female threaded metallic electrically conductive socket member connected to said annular member, and extending through a wall of said elongated tubular structure for connection of electrical connection means thereto from the exterior thereof;

at least one layer of woven reinforcing filament cloth material extending up the interior of said tubular structure adjacent said lower end, and overlying the interior of said annular member, and,

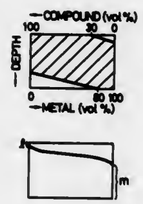
resin means bonding said layer of woven cloth material to the interior of said tubular structure, and to the interior of said annular member, thereby substantially embedding and enclosing said annular member.

4,500,889

METHOD FOR RECORDING LIGHT INFORMATION

Minoru Wada; Yonosuke Takahashi, and Eiichi Hasegawa, all of Saitama, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jun. 21, 1982, Ser. No. 390,735
Claims priority, application Japan, Jun. 19, 1981, 56-93964
Int. Cl.³ G01D 15/34, 15/32; G03C 5/04, 5/24
U.S. Cl. 346—1.1 **23 Claims**



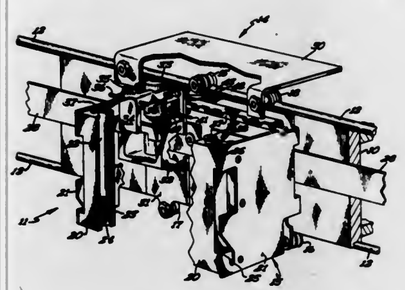
1. In a method for recording information by irradiating an optical information recording material comprising a heat mode recording layer comprising a metal on a base with a light beam, the method for recording optical information in which said heat mode recording layer consists of a metal and at least one metal compound selected from metal oxides and metal sulfides and the proportion of the amount of the metal to that of said metal compound changes in a manner that the proportion either increases or decreases in the direction of the thickness of the layer, said recording layer having a layer comprising a mixture of at least one of the metals and at least one of the metal compounds in which irradiation with the light beam is conducted from the side where the proportion of the metal in the recording layer is smaller, and in which melting and removing are conducted to expose an area where the proportion of the metal is greater in the recording layer until the difference in reflection of the light between the non-irradiated area and the irradiated area reaches an extent which is sufficient to permits reading by light.

4,500,890

GRAPHIC RECORDING SYSTEM

Rodney G. Nicholas, Berkeley, Calif., assignor to Nicolet Instrument Corporation, Madison, Wis.

Filed Aug. 23, 1982, Ser. No. 410,504
Int. Cl.³ G01D 9/40
U.S. Cl. 346—29 **20 Claims**



1. In a graphic recording system of the type wherein a plurality of recording elements are moved relative to a recording medium and having means for selectively actuating said recording elements for recording on said medium, the improvement which comprises:

carriage means for carrying said recording elements;

means, including rail means, independently supporting said carriage means and said actuating means for movement relative to said recording medium and each other along said rail means;

means selectively moving at least one of said carriage means and actuating means relative to the other along said rail means for recording element selection; and

means selectively locking said carriage means and said actuating means for movement together by said selectively moving means during recording.

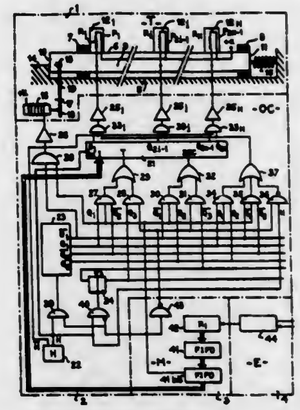
4,500,891

PROCESS FOR PRINTING DOTS ON A HEAT SENSITIVE PAPER BY A THERMAL PRINTER AND PRINTER USING THIS PROCESS

Bernard Gimel, and Christian DeFay, both of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Jan. 18, 1983, Ser. No. 458,876
Claims priority, application France, Jan. 29, 1982, 82 01451
Int. Cl.³ G01D 15/10
U.S. Cl. 346—76 PH **6 Claims**

1. A process for printing dots on a heat sensitive paper by means of a thermal printer comprising a printing head formed by N heating resistors, aligned in the direction of the line to be printed, signal input devices representing the dots to be printed, means for storing the signals received by the input devices, as well as means for controlling the displacement of the printing head and the heating of the resistors corresponding to the location of the dots to be printed, wherein in a first stage heating takes place of the resistors corresponding to the locations of the dots to be printed in a line directly facing these resistors and in a second stage the printing head is displaced in order to again heat the resistors on the head corresponding to



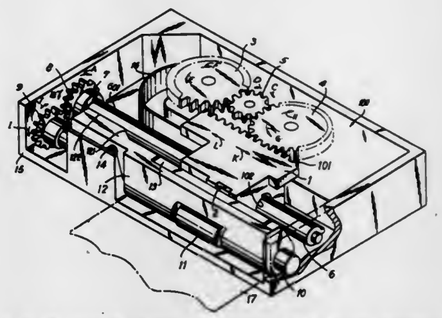
the locations of the dots of the line still to be printed, and wherein the displacement of the printing head is prevented and the heating of the resistors corresponding to the dots remaining to be printed is permitted during the second stage when, the number of dots to be printed, stored in the storage means, exceeds a predetermined number of dots, in order to ensure that the number of dots to be stored does not exceed the storage capacity of the storage means.

4,500,892

SERIAL THERMAL PRINTER

Seiichi Hirano, Shiojiri, Japan, assignor to Epson Corporation, Tokyo, Japan

Filed Jul. 18, 1983, Ser. No. 515,087
Claims priority, application Japan, Jul. 21, 1982, 57-128008
Int. Cl.³ B41J 3/20
U.S. Cl. 346—76 PH **20 Claims**



1. A serial thermal printer for printing on a thermo-sensitive recording medium comprising a frame, a carriage supported on said frame for lateral movement across said recording medium, a thermal print head supported on said carriage for lateral displacement therewith for printing on said recording medium, platen means supported on said frame for supporting said

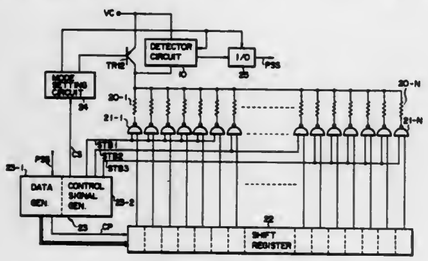
recording medium so that said print head can be pressed against said recording medium to effect thermal printing thereon, motor means having a relatively flat configuration supported on said frame and having a vertical rotatable shaft which is rotated by said motor means, drive gear means operatively coupled to said rotatable shaft for selective rotation thereby in opposite directions in response to rotation by said motor means, converting means for converting rotation of said drive means into lateral movement of said carriage, paper feed means operatively coupled to said carriage for feeding said recording medium past said print head, and platen release means selectively engageable with said carriage for releasing said print head from engagement with said platen means.

4,500,893

THERMAL-PRINTING DEVICE WITH DEFECTIVE RESISTIVE HEATING ELEMENT DETECTION MODE

Yasuhiro Sakura, Mishima; Yoshihiro Takai, Shizuoka, and Michio Suzuki, Mishima, all of Japan, assignors to Tokyo Electric Co., Ltd., Tokyo, Japan

Filed Apr. 18, 1984, Ser. No. 601,552
Claims priority, application Japan, Apr. 28, 1983, 58-75949
Int. Cl.³ G01D *15/10*; H05B *1/02, 1/00*; B41J *3/20*
U.S. Cl. 346—76 PH **20 Claims**



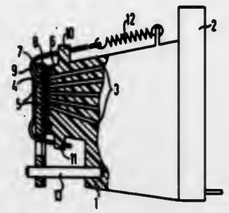
1. A thermal-printing device comprising:
a power supply terminal set at a predetermined potential;
a pluraltiy of heat generating means;
a first current path;
a second current path including current limiting means;
current detecting means for generating a control output signal upon detecting a flow of a current through said second current path;
switching means set to connect one terminal of each of said plurality of heat generating elements to said power supply terminal through said first and second paths in a printing mode and a check mode, respectively; and
potential setting means, having a plurality of output terminals each connected to the other terminal of a corresponding one of said plurality of heat generating elements, for selectively setting potentials at said output terminals at a predetermined potential level in accordance with input data to selectively flow a current through said plurality of heat generating elements in the printing mode, and for sequentially setting the potentials at said output terminals at said predetermined potential level to sequentially flow a check current through said plurality of heat generating elements in the check mode.

4,500,894

DEVICE FOR COVERING AND CLEANING THE DISCHARGE OPENINGS OF INK PRINTING HEADS

Wilhelm Kirner, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Feb. 16, 1983, Ser. No. 466,890
Claims priority, application Fed. Rep. of Germany, Feb. 26, 1982, 3207072
Int. Cl.³ G01D *15/18*
U.S. Cl. 346—140 R **5 Claims**



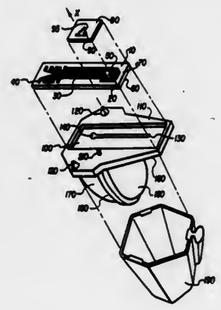
1. A device for sealing and cleaning the discharge openings of a nozzle plate having plural discharge openings in an ink printing head, including in combination:
a sealing plate mounted for movement relative to the nozzle plate;
said sealing plate having a cut-out adapted to be aligned with the front of the discharge openings during the print periods, to release such openings;
said cut-out being sharp-edged for executing a cleaning function as it is moved relatively to said nozzle plate;
a pressure element for forcing said sealing plate and said nozzle plate against the limiting surface of said print head at which the ink channels terminate;
and a sealing ring which is deformed by said pressure element being provided between the limiting surface of said print head and said nozzle plate.

4,500,895

DISPOSABLE INK JET HEAD

Roy T. Buck; Frank L. Cloutier; R. Ernst Erni; Robert N. Low, all of Corvallis, Oreg., and F. Duncan Terry, Boise, Id., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed May 2, 1983, Ser. No. 490,754
Int. Cl.³ G01D *15/18*
U.S. Cl. 346—140 R **10 Claims**



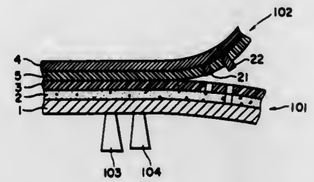
1. A printing apparatus for jetting ink in an ink jet printer comprising:
a collapsible ink reservoir;
a substrate having jetting means disposed on the substrate for imparting momentum to the ink, and electrical connection means for energizing the jetting means;
orifice means connected to the substrate and covering the jetting means for providing an orifice through which the ink is jetted under the influence of the momentum imparted by the jetting means;
support means coupled to and mechanically supporting the ink reservoir and the substrate for providing a sealed hydraulic connection therebetween for the ink;
fill means coupled to the ink reservoir for substantially filling the collapsible ink reservoir with ink; and
plug means coupled to the fill means for hydraulically sealing the fill means so that the only exit for the ink from the ink reservoir is through the orifice means.

4,500,896

HEAT-SENSITIVE RECORDING MEDIUM AFFORDING PATTERNS WITH DIFFERENT COLORS

Keishi Kubo, Yokohama; Hideo Watanabe, Numazu; Nobuhiro Takigawa, Numazu; Minoru Hagiri, Numazu, and Kanjiro Kawasaki, Numazu, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Jan. 24, 1984, Ser. No. 573,357
Claims priority, application Japan, Jan. 25, 1983, 58-10388; Mar. 12, 1983, 58-40960
Int. Cl.³ B41M *5/22*
U.S. Cl. 346—204 **16 Claims**



1. A heat-sensitive recording medium comprising:
(a) a transferring sheet which includes
a first substrate,
a lower layer provided over said first substrate and comprised of a discoloring agent and a solid ink having a first color, and
an upper layer provided above said lower layer and containing a leuco-compound capable of coloring in a second color which is different from said first color by reaction with a developer at such a first temperature that at least one of said leuco-compound and said developer can melt but that neither said discoloring agent nor said solid ink can melt, said leuco-compound being incapable of coloring upon contact with said developer in the presence of said discoloring agent at such a second temperature that both of said discoloring agent and said solid ink can melt; and
(b) a receiving sheet which includes
a second substrate, and
a developing layer provided over said second substrate and containing said developer,
whereby, when said recording medium is subjected to thermal recording temperatures with said upper layer being maintained in thermal contact with said developing layer, there are formed a first image developed by the contact between said leuco-compound and said developer at said first temperature and a second, fused image of said solid ink at said second temperature, said first and second images being received by said receiving sheet.

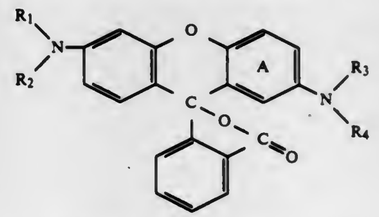
4,500,897

HEAT-SENSITIVE BLACK RECORDING ELEMENT

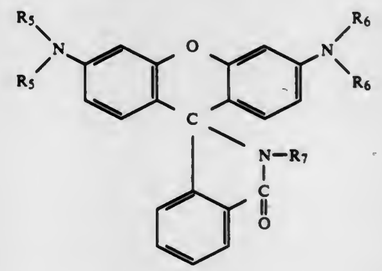
Masanori Matsuda, Sakai; Haruo Koyama, Hirakata, and Nobuhiro Miyakawa, Abiko, all of Japan, assignors to Mita Industrial Co., Ltd., Osaka, Japan

Filed Jun. 29, 1983, Ser. No. 509,067
Claims priority, application Japan, Jun. 29, 1982, 57-110676
Int. Cl.³ B41M *5/18, 5/22*
U.S. Cl. 346—209 **15 Claims**

1. A heat-sensitive recording element capable of forming an image of a hue close to a pure black at a low density, which comprises a dispersion of a leuco dye, a heat-fusible organic acidic substance solid at normal temperature and a sensitizing agent in a binder, wherein the leuco dye comprises a fluoran type leuco dye for forming a black color, which is a compound represented by the following general formula:



wherein R_1 and R_2 each represent an alkyl or aryl group having up to 4 carbon atoms or R_1 and R_2 are bonded to form a nitrogen-containing heterocyclic ring group together with the nitrogen atom, R_3 represents a hydrogen atom or a lower alkyl or aralkyl group, R_4 represents an unsubstituted or substituted aryl group, and the ring A may be substituted with a halogen atom or an alkyl group, and a rhodamine lactam type leuco dye for forming a red dye, which is a compound represented by the following general formula:



wherein R_5 and R_6 each represent an alkyl group having up to 4 carbon atoms, and R_7 represents a substituted or unsubstituted aryl group or an aralkyl group, in an amount of 1.5 to 30% by weight based on said black color-forming leuco dye.

4,500,898

SEMICONDUCTOR DEVICES UTILIZING EUTECTIC MASKS

Harvey E. Cline, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

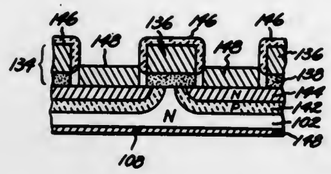
Filed Jul. 6, 1982, Ser. No. 395,761
Int. Cl.³ H01L *29/78*
U.S. Cl. 357—23 **6 Claims**

1. A vertical power MOSFET semiconductor device which comprises
(a) a substrate suitable for the manufacture of semiconductor devices, said substrate including at least a planar base of a semiconductor material and a planar layer of a dielectric and insulating material, said base having substantially parallel upper and lower major planar surfaces and a

peripheral edge area interconnecting said major surfaces, said planar layer of a dielectric and insulating being situated on and contiguous with defined portions of said upper major planar surface of said base designated as an array;

(b) a thin film lamellar metallic eutectic on said defined portions of said planar layer of a dielectric and insulating material;

(c) one of the phases of said thin film lamellar metallic eutectic forming said array of spaced metallic elements with substantially parallel spaces in-between said spaced metallic elements of said array; said elements of said array being less than one micron in width;



(d) said parallel elements comprising an array of substantially parallel metallic gate contacts, the segments of said upper major surface of said base in-between said gate contacts being provided with:

(e) first extended doped regions and second extended doped source regions, said extended doped regions underlying and extending between at least a portion of said gate contacts on either side of each said segment of said upper major surface of said base, each said second extended doped region being substantially bounded by said upper major surface of said base and by a first extended doped region;

(f) source contacts at said source regions; and

(g) at least one drain contact on said lower major planar surface of said body.

4,500,899

SEMICONDUCTOR MEMORY DEVICE AND PROCESS FOR PRODUCING THE SAME

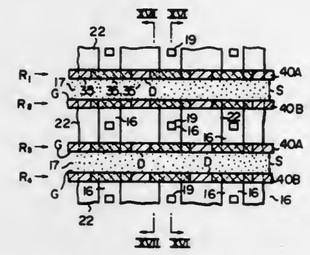
Kazunari Shirai, and Izumi Tanaka, both of Yokohama, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Dec. 23, 1981, Ser. No. 333,652

Claims priority, application Japan, Dec. 25, 1980, 55-184715

Int. Cl.³ H01L *29/78, 27/02, 27/10*

U.S. Cl. 357—23 **4 Claims**



1. In a semiconductor memory device, comprising:

a semiconductor substrate;

MOS transistors for use as memory cells formed in said semiconductor substrate and arranged in a plurality of rows;

a plurality of field insulation films arranged in an island pattern formed on said semiconductor substrate, aligned in rows, isolating said MOS transistors from each other and each having an end;

common gates of respective said MOS transistors running in the direction of the rows and said common gates formed on and extending on one row of said field insulation films and having an edge;

a common first region for forming a source or a drain of said MOS transistors running in the direction of the rows and said common first region being parallel to said common gates; and

second regions each for forming another source or drain of each MOS transistor, surrounded by both a pair of said common gates and a pair of said field insulation films that are arranged in an island pattern and each of said second regions being isolated from each other; and

the end of said field insulation films facing said common first region and coinciding with the edge of said common gate extending on said field insulation films and also facing said common first region.

4,500,900

EMITTER BALLAST RESISTOR CONFIGURATION

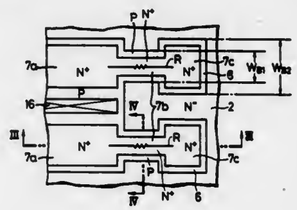
Isao Shimizu, Takasaki, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 22, 1982, Ser. No. 350,873

Claims priority, application Japan, Feb. 20, 1981, 56/23017

Int. Cl.³ H01L *29/72, 27/02, 29/06*

U.S. Cl. 357—36 **13 Claims**



5. In a semiconductor device which has a first semiconductor region of a first conductivity type extending from a principal surface into a semiconductor body, a second semiconductor region of a second conductivity type selectively formed within said first semiconductor region to be surrounded by the first semiconductor region, and a third semiconductor region of the first conductivity type selectively formed within said second semiconductor region to be surrounded by the second semiconductor region as a collector region, a base region and an emitter region, respectively for said semiconductor device,

said semiconductor device characterized in that said third semiconductor region includes a pair of transistor operation portions separated from one another by a portion of said second semiconductor region, a pair of ballast resistance portions respectively coupled to said pair of transistor operation portions, said pair of ballast resistance portions being separated from one another by a portion of said second semiconductor region, and a common electrode connection portion coupled to said pair of ballast resistance portions, wherein a part of said first semiconductor region extends to said one principal surface of said semiconductor body between said ballast resistance portions so that the combined lateral width of said second semiconductor region surrounding said pair of ballast resistance portions is less than the total lateral width of said second semiconductor region surrounding said common electrode connection portion.

4,500,901

THYRISTOR HAVING N+- MAIN AND AUXILIARY EMITTERS AND A P+ RING FORMING A P+N+ JUNCTION WITH THE MAIN EMITTER

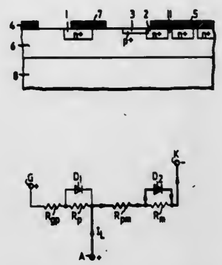
Karl H. Sommer, Belecke; Alois Sonntag, Mulheim, and Wolfgang Pikorz, Belecke, all of Fed. Rep. of Germany, assignors to Licentia Patent-Verwaltungs-G.m.b.H., Frankfurt am Main, Fed. Rep. of Germany

Continuation of Ser. No. 54,894, Jul. 5, 1979, abandoned. This application Jun. 25, 1981, Ser. No. 277,322

Claims priority, application Fed. Rep. of Germany, Jul. 13, 1978, 2830735

Int. Cl.³ H01L *29/74*

U.S. Cl. 357—38 **14 Claims**



1. In a thyristor with an amplifying gate including: a silicon semiconductor body having three layer-like zones of alternating conductivity type between its two major surfaces with the control base zone on the cathode side of the device being p conductive, and having n^+ conductive main emitter and auxiliary emitter zones formed in said p conductive control base zone adjacent one major surface of said semiconductor body, said auxiliary emitter zone forming only a pn^+ junction with said p conductive control base zone; a metal control contact, a metal auxiliary emitter contact and a metal main cathode contact provided on said one major surface for said p conductive control base zone, said auxiliary emitter zone and said main emitter zone, respectively, said auxiliary emitter contact extending over and contacting a portion of the surface of said p conductive control base zone between said auxiliary and main emitter zones; and a metal anode contact provided on the opposite of said two major surfaces; the improvement comprising means for ensuring firing of the auxiliary thyristor before the main thyristor by a biasing voltage applied between said anode and said main cathode contacts and a control voltage applied to said control contact, said means including a p^+ zone formed between said auxiliary emitter and said main emitter zones in a region of said p conductive control base zone adjacent said one major surface of said semiconductor body, said p^+ zone contacting the edge region of said main emitter zone which faces said auxiliary emitter zone and forming a p^+n^+ junction with said main emitter zone, and said p^+ zone being laterally spaced from and not physically contacting said n^+ auxiliary emitter zone.

4,500,902

FET CONTROLLED THYRISTOR

Helmut Herberg, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Feb. 4, 1982, Ser. No. 345,594

Claims priority, application Fed. Rep. of Germany, Mar. 31, 1981, 3112942

Int. Cl.³ H01L *29/74, 29/78, 27/02, 29/167*

U.S. Cl. 357—38 **18 Claims**

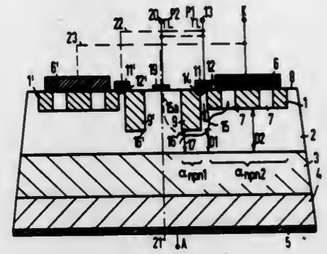
1. In a thyristor of the type having a semiconductor body in which a first base of a first conductivity type has a first emitter of a second conductivity type on one side thereof and a second base of the second conductivity type on the other side thereof, and in which a second emitter of the first conductivity type is provided adjacent the second base on the side opposite the first base, the improvement therein comprising:

a third emitter of the second conductivity type adjacent and spaced from the first emitter; and

a semiconductor switch bridging and operable to conductively connect said third and first emitters,

said semiconductor switch comprising a field effect transistor including a first edge region of said third emitter, a second edge region of the first emitter, a third region of the first base between the first and third emitters,

a gate spanning said third region and said first and second edge regions and insulated from the semiconductor body, and a control voltage terminal carried by said gate;



said third emitter extending towards and spaced from the junction of the first and second bases a distance less than that of the first emitter;

the first and second bases and the first emitter forming a three-layer structure having a second current transfer ratio which is less than the first current transfer ratio given a forward bias of the second emitter with respect to the first emitter because of the greater recombination rate of carriers of the first emitter due to its greater distance from the junction of the first and second bases.

4,500,903

SEMICONDUCTOR GTO SWITCHING DEVICE WITH RADIALLY ELONGATED CATHODE EMITTER REGIONS OF INCREASING LENGTH

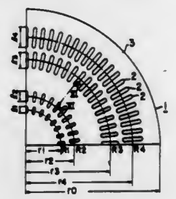
Tsutomu Yatsuo; Takahiro Nagano; Saburo Oikawa, all of Hitachi, and Akira Horie, Katsuta, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

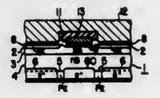
Filed Jun. 3, 1982, Ser. No. 384,520

Claims priority, application Japan, Jun. 5, 1981, 56-85760

Int. Cl.³ H01L *29/74*

U.S. Cl. 357—38 **11 Claims**

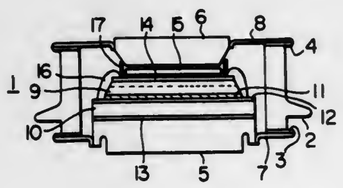




1. A semiconductor switching device comprising:

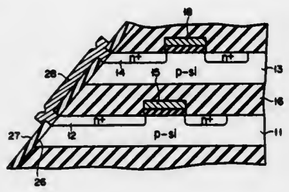
(a) a semiconductor substrate including a cathode-emitter layer, a cathode-base layer, an anode-base layer and an anode-emitter layer, said layers having conductivity types differing alternately from one another between the adjacent layers;
(b) said cathode-emitter layer being divided into a plurality of strip-like cathode-emitter regions which are arrayed on a major surface of said semiconductor substrate in a coaxial multi-ring pattern, each cathode-emitter region being elongated along the radial direction of the ring;
(c) the strip-like cathode-emitter regions which constitute an inner ring in said coaxial multi-ring pattern having a length in said radial direction shorter than the length in the radial direction of strip-like cathode-emitter regions constituting an outer ring in said multi-ring pattern;
(d) cathode electrodes contacted to said strip-like cathode emitter regions in low resistance contact;
(e) gate electrodes disposed so as to enclose said strip-like cathode-emitter regions and contacted to said cathode-emitter regions in low resistance contact; and
(f) an anode electrode contacted to said anode-emitter layer in low resistance contact.

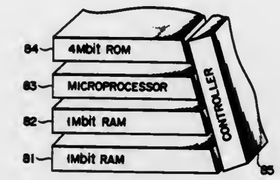
4,500,904
SEMICONDUCTOR DEVICE
Jin Onuki; Ko Soeno; Keiichi Morita, and Hisakithi Onodera, all of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Continuation of Ser. No. 211,121, Nov. 28, 1980, abandoned.
This application Oct. 20, 1983, Ser. No. 544,119
Claims priority, application Japan, Nov. 30, 1979, 54-154450
Int. Cl.³ H01L *23/48*
U.S. Cl. 357—67 **15 Claims**



1. A semiconductor device comprising:
a semiconductor substrate including at least one pn junction, an n-type semiconductor layer being exposed to a principal surface of said semiconductor substrate; and
an electrode bonded to the principal surface of said semiconductor substrate with brazing solder,
wherein said brazing solder is in contact with substantially the entire exposed principal surface of said semiconductor substrate to bond said entire exposed principal surface of said semiconductor substrate to said electrode and comprises aluminum solder and copper solder bonded in solid phase adhesion to each other, said aluminum solder containing aluminum as a main component thereof and being provided on the side of said semiconductor substrate, said copper solder being provided on the side of said electrode.

4,500,905
STACKED SEMICONDUCTOR DEVICE WITH SLOPING SIDES
Tadashi Shibata, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan
Filed Sep. 28, 1982, Ser. No. 425,513
Claims priority, application Japan, Sep. 30, 1981, 56-155126; Sep. 30, 1981, 56-155127
Int. Cl.³ H01L *23/48*
U.S. Cl. 357—68 **3 Claims**

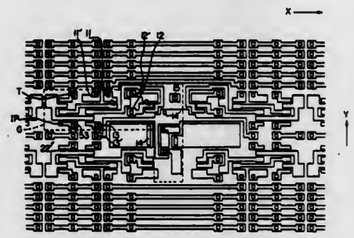


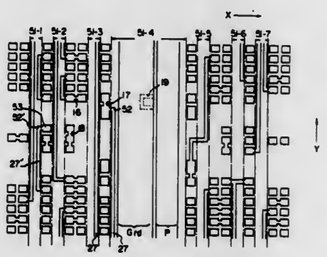


1. A stacked semiconductor device comprising:
a plurality of semiconductor layers each having integrated circuits stacked with an insulating layer interposed between two adjacent of said semiconductor layers, and
which has at least one inclined face defined by the sloping sides of two or more of said semiconductor layers and one or more of said insulating layers interposed therebetween,
said inclined face being formed thereon through another insulating layer, with at least one element for effecting the transmission and reception of signals between said integrated circuits formed in the different semiconductor layers,
said element being one member selected from the group consisting of an interconnection layer, a semiconductor element and a controller for the respective integrated circuits of said semiconductor layers.

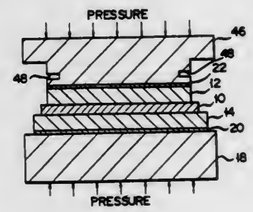
4,500,906
MULTILEVEL MASTERSLICE LSI WITH SECOND METAL LEVEL PROGRAMMING
Kenichi Ohno, Tokyo; Tohru Hosomizu, Yokohama, and Rokutaro Ogawa, Tokyo, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan
Continuation of Ser. No. 150,799, May 19, 1980, abandoned.
This application May 14, 1982, Ser. No. 378,046
Claims priority, application Japan, May 24, 1979, 54-63203; May 25, 1979, 54-63965
Int. Cl.³ H01L *23/48*
U.S. Cl. 357—71 **5 Claims**

1. A selected masterslice semiconductor LSI device having different types of logic circuits selectively interconnected, said LSI device having been produced from a common structure, said common structure comprising
a semiconductor bulk having at least one group of regions of a respective predetermined configuration repeatedly formed therein, said groups of regions being spaced in said semiconductor bulk to define an array in a first direction and a transverse direction along the surface of said semiconductor bulk, each said group of regions corresponding to a basic cell of a respective type,
a first insulating layer formed on said semiconductor bulk with a common pattern of first windows over the basic cells of the same respective type for exposing the respective regions of each type of basic cell,
first interconnecting lines selectively formed over said first insulating layer and in said windows, with a common pattern for the basic cells of the same respective type, said first interconnecting lines for each said basic cell including: (a) first portions each having a first end connected to a corresponding one of said regions and a second end located on said first insulating layer; and (b) second portions each extending in said first direction on said first insulating layer, said second portions at each said basic cell being divided into two respective groupings with each said grouping of second portions being located at a respective side of the regions of the respective basic cell, each said second portion of each said basic cell comprising plural separated parts aligned in said first direction with each said separated part extending along said first direction and having two ends located adjacent to a corresponding end of an adjacent one of said separated parts, said second ends of said first portions and said ends of said separated parts of said second portions being arranged in a common alignment in said transverse direction; and
a second insulating layer formed over said first insulating layer and said first interconnecting lines with a common pattern of second windows formed over said second ends of said first portions and over both said ends of each said separated part of said second portions of said first interconnecting lines, said pattern of second windows having a respective common pattern for the basic cells of each said type, the second windows for both ends of each said separated part of said second portions of said first interconnecting lines being aligned in a row extending in said first direction across said semiconductor bulk, with greater separation along said first direction between adjacent second windows that are over the two ends of the same separated parts than the separation between said second windows over adjacent ends of adjacent ones of said separated parts, said second windows over said ends of said separated parts of said second portions and over a plurality of said second ends of said first portions being aligned in columns extending in said transverse direction across said semiconductor bulk, wherein line areas extending in said transverse direction are formed between said columns of second windows in said second insulating layer, and
said selected LSI device comprising a layer out of which second interconnecting lines selectively are formed on said common structure to selectively connect to the first interconnecting lines through correspondingly selected ones of said second windows in said second insulating layer, said layer of second interconnecting lines comprising, at selected ones of said basic cells, to provide said interconnected logic circuits of different types: (a) lines extending in said transverse direction within said line areas and connecting through selected second windows of said columns of second windows on at least one side of the respective line area; and (b) portions outside of said line areas connecting between adjacent second windows in each said column and between adjacent second windows in adjacent ones of said columns of second windows not separated by said line areas,
wherein said interconnected logic circuits of said LSI device are effectively provided as a result of said common structure and said layer of second interconnecting lines.





4,500,907
PRESSURE-APPLIED TYPE SEMICONDUCTOR DEVICE
Katsuhiko Takigami, Yokohama, and Keiko Tokushuku, Ibaraki, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan
Filed Sep. 17, 1982, Ser. No. 419,477
Claims priority, application Japan, Oct. 23, 1981, 56/169890
Int. Cl.³ H01L *21/603, 23/04, 23/10*
U.S. Cl. 357—79 **6 Claims**



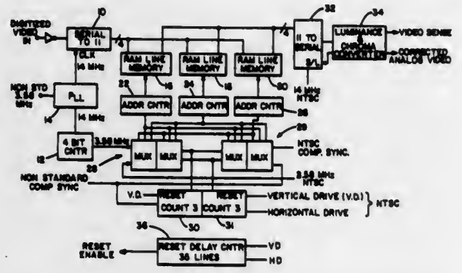
1. A pressure-applied type semiconductor device comprising:
a semiconductor body;
a first metal plate provided on one side of said semiconductor body and having a peripheral surface and a coefficient of thermal expansion similar to the coefficient of thermal expansion of said body; coefficient of thermal expansion of said body;
a first metal stamp for urging said semiconductor body via said first metal plate and having at least one groove formed in its peripheral surface and extending in the circumferential direction thereof, said groove having a bottom inwardly positioned from the peripheral surface of said first metal plate;
a second metal plate provided on the other side of said semiconductor body and having a coefficient of thermal expansion similar to the coefficient of thermal expansion of said body; and
a second metal stamp for urging said semiconductor body via said second metal plate.

4,500,908

METHOD AND APPARATUS FOR STANDARDIZING NONSTANDARD VIDEO SIGNALS

Richard D. Mandeberg, Chicago, Ill., assignor to Research and Development Institute for Infosystems, Inc., Libertyville, Ill.

Filed Jun. 18, 1982, Ser. No. 389,689
Int. Cl.³ H04N 9/42
U.S. Cl. 358—11 **18 Claims**



1. A method of correcting color video signals represented in digital form having a horizontal scan frequency which is an even harmonic of the color subcarrier to an N.T.S.C. interlaced color video signal having N.T.S.C. luminance and chrominance components and being compatible with and superimposable on other N.T.S.C. color video signals comprising the steps of:

(a) writing the digitized signals into at least one line memory at selected memory locations;

(b) means for resetting the source of the video signals to be corrected once during each N.T.S.C. vertical field to synchronize said source to the N.T.S.C. vertical frame rate;

(c) reading out the digitized video signals from selected memory locations in said line memories at a clock rate synchronized with an N.T.S.C. source;

(d) extracting luminance and chrominance information from the read out signals including the step of shifting the signal sampling window every other horizontal line for either the chrominance or luminance information;

(e) combining the information extracted in step (d) to obtain corrected, analog color video signals.

4,500,909

SYNCHRONIZING SIGNAL GENERATING APPARATUS

Toyotaka Machida, Kashiwa, Japan, assignor to Victor Company of Japan, Ltd., Kanagawa, Japan

Filed Jan. 14, 1983, Ser. No. 457,949
Claims priority, application Japan, Jan. 21, 1982, 57-7974; Feb. 10, 1982, 57-19971
Int. Cl.³ H04N 5/06
U.S. Cl. 358—17 **6 Claims**

1. A synchronizing signal generating apparatus for generating a signal having a chrominance subcarrier frequency, a horizontal synchronizing signal, and other synchronizing signals of a desired color television system, said synchronizing signal generating apparatus comprising:

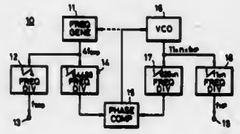
a first frequency generator for at least generating a frequency which is 4c times the chrominance subcarrier frequency of B, G, H, and I/PAL systems, where c is a factor of (625×n) and n is an arbitrary positive integer;

a second frequency generator for generating a frequency which is (11×n) times a horizontal scanning frequency;

a first frequency divider for frequency-dividing an output signal frequency of said first frequency generator by 1/64489;

a second frequency divider for frequency-dividing an output signal frequency of said second frequency generator by 1/(625×n);

a phase comparator for comparing phases of output signals of said first and second frequency dividers, and supplying a phas error signal in accordance with the compared result to said first frequency generator or said second frequency generator to variably control the output signal frequency of the first frequency generator or the second frequency generator so that the phase error becomes zero at said phase comparator;



a third frequency divider for frequency-dividing the output signal frequency of said first frequency generator, to produce a frequency equal to the chrominance subcarrier frequency; and

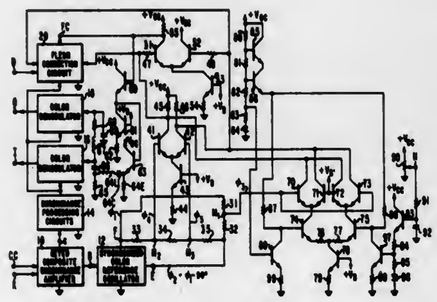
a fourth frequency divider for frequency-dividing the output signal frequency of said second frequency generator by 1/(11×n).

4,500,910

HUE CONTROL SYSTEM

Leopold A. Harwood, Bridgewater, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Nov. 30, 1982, Ser. No. 445,488
Int. Cl.³ H04N 9/535
U.S. Cl. 358—28 **15 Claims**



9. In apparatus for reproducing color images in response to composite color television signals inclusive of (a) a chrominance signal comprising modulated color subcarrier waves and (b) an accompanying color synchronizing component comprising bursts of oscillations of color subcarrier frequency; said apparatus including (1) a color reference oscillator subject to synchronization with said bursts, and providing first and second oscillatory signals of color subcarrier frequency and respective first and second phases in substantially quadrature phase relationship; (2) first and second synchronous detectors,

each having a modulated signal input terminal coupled to receive said modulated color subcarrier waves, and each having a reference signal input terminal; and (3) a phase shift network connected between the respective reference signal input terminals of said detectors; a hue control system for varying the hues of said reproduced color images, comprising:

matrixing means for combining predetermined magnitudes of said first and second oscillatory signals to form a third oscillatory signal having a third phase lying between said first and second phases;

a differential amplifier of substantially fixed gain, having first and second differential inputs, for developing a fourth oscillatory signal having a phase in quadrature with said third phase across an output load, said first input being responsive to an oscillatory signal derived from said oscillator and having a phase leading said third phase, and said second input being responsive to an oscillatory signal derived from said oscillator and having a phase lagging said third phase;

a source of a variable control voltage;

a source of a reference voltage;

controlled amplifier means, responsive to said third oscillatory signal, to said reference voltage, and to said variable control voltage for additionally delivering said third oscillatory signal to said output load only when a difference exists between said variable control voltage and said reference voltage, with a magnitude dependent upon the magnitude of said difference, and with a polarity dependent upon the sense of said difference; and

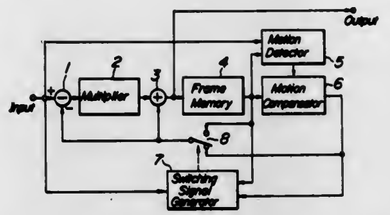
means for applying the oscillatory signal appearing across said output load to said reference signal input terminal of said first synchronous detector.

4,500,911

NOISE REDUCTION APPARATUS

Yuichi Ninomiya, and Yoshimichi Ohtsuka, both of Tokyo, Japan, assignors to Nippon Hoso Kyokai, Tokyo, Japan

Filed Apr. 29, 1982, Ser. No. 373,268
Claims priority, application Japan, May 25, 1981, 56-77924; May 25, 1981, 56-77925
Int. Cl.³ H04N 5/21
U.S. Cl. 358—36 **7 Claims**



6. A noise reduction apparatus for reducing noise components in an input picture signal comprising:

a subtractor means for subtracting a predicted picture signal, formed at least by delaying an input picture signal, from said input picture signal to provide an output signal;

a multiplier means for multiplying the output signal of said subtractor means by a factor which does not exceed unity and providing an output signal;

an adder means for adding the output signal of said multiplier means to said predicted picture signal, to obtain an output picture signal of said noise reduction apparatus;

a frame memory means for delaying said output picture signal of said adder means by one frame duration to obtain a non-compensated predicted picture signal output;

a motion detector means for detecting a motion of said input picture signal by comparing said input picture signal with said non-compensated predicted picture signal output;

a motion compensator means for compensating said non-compensated predicted picture signal output in response to said motion detected by said motion detector means to obtain a motion-compensated predicted picture signal output;

a switch means for switching between said non-compensated predicted picture signal output and said motion compensated predicted picture signal output to obtain said predicted picture signal; and

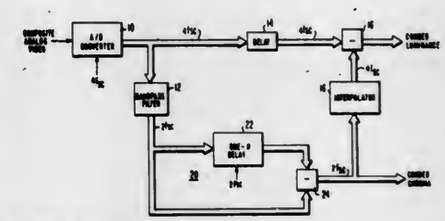
a switching signal generator means for generating a switching signal for controlling said switch means by comparing said non-compensated and said motion-compensated predicted picture signals with said input picture signal.

4,500,912

FIR CHROMINANCE BANDPASS SAMPLED DATA FILTER WITH INTERNAL DECIMATION

Thomas V. Bolger, Camden, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Aug. 4, 1982, Ser. No. 405,172
Int. Cl.³ H04N 9/535
U.S. Cl. 358—31 **8 Claims**



1. A FIR filter comprising:

a shift register for storing and temporally translating signal, having N serially cascaded delay stages, a signal input terminal coupled to the first delay stage of said series of delay stages and N parallel output terminals located at each stage, said shift register being synchronously clocked to process signals applied to said input terminal at a given rate;

M pairs of first and second signal storage elements;

means responsive to a first clocking signal having a clocking rate less than said given rate for simultaneously coupling signal from respective ones of the register input and output terminals to said first storage elements;

means responsive to a second clocking signal having a clocking rate less than said given rate for simultaneously coupling signal from said respective ones of the register input and output terminals to said second stage elements of said pairs respectively;

M coefficient multiplying circuits for weighting signal applied thereto;

multiplexing means for alternately coupling stored signal from the first storage elements of the M pairs of storage elements to respective ones of said M multiplying circuits to the exclusion of stored signal from said second storage elements, and for coupling stored signal from the second storage elements of said M pairs of storage elements to said M multiplying circuits to the exclusion of stored signal from said first storage elements respectively; and

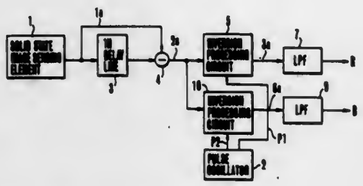
means for summing the M weighted signals from said M multiplying circuits.

4,500,913

SOLID-STATE COLOR IMAGE SENSING DEVICE

Seiji Hashimoto; Nobuyoshi Tanaka, both of Kanagawa; Akira Suga, Tokyo, and Tetsuro Kuwayama, Kanagawa, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 8, 1982, Ser. No. 386,232
Claims priority, application Japan, Jun. 18, 1981, 56-93019
Int. Cl.³ H04N 9/07
U.S. Cl. 358—44 **17 Claims**



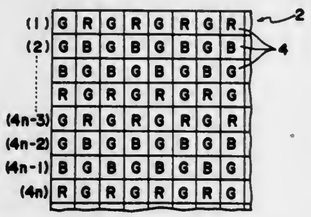
1. A color image sensing device comprising:
a. image pickup means for converting an optical image into an electrical signal;
b. a color separation filter disposed in front of the image pickup means, said filter consisting of a plurality of color filters arranged in a given pattern;
c. a correlation circuit for forming correlative color outputs on the basis of a plurality of different portions of the image pickup means, said correlation circuit being arranged for forming a plurality of color signals each containing predetermined primary color information;
d. a plurality of polarity inverting means for inverting the polarity of the output of said correlation circuit at predetermined intervals, each inverting means being arranged for inverting the output of the correlation circuit at a different phase; and
e. signal filter means arranged to cut off the high frequency zone component of the output of said polarity inverting means.

4,500,914

COLOR IMAGING ARRAY AND COLOR IMAGING DEVICE

Takashi Watanabe, and Shigehiro Miyatake, both of Nara, Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jul. 23, 1982, Ser. No. 401,384
Claims priority, application Japan, Aug. 1, 1981, 56-114985[U]; Oct. 20, 1981, 56-156499[U]
Int. Cl.³ H04N 9/07
U.S. Cl. 358—44 **32 Claims**



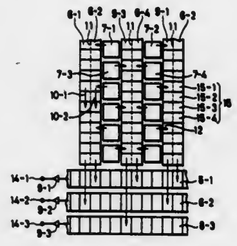
1. A color imaging array comprising:
a plurality of elements including,
first type of elements sensitive to light in a first region of the frequency spectrum,
second type of elements sensitive to light in a second region of the spectrum not coextensive with said first region, and
third type of elements sensitive to light in a third region of the spectrum not coextensive with said first or second regions;
said plurality of elements arranged in a predetermined plane and having a plurality of element sections along both of the horizontal and vertical directions, each section containing two adjacent elements positioned in vertical alignment,
said three types of elements being aligned within said predetermined plane such that said first type of elements occupy both element positions in every other one of said sections in both of the horizontal and vertical directions, said second type of elements occupying one of the two element positions in the remaining sections, and said third type of elements occupy other of the two element positions in the remaining sections.

4,500,915

COLOR SOLID-STATE IMAGER

Norio Koike, Suginami; Toshihisa Tsukada, Nerima; Toru Baji, Kokubunji, and Akira Sasano, Nishitama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Sep. 24, 1982, Ser. No. 423,446
Claims priority, application Japan, Oct. 9, 1981, 56-149492[U]
Int. Cl.³ H04N 9/07
U.S. Cl. 358—44 **4 Claims**



1. A color solid-state imager wherein a group of photoelectric conversion elements for deriving color optical information, and a group of CCD shift registers for successively transferring optical signal charges stored in the elements are integrated on an identical semiconductor substrate; characterized in that sets of vertical CCD shift registers are provided, each set consisting of a pair of registers electrically insulated from each other and on opposite sides of an associated column of photoelectric conversion elements, said sets being periodically arrayed in a horizontal direction, and that transfer gates which belong to the respective photoelectric conversion elements are arrayed in an alternating pattern, such that the signal charges from vertically adjacent photoelectric conversion elements are sent into different ones of the pair of individual vertical CCD shift registers, and that the signal charges of respective colors successively transferred by the vertical CCD shift registers and distributively sent into a plurality of horizontal CCD shift registers which are arranged at ends of the group of vertical CCD shift registers, whereby the signal charges of 1-2 colors are provided from output ends of the respective horizontal CCD shift registers.

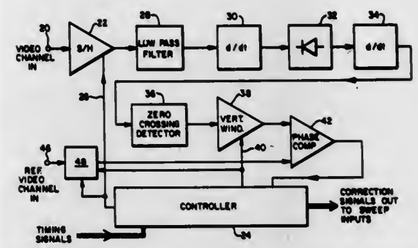
4,500,916

AUTOMATIC ON-AIR REGISTRATION SYSTEM AND METHOD FOR COLOR TV CAMERA

Hazem Nabulsi, Santa Clara, Calif., assignor to Panavision, Inc., Tarzana, Calif.

Filed Apr. 5, 1982, Ser. No. 365,546
Int. Cl.³ H04N 9/09
U.S. Cl. 358—51 **23 Claims**

1. A method of automatically correcting registration errors in a color television camera that raster scans a scene and produces video signals representative of different component colors of the scene, comprising sampling first and second component color video signals at a plurality of different points in the raster to detect amplitude level transitions associated with the edges of objects in the scene; comparing corresponding transitions for time coincidence to detect misregistration of the first and second video signals; for each misregistration



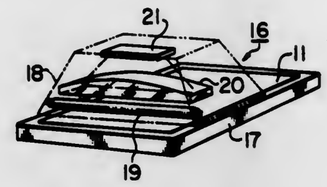
detected, producing an error signal; accumulating separately for each of preselected regions of the raster a plurality of the error signals produced in each region; analyzing the accumulated error signals associated with different regions of the raster to determine the type of registration error present; and, based upon the analysis, generating a correction signal to correct the registration error.

4,500,917

METHOD OF FILING SET-UP DATA FOR A PHOTO-ELECTRIC SCANNER AND AN APPARATUS FOR READING SUCH DATA IN THE FORM OF GRAPHS

Mitsuhiko Yamada, Kyoto, Japan, assignor to Dainippon Screen Seizo Kabushiki Kaisha, Kyoto, Japan

Filed Feb. 17, 1981, Ser. No. 234,654
Claims priority, application Japan, Feb. 27, 1980, 55-23675
Int. Cl.³ H04N 1/04, 3/14
U.S. Cl. 358—75 **9 Claims**



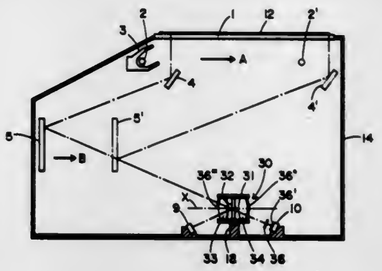
1. A method of filing set-up data for a photo-electric scanner incorporating a central processing unit having a memory comprising the steps of:
drawing a graph on a sheet of paper on which a coordinate system is defined so that one coordinate X axis corresponds to input data of a memory device while the other coordinate Y axis corresponds to output data stored in said memory device;
mounting said graph on a table having coordinate X and Y axes with the origin of said graph defined as the intersection of said coordinate X and Y axes;
scanning said graph on said table with a linear image sensor having a scanning line that encompasses and is parallel to the Y axis and moves from said origin of the graph along the length of the X axis, the position of said graph being designated at the intersection of said scanning line with respect to the values of X and associates the values of Y as being the intersection of the values of X with said scanning line, said linear image sensor being capable of transmitting X and Y output signals associated with said X and Y axes;
controlling the relative motion between the table and the linear image sensor by way of the central processing unit so that the scanning line is moved from said origin in steps by distances which are directly related to particular X values; and
recording in the memory of said central processing unit the Y output signals sent by the linear image sensor at each of the steps in a digital form with the associated X designations of the central processing unit so that a conversion table having characteristics of said graph is recorded in the memory of said control processing unit.

4,500,918

ORIGINAL READING APPARATUS

Noboru Koumura, Narashino; Naoki Ayata, Machida; Seiji Saito, Yokosuka; Hidetoshi Suzuki, and Kunitaka Ozawa, both of Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 27, 1982, Ser. No. 424,632
Claims priority, application Japan, Oct. 19, 1981, 56-165622; Oct. 19, 1981, 56-165623
Int. Cl.³ H04N 1/46
U.S. Cl. 358—75 **21 Claims**



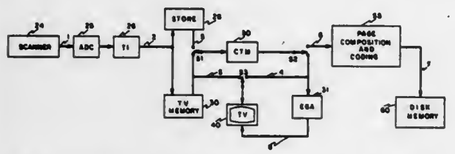
1. An original reading apparatus including:
original supporting means for supporting an original to be read;
original illuminating means for illuminating the original;
a lens system for forming a plurality of optical images of the original, said lens system having a first lens portion, a second lens portion and a dichroic mirror disposed between said first and said second lens portions and reflecting a light of a first color and transmitting a light of a second color therethrough;
a first image pick-up element for forming an electrical signal corresponding to the image of the original, said first image pick-up element being disposed at a position whereat, of the light from the original, the light of the first color passed through said first lens portion, reflected by said dichroic mirror and again passed through said first lens portion forms the image of the original; and
a second image pick-up element for forming a electrical signal corresponding to the image of the original, said second image pick-up element being disposed at a position whereat, of the light from the original, the light of the second color passed through said first lens portion, said dichroic mirror and said second lens portion in the named order forms the image of the original.

4,500,919

COLOR REPRODUCTION SYSTEM

William F. Schreiber, Cambridge, Mass., assignor to Massachusetts Institute of Technology, Cambridge, Mass.

Filed May 4, 1982, Ser. No. 374,804
Int. Cl.³ H04N 1/46
U.S. Cl. 358—78 21 Claims



1. A system for reproducing a color original in a medium using a selected multiplicity of reproduction colorants, the system comprising in serial order:

a. a scanner for producing from said color original a set of three tristimulus appearance signals dependent on the colors in said original;

b. display means connected to the scanner for receiving the appearance signals and aesthetic correction circuitry for interactively introducing aesthetically desired alterations into said appearance signals to produce modified appearance signals; and

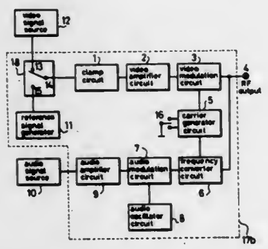
c. colorant selection mechanism for receiving said modified appearance signals and for selecting corresponding reproduction signals representing values of said reproduction colorants to produce in said medium a colorimetrically-matched reproduction.

4,500,920

RF MODULATOR

Tohru Ohyama, Miyagi, and Shigeru Nigorikawa, Kakuda, both of Japan, assignors to Alps Electric Co., Ltd., Tokyo, Japan

Filed Jul. 1, 1982, Ser. No. 394,142
Claims priority, application Japan, Jul. 1, 1981, 56-98215[U]
Int. Cl.³ H04N 7/18
U.S. Cl. 358—139 3 Claims



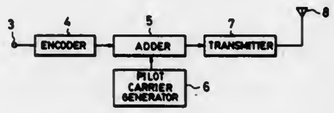
3. In a RF modulator having means including a modulation circuit for modulating a video signal from a video recorder or the like and converting it into a signal for a video monitor, and means including a reference signal generator and a switching circuit for producing a test signal to be delivered on occasion to said monitor, the improvement wherein said modulation circuit, said reference signal generator and said switching circuit are housed in a common shield case.

4,500,921

AGC ARRANGEMENT FOR A TELEVISION SYSTEM

Akimori Tomizawa, and Hiroshi Osaka, both of Tokyo, Japan, assignors to Clarion Co., Ltd., Tokyo, Japan

Filed Jul. 20, 1982, Ser. No. 400,195
Claims priority, application Japan, Jul. 23, 1981, 56-115505
Int. Cl.³ H04N 5/52
U.S. Cl. 358—174 3 Claims



1. A television system which comprises:

pilot carrier generating means for generating a pilot carrier having a frequency within a video signal band;

adder means for adding said pilot carrier to a video signal which is within said video signal band;

transmitting means for transmitting a TV signal which includes said added video signal and pilot carrier;

means for receiving and demodulating said TV signal and for generating a demodulated signal;

automatic gain control means for extracting said pilot carrier from said demodulated signal to obtain an AGC reference signal for said receiving and demodulating means; and

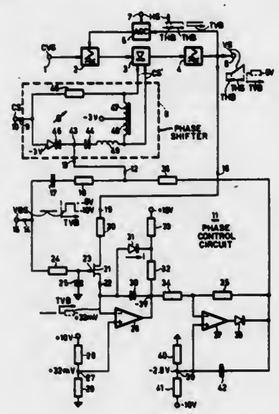
means for removing said video signal from said demodulated signal and for thereafter supplying said video signal to a later stage.

4,500,922

SYNCHRONOUS DEMODULATION CIRCUIT FOR A CARRIER WHICH IS AMPLITUDE-MODULATED BY A VIDEO SIGNAL

Frederik J. Van Roessel, Upper Saddle River, N.J., assignor to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 15, 1982, Ser. No. 441,698
Claims priority, application Netherlands, Dec. 4, 1981, 8105465
Int. Cl.³ H04N 5/44
U.S. Cl. 358—188 9 Claims



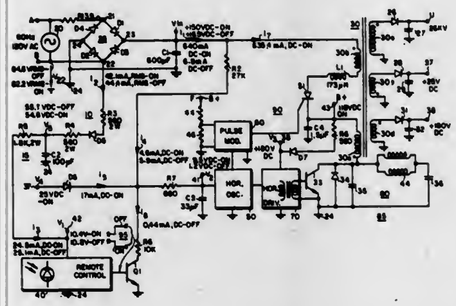
1. A synchronous demodulation circuit for a carrier which is amplitude-modulated by a video signal, the circuit comprising a series arrangement of a high-frequency amplifier and a demodulator, an output of the demodulator, for supplying a demodulated video signal containing a d.c. voltage component, being connected to a control input of the high-frequency amplifier via a keyed automatic gain control circuit, the demodulator being connected via a variable phase shifter to a circuit input terminal to which a reference carrier is applied, characterized in that the demodulation circuit further comprises a phase control circuit, having an output connected to a control input of said phase shifter, a first input for receiving a pulse-shaped signal with a pulse in video blanking periods, and a second input coupled to the demodulator output for supplying the demodulated video signal, the first input, for receiving the pulse-shaped signal, being directly coupled to the output of the phase control circuit which output is further coupled to an output of an integrating fed-back differential amplifier incorporated in the phase control circuit, a (+) input of this differential amplifier being connected to a terminal carrying a reference voltage and a (−) input being connected to a signal output of a gate circuit, this gate circuit having a switching input coupled to the first input for receiving the said pulse-shaped signal and a signal input coupled to the second input for receiving the demodulated video signal, the gate circuit being conductive during the occurrence of said pulses.

4,500,923

TELEVISION RECEIVER STANDBY POWER SUPPLY

William E. Duvall, and Mau-Choung P. Hwang, both of Indianapolis, Ind., assignors to RCA Corporation, New York, N.Y.

Filed Oct. 29, 1982, Ser. No. 437,832
Int. Cl.³ H04N 5/44; H01J 29/70
U.S. Cl. 358—190 8 Claims



1. A power supply for a television receiver responsive to a command signal having an on and off state, comprising:

a source of alternating voltage available during both states of said command signal;

a bridge rectifier including first and second unidirectional current conducting devices, an output terminal, a current return terminal and first and second input terminals, said source of alternating voltage coupled between said first and second input terminals so as to develop a first direct voltage between said output and current return terminals during both the on and the off states of said command signal upon the alternate conduction of said first and second unidirectional current conducting devices;

a first power supply coupled between said bridge rectifier output and current return terminals and responsive to said command signal for developing an operating potential from said first direct voltage only during the on-state of said command signal;

a load circuit energized by said operating potential only during the on-state of said command signal to draw power from said bridge rectifier output terminal;

a control circuit for developing said command signal; and

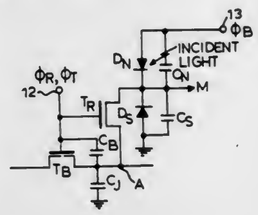
a standby DC power supply employing one of the bridge rectifier unidirectional current conducting devices to develop a second, lower magnitude, direct voltage that energizes said control circuit during both the on and the off states of said command signal, including a filter circuit having an input terminal and an output terminal, and having a return terminal coupled to the current return terminal of said bridge rectifier, the input terminal of said filter being coupled to said one unidirectional current conducting device for half-wave rectifying said alternating voltage to develop between said filter output and return terminals said second direct voltage of magnitude lower than that of said first direct voltage, said control circuit being coupled between said filter output and return terminals.

4,500,924

SOLID STATE IMAGING APPARATUS

Yoshio Ohta, Amagasaki, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation of Ser. No. 205,596, Nov. 10, 1980, abandoned.
This application Aug. 17, 1982, Ser. No. 408,776
Claims priority, application Japan, Nov. 16, 1979, 54-149375; Nov. 16, 1979, 54-149376; Nov. 16, 1979, 54-149378
Int. Cl.³ H04N 3/14; H01L 27/14, 29/161, 29/78
U.S. Cl. 358—213 19 Claims



1. A solid state imaging apparatus having a substrate and a plurality of cells formed on the substrate, which accumulate charge signals in response to an intensity of an incident light from an object and producing a video signal representing an optical image of the object, by reading the charge signals from said cells, in which each of said cells comprises:

a photosensitive element;

a switching element which is substantially connected to said photosensitive element;

and an electrode which is capacitively coupled to a connection point located between said photosensitive element and said switching element;

said apparatus further comprises a first means for applying a read pulse to said switching element of each of said cells to control said switching element such that the charge signals are read out therefrom; and said apparatus further comprises a second means for supplying a blooming suppression pulse to said electrode of each of said cells in synchronism with said read pulse.

4,500,925

AUTO-FOCUSING SYSTEM FOR VIDEO CAMERA

Kentaro Hanma; Toshio Murakami, and Yoshihiro Todaka, all of Yokohama, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jun. 21, 1982, Ser. No. 390,643
Claims priority, application Japan, Jun. 26, 1981, 56-98246; Mar. 31, 1982, 57-51250
Int. Cl.³ H04N 5/26
U.S. Cl. 358—227 15 Claims

1. In an auto-focusing system for a video camera comprising:

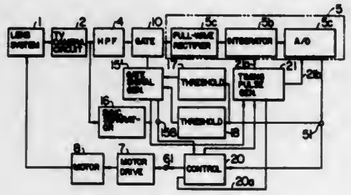
a video camera for providing a video signal;

focus signal extracting means for receiving the video signal from said video camera and for extracted a focus signal representing the degree of matching of focusing and providing an output indicative thereof; and

control means responsive to said focus signal extracting means for controlling the lens system of said video camera so that the output of said focus signal extracting means has a predetermined value, the improvement comprising:

gate means connected between said video camera and said focus signal extracting means; and

gate control signal generating means responsive to at least one of said video camera and said focus signal extracting



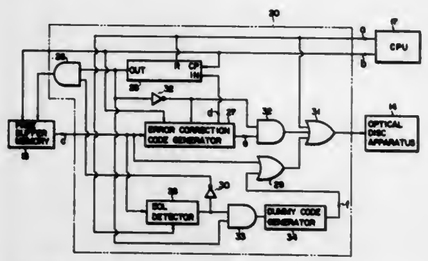
means for generating signals which make said gate means conductive or non-conductive depending on the quantity of high-frequency components included in said video signal.

4,500,926

DATA-RECORDING APPARATUS

Tomohisa Yoshimaru, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Jun. 14, 1982, Ser. No. 388,504
Claims priority, application Japan, Jun. 19, 1981, 56-93424
Int. Cl.³ H04N *7/12*
U.S. Cl. 358—256 **9 Claims**



1. A data recording apparatus, comprising:

an optical scanner for optically scanning a document and for outputting an image signal corresponding to a pattern of the document;

means for compressing the image signal from said optical scanner and for converting the image signal into a plurality of image information items each corresponding to at least one scanning line;

means for dividing each of the image information items from said converting means into a plurality of image data pieces of a fixed bit length from an information item end which corresponds to one end of the scanning line;

means for adding dummy data to the image data piece corresponding to the other end of the scanning line to form a terminal end image data piece of the fixed bit length;

means for inserting error correction codes into the image data pieces and the terminal end image data piece; and

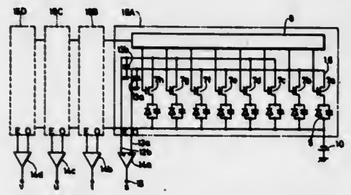
means for recording the image data pieces and the error correction codes on a recording medium.

4,500,927

ORIGINAL READING DEVICE

Takashi Ozawa, Kanagawa, Japan, assignor to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Jan. 20, 1983, Ser. No. 459,557
Claims priority, application Japan, Jan. 22, 1982, 57-7457
Int. Cl.³ H04N *1/10, 5/21, 1/40, 1/02*
U.S. Cl. 358—293 **4 Claims**



1. An original reading device of the type having light sensing elements connected to a signal line through MOS transistors, whereby a light sensing element is charged when an MOS to which it is connected is turned on, the charging representing light intensity in said light sensing element and being detected on a signal line, the improvement comprising:

first and second signal lines for connection to a block of said elements via a corresponding number of said MOS transistors to which said elements are respectively connected;

said number of MOS transistors being arranged in alternating groups of at least two MOS transistors per group, said groups being alternately connected to said first and second signal lines such that all MOS transistors in any group are connected to the same signal line and all MOS transistors in the next succeeding group being connected to the other signal line; and

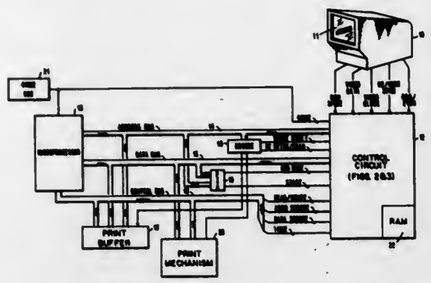
a differential amplifier having its inputs fed with the signals on said first and second signal lines.

4,500,928

STORAGE APPARATUS FOR VIDEO DATA

Francis J. Bucek, Binghamton, and Frank V. Paxhia, Johnson City, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 26, 1982, Ser. No. 444,557
Int. Cl.³ H04N *1/22, 1/40*
U.S. Cl. 358—296 **15 Claims**



1. Apparatus for storing video data displayed as a group of scan lines of bit positions generated in response to scan line synchronizing signals and in conjunction with video clock signals comprising:

memory means having data storage locations each for receiving bit position data for said scan line;

means responsive to a said synchronizing signal for temporarily recording the bit position data from a said scan line; and

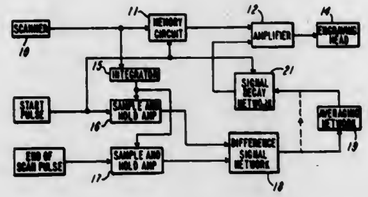
control means responsive to the accumulation of a predetermined number of said recorded bit position data for storing said recorded data in selected ones of said storage locations of said memory means during the recording of succeeding bit position data in said scan line.

4,500,929

METHOD OF ENGRAVING AN INVISIBLE JOINT WITHIN A GRAVURE PRINTING CYLINDER

Lester W. Buechler, 3193 Plainfield Rd., Dayton, Ohio 45432

Continuation-in-part of Ser. No. 056,623, Jul. 11, 1979, Pat. No. 4,357,633. This application Aug. 19, 1981, Ser. No. 294,224
The portion of the term of this patent subsequent to May 20, 2001, has been disclaimed.
Int. Cl.³ H04N *1/24*
U.S. Cl. 358—299 **5 Claims**



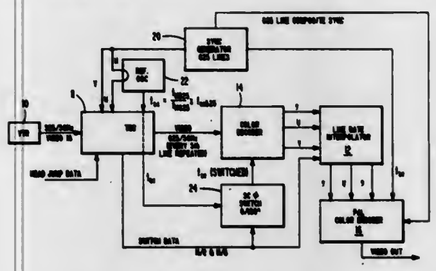
1. A method of engraving the surface of a gravure printing cylinder with a pattern adapted to be repetitively printed with a joint between adjacent printed patterns being less visible to the human eye, comprising the steps of scanning a copy of a pattern having selected opposite ends adapted to form a joint on the gravure printing cylinder, electronically sensing the copy density at two locations on the pattern copy adjacent the opposite ends, electronically comparing the density at the different locations, electronically determining a correction factor based upon the comparison, engraving generally circumferentially extending rows of peripherally spaced cells within the cylinder surface according to the pattern, and adjusting the depth of the engraved cells corresponding to the opposite ends of the copy according to the correction factor to correct for unbalance in copy density at the two locations on the pattern copy.

4,500,930

TELEVISION SIGNAL STANDARDS CONVERSION USING A HELICAL SCAN VTR

Kaarlo J. Hamalainen, Marlton, and Glenn A. Reitmeier, Trenton, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed May 26, 1982, Ser. No. 382,198
Int. Cl.³ H04N *9/491*
U.S. Cl. 358—310 **2 Claims**



1. A television standards conversion apparatus for changing the line and frame rates of a recorded NTSC television signal to the line and frame rates of a PAL signal standard comprising:

a helical-scan video tape playback apparatus having a capstan which establishes the velocity at which the tape travels and at least one video head disposed on a headwheel which rotates at a velocity to scan the video heads at an angle across the direction of tape travel;

control means for establishing the speed of said capstan in accordance with said NTSC television signal and for establishing the speed of said headwheel in accordance with said PAL signal standard to thereby convert the NTSC frame rate of the recorded television signal to said PAL standard; and

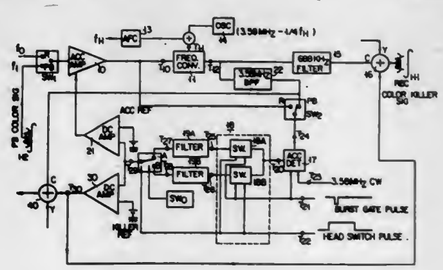
line rate interpolation means for converting the line rate derived from the recorded NTSC television signal to the PAL standard which interpolation means uses coefficients predicated on simple fractional values which have a single digit numerator and a single digit denominator and establish a conversion ratio of 5/6.

4,500,931

SIGNAL SAMPLING GATE CIRCUIT

Shinichiro Taguchi; Nobuya Nagao, and Yutaka Ogihara, all of Fukaya, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Division of Ser. No. 238,024, Feb. 25, 1981, Pat. No. 4,433,255. This application Dec. 12, 1983, Ser. No. 560,159
Int. Cl.³ H04N *9/493*
U.S. Cl. 358—310 **8 Claims**



1. A signal sampling gate circuit in a color video tape recording/reproducing device, having at least two reproducing heads which are alternately switched by a head switch pulse for processing a color signal, comprising:

means (17) for generating a sample signal and processing said color signal;

a sample signal input terminal (T20) to which said sample signal is supplied;

a first hold circuit for holding the sample signal supplied to said sample signal input terminal;

a first sample signal gate circuit for connecting said sample signal input terminal and said first hold circuit, in response to a sampling pulse when in a low impedance state, and disconnecting said sample signal input terminal from said first hold circuit in response to said sampling pulse when in a high impedance state;

a second hold circuit for holding the sample signal supplied to said sample signal input terminal;

a second sample signal gate circuit for connecting said sample signal input terminal and said second hold circuit, in response to the sampling pulse when in a low impedance state, and disconnecting said sample signal input terminal from said second hold circuit when in a high impedance state, said second signal gate circuit functioning in complementary fashion with respect to said first sample signal gate circuit;

gate circuit driving means for selectively and complementarily driving said first and second sample signal gate cir-

cuits in response to the head switch pulse having a different period from that of said sampling rate; and

sample signal gate circuit control means for controlling selectively said first and second sample signal gate circuits in one of the low and high impedance states in response to said head switch pulse;

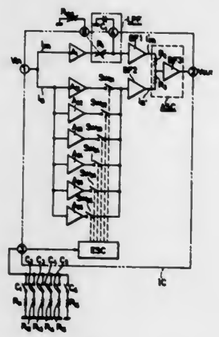
whereby said sample signal is held in said first and second hold circuits in response to the head switch pulse as a control signal for processing the color signal.

4,500,932

SIGNAL PROCESSING CIRCUIT

Tetsuo Sato, and Yasuo Kominami, both of Takasaki, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jun. 3, 1982, Ser. No. 384,602
Claims priority, application Japan, Jun. 3, 1981, 56-84343
Int. Cl.³ G11B *5/45, 5/02*
U.S. Cl. 360—65 **10 Claims**



1. A playback equalizer for providing compensation for a playback signal from a magnetic tape playback head comprising:

(a) a main path having a first end and a second end, said first end being supplied with said playback signal;

(b) a side path having a first end and a second end, said first end being supplied with said playback signal;

(c) a low-pass filter disposed between said first end and said second end of said main path, said low-pass filter transmitting a signal which has a first component of flat frequency characteristic below a predetermined first frequency as well as a second component of decreasing frequency characteristic above said predetermined first frequency to said second end;

(d) variable gain means disposed between said first end and said second end of said side path, said variable gain means having a substantially flat frequency characteristic over a predetermined frequency range and the gain which is varied in response to control data; and

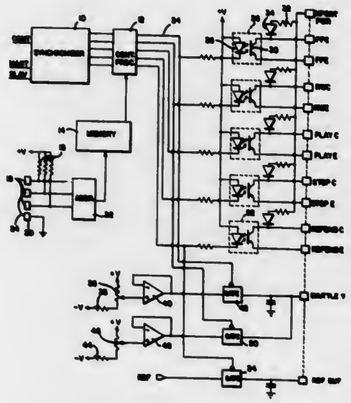
(e) an adder coupled to said second ends of said main and side paths, said adder including mans for adding a signal at said second end of said main path and a signal at said second end of said side path and means for transmitting the added signal which has a first component of flat frequency characteristic below said predetermined first frequency, a second component of decreasing frequency characteristic between said predetermined first frequency and a predetermined second frequency and a third component of flat frequency characteristic above said predetermined second frequency to the output terminal, said predetermined second frequency being adjusted by said decreasing frequency characteristic of said low-pass filter and said gain of said variable gain means.

4,500,933

UNIVERSAL INTERFACE UNIT

Steven S. Chan, Fremont, Calif., assignor to Ampex Corporation, Redwood City, Calif.

Filed Apr. 2, 1982, Ser. No. 364,922
Int. Cl.³ H03K *13/24*; G11B *31/00*
U.S. Cl. 360—69 **13 Claims**



1. A universal interface unit for receiving input signals and generating corresponding output signals in one of a number of different formats in dependence upon the requirements of an external device to which the output signals are to be applied, comprising:

means for generating a data signal relating to the signal format requirements of an external device;

a memory unit containing information relating to a plurality of different formats of output signals to be generated and, in response to said data signal, producing output information pertaining to the particular signal format requirements of the external device; and

processing means for receiving the input signals and generating the corresponding output signals in the format indicated by the output information from said memory unit.

4,500,934

HYBRID SWITCHING DEVICE EMPLOYING LIQUID METAL CONTACT

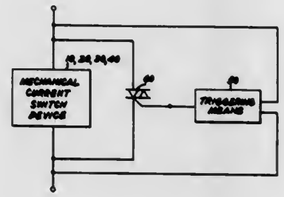
Richard E. Kinsinger, Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Jun. 21, 1982, Ser. No. 390,602
Int. Cl.³ H01H *9/30*
U.S. Cl. 361—3 **6 Claims**

1. A hybrid electrical current switching device comprising:

a mechanical current switch device having open and cloed positions and in which current flow is dependent on the relative positioning of a liquid metal conducting medium; and

a triggerable solid-state current switch device connected in parallel with said mechanical current switch device, so that arc formation across the contacts of said mechanical current switch device is controllable by triggering of said solid-state current switch device, which is operable to divert current from said switch in response to arc formation conditions.

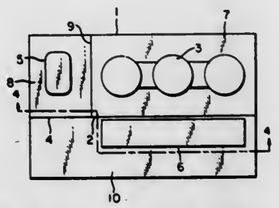


4,500,935

PACKAGE SUBSTATION IN TANK WITH SEPARATE CHAMBERS

Keiji Tsuruta, Takarazuka, and Nagayuki Tsutsumi, Suita, both of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Japan

Filed Aug. 26, 1982, Ser. No. 411,974
Claims priority, application Japan, Sep. 2, 1981, 56-131062[U]
Int. Cl.³ H05K *7/20*; H02B *7/06*
U.S. Cl. 361—333 **1 Claim**



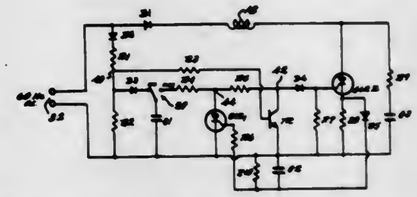
1. A package substation in which a plurality of elements which constitute a substation including a transformer, low tension switchgear and high tension switchgear, are accommodated in a tank, said tank having an outer surrounding wall, separator walls connected to said outer walls and other separator walls to form separate accommodation chambers which isolate said elements each from the others, and insulation fluids filling said accommodation chambers, said insulation fluids covering the elements which are accommodated in said accommodation chambers and said insulation fluids comprising liquids in said high tension switchgear and transformer accommodation chambers and gas in said low tension switchgear accommodation chamber, the liquid containing chambers being isolated and sealed from the gas containing chamber.

4,500,936

FASTENER DRIVING DEVICE HAVING A THREE STAGE FIRING CIRCUIT

Kerry Dulin, Highland Park, Ill., assignor to Textron, Inc., Providence, R.I.

Filed Aug. 9, 1983, Ser. No. 521,570
Int. Cl.³ H01H *47/32*
U.S. Cl. 361—152 **31 Claims**



1. An electrically operated fastener driving device comprising:

a housing assembly defining a drive track;

a driver movably engaged within said drive track;

a magazine for feeding fasteners to said drive track for being driven by said driver;

a solenoid energizable to move said driver through a drive stroke in said drive track;

circuit means, including a first controlled conduction device having a control electrode, for conducting power from an AC potential source to said solenoid to energize it whenever a firing signal is applied to said control electrode;

switch means having a normally "off" position and operable in response to an actuation to move into a "fire" position at a random time relative to the cycles of the AC potential;

firing signal generating means for generating said firing signal in response to an actuation of said switch means from said "off" position to said "fire" position;

firing synchronizer circuit means for inhibiting the coupling of said firing signal to said control electrode until the magnitude of said AC potential is greater than a predetermined reference level; and

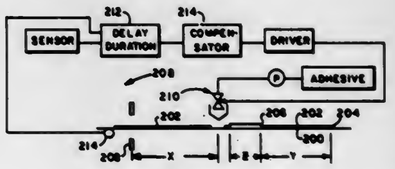
switch bounce circuit means for preventing an interruption in the generation of said firing signal even if switch bounce occurs which might, in the absence of said switch bounce circuit means, cause an interruption of said firing signal.

4,500,937

CONTROL CIRCUIT FOR A SOLENOID DRIVER FOR A DISPENSER

Timothy S. Matt, Bay Village, Ohio, assignor to Nordson Corporation, Amherst, Ohio

Filed Nov. 12, 1982, Ser. No. 441,241
Int. Cl.³ H01H *47/32*
U.S. Cl. 361—153 **7 Claims**



1. A control circuit for a driver for a dispenser having an inherent pull-in delay and drop-out delay, for dispensing fluid for a preselected dispensing duration upon a substrate conveyed by a conveyor commencing at a preselected position, comprising:

encoder means for generating a pulse signal representative of conveyor distance traveled per unit time;

sensor means for sensing the presence of a conveyed substrate at a preselected location and for generating a trigger signal indicating a substrate is at the preselected location;

delay means, enabled through the trigger signal and connected to receive said pulse signal, for generating an enabling signal after a first preselected number of pulses, said delay means including a delay counter enabled through the trigger signal and generating the enabling signal after receiving a preselected number of pulses, and further including accelerator means, receiving inputs from said encoder means and sensor means for accelerating the generation of pulses to said delay counter so as to advance the generation of the enabling signal a predetermined period of time;

duration means, enabled by the enabling signal and connected to receive said pulse signal, for generating an initial driving signal of a preselected signal duration reflective of a second preselected number of pulses; and

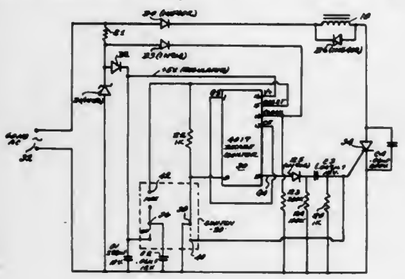
compensator means, receiving the initial driving signal, for modifying the commencement and duration of the initial driving signal to compensate for the dispenser pull-in and drop-out delays to produce a driver signal couplable to a driver so that fluid is deposited for the dispensing duration upon a substrate commencing at the preselected position.

4,500,938

FASTENER DRIVING DEVICE

Kerry Dulin, Highland Park, Ill., assignor to Textron, Inc., Providence, R.I.

Filed Feb. 16, 1983, Ser. No. 467,162
Int. Cl.³ H01H *47/32*
U.S. Cl. 361—153 **32 Claims**



1. An electrically operated fastener driving device comprising:

a housing assembly defining a drive track;

a driver movably engaged within said drive track;

a magazine for feeding fasteners to said drive track for being driven by said driver;

a solenoid energizable to move said driver through a drive stroke in said drive track;

circuit means, including a controlled conduction device having a control electrode, for conducting power from an AC potential source to said solenoid to energize it whenever a firing signal is applied to said control electrode;

switch means having a normally "off" position and operable in response to an actuation to move into a "fire" position at a random time relative to the cycles of the AC potential; and

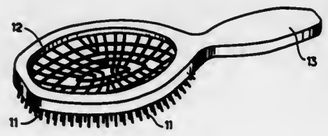
counter means for (a) counting the cycles of AC potential occurring after an actuation of said switch means from its normally "off" position to its "fire" position and (b) applying a firing signal to said control electrode to place said controlled conduction means in a conductive state during a properly poled half cycle of said AC potential occurring a predetermined number of cycles greater than one (1) after the actuation of said switch means, the conductive state of said controlled conductive device causing said solenoid to be energized, and (c) preventing the application of a further signal to said control electrode after the application of said firing signal until said switch means is returned to its "off" position and reactuated to its "fire" position.

4,500,939

HAIR BRUSH WITH A FLEXIBLE BASE PLATE MADE OF A PLASTIC MATERIAL

Jean-Louis H. Gueret, Paris, France, assignor to L'Oreal, Paris, France

Filed Mar. 18, 1983, Ser. No. 476,718
Claims priority, application France, Apr. 7, 1982, 82 06072
Int. Cl.³ H05F *3/00*; A46B *9/08*
U.S. Cl. 361—221 **20 Claims**



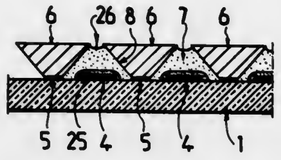
1. In an antistatic hair brush comprising handle means and brushing means carried by said handle means, said brushing means embodying a flexible base means and bristles on said base means, the improvement wherein said base means is made of an antistatic plastic material and includes grid means defining apertures and bristles being integrally moulded together with said grid means and disposed perpendicular to the grid means.

4,500,940

CAPACITIVE HUMIDITY SENSOR AND METHOD FOR THE MANUFACTURE OF SAME

Heikki T. Kuisma; Ari Lehto, both of Helsinki, and Jouko S. Jalava, Vantaa, all of Finland, assignors to Vaisala Oy, Helsinki, Finland

Filed Dec. 19, 1983, Ser. No. 562,746
Claims priority, application Finland, Dec. 21, 1982, 824392
Int. Cl.³ H01G *5/20*
U.S. Cl. 361—286 **6 Claims**



1. Capacitive humidity sensor, which comprises

a substrate made, e.g., of glass,

at least one first and one second bottom electrode arranged close to each other on the substrate,

an active layer, which fills the area between the first and the second bottom electrode on the substrate and extends to above the top face of the second electrode,

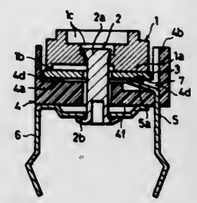
a plurality of conductive, beam-shaped structures placed side by side, connected to the first electrode, and having an upwardly widening cross-section, said structures limiting portions of the active layer between themselves from two sides such that a narrow slot is formed between the top faces of said structures.

4,500,941

CERAMIC TRIMMER CAPACITOR

Hiroshi Izumi, Tamayama, Japan, assignor to Alps Electric Co., Ltd., Tokyo, Japan

Filed Jan. 20, 1982, Ser. No. 341,097
Claims priority, application Japan, Jan. 27, 1981, 56-9905[U]
Int. Cl.³ H01G *5/04*
U.S. Cl. 361—293 **3 Claims**



1. A ceramic trimmer capacitor comprising a ceramic board, a substantially semi-circular stator electrode formed on one surface of the ceramic board, a conductive rotor member, and an insulating frame having a surface for supporting said ceramic board; means including a plurality of arcuate portions spaced around said surface of said frame for engaging extreme peripheral portions of said ceramic board for holding said ceramic board between said rotor member and said insulating frame so that the periphery of said ceramic board is supported by said arcuate portions with minimal bending stresses being applied during loading of said rotor member.

4,500,942

TEMPERATURE STABLE MONOLITHIC CAPACITORS AND CERAMIC COMPOSITIONS FOR PRODUCING SAME

James M. Wilson, Victor, N.Y., assignor to Ferro Corporation, Cleveland, Ohio

Filed Nov. 12, 1982, Ser. No. 440,804
Int. Cl.³ H01G *4/12*; C04B *35/46*
U.S. Cl. 361—320 **11 Claims**

1. A ceramic temperature compensating dielectric composition in fine particle form having a dielectric constant of 84.0 or greater and consisting essentially of a mixture of BaO, PbO, Bi_2O_3, TiO_2 in quantities of approximately 16, 2, 9 and 37 wt. %, respectively, and rare earth oxides in an amount not exceeding approximately 35 wt.% of said mixture, said rare earth oxides consisting essentially of Nd_2O_3 and one of the additional rare earth oxides selected from the group consisting of Pr_6O_{11} and Sm_2O_3, said Nd_2O_3 being present in amounts ranging from approximately 17.4 to 31.3 wt.% of the overall mixture, and said additional rare earth oxide being present in an amount ranging from approximately 10 to 50 wt. % of the total amount of rare earth oxides present in the mixture.

4,500,943

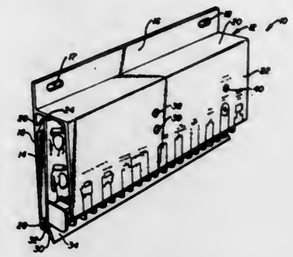
ELECTRONIC PANEL

Ted R. Greene, Livermore, Calif., assignor to United Security Products, Inc., Livermore, Calif.

Filed Dec. 9, 1982, Ser. No. 448,102
Int. Cl.³ H05K *7/20*
U.S. Cl. 361—383 **7 Claims**

1. An electronics panel comprising:

a unitary extrusion of substantially constant cross seetion adapted to be horizontally mounted to a supporting vertical structure, said extrusion including a back plate having a front surface and a back surface adapted to be mounted flush to the supporting structure, a top plate projecting forwardly from the front surface of the back plate at a position spaced downwardly from the top edge of the back plate, a front plate parallel to the back plate and projecting downwardly from the forward edge of the top plate with the lower edge of the front plate spaced upwardly from the lower end of the back plate and being structurally unconnected to the back plate to produce a space between them, said extrusion further having a clip near the juncture of the front surface of the back plate and the bottom surface of the top plate and a snap near the lower edge of the back plate; and



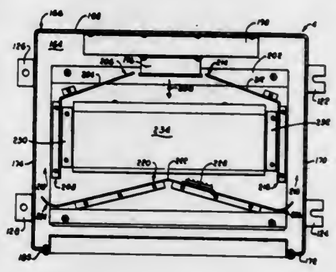
a circuit board having parallel edges, one edge inserted in the clip and the other engaged by the snap to secure the circuit board to the extrusion, said circuit board including a row of connector elements near the edge of the board engaged by the snap so that the connector elements are exposed below the lower edge of the front plate and allow for passage of air upwardly between the front and back plates of the extrusion to cool the circuit board.

4,500,944

ENCLOSURE FOR ELECTRONIC COMPONENTS

Don M. Roberts, and David W. Looper, both of Duncan, Okla., assignors to Halliburton Company, Duncan, Okla.

Filed Jun. 6, 1983, Ser. No. 501,681
Int. Cl.³ H05H *7/20*
U.S. Cl. 361—384 **16 Claims**



1. An enclosure for providing a temperature-controlled environment, comprising:

a housing, including:

a first wall;

a second wall connected to said first wall, said first and second walls defining an interior volume therebetween; and

a third wall connected to said second wall in movable relationship thereto and providing a closable entry to said interior volume;

temperature control means for transferring heat to or from said interior volume and including a heat transfer means disposed in said second wall, said heat transfer means having a surface area disposed in said interior volume;

air movement means for moving air within said interior volume, said air movement means including a fan associated with said surface area of said heat transfer means;

first baffle means for directing said air moved by said air movement means to flow in a first direction within said interior volume; said first baffle means including:

a first angle member, having a first end and a second end disposed in said interior volume so that said first end is closer to said fan than is said second end, and so that a first channel is defined between said first angle member and said second wall, said first channel having an inlet associated with said second end and having an outlet associated with said heat transfer means; and

a second angle member having a third end and a fourth end, disposed in said interior volume so that said third end is closer to said fan than is said fourth end, and so that a second channel is defined between said second angle member and said second wall, said second channel having an inlet associated with said fourth end and having an outlet associated with said heat transfer means; and

second baffle means for directing said air which has flowed in said first direction to flow in a second direction from which said air comes into heat exchange relationship with said temperature control means, said second baffle means including:

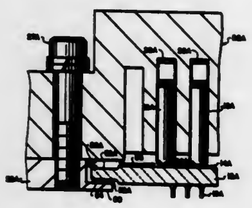
a deflector member extending at least partially across said interior volume in overlapping association with said second and fourth ends so that said air moved by said air movement means is directed into the inlets of said first and second channels.

4,500,945

DIRECTLY SEALED MULTI-CHIP MODULE

Lewis D. Lipschutz, Poughkeepsie, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Jul. 23, 1982, Ser. No. 401,186
Int. Cl.³ H05K *7/20*
U.S. Cl. 361—386 **9 Claims**



1. A hermetic compression sealing system with a semiconductor, multi-chip, thermal conduction module comprising:

(a) a ceramic substrate having a main portion of predetermined thickness and a marginal portion which has a thickness less than said predetermined thickness and including interconnected semiconductor chips containing integrated circuits defining said module;

(b) means for directly sealing said module, said means including:

1. a unitary metallic compression seal in direct bearing contact with the marginal portion of the upper surface of said substrate for providing hermetic sealing of a gas charge;

2. a cover in contact with said compression seal;

3. a clamping plate holding the cover, compression seal and the ceramic substrate in sealing engagement, thereby forming a unitary sealed chamber surrounding said module; said clamping plate having a flange in overlapping relationship with the marginal portion of the lower surface of said substrate;

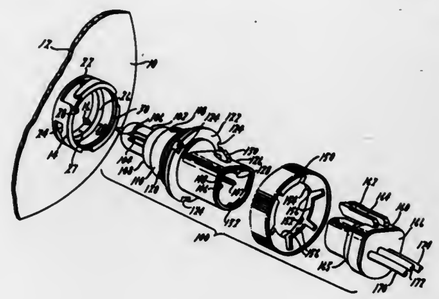
(c) means for conducting heat from the semiconductor chips to the ambient, including a gas charge within said chamber, the means for directly sealing said module preventing leakage of the gas to the ambient.

4,500,946

REPLACEABLE LAMP ASSEMBLY FOR A SEALABLE REFLECTOR HOUSING

James A. Mikola, Livonia, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Jan. 13, 1982, Ser. No. 339,194
Int. Cl.³ H01R *33/00*
U.S. Cl. 362—226 **11 Claims**



1. A replaceable lamp plug assembly for mating with a hermetically sealable lamp enclosure including a light transmitting lens, attached to the front of a light directing reflector and an open cylindrical socket formed to extend outwardly from the rear of said reflector comprising:

a filament lamp light source; and

plug means having a body portion formed to be axially inserted into said cylindrical socket wherein said plug means includes means for permanently supporting said lamp so that the filament of said lamp is located at a predetermined point and in a predetermined orientation with respect to said body portion; means for hermetically sealing said lamp enclosure when said plug means is inserted into the rear of said cylindrical socket; a base flange extending transverse to said body portion and having a diametric dimension larger than that of said cylindrical socket for contacting the outward extension of said cylindrical socket and limiting the insertion distance of said plug means into said socket; a plurality of electrical terminals permanently connected through said body portion to said filament of said lamp; and a plug connector shroud on the opposite end of said plug means from said support means, extending beyond said base flange and surrounding said terminals.

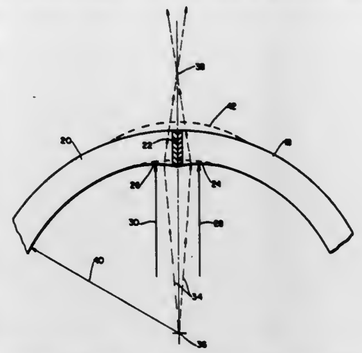
4,500,947

TRI SPHERICAL LENS ASSEMBLY

Frederick M. Perkins, Miami, Fla., assignor to Perko, Inc., Miami, Fla.

Filed Nov. 10, 1982, Ser. No. 440,550
Int. Cl.³ F21V *3/00*
U.S. Cl. 362—311 **18 Claims**

1. A continuous lens assembly with uninterrupted arc of visibility comprising at least a first lens segment and a second lens segment and at least one junction at the edges thereof and consisting of a progressively thicker lens portion of each segment as said segment nears said junction for progressively imparting a greater degree of refraction in the area of said lens



segments adjacent said junction for bending light rays in the direction of said junction.

4,500,948

ONE-PIECE FRAME FOR AN ELECTRIC LAMP

Ronald G. Blaisdell, Saugus, and Peter R. Gagnon, Georgetown, both of Mass., assignors to GTE Products Corporation, Stamford, Conn.

Filed Oct. 7, 1983, Ser. No. 539,852
Int. Cl.³ F21V *21/00*
U.S. Cl. 362—382 **4 Claims**

1. A one-piece frame for mounting a light-source capsule within the outer envelope of an electric lamp comprising:

(a) a one-piece body formed by means of bending a single sheet of stiff electrically conductive material, said one-piece body having two legs and a bridge between said legs, each of said legs being formed to provide means for mounting said frame within said outer envelope, said body being sufficiently rigid to provide support for mounting said light-source capsule thereon, said body having sufficient electrical conductivity to act as a part of an electrical circuit through which electrical power is conveyed to said light-source capsule from an external source.

4,500,949

CHOPPING TYPE ELECTRICAL CONVERTER

Ralph Prete, West Haven, Conn., assignor to Stone Safety Corporation, Wallingford, Conn.

Filed Feb. 14, 1983, Ser. No. 465,839
Int. Cl.³ H02M *3/315*
U.S. Cl. 363—28 **21 Claims**

1. A chopping type electrical converter wherein the chopping frequency is varied to control a DC output voltage, comprising:

(a) a primary circuit for chopping an input voltage comprising:

(i) at least one controlled rectifier, and

(ii) at least one voltage transformer means associated with controlled rectifier and electrically connected thereto;

(b) a secondary circuit comprising:

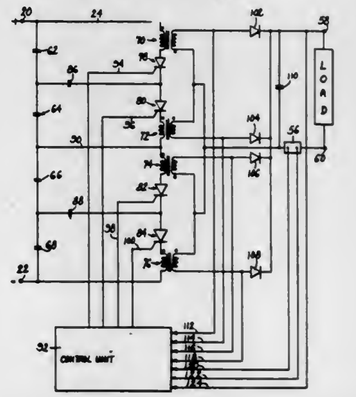
(i) output terminals,

(ii) rectifier means electrically connected to the voltage transforming means, and

(iii) filtering means electrically connected to the output terminals and the rectifier means for providing the DC output voltage; and

(c) a control unit comprising:

(i) a pulse generator for generating trigger pulses at a variable frequency to trigger on the controlled rectifier and thereby chop the input voltage,



(ii) a control circuit including means for sensing the output voltage, and means for controlling the frequency at which the pulse generator generates pulses, responsive to the sensed output voltage, to hold the output voltage at a desired output level over a range of output currents, and

(iii) a backfire prevention circuit including means for sensing the presence of current flowing in the voltage transforming means associated with controlled rectifier, and including means for delaying trigger pulses to controlled rectifer until current has ceased to flow in its associated voltage transforming means.

4,500,950

INDUSTRIAL PROCESS CONTROL APPARATUS AND METHOD

Richard E. Putman, Penn Hills Township, Allegheny County, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Apr. 12, 1982, Ser. No. 367,830
Int. Cl.³ G05B *13/02*; G06F *15/46*
U.S. Cl. 364—138 **8 Claims**

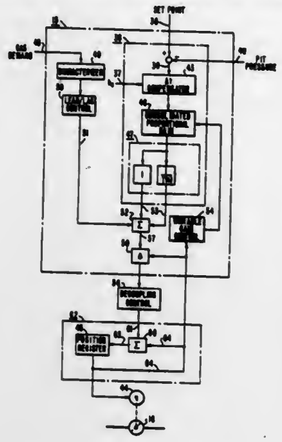
1. In a control apparatus for a plurality of independent industrial processes, with each said process including a process control member determining the operation of that process and providing a common operationally dependent intercoupling between said processes, the combination of:

means coupled with each of said processes for independently establishing the operation of the process control member determining the operation of that process,

means responsive to all of the established operations of the respective process control means for providing decoupled operational changes for the respective process control members, and

means provided for each process control member and re-

sponsive to the decoupled operational change for that process control member determining the operation of the



process control member for controlling the industrial process associated with that process control member.

4,500,951

PLANT CONTROL SYSTEM

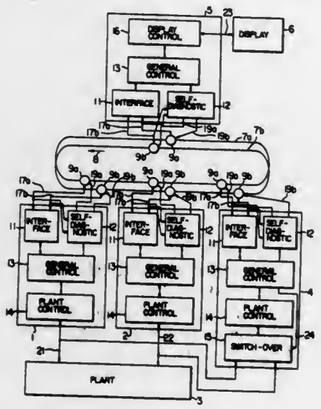
Norihiko Sugimoto, Katsuta; Nobuhiro Hamada, Hitachiota; Ikuro Masuda, Hitachi, and Jinichi Sakurai, Mito, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 30, 1981, Ser. No. 335,689

Claims priority, application Japan, Jan. 7, 1981, 56-348; Mar. 31, 1981, 56-46459; Apr. 20, 1981, 56-58488

Int. Cl.³ G05B *23/02*; G06F *15/46*

U.S. Cl. 364—186 **5 Claims**



1. A loop communication system comprising a plurality of controller stations, at least one display station including means for displaying the status of each of said controller stations, and a loop transmission channel through which said controller stations and said display station are connected in a loop to permit data transmission between said controller and display stations while giving a transmission right to each of said controller and display stations in sequential order so that the station to which the transmission right is given is allowed to send out into the transmission channel data originating in that status, wherein each of said controller and display stations comprises a transmission interface circuit and a self-diagnostic circuit connected to said loop transmission channel, said transmission interface circuit in each station including means for effecting data transmission with the other stations by way of said transmission channel, and said self-diagnostic circuit in each station including means for diagnosing the operation of its station for the presence or absence of a malfunction and for disconnecting its station from said transmission channel when it diagnoses that its station is disabled, wherein said transmission channel includes loop transmission lines arranged in duplex, said transmission interface circuit in each station including means for receiving data from and applying data to one of said transmission lines for effecting data transmission between its station and the other stations by way of said one transmission line, and said self-diagnostic circuit in each station including means for selecting said one of said transmission lines and for disconnecting its station from said selected transmission line when it diagnoses that its station is disabled, and wherein said transmission interface circuit includes first selector means for selecting data received through one of said two loop transmission lines, register means for registering the received data selected by said first selector means, second selector means connected to said first selector means and said register means for selecting the data registered in said register means when the transmission right for data transmission over said selected transmission line has been received and for selecting the data supplied from said first selector means when the transmission right has not been received, transmission control circuit means for receiving the data selected by said second selector means and for processing said received data thereby producing processed data, and third selector means for selecting either the processed data or the data transmitted by the selected one of said transmission lines according to a signal determining a transmission mode and for supplying the data selected by said third selector means to the selected one of said two transmission lines; and said self-diagnostic circuit in each station includes first circuit means for receiving the data transmitted through said selected one of said transmission lines and for producing a first signal when said received data meets predetermined requirements indicating that the received data is normal, second circuit means for receiving the data transmitted to said selected one of said transmission lines and for producing a second signal when said received data meets predetermined requirements indicating that the received data is normal, and third circuit means for receiving a signal originating in the station having that third circuit means and producing a third signal when said received signal meets predetermined requirements indicating that the received signal is normal, and an AND gate connected to receive said first, second and third signals and producing a signal to select one of said transmission lines in the presence of all of said first, second and third signals.

4,500,952

MECHANISM FOR CONTROL OF ADDRESS TRANSLATION BY A PROGRAM USING A PLURALITY OF TRANSLATION TABLES

Andrew R. Heller, Morgan Hill, Calif., and William S. Worley, Jr., Endicott, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

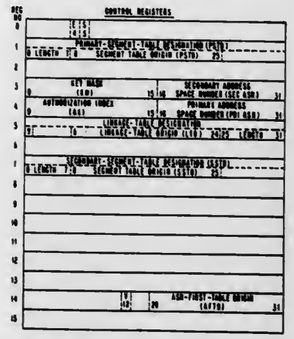
Filed May 23, 1980, Ser. No. 152,889

Int. Cl.³ G06F *9/36, 9/46, 13/00*

U.S. Cl. 364—200 **7 Claims**

1. In a multiprogramming data processing system including (1) a main memory comprised of physical, addressable blocks having associated addressable coded storage protect keys providing access control to the associated physical block, the main memory adaptable for storing information including data, problem programs, supervisor programs, and system control tables including addressable address translation tables for translating virtual addresses to real main memory addresses and (2) processor means for extracting and decoding series of program instructions from the main memory and for performing the operations required including the accessing of physical addressable blocks in the main memory for transfer of information between the processor and main memory, the processor including a program status word (PSW) including a plurality of control bits including a problem program bit, the binary state of which signifies a problem or supervisor program state, control fields including a coded PSW protect key field to be compared with the coded storage protect key of a physical block to be accessed in main memory, and an instruction address value indicating the location of the next program instruction to be extracted, the improvement comprising:

a first addressing control register for storing the main memory address of a particular address translation table used



for translating addresses of an associated program from virtual to real main memory addresses;

a second addressing control register for storing a plural-bit address space number (ASN), an ASN comprising a symbolic identifier of, and being associated with, said particular address translation table addressed by said first addressing control register; and

ASN translation means, including processor control means effective to transfer an ASN for storage in said second addressing control register, and for storing the address of the associated address translation table in said first addressing control register.

4,500,953

DATA TRANSFER ABNORMALITY PROCESSING SYSTEM

Fumihiko Takezoe, and Junichi Fujii, both of Tokyo, Japan, assignors to Fuji Facom Corporation, Tokyo and Fuji Electric Company Limited, Kanagawa, both of, Japan

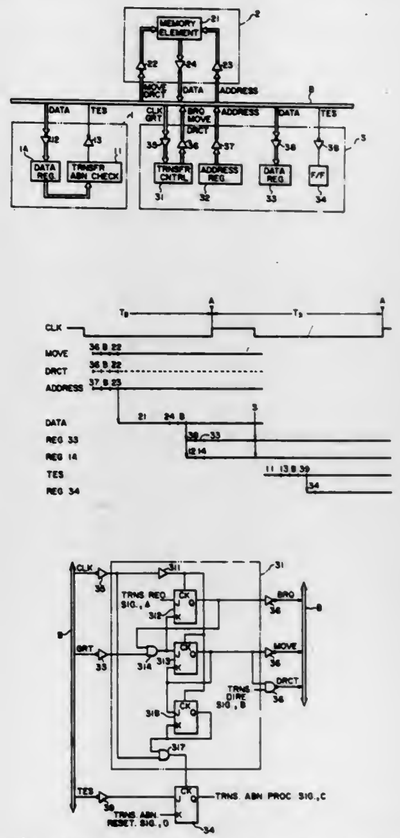
Filed Jun. 23, 1981, Ser. No. 276,549

Claims priority, application Japan, Jun. 27, 1980, 55-86653

Int. Cl.³ G06F *9/00, 13/00*

U.S. Cl. 364—200 **5 Claims**

1. A data processing system comprising: a memory unit; at least one data processing unit; a common bus having a plurality of data lines and a transfer abnormality signal line indicative of transferred data being abnormal; a bus controller coupled to said common bus, data being transferred between said memory unit and said at least one data processing unit and/or between data processing units through said common bus under control of said bus controller in transfer cycle periods, said bus controller comprising means for producing a transfer abnormality signal corresponding to data transferred in a first cycle period during a second cycle period immediately subsequent said first cycle period, wherein a time between adjacent cycle periods is substantially unaffected by said transfer abnormality signal, wherein said means for producing said transfer abnormality signal comprises a data register for receiving data from said common bus and a transfer abnormality check circuit having data inputs coupled to data outputs of said data register, said data register delaying the application of data from said common bus to said transfer abnormality check circuit by one cycle period.



4,500,954

CACHE BYPASS SYSTEM WITH POST-BLOCK TRANSFER DIRECTORY EXAMINATIONS FOR UPDATING CACHE AND/OR MAINTAINING BYPASS

Alan H. Duke; Michael H. Hartung; Frederick J. Marschner, all of Pima County, Ariz., and Kenneth P. Nolan, Boulder County, Colo., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 15, 1981, Ser. No. 311,570

Int. Cl.³ G06F *9/06, 13/00*

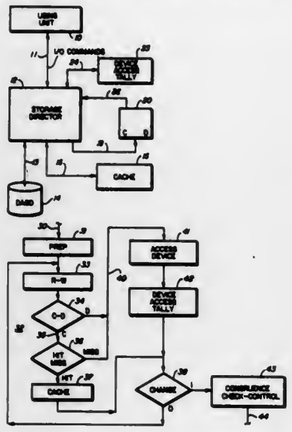
U.S. Cl. 364—200 **16 Claims**

1. The method of operating a buffered peripheral system having a plurality of peripheral devices connected to and sharing a random-access data buffer, directory means for indicating whether data stored or to be stored in a one of said peripheral devices has data storage spaced allocated therefor in said data buffer, data transfer means connected to said data buffer and to said peripheral devices for transferring data therewith and with external means external to said buffered peripheral system;

the improvement including the steps of:

initiating a data transfer for transferring a record of data, by addressing a given one of said peripheral devices, between said buffered peripheral system and said data transfer means by first examining said directory means to ascertain

whether said data buffer has data storage spaced allocated relating to said data transfer being initiated, if said data storage space is allocated, performing said data transfer between said buffer and said data transfer means; if said data buffer has no data storage space allocated for said data transfer, bypassing said data buffer and directly transferring data with said given one peripheral device; and



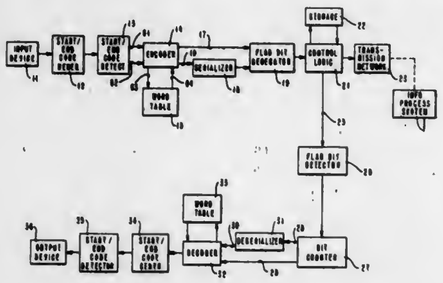
then transferring in a respective series of data transfers a series of records of data between said data transfer means and said given one of said peripheral devices without examining said directory means such that said series for data transfers occurs with said given one of said peripheral devices irrespective of said data storage space allocations in said data buffer.

4,500,955

FULL WORD CODING FOR INFORMATION PROCESSING

Ifay F. Chang, Chappaqua, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 31, 1981, Ser. No. 336,193
Int. Cl.³ G06F *3/14*
U.S. Cl. 364—200 **3 Claims**



1. An information processing system comprising:

means for inputting alphanumeric words into the system, said alphanumeric words comprising serial aggregations of coded representations with a coded representation for each character in said alphanumeric words;

encoding means for matching each of said inputted alphanumeric words with a unique predetermined unitary representation which is independent of any reordering of the serial aggregations of the coded representations comprising an inputted alphanumeric word, said encoding means sequentially examining each coded representation for the characters in an inputted word and branching to a unique location in a tree search logic for each character, each said unique location containing a unique predetermined unitary representation, said encoding means outputting the unique predetermined unitary representation reached after sequentially examining an entire inputted word; and

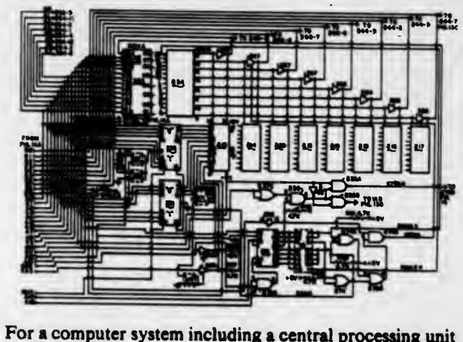
control logic means for directing such unique unitary representation in place of its corresponding alphanumeric word to a word processing apparatus.

4,500,956

MEMORY ADDRESSING SYSTEM

Steven Leininger, Arlington, Tex., assignor to Tandy Corporation, Fort Worth, Tex.

Division of Ser. No. 261,976, May 8, 1981, Pat. No. 4,430,649, which is a continuation of Ser. No. 926,957, Jul. 21, 1978, abandoned. This application Jan. 25, 1982, Ser. No. 342,069
Int. Cl.³ G06F *13/00*
U.S. Cl. 364—200 **8 Claims**



1. For a computer system including a central processing unit having data and address lines, means for storing instructions, a random access memory, keyboard means and display means,

said random access memory having input address terminals and control terminals, including an enable input,

first multiplexing means having two groups of input address lines coupled from the address lines of the central processing unit and control means for selectively coupling one of the groups of input address lines to the output of the multiplexing means,

means coupling the output of the multiplexing means to the address terminals of the random access memory,

and selection means in one position providing a memory enable signal for the random access memory and in another position coupling one of said address lines from the central processing unit to the enable input,

said control terminals further including a row address select terminal and a column address select terminal coupled from the central processing unit,

said selection means including a selectable shunt having one input for receiving the memory enable signal and another input for receiving an address signal from one of said address lines.

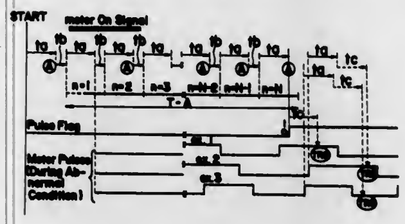
4,500,957

TIMING CONTROL SYSTEM FOR DETERMINING ABNORMAL MOTOR OPERATION

Hiroyuki Hanamoto, and Yoshihiro Horie, both of Toyokawa, Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Mar. 23, 1982, Ser. No. 360,989
Claims priority, application Japan, Mar. 27, 1981, 56-45812
Int. Cl.³ G06F *15/00*; G03G *15/00*
U.S. Cl. 364—200 **7 Claims**

1. In a control system for a machine including a programmed control device for controlling the sequence of operation of the machine, and a pulse generating means for generating pulse signals synchronized with a speed of a drive of the machine, said pulse signals being supplied to the programmed control device for synchronizing a control operation, which is performed by the programmed control, device with actual operation of the machine, the improvement wherein a program of the programmed control device is so designed that a control routine for executing a process necessary to control the machine and a synchronizing routine for controlling a time at which said control routine is to be started are executed continuously and repeatedly, said routines of said program being so associated with said pulse generating means that a number of pulses generated, when the machine is driven at a normal speed during a time period equal to a time required for completion of a succession of the control routine and the synchronizing routine, is at least two and that, said control routine is started immediately after generation of one of said pulses, during execution of said synchronizing routine, has been detected.

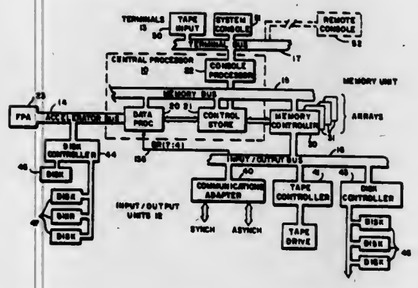


4,500,958

MEMORY CONTROLLER WITH DATA ROTATION ARRANGEMENT

John C. Manton, Marlboro, Mass., and Kenneth Okin, Saratoga, Calif., assignors to Digital Equipment Corporation, Maynard, Mass.

Filed Apr. 21, 1982, Ser. No. 370,572
Int. Cl.³ G06F *13/00*
U.S. Cl. 364—200 **21 Claims**



1. A memory unit for connection in a data processing system ncluding a central processor unit and interconnection means ncluding means for transferring address, control and data ignals, the memory unit comprising a plurality of addressable torage locations each comprising a plurality of identifiable ub-locations and means for transferring data from or into a elected addressable storage location, said memory unit further omprising:

A. transfer data signal storage means connected to said data transferring means for storing data signals that have been transferred from or that are to be transferred into an addressable storage location;

B. rotation means connected to said interconnection means and to said data transferring means for rotating said data signals in response to the address and control signals;

C. rotated data signal storage means connected to said rotating means, said transfer data signal storing means, and to said interconnection means for storing said rotated data signals; and

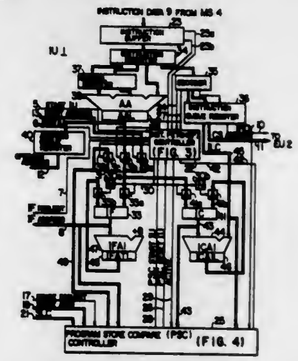
D. control means connected to said rotated data signal storing means and to said transfer data signal storing means for selectively transferring data signals from said rotated data signal storing means to said interconnection means and to said transfer data signal storing means.

4,500,959

APPARATUS FOR INVALIDATING THE CONTENT OF AN INSTRUCTION BUFFER BY PROGRAM STORE COMPARE CHECK

Kanji Kubo; Tsugio Momose, and Chikahiko Izumi, all of Hadano, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed May 6, 1982, Ser. No. 375,587
Claims priority, application Japan, May 11, 1981, 56-69458
Int. Cl.³ G06F *9/30*
U.S. Cl. 364—200 **12 Claims**



1. In a data processing system in which instructions are prefetched from a main storage to an instruction buffer in advance of the execution of an instruction in response to an instruction fetch address and the instructions are read out from said instruction buffer for execution, the improvement comprising:

prefetch means for specifying an instruction fetch address of an instruction to be fetched from said main storage to said instruction buffer;

means for specifying an execution instruction address of an instruction to be executed and first information indicating the byte position at which said instruction is stored in said main storage;

means for specifying a store address by a store instruction and second information indicating the byte position of the content in the main storage which is changed by a store operation;

detection means for detecting that the content of the instruction fetched from said main storage to said instruction buffer has been changed in said main storage as a result of said store operation and that the execution of the instructions has proceeded to the instructions changed in said main storage, based on said fetch address, said execution instruction address, said first information, and store address and said second information;

suppression means for suppressing operation of said prefetch means in response to the detection by said detection means that the content of the instruction fetched from said main storage to said instruction buffer has changed in said main storage as a result of said store operation; and

invalidating means for invalidating the content of said in-

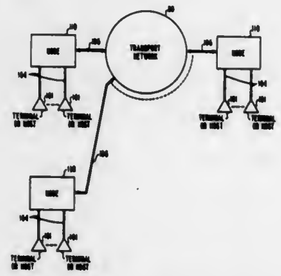
struction buffer in response to the detection by said detection means that the execution of the instruction has proceeded to the instruction changed in said main storage.

4,500,960

GEOGRAPHICALLY DISTRIBUTED MULTIPROCESSOR TIME-SHARED COMMUNICATION PROCESSING SYSTEM

Glenn R. Babecki, Lawrenceville; Carlos Escolar, East Windsor; Craig M. Garnant, Middletown; Hsin-Kuo Kan, Holmdel; Frank Kaplan, Warren; Hueichi R. Liu, Marlboro; George F. MacLachlan, Tinton Falls; Peter J. Matteo, Eatontown; John F. McDonald, Watchung; John D. Palframan, Aberdeen; Roger T. Tran, Marlboro; Martin J. Welt, Middletown, all of N.J.; Timothy A. Wendt, New York, N.Y.; Gregory S. Yates, Aberdeen, and Paul M. Zialis, Holmdel, both of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Jun. 28, 1982, Ser. No. 393,138
Int. Cl.³ G06F *15/16*
U.S. Cl. 364—200 **6 Claims**



1. In a system for processing data calls from initiating end point users to terminating end point users, the system including at least one processor supporting a plurality of processes adaptable to the initiating and terminating end point users:

a process in the processor for interfacing an external communication link;

an internal communication subsystem for exchanging data between the processes through links internal to the processor in accordance with communication parameters defined by control data passed through the internal links during call initiation, at least one of the internal links extending to the interfacing process; and

means invoked by the interfacing process during call initiation for applying the control data on the one internal link to the external communication link when the terminating end point user is accessed by way of the external communication link and for processing the control data when the terminating end point user is the interfacing process.

4,500,961

PAGE MODE MEMORY SYSTEM

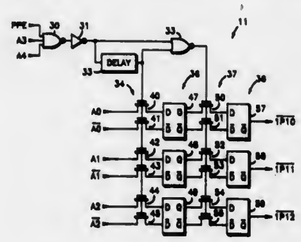
Bruce E. Engles, Austin, Tex., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Jun. 3, 1983, Ser. No. 500,705
Int. Cl.³ G06F *9/30*
U.S. Cl. 364—200 **8 Claims**

1. In a multi-page ROM having a plurality of pointers which are selectively programmable to provide page address signals which correspond to a chosen page of the ROM and which are programmed in response to a particular program address, the improvement comprising a pointer responsive to the occurence and removal of a first program address which comprises:

delay control means for providing a first signal a first predetermined delay period following the removal of the first program address, for providing a second signal and removing the first signal a second predetermined delay period following the occurrence of the first program address, and for removing the second signal in response to the removal of the first program address;

preliminary latch means for receiving and storing program address signals when the first signal is present;



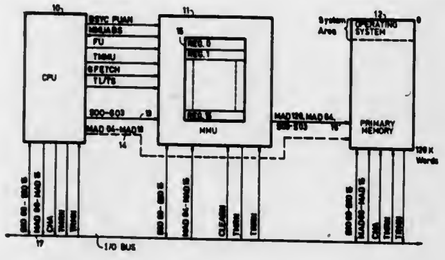
output latch means for receiving and storing the program address signals stored in the preliminary latch means when the second signal is present and for providing said stored program address signals as the page address signals.

4,500,962

COMPUTER SYSTEM HAVING AN EXTENDED DIRECTLY ADDRESSABLE MEMORY SPACE

Edmond Lemaire, Maurepas par Trappes, and Jacques Lebreton, Saclay par Orsay, both of France, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 288,565, Jul. 30, 1981, , which is a continuation of Ser. No. 42,660, May 25, 1979, abandoned. This application Sep. 22, 1983, Ser. No. 534,266
Claims priority, application France, Jun. 15, 1978, 7817898
Int. Cl.³ G06F *9/06*
U.S. Cl. 364—200 **3 Claims**



1. A computer system comprising central processing means (10) random access memory means (12), memory management means (11); and bus means (17) interconnecting said central processor means, said random access memory means and said memory management means, comprising:

said random access memory means having a sequence of word locations of equal length, each location accommodating a word, a predetermined fraction of said word locations containing two character locations of equal length, each location accommodating a character being half as long as a word, said random access memory means being connected to said bus means by means of an address input (MAD 00—MAD 15), a bidirectional data line (BIO 00-BIO 15), a character selection signal (CHA) input, and a handshake interconnection (TMRX, TRMN);

said central processing means being connected to said bus means by means of an address output (MAD 00—MAD 15), a bidirectional data line (BIO 00-BIO 15), a character selection signal (CHA) output, and a handshake interconnection;

said central processing means having address generating means for generating N-bit addresses on said address output, and first signalling means for generating a character detection signal, a first value of said character detection signal signalling that an accompanying address is directed to a word location as one of 2^N different word locations;

a second value of said character selection signal signalling that an accompanying address is directed to a character location, in that one predetermined address bit operates as first/second character location selecting bit, the remaining (N−1) bits then operating to select a word location in one predetermined half of said 2^N different word locations;

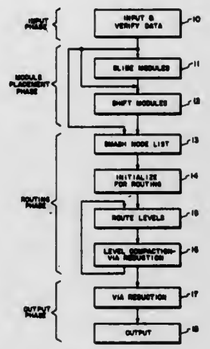
said memory management means being connected to said bus means by means of an address input (MAD 00 . . . MAD 15), a bidirectional data line (BIO 00-BIO 15) and a handshake interconnection, said memory management means being connected to said central processing means by means of a segment table pointer line (13), said memory management means being connected to said random access memory means by means of a physical page number line (16) for forwarding a page selection signal.

4,500,963

AUTOMATIC LAYOUT PROGRAM FOR HYBRID MICROCIRCUITS (HYPAR)

David C. Smith, Williamstown, and Richard Noto, Maple Shade, both of N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Nov. 29, 1982, Ser. No. 445,341
Int. Cl.³ G06F *15/20*
U.S. Cl. 364—300 **6 Claims**



1. A computer process for automatic layout of hybrid microcircuits comprising the steps of:

(a) defining the general hybrid layout data, an X-Y orthogonal grid, module geometry and relative placement, and a node list;

(b) establishing potential routing areas by combining said general hybrid layout data with said module placement data;

(c) creating a routing subset having all grid point information for the available routing levels;

(d) smashing the node list into source-pin/sink-pin pairs and sorting the pairs according to a specified routing priority criteria;

(e) selecting a source-pin/sink-pin pair for routing;

(f) energizing available paths between said source-pin and said sink-pin;

(g) creating an energy level record for each of said energized paths;

(h) establishing said sink-pin as the current point of routing;

(i) creating a subset of all energized points from said current point of routing which satisfy the minimum criteria of a decreased energy level;

(j) establishing selection criteria for choosing the next point of routing;

(k) evaluating all points in the subset created in step (i) by the criteria established in step (j);

(l) routing to the point having the best evaluation data from step (k);

(m) repeating step (i) through step (m) until the source-pin is reached;

(n) repeating step (e) through step (n) for each source-pin/-sink-pair determined in step (d) until either:

(i) no further routing paths exist on the available, routing levels, or

(ii) no source-pin/sink-pin pairs remain;

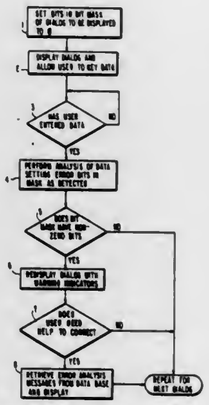
(o) translating all connection data in to a language suitable for describing the fabrication layout of the hybrid module.

4,500,964

DIALOG USER ERROR DIAGNOSIS, SEVERITY, AND HELP TECHNIQUE

Allen F. Nickle, Euless, Tex., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 30, 1983, Ser. No. 480,420
Int. Cl.³ G06F *9/00*
U.S. Cl. 364—300 **3 Claims**



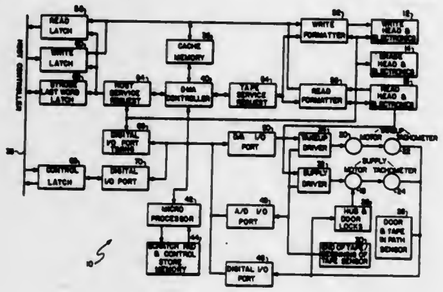
1. In an interactive data entry system of the type wherein a dialog is displayed requiring a user to key in certain specified data and then enter that data, the system then performing an error analysis of the entered data in the sequence of (1) individual keyed data field validity, (2) interaction of one keyed data field with another, and (3) interaction of keyed data with previously specified data or other application related limits and setting related error bits in a mask as errors are detected, and if the error mask has any non-zero bits, then redisplaying the dialog with warning indicators, the improvement of a method of providing an extended error diagnosis of all errors to assist the user in correcting the errors, said method comprising the step of building a data base of extended diagnostic error messages sets for each type of error for each data field of each data entry dialog, each set of extended diagnostic error messages being uniquely addressed in said data base by at least the name of the corresponding data entry dialog and said bit mask.

4,500,965

CAPSTANLESS MAGNETIC TAPE DRIVE WITH ELECTRONIC EQUIVALENT TO LENGTH OF TAPE

Martin D. Gray, La Jolla, Calif., assignor to Cipher Data Products, Inc., San Diego, Calif.

Filed Jun. 4, 1982, Ser. No. 385,082
Int. Cl.³ G06F *3/00*
U.S. Cl. 364—400 **8 Claims**



1. A magnetic tape drive operative with a host controller for reading and writing sequential data records comprising:

transducer means for writing the data records on magnetic tape and for reading the data records therefrom;

means for selectively moving the tape in forward and rearward directions past the transducer means;

means for sensing a position of the transducer means on the tape;

a cache memory for storing the data records to be written on, and the data records read from, the tape, a data storage capacity of the cache memory corresponding to a predetermined length of the tape and having forward and rearward boundaries; and

circuitry means connected to the transducer means, tape moving means, transducer position sensing means and cache memory for generating a logical head that moves forwardly and rearwardly through the cache memory as the data records are written into and read therefrom, for controlling the tape moving means to cause a corresponding position of the transducer means to approach a position of the logical head during a write operation, and for causing the position of the logical head to approach the corresponding position of the transducer means during a read operation so that delays due to accelerations and decelerations of the tape moving means are masked and the host controller can instantaneously read data bi-directionally and instantaneously switch between read and write operations.

4,500,966

SUPER CONTINGENCY AIRCRAFT ENGINE CONTROL

Raymond D. Zagranski, Somers; James J. Howlett, North Haven, and Nicholas D. Lappos, Madison, all of Conn., assignors to Chandler Evans Inc., West Hartford, Conn.

Filed May 26, 1982, Ser. No. 382,258
Int. Cl.³ G06F *15/50*; G05B *13/02*; F02C *9/42*
U.S. Cl. 364—432 **7 Claims**

1. A control for an aircraft engine, comprising:

means for providing a speed signal indicative of engine speed;

means for providing an engine signal indicative of at least one additional engine operating parameter;

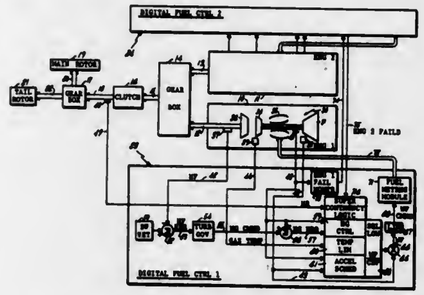
means for metering fuel to the engine in response to a fuel command signal provided thereto; and

signal processing means for providing, in response to said speed signal and said engine signal, said fuel command signal under constraint of normal engine limits;

wherein the improvement comprises:

means for providing a flight parameter signal indicative of an aircraft flight parameter directly dependent on engine power; and

said signal processing means comprising means responsive to said flight parameter signal for providing a super contingency signal indicative of a need for engine power in excess of engine power available at rated engine conditions, and responsive to said super contingency signal for providing, in response to said speed signal and said engine signal, said fuel command signal under constraint of super contingency engine limits which are higher than said normal engine limits.

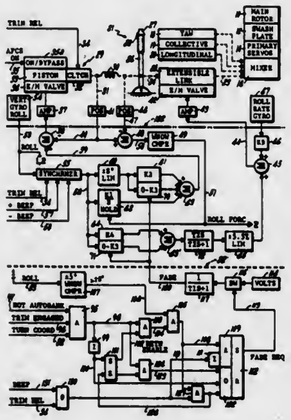


4,500,967

AIRCRAFT SHORT-TERM ROLL ATTITUDE RETENTION SYSTEM

Richard D. Murphy, Trumbull; Ricardo L. Perez, Southington, and Douglas H. Clelford, Trumbull, all of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Nov. 27, 1981, Ser. No. 325,391
Int. Cl.³ G06F *15/50*; B64C *11/00*
U.S. Cl. 364—434 **3 Claims**



1. An aircraft automatic flight control system comprising:

a vertical gyro providing a roll axis output signal indicative of the direction and magnitude of bank angle of the aircraft with respect to level;

roll control means, including a pilot control stick and actuator means including a roll attitude retention outer loop portion and a roll stability inner loop portion, for providing commands to the control surfaces of the aircraft for controlling the roll attitude of the aircraft, lateral force on said control stick providing input commands to said control surfaces which override input commands related to the positioning of said roll attitude retention outer loop portion; and

signal processing means responsive to said roll axis output signal of said vertical gyro and connected to said roll control means, for selectively providing a desired roll attitude reference signal, for providing a roll error signal indicative of the difference in roll attitude indicated by said desired roll attitude reference signal and said roll axis output signal, responsive to said roll control means for providing a signal indicative of lateral force in excess of a predetermined threshold magnitude being applied to said control stick, for providing to said roll attitude retention outer loop portion a first roll command signal which is a first proportional function of said roll error signal in response to the presence of said force signal and which is both said first proportional function and an integral function of said roll error signal in response to the absence of said force signal, for providing a second roll command signal to said roll stability inner loop portion which is a second proportional function of said roll error signal;

characterized by:

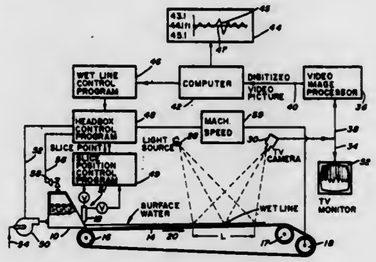
said signal processing means providing said second roll command signal to said roll stability inner loop portion which is a washed out proportion of said roll error signal, whereby a turn induced by lateral force applied to said control stick against a trim position established by said roll attitude retention outer loop portion in response to said roll error signal will be stabilized by said roll stability inner loop portion responding to said washed out function of said roll error signal to stabilize the aircraft against attitude perturbations which result in short-term changes in said roll error signal.

4,500,968

PAPER MACHINE WET LINE CONTROL

Wojciech L. Bialkowski, Richmond Hill, Canada, assignor to Domtar Inc., Montreal, Canada

Filed Jun. 29, 1982, Ser. No. 393,457
Int. Cl.³ G06F *15/46*
U.S. Cl. 364—471 **4 Claims**



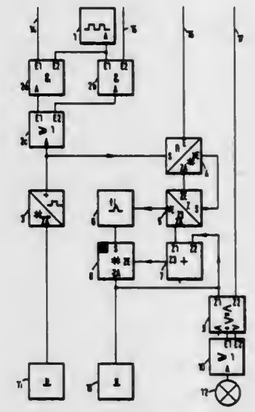
1. A method for continuously monitoring the position of the wet line on a paper machine comprising continuously generating a video signal representing the surface of a wire of said paper machine in the area where the wet line is normally located, digitizing the video signal so generated to provide a digitized signal, processing said digitized signal to define a line corresponding to the wet line on the machine, and displaying the wet line defined by said processed digitized video signal.

4,500,969

METHOD AND APPARATUS FOR DETERMINING STRESS ON HOISTING EQUIPMENT

Heinz Hasselmann, Hagen, and Anton Muenzebrock, Witten, both of Fed. Rep. of Germany, assignors to Mannesmann Aktiengesellschaft, Dusseldorf, Fed. Rep. of Germany

Filed Dec. 15, 1981, Ser. No. 331,015
Claims priority, application Fed. Rep. of Germany, Dec. 24, 1980, 3048964
Int. Cl.³ G01M *17/00*; G08B *21/00*
U.S. Cl. 364—508 **15 Claims**



1. A method for determining the stress on hoisting equipment characterized by a value indicative of such stress and determined as a function of the load and running time of said hoisting equipment, comprising the steps of

(a) generating a series of constant time interval electrical signals,

(b) generating an electrical signal upon and during operation of said hoisting equipment to indicate operation of the hoisting equipment,

(c) conducting said series of constant time interval electrical signals and said electrical signal to indicate operation of said hoisting equipment to the input means of an AND gate electrical means whereby said AND gate means generates an output when both the series of constant time interval signals and the signal to indicate the operation of the hoisting equipment are conducted to said input means of the AND gate electrical means,

(d) generating a signal corresponding to the value of the load being handled by said hoisting equipment,

(e) conducting said signal corresponding to the value of the load to an electrical calculating means,

(f) utilizing the output of said AND gate means to control the operation of said electrical calculating means, whereby said electrical calculating means calculates the cube of the value corresponding to the load during the time interval of each particular one of the series of constant time interval electrical signals and generates an electrical signal corresponding to each calculation,

(g) conducting said electrical signals corresponding to the cubes of the values of the load during each particular one of the series of constant time interval electrical signals sequentially to an electrical adding and storage means whereby the value of each signal is stored and added to a sum representing the total value of the signals corresponding to the cube of the load during each time interval of each particular one of the series of constant time interval electrical signals which have been conducted to said electrical adding and storage means and an electrical signal corresponding to said sum is generated,

(h) generating an electrical signal corresponding to a predetermined maximum sum for the cubes of the values of the

load during each particular one of the series of constant time interval electrical signals,

(i) conducting the electrical signal corresponding to said predetermined maximum sum and the electrical signal corresponding to the sum stored in said adding and storage means to input means of an electrical comparator means,

(j) operating said electrical comparator means to compare the signal corresponding to the sum stored in the electrical adding and storage means with the electrical signal corresponding to the value of said predetermined maximum sum whereby the electrical comparator means generates an output signal when the electrical signal corresponding to the sum stored in the electrical adding and storage means is equal to or greater than the electrical signal corresponding to said predetermined maximum sum, and

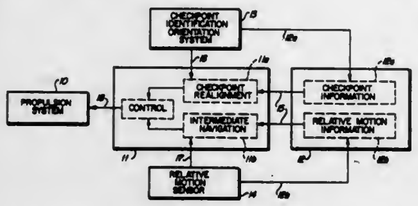
(k) utilizing the output signal of said electrical comparator means to operate an indicator means.

4,500,970

ROBOT VEHICLE GUIDANCE SYSTEM INCLUDING CHECKPOINT REALIGNMENT SYSTEM

Johnathan E. Daemmer, Glendale, Ariz., assignor to Richard A. Boulais, Glendale, Ariz., a part interest

Filed Jan. 15, 1982, Ser. No. 339,426
Int. Cl.³ G06F *15/50*
U.S. Cl. 364—513 **1 Claim**



1. In a guidance system for a robot vehicle, including

relative motion sensor means for initially detecting the relative motion of said vehicle with respect to its environment along a pre-selected guidepath between a start position and a finish position and for generating signals representing learned behavior in the form of initial vehicle-guidepath relative motion information,

memory means for storing said initial relative motion information,

means for recalling said initial relative motion information and converting said information to vehicle guidance signals,

propulsion means responsive to said guidance signals, to cause said vehicle to repeat the learned behavior embodied in said stored initial vehicle-guidepath relative motion information,

the improvements in said guidance system which enable said robot to move from the start position to the finish position without reliance on a pre-selected guidepath therebetween and without compounding anomalous guidance errors induced by extraneous environmental effects, said improvements comprising, in combination with said guidance system:

(a) means for initially identifying environmental checkpoints and locating each of these checkpoints in relation to at least certain other environmental checkpoints and for initially establishing the orientation of said vehicle with respect to said checkpoints;

(b) means for storing said initial vehicle-checkpoint orientation information;

(c) means for recalling said initial vehicle-checkpoint orientation information in later operations of the vehicle within said environment;

(d) means for sensing actual vehicle-checkpoint orientation during said later operations and for comparing said actual orientation information with said recalled orientation information and generating vehicle-checkpoint realignment signals; and

(e) propulsion means responsive to

(i) said relative motion guidance signals for intermediate navigation of sald vehicle between said checkpoints, and

(ii) said vehicle-checkpoint realignment signals to realign said vehicle with respect to said checkpoints to said initial alignment,

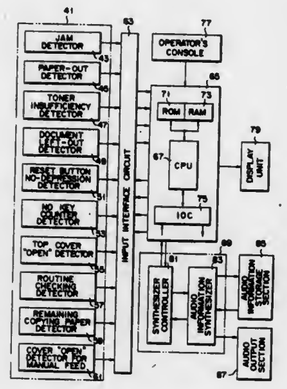
to guide said vehicle from said start position to said finish position.

4,500,971

ELECTRONIC COPYING MACHINE

Kenji Futaki, Kawasaki, and Hitoshi Dekura, Tokyo, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Mar. 29, 1982, Ser. No. 363,387
Claims priority, application Japan, Mar. 31, 1981, 56-48073
Int. Cl.³ G10L *1/00*; G03G *15/00*
U.S. Cl. 364—513.5 **7 Claims**



1. An electronic copying machine comprising:

a copying machine main body;

fault detecting means for detecting at least one fault in an operation of said copying machine main body, each said fault being correctable by a sequence of manual operations;

operation detecting means for detecting the occurrence of each of said manual operations;

audio information storage means for storing instructions for said manual operations;

audio information synthesizing means for reading out said instructions from said audio information storage means and for synthesizing audio information related thereto;

voice output means for converting the audio information synthesized by said audio information synthesizing means, corresponding to said read out instructions, to a voice and for outputting the voice; and

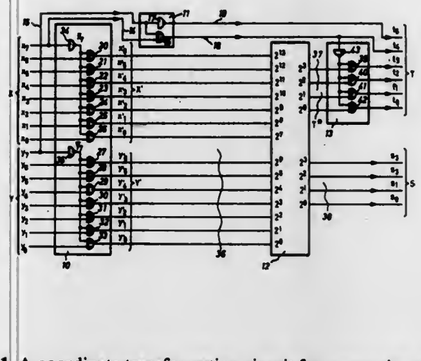
control means for: (1) causing said output means to output one of said instructions related to the first manual operation in said sequence to correct one of said faults detected by said fault detecting means, (2) causing said output means to output one of said instructions related to the next manual operation in said sequence to correct said detected fault when said operation detecting means detects the occurrence of said manual operation previously instructed by output of said output means, and (3) repeating said function (2) until instructions for all of said manual operations necessary to correct said detected fault have been outputted by said output means.

4,500,972

APPARATUS FOR CONVERTING DIGITAL CHROMINANCE SIGNALS OF A CARTESIAN COLOR COORDINATE SYSTEM INTO DIGITAL COLOR SIGNALS AND SATURATION SIGNALS OF A POLAR COLOR COORDINATE SYSTEM AND A TRANSFORMATION CIRCUIT

Franz Kuhn, Schonkirchen; Wilfried Lippek; Klaus Möllgaard, both of Kiel, and Friedrich Redecker, Heikendorf, all of Fed. Rep. of Germany, assignors to Dr.-Ing. Rudolf Hell GmbH, Fed. Rep. of Germany

PCT No. PCT/DE80/00138, § 371 Date Jun. 5, 1981, § 102(e) Date May 28, 1981, PCT Pub. No. WO81/01065, PCT Pub. Date Apr. 16, 1981
PCT Filed Sep. 26, 1980, Ser. No. 269,015
Claims priority, application Fed. Rep. of Germany, Oct. 5, 1979, 2940440; Oct. 5, 1979, 2940422; Oct. 5, 1979, 2940439
Int. Cl.³ G06F *15/20, 7/548*; G01J *3/46*
U.S. Cl. 364—526 **15 Claims**



1. A coordinate transformation circuit for converting digital chrominance signals of a first cartesian color coordinate system into digital hue signals and saturation signals of a polar color coordinate system, whereby a second cartesian color coordinate system (8) with axes parallel to the first cartesian color coordinate system (1) is placed through the center point (P'_0) of the polar color coordinate system (4), said second cartesian color coordinate system (8) dividing the polar color coordinate system (4) into four quadrants, which are defined by digital quadrant identification numbers, comprising:

a. means for converting the pairs of digital chrominance signal values (X; Y), defining the positions of the color locations (F) within the first cartesian color coordinate system (1) into corresponding pairs of second chrominance signal values (X'; Y'), defining the relative positions of said color locations (F) within a selected quadrant of the second cartesian color coordinate system (8),

b. means for generating digital hue signal values (T^*) for said selected quadrant and saturation signal values (S) from said pairs of second chrominance signal values (X'; Y') according to the equations:

$$T^* = C_2 \arctan (Y'/X') \text{ and}$$

$$S = C_1\sqrt{X'^2 + Y'^2}$$

wherein C_1 and C_2 are constant factors, and

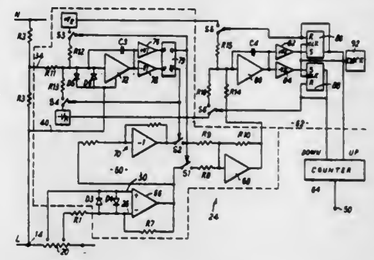
c. means for determining the quadrant identification numbers of the quadrants, in which the respective color locations (F) fall, from said first chrominance signal values (X; Y), whereby the hue signal values (T) for all quadrants are obtained from said determined quadrant identification numbers and said hue signal values (T^*) of said selected quadrant.

4,500,973

ELECTRONIC DEVICES

Anthony J. Ley, Los Alto Hills, Calif. 94022, assignor to Enertec, Montrouge, France

Division of Ser. No. 905,450, May 12, 1978, Pat. No. 4,359,684.
This application Sep. 28, 1982, Ser. No. 425,737
Claims priority, application United Kingdom, May 16, 1977, 20564/77
Int. Cl.³ G06J *1/00*; G06G *7/16*
U.S. Cl. 364—606 **19 Claims**



1. An electronic circuit for producing an output signal representative of the time integral of the product of two input signals, the circuit comprising:

a multiplier for receiving and multiplying together the two input signals to produce a signal dependent upon the product of the two input signals;

a signal-to-frequency converter arranged to convert the product-dependent signal to a pulse signal whose pulse rate is dependent upon the magnitude of the product-dependent signal;

a reversible counter connected to receive and count the pulses of the pulse signal so as to produce said output signal; and

means for repetitively and simultaneously reversing the effective polarity of one of the input signals and the direction of counting of the reversible counter, whereby to substantially reduce errors in said output signal due to drift in the multiplier;

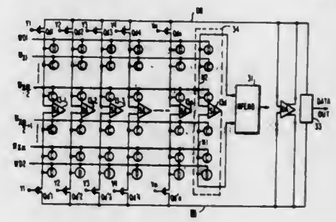
wherein the reversible counter includes means responsive to a first predetermined count therein to reset the counter to a second predetermined count, the difference between said first and second predetermined counts being less than the full house count of the counter.

4,500,974

MEMORY CIRCUIT

Akira Nagami, Tokyo, Japan, assignor to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Sep. 29, 1982, Ser. No. 428,517
Claims priority, application Japan, Sep. 29, 1981, 56-154347
Int. Cl.³ G11C *11/40*
U.S. Cl. 365—222 **8 Claims**



4. A memory circuit comprising a plurality of memory cells

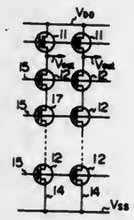
arrayed in rows and columns, a sense amplifier for each column, a true digit line and a complement digit line for each sense amplifier, the memory cells in each column being connected to at least one of the respective digit lines when the respective memory cells are enabled in a selected row thereby to cause a difference in potential between the true and complement digit lines in the same column, control means for operatively enabling said sense amplifiers thereby to make a potential at one of the true and complement digit lines at a low level and a potential at the other of the true and complement digit lines at a high level, a first detection circuit coupled to the true digit line of one of said columns for detecting that a potential thereof becomes said low level, a second detection circuit coupled to the complement digit line of said one of said columns for detecting that a potential thereof becomes said low level, column selection means for selecting the remainder of said columns other than said one of said columns, output means for outputing data from the selected column by said column selection means, and signal generating means coupled to said first and second detection circuits for generating a refresh end confirmation signal indicating that said sense amplifiers achieve their amplifying operations.

4,500,975

MASK ROM-TYPE SEMICONDUCTOR MEMORY DEVICE

Takehide Shirato, Hiratsuka, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Dec. 16, 1981, Ser. No. 331,478
Claims priority, application Japan, Dec. 26, 1980, 55-186886
Int. Cl.³ G11C *11/40*
U.S. Cl. 365—104 **5 Claims**



1. A read-only memory semiconductor device comprising:
a plurality of MIS (metal insulator semiconductor)-type transistors arranged in a matrix, with each of said MIS-type transistors corresponding to one memory information bit and having a source region and a drain region, some of said MIS-type transistors having a normally on characteristic, and the remaining of said MIS-type transistors having a normally off characteristic; and
at least one of said MIS-type transistors having a normally on characteristic and having a source region and a drain region with a greater depth than the depth of the source region and the drain region of said MIS transistors having a normally off characteristic.

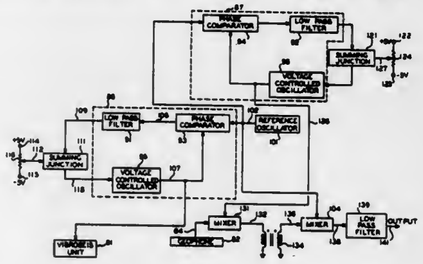
4,500,976

SEISMIC EXPLORATION

Richard E. DuBroff, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jun. 7, 1982, Ser. No. 385,754
Int. Cl.³ G01V *1/00*
U.S. Cl. 367—48 **4 Claims**

1. Apparatus comprising:
a plurality of seismic sources;
a plurality of seismic receivers;
a first phase comparator having first and second inputs and an output;
means for providing a reference signal having the form cos Ωt to the first input of said first phase comparator, wherein Ω is the frequency of said reference signal;
a first voltage controlled oscillator having an input and an output;
means for providing an output signal from the output of said first voltage controlled oscillator to the second input of said first phase comparator, wherein said first phase comparator establishes a first signal which is proportional to the phase difference between said reference signal and the output signal from said first voltage controlled oscillator;
means for combining a first DC voltage with said first signal to produce a first combined signal;
means for providing said first combined signal to the input of said first voltage controlled oscillator, wherein the output signal from said first voltage controlled oscillator has the form cos $(\Omega t+\phi_1)$ and wherein ϕ_1 is a phase angle which is determined by the magnitude of said first DC voltage;
means for controlling a first one of said plurality of seismic sources in response to the output signal from said first voltage controlled oscillator, wherein the phase angle of the wavefront induced into the earth by said first one of said plurality of seismic sources is ϕ_1, wherein the magnitude of said first DC voltage is chosen so as to produce a wavefront from said first one of said plurality of seismic sources which has a phase angle, as seen by one of said plurality of receivers, substantially equal to the phase angle, as seen by the same one of said plurality of receivers, of the wavefront produced by the one of said plurality



of seismic sources which is selected as a reference seismic source, wherein a wavefront from each one of said plurality of seismic sources is received by each one of said plurality of seismic receivers and wherein a first one of said seismic receivers provides an output signal having the form cos $\Omega t+\phi_2$ where ϕ_2 is the phase angle, as seen by said first one of said seismic receivers, of the wavefront produced by said reference seismic source;
a second phase comparator having first and second inputs and an output;
means for providing said reference signal to the first input of said second phase comparator;
a second voltage controlled oscillator having an input and an output;
means for providing an output signal from the output of said second voltage controlled oscillator to the second input of said second phase comparator, wherein said second phase comparator establishes a second signal which is proportional to the phase difference between said reference signal and the output signal from said second voltage controlled oscillator;
means for combining a second DC voltage with said second signal to produce a second combined signal;
means for providing said second combined signal to the input of said second voltage controlled oscillator, wherein the output signal from said second voltage controlled oscillator has the form cos $(\omega t+\phi_3)$ and wherein ϕ_3 is a phase angle which is determined by the magnitude of said second DC voltage;

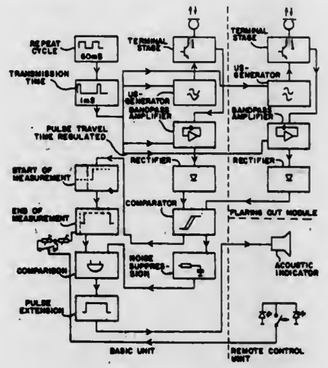
a first mixer having first and second inputs and an output;
means for providing the output signal from said first one of said plurality of seismic receivers to the first input of said first mixer;
means for providing the output signal from said second voltage controlled oscillator to the second input of said first mixer, wherein said first mixer establishes a third signal which is representative of the result of mixing the output signal from said second voltage controlled oscillator and wherein said third signal has a DC component and a component having a frequency of 2Ω;
means for removing a DC component from a signal;
a second mixer having first and second inputs and an output;
means for providing said third signal from the output of said first mixer through said means for removing a DC component from a signal to the first input of said second mixer;
means for providing said reference signal to the second input of said second mixer, wherein said second mixer establishes a fourth signal representative of the result of mixing the 2Ω component of said third signal and said reference signal;
a low pass filter; and
means for passing said fourth signal through said low pass filter to establish a fifth signal which has the form of a phase shifted signal having a frequency of Ω, wherein the magnitude of said second DC voltage is chosen so as to apply a phase shift to the output signal from said first one of said plurality of seismic receivers which will make the phase angle of said fifth signal substantially equal to the phase angle of the output signal from the one of said seismic receivers which is selected as a reference receiver.

4,500,977

METHOD AND APPARATUS FOR MEASURING A DISTANCE USING ULTRASONIC ECHO SIGNALS, PARTICULARLY FOR USE ON A MOTOR VEHICLE

Egon Gelhard, Thomas-Mann-Str. 10, D-5000 Köln, 51, Fed. Rep. of Germany

PCT No. PCT/DE81/00153, § 371 Date May 25, 1982, § 102(e) Date May 25, 1982, PCT Pub. No. WO82/01256, PCT Pub. Date Apr. 15, 1982
PCT Filed Sep. 24, 1981, Ser. No. 385,382
Claims priority, application Fed. Rep. of Germany, Sep. 25, 1980, 3036081
Int. Cl.³ G01S *15/18, 15/93*
U.S. Cl. 367—108 **9 Claims**



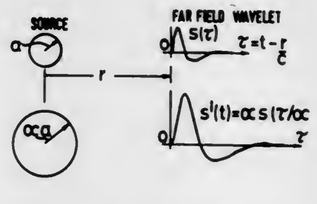
1. A circuit for measuring and indicating the separation distance between a vehicle and adjacent obstacles, comprising;
pulse controlled ultrasonic generator,
ultrasonic transmit-receive transducer connected to said generator for transmitting direct ultrasonic pulse signals to the ostacles, and wherein the ultrasonic signals reflected by the obstacles are received by said transducer;
an amplifier and detector circuit coupled to said transducer output for receiving and detecting both transmitted and received pulse signals;
a first comparator coupled to the output of said amplifier and detector circuit,
a start-stop counter coupled to the output of said first comparator for measuring the difference in time between the end of the transmitted ultrasonic signal, and the reception of the reflected signal from the obstacle;
a noise suppression circuit coupled to the output of said first comparator;
a second comparator coupled to both the output of said noise suppression circuit and the output of said start-stop counter;
wherein said start-stop counter begins the measurement time used for determining the separation distance at the corresponding end of the direct transmitted pulse signal appearing in said receiver circuit.

4,500,978

SEISMOGRAPHIC METHOD AND APPARATUS USING SCALED SOUND SOURCES

Antoni M. Ziolkowski, Twickenham, and William E. Lerwill, Keston, both of England, assignors to Seismograph Service Corporation, Tulsa, Okla.

Continuation of Ser. No. 142,924, Apr. 23, 1980, abandoned. This application Jul. 16, 1982, Ser. No. 399,119
Int. Cl.³ G01V *1/13, 1/40*
U.S. Cl. 367—142 **17 Claims**



1. A method of determining the location of sub-surface boundaries and/or the acoustic properties of sub-surface features in the earth, which method comprises employing a first point sound source and subsequently but at the same location as that of said first point sound source a second point sound source of the same type as the first point sound source to produce first and second mutually non-interfering sound waves of the same shape but at a different amplitude and time scale, the energy of the elastic radiation of the first source differing by a known factor from the energy of the elastic radiation of the second source and being such that the frequency spectra of the respective sound waves overlap, detecting reflections of said first and second sound waves from within the earth and generating therefrom respective first and second seismic signals and subjecting these two seismic signals to analysis and comparison to define the impulse response of the earth substantially in the absence of the far field source wavelet and noise.

4,500,979

OPTICAL SEISMIC TRANSDUCER

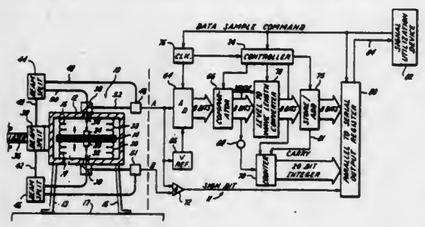
Gary L. Scott, Sugarland, Tex., assignor to Western Geophysical Co of America, Houston, Tex.

Filed Sep. 16, 1981, Ser. No. 302,873
Int. Cl.³ G01V *1/16, 1/18;* G01D *5/26*
U.S. Cl. 367—149 **13 Claims**

1. An improved seismic transducer of the type including a mass resiliently mounted for relative motion with respect to an earth-contacting housing in response to seismic waves and means for detecting motion of the mass with respect to the

housing utilizing a beam of coherent radiation reflected from a first face of the mass, wherein the improvement comprises:

means for reflecting a second beam of coherent radiation from a face of the mass opposite to the first face;



means for creating a pair of interference fringe patterns by separately combining each of the beams of coherent radiation with one or more reference beams; and

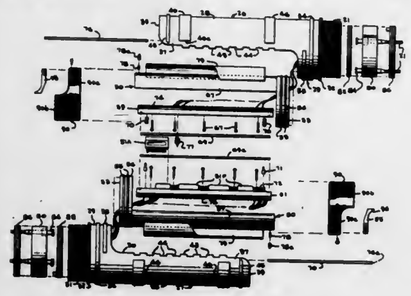
means for processing said interference fringe patterns to determine the magnitude and direction of said relative motion.

4,500,980

SEISMIC STREAMER CONNECTOR ASSEMBLY

James R. Copeland, Irving, Tex., assignor to Whitehall Corporation, Dallas, Tex.

Filed Aug. 24, 1981, Ser. No. 295,499
Int. Cl.³ G01V *1/00*; H04B *13/00*
U.S. Cl. 367—154 **26 Claims**



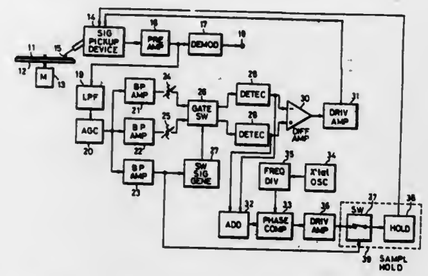
1. A marine acoustical streamer section for an elongated acoustical streamer cable made up of plural sections connected serially together, the streamer section comprising an elongated streamer jacket of generally cylindrical tubular configuration of predetermined diameter including a bundle of signal wires and plurals strain wires extending through the interior thereof and connector couplers at opposite ends thereof adapted to be secured in mated relation without rotation to companion connector couplers of the same construction at the ends of adjacent streamer sections, each coupler comprising an axially elongated coupler body having a fully cylindrical anchoring head portion at an end thereof and an axially elongated half cylindrical segment portion extending integrally from said anchoring head portion having a distal end spaced from the latter, the half cylindrical segment portions of the companion couplers when secured in mating relation collectively forming a cylinder coaxial with said streamer jacket of a diameter substantially corresponding to the streamer jacket diameter, the coupler body defining a partially segmented tubular shell having a concave cavity extending through the length of said segment portion, said anchoring head portion including strain cable anchoring means and means for passing the bundle of signal wires therethrough, the insulator core assemblies removably received in said concave cavities having multiterminal electrical pin and socket type plug panels supported in the concave cavity of the associated coupler body to be disposed in confronting immediately adjacent parallelism with and connected to a mating multiterminal electrical plug panel of a companion coupler to be mated therewith, the insulator core assemblies for each coupler body having resilient means interposed between the core assembly and the surrounding coupler body and between its associated electrical plug panel and the panel-supporting portions of the associated core assembly disposing them in floating relation relative to the coupler body so that deformation of the stress carrying coupler body is not transmitted to its associated electrical plug panel, and assembly means adjacent to the ends of the half cylindrical segment portions of the coupler bodies remote from their anchoring head portions for securing the coupler bodies together with their half cylindrical segment portions mated together, said assembly means comprising a locking ring rotatably supported on the anchoring head portion of its associated coupler body for rotary movement about the axis of the coupler body between angularly spaced locking and unlocking positions and having an interlock portion disposed to overlap and interlock with the distal end portion of the elongated half cylindrical segment portion of the companion coupler when those coupler bodies are mated together and the locking ring is in the locking position.

4,500,981

JITTER COMPENSATION SYSTEM IN A ROTARY RECORDING MEDIUM REPRODUCING APPARATUS

Hiroyuki Sugiyama, Isehara, Japan, assignor to Victor Company of Japan, Ltd., Kanagawa, Japan

Filed May 26, 1982, Ser. No. 382,276
Claims priority, application Japan, Jun. 1, 1981, 56-84190
Int. Cl.³ G11B *21/02*
U.S. Cl. 369—43 **5 Claims**



1. A jitter compensation system in a rotary recording medium reproducing apparatus having a reproducing transducer including a reproducing element for reproducing recorded signals from a rotary recording medium, said rotary recording medium having recorded thereon an information signal and also recorded thereon reference signals for tracking control with a predetermined period, said reference signals for tracking control recorded on said rotary recording medium comprising first and second reference signals for tracking control, said first and second reference signals being changed over for each recorded track turn of the information signal on said rotary recording medium and alternately recorded between each track turn, said rotary recording medium also having recorded thereon a third reference signal for indicating the changeover of said first and second reference signals, said first and second reference signals not being recorded in an interval in which said third reference signals exists, said jitter compensation system comprising:

separation means for separating said reference signals from a signal reproduced by said reproducing transducer;

detection means for detecting the separated reference signals

and for obtaining at least one detection signal having a period which is dependent on a jitter;

standard signal supplying means for supplying a standard signal having a period equal to said predetermined period;

Phase comparing means for comparing means for comparing phases of said standard signal from said standard signal supplying means and at least one detection signal from said detection means, to produce a phase comparison error signal;

displacing means for displacing the reproducing element of said reproducing transducer along a relative scanning direction with respect to said rotary recording medium, in response to the output error signal of said phase comparing means; and

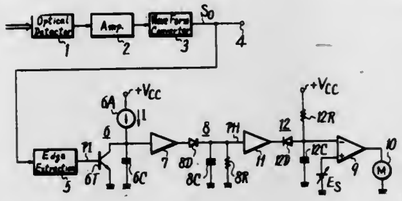
interrupting means responsive to the separated third reference signal, for interrupting the output of said phase comparing means during the interval in which said third reference signal exists.

4,500,982

SERVO CIRCUIT FOR A MOTOR FOR REPRODUCING A PCM AUDIO DISK

Tadao Yoshida, Kawasaki, Japan, assignor to Sony Corporation, Tokyo, Japan

Continuation of Ser. No. 381,958, May 25, 1982, abandoned.
This application May 1, 1984, Ser. No. 604,433
Claims priority, application Japan, May 29, 1981, 56-83028
Int. Cl.³ G11B *19/24*
U.S. Cl. 369—50 **5 Claims**



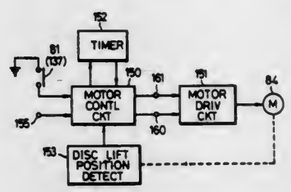
1. A servo circuit for driving a disk drive motor for a disk upon which a pulse code modulation signal with a run length limited code is recorded at a constant linear velocity comprising, an optical detector scanning said disk and producing a digital square wave output signal, a differentiating circuit receiving an output of said optical detector, and producing a pulse signal, a sawtooth signal producing circuit with a first time constant receiving the output of said differentiating circuit and the amplitude level of said sawtooth signal (SA) varying as a function of the output of said differentiating circuit, a maximum value holding circuit receiving the output of said sawtooth signal producing circuit, a first diode with one side connnected to the output of said maximum value holding circuit, a fixed voltage supply, a first resistor and a first capacitor connected between ground and said fixed voltage supply and the product of the resistance of said first resistor and the capacitance of said first capacitor being equal to a second time constant which is substantially more than said first time constant, an amplitude comparator connected to the second side of said first diode and to the junction point between said first resistor and first capacitor, a reference voltage source connected to said comparator, and said disk drive motor receiving the output of said comparator.

4,500,983

ROTARY RECORDING MEDIUM REPRODUCING APPARATUS

Hiroyuki Sugiyama, Isehara; Masaki Sakurai; Ryozo Abe, both of Yokohama, and Kenji Yoshihara, Chiba, all of Japan, assignors to Victor Company of Japan, Ltd., Japan

Filed Jul. 23, 1982, Ser. No. 401,321
Claims priority, application Japan, Jul. 28, 1981, 56-111838[U]
Int. Cl.³ G11B *19/10, 17/04*
U.S. Cl. 369—77.2 **5 Claims**



1. A rotary recording medium reproducing apparatus for reproducing a rotary recording medium accommodated within a case, said case comprising a jacket provided with a space for accommodating said rotary recording medium and an opening for allowing said rotary recording medium to go in and out of said jacket, and a lid member inserted through said opening of said jacket for closing said opening of said jacket, said rotary recording medium reproducing apparatus comprising:

an inserting opening through which said case is inserted;

a turntable for rotating said rotary recording medium;

lid member locking means and rotary recording medium clamping means respectively provided at an innermost part of said reproducing apparatus opposite to said inserting opening with respect to said turntable;

jacket opening enlarging means provided in the vicinity of said inserting opening, capable of moving over said turntable between a position in the vicinity of said inserting opening and said innermost part of said reproducing apparatus, in response to an operation in which said case is inserted into and pulled out from said reproducing apparatus;

a rotary recording medium supporting member provided at a center part of said turntable, capable of moving upwards and downwards independently of said turntable, for rising to support an inner peripheral part of said rotary recording medium so that said rotary recording medium is supported above said turntable;

a supporting member elevator mechanism for elevating said rotary recording medium supporting member, said supporting member elevator mechanism operating so that said rotary recording medium supporting member is in a raised state when said case or an empty jacket is inserted into said reproducing apparatus;

driving means for operating said supporting member elevator mechanism, said driving means operating in one direction to operate said supporting member elevator mechanism so that said rotary recording medium supporting member is raised, and operating in a reverse direction to operate said supporting member elevator mechanism so that said rotary recording medium supporting member is lowered;

detecting means for detecting that said rotary recording medium supporting member is at the raised position; and

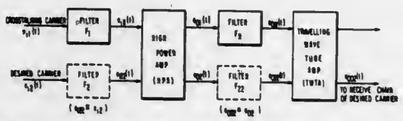
control means for controlling said driving means so as to operate in said reverse direction when said rotary recording medium supporting member is still at the raised position after a predetermined time period has elapsed from a time when said detecting means is operated.

4,500,984

EQUALIZER FOR REDUCING CROSSTALK BETWEEN TWO FDM/FM CARRIERS IN A SATELLITE COMMUNICATIONS SYSTEM

Osamu Shimbo, Bethesda, Md.; Lan N. Nguyen, Annandale, and Jack L. Dicks, Alexandria, both of Va., assignors to International Telecommunications Satellite Organization, Washington, D.C.

Filed Sep. 29, 1982, Ser. No. 427,097
Int. Cl.³ H04J 1/12
U.S. Cl. 370—6 **6 Claims**



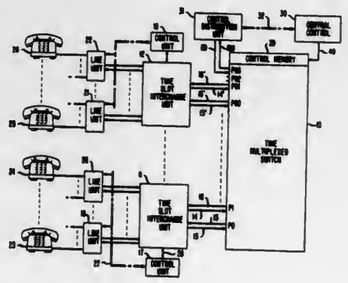
1. A satellite communications system, comprising: a transmitting earth station including at least two discrete carrier signal sources for producing two carrier signals, two modulators for individually modulating said two carrier signals and producing two modulated signals, modulator filter means for filtering said two modulator signals and producing two filtered signals, and a high power amplifier for amplifying said two filtered signals and transmitting two amplified signals, said high power amplifier having first non-linear transfer characteristics which produce intelligible crosstalk between said two transmitted amplified signals, and a receiving satellite including an input multiplex filter means for multiplexing said two transmitted amplified signals and producing two multiplexed signals, and a transponder travelling wave tube amplifier means for receiving said two multiplexed signals and producing two transponder output signals, said transponder travelling wave tube amplifier means having second non-linear transfer characteristics which produce intelligible crosstalk between said two transponder output signals, said modulator filter means of said transmitting earth station comprising an equalizer means for realizing a transfer function that takes into account the non-linearities of the high-power amplifier, the travelling wave tube amplifier and the responses of the input multiplexer filter, whereby said intelligible crosstalk between said two output signals is reduced under a first order approximation of the system.

4,500,985

COMMUNICATION PATH CONTINUITY VERIFICATION ARRANGEMENT

Shih-Jeh Chang, Naperville, Ill., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Dec. 8, 1982, Ser. No. 447,878
Int. Cl.³ H04J 3/14; H04M 3/22
U.S. Cl. 370—14 **20 Claims**



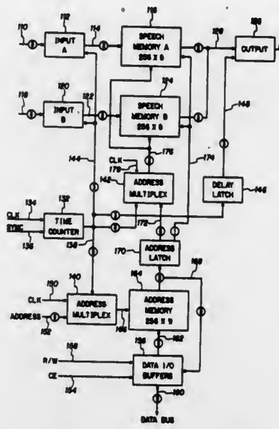
1. An arrangement comprising
switching means having an input port and an output port for selectively establishing a communication path between said input port and said output port,
a first communication unit connected to said input port,
a second communication unit connected to said output port,
means for generating a communication path identity signal defining said communication path and defining said first communication unit and
means for transmitting said communication path identity signal to said first communication unit and said second communication unit,
wherein said first communication unit comprises means responsive to said communication path identity signal for transmitting a source identification signal to said input port, said source identification signal defining said first communication unit and
wherein said second communication unit comprises means for receiving signals from said output port and means responsive to said communication path identity signal for generating an error signal when said source identification signal defining said first communication unit is not received from said output port by said second communication unit.

4,500,986

ASYMMETRICAL TIME DIVISION MATRIX APPARATUS

John H. Carver, Cedar Rapids, Iowa, assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Jan. 31, 1983, Ser. No. 462,297
Int. Cl.³ H04J 3/04
U.S. Cl. 370—58 **3 Claims**



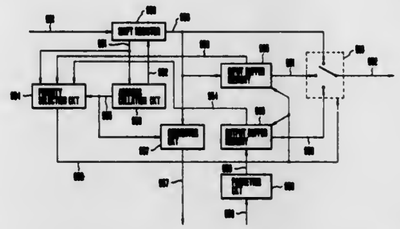
1. Time division multiplex apparatus having time and space switching capability comprising, in combination:
first means for supplying N signal groups each signal group having M sets of time division multiplexed signals where N and M are both integers greater than 1;
signal memory second means including input means, output means and addressing control means having first and second (N * M) signal storage location sets where "*" is a multiplication symbol;
sequential addressing third means for providing sequentially occurring and repeating first address signals;
input buffer serial to parallel fourth means, connected to said first, second and third means, for supplying signals as received from said first means to said first and second signal storage locations of said second means at times determined by addressing signals received from said third means;
fifth means for supplying second address signals;
address memory sixth means, including address signal input means, control means and output means, for storing (N * M) signal addresses wherein each signal address is (K+1) bits in length, where K is equal to $\log_2$ (N * M), at storage locations determined by signals applied at said control means thereof;
address memory multiplex seventh means, including clock input means, first and second address signal input and signal output means, and connected to said third, fifth and sixth means for supplying read and write addresses to said sixth means in accordance with clock signals supplied to said clock input means;
signal memory multiplex eighth means, including clock means, first and second address signal input means and signal output means, connected to said second, third and sixth means, for passing K addressing bits from said third and sixth means to each of said first and second signal storage location sets of said means;
ninth means connecting said sixth means to said second means for supplying the remaining addressing bit of said (K+1) bits in said sixth means to said first and second signal storage location sets in said second means;
parallel to serial output tenth means, including signal input, control input and N output means, connected to said second and third means for converting parallel signals from said first storage location set of said second means to serial output signals at one of said N output means in accordance with address signals received at said control means thereof from said third means; and
parallel to serial output eleventh means, including signal input, control input and N output means, connected to said second and third means for converting parallel signals from said second storage location set of said second means to serial output signals at one of said N output means in accordance with address signals received at said control means thereof from said third means.

4,500,987

LOOP TRANSMISSION SYSTEM

Satoshi Hasegawa, Tokyo, Japan, assignor to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Nov. 23, 1982, Ser. No. 443,876
Claims priority, application Japan, Nov. 24, 1981, 56-188118; May 24, 1982, 57-87485; May 24, 1982, 57-87486
Int. Cl.³ H04J 3/00
U.S. Cl. 370—60 **7 Claims**



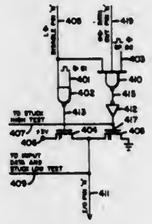
1. In a loop transmission system of the type including a plurality of transmission/reception terminals and a control terminal which are connected in a loop so as to perform packet communications among respective transmission/reception terminals, the improvement wherein said control terminal includes means for periodically sending out a signal indicative of a leading position of a packet, and means for establishing a loop synchronization such that a transmission line delay created while the packet circulates once through the loop will be an integer multiple of a length of said packet, wherein there is provided means which gives a degree of priority to information signal from each of said transmission/reception terminals in accordance with the type of said information signal, and wherein said transmission/reception terminal comprises first accumulating means for storing and retiring an input packet from an input transmission line; second accumulating means for accumulating a transmission packet sent out from information generating means connected to said transmission/reception terminal, and means for comparing degrees of priorities of said input packet, a delayed packet and said transmission packet for sending out a packet having the highest degree of priority.

4,500,988

VLSI WIRED-OR DRIVER/RECEIVER CIRCUIT

Donald B. Bennett, Burnsville; Lee T. Thorsrud, Saint Paul, and Thomas W. Petschauer, Bloomington, all of Minn., assignors to Sperry Corporation, New York, N.Y.

Filed Mar. 8, 1982, Ser. No. 355,803
Int. Cl.³ H03K 17/00
U.S. Cl. 370—85 **15 Claims**



1. The method of driving a communications bus line connecting a plurality of driver/receiver elements, said communication bus line having inherent capacitance, said method comprising:
applying a first signal to said bus line during a first time interval from each and all of said driver/receiver elements in order to drive said bus line to a first voltage level representing a first logic state; and,
applying a second signal to said bus line during a second time interval from those ones of said driver/receiver elements which desire to drive said bus line to a second voltage level representing a second logic state, said second signal as applied from any one or ones of said driver/receiver elements which desire to drive said bus line to said second voltage level being sufficient to do so drive said bus line to said second voltage level;
wherein if none of those said ones of said driver/receiver elements do desire to drive said bus line to said second voltage level then said inherent capacitance of said bus line will maintain said bus line substantially at said first voltage level representing said first logical state for at least a portion of said second time interval.

4,500,989

DIGITAL COMMUNICATION SYSTEM

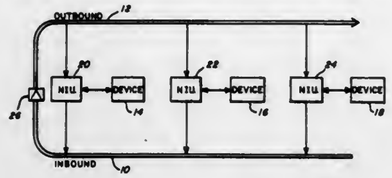
Ashraf M. Dahod, 21 Field Pond Dr., Reading, Mass. 01867

Filed Aug. 2, 1982, Ser. No. 404,039
Int. Cl.³ H04J 6/00; H04M 11/04
U.S. Cl. 370—85 **68 Claims**

1. In a digital communication system having a signal communication network and a plurality of subscriber devices for transmitting information on, and receiving inforamtion from, said network in a plurality of variable-length information messages each having a start time, the improvement wherein said system comprises
means for associating with each subscriber device at least one message number selected from a group of message numbers which are sequentially numbered, and each one of said subscriber devices comprises,
means responsive to predetermined information in at least one of said messages for generating a message count indic-

ative of a message number associated with the message transmitted on said network at the time the count is generated, and

means responsive to the start times of messages on said network and responsive to said message count for transmitting a message on said netork a predetermined time interval after the start of the passage was transmitted on the network by the subscriber device associated with the



message number immediately preceding a message number associated with said one subscriber device,

said associating means comprising means associated with each subscriber unit and operable temporarily to perform said message number association,

said associating means comprising means for associating each message number with either only one subscriber device or with a plurality of subscriber devices.

4,500,990

DATA COMMUNICATION DEVICE INCLUDING CIRCUITRY RESPONSIVE TO AN OVERFLOW OF AN INPUT PACKET BUFFER FOR CAUSING A COLLISION

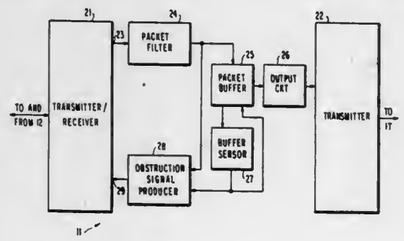
Fumio Akashi, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Apr. 13, 1983, Ser. No. 484,675

Claims priority, application Japan, Apr. 14, 1982, 57-61896; Dec. 24, 1982, 57-231602

Int. Cl.³ H04Q *9/00*

U.S. Cl. 370—85 **5 Claims**



1. A data communication device for use between a data processing device and a transmission medium of a data communication network including a plurality of transceivers by which said transmission medium is accessible by packets of digital signals, said network including collision detection, said packets including address parts by which said data communication device and said transceivers are identifiable, said data communication device comprising:

a receiver for receiving the digital signals from said transmission medium to produce received packets;

a packet buffer;

selecting means responsive to the address parts included in said received packets for selecting that one of said received packets as a selected packet which includes the address part for said data communication device, said selecting means thereby delivering said selected packet to said packet buffer to load said packet buffer with at least a portion of the selected packet delivered thereto;

packet delivering means coupled to said packet buffer for delivering the selected packet stored in said packet buffer to said data processing device;

sensing means coupled to said packet buffer for sensing whether or not said packet buffer is capable of storing an additional portion of the selected packet delivered thereto, said sensing means producing an overflow flag upon sensing that said packet buffer is not capable of storing said additional portion in addition to the portion already stored therein; and

obstruction signal transmitting means responsive to said overflow flag for transmitting an obstruction signal to said transmission medium, said obstruction signal causing a collision on said transmission medium.

4,500,991

CIRCUIT ARRANGEMENT FOR THE CONTROL OF THE TRANSMISSION OF DIGITAL SIGNALS, PARTICULARLY PCM-SIGNALS, BETWEEN STATIONS OF A TIME DIVISION MULTIPLEX TELECOMMUNICATION NETWORK PARTICULARLY PCM-TIME DIVISION MULTIPLEX TELECOMMUNICATION NETWORK

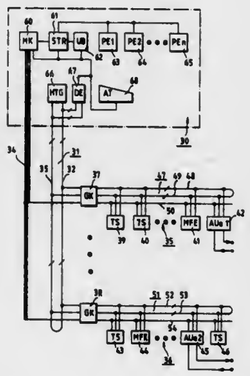
Hartmut Lubcke, and Martin Backhaus, both of Paderborn, Fed. Rep. of Germany, assignors to Nixdorf Computer AG, Furstenallee, Fed. Rep. of Germany

Continuation of Ser. No. 140,872, Apr. 16, 1980, abandoned. This application Jun. 2, 1982, Ser. No. 384,275

Claims priority, application Fed. Rep. of Germany, Apr. 17, 1979, 2915488

Int. Cl.³ H04J *3/06*

U.S. Cl. 370—88 **4 Claims**



1. In a circuit for the control of the transmission of pulse code modulated (PCM) signals between a plurality of stations over a closed circuit parallel PCM time-division multiplex channel, said plurality of stations being arranged in a plurality of groups, each group being connected by a pair of transmitting and receiving trunks to said closed circuit time-division multiplex channel, said multiplex channel having a number of individual lines at least equal to the number of encoded bits of a PCM signal, each transmitting trunk of a pair connecting a group of stations to said multiplex channel through a plurality of individual transmitting lines connected to corresponding individual lines of said multiplex channel, and each receiving trunk of a pair connecting a plurality of individual receiving lines to corresponding individual lines of said multiplex channel, a central control system having an address control unit comprised of means for selectively connecting said pairs of trunks to said closed circuit time-division multiplex channel and disconnect means for selectively disconnecting at least the transmission trunk of any of said group of stations, a synchronizing signal generator, said closed circuit time-division multiplex channel and each receiving trunk of each group of stations having a single line for distribution of said synchronizing signal to all connected stations, and a clock signal generator, said closed circuit time-division multiplex channel and each receiving trunk of each group of stations having a single line for distribution of said clock signal to all connected stations for synchronous time-division multiplex transmission and reception of signals by said stations over said closed circuit time-division multiplex channel during preassigned time slots.

4,500,992

SYNCHRONIZING ARRANGEMENT

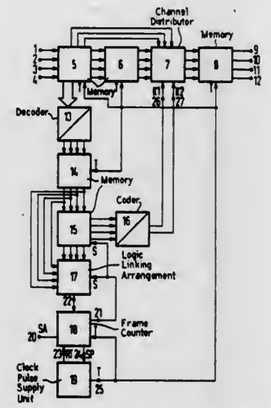
Heinrich Fladerer, Planegg, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Jul. 14, 1983, Ser. No. 513,402

Claims priority, application Fed. Rep. of Germany, Aug. 12, 1982, 3230027

Int. Cl.³ H04J *3/06*

U.S. Cl. 370—100 **11 Claims**



1. An arrangement for synchronizing outgoing channels at the outputs of a demultiplexer by frame code words received as blocks in an incoming channel of a time-division multiplex system, comprising:

a transmission path including an input for receiving frame code words, an output for providing synchronized outgoing channels, a first memory connected to said input, a second memory connected to said first memory, a channel distributor connected to said second memory, and a third memory connected between said channel distributor and said output; and

a control path comprising a decoder connected to said first memory for decoding frame code words, a fourth memory connected to said decoder, a fifth memory connected to said fourth memory and including a switch through output, a logic linking arrangement connected to said fourth and fifth memories, for recognizing frame code words, a frame counter connected to said logic linking arrangement for counting frames and connected to said logic linking arrangement and to said fifth memory to cause switch through of a corresponding channel predetermined in response to the recognition of a number of frame code words, and a coder connected to said switch through output and to said channel distributor for causing synchronous distribution of the output channels via said third memory.

4,500,993

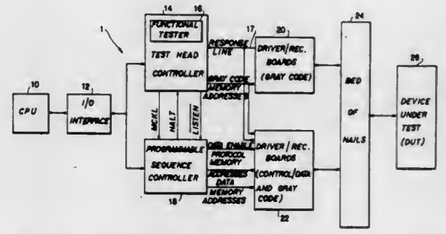
IN-CIRCUIT DIGITAL TESTER FOR TESTING MICROPROCESSOR BOARDS

Robert G. Jacobson, Brentwood, Calif., assignor to Zehntel, Inc., Walnut Creek, Calif.

Continuation-in-part of Ser. No. 160,562, Jun. 17, 1980, Pat. No. 4,339,819. This application May 19, 1982, Ser. No. 379,726

Int. Cl.³ G01R *31/28*; G06F *11/00*

U.S. Cl. 371—16 **24 Claims**



1. A circuit for use in an in-circuit digital tester for generating data bus and control input test signals to test electrical components of a circuit under test, the circuit-under-test having a plurality of data bus signal lines, the circuit comprising:

(a) a data memory responsive to data memory addresses for storing digital signals for generating data bus test signals in data signal sequences defined by a starting and a last data memory address, said stored signals for generating data bus test signals outputted in response to a predetermined sequence of data memory addresses;

(b) a control memory responsive to control memory addresses for storing digital signals for generating control test signals for a plurality of protocol control sequences in which each control sequence is defined by a plurality of control test signals generated in response to a predetermined sequence of control memory addresses, each control sequence having a starting and a last control memory address;

(c) a controller means, for generating the predetermined sequences of data and control memory addresses to generate selected ones of the control and data sequences, said controller means selectively enabling the generation of the data bus test signals in a data sequence during a selected control sequence; and

(d) a driver means associated with each said data and said control memory and responsive to the signal generating data from its associated memory, for generating the data bus and control sequence test signals, said driver means associated with said data memory outputting the data bus test signals when enabled by said controller means.

4,500,994

MULTI-RATE BRANCH METRIC PROCESSOR FOR MAXIMUM-LIKELIHOOD CONVOLUTIONAL DECODER

Ronald D. McCallister, Scottsdale, and James J. Crawford, Tempe, both of Ariz., assignors to Motorola, Inc., Schaumberg, Ill.

Filed Oct. 4, 1982, Ser. No. 432,489

Int. Cl.³ G06F *11/12*

U.S. Cl. 371—43 **8 Claims**

6. In a maximum-likelihood convolutional decoder, a branch metric processor for generating branch metrics corresponding to base code rates of $1/X$ and $1/Y$, where $X>Y$, comprising:

a first set of input registers comprising X registers each adapted to receive a soft-decision symbol;

a quantization input register adapted to receive an indication of a level of quantization of said symbols;

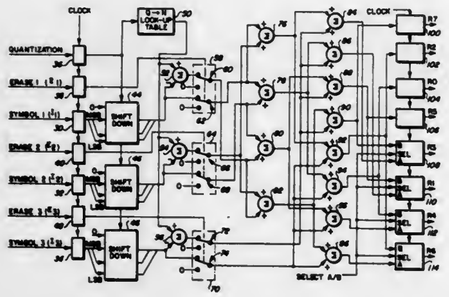
a second set of input registers comprising X registers each adapted to receive an erase control signal, each of said

registers in said second set being associated with a register in said first set;

means coupled to said quantization input register for producing a signal N equal to said level of quantization minus one;

a set of X subtraction circuits each coupled to one of said first set of input registers and to said signal N to produce a signal equal to N minus said symbol received by said one of said input registers;

a set of X switches having first and second outputs, each of said switches having a first position in which said first output is coupled to one of said subtraction circuits and said second output is coupled to the input register coupled to said one of said subtraction circuits and a second position in which each of said first and second outputs is equal



to zero, each of said switches being coupled to said input register in said second set which is associated with the input register coupled to said one of said subtraction circuits, whereby the erase control signal received by said input register determines the position of the switch;

summation means coupled to said outputs of said switches for producing a set of sums, each of said sums having a number of addends equal to X, said set of sums including all possible combinations of said outputs but excluding redundant combinations and combinations including two outputs from any one of said switches; and

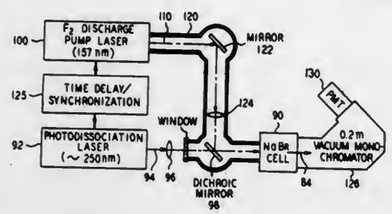
output means coupled to said summation means for outputing said sums as branch metrics, said output means being responsive to a select control signal to select the proper of said sums to correspond to one of said base code rates.

4,500,995

BROMINE ANTI-STOKES RAMAN LASER

Jonathan C. White, Lincroft, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed May 2, 1983, Ser. No. 490,783
Int. Cl.³ H03F *7/00*
U.S. Cl. 372—3 **10 Claims**



1. An anti-Stokes Raman laser comprising:

a medium of molecules each of which contains at least one bromine atom, wherein said medium is chosen from the group consisting of:

(a) Br_2
(b) alkali bromides
(c) CH_3Br
(d) C_3F_7Br
(e) organo bromides
(f) Tl Br
(g) NaBr;

means for dissociating said at least one bromine atom from said molecules so that a majority of dissociated bromine atoms go into at least one excited metastable state; and
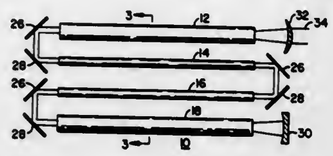
means for pumping said bromine atoms in said at least one metastable state with pump photons in order to provide anti-Stokes Raman output photons by transition from said metastable state to a final state, said output photons having energy equal to the pump photon energy plus an energy gain given by the energy difference between said metastable state and said final state.

4,500,996

HIGH POWER FUNDAMENTAL MODE LASER

Michael W. Sasnett, Los Altos; James L. Hobart, Los Altos Hills, and Larry A. Gibson, Redwood City, all of Calif., assignors to Coherent, Inc., Palo Alto, Calif.

Filed Mar. 31, 1982, Ser. No. 363,843
Int. Cl.³ H01S *3/03*
U.S. Cl. 372—19 **11 Claims**



1. A gas laser comprising:

a discharge-confining bore tube enclosing a gaseous lasing medium;

a pair of optical resonator mirrors aligned with said bore tube;

means for exciting said gaseous medium; and

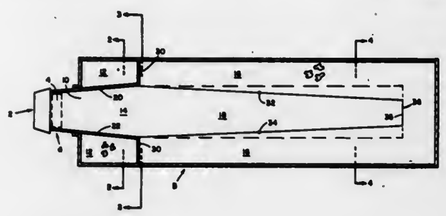
means for dispersing unwanted reflected light and providing desired mode operation comprising periodic annular projections within the interior of said discharge-confining bore tube, said annular projections having inside diameters which vary in accordance with the desired mode, as the mode diameter changes along said bore-tube.

4,500,997

CHEMICAL PUMP WITH INTEGRAL DIFFUSER

Gary F. Morr, Thousand Oaks, Calif., and William A. Duncan, Huntsville, Ala., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Apr. 1, 1982, Ser. No. 364,176
Int. Cl.³ H01S *3/22*
U.S. Cl. 372—58 **9 Claims**



1. In a closed laser system including a chemical laser having a gas storage and supply system, a self-contained device for pumping supersonic and subsonic gas flows comprising:

a. a chemically activated material capable of chemical reaction with the gas mixture being pumped;

b. thermal ballast material in a mixture with said chemically activated material;

c. a hermetically sealable vessel for containing said chemically active material;

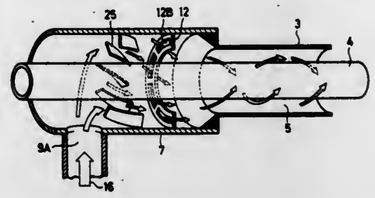
d. said vessel being provided with internal surfaces to provide gas flow, said internal surfaces being geometrically prescribed to accept a supersonic gas flow, to induce a stable normal shock, to diffuse the subsonic flow obtained after the normal shock, and to distribute the low velocity, subsonic gas flow to the reactive chemical activated material.

4,500,998

GAS LASER

Kouji Kuwabara; Hiroyuki Sugawara, both of Hitachi; Toshiharu Shirakura, Tohkai; Yukio Kawakubo, and Kouji Sasaki, both of Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Aug. 24, 1982, Ser. No. 410,955
Claims priority, application Japan, Sep. 9, 1981, 56-141022
Int. Cl.³ H01S *3/03*
U.S. Cl. 372—61 **10 Claims**



1. In a gas laser comprising; a discharge tube filled with a gas mixture and having mirrors at both ends thereof; electrodes disposed within said discharge tube for exciting the gas mixture; a cooling passage for introducing the gas mixture into said discharge tube through its one end and for exhausting the same from the other end of said discharge tube; and a heat exchanger for cooling the gas mixture and a blower for forcedly circulating it, both of which are disposed in said cooling passage,

an improved gas laser characterized in that said discharge tube has a double-tube construction comprising concentrically disposed inner and outer tubes, a tubular discharge space is formed between said inner and outer tubes, said cooling passage is connected to said discharge space a pair of mirror groups are disposed at both ends of said discharge space, each group comprising a plurality of mirrors arranged in a circumferential direction, and said pair of mirror groups are arranged in such a manner that a laser beam is reflected by said mirror pairs to repeatedly longitudinally traverse in said discharge space and each path of the laser beam between the corresponding mirror pairs in both said mirror groups obliquely intersects the central axis of said discharge space.

4,500,999

LINE EQUALIZER

Hiroshi Takatori, Kokubunji, and Toshiro Suzuki, Tama, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Nov. 24, 1982, Ser. No. 444,227
Claims priority, application Japan, Nov. 27, 1981, 56-189341
Int. Cl.³ H04B *3/14*
U.S. Cl. 375—16 **3 Claims**

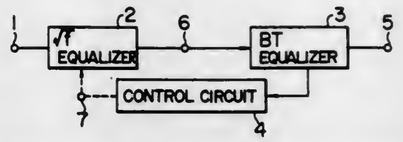
1. A line equalizer comprising:

a first equalizer for compensating a $\sqrt{f}$-characteristic of a transmission line;

a second equalizer having a subtractor for subtracting an echo component from the output of said first equalizer;

a decision circuit for discriminating code level of an equalized and coded signal outputted from said subtractor;

an equalization error detecting circuit for detecting an equalization error on the basis of the outputs from said subtractor and said decision circuit;



an echo detecting circuit for forming said echo component from the outputs of said decision circuit and said equalization error detecting circuit; and

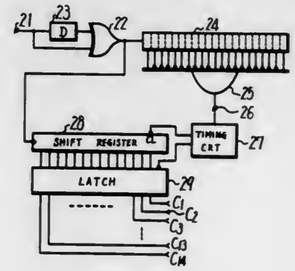
a control circuit for controlling gain of said first equalizer on the basis of signals obtained in said decision circuit and said equalization error detecting circuit of said second equalizer.

4,501,000

METHOD OF CODING BINARY DATA

Kornelis A. Immink; Jakob G. Nijboer, both of Eindhoven, Netherlands; Hiroshi Ogawa, and Kentaro Odaka, both of Tokyo, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Jul. 27, 1981, Ser. No. 286,982
Int. Cl.³ H03K *13/02*
U.S. Cl. 375—25 **13 Claims**



1. A method of encoding a binary digital signal, comprised of words of m bits, into a sequence of channel blocks each formed of an information block of n_1 serial bits followed by a separation block of a predetermined number of bits, where n_1 is greater than m, wherein, in a stream of such channel blocks, a d-constraint is satisfied such that consecutive bits of one type characterized by a transition are separated by at least d bits of another type characterized by an absence of a transition, and a k-constraint is satisfied such that no more than a maximum of k bits of the other type occur between successive bits of the one type, comprising the steps of:

receiving each word of m bits;

converting each such word into a corresponding information block of n_1 bits;

generating a set of possible separation blocks for use between successive information blocks so that said information and separation blocks together satisfy said d-constraint and said k-constraint;

initially forming a superblock of a plurality of successive information blocks catenated with respective possible

separation blocks, said superblock having a first information block therein;

determining the total DC imbalance for such initially formed superblock of said plurality of successive information words catenated with said respective possible separation blocks;

selecting for said initially formed superblock those possible separation blocks yielding the least total DC imbalance;

forming a subsequent superblock from said initially formed superblock, but excluding therefrom the first information block and separation block thereof, and from the next successive information block and another of said possible separation blocks;

determining the total DC imablance for such subsequent superblock;

selecting those possible separation blocks yielding the least total imbalance for said subsequent superblock; and

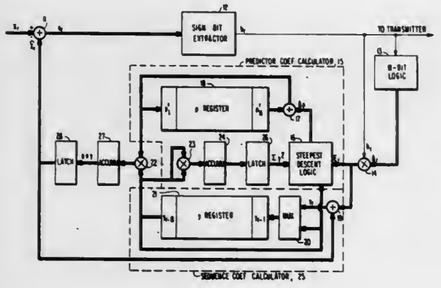
iterating the steps of forming a subsequent superblock, determining the DC imalance thereof and selecting the separation blocks therefor yielding the least total DC imbalance for the successive information blocks and associated separation blocks.

4,501,001

VARIABLE SLOPE DELTA CODING PROCESSOR USING ADAPTIVE PREDICTION

Krishnamoorthy Virupaksha, Rockville, and Samuel J. Campanella, Gaithersburg, both of Md., assignors to Communications Satellite Corporation, Washington, D.C.

Filed Nov. 4, 1982, Ser. No. 439,235
Int. Cl.³ H03K *13/22*
U.S. Cl. 375—30 **24 Claims**



1. A method for transmitting an input signal at a reduced bit rate, comprising the steps of:

determining a difference between an input signal and an estimate of said input signal;

transmitting as an output signal a sign bit of said difference;

providing an adaptive step size value in accordance with a predetermined number of sequential sign bits of said difference;

calculating a set of reconstructed signal values in accordance with sequential ones of said adaptive step size values and said estimate;

calculating a set of predictor coefficients in accordance with said reconstructed signal values and said sequential ones of said adaptive step size values; and

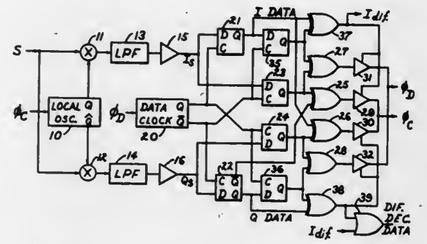
convolving said set of reconstructed signal values with said set of predictor coefficients to obtain a new value of said estimate.

4,501,002

OFFSET QPSK DEMODULATOR AND RECEIVER

Richard C. Auchterlonie, 5701 N. Sheridan #29-Q, Chicago, Ill. 60660

Filed Feb. 28, 1983, Ser. No. 470,053
Int. Cl.³ H04L *27/22*; H03D *3/02*
U.S. Cl. 375—86 **20 Claims**



12. In an offset QPSK demodulator receiving inphase and quadraphase signals in respective inphase and quadraphase channels and demodulating the signals to obtain data at a predetermined data rate, said inphase and quadraphase signals encoding respective inphase and quadraphase data streams having data transitions substantially offset from each other, a phase control signal generating apparatus comprising, in combination,

(a) means for sampling the inphase and quadraphase signals at approximately the data rate to alternately obtain data samples and control samples for each channel,

(b) means responsive to the data samples in each channel for generating transition-indicating signals for each channel, and

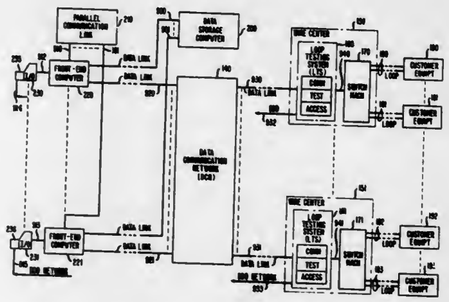
(c) first tristate means for comparing the data samples from each channel with the control samples from the other channel to generate a carrier phase control signal, said first tristate means being active in response to the transition-indicating signals.

4,501,003

DIAL PULSE MEASUREMENT CIRCUITRY

Hubert A. Miller, Manassas, Va., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Jul. 16, 1982, Ser. No. 399,181
Int. Cl.³ H04M *3/22*
U.S. Cl. 375—94 **6 Claims**
MICROFICHE APPENDIX INCLUDED
(18 Microfiche, 1055 Pages)



1. A method for determining if a signal comprising a substantially rectangular wave degraded by interference has completed a transition from its first level to its second level and for estimating the time spent at said second level, said signal being sampled at a rate significantly greater than the rate of said wave and the highest frequency of said interference to produce a sequence of samples and wherein each of said samples has been classified as a first level sample or a second level sample by comparison to a preselected threshold, said method comprising the steps of

(A) providing a monitor value initialized to said second level and a restart value initialized to said first level,

(B) monitoring said sequence for said monitor value and, upon detection, counting the number of samples generated until a predetermined number of consecutive samples have attained one of said levels, and once step (B) is entered from step (D), also incrementing an index until said number of consecutive samples have attained one of said levels,

(C) if said one of said levels is said restart value, returning to step (B), and

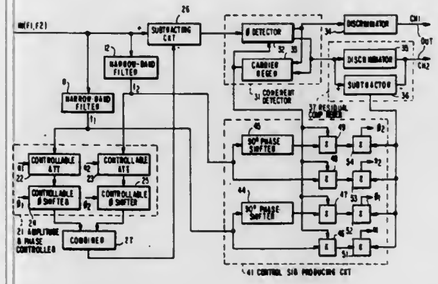
(D) if this step is entered for the first time, retaining the counted number of samples from step (B) as said index, interchanging said monitor value with said restart value and returning to step (B); otherwise, indicating the presence of said transition and providing said estimate in proportion to said index less said predetermined number.

4,501,004

DEVICE FOR ELIMINATING FM OR LIKE INTERFERENCE FROM A DIGITAL MICROWAVE SIGNAL

Yasuharu Yoshida; Hiroshi Seguchi, and Yoshimi Tagashira, all of Tokyo, Japan, assignors to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Jan. 25, 1983, Ser. No. 460,961
Claims priority, application Japan, Jan. 30, 1982, 57-12544; Jan. 30, 1982, 57-12545
Int. Cl.³ H04B *1/12*
U.S. Cl. 375—102 **5 Claims**



1. An interference elimination device for use in a digital microwave communication system, said device being responsive to an intermediate frequency device input signal accompanied by an interference carrier component of a frequency modulation microwave communication system and operating at an intermediate frequency band, for substantially eliminating said interference carrier component and comprising:

narrow-band filter means for extracting said interference carrier component from said device input signal to provide an interference carrier component signal;

control means responsive to an amplitude and a phase control signal for amplitude and phase controlling said interference carrier component signal to produce an amplitude and phase controlled signal;

subtracting means for subtracting said amplitude and phase controlled signal from said device input signal to produce a difference signal including a residual interference component; and

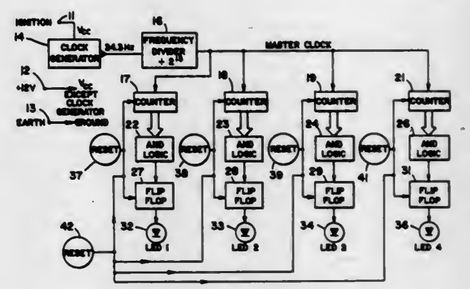
control signal producing means responsive to said difference signal and said interference carrier component signal for producing said amplitude and said phase control signal.

4,501,005

VEHICLE ELAPSED MILEAGE INDICATOR

Albert J. Miller, Campbell, Calif., assignor to Atlas Electronics International, Inc., Santa Clara, Calif.

Filed May 21, 1982, Ser. No. 380,913
Int. Cl.³ G04F *13/04*; G01R *23/10*
U.S. Cl. 377—20 **6 Claims**



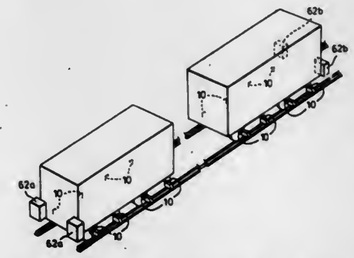
1. In a vehicle having an engine operated by repetitive ignition pulses, a device for indicating required vehicle maintenance at predetermined elapsed time periods corresponding approximately to indicated mileage intervals, including clock generator means adapted to receive the vehicle engine ignition pulses and to generate output pulses in predetermined correspondence thereto, frequency divider means connected to said clock generator means for generating a master clock signal, a plurality of counters connected to said master clock signal, a plurality of logic gates, each connected to selected outputs of a respective one of said counters to produce an actuating signal at a predetermined count, and means connected to said logic gates for indicating that said predetermined count has been attained to thereby show said time for vehicle maintenance readable in approximate mileage.

4,501,006

HOT-BOX SIGNALLING DEVICES

Michael Korenberg, 626 Algonquin Ave., Montreal, P.Q., Canada

Division of Ser. No. 178,189, Aug. 14, 1980, abandoned. This application Sep. 29, 1982, Ser. No. 427,032
Int. Cl.³ H03K *5/13*
U.S. Cl. 377—45 **4 Claims**



1. A system for detecting a signal produced by a vehicle-mounted signalling device of the type adapted to expel a marker material in response to an abnormal condition sensed by said device, the system comprising:

a first detector adapted to be mounted at a forward position on the vehicle in front of all of said signalling devices carried, by the vehicle;

a second detector adapted to be mounted at a rear position on the vehicle behind all of the said signalling devices;

each of said detectors being adapted to detect and respond to

the presence of said marker material expelled by one of said signalling devices, and thereupon produce a signal; and,

comparator means to which said detectors are connected, said comparator means being adapted to produce an output signal only when an input signal is received from said second detector without being preceded by a corresponding input signal from said first detector.

4,501,007

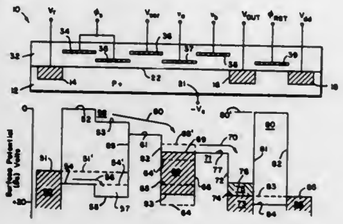
CCD DIFFERENTIATOR

William E. Jensen, San Pedro, Calif., assignor to Hughes Aircraft Company, El Segundo, Calif.

Continuation of Ser. No. 909,329, May 25, 1978, abandoned. This application Oct. 29, 1979, Ser. No. 88,801

Int. Cl.³ G11C *19/28*; H01L *29/78*

U.S. Cl. 377—60 **2 Claims**



1. A charge coupled device for differentiating an input signal, comprising:

means for providing a potential well for storing charge;

means for periodically generating a charge packet of fixed value and for applying said charge packet to said well;

means for changing the capacity of said well in response to said input signal such that the change in capacity of said well corresponds to the change in potential of said input signal; and

means for providing an output signal representative of the change in capacity of said well.

4,501,008

DEVICE FOR ELECTRONICALLY CONTROLLING LOOM COMPONENTS

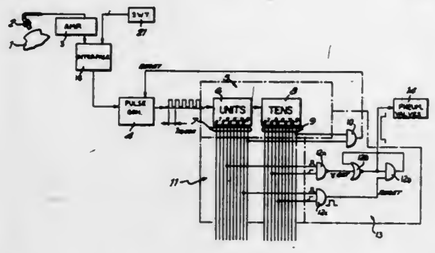
Henri J. Rosseel, Ieper, and Filip N. Deconinck, Zwevegem, both of Belgium, assignors to N.V. Weefautomaten Picanol, Belgium

Filed Jun. 4, 1982, Ser. No. 385,078

Claims priority, application Belgium, Jun. 17, 1981, 59214; European Pat. Off., Sep. 10, 1981, 81201008.0

Int. Cl.³ D03D *51/00*

U.S. Cl. 377—2 **5 Claims**



1. A device for generating electronic control signals for a pneumatic projecting loom comprising:

a mechanical cam lobe driven in synchronism with the crankshaft of said loom,

a detecting means for producing an enabling pulse only when cooperating with said cam lobe,

a pulse generator which is connected to said detecting means for producing a series of digital pulses of adjustably variable frequency only when cyclically enabled by said detecting means,

a number of series-connected decade pulse counters, whose first counter is series-connected to said pulse generator and whose parallel output pin-selectable conductors form the vertical components of a conductor matrix, the horizontal components of which are in turn formed from a pin-selectable number of conductors comprising the inputs of a pre-determined group of digital logic gates whereby a set of logic signals from said gates operate a set of control/drive circuits connected directly to the loom components to thus control specific cyclic events in said loom by the pin-selected values designated in said conductor matrix.

4,501,009

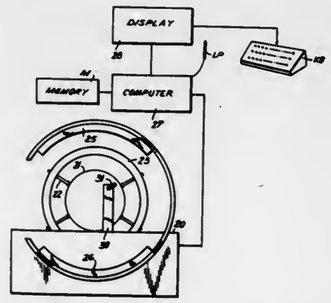
APPARATUS FOR STEREOTACTIC SURGERY

Manlio Abele, Garden City, N.Y., assignor to New York University, New York, N.Y.

Filed Aug. 17, 1981, Ser. No. 293,526

Int. Cl.³ G03B *41/16*

U.S. Cl. 378—19 **17 Claims**



1. In a computerized tomographic scanning system including a base, a source or radiation, detector means comprising first and second detector units for receiving said radiation and producing scanning signals, and positioning means on said base for supporting and moving said source and detector means in a defined relationship relative to each other, the improvement in said positioning means comprising:

(a) a generally C-shaped frame having upper and lower arms,

(b) means for securing said source to said upper arm and means for movably arranging said first and second detector units along a predetermined portion of said lower arm, said predetermined portion being disposed circumferentially opposite said source,

(c) first drive means for rotating said frame about a nominally horizontal axis Z, thereby rotating said source and said predetermined portion of said lower arm in the same direction about a circumferential path, with the rotation of said beam defining a basic radiation scan plane,

(d) second drive means for moving said frame along said Z axis for scanning in planes parallel to said basic plane and axially spaced along said Z axis, and

(e) third drive means on said frame for moving said detector means circumferentially along said predetermined portion of said lower arm, particularly for moving said first and second detector units together, one leading the other, in the same circumferential direction as said source for a first predetermined distance and moving the leading one of said detector units in the opposite direction for a second predetermined distance after each movement of said detector units together for said first predetermined distance, while said radiation beam is projected between said source and said detector means such that at all times said beam impinges on at least one of said detector units.

4,501,010

DENTAL X-RAY DIAGNOSTIC INSTALLATION

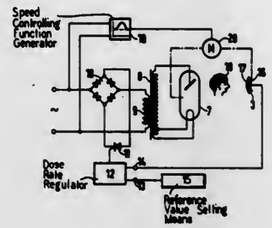
Ulrich Grassme, Nuremberg, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Sep. 28, 1982, Ser. No. 425,445

Claims priority, application Fed. Rep. of Germany, Oct. 30, 1981, 3143157

Int. Cl.³ G03B *41/16*

U.S. Cl. 378—38 **1 Claim**



1. A dental X-ray diagnostic installation comprising an exposure unit including an X-ray tube and a cassette holder, movable about a head location lying between the X-ray tube and the cassette holder for producing general exposures, a radiation detector which supplies an electrical output signal corresponding to the dose rate when it is struck by X-radiation being attached to the cassette holder, automatic exposure control means coupled with said radiation detector and including a dose rate regulator and an X-ray tube voltage control means interconnected in such manner that the X-ray tube voltage is influenced by the output signal of the radiation detector for the purpose of the control of the dose rate to a value producing an optimum film blackening, a single motor coupled with said X-ray tube and with said cassette holder for effecting movement thereof about the head location for the production of a general exposure during an exposure operation, and a function generator coupled with said single motor, said function generator storing respectively optimum velocity curves for various patient constitutions and controlling the speed of the single motor during an exposure operation for a given patient constitution such that the radiation dose influencing successive locations of an X-ray film in the cassette holder is approximately constant for the given patient constitution, and such that the dose rate regulator is only required to vary the radiation output from the X-ray tube within a relatively small range in comparison to the range which would be required in the absence of control of the speed of said single motor by said function generator.

4,501,011

ANGULATING LATERAL FLUOROSCOPIC SUSPENSION

Robert B. Hauck, Delafield, and Larry Susami, Wauwatosa, both of Wis., assignors to General Electric Company, Schenectady, N.Y.

Filed Sep. 22, 1982, Ser. No. 421,603

Int. Cl.³ G03B *41/16*

U.S. Cl. 378—196 **23 Claims**

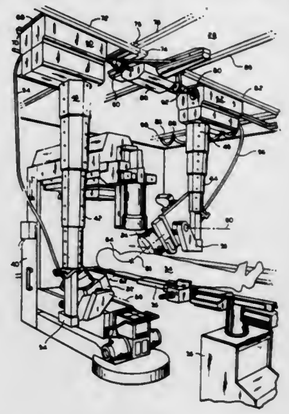
1. A diagnostic x-ray machine for being mounted to a support to conduct fluoroscopic examinations with x-rays passing through an isocenter, said machine comprising:

an x-ray source for emitting a pattern of x-rays disposed about a central ray;

an x-ray source carriage for supporting said x-ray source, wherein said source carriage is supported by said support and mounted for pivoting said x-ray source about a first axis and for translating said x-ray source in a first plane perpendicular to said first axis;

an x-ray detector for receiving a pattern of x-rays from said source;

an x-ray detector carriage for supporting said x-ray detector, wherein said detector carriage is supported by said support and mounted for pivoting said x-ray detector about a second axis parallel to said first axis and for translating said x-ray detector in a second plane perpendicular to said second axis; and



a bridge pivotally secured to said support for rotation about a third axis which is parallel to said first and second axes and passes through said isocenter, said bridge including coupling means for linking said x-ray source carriage and said x-ray detector carriage in such a way as to allow said x-ray source and x-ray detector to be maintained in diametric opposition with respect to said isocenter.

4,501,012

SPEECH RECOGNITION SYSTEM FOR AN AUTOMOTIVE VEHICLE

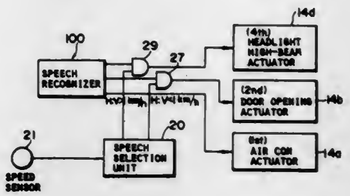
Norimasa Kishi, and Kazunori Noso, both of Yokosuka, Japan, assignors to Nissan Motor Company, Limited, Japan

Filed May 18, 1982, Ser. No. 379,506

Claims priority, application Japan, Nov. 17, 1980, 55-161605; Nov. 21, 1980, 55-164359

Int. Cl.³ G10L *1/00*; E05B *49/00*

U.S. Cl. 381—43 **14 Claims**



1. A speech recognition system for an automotive vehicle for outputting a plurality of command signals to a plurality of vehicle actuators independently in accordance with spoken instructions, which comprises:

(a) at least one microphone for transducing spoken instruc-

tions into corresponding electric signals and outputting signals corresponding thereto;

(b) a speech recognizer including a parameter extraction section, at least one reference pattern memory unit, a resemblance comparator, a resemblance determination section, and a controller, said speech recognizer being connected to said at least one microphone for extracting time-series matrix-phonetic pattern data from the transduced spoken instruction signals by said parameter extraction section, sequentially comparing the extracted matrix-phonetic pattern data with the reference matrix-phonetic pattern data of a plurality of reference spoken instructions previously stored in said reference pattern memory unit by said resemblance comparator in order to obtain resemblance rates of the extracted pattern data to the reference pattern data, and outputting a command signal corresponding to the transduced spoken instruction signals to one of the actuators when one of the obtained resemblance rates lies within a predetermined range in said resemblance determination section, all the mutual operations within said speech recognizer being executed in accordance with command signals outputted from said controller,

(c) at least one means for detecting vehicle-travelling conditions and outputting signals corresponding thereto; and

(d) a speed-dependent speech selection unit connected to both said speech recognizer and said vehicle-travelling condition detecting means for selectively allowing said speech recognizer to activate some of the actuators, according to the detected vehicle-travelling conditions, in response to the spoken instructions corresponding to the actuators,

whereby it is possible to prevent actuator operations due to said speech recognizer which would be inappropriate for the current vehicle speed.

4,501,013

CAR STEREO SET

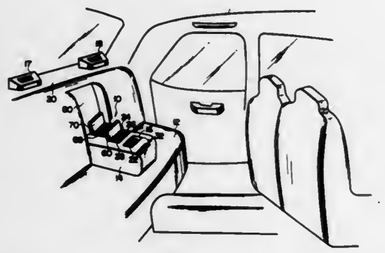
Masaaki Sato, Hachioji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Sep. 10, 1980, Ser. No. 185,804

Claims priority, application Japan, Sep. 18, 1979, 54-119720; Sep. 18, 1979, 54-119721; Sep. 18, 1979, 54-119722; Sep. 18, 1979, 54-119724; Sep. 18, 1979, 54-119725; Sep. 18, 1979, 54-119726; Sep. 18, 1979, 54-119727; Sep. 18, 1979, 54-119728; Sep. 18, 1979, 54-119729; Sep. 18, 1979, 54-119730; Sep. 18, 1979, 54-119731; Sep. 18, 1979, 54-119732

Int. Cl.³ H04R *5/00, 1/00*

U.S. Cl. 381—86 **14 Claims**



1. In a car stereo set for an automobile having a front and a rear seat, said rear seat having a substantially central recess and substantially central armrest which is movable into and out of said recess of said rear seat, said substantially central armrest having a portion which is selectively hidden from view when said armrest is in said recess of said rear seat, said armrest portion having an upper surface directed toward the ceiling of the automobile when said armrest is out of said recess of said rear seat,

the improvement comprising:

a car stereo set installed in said armrest, said stereo set comprising a portion having control knobs and a tape recorder mechanism having an operating portion incluidng a cassette loading chamber, said control knobs and cassette loading chamber being exposed on said upper surface of said portion of said armrest;

at least one openable cover means covering both said portion having said control knobs and said operating portion of said tape recorder mechanism, including said cassette loading chamber, said cover means presenting a flat surface, free of projecting knobs, at said upper surface of said armrest when said cover means is closed, said cover means permitting access to said control knobs and cassette loading chamber when opened;

wherein said car stereo set including said control knobs and operating portion of said tape recorder mechanism is hidden from view when said armrest is in said recess, and wherein a rear seat passenger can access said control knobs and operating portion of said tape recorder mechanism to operate said car stereo set when said armrest is moved out of said recess and said cover means is opened.

4,501,014

METHOD FOR ELIMINATING UNWANTED ACOUSTIC SIGNALS IN AUDIO PROGRAMS TO BE EDITED FOR REPRODUCTION

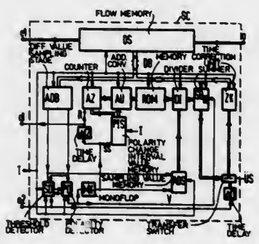
Björn Blüthgen, Celle, Fed. Rep. of Germany, assignor to Polygram GmbH, Hamburg, Fed. Rep. of Germany

Continuation of Ser. No. 285,546, Jul. 21, 1981, abandoned. This application Jan. 12, 1984, Ser. No. 570,413

Claims priority, application Fed. Rep. of Germany, Jul. 25, 1980, 3028334

Int. Cl.³ G11B *3/00*

U.S. Cl. 381—94 **5 Claims**



1. A method for suppressing unwanted acoustical signals in audio programs to be edited for reproduction, if unwanted signals occur, and for connecting audio signals immediately preceding and following said unwanted signals, such unwanted acoustical signals including abrupt signal level discontinuities, comprising the steps of:

storing predetermined values in memory corresponding to amplitudes of transition signals, detecting a signal level discontinuity, sampling an audio signal of said audio program between successive signal flow/polarity changes in such signal, preceding and following the detected discontinuity, to produce a plurality of sample values between said two successive signal flow/polarity changes, reading said predetermined stored values corresponding to amplitudes of transition signals and manifesting the same as a plurality of equally distributed values corresponding to a transfer function forming smooth transitions with said preceding and following audio signals; modifying the amplitudes of the said values read from said memory in accordance with the amplitude change between the preceding and following audio signals; whereby said modified values correspond to a transfer function smoothly connecting the preceding and following audio signals; delaying the sampled audio signals, and inserting, when a

said discontinuity is detected, the modified values into the delayed audio signals, whereby the sample values between said two signal flow/polarity changes in the region of a discontinuity are replaced with transition signals having a smooth transition with respect to the preceding and succeeding audio signals, said transition signals being matched to the time interval between the signal flow/-polarity changes.

4,501,015

APPARATUS FOR ELECTROACOUSTIC ENERGY CONVERSION

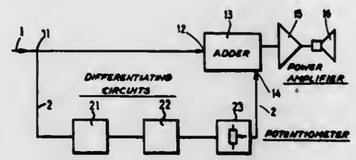
Jacobus C. van Dijk, Gouvernestraat 134 b, Rotterdam, and Erik von Michalofski, Planetenlaan 408, 3318 JS Dordrecht, both of Netherlands

Filed Aug. 23, 1982, Ser. No. 410,677

Claims priority, application Netherlands, Sep. 4, 1981, 8104108

Int. Cl.³ H04R *3/04*

U.S. Cl. 381—103 **9 Claims**



1. An apparatus for electroacoustical energy conversion comprising:

(a) a first channel for receiving an electrical input signal, said first channel including:

(i) a signal adder means having a first input supplied with said input signal and an output for supplying a first output signal;

(ii) a power amplifier for amplifying said first output signal; and

(iii) an electroacoustic transducer connected to an output of said power amplifier; and

(b) a second channel for receiving a portion of said input signal, said second channel including signal front edge slope sensing means for sensing the front edge slope of said input signal, said slope sensing means providing, only at frequencies above at least 50 kHz, a second output signal to a second input of said signal adder means, whereby said first output signal supplied to said power amplifier represents a sum of said input signal and said second output signal.

4,501,016

DEVICE FOR THE DYNAMIC ADJUSTMENT OF A BLACK/WHITE DISCRIMINATION THRESHOLD FOR THE PROCESSING OF IMAGES CONTAINING GREY VALUES

Eric H. J. Persoon, Eindhoven, Netherlands, and Ratnayake M. S. S. Abeysekera, Nugegoda, , assignors to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 22, 1982, Ser. No. 443,768

Claims priority, application Netherlands, Nov. 20, 1981, 8105256

Int. Cl.³ G06K *9/48*

U.S. Cl. 382—22 **10 Claims**

1. A device for the dynamic adjustment of a black/white discrimination threshold for the processing of images which are composed of a matrix of pixels which each contain a grey value and which are arranged in rows and columns of the matrix, said device comprising:

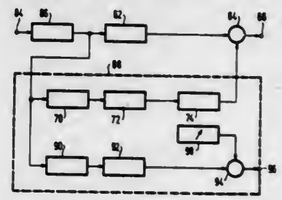
a. a first input (60) for receiving the grey values;

b. a threshold generator (68) which comprises:

b1. first means (72, 74) for receiving the grey values of a first sequence of first local sub-sets of pixels and for determining for each first local sub-set a local black/white threshold for presentation on a first output;

c. a discriminator (64) for presenting alternatively a black or a white signal on a second output (66) by comparison of the grey value of a pixel with the local black/white threshold applicable to the relevant pixel, characterized in that the threshold generator comprises:

b2. an edge detector which comprises a second input which is connected to said first input in order to receive the grey values of a second sequence of second local sub-sets of



pixels for the detection of a local edge between darker pixels and lighter pixels, thus forming an accept signal on a third output (82), but forming a reject signal on the third output in the absence of such a local edge;

there are also being provided:

d. time control means (62) for presenting a black/white signl of a pixel, on the basis of a first local sub-set of pixels to the second output together with the accept/reject signal on the third output which has been generated on the basis of a second local sub-set of pixels associated with said first local sub-set of pixels.

4,501,017

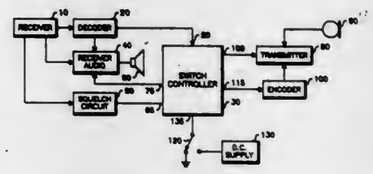
SWITCH CONTROLLER FOR OBTAINING A PLURALITY OF FUNCTIONS FROM A SINGLE SWITCH IN A TWO-WAY TRANSCEIVER AND METHOD THEREFOR

Mary L. Higgins, and David L. Muri, both of Sunrise, Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jan. 31, 1983, Ser. No. 462,486

Int. Cl.³ H04B *1/44, 1/02;* **H04Q** *7/00*

U.S. Cl. 455—78 **31 Claims**



1. In a transceiver including a transmitter and a receiver, a multiple function switch controller for controlling the transceiver by the operation of a switch, comprising:

a timer responsive to said switch for establishing a time interval, the duration of said time interval being independent of the operation of said switch;

first means, coupled to said timer and responsive to actuation of said switch occuring during said time interval, for producing a first transceiver control signal wherein said first control signal establishes a first operational mode for said transceiver; and

second means, coupled to said timer and responsive to actuation of said switch occuring outside of said time interval, for producing a second transceiver control signal wherein said second control signal establishes a second operational mode for said transceiver;

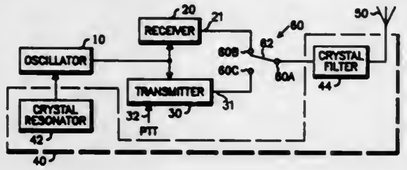
whereby, said switch controller allows said switch to control a plurality of transceiver functions.

4,501,018

SIMPLEX TRANSCEIVER EMPLOYING A COMMON PIEZOELECTRIC ELEMENT FOR TRANSMITTING AND RECEIVING

Charles W. Shanley, Plantation, and William V. Braun, Pompano Beach, both of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jul. 5, 1983, Ser. No. 511,024
Int. Cl.³ H04B *1/44, 1/54*
U.S. Cl. 455—83 **22 Claims**



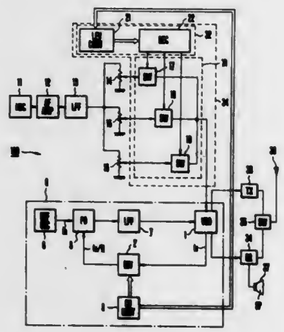
1. A radio frequency transceiver comprising:
radio frequency receiver means for receiving input signals at a first predetermined frequency;
radio frequency transmitter means for generating output signals at said first predetermined frequency;
oscillator means, coupled to each of said transmitter means and said receiver means, for generating signals which control the frequency on which said receiver means receives and said transmitter means transmits;
piezoelectric resonator means, coupled to said oscillator means, for controlling the frequency of the signals generated thereby;
piezoelectric filter means, selectively coupled to said receiver and transmitter means, for filtering input signals provided to said receiver means and for filtering output signals generated by said transmitter means,
said piezoelectric resonator means and said piezoelectic filter means each operating at or near said first predetermined frequency.

4,501,019

FREQUENCY MODULATION TRANSMITTER

Masayuki Matsukura, and Yukio Fukumura, both of Tokyo, Japan, assignors to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Dec. 17, 1982, Ser. No. 450,787
Claims priority, application Japan, Dec. 17, 1981, 56-204979
Int. Cl.³ H04B *1/04*
U.S. Cl. 455—112 **1 Claim**



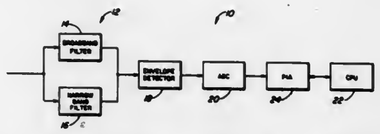
1. In a frequency modulation transmitter comprising: a transmitter section; a frequency synthesizer for operating the transmitter section including a loop connection of a voltage controlled oscillator, a frequency divider for frequency dividing the output signal of the voltage controlled oscillator and a comparator for comparing the output signal of the frequency divider with a reference frequency signal, and a channel controller for generating channel designation information for setting the frequency division ratio of the frequency divider; means for applying a modulation input signal to the voltage controlled oscillator; and switch means for setting the level of the modulation input signal according to the frequency division ratio of the frequency divider as set by the channel controller, said level setting means comprises: means, responsive to the channel designation information of said channel controller, for generating code signals representative of a plurality of sub-frequency bands within a transmission frequency band in use; means for decoding the code signals to generate corresponding analog signals; a plurality of means, connected to said modulation input signal applying means, for changing the level of the modulation input signal; and a plurality of switches, each connected between each level changing means and said voltage controlled oscillator, each being actuated in response to each of the analog signals.

4,501,020

SPECTRUM SURVEILLANCE RECEIVER SYSTEM

Philip E. D. Wakeman, Nepean, Canada, assignor to Her Majesty in Right of Canada, Canada

Filed Sep. 21, 1982, Ser. No. 420,894
Int. Cl.³ H04B *17/00*
U.S. Cl. 455—226 **13 Claims**



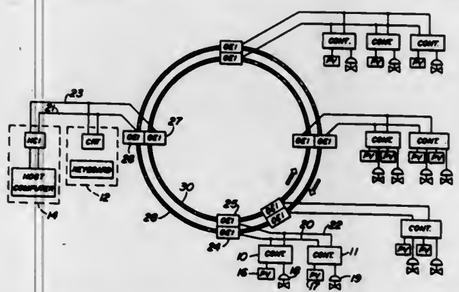
7. A spectrum surveillance apparatus for surveilling signals within a predetermined RF band and identifying at least the type of modulation of signals within said band, said apparatus comprising:
a receiver adapted to receive RF signals at a variable reception frequency within said RF band and convert any signal at that frequency to an IF signal having a predetermined IF;
first sampling means for sampling the IF envelope of said IF signal;
second sampling means for sampling said IF signal and providing AM, FM and DSB lock indication and modulation indication outputs;
means responsive to said first and second sampling means for providing signals representative of at least the variance and the percentage of said first sample means samples having at least one predetermined amplitude and signals representative of the percentage of the samples of said second sampling means which are indicative of a condition of lock and modulation;
comparator means for comparing said signals of said responsive means against predetermined sets of reference values, each set being distinctive of a particular modulation type, and providing a first output indicative of the type of modulation of said signal when said responsive means signals substantially match the reference values of said modulation type and a second signal indicative of an unidentified signal when said responsive means signals do not match any of said sets of reference values.

4,501,021

FIBER OPTIC DATA HIGHWAY

Edward L. Weiss, Quakertown, Pa., assignor to General Signal Corporation, Stamford, Conn.

Filed May 3, 1982, Ser. No. 373,916
Int. Cl.³ H04B *9/00*
U.S. Cl. 455—601 **4 Claims**



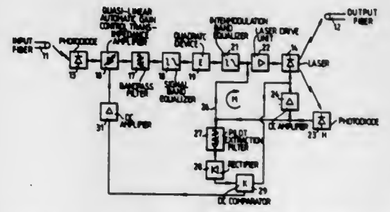
4. A data communications system for providing communications between any of a plurality of stations or groups of stations, comprising:
a first fiber optic data highway connecting all of said stations or groups of stations in a loop configuration and enabling optical data to be transmitted from any one station completely around said loop for reception by a selected other station;
a second fiber optic data highway providing a redundant connection of all of said stations or groups of stations in a similar loop configuration enabling the exact same optical data to be transmitted from said one station to said selected other station in a direction opposite to that of said first highway;
optical electrical interface means connecting each of said stations to said first and second loops, said interface means each having a first transmitter-receiver in series in said first highway and a second transmitter-receiver in series in said second highway so that data signals are propagated completely around both of said highways and received by the transmitting station to provide a check on the continuity of said highways, said interface means also including means for disconnecting the transmitters associated with the transmitting station from the receivers associated with that station so that the propagation of said data signals does not continue around the loops more than once.

4,501,022

OPTICAL TRANSMISSION SYSTEM AND METHOD

Thomas Oswald, Dartford, England, assignor to International Standard Electric Corporation, New York, N.Y.

Filed Nov. 30, 1982, Ser. No. 445,623
Claims priority, application United Kingdom, Dec. 3, 1981, 8136508
Int. Cl.³ H04B *9/00*
U.S. Cl. 455—601 **29 Claims**



1. A method of optical transmission of an analog signal whose statistical properties approximate "white noise", said analog signal having a mean signal value and being transmitted by a repeater having a minimum threshold signal value comprising the step of increasing said mean signal value when the peak value of said analog signal is equal to or exceeds the difference between said mean signal value and said minimum threshold signal value.

277,614
SWIM GOGGLES
Simon C. Fireman, Quincy, Mass., assignor to Aqua-Leisure Industries, Inc., Avon, Mass.
Continuation of Ser. No. 413,733, Sep. 1, 1982, abandoned. This application Sep. 30, 1982, Ser. No. 429,283
Term of patent 14 years
U.S. Cl. D2—234



277,615
POCKETED BOOT
Robert J. Gamm, St. Louis, Mo., assignor to Kangaroos U.S.A., Inc., St. Louis, Mo.
Filed Mar. 12, 1982, Ser. No. 357,487
Term of patent 14 years
U.S. Cl. D2—274



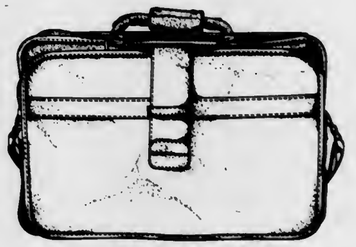
277,616
ATHLETIC SHOE WITH COUNTER POCKET
Robert J. Gamm, St. Louis, Mo., assignor to Kangaroos U.S.A., Inc., St. Louis, Mo.
Filed Oct. 8, 1982, Ser. No. 433,462
Term of patent 14 years
U.S. Cl. D2—309



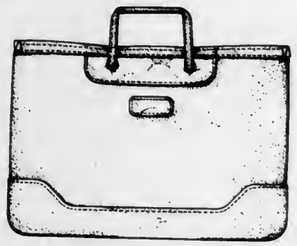
277,617
NECKTIE
Cheng C. Chen, 2-6th Fl., 13, La. 118, Chung Ching S. Rd. Sec. 1, Taipei, Taiwan
Filed Apr. 23, 1982, Ser. No. 371,347
Term of patent 14 years
U.S. Cl. D2—354



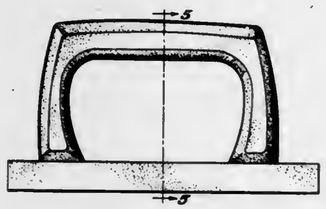
277,618
CARRY-ON LUGGAGE
Harvey J. Bomes, Wellesey, Mass.; John J. Migliore, Barrington, R.I.; John Pullchino, Wellesey, and Jack Barber, Cambridge, both of Mass., assignors to American Tourister, Inc., Warren, R.I.
Filed Jan. 18, 1983, Ser. No. 458,952
Term of patent 14 years
U.S. Cl. D3—71



277,619
PORTFOLIO CASE
Harvey J. Bomes, Wellesey, Mass.; John J. Migliore, Barrington, R.I.; John Pulichino, Wellesey, and Jack Barber, Cambridge, both of Mass., assignors to American Tourister, Inc., Warren, R.I.
Filed Jan. 18, 1983, Ser. No. 458,953
Term of patent 14 years
U.S. Cl. D3—71



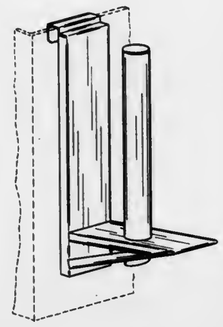
277,620
HANDLE FOR A BAG
Maxime Parrochia, Quartier l'Iiate, La Verpilliere, 38290, France
Filed Apr. 1, 1982, Ser. No. 364,284
Claims priority, application France, Nov. 23, 1981, 81 4023
Term of patent 14 years
U.S. Cl. D3—54



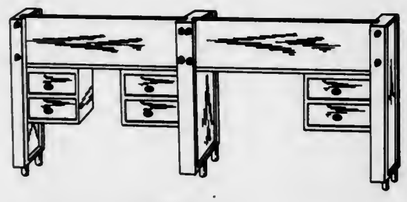
277,621
CHAIR
Anthony F. Albanese, Upper Montclair, N.J., assignor to I.P.F. International, Inc., Paterson, N.J.
Filed Dec. 16, 1982, Ser. No. 450,233
Term of patent 14 years
U.S. Cl. D6—334



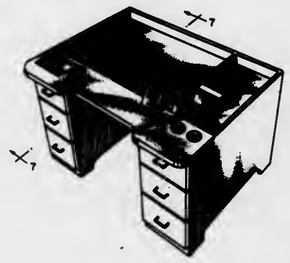
277,622
BATHROOM TISSUE HOLDER
Robert Servadio, 3721 Parkview Ave., Pittsburgh, Pa. 15213
Filed Mar. 23, 1983, Ser. No. 477,919
Term of patent 14 years
U.S. Cl. D6—520



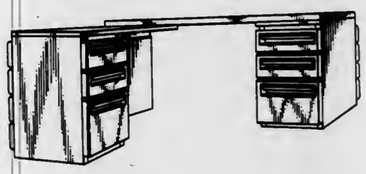
277,623
CABINET UNIT FOR LAVATORY BASINS
James J. Palka, Arlington Heights, Ill., assignor to Pace Industries Inc., Chicago, Ill.
Filed Apr. 22, 1982, Ser. No. 370,944
Term of patent 14 years
U.S. Cl. D6—423



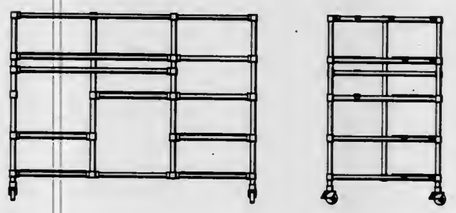
277,624
MAIL EXTRACTING AND SORTING DESK
Albert F. Stevens, Moorestown, and Paul E. Haley, Hammonton, both of N.J., assignors to Opex Corporation, Cherry Hill, N.J.
Filed Oct. 20, 1981, Ser. No. 312,949
Term of patent 14 years
U.S. Cl. D6—422



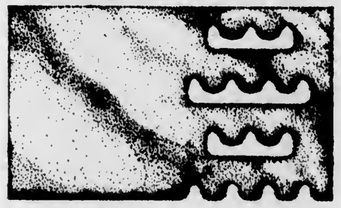
277,625
COMBINED DESK AND RETURN
Bruce R. Hannah, Cold Spring, N.Y., assignor to Knoll International, Inc., New York, N.Y.
Division of Ser. No. 153,870, May 28, 1980, Pat. No. Des. 270,409. This application Feb. 22, 1983, Ser. No. 468,377
Term of patent 14 years
U.S. Cl. D6—422



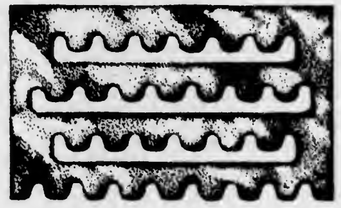
277,626
MOBILE CLOTHIING DISPLAY RACK
Jonathan M. Evans, San Francisco, Calif., assignor to Esprit de Corp, San Francisco, Calif.
Filed Jun. 1, 1982, Ser. No. 383,352
Term of patent 14 years
U.S. Cl. D6—317



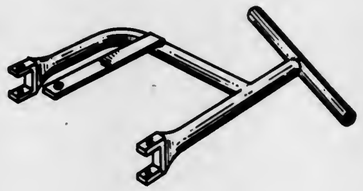
277,627
INTERIOR SHELF FOR A SECURITY SAFE, GUN CABINET, VAULT OR THE LIKE
Stanford E. Shaw, Orem, Utah, assignor to Provo Steel and Supply Company, Salt Lake City, Utah
Filed Nov. 15, 1982, Ser. No. 441,505
Term of patent 14 years
U.S. Cl. D6—574



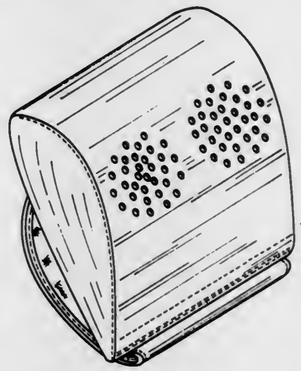
277,628
INTERIOR SHELF FOR A SECURITY SAFE, GUN CABINET, VAULT OR THE LIKE
Stanford E. Shaw, Orem, Utah, assignor to Provo Steel & Supply Company, Salt Lake City, Utah
Filed Nov. 15, 1982, Ser. No. 441,506
Term of patent 14 years
U.S. Cl. D6—514



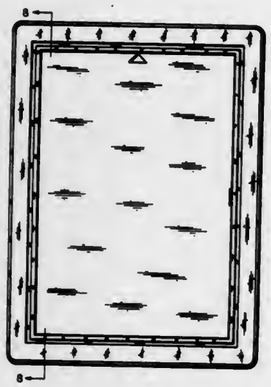
277,629
SUPPORT BRACKET FOR A GOLF BUGGY SEAT
Douglas Murray, 36 Tennyson Rd., Mortlake, New South Wales, Australia
Filed Apr. 27, 1982, Ser. No. 372,391
Claims priority, application Australia, Nov. 19, 1981, 85807
Term of patent 14 years
U.S. Cl. D6—500



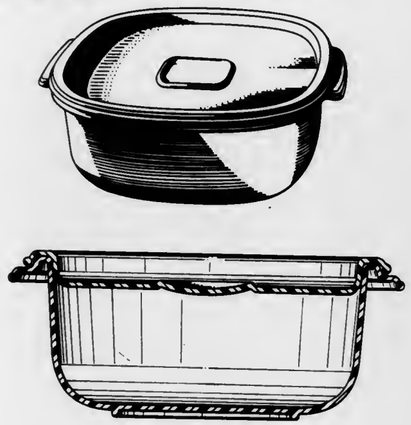
277,630
STEREO HEADREST FOR DENTAL CHAIRS
David V. Olson, 324 IDS Tower, Minneapolis, Minn. 55402, and Steven T. Matthews, 8900 Penn Ave. S., Bloomington, Minn. 55431
Filed Sep. 29, 1982, Ser. No. 428,126
Term of patent 14 years
U.S. Cl. D6—501

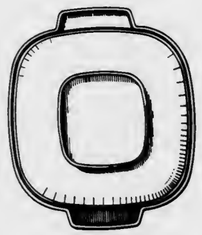


277,631
DOCUMENT HOLDER
Fred C. Blome, 6447 Hilltop La., Maumee, Ohio 43537
Filed Dec. 29, 1982, Ser. No. 454,462
Term of patent 14 years
U.S. Cl. D6—311

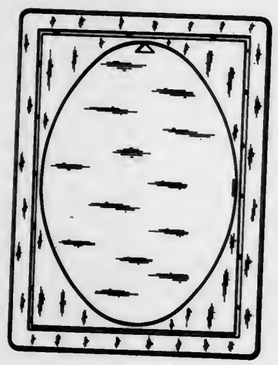


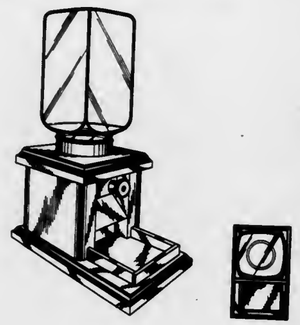
277,632
FOOD STORAGE DISH
Donald J. Staufenberg, Hudsonville, Mich., assignor to Rubbermaid Incorporated, Wooster, Ohio
Filed Feb. 19, 1982, Ser. No. 350,306
Term of patent 14 years
U.S. Cl. D7—76



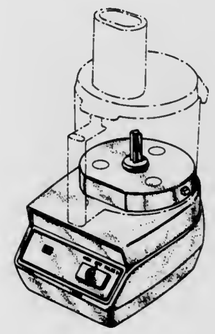


277,633
DISPENSER FOR CANDY, NUTS OR THE LIKE
Thomas M. McClellan, 208 Alger Dr., Blue Springs, Mo. 64015, assignor to Thomas M. McClellan, Blue Springs, Mo.
Filed May 28, 1982, Ser. No. 383,015
Term of patent 14 years
U.S. Cl. D7—76





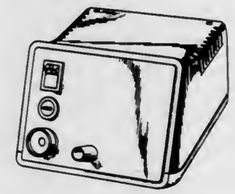
277,634
FOOD PROCESSOR POWER UNIT
Lawrence A. Doggett, Dayton, Ohio, assignor to Hobart Corporation, Troy, Ohio
Filed Dec. 20, 1982, Ser. No. 451,128
Term of patent 14 years
U.S. Cl. D7—386



277,635
OPENER FOR PULL-TAB CANS AND BOTTLES
Glenn A. Sherwood, 1044 Menlo Oaks, Menlo Park, Calif. 94025
Filed Oct. 26, 1981, Ser. No. 315,356
Term of patent 14 years
U.S. Cl. D8—18



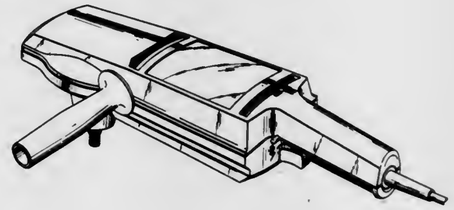
277,636
CONTROL HOUSING FOR A SOLDERING DEVICE
Günther Rittmann, Lochgau, Fed. Rep. of Germany, assignor to The Cooper Group Deutschland GmbH, Besigheim, Fed. Rep. of Germany
Division of Ser. No. 321,316, Nov. 13, 1981,. This application Dec. 9, 1983, Ser. No. 559,873
Claims priority, application Fed. Rep. of Germany, May 13, 1981, MR18189
Term of patent 14 years
U.S. Cl. D8—30



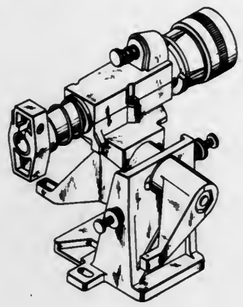
277,637
WOOD SPLITTER
Jeffrey H. TePastte, 2797 Croton Rd., Newago, Mich. 49337, and Kenneth L. Friedrich, 11337-52nd St., Lowell, Mich. 49331
Continuation-in-part of Ser. No. 212,692, Dec. 3, 1980,. This application Aug. 22, 1983, Ser. No. 525,016
Term of patent 14 years
U.S. Cl. D8—47



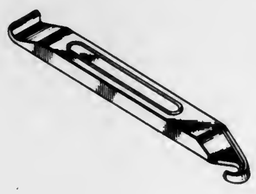
277,638
SANDER/POLISHER
Robert I. Somers, Raleigh, N.C., assignor to Black & Decker Inc., Newark, Del.
Filed Mar. 30, 1982, Ser. No. 363,643
Term of patent 14 years
U.S. Cl. D8—62



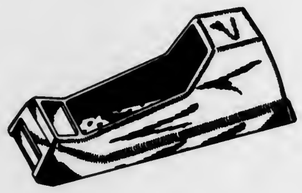
277,639
DRILL BIT HOLDER FOR SHARPENING OR SIMILAR ARTICLE
Edward V. Welliver, 3522 Rotary Rd., Rockford, Ill. 61109
Filed Mar. 30, 1982, Ser. No. 363,519
Term of patent 14 years
U.S. Cl. D8—72



277,640
PLASTIC TIRE LEVER
Joannes H. Drexler, Doesburg, Netherlands, assignor to B.V. Machine-en Metaalwarenfabriek "Dremefa", Doesburg, Netherlands
Filed Oct. 13, 1982, Ser. No. 434,090
Claims priority, application Benelux, Apr. 20, 1982, 56784-01/02
Term of patent 14 years
U.S. Cl. D8—88



277,641
PLANING TOOL
Robert R. Hayes, Euclid, and George H. Frost, Kent, both of Ohio, assignors to Oatey Co., Cleveland, Ohio
Filed Aug. 14, 1981, Ser. No. 293,001
Term of patent 14 years
U.S. Cl. D8—101



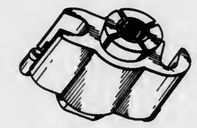
277,642
GROMMET TAB
Cornelius A. Hinsperger, 21 Richgrove Dr., #710, Weston, Ontario, Canada
Filed Sep. 20, 1982, Ser. No. 420,693
Claims priority, application Canada, Aug. 26, 1982, 26-08-82-1
Term of patent 14 years
U.S. Cl. D8—356

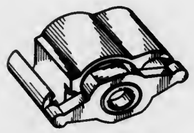


277,643
HOLDER AND GROUND ANCHOR UNIT FOR RECTANGULAR FENCE POSTS
David G. Fambrough, 13205 S. Hills Dr., Reno, Nev. 89511
Filed Aug. 5, 1982, Ser. No. 405,682
Term of patent 14 years
U.S. Cl. D8—373



277,644
LOCKING DEVICE FOR AN END CLAMP FOR METAL WIRES
Esko M. Tölkkö, Porvoo, Finland, assignor to Oy Ensto AB, Porvoo, Finland
Filed Aug. 17, 1982, Ser. No. 408,744
Term of patent 14 years
U.S. Cl. D8—396

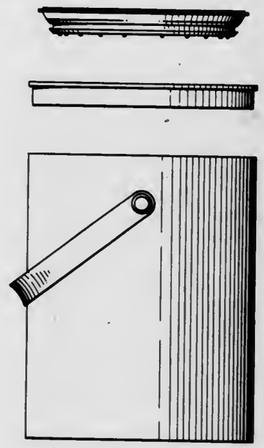




277,645
SECURITY STOP FOR DOORS
Brian F. McGarry, 578 Harewood Rd., Christchurch, New Zealand
Filed Oct. 26, 1982, Ser. No. 436,713
Claims priority, application New Zealand, May 14, 1982, 17693
Term of patent 14 years
U.S. Cl. D8—402



277,646
COMBINED COVERED PAIL AND DETACHABLE RIM
Helge D. Jorgensen, Copenhagen, Denmark, assignor to Superfos Emballage a/s, Vipperod, Denmark
Filed Dec. 15, 1981, Ser. No. 331,908
Claims priority, application Denmark, Aug. 12, 1981, 781/81
Term of patent 14 years
U.S. Cl. D9—352



277,647
BOTTLE
James Lane, Ontario, Canada, assignor to The Drackett Company, Cincinnati, Ohio
Filed Mar. 18, 1982, Ser. No. 359,543
Claims priority, application Canada, Oct. 7, 1981, 70-10-81-5
Term of patent 14 years
U.S. Cl. D9—377



277,648
AEROSOL CAN OVERCAP
David A. Jones, Kettering, Ohio, assignor to The Drackett Company, Cincinnati, Ohio
Filed Sep. 9, 1982, Ser. No. 416,522
Term of patent 14 years
U.S. Cl. D9—445

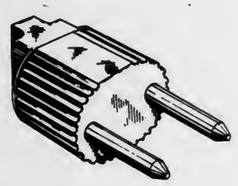




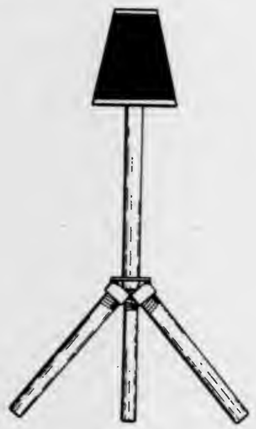
277,649
WRIST WATCH
Alain Glauser, Carouge, Switzerland, assignor to Baume & Mercier S.A., Geneva, Switzerland
Filed May 7, 1981, Ser. No. 261,615
Term of patent 14 years
U.S. Cl. D10—32



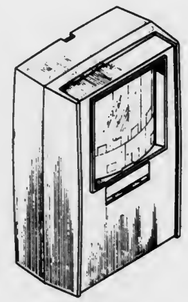
277,650
MAGNETIC TESTER
Dennis W. Mulvaney, 23862 Windmill La., Laguna Niguel, Calif. 92677
Filed Jul. 9, 1982, Ser. No. 396,795
Term of patent 14 years
U.S. Cl. D10—78



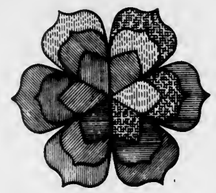
277,651
WHEEL BALANCER
Tom A. Herron, Rte. 3, Box 362, Sapulpa, Okla. 74066
Filed Sep. 30, 1982, Ser. No. 430,130
Term of patent 14 years
U.S. Cl. D10—82



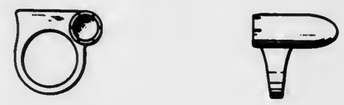
277,652
PASSIVE INFRARED INTRUSION DETECTOR UNIT
William G. Kahl, Jr., Brookfield, and Ronald G. Avery, Bethel, both of Conn., assignors to Cerberus AG, Mannedorf, Switzerland
Filed Aug. 16, 1982, Ser. No. 407,930
Term of patent 14 years
U.S. Cl. D10—106



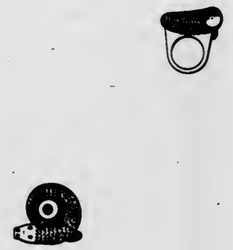
277,653
CLOCK FACE
Louis W. Jagoe, 210 Tanglewood Pl., #S-102, Tampa, Fla. 33617
Filed Sep. 28, 1982, Ser. No. 426,239
Term of patent 14 years
U.S. Cl. D10—123



277,654
COMBINED RING AND ARTICLE HOLDER
Genaro Texidor, 522 W. 136th St., New York, N.Y. 10031
Filed Jun. 15, 1982, Ser. No. 388,702
Term of patent 14 years
U.S. Cl. D11—2



277,655
COMBINED RING AND ARTICLE HOLDER
Genaro Texidor, 522 W. 136th St., New York, N.Y. 10031
Filed Jun. 15, 1982, Ser. No. 388,701
Term of patent 14 years
U.S. Cl. D11—31



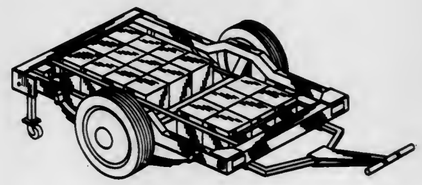
277,656
JEWELRY SLIDE
Katherine D. Johnston, 3242 E. Endora, Phoenix, Ariz. 85032; Clarence Johnston, deceased, late of Phoenix, Ariz., and by Katherine D. Johnston, heir, 3242 E. Endora, Phoenix, Ariz. 85032
Filed May 14, 1982, Ser. No. 378,120
Term of patent 14 years
U.S. Cl. D11—81



277,657
SURFACE EFFECT SHIP
John B. Chaplin, Covington, La., assignor to Textron Inc., Providence, R.I.
Filed Dec. 2, 1982, Ser. No. 446,388
Term of patent 14 years
U.S. Cl. D12—5



277,658
MOBILE BATTERY CARRIAGE
Edwin M. King, Royal Oak, Mich., assignor to Extran Corporation, Littleton, Conn.
Filed Aug. 20, 1981, Ser. No. 294,628
Term of patent 14 years
U.S. Cl. D12—101



277,659
MOTORCYCLE
Norio Hoshi, Fujimi, and Shigeru Hattori, Niiza, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Jul. 12, 1982, Ser. No. 397,465
Claims priority, application Japan, Jan. 12, 1982, 57/878
Term of patent 14 years
U.S. Cl. D12—110



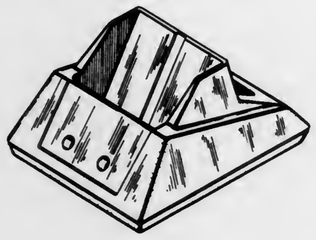
277,660
VEHICLE WHEEL
Giorgetto Giugiaro, Turin, Italy, assignor to Nihon Meiber Kabushiki Kaisha, Tokyo, Japan
Filed Dec. 13, 1982, Ser. No. 449,209
Term of patent 14 years
U.S. Cl. D12—204



277,661
VEHICLE WHEEL
John A. Cafaro, and Jerry P. Palmer, both of Birmingham, Mich., assignors to General Motors Corporation, Detroit, Mich.
Filed Aug. 1, 1980, Ser. No. 174,638
Term of patent 14 years
U.S. Cl. D12—211

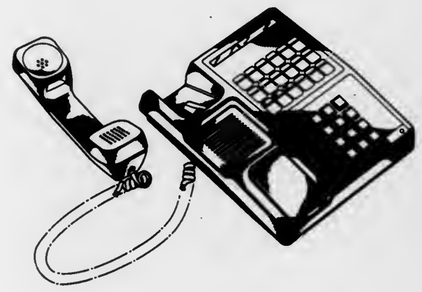


277,662
RADIO BATTERY CHARGER
Robert R. Huntington, and Henry A. Schaefer, both of Lynchburg, Va., assignors to General Electric Company, Lynchburg, Va.
Filed Sep. 27, 1982, Ser. No. 424,758
Term of patent 14 years
U.S. Cl. D13—5

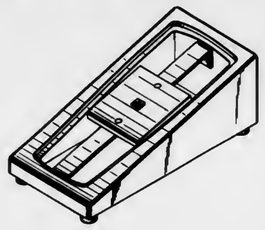


277,663
TELEPHONE
Motoaki Sakamoto, Tanashi, and Ichiro Sato, Maebashi, both of Japan, assignors to Nakayo Telecommunications Inc., Tokyo, Japan
Filed May 26, 1982, Ser. No. 382,465
Claims priority, application Japan, Dec. 12, 1981, 56/54815
Term of patent 14 years
U.S. Cl. D14—58



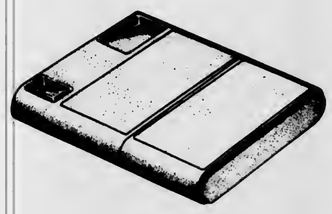


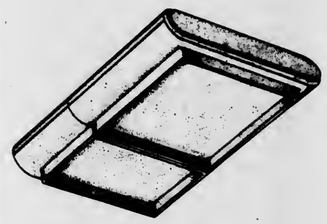
277,664
TELEPHONE SET STAND
William L. Wilt, Shreveport, La., assignor to AT&T Technologies, Inc., New York, N.Y.
Filed Dec. 16, 1982, Ser. No. 450,573
Term of patent 14 years
U.S. Cl. D14—60





277,665
TELEPHONE BASE WITH EXTENDER
Donald M. Genaro, Haworth, N.J.; Jerome M. Gotway; Norris R. Hall, both of Indianapolis, Ind., and John N. McGarvey, Drexel Hill, Pa., assignors to AT&T Bell Laboratories, Murray Hill, N.J.
Division of Ser. No. 455,888, Jan. 5, 1983,. This application May 21, 1984, Ser. No. 612,466
Term of patent 14 years
U.S. Cl. D14—60

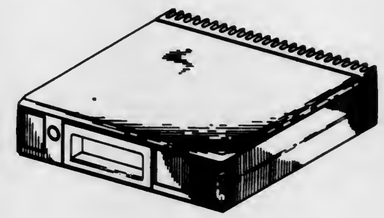




277,666
HOUSING FOR A TELEPHONE STATION HANDSET
Ghanshyam A. Bhat, Marlboro, N.J.; Eric P. P. Chan, New York, N.Y.; John S. Lamancusa, Middletown, N.J.; Gordon E. Sylvester, Jamaica, N.Y., and Jose R. Varela, Middletown, N.J., assignors to AT&T Information Systems Inc., Holmdel, N.J.
Filed Jun. 5, 1984, Ser. No. 617,516
Term of patent 14 years
U.S. Cl. D14—63



277,667
VEHICULAR RADIO HOUSING OR SIMILAR ARTICLE
Ronald A. Zurawski, Rolling Meadows, Ill., assignor to Motorola, Inc., Schaumburg, Ill.
Filed Sep. 13, 1982, Ser. No. 417,017
Term of patent 14 years
U.S. Cl. D14—68



277,668
RADIO
Rouben T. Terzian, Chicago, and Horst D. Herbstler, Bolingbrook, both of Ill., assignors to Marvin Glass & Associates, Chicago, Ill.
Filed Jul. 26, 1982, Ser. No. 401,535
Term of patent 14 years
U.S. Cl. D14—69



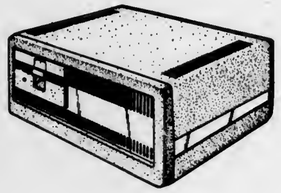
277,669
WALL PROJECTION CTV UNIT
David P. Chuboff, North Barrington, and Arnold S. Goldman, Clarendon Hills, both of Ill., assignors to Zenith Electronics Corporation, Glenview, Ill.
Filed Oct. 25, 1982, Ser. No. 436,259
Term of patent 14 years
U.S. Cl. D14—84



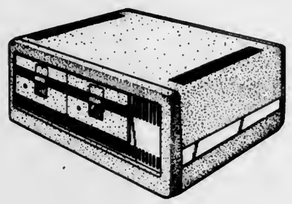
277,670
ELECTRONIC INSTRUMENT FOR LOGGING DATA
Jeffrey C. Brown, Seattle, Wash., assignor to John Fluke Mfg. Co., Inc., Everett, Wash.
Filed Apr. 29, 1982, Ser. No. 373,007
Term of patent 14 years
U.S. Cl. D14—100



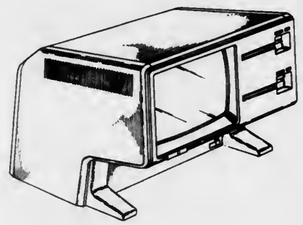
277,671
COMPUTER CONSOLE
Michael Cridland, Manlius, N.Y., and David P. Moriconi, Ben Lomond, Calif., assignors to Victor Technologies, Inc., Scotts Valley, Calif.
Filed Nov. 15, 1982, Ser. No. 441,877
Term of patent 14 years
U.S. Cl. D14—100



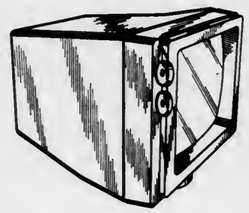
277,672
COMPUTER CONSOLE
Michael Cridland, Manlius, N.Y., and David P. Moriconi, Ben Lomond, Calif., assignors to Victor Technologies, Inc., Scotts Valley, Calif.
Filed Nov. 15, 1982, Ser. No. 441,885
Term of patent 14 years
U.S. Cl. D14—100



277,673
COMPUTER
William F. Dresselhaus, Redwood City; Kenneth S. Campbell, Mountain View; Clive R. Twyman, Fremont, all of Calif., and Douglas C. Dayton, Cambridge, Mass., assignors to Apple Computer, Inc., Cupertino, Calif.
Filed Jun. 10, 1982, Ser. No. 387,029
Term of patent 14 years
U.S. Cl. D14—106



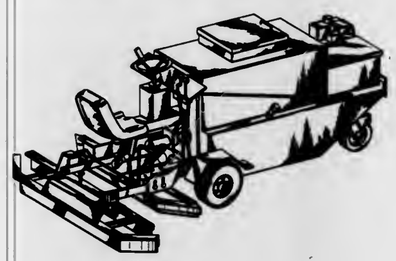
277,674
VIDEO DISPLAY
Karen L. Usab, Brighton, and Douglas C. Dayton, Cambridge, both of Mass., assignors to Wang Laboratories, Inc., Lowell, Mass.
Filed Dec. 27, 1982, Ser. No. 453,072
Term of patent 14 years
U.S. Cl. D14—113



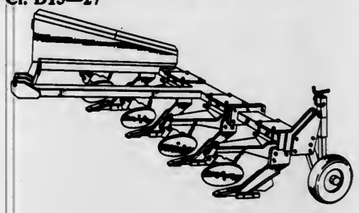
277,675
MINI AIR COMPRESSOR AND THE LIKE
Michael Hung, 6th Floor, No. 683 Ming Shen E. Rd., Taipei, Taiwan
Filed Jan. 26, 1982, Ser. No. 342,778
Term of patent 14 years
U.S. Cl. D15—7



277,676
PAVEMENT SEALING MACHINE
Harold W. Neal, 112 Dunwoody Dr., Carrollton, Ga. 30117
Filed Jul. 30, 1982, Ser. No. 403,561
Term of patent 14 years
U.S. Cl. D15—13

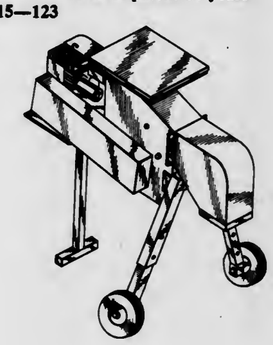


277,677
CULTIVATING IMPLEMENT
Barry A. Linger, Harleston, England, assignor to Howard Machinery Limited, Harleston, England
Filed Nov. 27, 1981, Ser. No. 325,278
Claims priority, application United Kingdom, May 26, 1981, 1000662
Term of patent 14 years
U.S. Cl. D15—27

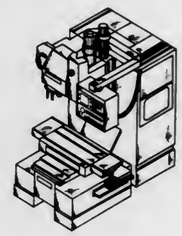




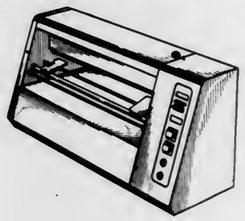
277,678
AUTOGENOUS IMPACT MILL
Alvin A. Snaper, 2800 Cameo Cir., Las Vegas, Nev. 89107
Filed Sep. 8, 1982, Ser. No. 415,891
Term of patent 14 years
U.S. Cl. D15—123



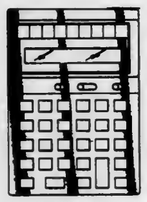
277,679
MACHINING CENTER
Koichiro Kitamura, Takaoka, Japan, assignor to Kitamura Machinery Co., Ltd., Takaoka, Japan
Filed Feb. 8, 1982, Ser. No. 346,931
Term of patent 14 years
U.S. Cl. D15—127
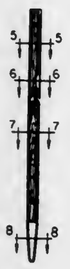


277,680
CONTINUOUS FORM CHECK SIGNER
Kenneth M. Hattori, Jr., Bensenville, Ill., assignor to The Hedman Company, Chicago, Ill.
Filed Oct. 22, 1982, Ser. No. 436,987
Term of patent 14 years
U.S. Cl. D18—5



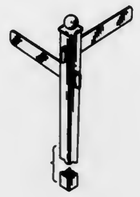
277,681
CALCULATOR
Katsuhiro Ishida, Osaka, Japan, assignor to Sharp Corporation, Osaka, Japan
Filed Mar. 24, 1982, Ser. No. 361,486
Term of patent 14 years
U.S. Cl. D18—7



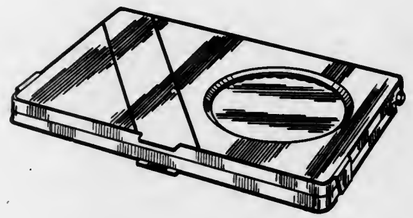
277,682
WRITING INSTRUMENT
S. Richard Luntz, 22150 S. Woodland Rd., Shaker Heights, Ohio 44122
Filed Sep. 7, 1982, Ser. No. 415,752
Term of patent 14 years
U.S. Cl. D19—47



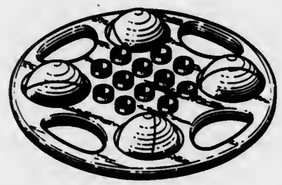
277,683
SIGN POST ASSEMBLY
Joseph B. Glassford, 620 N. Arbogast, Griffith, Ind. 46319
Filed Sep. 27, 1982, Ser. No. 423,556
Term of patent 14 years
U.S. Cl. D20—17



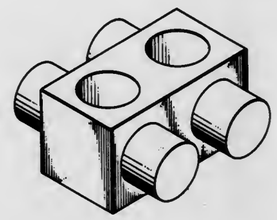
277,684
TOY FOR DRAWING DESIGNS
Douglas R. Miller, and George D. Smith, both of Cincinnati, Ohio, assignors to CPG Products Corp., Minneapolis, Minn.
Filed May 26, 1982, Ser. No. 382,020
Term of patent 14 years
U.S. Cl. D21—59



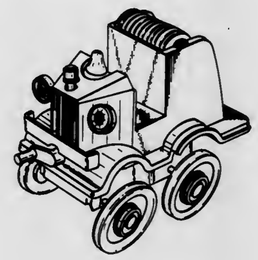
277,685
ACTIVITY TOY
Flemming H. Olsen, Espergaerde, Denmark, assignor to Interlego A.G., Baar, Switzerland
Filed Jun. 11, 1982, Ser. No. 387,286
Term of patent 14 years
U.S. Cl. D21—59



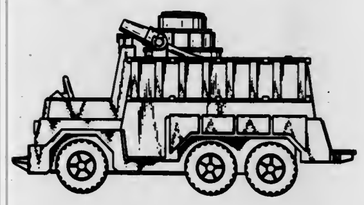
277,686
TOY BLOCK
Yasushi Chatani, Tokorozawa, and Toshio Tsuchikura, Koshigaya, both of Japan, assignors to Kawada Co., Ltd., Tokyo, Japan
Filed Aug. 7, 1979, Ser. No. 64,488
Term of patent 14 years
U.S. Cl. D21—108



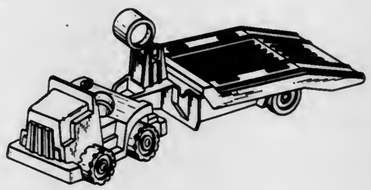
277,687
TOY TRUCK
Gordon Cutler, East Aurora, N.Y., assignor to The Quaker Oats Company, Chicago, Ill.
Filed Jan. 27, 1983, Ser. No. 461,582
Term of patent 14 years
U.S. Cl. D21—128



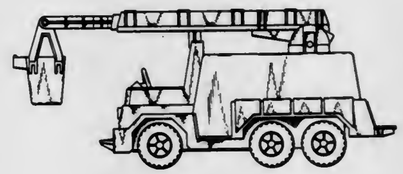
277,688
TOY FIRE TRUCK
Kenneth R. Wilkes, East Aurora, N.Y., assignor to The Quaker Oats Company, Chicago, Ill.
Filed Jan. 21, 1983, Ser. No. 459,774
Term of patent 14 years
U.S. Cl. D21—133



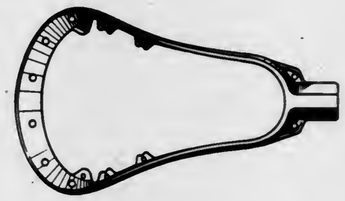
277,689
TOY VEHICLE
Mary A. Smith, East Aurora, N.Y., assignor to The Quaker Oats Company, Chicago, Ill.
Filed Jan. 20, 1983, Ser. No. 459,489
Term of patent 14 years
U.S. Cl. D21—134



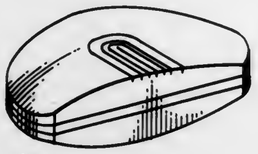
277,690
TOY UTILITY TRUCK
Kenneth R. Wilkes, East Aurora, N.Y., assignor to The Quaker Oats Company, Chicago, Ill.
Filed Jan. 21, 1983, Ser. No. 459,809
Term of patent 14 years
U.S. Cl. D21—135



277,691
LACROSSE STICK HEAD
Robert J. Rule, Manhasset, N.Y., assignor to W. H. Brine Company, Milford, Mass.
Filed Feb. 3, 1982, Ser. No. 345,229
Term of patent 14 years
U.S. Cl. D21—210



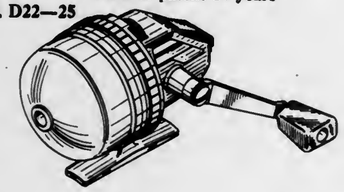
277,692
PUTTER HEAD
Alexander S. O. MacDougall, 495 Valley Club Rd., Santa Barbara, Calif. 93108
Filed Feb. 8, 1982, Ser. No. 347,055
Term of patent 14 years
U.S. Cl. D21—219



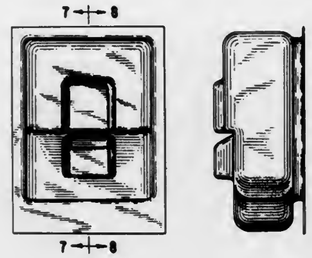
277,693
GOALER SKATE
Rene Bourque, Duvernay, Canada, assignor to Warrington Inc., Montreal, Canada
Filed Mar. 8, 1982, Ser. No. 355,387
Claims priority, application Canada, Jan. 29, 1982, 29-01-82-7
Term of patent 14 years
U.S. Cl. D21—225



277,694
FISHING REEL
Masakazu Sakamoto, and Takeshi Shohoji, both of Funabashi, Japan, assignors to Ryobi Limited, Fuchu, Japan
Division of Ser. No. 340,055, Jan. 18, 1982,. This application Jan. 18, 1984, Ser. No. 571,706
Claims priority, application Japan, Jul. 31, 1981, 56-34181; Jul. 31, 1981, 56-34182; Sep. 1, 1981, 56-38807
Term of patent 14 years
U.S. Cl. D22—25



277,695
COMBINED TUB AND SHOWER STALL
Leif Blodee, Holland, Mich., assignor to Riblet Products Corporation, Elkhart, Ind.
Filed Apr. 19, 1982, Ser. No. 369,939
Term of patent 14 years
U.S. Cl. D23—49



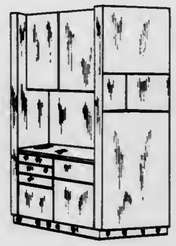
277,696
COMBINED OVERFLOW HOOD AND DRAIN CONTROL
Donald W. Doman, Janesville, and Philip F. Segor, Sheboygan, both of Wis., assignors to Kohler Co., Kohler, Wis.
Filed Sep. 28, 1982, Ser. No. 426,209
Term of patent 14 years
U.S. Cl. D23—69



277,697
OILSTOVE
Nobuyuki Kojima; Youichi Sekigawa, both of Kamo, and Kazunori Amano, Niitsu, all of Japan, assignors to Toshiba Heating Appliances Co., Ltd., Kamo, Japan
Filed Dec. 22, 1982, Ser. No. 452,211
Term of patent 14 years
U.S. Cl. D23—121



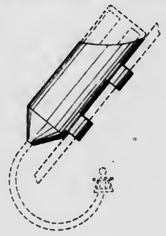
277,698
DENTIST SERVICE UNIT
David E. J. Newman, Toronto, Canada, assignor to D.I. Retail Planning & Design Ltd., Toronto, Canada
Filed Aug. 12, 1982, Ser. No. 407,597
Claims priority, application Canada, Apr. 27, 1982, 27-04-82-14
Term of patent 14 years
U.S. Cl. D24—4



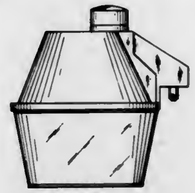
277,699
MICROSCOPE LABORATORY SLIDE
Donald W. Valencia, El Dorado Hills, Calif., assignor to Immuno Concepts, Inc., Sacramento, Calif.
Filed Jan. 9, 1981, Ser. No. 223,908
Term of patent 14 years
U.S. Cl. D24—29



277,700
BABY BOTTLE HOLDER
Larry P. Heber, and Blayde M. Penza, both of Vacaville, Calif., assignors to IDS Products, Inc., Vacaville, Calif.
Filed Jun. 28, 1982, Ser. No. 392,855
Term of patent 14 years
U.S. Cl. D24—48



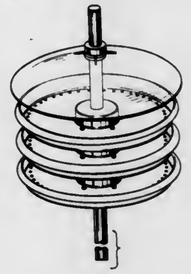
277,701
OUTDOOR LUMINAIRE
Giovanni deCandia, Germantown, Tenn., assignor to International Telephone and Telegraph Corporation, New York, N.Y.
Filed Aug. 4, 1982, Ser. No. 405,178
Term of patent 14 years
U.S. Cl. D26—67



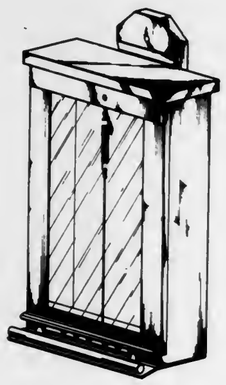
277,702
ASHTRAY WITH FISH-LIKE PATTERN
Marina Bulgari, Athens, Greece, assignor to Marina B. Creation S.A., Vaduz, Liechtenstein
Filed Jun. 6, 1983, Ser. No. 501,375
Claims priority, application Italy, Dec. 6, 1982, 36197 B/82
Term of patent 14 years
U.S. Cl. D27—23



277,703
TIERED BIRD FEEDER
Peter Kilham, Mill Rd., Foster, R.I. 02825
Filed Feb. 7, 1983, Ser. No. 464,192
Term of patent 14 years
U.S. Cl. D30—14



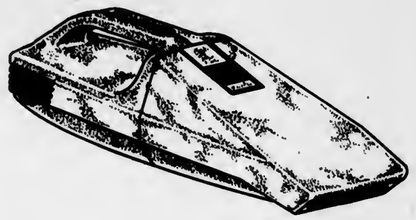
277,704
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Allan W. Dehls, 1010 Whittemore Pt. Rd., Bridgewater, N.H. 03222
Filed Oct. 27, 1983, Ser. No. 546,032
Term of patent 14 years
U.S. Cl. D30—15



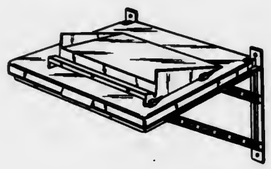
277,705
PET FOOD DISH HOLDER
Paul A. Bello, 1109 Ralph Ter. 2, Saint Louis, Mo. 63117
Filed Jun. 18, 1982, Ser. No. 295,254
Term of patent 14 years
U.S. Cl. D30—16



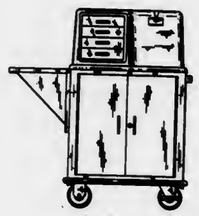
277,706
VACUUM CLEANER OR THE LIKE
Richard A. Wareham, North Canton, Ohio, assignor to The Hoover Company, North Canton, Ohio
Filed Mar. 29, 1982, Ser. No. 362,884
Term of patent 14 years
U.S. Cl. D32—18



277,707
HOLDER FOR A PLASTIC TRASH BAG DESIGN
Ezequiel Rico, 18092 Pamela, Villa Park, Calif. 92667
Filed Mar. 8, 1982, Ser. No. 355,901
Term of patent 14 years
U.S. Cl. D34—6



277,708
CART FOR HANDLING BIOLOGICAL TISSUE
James H. Becker, Topeka, Kans., assignor to Marketing International, Inc., Topeka, Kans.
Filed Oct. 19, 1982, Ser. No. 435,244
Term of patent 14 years
U.S. Cl. D34—20



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A&A Manufacturing Co., Inc.: *See—*
Klein, Ernst, 4,499,720, Cl. 59-78.100.
A. Ahlstrom Osakeyhtio: *See—*
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A. Mion S.p.A. Nastrificio: *See—*
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A. O. Smith Harvestore Products, Inc.: *See—*
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Carlsen, Russell O.; Casati, Francois M.; and Raden, Daniel S., 4,500,654, Cl. 521-129.000.
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Abele, Manlio, to New York University. Apparatus for stereotactic surgery. 4,501,009, Cl. 378-19.000.
Abeysekera, Ratnayake M. S. S.: *See—*
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Aburaki, Shimpei: *See—*
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Ackerman, John P.: *See—*
Zwick, Stanley A.; and Ackerman, John P., 4,499,663, Cl. 29-623.100.
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Lawrence, Robert H., Jr.; and Hill, Phillip E., 4,499,687, Cl. 47-58.000.
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Izumi, Hiroshi, 4,500,941, Cl. 361-293.000.
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Cummins, Donald L., 4,500,266, Cl. 417-474.000.

AMP Incorporated: *See—*
Brown, Christopher K.; Kensinger, Lex D.; Over, William R.; and Wion, Donald A., 4,499,648, Cl. 29-564.200.
Dola, Frank P., 4,500,158, Cl. 339-122.00R.
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Chan, Steven S., 4,500,933, Cl. 360-69.000.
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Hosokawa, Tomoyoshi; Matsuura, Ikutoshi; Takahashi, Hidenori; Ando, Kunio; and Tamura, Gakuzo, 4,500,544, Cl. 514-543.000.

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Aono, Toshiaki: *See—*
Naito, Hideki; Hara, Hiroshi; Aono, Toshiaki; Sato, Kozo; and Fujita, Shinsaku, 4,500,626, Cl. 430-203.000.

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Aquarium Pharmaceuticals, Inc.: *See—*
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Douglas, Jack E., 4,500,122, Cl. 292-161.000.

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Ashlock, L. T.; Mukamal, Harold; and White, William H., to Swedlow, Inc. Transparent, abrasion resistant coating compositions. 4,500,669, Cl. 514-440.000.

Askew, Dennis D.: *See—*
Odenthal, Conrad J.; and Askew, Dennis D., 4,500,809, Cl. 313-444.000.

Astier, Jean-Francois; Bessaguet, Louis; and Laplanche, Michel, to Legrand. Floating core transmission member for ultrasonic assistance. 4,500,272, Cl. 425-78.000.

Astier, Jean-Francois; Bessaguet, Louis; and LaPlanche, Michel, to Legrand. Vibration-aided feed device for a molding apparatus. 4,500,280, Cl. 425-569.000.

AT&T Bell Laboratories: *See—*
Babecki, Glenn R.; Escolar, Carlos; Garnant, Craig M.; Kan, Hsin-Kuo; Kaplan, Frank; Liu, Hueichi R.; MacLachlan, George F.; Matteo, Peter J.; McDonald, John F.; Palframan, John D.; Tran, Roger T.; Welt, Martin J.; Wendt, Timothy A.; Yates, Gregory S.; and Zislis, Paul M., 4,500,960, Cl. 364-200.000.
Chang, Shih-Jeh, 4,500,985, Cl. 370-14.000.
Keramidas, Vassilis G.; and Lourenco, Jose A., 4,500,367, Cl. 148-171.000.
Lisco, Richard J., 4,500,844, Cl. 330-10.000.
Miller, Hubert A., 4,501,003, Cl. 375-94.000.
Ren, Chung-Li; Thompson, Matthew V.; and Wang, Han-Chiu, 4,500,859, Cl. 333-208.000.
Taylor, Gary N., 4,500,628, Cl. 430-311.000.
White, Jonathan C., 4,500,995, Cl. 372-3.000.

AT&T Technologies, Inc.: *See—*
Mackay, Robert D., 4,500,149, Cl. 339-17.00C.
Marx, Morris F., III, 4,500,481, Cl. 264-40.600.
Rizzo, John S., 4,500,394, Cl. 204-15.000.

Atlantic Richfield Company: *See—*
Lewis, Kathrine J., 4,499,658, Cl. 29-588.000.
Perkins, Thomas K., 4,499,948, Cl. 166-248.000.
Wright, Harold A., 4,500,692, Cl. 526-201.000.

Atlas Copco Aktiebolag: *See—*
Molin, Alexis, 4,499,953, Cl. 173-43.000.

Atlas Electronics International, Inc.: *See—*
Miller, Albert J., 4,501,005, Cl. 377-20.000.

Atsumi, Akira: *See—*
Kuroda, Shigeaki; Senshu, Takao; Oguni, Kensaku; Mochizuki, Taketoshi; Yasuda, Hiromu; Ishibane, Kyuhei; Atsumi, Akira; Kimura, Hideyuki; and Hatada, Toshio, 4,500,035, Cl. 236-92.00B.

Auchterlonie, Richard C. Offset QPSK demodulator and receiver. 4,501,002, Cl. 375-86.000.

Audeh, Costandi A., to Mobil Oil Corporation. Combined surface and in situ tar sand bitumen production. 4,499,949, Cl. 166-260.000.

Audeh, Costandi A., to Mobil Oil Corporation. Enhanced recovery of hydrocarbonaceous fluids from the oil shale. 4,500,414, Cl. 208-11.00R.

Austenal International, Inc.: *See—*
Fox, Adrian S., 4,500,658, Cl. 523-117.000.

Austin, James W.; Bradburn, Ronald G.; Cromwell, Clarence A.; Gratch, Eitan; Groiss, Erich; Perkins, Derek; and Walker, Robert A., to Brenda Mines Ltd. Process for purifying molybdenite concentrates. 4,500,496, Cl. 423-55.000.

Automobiles Citroen: *See—*
Harmand, Michel, 4,500,130, Cl. 296-65.00R.

Automobiles Peugeot: *See—*
Harmand, Michel, 4,500,130, Cl. 296-65.00R.

Avco Corporation: *See—*
De Ferrari, Alfred; and Doddman, William H., 4,500,038, Cl. 239-85.000.

Awater, Albert: *See—*
Goyert, Wilhelm; Grimm, Wolfgang; Awater, Albert; Wagner, Hans; and Kruger, Bruno, 4,500,671, Cl. 524-494.000.

Aya, Masahiro; Saito, Junichi; Yasui, Kazuomi; Shiokawa, Kozo; Morishima, Norihisa; and Goto, Toshio, to Nihon Tokushu Noyaku Seizo K.K. Herbicidally active substituted phenylsulfonylurea derivatives and intermediates therefor. 4,500,342, Cl. 71-93.000.

Ayata, Naoki: *See—*
Koumura, Noboru; Ayata, Naoki; Saito, Seiji; Suzuki, Hidetoshi; and Ozawa, Kunitaka, 4,500,918, Cl. 358-75.000.

Ayers, Ray R.; and Kipp, Robert M., to Shell Oil Company. Pipeline connector. 4,500,117, Cl. 285-3.000.

Ayers, Ray R., to Shell Oil Company. Marine electrical plug. 4,500,151, Cl. 339-59.00R.

B. F. Goodrich Company, The: *See—*
Lai, John T., 4,500,662, Cl. 524-99.000.
Parish, James M., 4,499,844, Cl. 114-367.000.
Tucker, Harold A., 4,500,684, Cl. 525-327.300.

B & H Manufacturing Company, Inc.: *See—*
Hoffman, Wolfgang, 4,500,386, Cl. 156-449.000.

B.W.B. Controls, Inc.: *See—*
Bergeron, Ned; and Stollberg, Theodore A., 4,499,846, Cl. 116-272.000.

Babecki, Glenn R.; Escolar, Carlos; Garnant, Craig M.; Kan, Hsin-Kuo; Kaplan, Frank; Liu, Hueichi R.; MacLachlan, George F.; Matteo, Peter J.; McDonald, John F.; Palframan, John D.; Tran, Roger T.; Welt, Martin J.; Wendt, Timothy A.; Yates, Gregory S.; and Zislis, Paul M., to AT&T Bell Laboratories. Geographically distributed multiprocessor time-shared communication processing system. 4,500,960, Cl. 364-200.000.

Bach, Nicholas J.; Kornfeld, Edmund C.; and Titus, Robert D., to Eli Lilly and Company. Hydroxyaminotetralincarboxamides. 4,500,545, Cl. 514-619.000.

Backe, Egbert; Muller, Rolf; Otto, Dieter; Leonardi, Cornelio; Kochendorfer, Heinrich; Fussner, Paul; Walker, Ewald; and Rommel, Rudi. Device and method for locking a drive shaft disposed in a fuel injection pump for internal combustion engines and holding bolt therefor. 4,499,757, Cl. 73-119.00A.

Backhaus, Martin: *See—*
Lubcke, Hartmut; and Backhaus, Martin, 4,500,991, Cl. 370-88.000.

Bacon, Forrest C.; and Nord, Keith W., to Ex-Cell-O Corporation. Corrugated box forming, loading and sealing machine. 4,499,704, Cl. 53-156.000.

Badger Meter, Inc.: *See—*
Fiorina, Mark A.; and Roberts, Todd N., 4,499,764, Cl. 73-253.000.

Baeger, Holm: *See—*
Nickol, Friedrich W.; and Baeger, Holm, 4,500,611, Cl. 428-686.000.

Bagwell, Bobby F.; and Wells, Rickey D. Dual hydraulic lifts. 4,500,071, Cl. 254-423.000.

Bailey, Julian C. Steamer. 4,499,819, Cl. 99-483.000.

Baji, Toru: *See—*
Koike, Norio; Tsukada, Toshihisa; Baji, Toru; and Sasano, Akira, 4,500,915, Cl. 358-44.000.

Baker, James W., Jr.: *See—*
Darland, Michael L.; Stoner, Donald L.; Baker, James W., Jr.; and Sponhnholtz, Michael A., 4,500,751, Cl. 179-2.0DP.

Bako, Lazlo; and Scelba, Stephen S., to Presto Lock, Inc. Security device for firearms. 4,499,681, Cl. 42-1.00Y.

Balazs, Endre A.; and Leshchiner, Adolf, to Biomatrix, Inc. Hyaluronate modified polymeric articles. 4,500,676, Cl. 525-54.200.

Ballheimer, Benny, to Caterpillar Tractor Co. Coupling of driving member to driven member. 4,499,786, Cl. 74-606.00R.

Balogh, Alojz: *See—*
Durmis, Julius; Balogh, Alojz; Karvas, Milan; Hrachovcova, Maria; Masek, Jan; Caucik, Pavol; and Povazancova, Marta, 4,500,446, Cl. 252-403.000.

Balz, Gunther W., to Roto-Finish Company, Inc. Dual motion vibratory finishing machine and method. 4,499,692, Cl. 51-313.000.

Ban, Yasutaka; and Osada, Toshihiko, to Fujitsu Limited. Electron beam exposing method. 4,500,789, Cl. 250-492.200.

Bando Chemical Industries, Ltd.: *See—*
Wada, Noriaki, 4,500,666, Cl. 524-232.000.

Barber, Ralph R.; and Schultze, Eckart F., to Duff-Norton Co. Hydraulic directional control valve. 4,500,069, Cl. 251-282.000.

Barme, Michel, to Institut Pasteur. Stabilizing agents for live viruses for preparing vaccines, and stabilized vaccines containing said stabilizing agents. 4,500,512, Cl. 424-89.000.

Barnum, Dean C.: *See—*
Campbell, Frank L.; Barnum, Dean C.; and Corea, William C., 4,499,955, Cl. 175-46.000.
Campbell, Frank L.; Barnum, Dean C.; and Corea, William C., 4,499,956, Cl. 175-46.000.

Baron, Kenneth: *See—*
Simpson, Howard D.; Richardson, Ryden L.; and Baron, Kenneth, 4,500,424, Cl. 208-216.0PP.

Barone, Domenico: *See—*
Winters, Giorgio; Sala, Alberto; and Barone, Domenico, 4,500,525, Cl. 514-210.000.

Bartee, Gary E.: *See—*
Hoyt, Robert M.; Bobbitt, Donald E.; Bartee, Gary E.; Garton, Stanley C.; and Pilliard, J. Paul, 4,499,698, Cl. 52-157.000.

Barton, Jeffrey N.: *See—*
Suh, John T.; Barton, Jeffrey N.; and Regan, John R., 4,500,713, Cl. 546-165.000.

Barzaghi, Fernando: *See—*
Bianchi, Mario; and Barzaghi, Fernando, 4,500,731, Cl. 514-452.000.

Basalay, Robert J.: *See—*
West, C. Thomas; and Basalay, Robert J., 4,500,439, Cl. 252-46.400.

BASF Aktiengesellscaft: *See—*
Kubinyi, Hugo; Traut, Martin; and Gries, Josef, 4,500,467, Cl. 514-2.000.

BASF Aktiengesellschaft: *See—*
Becker, Rainer; Theobald, Hans; Schirmer, Ulrich; Spiegler, Wolfgang; Seufert, Walter; and Wuerzer, Bruno, 4,500,340, Cl. 71-90.000.

Bates, William L.: *See—*
McWhorter, Fred A.; and Bates, William L., 4,500,110, Cl. 280-680.000.

Bateson, Norman E., to Norson Industries, Inc. Pneumatic gate for railway hopper cars. 4,500,230, Cl. 406-131.000.

Battenfeld Maschinenfabriken GmbH: *See—*
Cyriax, Wilhelm; Tamboers, Gerhard; and Holzschuh, Johannes, 4,500,274, Cl. 425-185.000.

Bauer, James J.: *See—*
Trusock, George J.; Bauer, James J.; and Gandhi, Bhupen, 4,500,819, Cl. 318-106.000.

Baumann, Theodor; and Schreyegg, Otmar, to Philipp Holzmann Aktiengesellschaft. Moulding device for sub-soil curtain wall sections. 4,499,699, Cl. 52-169.100.

Baumer, Klaus; and Wiegand, Herbert, to Deutsche Forschungs- und Versuchsanstalt fur Luft- und Raumfahrt e.V. Injection device for direct injection diesel engines using alcohol and diesel fuel. 4,499,862, Cl. 123-1.00A.

Baumer, Klaus: *See—*
Wiegand, Herbert; and Baumer, Klaus, 4,499,861, Cl. 123-1.00A.

Baumgartner, Charles E.: *See—*
Karas, Bradley R.; and Baumgartner, Charles E., 4,500,566, Cl. 427-115.000.

Bausch & Lomb Incorpofated: *See—*
Stevens, Donn E., 4,500,180, Cl. 351-234.000.

Baxter, Jack L.: *See—*
Sermersheim, DeWayne T.; and Baxter, Jack L., 4,500,303, Cl. 474-112.000.

Baxter Travenol Laboratories, Inc.: *See—*
Kulin, Ralph; Granzow, Daniel B.; and Danielsen, Brant R., 4,500,788, Cl. 250-455.100.

Bayer Aktiengesellschaft: *See—*
Elbe, Hans-Ludwig; Buchel, Karl H.; Frohberger, Paul-Ernst; and Brandes, Wilhelm, 4,500,537, Cl. 514-383.000.
Forster, Heinz; Eue, Ludwig; and Schmidt, Robert R., 4,500,341, Cl. 71-92.000.
Furstenwerth, Hauke, 4,500,715, Cl. 548-140.000.
Goyert, Wilhelm; Grimm, Wolfgang; Awater, Albert; Wagner, Hans; and Kruger, Bruno, 4,500,671, Cl. 524-494.000.
Hausmann, Heinz; Niessen, Heinz J.; Telle, Otto; and Neumaier, Hermann, 4,500,348, Cl. 71-103.000.
Kinast, Gunther, 4,500,716, Cl. 548-196.000.
Meussdoerffer, Johann-Nikolaus; Niederprum, Hans; Nieder-Vahrenholz, Hans-Georg; and Bockelmann, Wolfgang, 4,500,350, Cl. 75-1.00R.
Ostlinning, Edgar; and Idel, Karsten, 4,500,702, Cl. 528-388.000.
Rasshofer, Werner; and Prolingheuer, Ernst-Christoph, 4,500,656, Cl. 521-164.000.

BBC Aktiengesellschaft Brown, Boveri & Cie: *See—*
Nicoll, Andrew R., 4,500,489, Cl. 420-445.000.

BBC Brown, Boveri & Company, Limited: *See—*
Mayer, Andreas; and Niederer, Adolf, 4,500,260, Cl. 417-64.000.
Moser, Peter, 4,499,731, Cl. 60-602.000.

Beane, Michael J., to Liquidometer Corporation. Inductively-coupled signalling system. 4,500,881, Cl. 340-825.730.

Beardmore, David H., to Phillips Petroleum Company. Burning of fuels. 4,500,281, Cl. 431-3.000.

Beck, Ernst; Lenard, Peter; and Pokorny, Erich, to Vollmer Werke Maschinenfabrik GmbH. Machine for machining circular saw blades. 4,499,794, Cl. 76-75.000.

Becker, Herbert: *See—*
Leistner, Rolf; and Becker, Herbert, 4,499,787, Cl. 74-625.000.

Becker, Rainer; Theobald, Hans; Schirmer, Ulrich; Spiegler, Wolfgang; Seufert, Walter; and Wuerzer, Bruno, to BASF Aktiengesellschaft. Urea derivatives and their use for controlling undesirable plant growth. 4,500,340, Cl. 71-90.000.

Beckman, Robert F.: *See—*
Hennekes, Daniel M.; Suica, David E.; and Beckman, Robert F., 4,500,065, Cl. 248-542.000.

Becton, Dickinson and Company: *See—*
Christinger, Werner, 4,500,310, Cl. 604-228.000.

Beekman, Stewart M. Process for preparing basic aluminum carbonate gels substantially free from foreign anions and fibrous colloidal alumina monohydrate of a boehmite crystal lattice structure. 4,500,444, Cl. 252-315.700.

Bege, Dietmar: *See—*
Kuhnke, Klaus; Bege, Dietmar; Puthawala, Anwer; and Witrowsky, Gunter, 4,500,449, Cl. 252-628.000.

Behar, Marvin L. Picnic basket. 4,499,999, Cl. 206-546.000.

Behringwerke Aktiengesellschaft: *See—*
Bohn, Hans; and Kraus, Walter, 4,500,451, Cl. 260-112.00R.

Beikman, Douglas L. Apparatus and method of handling bales. 4,500,242, Cl. 414-24.500.

Beisswenger, Siegfried, to Dr. -Ing. Rudolf Hell GmbH. High stability electron beam generator for processing material. 4,500,791, Cl. 250-493.100.

Bell, Raymond J.: *See—*
Poole, John S.; Gere, Dennis R.; Bell, Raymond J.; and Nickerson, Mark A., 4,500,432, Cl. 210-659.000.

Belorussky Nauchnoissledovatelsky Institut Kardiologii: *See—*
Sidorenko, Georgy I.; Lopato, Georgy P.; Yakubovich, Vladimir M.; Nikitin, Yaroslav G.; Usachev, Oleg I.; and Vorobiev, Anatoly P., 4,499,904, Cl. 128-703.000.

Belttari, Stanley C.: *See—*
Jacobson, Mark K.; and Belttari, Stanley C., 4,500,232, Cl. 408-153.000.

Ben Clements & Sons, Inc.: *See—*
Furutsu, Akira, 4,499,928, Cl. 140-93.200.

Bender, Fredric G.; Everson, Charles W.; and Swartz, William E., to Stauffer Chemical Company. Method of increasing the organoleptic acceptability of shank meat. 4,500,559, Cl. 426-646.000.

Bendix Corporation, The: *See—*
de Campos, Hugo N., 4,500,144, Cl. 384-463.000.
Gaiser, Robert F., 4,499,729, Cl. 60-578.000.

Woo, Ji Y., 4,500,111, Cl. 280-688.000.

Bennett, Donald B.; Thorsrud, Lee T.; and Petschauer, Thomas W., to Sperry Corporation. VLSI Wired-OR driver/receiver circuit. 4,500,988, Cl. 370-85.000.

Bennett, William G.; and Spease, Arthur L., to Teleflex Incorporated. Molded ball socket terminal (connecting belts). 4,499,785, Cl. 74-501.00R.

Benz, Karl; and Kech, Gunter, to VEGA Grieshaber GmbH & Co. KG. Device for the determination and/or control of a certain charging level in a container. 4,499,765, Cl. 73-290.00V.

Berger, Richard M., to American Filtrona Corporation. Free air dilution smoke filter and method and apparatus for fabricating same. 4,499,912, Cl. 131-336.000.

Bergeron, Ned; and Stollberg, Theodore A., to B.W.B. Controls, Inc. Plunger and transparent indicator. 4,499,846, Cl. 116-272.000.

Bergeson, Lloyd: *See*—
Lord, John G., 4,499,841, Cl. 114-98.000.

Bernard, Daniel: *See*—
Broussoux, Dominique; Facoetti, Hugues; Ravinet, Pierre; Bernard, Daniel; and Micheron, Francois, 4,500,377, Cl. 156-164.000.

Bernardi, Luigi; Temperilli, Aldemio; Ruggieri, Daniela; Arcari, Giuliana; and Salvati, Patricia, to Farmitalia Carlo Erba S.p.A. Ergoline derivatives. 4,500,712, Cl. 546-67.000.

Berry, Jean-Luc, to S.I.C.A. Pulposec de Chevrieres. Continuous press, in particular for pressing beet pulp and other juice-containing materials. 4,499,823, Cl. 100-121.000.

Berthel, Robert O.: *See*—
Plank, Vernon G.; Matthews, Anthony J.; Berthel, Robert O.; and LaGross, Dennis L., 4,499,761, Cl. 73-170.00R.

Bertram, Leo: *See*—
Schemmann, Hugo; and Bertram, Leo, 4,500,825, Cl. 318-792.000.

Bertsch, Jack, to Polytronics, Inc. Electrical connector device. 4,500,160, Cl. 339-166.00R.

Berwind Corporation: *See*—
Brenton, Ronald G.; and Runck, Robin B., 4,499,640, Cl. 29-25.410.
Fathauer, George H.; and Hood, Charles F., 4,499,766, Cl. 73-304.00C.
Fathauer, George H.; Hood, Charles F.; and Runck, Robin B., 4,499,767, Cl. 73-304.00C.
Fleckenstein, Phillip P., 4,499,641, Cl. 29-25.410.

Bessaguet, Louis: *See*—
Astier, Jean-Francois; Bessaguet, Louis; and Laplanche, Michel, 4,500,272, Cl. 425-78.000.
Astier, Jean-Francois; Bessaguet, Louis; and LaPlanche, Michel, 4,500,280, Cl. 425-569.000.

Bessay, Raymond; and Riollet, Gilbert, to Alsthom-Atlantique. Guide blade set for diverging jet streams in a steam turbine. 4,500,256, Cl. 415-191.000.

Bessay, Raymond: *See*—
Riollet, Gilbert; and Bessay, Raymond, 4,500,070, Cl. 251-282.000.

Beta Engineering & Development Ltd.: *See*—
Porat, Chaim; and Sadeh, Yaacov, 4,500,873, Cl. 340-515.000.

Bethlehem Steel Corporation: *See*—
Hart, Robert G.; and Townsend, Herbert E., 4,500,399, Cl. 204-181.00C.

Beuhler, Allyson J.: *See*—
Polak, Anthony J.; and Beuhler, Allyson J., 4,500,667, Cl. 524-406.000.

Beyer, Henry R.; DeSipio, Richard G.; Long, Thomas F.; and Ritz, Joseph, to United States of America, Navy. Data link data and address recognition. 4,500,885, Cl. 343-456.000.

Beyer, Henry R.: *See*—
Naubereit, Henry; Beyer, Henry R.; DeSipio, Richard G.; and Picard, Salvatore R., 4,500,884, Cl. 343-456.000.

BF Goodrich Company, The: *See*—
Rundo, John R., 4,499,703, Cl. 52-746.000.

Bialkowski, Wojciech L., to Domtar Inc. Paper machine wet line control. 4,500,968, Cl. 364-471.000.

Bianchi, Mario; and Barzaghi, Fernando, to Roussel Uclaf. Derivatives of 4-phenyl-4-oxobuten-2-oic acid, pharmaceutical compositions containing them, and therapeutic uses for them. 4,500,731, Cl. 514-452.000.

Bieringer, Robert J., to Owens-Illinois, Inc. Method and apparatus for inspecting articles. 4,500,203, Cl. 356-240.000.

Bieringer, Ulrich: *See*—
Napp, Gerhard; Bieringer, Ulrich; Kreismer, Heinz; and Goseberg, Walter, 4,500,833, Cl. 323-359.000.

Biffle, Morris S. High pressure rotary stripper. 4,500,094, Cl. 277-31.000.

Bildusas, Leon L. Resealable articles and process. 4,500,021, Cl. 225-49.000.

Biller, Cleveland J.: *See*—
Peters, Penn A.; Biller, Cleveland J.; and Johnson, David D., 4,500,004, Cl. 212-80.000.

Billingsley, Henry C.; and Clark, Amos M., to Outboard Marine Corporation. Dual fuel supply system. 4,499,887, Cl. 123-575.000.

Bindel, Rudolf; and Ruoff, Eugen, to Elring Dichtungswerke GmbH. Cylinder head gasket. 4,500,100, Cl. 277-235.00B.

Binnig, Gerd K.; and Gerber, Christoph E., to International Business Machines Corporation. Method and dilution refrigerator for cooling at temperatures below 1° K. 4,499,737, Cl. 62-56.000.

Biomatrix, Inc.: *See*—
Balazs, Endre A.; and Leshchiner, Adolf, 4,500,676, Cl. 525-54.200.

Biomelktechnik Hoefelmayr & Co.: *See*—
Hoefelmayr, Tilman; and Maier, Jakob, 4,499,854, Cl. 119-14.320.

Bion Corporation: *See*—
Roberts, Michael K.; Ottosen, Richard A.; and McConnell, Matthew L., 4,499,771, Cl. 73-632.000.

BioResearch Inc.: *See*—
Kurtz, Leonard D.; and LiCausi, Joseph, 4,500,308, Cl. 604-4.000.

Birdwell, J. C. Mud pump. 4,500,267, Cl. 417-552.000.

Bitting, Ricky F.; and Peil, William, to General Electric Company. Speed or torque control circuit for an electronically commutated motor (ECM) and method of controlling the torque or speed of an ECM. 4,500,821, Cl. 318-254.000.

Bittler, Dieter: *See*—
Nickisch, Klaus; Bittler, Dieter; Laurent, Henry; Wiechert, Rudolf; and Losert, Wolfgang, 4,500,522, Cl. 514-173.000.

Blachman, Marc W.: *See*—
Burrington, James D.; and Blachman, Marc W., 4,500,468, Cl. 260-465.80D.

Blackwood, John; Graham, Thomas G.; and Brauch, Robert B., to Singer Company, The. Reverse feed controlling mechanism for a sewing machine. 4,499,839, Cl. 112-317.000.

Blaisdell, Ronald G.; and Gagnon, Peter R., to GTE Products Corporation. One-piece frame for an electric lamp. 4,500,948, Cl. 362-382.000.

Blake, Frederick H. Lighting circuit control apparatus. 4,500,814, Cl. 315-323.000.

Blakeslee, A division of Blako, Inc.: *See*—
Vilen, Erik O., 4,500,210, Cl. 366-207.000.

Blenkush, Brian J., to Colder Products Company. Fitting apparatus for soft tubing. 4,500,118, Cl. 285-247.000.

Bloome, James A.; Meeker, Rick A.; Whicker, Jerry T.; and Foreman, Frederick J., to Kartridg Pak Company, The. Portable polisher. 4,499,624, Cl. 15-97.00R.

Bloomer, Milton D., to General Electric Company. Current sensor. 4,500,838, Cl. 324-117.00R.

Bluthgen, Bjorn, to Polygram GmbH. Method for eliminating unwanted acoustic signals in audio programs to be edited for reproduction. 4,501,014, Cl. 381-94.000.

Blytas, George C., to Shell Oil Company. Aqueous electrolyte desiccation of substantially supercritical CO_2. 4,500,333, Cl. 62-17.000.

Bobbitt, Donald E.: *See*—
Hoyt, Robert M.; Bobbitt, Donald E.; Bartee, Gary E.; Garton, Stanley C.; and Pilliard, J. Paul, 4,499,698, Cl. 52-157.000.

Bobrov, Anatoly D.: *See*—
Eschenko, Vladislav Y.; Musaev, Irsali K.; Talibdzhanov, Zakhidzhan S.; Leonov, Viktor A.; Bobrov, Anatoly D.; Kirovsky, Efim I.; Gritsenko, Vladimir A.; and Golovanov, Alexandr V., 4,500,282, Cl. 431-184.000.

Bobst SA: *See*—
Anastasio, Frank J.; and Byro, Thomas, 4,499,831, Cl. 101-152.000.
Lucas, Raymond, 4,500,022, Cl. 225-97.000.

Bockelmann, Wolfgang: *See*—
Meussdoerffer, Johann-Nikolaus; Niederprum, Hans; Nieder-Vahrenholz, Hans-Georg; and Bockelmann, Wolfgang, 4,500,350, Cl. 75-1.00R.

Bockwinkel, Joe L.; and Pehl, Willis G., to Shakertown Corporation. Rabbeted shingle butt joint sidewall panel and shingle component. 4,499,701, Cl. 52-555.000.

Boda, James C., to Brunswick Corporation. Adjustable control linkage. 4,499,780, Cl. 74-107.000.

Boden, Richard M.; Hanna, Marie R.; and Tyszkiewicz, Theodore J., to International Flavors & Fragrances Inc. 1-Hydroxymethyl cyclopropanes organoleptic use of same. 4,500,448, Cl. 252-522.00R.

Bodge, Kevin R.; and Dean, Robert G., to University of Delaware. Water wave monitor. 4,499,762, Cl. 73-170.00A.

Boeing Company, The: *See*—
Williams, John W., 4,499,843, Cl. 114-280.000.

Bohn, Hans; and Kraus, Walter, to Behringwerke Aktiengesellschaft. New protein PP_{13} extracted from human placental tissues and use thereof. 4,500,451, Cl. 260-112.00R.

Boisot, Yves: *See*—
Malbec, Yves; Boisot, Yves; Bontemps, Daniel; and Duhamel, Georges, 4,500,760, Cl. 200-83.00C.

Bolger, Thomas V., to RCA Corporation. FIR Chrominance bandpass sampled data filter with internal decimation. 4,500,912, Cl. 358-31.000.

Bolton, John D. Jet power lawn mower. 4,499,710, Cl. 56-11.900.

Bolton, Theodore S.; Leech, Brad G.; and Lang, Richard D., to Carrier Corporation. Discharge air assembly for a room air conditioner. 4,499,816, Cl. 98-40.260.

Bond, Armand P.; Poznansky, Abraham; and Grobner, Paul J., to Amax Inc. Cast duplex stainless steel. 4,500,351, Cl. 75-128.00N.

Bongrain S.A.: *See*—
Chauvin, Bernard, 4,500,550, Cl. 426-38.000.

Bontemps, Daniel: *See*—
Malbec, Yves; Boisot, Yves; Bontemps, Daniel; and Duhamel, Georges, 4,500,760, Cl. 200-83.00C.

Bordages, John W., to Texaco Inc. Internal gripping pipe wrench. 4,499,799, Cl. 81-446.000.

Bordogna O. & C., Macpi S.p.A.: *See*—
Cartabbia, Giovanni, 4,499,677, Cl. 38-28.000.

Borel, Georg, to Hermann Wangner GmbH & Co KG. Two-ply screen for the sheet forming zone of a papermaking machine. 4,499,927, Cl. 139-425.00A.

Boremaster Precision Tool & Mfg.: *See*—
Jacobson, Mark K.; and Belttari, Stanley C., 4,500,232, Cl. 408-153.000.

Borg, Sidney: *See*—
Lynch, Joseph M.; Pfafflin, James R.; Pecker, Calman; Cardenas, Raul; Cunningham, Seamus; Bozzone, Richard T., Sr.; and Borg, Sidney, 4,500,428, Cl. 210-609.000.

Bornowski, Gunter: *See*—
Girodi, Erich; Bornowski, Gunter; Dejmek, Eberhard; Knabe, Andreas; Koch, Roland; Urbach, Bernd; and Weisselberg, Arnold, 4,500,764, Cl. 219-59.100.

Bornzin, Gene A.: *See*—
Kallok, Michael J.; and Bornzin, Gene A., 4,499,907, Cl. 128-786.000.

Borzym, Alexander: *See*—
Borzym, John J.; and Borzym, Alexander, 4,499,803, Cl. 83-319.000.

Borzym, John J.; and Borzym, Alexander, to Alpha Industries, Inc. Double cut die set with improved pull-across notching feature. 4,499,803, Cl. 83-319.000.

Boseki Kabushiki Kaisha: *See*—
Mitomi, Takeshi; Yoshimura, Eiji; and Komagata, Hideki, 4,500,581, Cl. 428-85.000.

Bosselaers, Robert J.; and Elder, Richard B., to United States of America, Army. Frequency modulated phase locked loop. 4,500,857, Cl. 332-9.00R.

Boston University, Trustees of: *See*—
Catsimpoolas, Nicholas, 4,500,524, Cl. 514-250.000.

Bottomley, C. Edward. Two-way gun cleaner tip and butterfly path for use therewith. 4,499,625, Cl. 15-104.165.

Boucher, John H. Method of treating horses to inhibit or reduce increases in crenated red blood cells during exercise. 4,500,530, Cl. 514-255.000.

Boulais, Richard A.: *See*—
Daemmer, Johnathan E., 4,500,970, Cl. 364-513.000.

Boulva, Paul. Paddle wheel propelled watercraft. 4,500,297, Cl. 440-27.000.

Boundy, Bruce K.: *See*—
Anderson, William C.; Boundy, Bruce K.; and Schoumaker, Raoul J. P., 4,500,060, Cl. 248-349.000.

Bourgery, Guy R.: *See*—
Platel, Alain Y.; Lacour, Alain P.; and Bourgery, Guy R., 4,500,531, Cl. 514-255.000.

Boutros, Kamal S.: *See*—
Briones, Francisco R.; and Boutros, Kamal S., 4,500,159, Cl. 339-147.00R.

Bova, Joseph D. Method and apparatus for continuous production of expandable honeycomb. 4,500,380, Cl. 156-197.000.

Bower, George L.: *See*—
Ellenberger, Charles E.; Bower, George L.; and Snow, William R., 4,500,563, Cl. 427-38.000.

Boys, Donald R.; and Graves, Walter E., to Varian Associates, Inc. Disk or wafer handling and coating system. 4,500,407, Cl. 204-298.000.

Boys, Donald R.; and Smith, Robert M., to Varian Associates, Inc. Apparatus for and method of controlling sputter coating. 4,500,408, Cl. 204-298.000.

Boys, Donald R.; and Graves, Walter E., to Varian Associates, Inc. Magnetron sputter coating source for both magnetic and non magnetic target materials. 4,500,409, Cl. 204-298.000.

Bozzone, Richard T., Sr.: *See*—
Lynch, Joseph M.; Pfafflin, James R.; Pecker, Calman; Cardenas, Raul; Cunningham, Seamus; Bozzone, Richard T., Sr.; and Borg, Sidney, 4,500,428, Cl. 210-609.000.

Bradburn, Ronald G.: *See*—
Austin, James W.; Bradburn, Ronald G.; Cromwell, Clarence A.; Gratch, Eitan; Groiss, Erich; Perkins, Derek; and Walker, Robert A., 4,500,496, Cl. 423-55.000.

Bradbury, Allan G.: *See*—
Fulger, Charles V.; and Bradbury, Allan G., 4,500,558, Cl. 426-622.000.

Bradley, Wilson E., Jr.; and Rye, Palle, to Evapco, Inc. Drift eliminator. 4,500,330, Cl. 55-257.0PV.

Braga, Thomas G.: *See*—
French, Eddie; and Braga, Thomas G., 4,500,445, Cl. 252-387.000.

Braitsch, Hans; Ortwein, Hermann; and Vorwald, Josef, to Clouth Gummiwerke Aktiengesellschaft. Railway road bed. 4,500,037, Cl. 238-2.000.

Branco, Antonio: *See*—
Ford, James M.; Dean, Robert A.; Woodard, Kenneth E., Jr.; and Branco, Antonio, 4,500,379, Cl. 156-172.000.

Brand, Rolf. Propeller and engine mounting device. 4,500,053, Cl. 244-54.000.

Brandes, Wilhelm: *See*—
Elbe, Hans-Ludwig; Buchel, Karl H.; Frohberger, Paul-Ernst; and Brandes, Wilhelm, 4,500,537, Cl. 514-383.000.

Brandigampola, Don E., to Valcom Limited. Antenna construction. 4,500,888, Cl. 343-873.000.

Brassell, Gilbert W.; and Brugger, Ronald P., to Brassell, Gilbert W. Bonded carbon or ceramic fiber composite filter vent for radioactive waste. 4,500,328, Cl. 55-97.000.

Bratt, Christer, to United Stirling AB. Heater head for a multi-cylinder hot gas engine. 4,499,726, Cl. 60-517.000.

Brauch, Robert B.: *See*—
Blackwood, John; Graham, Thomas G.; and Brauch, Robert B., 4,499,839, Cl. 112-317.000.

Braun, William V.: *See*—
Shanley, Charles W.; and Braun, William V., 4,501,018, Cl. 455-83.000.

Brecker, Lawrence R.; and Keeley, Charles, to Argus Chemical Corporation. Codispersed particulate lubricant stabilizer compositions for synthetic resins. 4,500,665, Cl. 524-227.000.

Breedis, John F.; and Fister, Julius C., to Olin Corporation. Method of forming a composite material having improved bond strength. 4,500,028, Cl. 228-117.000.

Breedis, John F.: *See*—
Fister, Julius C.; and Breedis, John F., 4,500,605, Cl. 428-469.000.

Brenda Mines Ltd.: *See*—
Austin, James W.; Bradburn, Ronald G.; Cromwell, Clarence A.; Gratch, Eitan; Groiss, Erich; Perkins, Derek; and Walker, Robert A., 4,500,496, Cl. 423-55.000.

Brendling, Lennart I. Collapsible urinal drop collector applicator. 4,500,314, Cl. 604-346.000.

Brennan, Gerald J. Chimney flue insertion apparatus. 4,500,078, Cl. 269-46.000.

Brennan, Michael E., to Texaco Inc. Alkoxylated modified Mannich condensates and manufacture of rigid polyurethane foams therewith. 4,500,655, Cl. 521-163.000.

Brenton, Ronald G.; and Runck, Robin B., to Berwind Corporation. Method of manufacturing capacitance-type material level indicator probe. 4,499,640, Cl. 29-25.410.

Bretscher, Erwin; and Vettiger, Peter, to International Business Machines Corporation. System for improving the uniformness of patterns generated by electron beam lithography. 4,500,790, Cl. 250-492.200.

Brian Davis and Company Proprietary Limited: *See*—
Carlson, Arthur R., 4,499,998, Cl. 206-541.000.

Bridgeman, Danial N. P. Apparatus for producing continuous bags of thin wall material. 4,500,307, Cl. 493-196.000.

Bridgestone Tire Company Limited: *See*—
Ogawa, Masaki; and Shiomura, Yasuro, 4,500,685, Cl. 525-343.000.

Briesemeister, Richard A.: *See*—
Paulson, Bernard S.; Paulson, Bruce H.; Clark, Brian K.; and Briesemeister, Richard A., 4,499,992, Cl. 198-498.000.

Brimfield Precision, Inc.: *See*—
Lyons, William G., III, 4,499,899, Cl. 128-305.000.

Brinkworth, Robert T.: *See*—
Katsen, Boris J.; Brinkworth, Robert T.; Kay, Daniel J.; and Riester, James A., 4,500,354, Cl. 106-21.000.

Briones, Francisco R.; and Boutros, Kamal S., to Allied Corporation. Filter electrical connector. 4,500,159, Cl. 339-147.00R.

Brisabois, Roger, to Regie Nationale des Usines Renault. Automotive vehicle drive train. 4,499,791, Cl. 74-700.000.

Bristol-Myers Company: *See*—
Imae, Kiyoto; Aburaki, Shimpei; Narita, Yukio; Okumura, Jun; and Naito, Takayuki, 4,500,526, Cl. 514-226.000.

Britten, Roy J.; and Davidson, Eric H., to California Institute of Technology. Large area spark chamber and support, and method of recording and analyzing the information on a radioactive work piece. 4,500,786, Cl. 250-389.000.

Brochman, Wilfred R., to Minnesota Mining and Manufacturing Company. Tape closure for a can end. 4,500,011, Cl. 220-359.000.

Broderna Holmbergs Fabriks AB: *See*—
Elwing, Ben; Foldi, Peter; and Holmberg, Gote, 4,499,824, Cl. 100-48.000.

Brose Fahrzeugteile GmbH und Co.: *See*—
Leistner, Rolf; and Becker, Herbert, 4,499,787, Cl. 74-625.000.

Brothers, Lance E.; and Rao, S. Prabhakara, to Halliburton Company. Oil field cementing methods and compositions. 4,500,357, Cl. 106-90.000.

Broussoux, Dominique; Facoetti, Hugues; Ravinet, Pierre; Bernard, Daniel; and Micheron, Francois, to Thomson-CSF. Process for the production of a block of piezoelectric macromolecular material. 4,500,377, Cl. 156-164.000.

Brown, Christopher K.; Kensinger, Lex D.; Over, William R.; and Wion, Donald A., to AMP Incorporated. Automatic wiring apparatus with rotatable insertion tooling. 4,499,648, Cl. 29-564.200.

Brown, Karen K.; and Stewart, Richard C., to Miles Laboratories, Inc. Influenza vaccine production in liquid cell culture. 4,500,513, Cl. 424-89.000.

Brown, Patrick C., to Corning Glass Works. Low tension winding apparatus. 4,500,043, Cl. 242-45.000.

Brugger, Ronald P.: *See*—
Brassell, Gilbert W.; and Brugger, Ronald P., 4,500,328, Cl. 55-97.000.

Brunet, Maurice, to Societe Europeenne de Propulsion. Magnetic suspension device of a rotor placed in a sealed enclosure. 4,500,142, Cl. 308-10.000.

Brunswick Corporation: *See*—
Boda, James C., 4,499,780, Cl. 74-107.000.

Bruttel, Beat: *See*—
Hugelshofer, Paul; Bruttel, Beat; Pfenninger, Heinz; and Lacroix, Roger, 4,500,321, Cl. 8-527.000.

Bryant, Clifford A.: *See*—
Pacifici, Joseph A.; and Bryant, Clifford A., 4,500,039, Cl. 239-193.000.

Buan, Danilo P.; and Eckert, Alton B., to Pitney Bowes Inc. Apparatus and method for aligning postage meter components with an optical sensor. 4,500,780, Cl. 250-231.0SE.

Bucek, Francis J.; and Paxhia, Frank V., to International Business Machines Corporation. Storage apparatus for video data. 4,500,928, Cl. 358-296.000.

Buchel, Karl H.: *See*—
Elbe, Hans-Ludwig; Buchel, Karl H.; Frohberger, Paul-Ernst; and Brandes, Wilhelm, 4,500,537, Cl. 514-383.000.

Buck, Roy T.; Cloutier, Frank L.; Erni, R. Ernst; Low, Robert N.; and Terry, F. Duncan, to Hewlett-Packard Company. Disposable ink jet head. 4,500,895, Cl. 346-140.00R.

Buckle, Ian G.; and Built, Steven M., to Development Finance Corporation of New Zealand. Cyclic shear energy absorber. 4,499,694, Cl. 52-167.000.

Buckley, B. Shawn: *See*—
Buckley, Bruce S., 4,499,894, Cl. 126-450.000.

Buckley, Bruce S., to Buckley, B. Shawn. Passive solar water heater support box. 4,499,894, Cl. 126-450.000.

Budd Company, The: *See*—
Hull, Frederick H., 4,499,759, Cl. 73-146.000.

Buechler, Lester W. Method of engraving an invisible joint within a gravure printing cylinder. 4,500,929, Cl. 358-299.000.

Buffone, Louis A.: *See*—
Krohn, David A.; Buffone, Louis A.; and Vinarub, Edmond I., 4,500,870, Cl. 340-347.00P.

Built, Steven M.: *See*—
Buckle, Ian G.; and Built, Steven M., 4,499,694, Cl. 52-167.000.

Bullis, Robert H.; and Couch, Robert P., to United Technologies Corporation. Emitted ion surge/stall detection. 4,499,755, Cl. 73-116.000.

Bullock, Lance W.; Vlahek, Josip; and Kovacs, Ferenc, to W. R. Grace Australia Limited. Apparatus for thermoforming thermoplastic sheet materials. 4,500,277, Cl. 425-387.100.

Burkarth, Jack L., to Gulton Industries, Inc. Air diffuser. 4,499,815, Cl. 98-40.140.

Burn, William H., to Crescent Hosiery Mills. Crew sock with nonroll selvage top. 4,499,742, Cl. 66-172.00E.

Burns, Richard H.; Hall, William M.; and Hildebrand, Bernard P., to Singer Company, The. Holographic projection screen. 4,500,163, Cl. 350-3.700.

Burow, Kenneth W., Jr., to Eli Lilly and Company. Oxazolyl and thiazolyl amides as herbicides. 4,500,343, Cl. 71-76.000.

Burrington, James D.; and Blachman, Marc W., to Standard Oil Company, The. Catalytic dimerization of acrylonitrile. 4,500,468, Cl. 260-465.80D.

Burroughs Corporation: *See*—
Rayfield, Wilson P.; Peter, Emmett B., III; and Shultz, Richard E., 4,500,085, Cl. 271-207.000.

Burroughs Wellcome Co.: *See*—
Wisowaty, James C.; Swaringen, Roy A.; and Yeowell, David A., 4,500,711, Cl. 544-258.000.

Bussey, Harry, Jr. Billowed filling elements for packaging. 4,500,586, Cl. 428-174.000.

Byro, Thomas: *See*—
Anastasio, Frank J.; and Byro, Thomas, 4,499,831, Cl. 101-152.000.

C. Reichert Optische Werke, AG: *See*—
Tvedt, Kare E.; Kopstad, Guennar; and Haugen, Olav A., 4,499,670, Cl. 34-143.000.

C. S. Norcross & Sons: *See*—
Norcross, Charles E., 4,499,978, Cl. 188-79.50K.

Cadee , Theodorus P. M., to Van Doorne's Transmissie B.V. Apparatus for controlling the transmission ratio of an infinitely variable transmission. 4,500,301, Cl. 474-28.000.

Calabro, Philip. Mast support assembly. 4,500,064, Cl. 248-539.000.

California Institute of Technology: *See*—
Britten, Roy J.; and Davidson, Eric H., 4,500,786, Cl. 250-389.000.

Calvet, Pierre; and Platet, Bernard, to Office National d'Etudes et de Recherche Aerospatiales. Apparatus for the continuous measurement of the heating power of a gas. 4,500,214, Cl. 374-36.000.

Cambio, Orlando D., Jr., to Respiratory Care, Inc. Pediatric cartridge humidifier. 4,500,480, Cl. 261-104.000.

Campanella, Samuel J.: *See*—
Virupaksha, Krishnamoorthy; and Campanella, Samuel J., 4,501,001, Cl. 375-30.000.

Campbell, Donald N.: *See*—
Schmidt, John C.; Sands, Clifton A.; and Campbell, Donald N., 4,500,391, Cl. 204-1.00T.

Campbell, Frank L.; Barnum, Dean C.; and Corea, William C., to Chevron Research Company. Battery powered means and method for facilitating measurements while coring. 4,499,955, Cl. 175-46.000.

Campbell, Frank L.; Barnum, Dean C.; and Corea, William C., to Chevron Research Company. Locking means for facilitating measurements while coring. 4,499,956, Cl. 175-46.000.

Campoli, Alan A.; and Garcia, Fred, to United States of America, Interior. Self-actuating vacuum gas/liquid separator. 4,500,329, Cl. 55-189.000.

Canada, Her Majesty in Right of: *See*—
Wakeman, Philip E. D., 4,501,020, Cl. 455-226.000.

Canadian Fram Limited: *See*—
Charles, Herbert N., 4,499,865, Cl. 123-41.050.

Canamero, Ernest V.: *See*—
Cherkasky, Miles R.; and Canamero, Ernest V., 4,500,276, Cl. 425-297.000.

Cannavo, Glenn M.: *See*—
Gerteisen, Steven R.; Wenger, Richard M.; and Cannavo, Glenn M., 4,500,595, Cl. 428-294.000.

Cannon, Lee E.; and Wilson, Kentner B., to Wilson, Kentner B. Automatic tool changer. 4,499,650, Cl. 29-568.000.

Canon Kabushiki Kaisha: *See*—
Endo, Takashi, 4,500,187, Cl. 354-266.000.
Haraguchi, Shosuke; and Tosaka, Yoichi, 4,500,185, Cl. 354-209.000.
Hashimoto, Seiji; Tanaka, Nobuyoshi; Suga, Akira; and Kuwayama, Tetsuro, 4,500,913, Cl. 358-44.000.
Hosono, Nagao, 4,500,195, Cl. 355-3.00R.
Ishikawa, Shozo; Katagiri, Kazuharu; Watanabe, Katsunori; Sakai, Kiyoshi; and Kitahara, Makoto, 4,500,619, Cl. 430-59.000.
Kitagishi, Nozomu; and Tajima, Akira, 4,500,188, Cl. 354-406.000.
Koumura, Noboru; Ayata, Naoki; Saito, Seiji; Suzuki, Hidetoshi; and Ozawa, Kunitaka, 4,500,918, Cl. 358-75.000.
Sunouchi, Akio; Suzuki, Ryuji; Fujino, Masahisa; and Konno, Tatsuo, 4,500,186, Cl. 354-234.000.
Suzuki, Ryoichi; and Tokuda, Ryuji, 4,500,193, Cl. 354-471.000.

Caporiccio, Gerardo; Viola, Gian T.; and Corti, Costante, to Montedison S.p.A. Process for the insertion of perfluoroolefines on perfluoropolyethers and corresponding products. 4,500,739, Cl. 568-677.000.

Cardenas, Raul: *See*—
Lynch, Joseph M.; Pfafflin, James R.; Pecker, Calman; Cardenas, Raul; Cunningham, Seamus; Bozzone, Richard T., Sr.; and Borg, Sidney, 4,500,428, Cl. 210-609.000.

Carfer S.r.l.: *See*—
Carraroli, Dario; and Giavelli, Giordano, 4,500,287, Cl. 432-246.000.

Carl Manufacturing Co., Ltd.: *See*—
Mori, Chuzo, 4,499,805, Cl. 83-468.000.

Carlsen, Russell O.; Casati, Francois M.; and Raden, Daniel S., to Abbott Laboratories. Catalyst system and process for the production of polyurethanes. 4,500,654, Cl. 521-129.000.

Carlson, Arthur R., to Brian Davis and Company Proprietary Limited. Food container with removable lid. 4,499,998, Cl. 206-541.000.

Carossino, Andre , to Carossino Freres. Clamp apparatus, especially for clamping a part onto a machine tool. 4,500,081, Cl. 269-93.000.

Carossino Freres: *See*—
Carossino, Andre , 4,500,081, Cl. 269-93.000.

Carr, Kenneth R., to United States of America, Energy. Rotational viscometer for high-pressure high-temperature fluids. 4,499,753, Cl. 73-59.000.

Carraroli, Dario; and Giavelli, Giordano, to Carfer S.r.l.; and Officina Meccanica Giavelli S.p.A. Roller table for single-layer ceramic kilns in general. 4,500,287, Cl. 432-246.000.

Carre , Jean-Jacques: *See*—
Pressaco, Pierre; and Carre , Jean-Jacques, 4,499,812, Cl. 91-376.00R.

Carrier Corporation: *See*—
Bolton, Theodore S.; Leech, Brad G.; and Lang, Richard D., 4,499,816, Cl. 98-40.260.

Carroll, Kenneth M.: *See*—
Ward, William J., III; Ritzer, Alan; Carroll, Kenneth M.; and Flock, John W., 4,500,724, Cl. 556-472.000.

Carroll, Martin J.: *See*—
Fatula, James J., Sr.; and Carroll, Martin J., 4,499,693, Cl. 51-322.000.

Carroll, Robert G.: *See*—
Moore, George W.; and Carroll, Robert G., 4,499,735, Cl. 60-739.000.

Cartabbia, Giovanni, to Bordogna O. & C., Macpi S.p.A. Machine for ironing collars and cuffs. 4,499,677, Cl. 38-28.000.

Carter, William A.: *See*—
Kim, Yong-Wu; Coduti, Phillip L.; Sok, Brian A.; and Carter, William A., 4,500,561, Cl. 427-25.000.

Caruthers, Marvin H.; and Matteucci, Mark D., to University Patents, Inc. Nucleosides useful in the preparation of polynucleotides. 4,500,707, Cl. 536-27.000.

Carver, John H., to Rockwell International Corporation. Asymmetrical time division matrix apparatus. 4,500,986, Cl. 370-58.000.

Casati, Francois M.: *See*—
Carlsen, Russell O.; Casati, Francois M.; and Raden, Daniel S., 4,500,654, Cl. 521-129.000.

Cases, Moises; Kraft, Wayne R.; Stahl, William L., Jr.; and Thoma, Nandor G., to International Business Machines Corporation. Logic performing cell for use in array structures. 4,500,800, Cl. 307-468.000.

Casimir Kast GmbH & Co. KG: *See*—
Reppel, Werner; and Overlack, Claus, 4,500,378, Cl. 156-160.000.

Casio Computer Co., Ltd.: *See*—
Ishida, Hideaki, 4,499,807, Cl. 84-1.030.

Cassar, Luigi: *See*—
Rochat, Alain C.; and Cassar, Luigi, 4,500,718, Cl. 548-471.000.

Cassella Aktiengesellschaft: *See*—
Engelhardt, Friedrich; Kuhlein, Klaus; Riegel, Ulrich; von Halasz, Sigmar; Dawson, Jeffery C.; and Reed, Anthony R., 4,500,437, Cl. 252-8.55C.

Cassidy, Dale A.: *See*—
Groh, Edward F.; Cassidy, Dale A.; and Lewandowski, Edward F., 4,500,488, Cl. 376-409.000.

Castner, B. Christian, to Shipley Company Inc. Apparatus for regulating plating solution in a plating bath. 4,499,852, Cl. 118-690.000.

Castonguay, Richard N.: *See*—
King, John J.; Sellers, Ralph F.; and Castonguay, Richard N., 4,500,582, Cl. 428-116.000.

Catalysts & Chemicals Industries Co., Ltd.: *See*—
Fuchikami, Jun; Higashi, Hidehiro; Inoue, Takashi; and Oba, Hiroyuki, 4,500,645, Cl. 502-65.000.

Caterpillar Tractor Co.: *See*—
Ballheimer, Benny, 4,499,786, Cl. 74-606.00R.

Cato Research, Inc.: *See*—
Kruesi, Paul R.; and Kruesi, William H., 4,500,498, Cl. 423-100.000.

Catsimpoolas, Nicholas, to Boston University, Trustees of. Tranquilizing and reducing or preventing seizures. 4,500,524, Cl. 514-250.000.

Caucik, Pavol: *See*—
Durmis, Julius; Balogh, Alojz; Karvas, Milan; Hrachovcova, Maria; Masek, Jan; Caucik, Pavol; and Povazancova, Marta, 4,500,446, Cl. 252-403.000.

Cavallanti, Virginio: *See*—
Lagana', Vincenzo; and Cavallanti, Virginio, 4,500,734, Cl. 564-72.000.

Caverly, John C.: *See*—
Allor, Richard L.; and Caverly, John C., 4,499,646, Cl. 29-447.000.

Cedarstrom, Roy A.: *See*—
Gagnon, Ralph J.; and Cedarstrom, Roy A., 4,500,172, Cl. 350-331.00R.

Cedrone, Nicholas J. Axial lead tester/sorter. 4,500,003, Cl. 209-573.000.

Celanese Corporation: *See*—
Freundlich, Richard A., 4,500,603, Cl. 428-409.000.
Fruchey, Olan S., 4,500,464, Cl. 260-413.000.

Cellucci, Robert: *See*—
Madden, Allan C.; Cellucci, Robert; Hoshida, Robert A.; and MacKay, Duncan, 4,499,768, Cl. 73-462.000.

Central Glass Co., Ltd.: *See*—
Kita, Yasushi; Moroi, Shirou; Sakanoue, Akira; and Nakano, Hisaji, 4,500,678, Cl. 252-58.000.

Cernansky, Joseph S.: *See*—
Rudell, Elliot A.; Shumate, Michael E.; and Cernansky, Joseph S., 4,500,104, Cl. 280-289.00D.

Challenger Caribbean Corporation: *See*—
Sepulveda, Luis F., 4,500,863, Cl. 337-70.000.

Challenger Zinsco, Inc.: *See*—
Sepulveda, Luis F., 4,500,863, Cl. 337-70.000.

Chalmers, Edward L., II, to Lange International S.A. Ski boot. 4,499,676, Cl. 36-120.000.

Cham, Edward J.: *See*—
Specht, Theodore R.; and Cham, Edward J., 4,500,829, Cl. 323-215.000.

Chan, Ka-Kong; Holland, George W.; and Rosen, Perry, to Hoffmann-La Roche Inc. Unsaturated eicosanoic acids. 4,500,462, Cl. 260-405.500.

Chan, Steven S., to Ampex Corporation. Universal interface unit. 4,500,933, Cl. 360-69.000.

Chandler Evans Inc: *See*—
Sundberg, Jack G.; Schaffner, John P.; and Conlon, Daniel J., 4,500,268, Cl. 418-1.000.

Chang, Clarence D.; and Miale, Joseph N., to Mobil Oil Corporation. Catalysis over activated zeolites. 4,500,421, Cl. 208-116.000.

Chang, Clarence D.: *See*—
Miale, Joseph N.; and Chang, Clarence D., 4,500,418, Cl. 208-114.000.
Miale, Joseph N.; and Chang, Clarence D., 4,500,419, Cl. 208-115.000.
Miale, Joseph N.; and Chang, Clarence D., 4,500,420, Cl. 208-116.000.
Miale, Joseph N.; and Chang, Clarence D., 4,500,422, Cl. 208-117.000.

Chang, Ifay F., to International Business Machines Corporation. Full word coding for information processing. 4,500,955, Cl. 364-200.000.

Chang, Joseph J.; and Ramsey, Maynard, III, to Critikon, Inc. Retreated sensing electrode. 4,499,901, Cl. 128-635.000.

Chang, Pei K., to Stauffer Chemical Company. Vegetable protein evidencing improved solution viscosity. 4,500,454, Cl. 260-123.500.

Chang, Shih-Jeh, to AT&T Bell Laboratories. Communication path continuity verification arrangement. 4,500,985, Cl. 370-14.000.

Chardon, Manfred; Mauries, Reinhard; Rohner, Joachim; and Zumfeld, Heinz, to W. Schlafhorst & Co. Method and device for the knot-free connection of two threads. 4,499,715, Cl. 57-22.000.

Charles, Herbert N., to Canadian Fram Limited. Integral engine cooling system. 4,499,865, Cl. 123-41.050.

Chauvin, Bernard, to Bongrain S.A. Cheese with micro-organism—caused decoration on its rind and process for producing same. 4,500,550, Cl. 426-38.000.

Chem-Elec, Inc.: *See*—
Woenker, William E., 4,500,046, Cl. 242-67.10R.

Chemicke zavody Juraja Dimitrova, narodny podnik: *See*—
Durmis, Julius; Balogh, Alojz; Karvas, Milan; Hrachovcova, Maria; Masek, Jan; Caucik, Pavol; and Povazancova, Marta, 4,500,446, Cl. 252-403.000.

Chemische Werke Huls Aktiengesellschaft: *See*—
Disteldorf, Josef; and Gras, Rainer, 4,500,697, Cl. 528-45.000.
Disteldorf, Josef; and Gras, Rainer, 4,500,698, Cl. 528-45.000.
Gras, Rainer, 4,500,696, Cl. 528-45.000.

Chen, Nai Y.; Haag, Werner O.; Huang, Tracy J.; and Wong, Stephen S., to Mobil Oil Corporation. Conversion of Fischer-Tropsch products. 4,500,417, Cl. 208-111.000.

Cheng, Chung-Tsung. Kitchen exhaust apparatus. 4,500,331, Cl. 55-406.000.

Cheng, Dah Y., to International Power Technology, Inc. Control system for Cheng dual-fluid cycle engine system. 4,499,721, Cl. 60-39.050.

Cherkasky, Miles R.; and Canamero, Ernest V., to Cherkasky, Miles R. Apparatus for making deep dish pizza crusts or the like. 4,500,276, Cl. 425-297.000.

Chernack, Milton: *See*—
Greenberg, Mishel; Smyers, William H., Jr.; and Chernack, Milton, 4,499,905, Cl. 128-727.000.

Chesebrough-Pond's Inc.: *See*—
Greenberg, Mishel; Smyers, William H., Jr.; and Chernack, Milton, 4,499,905, Cl. 128-727.000.

Chevalier, Andre , to Institut Francais du Petrole. Plug-in electric connector for use in a liquid medium. 4,500,155, Cl. 339-94.00M.

Chevron Research Company: *See*—
Campbell, Frank L.; Barnum, Dean C.; and Corea, William C., 4,499,955, Cl. 175-46.000.
Campbell, Frank L.; Barnum, Dean C.; and Corea, William C., 4,499,956, Cl. 175-46.000.
Edwards, Laroy H., 4,500,539, Cl. 514-364.000.
Hubred, Gale L.; and Van Leirsburg, Dean A., 4,500,495, Cl. 423-53.000.
Krug, Russell R.; and Schmidt, Peter C., 4,500,423, Cl. 208-161.000.

Chiba, Hiromasa; Obama, Kenjiro; Kawazoe, Shunji; Oka, Takahiro; and Sato, Akihiro, to Chisso Corporation. High melt-viscoelastic polypropylene for post-processed sheets and for blow molding. 4,500,682, Cl. 525-240.000.

Chichibu Cement Co. Ltd.: *See*—
Nagai, Hiroshi, 4,500,286, Cl. 432-106.000.

Childs, William H., to Communications Satellite Corporation. Simplified minimum shift keying modulator. 4,500,856, Cl. 332-9.00R.

Chisso Corporation: *See*—
Chiba, Hiromasa; Obama, Kenjiro; Kawazoe, Shunji; Oka, Takahiro; and Sato, Akihiro, 4,500,682, Cl. 525-240.000.
Tomioka, Susumu; and Taniguchi, Masahiko, 4,500,384, Cl. 156-290.000.
Yemoto, Jiichiro; Tarao, Ryokichi; and Yamamoto, Yoshio, 4,500,725, Cl. 556-482.000.

Chiu, Herman; S.: *See*—
Nicholson, Myron D.; and Chiu, Herman; S., 4,500,576, Cl. 428-36.000.

Choay, Jean: *See*—
Lormeau, Jean-Claude; Petitou, Maurice; and Choay, Jean, 4,500,519, Cl. 514-56.000.

Choay S.A.: *See*—
Lormeau, Jean-Claude; Petitou, Maurice; and Choay, Jean, 4,500,519, Cl. 514-56.000.

Chorvat, Robert J.; Lenz, George R.; and Evans Radak, Suzanne, to G. D. Serle & Co. Benzothiazine derivatives. 4,500,708, Cl. 544-34.000.

Christensen, Inc.: *See*—
Grappendorf, Richard H.; and West, Jana L., 4,499,959, Cl. 175-330.000.

Christie, Alan M.; and Snyder, Kurt I., to United States of America, Energy. Pressure surge attenuator. 4,500,487, Cl. 376-283.000.

Christinger, Werner, to Becton, Dickinson and Company. Variable sealing pressure plunger rod assembly. 4,500,310, Cl. 604-228.000.

Chu, Wayne S., to Ralston Purina Company. Fish skinning process. 4,500,555, Cl. 426-479.000.

Chugai Seiyaku Kabushiki Kaisha: *See*—
Honda, Masamitsu; Nagai, Hideaki; Takishima, Shoko; Kawamura, Akinori; Kawamura, Noriko; Dan, Takashi; Koizumi, Masuo; Murakami, Yasushi; Hinohara, Yoshikazu; Nakano, Hideki; and Takagaki, Yoshio, 4,500,714, Cl. 546-309.000.
Hosokawa, Tomoyoshi; Matsuura, Ikutoshi; Takahashi, Hidenori; Ando, Kunio; and Tamura, Gakuzo, 4,500,544, Cl. 514-543.000.

Chuo Spring Co., Ltd.: *See*—
Kitagawa, Katsutoshi; Isogai, Kiyoshi; Ohmori, Nobuo; Takita, Naka; Okamoto, Makoto; Koga, Itsuo; and Ito, Kazuo, 4,500,099, Cl. 277-228.000.

Ciba-Geigy Corporation: *See*—
Dittrich, Volker, 4,500,521, Cl. 514-81.000.
Gosteli, Jacques; Ernest, Ivan; and Woodward, Robert B., 4,500,457, Cl. 260-245.20R.
Habicht, Ernst; and Zbinden, Paul, 4,500,542, Cl. 514-465.000.
Hugelshofer, Paul; Bruttel, Beat; Pfenninger, Heinz; and Lacroix, Roger, 4,500,321, Cl. 8-527.000.
Irving, Edward; and Smith, Terence J., 4,500,629, Cl. 430-325.000.
King, John J.; Sellers, Ralph F.; and Castonguay, Richard N., 4,500,582, Cl. 428-116.000.
Martin, Henry, 4,500,347, Cl. 71-97.000.
Rochat, Alain C.; and Cassar, Luigi, 4,500,718, Cl. 548-471.000.
Stockinger, Friedrich; and Haug, Theobald, 4,500,691, Cl. 525-503.000.
Vlattas, Isidoros, 4,500,472, Cl. 260-245.500.

Cincinnati Milacron Inc.: *See*—
Hennekes, Daniel M.; Suica, David E.; and Beckman, Robert F., 4,500,065, Cl. 248-542.000.

Cipher Data Products, Inc.: *See*—
Gray, Martin D., 4,500,965, Cl. 364-400.000.

Cipolla, Arthur F.: *See*—
Gomersall, Earl R.; and Cipolla, Arthur F., 4,500,880, Cl. 340-825.350.

Claas Ohg: *See*—
Hollmann, Bernd, 4,499,714, Cl. 56-341.000.

Clading-Boel, John P., to Waite & Son Limited. Aqueous ink writing tip. 4,500,222, Cl. 401-209.000.

Clarion Co., Ltd.: *See*—
Tomizawa, Akimori; and Osaka, Hiroshi, 4,500,921, Cl. 358-174.000.

Clark, Amos M.: *See*—
Billingsley, Henry C.; and Clark, Amos M., 4,499,887, Cl. 123-575.000.

Clark, Brian K.: *See*—
Paulson, Bernard S.; Paulson, Bruce H.; Clark, Brian K.; and Briesemeister, Richard A., 4,499,992, Cl. 198-498.000.

Clark Equipment Company: *See—*
Trusock, George J.; Bauer, James J.; and Gandhi, Bhupen, 4,500,819, Cl. 318-106.000.
Clark, James M.; Secrist, Duane R.; Hardin, Scotty L.; and McEntyre, Stephen C., to Great Lakes Carbon Corporation. Anode retraction device for a Hall-Heroult cell equipped with inert anodes. 4,500,401, Cl. 204-225.000.
Clark, K. Warren: *See—*
Puglia, Wayne J.; Kehoe, Gary S.; and Clark, K. Warren, 4,500,547, Cl. 426-3.000.
Clelford, Douglas H.: *See—*
Murphy, Richard D.; Perez, Ricardo L.; and Clelford, Douglas H., 4,500,967, Cl. 364-434.000.
Clevinger, Martin R. Dual signal magnetic pickup with even response of strings of different diameters. 4,499,809, Cl. 84-1.150.
Cline, Harvey E., to General Electric Company. Thin film binary metallic eutectics. 4,500,609, Cl. 428-610.000.
Cline, Harvey E., to General Electric Company. Semiconductor devices utilizing eutectic masks. 4,500,898, Cl. 357-23.000.
Cline, Richard L.: *See—*
Rabito, Thomas G.; Oswalt, Stephen M.; and Cline, Richard L., 4,500,606, Cl. 428-480.000.
Clouston, John L. System for immobilizing a plywood press platen during a press cycle. 4,499,821, Cl. 100-51.000.
Clouth Gummiwerke Aktiengesellschaft: *See—*
Braitsch, Hans; Ortwein, Hermann; and Vorwald, Josef, 4,500,037, Cl. 238-2.000.
Cloutier, Frank L.: *See—*
Buck, Roy T.; Cloutier, Frank L.; Erni, R. Ernst; Low, Robert N.; and Terry, F. Duncan, 4,500,895, Cl. 346-140.00R.
Coats Wheel Balancer Corp.: *See—*
Madden, Allan C.; Cellucci, Robert; Hoshida, Robert A.; and MacKay, Duncan, 4,499,768, Cl. 73-462.000.
Coburn, James A. Identification band. 4,499,680, Cl. 40-304.000.
Coca-Cola Company, The: *See—*
Kramer, Thomas, 4,500,248, Cl. 414-459.000.
Cochran, Stanley R.; and Strahorn, Francis W., to Du Pont de Nemours, E. I., and Company. Yarn heat treatment apparatus. 4,500,278, Cl. 425-445.000.
Coden, Michael H.: *See—*
Scholl, Frederick W.; and Coden, Michael H., 4,500,165, Cl. 350-96.200.
Codenoll Technology Corporation: *See—*
Scholl, Frederick W.; and Coden, Michael H., 4,500,165, Cl. 350-96.200.
Codman & Shurtleff, Inc.: *See—*
Mickiewicz, Stanley, 4,500,832, Cl. 323-340.000.
Coduti, Phillip L.: *See—*
Kim, Yong-Wu; Coduti, Phillip L.; Sok, Brian A.; and Carter, William A., 4,500,561, Cl. 427-25.000.
Coherent, Inc.: *See—*
Sasnett, Michael W.; Hobart, James L.; and Gibson, Larry A., 4,500,996, Cl. 372-19.000.
Colder Products Company: *See—*
Blenkush, Brian J., 4,500,118, Cl. 285-247.000.
Cole, Ernest R., Jr.; Lee, Agnes Y.; and Paulson, Danton L., to United States of America, Interior. Production of lead from sulfides. 4,500,398, Cl. 204-117.000.
Cole, Eugene O.; and Yeterian, Vahan H., to United States of America, Air Force. Optical system for measuring shadowgraph data. 4,500,206, Cl. 356-376.000.
Cole Polymers Limited: *See—*
Pearson, Leonard L.; and Litchfield, John, 4,500,568, Cl. 427-294.000.
Cole, Rodger E.; and Vander Meer, Richard H., to Goldco Engineering, Inc. Method and apparatus for forming cylindrical articles into a single line. 4,500,229, Cl. 406-88.000.
Coleman, John E.: *See—*
Kaczur, Jerry J.; and Coleman, John E., 4,500,499, Cl. 423-139.000.
Collins, Gordon T., to Allied Corporation. Electrical connector assembly having an anti-decoupling device. 4,500,154, Cl. 339-89.00M.
Colores Hispania, S.A.: *See—*
Sole, Carlos M.; and Vallvey, Juan A., 4,500,361, Cl. 106-298.000.
Combi Co., Ltd.: *See—*
Nakao, Shinroku; Ishii, Yoshiyasu; and Matsuda, Hiroaki, 4,500,133, Cl. 297-131.000.
Combustion Electromagnetics, Inc.: *See—*
Ward, Michael A. V.; and Lefevre, Robert P., 4,499,872, Cl. 123-344.000.
Combustion Engineering, Inc.: *See—*
Loomis, Robert W.; and Lawton, Carl W., 4,499,860, Cl. 122-510.000.
Commander Electrical Equipment, Inc.: *See—*
Sepulveda, Luis F., 4,500,863, Cl. 337-70.000.
Commissariat a l'Energie Atomique: *See—*
Courtois, Guy; and Jaquen, Claude, 4,500,227, Cl. 405-128.000.
Communications Satellite Corporation: *See—*
Childs, William H., 4,500,856, Cl. 332-9.00R.
Virupaksha, Krishnamoorthy; and Suyderhoud, Henri G., 4,500,842, Cl. 328-150.000.
Virupaksha, Krishnamoorthy; and Campanella, Samuel J., 4,501,001, Cl. 375-30.000.
Compagnie Internationale pour l'Informatique Cii Honeywell Bull (Societe Anonyme): *See—*
Eltgen, Jean J., 4,500,293, Cl. 434-114.000.
Compagnie Neerlandaise de l'Azote (Societe Anonyme): *See—*
Van Hijfte, Willy H. P.; and Vanmarcke, Luc A., 4,500,336, Cl. 71-29.000.
Conard, Wendell R.: *See—*
Hayes, Robert A.; and Conard, Wendell R., 4,500,466, Cl. 260-429.900.
Congoleum Corporation: *See—*
Ehrenfeld, Frank E., Jr., 4,500,319, Cl. 8-114.500.
Conlon, Daniel J.: *See—*
Sundberg, Jack G.; Schaffner, John P.; and Conlon, Daniel J., 4,500,268, Cl. 418-1.000.
Conner, Bruce E. Electrochromic imaging apparatus. 4,500,174, Cl. 350-357.000.
Conoco Inc.: *See—*
Lovercheck, Dale R.; and Curran, George P., 4,499,864, Cl. 123-3.000.
Container Graphics Corporation: *See—*
Simpson, Jack R., 4,499,802, Cl. 83-117.000.
Conway, Gregory J., to United States of America, Army. Acoustic emission monitoring. 4,499,769, Cl. 73-587.000.
Cook, David L., to PDL Industries Limited. Weatherproof and/or dust proof fitting. 4,500,008, Cl. 220-242.000.
Cook, Frank T.; Nutt, Michael O.; and Hsieh, Hsin H., to Dow Chemical Company, The. Process for preparation of 2-oxazolidinones. 4,500,717, Cl. 548-229.000.
Cook, John E.: *See—*
Hanson, John D.; and Cook, John E., 4,499,916, Cl. 137-103.000.
Cooper, Larry: *See—*
Lieu, Dennis K.; and Cooper, Larry, 4,499,736, Cl. 62-3.000.
Copeland, James R., to Whitehall Corporation. Seismic streamer connector assembly. 4,500,980, Cl. 367-154.000.
Copelin, Harry B., to Du Pont de Nemours, E. I., and Company. Method for reducing oligomeric cyclic ether content of a polymerizate. 4,500,705, Cl. 528-417.000.
Copyer Kabushiki Kaisha: *See—*
Ishikawa, Shozo; Katagiri, Kazuharu; Watanabe, Katsunori; Sakai, Kiyoshi; and Kitahara, Makoto, 4,500,619, Cl. 430-59.000.
Corea, William C.: *See—*
Campbell, Frank L.; Barnum, Dean C.; and Corea, William C., 4,499,955, Cl. 175-46.000.
Campbell, Frank L.; Barnum, Dean C.; and Corea, William C., 4,499,956, Cl. 175-46.000.
Cormed, Inc.: *See—*
Jess, Thurman S., 4,500,269, Cl. 418-45.000.
Cornell Research Foundation, Inc.: *See—*
Nathanielsz, 4,500,523, Cl. 514-178.000.
Cornick, Keith: *See—*
Ko, Yu M.; and Cornick, Keith, 4,500,834, Cl. 324-52.000.
Corning Glass Works: *See—*
Brown, Patrick C., 4,500,043, Cl. 242-45.000.
Crossman, Tommy L., 4,500,549, Cl. 426-33.000.
Thompson, David A., 4,500,722, Cl. 549-429.000.
Weetall, Howard H., 4,500,554, Cl. 426-323.000.
Corti, Costante: *See—*
Caporiccio, Gerardo; Viola, Gian T.; and Corti, Costante, 4,500,739, Cl. 568-677.000.
Cotter, Byron R.; and Tang, David Y., to Occidental Chemical Corporation. Preparation of trifluoromethyl-benzoyl halides. 4,500,471, Cl. 260-544.00D.
Cottle, Wilbur W., Jr.; and Smith, Lilburn R., to Texas Instruments Incorporated. Gyro stabilized optics with fixed detector. 4,500,051, Cl. 244-3.160.
Couch, Robert P.: *See—*
Bullis, Robert H.; and Couch, Robert P., 4,499,755, Cl. 73-116.000.
Councell, Graham D. Fuel burning assembly. 4,499,858, Cl. 122-14.000.
Courtois, Guy; and Jaquen, Claude, to Commissariat a l'Energie Atomique. Process and geological installation for the removal of radioactive waste. 4,500,227, Cl. 405-128.000.
Coxon, John R. Device for clamping workpieces. 4,500,077, Cl. 269-45.000.
Coyle, Peter J., to RCA Corporation. Protective cartridge for disc record. 4,499,996, Cl. 206-444.000.
Crampton, Arthur W.; Gray, Hollis L., Jr.; and Mermelstein, Seymour, to Dresser Industries, Inc. Variable capacitance pressure transducer. 4,499,773, Cl. 73-718.000.
Crawford, James J.: *See—*
McCallister, Ronald D.; and Crawford, James J., 4,500,994, Cl. 371-43.000.
Creative Technology Corp.: *See—*
Tuten, William J.; and Crosby, Kennith D., 4,499,984, Cl. 194-4.00C.
Credali, Lino; Martini, Emilio; and Lori, Domenico, to Montedison S.p.A. Process for preparing multilayer fibrous structures and product. 4,500,594, Cl. 428-284.000.
Crepin, Herve , to Huret et ses Fils. Derailler for a cycle having an orientable chain guiding device. 4,500,302, Cl. 474-82.000.
Crescent Hosiery Mills: *See—*
Burn, William H., 4,499,742, Cl. 66-172.00E.
Critikon, Inc.: *See—*
Chang, Joseph J.; and Ramsey, Maynard, III, 4,499,901, Cl. 128-635.000.
Cromwell, Clarence A.: *See—*
Austin, James W.; Bradburn, Ronald G.; Cromwell, Clarence A.; Gratch, Eitan; Groiss, Erich; Perkins, Derek; and Walker, Robert A., 4,500,496, Cl. 423-55.000.

Crosby, Kennith D.: *See—*
Tuten, William J.; and Crosby, Kennith D., 4,499,984, Cl. 194-4.00C.
Crossman, Tommy L., to Corning Glass Works. Use of whey-derived products as cheese flavoring agents or enhancers. 4,500,549, Cl. 426-33.000.
Crowe, Norman P.: *See—*
Madewell, James A.; Molitor, Edwin A.; Crowe, Norman P.; Lampe, Guy W.; and Pavey, Charles F., 4,500,245, Cl. 414-108.000.
Crown Controls Corporation: *See—*
Luebrecht, Donald; and Klopfleisch, Kim A., 4,499,971, Cl. 187-9.00R.
Crown Cork & Seal Company, Inc.: *See—*
Urban, Joseph, 4,499,931, Cl. 141-67.000.
Crown Zellerbach Corporation: *See—*
Reba, Imants; Schutz, Rudolph W.; and Kozbur, Nestor, 4,499,801, Cl. 83-24.000.
Crozet, Francois E. G.: *See—*
Kervistin, Robert; Lardellier, Alain M. J.; Mazeaud, Georges; and Crozet, Francois E. G., 4,500,143, Cl. 384-467.000.
Crump, Druce K.; Simon, Jaime; and Wilson, David A., to Dow Chemical Company, The. Methylenephosphonic acid derivatives of bis-(aminoalkyl)piperazines as cement set retarding agents. 4,500,356, Cl. 106-90.000.
Crump, Druce K.: *See—*
Simon, Jaime; Crump, Druce K.; and Wilson, David A., 4,500,469, Cl. 260-502.50E.
Crutcher Resources Corporation: *See—*
Goekler, Robert G., 4,500,570, Cl. 427-345.000.
Csaszar, Gabor; Oehley, Gernot F.; and Goldman, Fred M. Carburetion system. 4,500,475, Cl. 261-36.00A.
Cubin, Anatoly A.: *See—*
Zsoka, Istvan; Madar, Laszlo ; Cubin, Anatoly A.; Gaivoronsky, Albert A.; Farukshin, Lev H.; Morzsic, Piotr A.; Lisov, Aleksandr I.; and Galusztainc, Vladilen A., 4,499,947, Cl. 166-179.000.
Culver, Richard B.; and Oliver, Donald W., to Dresser Industries, Inc. Method and apparatus for determining neutron characteristics of borehole fluids. 4,500,781, Cl. 250-269.000.
Cummins, Donald L., to AMF Incorporated. Linear peristaltic pump. 4,500,266, Cl. 417-474.000.
Cummins Engine Company, Inc.: *See—*
Sermersheim, DeWayne T.; and Baxter, Jack L., 4,500,303, Cl. 474-112.000.
Cunningham, Seamus: *See—*
Lynch, Joseph M.; Pfafflin, James R.; Pecker, Calman; Cardenas, Raul; Cunningham, Seamus; Bozzone, Richard T., Sr.; and Borg, Sidney, 4,500,428, Cl. 210-609.000.
Curley, John J., Jr. Carrier for portable audio devices. 4,500,019, Cl. 224-222.000.
Curran, George P.: *See—*
Lovercheck, Dale R.; and Curran, George P., 4,499,864, Cl. 123-3.000.
Cvengros, Jan: *See—*
Tkac, Alexander; and Cvengros, Jan, 4,500,390, Cl. 159-6.100.
Cyriax, Wilhelm; Tamboers, Gerhard; and Holzschuh, Johannes, to Battenfeld Maschinenfabriken GmbH. Quick-change mold assembly for injection-molding machines. 4,500,274, Cl. 425-185.000.
D. W. Zimmerman Mfg., Inc.: *See—*
Fox, Albert D.; Kish, Robert J.; and Knight, Donn C., 4,500,074, Cl. 254-270.000.
Daemmer, Johnathan E., to Boulais, Richard A., a part interest. Robot vehicle guidance system including checkpoint realignment system. 4,500,970, Cl. 364-513.000.
Daewoo Electronic Co.: *See—*
Lee, Kyung-Suk, 4,500,752, Cl. 179-2.0EA.
D'Agostino, Vincent F.; Lee, Joseph Y.; Zapisek, Stephen; and Schore, George. Copper recovery process. 4,500,396, Cl. 204-107.000.
Dahod, Ashraf M. Digital communication system. 4,500,989, Cl. 370-85.000.
DAI-E Systems, Inc.: *See—*
Huang, Timothy D., 4,500,872, Cl. 340-365.00R.
Dai Nippon Insatsu Kabushiki Kaisha: *See—*
Kubota, Hajime, 4,500,373, Cl. 156-79.000.
Takeuchi, Hideo; Kaneko, Toshihisa; and Ikeda, Satoshi, 4,499,827, Cl. 101-425.000.
Daicel Chemical Industries, Ltd.: *See—*
Ishii, Kiyoshi; Murai, Masataka; and Yonekawa, Hitoshi, 4,500,426, Cl. 210-321.300.
Daikin Kogyo Co., Ltd.: *See—*
Ohmori, Akira; Tomihashi, Nobuyuki; and Kitahara, Takahiro, 4,500,694, Cl. 526-245.000.
Dainippon Screen Seizo Kabushiki Kaisha: *See—*
Yamada, Mitsuhiko, 4,500,917, Cl. 358-75.000.
D'Alfonso, Nunzio: *See—*
Neitz, Alfred; D'Alfonso, Nunzio; and Pickel, Hans, 4,499,871, Cl. 123-276.000.
Damico, Joyce A., to Kimberly-Clark Corporation. Disposable garment. 4,500,316, Cl. 604-389.000.
Dan, Takashi: *See—*
Honda, Masamitsu; Nagai, Hideaki; Takishima, Shoko; Kawamura, Akinori; Kawamura, Noriko; Dan, Takashi; Koizumi, Masuo; Murakami, Yasushi; Hinohara, Yoshikazu; Nakano, Hideki; and Takagaki, Yoshio, 4,500,714, Cl. 546-309.000.
Dana Corporation: *See—*
Kaminski, David C.; and Shea, Dennis W., 4,499,980, Cl. 192-35.000.
Daniels, Frank J. Palletizing process and a product of that process. 4,500,001, Cl. 206-597.000.
Daniels, Raymond A., to International Business Machines Corporation. Multiple roller magnetic brush developer having development electrode voltage switching. 4,500,198, Cl. 355-14.00D.
Danielsen, Brant R.: *See—*
Kulin, Ralph; Granzow, Daniel B.; and Danielsen, Brant R., 4,500,788, Cl. 250-455.100.
Dannatt, Hugh St. L., to Pitney Bowes Inc. Transport means for flat bed scanner. 4,500,197, Cl. 355-8.000.
Darland, Michael L.; Stoner, Donald L.; Baker, James W., Jr.; and Sponhnholtz, Michael A., to Microperipheral Corporation. Data communication system. 4,500,751, Cl. 179-2.0DP.
Dasgupta, Purnendu K. Continuously rejuvenated ion exchanger. 4,500,430, Cl. 210-638.000.
Daugherty, Estes M. Drill steel idler guide. 4,500,141, Cl. 308-4.00R.
David, Stan A.; and Woodhouse, John J., to United States of America, Energy. Assembly for testing weldability of sheet metal. 4,499,758, Cl. 73-159.000.
Davidson, Eric H.: *See—*
Britten, Roy J.; and Davidson, Eric H., 4,500,786, Cl. 250-389.000.
Davis, Lester M., deceased; and Davis, Ruth L., executor. Fishing lure. 4,499,682, Cl. 43-42.190.
Davis, Murray A. Production of breathing materials. 4,499,611, Cl. 2-169.000.
Davis, Randall C. Course correction calculator. 4,499,665, Cl. 33-1.0SB.
Davis, Ruth L., executor: *See—*
Davis, Lester M., deceased; and Davis, Ruth L., executor, 4,499,682, Cl. 43-42.190.
Davis, Sammy G.; and Gulling, Donna C. Method of fabricating dentures. 4,500,291, Cl. 433-213.000.
Dawson, Jeffery C.: *See—*
Engelhardt, Friedrich; Kuhlein, Klaus; Riegel, Ulrich; von Halasz, Sigmar; Dawson, Jeffery C.; and Reed, Anthony R., 4,500,437, Cl. 252-8.55C.
Dayco Corporation: *See—*
Foster, Randy C., 4,500,304, Cl. 474-138.000.
De Dietrich & Cie: *See—*
Guffroy, Gerard, 4,500,560, Cl. 427-8.000.
Dean, Raymond H.: *See—*
Reese, James A.; and Dean, Raymond H., 4,500,034, Cl. 236-49.000.
Dean, Robert A.: *See—*
Ford, James M.; Dean, Robert A.; Woodard, Kenneth E., Jr.; and Branco, Antonio, 4,500,379, Cl. 156-172.000.
Dean, Robert G.: *See—*
Bodge, Kevin R.; and Dean, Robert G., 4,499,762, Cl. 73-170.00A.
Debernardis, John F.; and Arendsen, David L., to Abbott Laboratories. Substituted 1-aminomethyl-phthalans. 4,500,543, Cl. 514-469.000.
de Campos, Hugo N., to Bendix Corporation, The. Bearing member. 4,500,144, Cl. 384-463.000.
Deconinck, Filip N.: *See—*
Rosseel, Henri J.; and Deconinck, Filip N., 4,501,008, Cl. 377-2.000.
Deere & Company: *See—*
Jacobi, Stephen F.; Haight, Robert E.; Schletzbaum, John W.; Martin, Yolanda E.; and Lang, Stephen P., 4,500,874, Cl. 340-607.000.
Sandvik, Leonard E., 4,500,062, Cl. 248-371.000.
deFasselle, Craig R.; and deFasselle, Robert J. Fluid flow switch. 4,500,759, Cl. 200-81.90R.
deFasselle, Robert J.: *See—*
deFasselle, Craig R.; and deFasselle, Robert J., 4,500,759, Cl. 200-81.90R.
DeFay, Christian: *See—*
Gimel, Bernard; and DeFay, Christian, 4,500,891, Cl. 346-76.0PH.
De Ferrari, Alfred; and Doddman, William H., to Avco Corporation. Powder feed system with recirculator for plasma spray apparatus. 4,500,038, Cl. 239-85.000.
Deforeit, Christian J., to Matth. Hohner AG. Method of and apparatus for producing an orchestra effect. 4,500,317, Cl. 84-1.240.
De Groot, Hubert, to N.V. Raychem S.A. Heat-recoverable article. 4,500,371, Cl. 156-48.000.
Dehn, Dieter, to Stellram GmbH. Rotary material removing tool. 4,500,233, Cl. 408-182.000.
Dejmek, Eberhard: *See—*
Girodi, Erich; Bornowski, Gunter; Dejmek, Eberhard; Knabe, Andreas; Koch, Roland; Urbach, Bernd; and Weisselberg, Arnold, 4,500,764, Cl. 219-59.100.
Dekura, Hitoshi: *See—*
Futaki, Kenji; and Dekura, Hitoshi, 4,500,971, Cl. 364-513.500.
Delalande S.A.: *See—*
Platel, Alain Y.; Lacour, Alain P.; and Bourgery, Guy R., 4,500,531, Cl. 514-255.000.
DeLigt, John, to Westvaco Corporation. Method of using a veneer butt-end splicer. 4,500,376, Cl. 156-159.000.
Della-Moretta, Leonard B. Aircraft towing and carrying linkage systems having high stability. 4,500,056, Cl. 244-137.00R.
De Lorenzi, John J.; and Sumka, Elmer H., to Westinghouse Electric Corp. Transportation system. 4,499,973, Cl. 187-29.000.
DeLuca, Hector F.; Tanaka, Yoko; Ikekawa, Nobuo; and Kobayashi, Yoshiro, to Wisconsin Alumni Research Foundation. 23,23-Difluoro-25-hydroxy-vitamin D_3 and process for preparing same. 4,500,460, Cl. 260-397.200.

Demonte, Flippo; and Figini, Mario, to Ing. C. Olivetti & C., S.p.A. Electronic typewriter. 4,500,216, Cl. 400-8.000.

Demoute, Jean-Pierre: *See—*
Martel, Jacques; Tessier, Jean; and Demoute, Jean-Pierre, 4,500,720, Cl. 549-313.000.

Demuth, Dietmar, to Thomson-CSF. Receiver device for a multi-element ultrasonic probe echograph and echograph equipped in this way. 4,499,902, Cl. 128-660.000.

Denise, Bernard; Hamon, Christian; Senes, Michel; and Sneeden, Raymond, to Societe Chimique de la Grande Paroisse, Azote et Producits Chimiques. Conversion catalysts for synthesis gas. 4,500,646, Cl. 502-78.000.

Desai, Rohit: *See—*
Loev, Bernard; Shroff, James R.; and Desai, Rohit, 4,500,527, Cl. 514-223.000.

DeSipio, Richard G.: *See—*
Beyer, Henry R.; DeSipio, Richard G.; Long, Thomas F.; and Ritz, Joseph, 4,500,885, Cl. 343-456.000.
Naubereit, Henry; Beyer, Henry R.; DeSipio, Richard G.; and Picard, Salvatore R., 4,500,884, Cl. 343-456.000.

Desjobert, Gilles; and Jaillet, Andre , to Rhone-Poulenc-Textile. Method and apparatus for baling a tow of textile filaments. 4,499,707, Cl. 53-429.000.

DeSoto, Inc.: *See—*
Devona, James E.; and Essigmann, Martin L., 4,500,673, Cl. 524-548.000.

Deutsche Forschungs- und Versuchsanstalt fur Luft- und Raumfahrt e.V.: *See—*
Baumer, Klaus; and Wiegand, Herbert, 4,499,862, Cl. 123-1.00A.
Wiegand, Herbert; and Baumer, Klaus, 4,499,861, Cl. 123-1.00A.

Devellian, Richard D.; and Swenson, Paul M., to Kona Corporation. Heat pipe manifold system. 4,500,279, Cl. 425-548.000.

Development Finance Corporation of New Zealand: *See—*
Buckle, Ian G.; and Built, Steven M., 4,499,694, Cl. 52-167.000.

Devona, James E.; and Essigmann, Martin L., to DeSoto, Inc. Vinylidene chloride and styrene-containing copolymer latices. 4,500,673, Cl. 524-548.000.

Devro, Inc.: *See—*
Hanlon, Allan J., 4,500,574, Cl. 428-35.000.

DeYoung, David H.: *See—*
Weyand, John D.; Woods, Robert W.; DeYoung, David H.; and Ray, Siba P., 4,500,406, Cl. 204-293.000.

Diamond Shamrock Chemicals Company: *See—*
Solomon, Frank, 4,500,647, Cl. 502-101.000.

DiBello, Benedict J.: *See—*
Moran, Thomas M.; and DiBello, Benedict J., 4,500,240, Cl. 411-103.000.

Dicks, Jack L.: *See—*
Shimbo, Osamu; Nguyen, Lan N.; and Dicks, Jack L., 4,500,984, Cl. 370-6.000.

Diederich, Dennis A.; Wiegmann, Thomas B.; and Pinnick, Robert V., to Kansas University Endowment Association, The. Method for regional anticoagulation during extracorporeal dialysis. 4,500,309, Cl. 604-5.000.

Diercksmeier, Richard A.: *See—*
Kilb, Donald A.; and Diercksmeier, Richard A., 4,499,690, Cl. 51-56.00R.

Diery, Helmut; and Mees, Bernhard, to Hoechst Aktiengesellschaft. Quaternary crosslinked products of xylylene dichlorides and triethanolamine condensates and their use. 4,500,735, Cl. 564-286.000.

Dietrich, Jerry L.: *See—*
Rozmus, Walter J.; and Dietrich, Jerry L., 4,500,009, Cl. 220-256.000.

Diggle, Dennis A. Geotechnical cone lubrication apparatus and method. 4,499,954, Cl. 175-21.000.

DiGiovanni, John; and Golden, Donald M., to Ethicon, Inc. Multiple clip applier. 4,500,024, Cl. 227-19.000.

Digital Equipment Corporation: *See—*
Manton, John C.; and Okin, Kenneth, 4,500,958, Cl. 364-200.000.

Dimitrov, Milko D., to N P S P "Novotex". Method of and apparatus for producing twistless yarns from glued separate fibers fitted together. 4,499,717, Cl. 57-297.000.

Dinius, Harold B.: *See—*
McKnight, Hugh P.; Welty, Kenneth B.; and Dinius, Harold B., 4,500,247, Cl. 414-416.000.

Discovision Associates: *See—*
Gregg, David P., 4,500,484, Cl. 264-107.000.
Slaten, Gary G., 4,500,392, Cl. 204-5.000.

Disteldorf, Josef; and Gras, Rainer, to Chemische Werke Huls Aktiengesellschaft. Mixture of substances suitable for use as a powder varnish or binder for powder varnishes. 4,500,697, Cl. 528-45.000.

Disteldorf, Josef; and Gras, Rainer, to Chemische Werke Huls Aktiengesellschaft. One-component baking enamels. 4,500,698, Cl. 528-45.000.

Dittrich, Volker, to Ciba-Geigy Corporation. Pesticidal composition containing a synergistic combination of an oxazolo-pyridine thiophosphate derivative and cypermethrin. 4,500,521, Cl. 514-81.000.

Divall, John E.: *See—*
Perigo, John A.; and Divall, John E., 4,499,932, Cl. 141-91.000.

Dixon, Ronald H. T.: *See—*
Else, George E.; Millward, Cyril; Dixon, Ronald H. T.; and Jorgensen, Knut, 4,500,352, Cl. 75-130.00B.

Dlugosz, Henry J.: *See—*
Tuttle, Alan H.; Leonard, James K.; and Dlugosz, Henry J., 4,500,096, Cl. 277-53.000.

Dobner, Eberhard: *See—*
Ehrich, Gerd; and Dobner, Eberhard, 4,499,960, Cl. 177-25.000.

Dr. -Ing. Rudolf Hell GmbH: *See—*
Beisswenger, Siegfried, 4,500,791, Cl. 250-493.100.
Kuhn, Franz; Lippek, Wilfried; Mollgaard, Klaus; and Redecker, Friedrich, 4,500,972, Cl. 364-526.000.

Dodd, Alec G.; and Hamblett, Martin, to Rolls-Royce Limited. Cooled turbine blade for a gas turbine engine. 4,500,258, Cl. 416-97.00R.

Doddman, William H.: *See—*
De Ferrari, Alfred; and Doddman, William H., 4,500,038, Cl. 239-85.000.

Dola, Frank P., to AMP Incorporated. Network interface device. 4,500,158, Cl. 339-122.00R.

Domtar Inc.: *See—*
Bialkowski, Wojciech L., 4,500,968, Cl. 364-471.000.

Donaldson Company, Inc.: *See—*
Gillingham, Gary R., 4,500,332, Cl. 55-443.000.

Donn Incorporated: *See—*
LaLonde, Paul D., 4,499,697, Cl. 52-98.000.

Donnelly, John H. Cosmetic and observer line of sight mirror. 4,500,169, Cl. 350-288.000.

Dorina Nahmaschinen GmbH: *See—*
Meier, Gunter; Meier, Willi; and Hartwig, Jurgen, 4,499,836, Cl. 112-158.00E.

Dorn, John J.: *See—*
Farr, Richard S.; and Dorn, John J., 4,499,733, Cl. 60-611.000.

Dornier GmbH: *See—*
Krojer, Hubert, 4,500,055, Cl. 244-55.000.

Doughman, Charles L.: *See—*
Shuey, Kenneth C.; and Doughman, Charles L., 4,500,837, Cl. 324-102.000.

Douglas, Jack E., to Arthur Shaw Manufacturing Limited. Fastener for sliding doors or windows. 4,500,122, Cl. 292-161.000.

Dow Chemical Company, The: *See—*
Cook, Frank T.; Nutt, Michael O.; and Hsieh, Hsin H., 4,500,717, Cl. 548-229.000.
Crump, Druce K.; Simon, Jaime; and Wilson, David A., 4,500,356, Cl. 106-90.000.
Erickson, Robert E., 4,500,585, Cl. 428-152.000.
Fazio, Michael J.; and Paisley, Kirk E., 4,500,728, Cl. 560-222.000.
Fisk, Thomas E., 4,500,675, Cl. 524-762.000.
Hay, Robert A., II; and Krause, Brian W., 4,499,749, Cl. 72-325.000.
Kruper, William J., Jr.; and Swart, Daniel J., 4,500,704, Cl. 528-405.000.
LaTulip, Randy J., 4,500,690, Cl. 525-502.000.
McKinley, Mark J.; and Sheridan, Dan P., 4,500,670, Cl. 524-445.000.
McKinney, Osborne K.; and Flores, David P., 4,500,664, Cl. 524-119.000.
Meyer, Louis W., 4,500,442, Cl. 252-182.000.
Paalman, H. Hunter; and Drapeau, Denis, 4,500,500, Cl. 423-224.000.
Simon, Jaime; Crump, Druce K.; and Wilson, David A., 4,500,469, Cl. 260-502.50E.
Skach, Edward J., Jr., 4,500,349, Cl. 75-0.50B.
Wilson, David A., 4,500,470, Cl. 260-502.50E.
Wolfe, David L., 4,500,687, Cl. 525-412.000.

Dow Corning Corporation: *See—*
Kroupa, Loretta A.; and Relyea, Elton H., 4,500,659, Cl. 523-213.000.

Dowbenko, Rostyslaw: *See—*
Singer, Debra L.; McCollum, Gregory J.; Dowbenko, Rostyslaw; and O'Dwyer, James B., 4,500,680, Cl. 525-143.000.

Downing, Gerald T.; and Schaefer, Karl P., to W. H. Brady Co. Carrier for hinged support of pages. 4,500,223, Cl. 402-20.000.

Drapeau, Denis: *See—*
Paalman, H. Hunter; and Drapeau, Denis, 4,500,500, Cl. 423-224.000.

Dresser Industries, Inc.: *See—*
Crampton, Arthur W.; Gray, Hollis L., Jr.; and Mermelstein, Seymour, 4,499,773, Cl. 73-718.000.
Culver, Richard B.; and Oliver, Donald W., 4,500,781, Cl. 250-269.000.
Engelhardt, Friedrich; Kuhlein, Klaus; Riegel, Ulrich; von Halasz, Sigmar; Dawson, Jeffery C.; and Reed, Anthony R., 4,500,437, Cl. 252-8.55C.
Winkelbauer, Howard M.; Hill, Kenneth W.; and Wang, Ke-Chin, 4,500,644, Cl. 501-98.000.

Drexler, Jerome, to Drexler Technology Corporation. High data capacity, scratch and dust resistant, infrared, read-write data card for automatic teller machines. 4,500,777, Cl. 235-487.000.

Drexler Technology Corporation: *See—*
Drexler, Jerome, 4,500,777, Cl. 235-487.000.

Driam Metallprodukt GmbH & Co. KG: *See—*
Dunaitschik, Rudolf, 4,499,847, Cl. 118-19.000.

DrM, Dr. Muller AG: *See—*
Muller, Hans, 4,500,435, Cl. 210-798.000.

Drogi, Dieter: *See—*
Lange, Heinz; Rix, Albert; and Drogi, Dieter, 4,500,219, Cl. 400-568.000.

Droll, Frances. Wall hanging. 4,499,688, Cl. 47-83.000.

Du Pont Canada Inc.: *See—*
Hajto, Ernest A., 4,500,370, Cl. 149-109.600.

DuBois, R. Clark, to Gradco Systems, Inc. Drop tray sorter. 4,500,087, Cl. 271-293.000.

Dubreuil, Luc; and Reed, Phillip J., to Northern Telecom Limited. Gas pressurizable cable with compressed plug seal and method of making it. 4,500,747, Cl. 174-76.000.

DuBroff, Richard E., to Phillips Petroleum Company. Seismic exploration. 4,500,976, Cl. 367-48.000.

Duff-Norton Co.: *See—*
Barber, Ralph R.; and Schultze, Eckart F., 4,500,069, Cl. 251-282.000.

Duffy, John J.: *See—*
Gitlin, Harvey S.; and Duffy, John J., 4,499,983, Cl. 194-1.00G.

DuFour, Daniel L., to Monsanto Company. Polyblends of thermoplastic copolyetheresters styrene-maleic anhydride polymers, and acrylonitrile-butadiene-styrene polymers. 4,500,679, Cl. 525-64.000.

Duhamel, Georges: *See—*
Malbec, Yves; Boisot, Yves; Bontemps, Daniel; and Duhamel, Georges, 4,500,760, Cl. 200-83.00C.

Duke, Alan H.; Hartung, Michael H.; Marschner, Frederick J.; and Nolan, Kenneth P., to International Business Machines Corporation. Cache bypass system with post-block transfer directory examinations for updating cache and/or maintaining bypass. 4,500,954, Cl. 364-200.000.

Dulin, Kerry, to Textron, Inc. Fastener driving device having a three stage firing circuit. 4,500,936, Cl. 361-152.000.

Dulin, Kerry, to Textron, Inc. Fastener driving device. 4,500,938, Cl. 361-153.000.

Dunaitschik, Rudolf, to Driam Metallprodukt GmbH & Co. KG. Apparatus for coating granules such as dragee pellets with a hardenable substance. 4,499,847, Cl. 118-19.000.

Duncan, William A.: *See—*
Morr, Gary F.; and Duncan, William A., 4,500,997, Cl. 372-58.000.

Du Pont de Nemours, E. I., and Company: *See—*
Antal, Paul S.; and Katz, Manfred, 4,499,716, Cl. 57-234.000.
Cochran, Stanley R.; and Strahorn, Francis W., 4,500,278, Cl. 425-445.000.
Copelin, Harry B., 4,500,705, Cl. 528-417.000.
Freerksen, Robert W., 4,500,344, Cl. 71-93.000.
Haber, Stephen B., 4,500,520, Cl. 514-63.000.
Irwin, Robert S.; and Logullo, Francis M., Sr., 4,500,699, Cl. 528-128.000.

Durbin-Durgo, Inc.: *See—*
Smith, Lonnie M., 4,500,073, Cl. 254-258.000.

Durmis, Julius; Balogh, Alojz; Karvas, Milan; Hrachovcova, Maria; Masek, Jan; Caucik, Pavol; and Povazancova, Marta, to Chemicke zavody Juraja Dimitrova, narodny podnik. Mixed unsaturated monocarboxylic acid esters of 2,2,6,6-tetramethyl-4-piperidinol and of its ammonium carboxylate as stabilizer against UV in polymeric materials. 4,500,446, Cl. 252-403.000.

Durr Automation + Fordertechnik GmbH: *See—*
Obenland, Gerhard, 4,499,788, Cl. 74-661.000.

Duvall, William E.; and Hwang, Mau-Choung P., to RCA Corporation. Television receiver standby power supply. 4,500,923, Cl. 358-190.000.

Duwelz, Alain J., to Societe Nationale Industrielle Aerospatiale. Mechanism for docking and joining space craft. 4,500,057, Cl. 244-161.000.

Dyett, Derek H.; Wood, Godfrey A.; and Seim, Albert D., II, to Molins, Ltd. Cutting head for a cigarette filter attachment machine. 4,499,910, Cl. 131-95.000.

DynaGel Incorporated: *See—*
Shank, Joseph L., 4,500,453, Cl. 260-117.000.

E.C.H. Will (GmbH & Co.): *See—*
Peters, Hartmut; and Ramcke, Bernd, 4,500,241, Cl. 412-37.000.

E. D. Coddington Manufacturing Company: *See—*
Kilb, Donald A.; and Diercksmeier, Richard A., 4,499,690, Cl. 51-56.00R.

E. J. Brooks Company: *See—*
Swift, Allan W., 4,500,124, Cl. 292-318.000.

E. R. Squibb & Sons, Inc.: *See—*
Gordon, Eric M.; and Godfrey, Jollie D., Jr., 4,500,518, Cl. 514-2.000.
Sprague, Peter W.; and Heikes, James E., 4,500,723, Cl. 549-459.000.

Eaton Corporation: *See—*
Janutka, William J., 4,500,801, Cl. 307-570.000.
Janutka, William J., 4,500,802, Cl. 307-571.000.
Klein, Gary S., 4,500,748, Cl. 174-121.00A.
Mezak, John A., 4,500,858, Cl. 333-202.000.
Moran, Thomas M.; and DiBello, Benedict J., 4,500,240, Cl. 411-103.000.
Peloza, Kirk B., 4,499,915, Cl. 137-85.000.
Zukausky, Keith E., 4,500,067, Cl. 251-38.000.

Ebara Corporation: *See—*
Kuramoto, Kenji, 4,500,793, Cl. 250-574.000.

Ebauches, S.A.: *See—*
Grimm, Maurice, 4,500,213, Cl. 368-208.000.

Ebenhoch, Sebastian: *See—*
Orth, Eugene C.; and Ebenhoch, Sebastian, 4,500,234, Cl. 408-206.000.

Eckert, Alton B.: *See—*
Buan, Danilo P.; and Eckert, Alton B., 4,500,780, Cl. 250-231.0SE.

Edging, Thomas E., to Stauffer Chemical Company. Leavening acid composition. 4,500,557, Cl. 426-563.000.

Edwards, Laroy H., to Chevron Research Company. Insecticidal 5-thiocarbamoyl-1,3,4-oxadiazoles. 4,500,539, Cl. 514-364.000.

Egami, Tsuneyuki: *See—*
Saito, Kimitaka; Kohama, Tokio; Egami, Tsuneyuki; Saito, Tsutomu; Nogami, Susumu; and Suzuki, Yukio, 4,499,882, Cl. 123-492.000.

Ehni, George J., to Texas Instruments Incorporated. Programmable attenuator. 4,500,845, Cl. 330-86.000.

Ehrenfeld, Frank E., Jr., to Congoleum Corporation. Textured pile fabrics. 4,500,319, Cl. 8-114.500.

Ehrich, Gerd; and Dobner, Eberhard, to Mannesmann Aktiengesellschaft. Method for measuring the weight of bulk goods loaded by a hydraulic excavator. 4,499,960, Cl. 177-25.000.

Eisai Co., Ltd.: *See—*
Sato, Akio; Nakajima, Kenji; Takahara, Yoshimasa; Kijima, Shizumasa; Inai, Yuichi; Kohara, Yoshiyuki; Kawakami, Yoshiyuki; and Tsurugi, Tomio, 4,500,463, Cl. 260-406.000.

Eisenlohr, Karl-Heniz: *See—*
Simo, Thomas; Eisenlohr, Karl-Heniz; and Puxbaumer, Hans-Hermann, 4,500,415, Cl. 208-56.000.

Eisenzimmer, George W.: *See—*
Schisler, Robert C.; and Eisenzimmer, George W., 4,500,095, Cl. 277-34.000.

Elander, Robert C.; Lennon, Richard E.; Matyas, Stephen M.; Meyer, Carl H. W.; Shuck, Robert E.; and Tuchman, Walter L., to International Business Machines Corporation. Cryptographic application for interbank verification. 4,500,750, Cl. 178-22.080.

Elbe, Hans-Ludwig; Buchel, Karl H.; Frohberger, Paul-Ernst; and Brandes, Wilhelm, to Bayer Aktiengesellschaft. Combating fungi with triazolyl-vinyl ketones and carbinols. 4,500,537, Cl. 514-383.000.

Elder, Richard B.: *See—*
Bosselaers, Robert J.; and Elder, Richard B., 4,500,857, Cl. 332-9.00R.

Electric Power Development Company Limited: *See—*
Nakaoji, Kazuhiko; Kamao, Mitsugu; Itoh, Hayami; Tatsumi, Shuhei; and Takao, Shoichi, 4,500,041, Cl. 241-16.000.

Electronic Specialists: *See—*
Stifter, Francis J., 4,500,853, Cl. 331-18.000.

Elevator GmbH: *See—*
Makinen, Heimo; and Suur-Askola, Seppo, 4,499,972, Cl. 187-29.00R.

Eli Lilly and Company: *See—*
Bach, Nicholas J.; Kornfeld, Edmund C.; and Titus, Robert D., 4,500,545, Cl. 514-619.000.
Burow, Kenneth W., Jr., 4,500,343, Cl. 71-76.000.
Matsumoto, Ken, 4,500,533, Cl. 514-256.000.
McKnight, Hugh P.; Welty, Kenneth B.; and Dinius, Harold B., 4,500,247, Cl. 414-416.000.
Spitzer, Wayne A.; and Goodson, Theodore, Jr., 4,500,456, Cl. 260-239.00A.

Ellenberger, Charles E.; Bower, George L.; and Snow, William R., to Pacific Western Systems, Inc. Independently variably controlled pulsed R.F. plasma chemical vapor processing. 4,500,563, Cl. 427-38.000.

Elring Dichtungswerke GmbH: *See—*
Bindel, Rudolf; and Ruoff, Eugen, 4,500,100, Cl. 277-235.00B.

Else, George E.; Millward, Cyril; Dixon, Ronald H. T.; and Jorgensen, Knut, to Stanton and Staveley Limited; and A/S Bjolvefossen. Production of cast iron. 4,500,352, Cl. 75-130.00B.

Eltac Nogler & Daum KG: *See—*
Oppitz, Hans, 4,500,410, Cl. 204-299.00R.

Eltgen, Jean J., to Compagnie Internationale pour l'Informatique Cii Honeywell Bull (Societe Anonyme). Apparatus for converting electric signals representing data into a group of raised dots constituting the image of said data. 4,500,293, Cl. 434-114.000.

Elwing, Ben; Foldi, Peter; and Holmberg, Gote, to Broderna Holmbergs Fabriks AB. Machine for crushing cylindrical aluminium cans for beer, soft drinks etc. 4,499,824, Cl. 100-48.000.

Embury Company: *See—*
Embury, Lloyd, 4,500,387, Cl. 156-499.000.

Embury, Lloyd, to Embury Company. Laminating apparatus wherein sheets to be bonded form heating chamber. 4,500,387, Cl. 156-499.000.

Emerson, Clarence A. Marker holder apparatus. 4,500,221, Cl. 401-82.000.

Emerson Electric Co.: *See—*
Peachee, C. Theodore, Jr., 4,499,661, Cl. 29-598.000.
Quin, Murray L., deceased, 4,500,796, Cl. 307-147.000.

Encomech Engineering Services Limited: *See—*
Laws, William R.; and Reed, Geoffrey R., 4,499,746, Cl. 72-13.000.

Endo, Shigeru: *See—*
Tanaka, Kenji; and Endo, Shigeru, 4,500,551, Cl. 426-62.000.

Endo, Takashi, to Canon Kabushiki Kaisha. Shutter arrangement. 4,500,187, Cl. 354-266.000.

Enertec: *See—*
Ley, Anthony J., 4,500,973, Cl. 364-606.000.

Engelhard Corporation: *See—*
Amundsen, Alan R.; and Stern, Eric W., 4,500,465, Cl. 260-429.00R.

Engelhardt, Friedrich; Kuhlein, Klaus; Riegel, Ulrich; von Halasz, Sigmar; Dawson, Jeffery C.; and Reed, Anthony R., to Cassella Aktiengesellschaft; and Dresser Industries, Inc. Water soluble copolymers for use in fracture-acidizing of wells. 4,500,437, Cl. 252-8.55C.

Engineering Research Applications, Inc.: *See—*
Rooney, Craig E., 4,500,757, Cl. 200-5.00A.

Engles, Bruce E., to Motorola, Inc. Page mode memory system. 4,500,961, Cl. 364-200.000.

English, Brian B.; and Gray, Hamish W. M., to Ferranti plc. Control system for positioning a marker on a cathode-ray tube display. 4,500,876, Cl. 340-709.000.

Enomoto, Yuji, to Agency of Industrial Science & Technology; and Ministry of International Trade & Industry. Method for surface treatment by ion bombardment. 4,500,564, Cl. 427-39.000.

Environmental Equipment Corporation: *See—*
Hussey, Ian G., 4,499,970, Cl. 187-9.00R.

Eotec Corporation: *See—*
Krohn, David A.; Buffone, Louis A.; and Vinarub, Edmond I., 4,500,870, Cl. 340-347.00P.

Epic International Corporation: *See—*
Lewis, William D., 4,500,294, Cl. 433-215.000.

Epson Corporation: *See—*
Akazawa, Hiroyuki, 4,500,023, Cl. 226-76.000.
Hirano, Seiichi, 4,500,892, Cl. 346-76.0PH.

Erickson, Robert E., to Dow Chemical Company, The. Creped absorbent composites. 4,500,585, Cl. 428-152.000.

Ernest, Ivan: *See—*
Gosteli, Jacques; Ernest, Ivan; and Woodward, Robert B., 4,500,457, Cl. 260-245.20R.

Erni, R. Ernst: *See—*
Buck, Roy T.; Cloutier, Frank L.; Erni, R. Ernst; Low, Robert N.; and Terry, F. Duncan, 4,500,895, Cl. 346-140.00R.

Erwin Sick GmbH Optik-Elektronik: *See—*
Sick, Erwin, 4,500,208, Cl. 356-431.000.

Eschenko, Vladislav Y.; Musaev, Irsali K.; Talibdzhanov, Zakhidzhan S.; Leonov, Viktor A.; Bobrov, Anatoly D.; Kirovsky, Efim I.; Gritsenko, Vladimir A.; and Golovanov, Alexandr V. Burner guide vane device. 4,500,282, Cl. 431-184.000.

Esco Design, Inc.: *See—*
Swanson, Richard G., 4,500,805, Cl. 310-80.000.

Escolar, Carlos: *See—*
Babecki, Glenn R.; Escolar, Carlos; Garnant, Craig M.; Kan, Hsin-Kuo; Kaplan, Frank; Liu, Hueichi R.; MacLachlan, George F.; Matteo, Peter J.; McDonald, John F.; Palframan, John D.; Tran, Roger T.; Welt, Martin J.; Wendt, Timothy A.; Yates, Gregory S.; and Zislis, Paul M., 4,500,960, Cl. 364-200.000.

Espinosa, Fausto L.; and Nunez, Cesar L. Variable speed electric induction motors without bushes. 4,500,826, Cl. 318-820.000.

Essigmann, Martin L.: *See—*
Devona, James E.; and Essigmann, Martin L., 4,500,673, Cl. 524-548.000.

Ethicon, Inc.: *See—*
DiGiovanni, John; and Golden, Donald M., 4,500,024, Cl. 227-19.000.

Eue, Ludwig: *See—*
Forster, Heinz; Eue, Ludwig; and Schmidt, Robert R., 4,500,341, Cl. 71-92.000.

Evans, David B.: *See—*
Hunt, Arlon J.; Hansen, Leif J.; and Evans, David B., 4,499,893, Cl. 126-449.000.

Evans, Jack; and Studer, Philip A., to United States of America, National Aeronautics and Space Administration. Magnetically actuated compressor. 4,500,265, Cl. 417-417.000.

Evans Radak, Suzanne: *See—*
Chorvat, Robert J.; Lenz, George R.; and Evans Radak, Suzanne, 4,500,708, Cl. 544-34.000.

Evapco, Inc.: *See—*
Bradley, Wilson E., Jr.; and Rye, Palle, 4,500,330, Cl. 55-257.0PV.

Everson, Charles W.: *See—*
Bender, Fredric G.; Everson, Charles W.; and Swartz, William E., 4,500,559, Cl. 426-646.000.

Evey, William M.: *See—*
Kub, Francis J.; and Evey, William M., 4,499,653, Cl. 29-571.000.

EVG Entwicklungs- u. Verwertungs-Gesellschaft m.b.H.: *See—*
Schmidt, Gerhard; Ritter, Klaus; and Ritter, Gerhard, 4,500,763, Cl. 219-58.000.

Ewers, Frederick H. Power driven disc cultivator apparatus. 4,499,747, Cl. 172-68.000.

Ewing, Peter D., to NSS, Industries, Inc. Coupling for sucker rod assembly. 4,500,224, Cl. 403-343.000.

Ex-Cell-O Corporation: *See—*
Bacon, Forrest C.; and Nord, Keith W., 4,499,704, Cl. 53-156.000.

Exxon Research & Engineering Co.: *See—*
Krutenat, Richard C., 4,500,364, Cl. 148-6.14R.
Malpass, Dennis B., 4,500,648, Cl. 502-115.000.
Scheller, Andor, 4,499,706, Cl. 53-399.000.
Shulman, Cindy B., 4,500,681, Cl. 525-222.000.

Fa.Jungheinrich Unternehmensverwaltung KG: *See—*
Helms, Dirk, 4,499,790, Cl. 74-665.00C.

Fabian, Walter; and Spooner, Frank H., to Sperry Corporation. Deep mesa process for fabricating monolithic integrated Schottky barrier diode for millimeter wave mixers. 4,499,656, Cl. 29-576.00E.

Facoetti, Hugues: *See—*
Broussoux, Dominique; Facoetti, Hugues; Ravinet, Pierre; Bernard, Daniel; and Micheron, Francois, 4,500,377, Cl. 156-164.000.

Faessler, Rene , to Societe Alsacienne de Construction de Materiel Textile. Freed-fiber spinning devices. 4,499,719, Cl. 57-417.000.

Farmitalia Carlo Erba S.p.A.: *See—*
Bernardi, Luigi; Temperilli, Aldemio; Ruggieri, Daniela; Arcari, Giuliana; and Salvati, Patricia, 4,500,712, Cl. 546-67.000.

Farr Company: *See—*
Farr, Richard S.; and Dorn, John J., 4,499,733, Cl. 60-611.000.

Farr, Richard S.; and Dorn, John J., to Farr Company. Emergency shutdown mechanism for a turbocharged diesel engine. 4,499,733, Cl. 60-611.000.

Farukshin, Lev H.: *See—*
Zsoka, Istvan; Madar, Laszlo ; Cubin, Anatoly A.; Gaivoronsky Albert A.; Farukshin, Lev H.; Morzsic, Piotr A.; Lisov, Alek sandr I.; and Galusztainc, Vladilen A., 4,499,947, Cl. 166-179.000

Fassauer, Arthur L. Apparatus for storing and serving perishable foox products. 4,500,145, Cl. 312-61.000.

Fathauer, George H.; and Hood, Charles F., to Berwind Corporation. Capacitance-type material level indicator. 4,499,766, Cl. 73-304.00C.

Fathauer, George H.; Hood, Charles F.; and Runck, Robin B., to Berwind Corporation. Capacitance-type material level indicator. 4,499,767, Cl. 73-304.00C.

Fatula, James J., Sr.; and Carroll, Martin J., to Ryman Engineering Company. Method of grinding non-uniform workpieces. 4,499,693, Cl. 51-322.000.

Fawwaz, Rashid A.: *See—*
Srivastava, Suresh C.; Fawwaz, Rashid A.; and Richards, Powell, 4,500,508, Cl. 424-1.100.

Fazio, Michael J.; and Paisley, Kirk E., to Dow Chemical Company, The. Process for preparing 2-aminoethyl methacrylate salts of high purity. 4,500,728, Cl. 560-222.000.

Feagans, Frederick C.; and Nordquist, Albert W., to Pratt-Read Corporation. Keyboard switch having a deformable membrane formed of cellular urethane. 4,500,756, Cl. 200-5.00A.

Feinberg, Jack, to University of Southern California. Phase conjugation using internal reflection. 4,500,855, Cl. 332-7.510.

Fenn, Lloyd B., to Texas A&M University. Composition of matter and method of use for nitrogen fertilization. 4,500,335, Cl. 71-28.000.

Ferdinand Menrad, Firma: *See—*
Schonhut, Kurt, 4,500,179, Cl. 351-137.000.

Ferranti plc: *See—*
English, Brian B.; and Gray, Hamish W. M., 4,500,876, Cl. 340-709.000.
Maiden, Adrian J., 4,500,207, Cl. 356-409.000.

Ferrero, Giuseppe, to Fiat Auto S.p.A. Device for stopping and holding in the open position a sliding door on a vehicle. 4,500,121, Cl. 292-79.000.

Ferro, Berkeley M.; and Walker, Aubrey D., to Post Office, The. Identification matter. 4,500,116, Cl. 283-92.000.

Ferro Corporation: *See—*
Wilson, James M., 4,500,942, Cl. 361-320.000.

Ferron, Ernest J. Obturator for flute designed to improve the emission of certain notes. 4,499,810, Cl. 84-384.000.

Fiat Auto S.p.A.: *See—*
Ferrero, Giuseppe, 4,500,121, Cl. 292-79.000.

Figini, Mario: *See—*
Demonte, Flippo; and Figini, Mario, 4,500,216, Cl. 400-8.000.

Fillpro Products, Inc.: *See—*
Johnson, Dwight N., 4,499,616, Cl. 4-393.000.

Fiorina, Mark A.; and Roberts, Todd N., to Badger Meter, Inc. Modular metering apparatus. 4,499,764, Cl. 73-253.000.

Firestone Tire & Rubber Company, The: *See—*
Hayes, Robert A.; and Conard, Wendell R., 4,500,466, Cl. 260-429.900.

Fischer, Rudolf; and Spiegel, Nikolaus, to Heidelberger Druckmaschinen AG. Device and process for high-precision measurement of the phase relationship and phase displacement, respectively, of two pulse trains. 4,499,760, Cl. 73-159.000.

Fishback, Alton J., to Mead Corporation, The. Apparatus for imparting angular movement to articles while being moved along a predetermined path. 4,499,990, Cl. 198-411.000.

Fisk, Thomas E., to Dow Chemical Company, The. Stable dispersions of polymers in polyfunctional compounds having a plurality of active hydrogens. 4,500,675, Cl. 524-762.000.

Fister, Julius C.; and Breedis, John F., to Olin Corporation. Electrical component forming process. 4,500,605, Cl. 428-469.000.

Fister, Julius C.: *See—*
Breedis, John F.; and Fister, Julius C., 4,500,028, Cl. 228-117.000.

Fladerer, Heinrich, to Siemens Aktiengesellschaft. Synchronizing arrangement. 4,500,992, Cl. 370-100.000.

Flanigen, Edith: *See—*
Lok, Brent M. T.; Marcus, Bonita K.; and Flanigen, Edith, 4,500,651, Cl. 502-208.000.

Flautt, Martin C.: *See—*
Wong, Robert; Flautt, Martin C.; and Haines, Richard M., 4,500,600, Cl. 428-391.000.

Flaxington, David: *See—*
Szczupak, David T.; Walsham, Brian E.; Hooley, Desmond J.; Flaxington, David; McKean, Peter S.; and Wescott, John D., 4,499,732, Cl. 60-602.000.

Fleckenstein, Phillip P., to Berwind Corporation. Method of manufacturing capacitance-type material level indicator probe. 4,499,641, Cl. 29-25.410.

Fleming, Dennis J., to Prince Corporation. Visor control. 4,500,131, Cl. 296-97.00K.

Flock, John W.: *See—*
Ward, William J., III; Ritzer, Alan; Carroll, Kenneth M.; and Flock, John W., 4,500,724, Cl. 556-472.000.

Flores, David P.: *See—*
McKinney, Osborne K.; and Flores, David P., 4,500,664, Cl. 524-119.000.

FMC Corporation: *See—*
Lill, Melvin H., 4,500,201, Cl. 356-152.000.
Liston, Allen L., 4,499,963, Cl. 180-90.600.

Foldi, Peter: *See—*
Elwing, Ben; Foldi, Peter; and Holmberg, Gote, 4,499,824, Cl. 100-48.000.

Fontana, Jack J.; and Reams, Walter, to United States of America, Energy. High temperature polymer concrete compositions. 4,500,674, Cl. 524-650.000.

Forcht, Brennan A.: *See—*
Patten, James W.; Moss, Ronald W.; and Forcht, Brennan A., 4,500,602, Cl. 428-408.000.

Ford Aerospace & Communications Corporation: *See—*
Montesanto, Ernest C., 4,500,170, Cl. 350-611.000.

Ford, James M.; Dean, Robert A.; Woodard, Kenneth E., Jr.; and Branco, Antonio, to Olin Corporation. Method of making a composite fiber reinforced plastic frame. 4,500,379, Cl. 156-172.000.

Ford Motor Company: *See—*
Allor, Richard L.; and Caverly, John C., 4,499,646, Cl. 29-447.000.
Gandhi, Haren S.; and Watkins, William L. H., 4,499,863, Cl. 123-3.000.
Garrett, William G.; and Overberg, Karl W., 4,499,673, Cl. 361-56.000.
Mikola, James A., 4,500,946, Cl. 362-226.000.

Foreman, Frederick J.: *See—*
Bloome, James A.; Meeker, Rick A.; Whicker, Jerry T.; and Foreman, Frederick J., 4,499,624, Cl. 15-97.00R.

Forester, Buford G. Valve. 4,499,919, Cl. 137-613.000.

Forms & Surfaces: *See—*
Grossman, Harvey L., 4,499,629, Cl. 16-111.00R.

Forrester, Jerry. Tamper-evident cap assembly for a container. 4,500,005, Cl. 215-203.000.

Forster, Heinz; Eue, Ludwig; and Schmidt, Robert R., to Bayer Aktiengesellschaft. Phenoxycarboxylic acid amide compounds and herbicidal compositions. 4,500,341, Cl. 71-92.000.

Foster, Randy C., to Dayco Corporation. Belt tensioner. 4,500,304, Cl. 474-138.000.

Foster, William J., to Transilwrap Company, Inc. Method of manufacture of resin film precision biomedical article. 4,500,382, Cl. 156-272.800.

Fox, Adrian S., to Austenal International, Inc. Radiopaque acrylic resin. 4,500,658, Cl. 523-117.000.

Fox, Albert D.; Kish, Robert J.; and Knight, Donn C., to D. W. Zimmerman Mfg., Inc. Fluid-operated apparatus for handling and lifting loads. 4,500,074, Cl. 254-270.000.

Framo Developments (UK) Limited: *See—*
Mohn, Frank, 4,500,263, Cl. 417-360.000.

Francis, Geoffrey V. Structural spacer glazing with connecting spacer device. 4,500,572, Cl. 428-34.000.

Frankel, Milton B.; and Wilson, Edgar R., to Rockwell International Corporation. Tris(2-azidoethyl)amine and method of preparation thereof. 4,499,723, Cl. 60-211.000.

Freeauf, Robert F. Dwelling structure. 4,499,696, Cl. 52-79.800.

Freerksen, Robert W., to Du Pont de Nemours, E. I., and Company. Herbicidal ortho-(alkoxy)-benzenesulfonamides. 4,500,344, Cl. 71-93.000.

Frehel, Daniel; Maffrand, Jean-Pierre; and Vallee, Eric, to Sanofi, S.A. Thienó-pyridinone derivatives, process for its preparation, and anti-blood-platelet and anti-thrombotic applications thereof. 4,500,534, Cl. 514-301.000.

Freis, Jean-Louis: *See—*
Oger, Jacques; Hauer, Jean-Claude; and Freis, Jean-Louis, 4,499,695, Cl. 52-19.000.

French, Eddie; and Braga, Thomas G., to Petrolite Corporation. Corrosion inhibited aqueous slurries. 4,500,445, Cl. 252-387.000.

Frenette, Albert: *See—*
Frenette, Eugene J., 4,499,913, Cl. 126-247.000.

Frenette, Eugene J., to Frenette, Albert. Method and apparatus for producing friction heat. 4,499,913, Cl. 126-247.000.

Freundlich, Richard A., to Celanese Corporation. Electrical grade extruded filled thermoplastic sheet material and process for the manufacture thereof. 4,500,603, Cl. 428-409.000.

Friberg, Gunnar S., to AB Volvo. Cable jacket. 4,499,926, Cl. 138-126.000.

Friedman, Abraham, to IPCO Corporation. Method and apparatus for reinforcing dental anchors. 4,500,296, Cl. 433-225.000.

Friedmann & Maier Aktiengesellschaft: *See—*
Lehner, Gerhard, 4,499,873, Cl. 123-372.000.

Frohberger, Paul-Ernst: *See—*
Elbe, Hans-Ludwig; Buchel, Karl H.; Frohberger, Paul-Ernst; and Brandes, Wilhelm, 4,500,537, Cl. 514-383.000.

Fruchey, Olan S., to Celanese Corporation. Copper and manganese recovery from C_5-C_9 saturated aliphatic monocarboxylic acids 4,500,464, Cl. 260-413.000.

Fruzzetti, Paul R.; Leavitt, Philip J.; and Nuzzi, Frank J., to Varian Associates, Inc. Counterflow leak detector with cold trap. 4,499,752, Cl. 73-40.700.

Frydman, Allen: *See—*
Reimann, Hans; Frydman, Allen; and Fuchs, Uwe, 4,500,429, Cl. 210-616.000.

Fuchikami, Jun; Higashi, Hidehiro; Inoue, Takashi; and Oba, Hiroyuki, to Catalysts & Chemicals Industries Co., Ltd. Hydrocracking catalyst composition and method of making same. 4,500,645, Cl. 502-65.000.

Fuchs, Uwe: *See—*
Reimann, Hans; Frydman, Allen; and Fuchs, Uwe, 4,500,429, Cl. 210-616.000.

Fuji Electric Company Limited: *See—*
Takezoe, Fumihiko; and Fujii, Junichi, 4,500,953, Cl. 364-200.000.

Fuji Facom Corporation: *See—*
Takezoe, Fumihiko; and Fujii, Junichi, 4,500,953, Cl. 364-200.000.

Fuji Jukogyo Kabushiki Kaisha: *See—*
Sugiura, Katsuhiko, 4,499,874, Cl. 123-407.000.

Fuji Photo Film Co., Ltd.: *See—*
Aoki, Kozo; Ogawa, Akira; and Tanabe, Osami, 4,500,635, Cl. 430-552.000.
Aono, Toshiaki; Hara, Hiroshi; and Naito, Hideki, 4,500,624, Cl. 430-138.000.
Horie, Seiji; Nakano, Junji; Nagata, Masayoshi; and Sato, Hideo, 4,500,622, Cl. 430-78.000.
Kato, Hisatoyo, 4,500,783, Cl. 250-327.200.
Kita, Nobuyuki; Matsumoto, Hiroshi; and Hagiwara, Hitoshi, 4,500,625, Cl. 430-149.000.
Naito, Hideki; Hara, Hiroshi; Aono, Toshiaki; Sato, Kozo; and Fujita, Shinsaku, 4,500,626, Cl. 430-203.000.
Naito, Hideki; and Yabuki, Yoshiharu, 4,500,627, Cl. 430-203.000.
Nakayama, Takao, 4,500,617, Cl. 430-49.000.
Ogawa, Hiroshi; Mizuno, Chiaki; Masaki, Kouichi; Suzuki, Masaaki; and Tamai, Yasuo, 4,500,599, Cl. 428-336.000.
Ohishi, Chikashi, 4,500,620, Cl. 430-60.000.
Ohmura, Kunioki; Torigoe, Masaaki; Itoh, Isamu; and Hayashi, Katsumi, 4,500,632, Cl. 430-428.000.
Oishi, Kengo; and Suzuki, Osamu, 4,500,050, Cl. 242-198.000.
Ono, Mitsunori; Itoh, Isamu; Mihayashi, Keiji; and Karino, Yukio, 4,500,636, Cl. 430-566.000.
Sakanoue, Kei; Yagihara, Morio; Ichijima, Seigi; and Nagao, Kimitoshi, 4,500,634, Cl. 430-544.000.
Sano, Kenji; Kondo, Syunichi; and Sato, Hideo, 4,500,623, Cl. 430-83.000.
Sato, Tadahisa; Kawagishi, Toshio; and Furutachi, Nobuo, 4,500,630, Cl. 430-386.000.
Shiba, Keisuke; Yazawa, Hiromi; Ohishi, Chikashi; and Nakao, Sho, 4,500,618, Cl. 430-49.000.
Takahashi, Osamu; Yamamura, Nobuo; Mukunoki, Yasuo; Ogawa, Shungi; and Nakagawa, Yutaka, 4,500,362, Cl. 106-309.000.
Wada, Minoru; Takahashi, Yonosuke; and Hasegawa, Eiichi, 4,500,889, Cl. 346-1.100.

Fuji Xerox Co., Ltd.: *See—*
Ozawa, Takashi, 4,500,927, Cl. 358-293.000.

Fujii, Akio: *See—*
Umezawa, Hamao; Fujii, Akio; Muraoka, Yasuhiko; Nakatani, Tokuji; Fukuoka, Takeyo; and Takahashi, Katsutoshi, 4,500,452, Cl. 260-112.50R.

Fujii, Junichi: *See—*
Takezoe, Fumihiko; and Fujii, Junichi, 4,500,953, Cl. 364-200.000.

Fujii, Kouhei: *See—*
Ishitobi, Yoshimitsu; Fujii, Kouhei; and Nakatsuji, Fumio, 4,500,867, Cl. 338-128.000.

Fujii, Masahiko: *See—*
Katayama, Hiroomi; Hirosawa, Yoshiaki; and Fujii, Masahiko, 4,499,875, Cl. 123-416.000.

Fujii, Masao; and Nishiyama, Enju, to Mitsubishi Denki Kabushiki Kaisha. Temperature control device for a fuel cell. 4,500,612, Cl. 429-26.000.

Fujimori, Noboru: *See—*
Sakamoto, Eiichi; Kawasaki, Mikio; Ono, Kouji; Fukuoji, Kakujulo; and Fujimori, Noboru, 4,500,631, Cl. 430-413.000.

Fujino, Masahisa: *See—*
Sunouchi, Akio; Suzuki, Ryuji; Fujino, Masahisa; and Konno, Tatsuo, 4,500,186, Cl. 354-234.000.

Fujisawa, Masao: *See—*
Mizusawa, Mitutoyo; and Fujisawa, Masao, 4,500,138, Cl. 303-6.00C.

Fujisawa Pharmaceutical Co., Ltd.: *See—*
Takaya, Takao; Masugi, Takashi; Ogino, Takashi; and Tsuji, Kiyoshi, 4,500,709, Cl. 544-58.100.

Fujita, Shinsaku: *See—*
Naito, Hideki; Hara, Hiroshi; Aono, Toshiaki; Sato, Kozo; and Fujita, Shinsaku, 4,500,626, Cl. 430-203.000.

Fujita, Yuji: *See—*
Yuhara, Akitsuna; Hosaka, Norio; Fujita, Yuji; Kishimoto, Kiyoharu; and Yamada, Jun, 4,500,807, Cl. 310-313.00B.

Fujitsu Limited: *See—*
Ban, Yasutaka; and Osada, Toshihiko, 4,500,789, Cl. 250-492.200.
Mori, Haruhisa, 4,500,365, Cl. 148-1.500.
Ohno, Kenichi; Hosomizu, Tohru; and Ogawa, Rokutaro, 4,500,906, Cl. 357-71.000.
Shirai, Kazunari; and Tanaka, Izumi, 4,500,899, Cl. 357-23.000.
Shirato, Takehide, 4,500,975, Cl. 365-104.000.

Fujiwara, Toshitaka: *See—*
Tokitsu, Naoki; Fujiwara, Toshitaka; Kato, Toranosuke; and Uno, Toshihiko, 4,500,868, Cl. 340-52.00F.

Fujiya, Toshimichi. Ventilator for coldroom with pressure responsive valves. 4,499,917, Cl. 137-341.000.

Fukami, Akira; Noguchi, Hiroki; and Hamaguchi, Hiroshi, to Nippon Soken, Inc. Humidifier. 4,500,479, Cl. 261-98.000.

Fukoku Kogyo Company Limited: *See—*
Sato, Hachiro, 4,499,822, Cl. 100-117.000.

Fukuda, Masao, to Kabushiki Kaisha Ishida Koki Seisakusho. Combinatorial weighing apparatus with check weigher. 4,499,961, Cl. 177-25.000.

Fukuhara, Toru: *See—*
Kusaka, Yosuke; and Fukuhara, Toru, 4,500,778, Cl. 250-204.000.

Fukumura, Yukio: *See—*
Matsukura, Masayuki; and Fukumura, Yukio, 4,501,019, Cl. 455-112.000.

Fukuoji, Kakujulo: *See—*
Sakamoto, Eiichi; Kawasaki, Mikio; Ono, Kouji; Fukuoji, Kakujulo; and Fujimori, Noboru, 4,500,631, Cl. 430-413.000.

Fukuoka, Takeyo: *See—*
Umezawa, Hamao; Fujii, Akio; Muraoka, Yasuhiko; Nakatani, Tokuji; Fukuoka, Takeyo; and Takahashi, Katsutoshi, 4,500,452, Cl. 260-112.50R.

Fulger, Charles V.; and Bradbury, Allan G., to General Foods Corporation. Modification of bran by extrusion. 4,500,558, Cl. 426-622.000.

Funfstuck, Horst. Rotatable closure and dispensing device for collapsible tubes and/or containers. 4,500,016, Cl. 222-153.000.

Furst, Emanuel F.; Lampe, Louis F.; and Woods, William L., to University of Arizona Foundation. Methods and apparatus for testing a blood pressure monitoring system of the hydraulic type. 4,499,903, Cl. 128-675.000.

Furstenwerth, Hauke, to Bayer Aktiengesellschaft. 2,5-Diamino-1,3,4-thiadiazole derivatives. 4,500,715, Cl. 548-140.000.

Furukawa, Nobuyuki; and Sanbe, Mitsuhiro, to Honda Giken Kogyo Kabushiki Kaisha. Supporting apparatus for carburetor controlling cam plate. 4,500,478, Cl. 261-52.000.

Furutachi, Nobuo: *See—*
Sato, Tadahisa; Kawagishi, Toshio; and Furutachi, Nobuo, 4,500,630, Cl. 430-386.000.

Furutsu, Akira, to Japan Bano'k Co. Ltd.; and Ben Clements & Sons, Inc. Cable banding machine. 4,499,928, Cl. 140-93.200.

Furuya, Akira: *See—*
Katsumata, Ryoichi; Oka, Tetsuo; and Furuya, Akira, 4,500,640, Cl. 435-253.000.

Fussner, Paul: *See—*
Backe, Egbert; Muller, Rolf; Otto, Dieter; Leonardi, Cornelio; Kochendorfer, Heinrich; Fussner, Paul; Walker, Ewald; and Rommel, Rudi, 4,499,757, Cl. 73-119.00A.

Futaba Denshi Kogyo K.K.: *See—*
Morimoto, Kiyoshi; and Takagi, Toshinori, 4,500,741, Cl. 136-206.000.
Morimoto, Kiyoshi; and Takagi, Toshinori, 4,500,742, Cl. 136-206.000.

Futagi, Masaaki: *See—*
Suzuki, Tadashi; Morimoto, Yoshiro; Hamada, Hideo; Suga, Masaaki; and Futagi, Masaaki, 4,499,979, Cl. 192-3.310.

Futaki, Kenji; and Dekura, Hitoshi, to Tokyo Shibaura Denki Kabushiki Kaisha. Electronic copying machine. 4,500,971, Cl. 364-513.500.

Fuzishiro, Tuneo: *See—*
Shima, Toshiaki; Hamamuro, Naozi; Ikari, Shinichi; and Fuzishiro, Tuneo, 4,499,929, Cl. 141-1.100.

G. D. Serle & Co.: *See—*
Chorvat, Robert J.; Lenz, George R.; and Evans Radak, Suzanne, 4,500,708, Cl. 544-34.000.

G.D Societa' per Azioni: *See—*
Seragnoli, Enzo, 4,499,909, Cl. 131-84.00R.

GA Technologies Inc.: *See—*
Kapich, Davorin D., 4,500,093, Cl. 277-15.000.

Gagnon, Peter R.: *See—*
Blaisdell, Ronald G.; and Gagnon, Peter R., 4,500,948, Cl. 362-382.000.

Gagnon, Ralph J.; and Cedarstrom, Roy A., to Hughes Aircraft Company. Two color liquid crystal light valve image projection system with single prepolarizer. 4,500,172, Cl. 350-331.00R.

Gaiser, Robert F., to Bendix Corporation, The. Fast-fill master cylinder. 4,499,729, Cl. 60-578.000.

Gaivoronsky, Albert A.: *See—*
Zsoka, Istvan; Madar, Laszlo ; Cubin, Anatoly A.; Gaivoronsky, Albert A.; Farukshin, Lev H.; Morzsic, Piotr A.; Lisov, Aleksandr I.; and Galusztainc, Vladilen A., 4,499,947, Cl. 166-179.000.

Gala Industries, Inc.: *See—*
Smith, Donald W., 4,500,271, Cl. 425-67.000.

Galasso, Francis S.: *See—*
Veltri, Richard D.; Galasso, Francis S.; and Mendelson, Mel I., 4,500,483, Cl. 264-81.000.

Galbraith, Andrew D., to Lockheed Missiles & Space Company, Inc. Electrochemical cell and method. 4,500,613, Cl. 429-69.000.

Galkiewicz, John. Kitty tease. 4,499,855, Cl. 119-29.000.

Gallucci, Jacques: *See—*
Gauthier-Lafaye, Jean; Perron, Robert; Gallucci, Jacques; and Leconte, Philippe, 4,500,473, Cl. 260-548.000.

Gallup, Darrell L.: *See—*
Jost, John W.; and Gallup, Darrell L., 4,500,434, Cl. 210-696.000.

Galusztainc, Vladilen A.: *See—*
Zsoka, Istvan; Madar, Laszlo ; Cubin, Anatoly A.; Gaivoronsky, Albert A.; Farukshin, Lev H.; Morzsic, Piotr A.; Lisov, Aleksandr I.; and Galusztainc, Vladilen A., 4,499,947, Cl. 166-179.000.

Galwey, Ronald K.; and Kanazawa, Kay K., to International Business Machines Corporation. High speed, power potentiostat/galvanostat with IR compensation for use with an electrochemical cell. 4,500,840, Cl. 324-425.000.

Gandhi, Bhupen: *See—*
Trusock, George J.; Bauer, James J.; and Gandhi, Bhupen, 4,500,819, Cl. 318-106.000.

Gandhi, Haren S.; and Watkins, William L. H., to Ford Motor Company. Method of operating an internal combustion engine on a methanol fuel. 4,499,863, Cl. 123-3.000.

Garavuso, Gerald M., to Xerox Corporation. Rotating inverter. 4,500,086, Cl. 271-225.000.

Garcia, Fred: *See—*
Campoli, Alan A.; and Garcia, Fred, 4,500,329, Cl. 55-189.000.

Gareis, Ronald E.: *See—*
Konrad, Charles E.; Gareis, Ronald E.; and Lodhia, Amratlal C., 4,500,818, Cl. 318-52.000.

Garganese, Ugo S.; Griffin, John R.; and Martin, Raymond H. Denture occlusal mounting translator. 4,500,289, Cl. 433-54.000.

Garnant, Craig M.: *See—*
Babecki, Glenn R.; Escolar, Carlos; Garnant, Craig M.; Kan, Hsin-Kuo; Kaplan, Frank; Liu, Hueichi R.; MacLachlan, George F.; Matteo, Peter J.; McDonald, John F.; Palframan, John D.; Tran, Roger T.; Welt, Martin J.; Wendt, Timothy A.; Yates, Gregory S.; and Zislis, Paul M., 4,500,960, Cl. 364-200.000.

Garner, Derek H., to USM Corporation. Gripper assembly. 4,499,622, Cl. 12-14.500.

Garrett, William G.; and Overberg, Karl W., to Ford Motor Company. Reverse voltage clamp circuit. 4,499,673, Cl. 361-56.000.

Garrett, William R., to Smith International, Inc. Method of making a drill pipe wear sleeve assembly and product thereof. 4,499,924, Cl. 138-110.000.

Garton, Stanley C.: *See—*
Hoyt, Robert M.; Bobbitt, Donald E.; Bartee, Gary E.; Garton, Stanley C.; and Pilliard, J. Paul, 4,499,698, Cl. 52-157.000.

Gasparini, Aldo; and Wimnell, Nils-Erik. Arrangement for slat screens for solar protection. 4,499,892, Cl. 126-446.000.

Gasser, Markus, to SIG Schweizerische Industrie-Gesellschaft. Method and apparatus for deflecting articles during their conveyance. 4,499,988, Cl. 198-369.000.

Gasser, Rene , to Maschinenfabrik AD. Schulthess & Co. AG. Method for washing laundry in a pass-through washing machine. 4,499,621, Cl. 8-158.000.

Gauthier-Lafaye, Jean; Perron, Robert; Gallucci, Jacques; and Leconte, Philippe, to Rhone-Poulenc Chimie de Base. Preparation of carboxylic acid anhydrides. 4,500,473, Cl. 260-548.000.

Gauthier-Lafaye, Jean; and Perron, Robert, to Rhone-Poulenc Chimie de Base. Carbonylation of methyl acetate. 4,500,474, Cl. 260-549.000.

Gaylord, Norman G.: *See—*
Young, Robert W.; Prussin, Samuel; and Gaylord, Norman G., 4,500,337, Cl. 71-67.000.
Young, Robert W.; Prussin, Samuel, deceased; and Gaylord, Norman G., 4,500,338, Cl. 71-67.000.
Young, Robert W.; Prussin, Samuel; and Gaylord, Norman G., 4,500,339, Cl. 71-67.000.

Geberth, John D., Jr. Fluid swivel coupling. 4,500,119, Cl. 285-276.000.

Gelhard, Egon. Method and apparatus for measuring a distance using ultrasonic echo signals, particularly for use on a motor vehicle. 4,500,977, Cl. 367-108.000.

General Clutch Corp.: *See—*
Waine, Martin; Rude, Edward T.; and Nisenson, Jules, 4,499,937, Cl. 160-41.000.

General Dynamics Corporation/Convair Div.: *See—*
Morghen, Manfred, 4,500,079, Cl. 269-47.000.

General Electric Company: *See—*
Anthony, Thomas R., 4,499,655, Cl. 29-576.00J.
Bitting, Ricky F.; and Peil, William, 4,500,821, Cl. 318-254.000.
Bloomer, Milton D., 4,500,838, Cl. 324-117.00R.
Cline, Harvey E., 4,500,609, Cl. 428-610.000.
Cline, Harvey E., 4,500,898, Cl. 357-23.000.
Hauck, Robert B.; and Susami, Larry, 4,501,011, Cl. 378-196.000.
Karas, Bradley R.; and Baumgartner, Charles E., 4,500,566, Cl. 427-115.000.
Karazim, Michael P.; Okashima, Bob Y.; and Ashburn, John J., 4,499,691, Cl. 51-241.00S.
Kinsinger, Richard E., 4,500,934, Cl. 361-3.000.
Konrad, Charles E.; Gareis, Ronald E.; and Lodhia, Amratlal C., 4,500,818, Cl. 318-52.000.
Lenz, Henry G., 4,499,660, Cl. 29-598.000.
McMillan, John E., 4,500,811, Cl. 315-58.000.
Medeiros, Charles W.; and Wagner, James B., 4,499,756, Cl. 73-118.000.
Miller, Timothy J. E., 4,500,824, Cl. 318-701.000.
Modic, Frank J., 4,500,584, Cl. 428-145.000.
Nester, William H., 4,500,887, Cl. 343-700.0MS.
Stahl, Gunther R., 4,499,800, Cl. 82-36.00R.
Taylor, Dale F.; and Sammler, Louis S., 4,500,413, Cl. 204-435.000.
Vermilyea, Mark E., 4,500,860, Cl. 335-216.000.
Ward, William J., III; Ritzer, Alan; Carroll, Kenneth M.; and Flock, John W., 4,500,724, Cl. 556-472.000.
Yerman, Alexander J., 4,500,029, Cl. 228-123.000.

General Electric Company, p.l.c., The: *See—*
Ko, Yu M.; and Cornick, Keith, 4,500,834, Cl. 324-52.000.

General Foods Corporation: *See—*
Fulger, Charles V.; and Bradbury, Allan G., 4,500,558, Cl. 426-622.000.
Langston, Metty S. K., 4,500,556, Cl. 426-540.000.
Liggett, Louis G.; Lang, Kevin W.; Wyss, Clement R.; and Williams, Richard A., 4,500,553, Cl. 426-101.000.

General Motors Corporation: *See—*
Stoltman, Donald D.; and Nichols, Gary A., 4,499,879, Cl. 123-480.000.
Tincher, Jon D., 4,500,769, Cl. 219-86.330.

General Signal Corporation: *See—*
Weiss, Edward L., 4,501,021, Cl. 455-601.000.

GEO Vann, Inc.: *See—*
Vann, Roy R., 4,499,951, Cl. 166-297.000.

George, Douglas A.: *See—*
Leibowitz, Marshall; and George, Douglas A., 4,500,173, Cl. 350-345.000.

Gerber, Christoph E.: *See—*
Binnig, Gerd K.; and Gerber, Christoph E., 4,499,737, Cl. 62-56.000.

Gerber, Heinz; Adam, Klaus; and Horn, Heinz, to L. Schuler GmbH. Drawing device for presses with mechanically driven drawing ram. 4,499,750, Cl. 72-351.000.

Gerber, James E.; Kovacs, Robert J.; and Herrmann, Willy, to APX Group, Inc. Flange weld technique. 4,500,030, Cl. 228-125.000.

Gere, Dennis R.: *See—*
Poole, John S.; Gere, Dennis R.; Bell, Raymond J.; and Nickerson, Mark A., 4,500,432, Cl. 210-659.000.

Geren, George W.: *See—*
Miles, Ronald C.; Geren, George W.; and Peel, R. W., 4,500,402, Cl. 204-242.000.

Gerteisen, Steven R.; Wenger, Richard M.; and Cannavo, Glenn M., to Plastic Specialties and Technologies, Inc. Stainless steel fiber-thermosplastic granules and molded articles therefrom. 4,500,595, Cl. 428-294.000.

Gesing, Adam J.; and Stratford, Graham, to Alcan International Limited. Shaped refractory metal boride articles and method of making them. 4,500,643, Cl. 501-96.000.

Giavelli, Giordano: *See—*
Carraroli, Dario; and Giavelli, Giordano, 4,500,287, Cl. 432-246.000.

Gibson, Larry A.: *See—*
Sasnett, Michael W.; Hobart, James L.; and Gibson, Larry A., 4,500,996, Cl. 372-19.000.

Gilev, Anatoly P.: *See—*
Grinberg, Grigory M.; Akifiev, Oleg N.; Pytel, Jury A.; Gilev, Anatoly P.; and Paberza, Monika Y., 4,500,516, Cl. 424-156.000.

Gillette Company, The: *See—*
Nigro, Louis V., 4,500,061, Cl. 248-359.00I.

Gillingham, Gary R., to Donaldson Company, Inc. Throughput blade for louvered separators. 4,500,332, Cl. 55-443.000.

Gimel, Bernard; and DeFay, Christian, to Thomson-CSF. Process for printing dots on a heat sensitive paper by a thermal printer and printer using this process. 4,500,891, Cl. 346-76.0PH.

Girlock Limited: *See—*
Wang, Nui, 4,499,977, Cl. 188-72.600.

Girodi, Erich; Bornowski, Gunter; Dejmek, Eberhard; Knabe, Andreas; Koch, Roland; Urbach, Bernd; and Weisselberg, Arnold, to VEB Gaskombinat Schwarze Pumpe. Device for internal welding of pipes or the like. 4,500,764, Cl. 219-59.100.

Gist-Brocades N.V.: *See—*
Apontoweil, Peter; and Krasselt, Manfred M., 4,500,638, Cl. 435-235.000.

Gitlin, Harvey S.; and Duffy, John J. Coin slide with coin drop delay means. 4,499,983, Cl. 194-1.00G.

Givaudan Corporation: *See—*
Lamparsky, Dietmar; and Kaiser, Roman, 4,500,729, Cl. 560-225.000.

Glaser, Roger M.: *See—*
Petrofsky, Jerrold S.; Phillips, Chandler A.; Glaser, Roger M.; and Heaton, Harry H., III, 4,499,900, Cl. 128-423.00W.

Godfrey, Jollie D., Jr.: *See—*
Gordon, Eric M.; and Godfrey, Jollie D., Jr., 4,500,518, Cl. 514-2.000.

Goekler, Robert G., to Crutcher Resources Corporation. Pipeline priming method and system. 4,500,570, Cl. 427-345.000.

Goertz, Arnold E.; and Guinn, Ronald K., to Hesston Corporation. Two-way knife adjustment for crop harvester cutting cylinder. 4,500,042, Cl. 241-238.000.

Goldco Engineering, Inc.: *See—*
Cole, Rodger E.; and Vander Meer, Richard H., 4,500,229, Cl. 406-88.000.

Golden, Donald M.: *See—*
DiGiovanni, John; and Golden, Donald M., 4,500,024, Cl. 227-19.000.

Goldhamer, Walter M. Modified pressure casting process and machine. 4,499,941, Cl. 164-313.000.

Goldman, Fred M.: *See—*
Csaszar, Gabor; Oehley, Gernot F.; and Goldman, Fred M., 4,500,475, Cl. 261-36.00A.

Goldsby, George M. Apparatus for replacing a chain. 4,499,644, Cl. 29-281.600.

Goldstein, Joel, to Aquarium Pharmaceuticals, Inc. Damaged fish tissue treating method and composition containing *Aloe vera* extract. 4,500,510, Cl. 424-80.000.

Goldstein, Leon C., to An-Rix, Inc. Cold recapping method for tires utilizing uncured rubber. 4,500,375, Cl. 156-96.000.

Golovanov, Alexandr V.: *See—*
Eschenko, Vladislav Y.; Musaev, Irsali K.; Talibdzhanov, Zakhidzhan S.; Leonov, Viktor A.; Bobrov, Anatoly D.; Kirovsky, Efim I.; Gritsenko, Vladimir A.; and Golovanov, Alexandr V., 4,500,282, Cl. 431-184.000.

Gomersall, Earl R.; and Cipolla, Arthur F., to Motorola, Inc. Real time, computer-driven retail pricing display system. 4,500,880, Cl. 340-825.350.

Goodson, Theodore, Jr.: *See—*
Spitzer, Wayne A.; and Goodson, Theodore, Jr., 4,500,456, Cl. 260-239.00A.

Goodyear Tire & Rubber Company, The: *See—*
Schisler, Robert C.; and Eisenzimmer, George W., 4,500,095, Cl. 277-34.000.

Gordon, Eric M.; and Godfrey, Jollie D., Jr., to E. R. Squibb & Sons, Inc. Amino thiol dipeptides. 4,500,518, Cl. 514-2.000.

Goseberg, Walter: *See—*
Napp, Gerhard; Bieringer, Ulrich; Kreismer, Heinz; and Goseberg, Walter, 4,500,833, Cl. 323-359.000.

Gosteli, Jacques; Ernest, Ivan; and Woodward, Robert B., to Ciba-Geigy Corporation. Process for preparing thia-aza compounds with a beta-lactam ring. 4,500,457, Cl. 260-245.20R.

Goto, Toshiki: *See—*
Asano, Hisoshi; Shimamune, Takayuki; Goto, Toshiki; and Hosonuma, Masashi, 4,500,405, Cl. 204-290.00F.

Goto, Toshio: *See—*
Aya, Masahiro; Saito, Junichi; Yasui, Kazuomi; Shiokawa, Kozo; Morishima, Norihisa; and Goto, Toshio, 4,500,342, Cl. 71-93.000.

Goto, Tsutomu: *See—*
Akano, Shinichi; Goto, Tsutomu; Watanabe, Hiroshi; Kuroda, Masato; Ishikawa, Sakae; and Matsumoto, Ryoichiro, 4,499,754, Cl. 73-861.120.

Gotou, Makoto; and Okamoto, Hiroshi, to Matsushita Electric Industrial Co., Ltd. Current control circuit for a plurality of loads. 4,500,830, Cl. 323-267.000.

Gottlieb, Milton: *See—*
Schaff, Fredrick L.; and Gottlieb, Milton, 4,500,175, Cl. 350-358.000.

Gould, Ashley M.: *See—*
Wyatt, Michael; Leach, Gary M.; and Gould, Ashley M., 4,500,650, Cl. 502-204.000.

Goyert, Wilhelm; Grimm, Wolfgang; Awater, Albert; Wagner, Hans; and Kruger, Bruno, to Bayer Aktiengesellschaft. Reinforced polyurethane thermoplastic chemical materials and processes for their preparation. 4,500,671, Cl. 524-494.000.

Gradco Systems, Inc.: *See—*
DuBois, R. Clark, 4,500,087, Cl. 271-293.000.

Graff, Eugene A., to North American Philips Lighting Corporation. Fluorescent lamp having integral light-filtering means and starting aid. 4,500,810, Cl. 313-486.000.

Graham, Thomas G.: *See—*
Blackwood, John; Graham, Thomas G.; and Brauch, Robert B., 4,499,839, Cl. 112-317.000.

Grantham, LeRoy F., to Rockwell International Corporation. Thermal conversion of wastes. 4,499,833, Cl. 110-342.000.

Granzow, Daniel B.: *See—*
Kulin, Ralph; Granzow, Daniel B.; and Danielsen, Brant R., 4,500,788, Cl. 250-455.100.

Graphic Controls Corp.: *See—*
Katsen, Boris J.; Brinkworth, Robert T.; Kay, Daniel J.; and Riester, James A., 4,500,354, Cl. 106-21.000.

Grappendorf, Richard H.; and West, Jana L., to Christensen, Inc. Tooth configuration for an earth boring bit. 4,499,959, Cl. 175-330.000.

Gras, Rainer, to Chemische Werke Huls Aktiengesellschaft. Powder surface coatings. 4,500,696, Cl. 528-45.000.

Gras, Rainer: *See—*
Disteldorf, Josef; and Gras, Rainer, 4,500,697, Cl. 528-45.000.
Disteldorf, Josef; and Gras, Rainer, 4,500,698, Cl. 528-45.000.

Grassame, Ulrich, to Siemens Aktiengesellschaft. Dental X-ray diagnostic installation. 4,501,010, Cl. 378-38.000.

Gratch, Eitan: *See—*
Austin, James W.; Bradburn, Ronald G.; Cromwell, Clarence A.; Gratch, Eitan; Groiss, Erich; Perkins, Derek; and Walker, Robert A., 4,500,496, Cl. 423-55.000.

Graves, Toby R.: *See—*
Woods, John H.; Graves, Toby R.; Nasser, William E.; and Jagtap, Ashvinkumar N., 4,500,359, Cl. 106-270.000.

Graves, Walter E.: *See—*
Boys, Donald R.; and Graves, Walter E., 4,500,407, Cl. 204-298.000.
Boys, Donald R.; and Graves, Walter E., 4,500,409, Cl. 204-298.000.

Gray, Hamish W. M.: *See—*
English, Brian B.; and Gray, Hamish W. M., 4,500,876, Cl. 340-709.000.

Gray, Hollis L., Jr.: *See—*
Crampton, Arthur W.; Gray, Hollis L., Jr.; and Mermelstein, Seymour, 4,499,773, Cl. 73-718.000.

Gray, Martin D., to Cipher Data Products, Inc. Capstanless magnetic tape drive with electronic equivalent to length of tape. 4,500,965, Cl. 364-400.000.

Great Lakes Carbon Corporation: *See—*
Clark, James M.; Secrist, Duane R.; Hardin, Scotty L.; and McEntyre, Stephen C., 4,500,401, Cl. 204-225.000.

Greenberg, Mishel; Smyers, William H., Jr.; and Chernack, Milton, to Chesebrough-Pond's Inc. Apparatus for measuring human respiration. 4,499,905, Cl. 128-727.000.

Greene, Ted R., to United Security Products, Inc. Electronic panel. 4,500,943, Cl. 361-383.000.

Greenway, John M., to Milliken Research Corporation. Method for the production of materials having visual surface effects. 4,499,637, Cl. 26-2.00R.

Gregg, David P., to Discovision Associates. Process for making a video record disc. 4,500,484, Cl. 264-107.000.

Grelan Pharmaceutical Co., Ltd.: *See—*
Kigasawa, Kazuo; Ohtani, Hideaki; and Kanezuka, Toshiyuki, 4,500,511, Cl. 424-81.000.

Grey, James T., Jr., to Thiokol Corporation. Device for controlled differential flow. 4,500,114, Cl. 280-742.000.

Gries, Josef: *See—*
Kubinyi, Hugo; Traut, Martin; and Gries, Josef, 4,500,467, Cl. 514-2.000.

Griffin, John R.: *See—*
Garganese, Ugo S.; Griffin, John R.; and Martin, Raymond H., 4,500,289, Cl. 433-54.000.

Grimm, Maurice, to Ebauches, S.A. Ultra-flat self-winding watch. 4,500,213, Cl. 368-208.000.

Grimm, Wolfgang: *See—*
Goyert, Wilhelm; Grimm, Wolfgang; Awater, Albert; Wagner, Hans; and Kruger, Bruno, 4,500,671, Cl. 524-494.000.

Grinberg, Grigory M.; Akifiev, Oleg N.; Pytel, Jury A.; Gilev, Anatoly P.; and Paberza, Monika Y., to Institut Organicheskogo Sinteza Akademii Nauk Latviiskoi SSR. Antibacterial pharmaceutical composition. 4,500,516, Cl. 424-156.000.

Griset, Norman. Guide clamp. 4,499,667, Cl. 33-446.000.

Gritsenko, Vladimir A.: *See—*
Eschenko, Vladislav Y.; Musaev, Irsali K.; Talibdzhanov, Zakhidzhan S.; Leonov, Viktor A.; Bobrov, Anatoly D.; Kirovsky, Efim I.; Gritsenko, Vladimir A.; and Golovanov, Alexandr V., 4,500,282, Cl. 431-184.000.

Grobner, Paul J.: *See—*
Bond, Armand P.; Poznansky, Abraham; and Grobner, Paul J., 4,500,351, Cl. 75-128.00N.

Grodinsky, Robert. Audio amplifier apparatus with minimum non-linear distortion. 4,500,850, Cl. 330-307.000.

Groh, Edward F.; Cassidy, Dale A.; and Lewandowski, Edward F., to United States of America, Energy. Encapsulated fuel unit and method of forming same. 4,500,488, Cl. 376-409.000.

Groiss, Erich: *See—*
Austin, James W.; Bradburn, Ronald G.; Cromwell, Clarence A.; Gratch, Eitan; Groiss, Erich; Perkins, Derek; and Walker, Robert A., 4,500,496, Cl. 423-55.000.

Grossman, Harvey L., to Forms & Surfaces. Door pull mounting and locking assembly. 4,499,629, Cl. 16-111.00R.

Gruber, Werner: *See—*
Herold, Julius; Gruber, Werner; and Henke, Guenter, 4,500,604, Cl. 428-414.000.

Grunert, Heinz; Hahn, Fritz; Rall, Ulrich; Schumann, Klaus; Schwuger, Milan J.; and Smolka, Heinz G., to Henkel Kommanditgesellschaft auf Aktien. Use of fine-particulate alkali metal aluminosilicates in the process of dye soaping. 4,500,320, Cl. 8-442.000.

Gruns, James H. Flexible surface cleaning and coatings applicator tool. 4,499,627, Cl. 15-210.00R.

Gruppo Lepetit S.p.A.: *See—*
Winters, Giorgio; Sala, Alberto; and Barone, Domenico, 4,500,525, Cl. 514-210.000.

GTE Communications Products Corporation: *See—*
Maiocchi, John, 4,499,848, Cl. 118-45.000.

GTE Products Corporation: *See—*
Blaisdell, Ronald G.; and Gagnon, Peter R., 4,500,948, Cl. 362-382.000.
Roche, William J., 4,500,812, Cl. 315-171.000.

Guckenheimer, Peter U., to Hewlett-Packard Company. Keyboard switch assembly having sensory feedback. 4,500,758, Cl. 200-5.00A.

Gueret, Jean-Louis H., to L'Oreal. Hair brush with a flexible base plate made of a plastic material. 4,500,939, Cl. 361-221.000.

Guffroy, Gerard, to De Dietrich & Cie. Process for enamelling objects electrostatically by means of a gun. 4,500,560, Cl. 427-8.000.

Guinn, Ronald K.: *See—*
Goertz, Arnold E.; and Guinn, Ronald K., 4,500,042, Cl. 241-238.000.

Gulf Oil Corporation: *See—*
Lakshmanan, Pallavoor R., 4,500,661, Cl. 524-77.000.

Gulling, Donna C.: *See—*
Davis, Sammy G.; and Gulling, Donna C., 4,500,291, Cl. 433-213.000.

Gulton Industries, Inc.: *See—*
Burkarth, Jack L., 4,499,815, Cl. 98-40.140.

Gunn, Walter H.; and Kennedy, Alexander W. Corrosion resistant substrate with metallic undercoat and chromium topcoat. 4,500,610, Cl. 428-624.000.

Gustafsson, Erik, to Plannja AB. Roofing sheet. 4,499,700, Cl. 52-478.000.

Guthrie, James L.; and Wojcik, Ronald T., to W. R. Grace & Co. Reactive adhesive dispersion and method of use. 4,500,703, Cl. 523-400.000.

Gutleber, Frank S., to United States of America, Army. Adaptive multiple interference tracking and cancelling antenna. 4,500,883, Cl. 343-383.000.

H. B. Fuller Co.: *See—*
Luss, V. Gerold, 4,500,517, Cl. 424-162.000.

H. King & Associates, Ltd.: *See—*
King, Homer F., 4,500,148, Cl. 312-312.000.

Haag, Werner O.: *See—*
Chen, Nai Y.; Haag, Werner O.; Huang, Tracy J.; and Wong, Stephen S., 4,500,417, Cl. 208-111.000.

Haas, Wendall M. B., to United States of America, Energy. Flexural support member having a high ratio of lateral-to-axial stiffness. 4,499,772, Cl. 73-666.000.

Haber, Stephen B., to Du Pont de Nemours, E. I., and Company. Antiinflammatory and/or analgesic silylfurans. 4,500,520, Cl. 514-63.000.

Haberl, Johann K. Side-channel pump. 4,500,253, Cl. 415-53.00T.

Habicht, Ernst; and Zbinden, Paul, to Ciba-Geigy Corporation. Dioxaheterocyclic compounds. 4,500,542, Cl. 514-465.000.

Hackett, Robert J., to Haly, Inc. Molten metal samplers. 4,499,777, Cl. 73-864.560.

Hacova, Kveta: *See—*
Junek, Jan; Skarka, Josef; Jaros, Frantisek; Hortlik, Frantisek; Hacova, Kveta; Vobornik, Vaclav; Ohlidal, Vladimi; and Lihtarova, Ludmila, 4,499,718, Cl. 57-301.000.

Hacskaylo, Michael. Automatic human body detector. 4,500,784, Cl. 250-341.000.

Haeck, Paul J., to Miller Hofft, Inc. Combination dryer and surge bin. 4,499,669, Cl. 34-102.000.

Haentjens, Yan: *See—*
Marchand, Maurice; and Haentjens, Yan, 4,500,848, Cl. 330-285.000.

Hagiri, Minoru: *See—*
Kubo, Keishi; Watanabe, Hideo; Takigawa, Nobuhiro; Hagiri, Minoru; and Kawasaki, Kanjiro, 4,500,896, Cl. 346-204.000.

Hagiwara, Hitoshi: *See—*
Kita, Nobuyuki; Matsumoto, Hiroshi; and Hagiwara, Hitoshi, 4,500,625, Cl. 430-149.000.

Hagler, Gerald E.: *See—*
Mathis, Ronald D.; Reed, Jerry O.; and Hagler, Gerald E., 4,500,706, Cl. 528-502.000.

Hahn, Fritz: *See—*
Grunert, Heinz; Hahn, Fritz; Rall, Ulrich; Schumann, Klaus; Schwuger, Milan J.; and Smolka, Heinz G., 4,500,320, Cl. 8-442.000.

Hahn, Terrence P. Protective pad. 4,500,129, Cl. 294-172.000.

Haight, Robert E.: *See—*
Jacobi, Stephen F.; Haight, Robert E.; Schletzbaum, John W.; Martin, Yolanda E.; and Lang, Stephen P., 4,500,874, Cl. 340-607.000.

Haines, Richard M.: *See—*
Wong, Robert; Flautt, Martin C.; and Haines, Richard M., 4,500,600, Cl. 428-391.000.

Hajto, Ernest A., to Du Pont Canada Inc. Emulsion blasting agent. 4,500,370, Cl. 149-109.600.

Halkey-Roberts Corporation: *See—*
Zimmerly, Harry L., 4,499,968, Cl. 184-18.000.
Zimmerly, Harry L., 4,500,014, Cl. 222-5.000.

Hall, Charles B.; and Mondek, Martin J., to Outboard Marine Corporation. Control system for torque correcting device. 4,500,298, Cl. 440-62.000.

Hall, Robert T., to Williams International Corporation. Casting process including making and using an elastomeric pattern. 4,499,940, Cl. 164-36.000.

Hall, William M.: *See—*
Burns, Richard H.; Hall, William M.; and Hildebrand, Bernard P., 4,500,163, Cl. 350-3.700.

Hallford, Ben R., to Rockwell International Corporation. Transistor amplifier variable matching transformer apparatus. 4,500,847, Cl. 330-277.000.

Halliburton Company: *See—*
Brothers, Lance E.; and Rao, S. Prabhakara, 4,500,357, Cl. 106-90.000.
Roberts, Don M.; and Looper, David W., 4,500,944, Cl. 361-384.000.

Haly, Inc.: *See—*
Hackett, Robert J., 4,499,777, Cl. 73-864.560.

Hamada, Hideo: *See—*
Suzuki, Tadashi; Morimoto, Yoshiro; Hamada, Hideo; Suga, Masaaki; and Futagi, Masaaki, 4,499,979, Cl. 192-3.310.

Hamada, Mitsuo: *See—*
Kobayashi, Hideki; and Hamada, Mitsuo, 4,500,447, Cl. 252-511.000.

Hamada, Nobuhiro: *See—*
Sugimoto, Norihiko; Hamada, Nobuhiro; Masuda, Ikuro; and Sakurai, Jinichi, 4,500,951, Cl. 364-186.000.

Hamada, Takeshi; and Komatsubara, Yoshinobu, to Mitsui Mining Company Ltd. Method of removing sulfur oxides and nitrogen oxides by dry process. 4,500,501, Cl. 423-239.000.

Hamada, Yasufumi: *See—*
Tanaka, Toru; Hataya, Masanori; Tanaka, Kazuo; Sakai, Yukio; and Hamada, Yasufumi, 4,500,730, Cl. 562-416.000.

Hamaguchi, Hiroshi: *See—*
Fukami, Akira; Noguchi, Hiroki; and Hamaguchi, Hiroshi, 4,500,479, Cl. 261-98.000.

Hamalainen, Kaarlo J.; and Reitmeier, Glenn A., to RCA Corporation. Television signal standards conversion using a helical scan VTR. 4,500,930, Cl. 358-310.000.

Hamamatsu, Seiji: *See—*
Kubota, Hitoshi; Hamamatsu, Seiji; Yambe, Teluo; and Takahashi, Toshiyuki, 4,500,761, Cl. 200-84.00C.

Hamamuro, Naozi: *See—*
Shima, Toshiaki; Hamamuro, Naozi; Ikari, Shinichi; and Fuzishiro, Tuneo, 4,499,929, Cl. 141-1.100.

Hamano, Isao; Morishita, Akira; Akae, Yoshifumi; and Tanaka, Toshinori, to Mitsubishi Denki Kabushiki Kaisha. Apparatus for automatically starting and stopping engine. 4,500,794, Cl. 290-38.00C.

Hamblett, Martin: *See—*
Dodd, Alec G.; and Hamblett, Martin, 4,500,258, Cl. 416-97.00R.

Hamilton, James G.; Sullivan, Ann C.; Tobias, Lawrence D.; and Triscari, Joseph, to Hoffmann-La Roche Inc. Thromboxane synthase inhibitors as insulin lowering agents and antionbesity agents. 4,500,540, Cl. 514-397.000.

Hamm, James R.; and Young, William E., to KRW Energy Systems Inc. High temperature gas turbine systems. 4,499,722, Cl. 60-39.120.

Hammer, Heiner I., to Schlegel Lining Technology GmbH. Concrete pipe with an inner lining. 4,499,923, Cl. 138-109.000.

Hammill, S. Scott, to SL Industries, Inc. Universal outlet. 4,500,152, Cl. 339-61.00M.

Hamon, Christian: *See—*
Denise, Bernard; Hamon, Christian; Senes, Michel; and Sneeden, Raymond, 4,500,646, Cl. 502-78.000.

Hanamoto, Hiroyuki; and Horie, Yoshihiro, to Minolta Camera Kabushiki Kaisha. Timing control system for determining abnormal motor operation. 4,500,957, Cl. 364-200.000.

Hancock, Robert D.: *See—*
Pettingell, James T., 4,500,031, Cl. 228-179.000.

Haneda, Satoshi; Itaya, Masahiko; and Tanaka, Minoru, to Konishiroku Photo Industry Co., Ltd. Extraction developing method for electrostatic latent images. 4,500,616, Cl. 430-45.000.

Hanlon, Allan J., to Devro, Inc. End closure for sausage casings. 4,500,574, Cl. 428-35.000.

Hanma, Kentaro; Murakami, Toshio; and Todaka, Yoshihiro, to Hitachi, Ltd. Auto-focusing system for video camera. 4,500,925, Cl. 358-227.000.

Hanna, Marie R.: *See—*
Boden, Richard M.; Hanna, Marie R.; and Tyszkiewicz, Theodore J., 4,500,448, Cl. 252-522.00R.

Hansen, Leif J.: *See—*
Hunt, Arlon J.; Hansen, Leif J.; and Evans, David B., 4,499,893, Cl. 126-449.000.

Hanson, John D.; and Cook, John E., to Allied Corporation. Vacuum check valve. 4,499,916, Cl. 137-103.000.

Hanson, Raymond; and Tillyard, Malcolm, to USM Corporation. Method and apparatus for use in heating shoe parts. 4,500,773, Cl. 219-215.000.

Hara, Hiroshi: *See—*
Aono, Toshiaki; Hara, Hiroshi; and Naito, Hideki, 4,500,624, Cl. 430-138.000.
Naito, Hideki; Hara, Hiroshi; Aono, Toshiaki; Sato, Kozo; and Fujita, Shinsaku, 4,500,626, Cl. 430-203.000.

Haraguchi, Keisuke: *See—*
Morizumi, Masaaki; Kando, Toru; and Haraguchi, Keisuke, 4,500,184, Cl. 354-149.110.

Haraguchi, Shosuke; and Tosaka, Yoichi, to Canon Kabushiki Kaisha. Film transportation device for camera. 4,500,185, Cl. 354-209.000.

Harbert, Charles A.: *See—*
Lombardino, Joseph G.; and Harbert, Charles A., 4,500,535, Cl. 514-277.000.

Hardee, Kim C.: *See—*
Sud, Rahul; and Hardee, Kim C., 4,500,799, Cl. 307-449.000.

Hardin, Scotty L.: *See—*
Clark, James M.; Secrist, Duane R.; Hardin, Scotty L.; and McEntyre, Stephen C., 4,500,401, Cl. 204-225.000.

Hareng, Michel; and Moutou, Paul, to Thomson-CSF. Thermoelectrically controlled electrochromatic visualization device. 4,500,878, Cl. 340-713.000.

Harer, Helmut: *See—*
Ahner, Peter; Harer, Helmut; and Schustek, Siegfried, 4,500,772, Cl. 219-209.000.

Harmand, Michel, to Automobiles Citroen; and Automobiles Peugeot. Vehicle seat. 4,500,130, Cl. 296-65.00R.

Harms, Orville L., to Timpte Industries, Inc. Apparatus and method for locking doors. 4,500,123, Cl. 292-259.00A.

Harris Graphics Corporation: *See—*
Ruetschle, Rudolph H.; and Raker, John W., 4,499,834, Cl. 112-2.000.

Harris, Ronald R., to Kemfast Textiles, Inc. Stretchable knitted article with printed design. 4,499,741, Cl. 66-171.000.

Harris, Stephen K.; and Miller, Wiley W., to Tappan Company, The. Manual control knob with adjustable pointer assembly. 4,499,630, Cl. 16-121.000.

Hart, Robert G.; and Townsend, Herbert E., to Bethlehem Steel Corporation. Method of producing metal-filled organic coating. 4,500,399, Cl. 204-181.00C.

Hartung, Michael H.: *See—*
Duke, Alan H.; Hartung, Michael H.; Marschner, Frederick J.; and Nolan, Kenneth P., 4,500,954, Cl. 364-200.000.

Hartwig, Jurgen: *See—*
Meier, Gunter; Meier, Willi; and Hartwig, Jurgen, 4,499,836, Cl. 112-158.00E.

Harwood, Leopold A., to RCA Corporation. Hue control system. 4,500,910, Cl. 358-28.000.

Hasegawa, Eiichi: *See—*
Wada, Minoru; Takahashi, Yonosuke; and Hasegawa, Eiichi, 4,500,889, Cl. 346-1.100.

Hasegawa, Katsuji; and Ibuki, Yasuhiro, to Meinan Machinery Works, Inc. Veneer lathe. 4,499,935, Cl. 144-209.00R.

Hasegawa, Satoshi, to Nippon Electric Co., Ltd. Loop transmission system. 4,500,987, Cl. 370-60.000.

Hashimoto, Junichi, to Pentel Kabushiki Kaisha. Mechanical pencil with removable lead feed cover. 4,500,220, Cl. 401-53.000.

Hashimoto, Seiji; Tanaka, Nobuyoshi; Suga, Akira; and Kuwayama, Tetsuro, to Canon Kabushiki Kaisha. Solid-state color image sensing device. 4,500,913, Cl. 358-44.000.

Hashimoto, Shintaro; Masuzawa, Sigeaki; Shibata, Shinya; Tsuda, Hiroshi; and Nakano, Masahiro, to Sharp Kabushiki Kaisha. Audibly announcing apparatus with power saving feature. 4,500,211, Cl. 368-63.000.

Hasselmann, Heinz; and Muenzebrock, Anton, to Mannesmann Aktiengesellschaft. Method and apparatus for determining stress on hoisting equipment. 4,500,969, Cl. 364-508.000.

Hatada, Toshio: *See—*
Kuroda, Shigeaki; Senshu, Takao; Oguni, Kensaku; Mochizuki, Taketoshi; Yasuda, Hiromu; Ishibane, Kyuhei; Atsumi, Akira; Kimura, Hideyuki; and Hatada, Toshio, 4,500,035, Cl. 236-92.00B.

Hatae, Masamiti: *See—*
Misaka, Yoshiharu; Teraue, Takeshi; and Hatae, Masamiti, 4,500,652, Cl. 521-33.000.

Hataya, Masanori: *See—*
Tanaka, Toru; Hataya, Masanori; Tanaka, Kazuo; Sakai, Yukio; and Hamada, Yasufumi, 4,500,730, Cl. 562-416.000.

Hatayama, Tamothu: *See—*
Nozaki, Hidetoshi; Kamimura, Takaaki; Hatayama, Tamothu; and Utagawa, Tadashi, 4,500,744, Cl. 136-258.000.

Hattori, Kazuhide: *See—*
Yazaki, Takao; Hattori, Kazuhide; Hattori, Satoru; Hayama, Kazuhide; and Itoh, Isao, 4,500,597, Cl. 428-317.700.

Hattori, Satoru: *See—*
Yazaki, Takao; Hattori, Kazuhide; Hattori, Satoru; Hayama, Kazuhide; and Itoh, Isao, 4,500,597, Cl. 428-317.700.

Hauck, Robert B.; and Susami, Larry, to General Electric Company. Angulating lateral fluoroscopic suspension. 4,501,011, Cl. 378-196.000.

Hauer, Jean-Claude: *See—*
Oger, Jacques; Hauer, Jean-Claude; and Freis, Jean-Louis, 4,499,695, Cl. 52-19.000.

Haug, Theobald: *See—*
Stockinger, Friedrich; and Haug, Theobald, 4,500,691, Cl. 525-503.000.

Haugen, Olav A.: *See—*
Tvedt, Kare E.; Kopstad, Guennar; and Haugen, Olav A., 4,499,670, Cl. 34-143.000.

Hauni-Werke Korber & Co. KG: *See—*
Vock, Jurgen; Pinck, Peter; Lange, Norbert; Schmalfeld, Erwin; and Petersen, Kurt-Eckard, 4,500,770, Cl. 219-121.0LK.

Haury, Gilbert E.; Patel, Nathalal G.; Lockard, Walter G.; and Wiatrak, Thomas R., to Invacare Corporation. Sports wheelchair. 4,500,102, Cl. 280-242.0WC.

Hausberg, Hans-Heinrich; Uhl, Jurgen; Seyfried, Christoph; and Minck, Klaus-Otto, to Merck Patent Gesellschaft Mit Beschrankter Haftung. Pharmacologically active cyclopropane derivatives. 4,500,541, Cl. 514-466.000.

Hausmann, Heinz; Niessen, Heinz J.; Telle, Otto; and Neumaier, Hermann, to Bayer Aktiengesellschaft. Oil-in-water emulsions, and their use. 4,500,348, Cl. 71-103.000.

Hawe-Neos Dental Dr. H. v. Weissenfluh S.A.: *See—*
von Weissenfluh, Hans C., 4,500,288, Cl. 433-40.000.

Hay, Robert A., II; and Krause, Brian W., to Dow Chemical Company, The. Tubing perforator. 4,499,749, Cl. 72-325.000.

Hayakawa, Kiyoharu: *See—*
Takahashi, Hideaki; Hayakawa, Kiyoharu; Kondo, Haruyoshi; and Takeuchi, Takashi, 4,500,412, Cl. 204-425.000.

Hayama, Kazuhide: *See—*
Yazaki, Takao; Hattori, Kazuhide; Hattori, Satoru; Hayama, Kazuhide; and Itoh, Isao, 4,500,597, Cl. 428-317.700.

Hayashi, Akira: *See—*
Nagamine, Akio; Hayashi, Akira; Yoshida, Kazumasa; and Miyasaka, Kojiro, 4,500,614, Cl. 429-206.000.

Hayashi, Katsumi: *See—*
Ohmura, Kunioki; Torigoe, Masaaki; Itoh, Isamu; and Hayashi, Katsumi, 4,500,632, Cl. 430-428.000.

Hayashi, Yutaka; Yamanaka, Mithuyuki; Iida, Hideyo; Shiba, Nobuyasu; Karasawa, Hideyuki; Mishuku, Toshio; and Itou, Atsuo, to Kogyo Gijutsuin; and Taiyo Yuden Kabushiki Kaisha. Amorphous semiconductor solar cell having a grained transparent electrode. 4,500,743, Cl. 136-258.000.

Hayes, James C. Self induced laser magnetohydrodynamic (MHD) electric generator. 4,500,803, Cl. 310-11.000.

Hayes, Robert A.; and Conard, Wendell R., to Firestone Tire & Rubber Company, The. Method for preparing a zinc dimethacrylate powder having a specific surface area range. 4,500,466, Cl. 260-429.900.

Hays, Dan A.: *See—*
Kopko, John J.; and Hays, Dan A., 4,499,851, Cl. 118-658.000.

Heaton, Harry H., III: *See—*
Petrofsky, Jerrold S.; Phillips, Chandler A.; Glaser, Roger M.; and Heaton, Harry H., III, 4,499,900, Cl. 128-423.00W.

Hecht, Betsalel; and Hecht, Silviu. Means for loading fowl onto a transporting vehicle. 4,499,856, Cl. 119-82.000.

Hecht, Silviu: *See—*
Hecht, Betsalel; and Hecht, Silviu, 4,499,856, Cl. 119-82.000.

Heidelberger Druckmaschinen AG: *See—*
Fischer, Rudolf; and Spiegel, Nikolaus, 4,499,760, Cl. 73-159.000.

Heidemeyer, Paulus: *See—*
Oetting, Hermann; and Heidemeyer, Paulus, 4,499,965, Cl. 180-165.000.

Heikes, James E.: *See—*
Sprague, Peter W.; and Heikes, James E., 4,500,723, Cl. 549-459.000.

Heikkila, Sakari, to A. Ahlstrom Osakeyhtio. Method and apparatus for detecting grain direction in wood, particularly in lumber. 4,500,835, Cl. 324-58.50R.

Heinecke, Steven B., to Minnesota Mining and Manufacturing Co. Reservoir wound dressing. 4,499,896, Cl. 128-156.000.

Heling, Dennis: *See—*
Murphy, Randall T.; and Heling, Dennis, 4,500,136, Cl. 297-284.000.

Heller, Andrew R.; and Worley, William S., Jr., to International Business Machines Corporation. Mechanism for control of address trans-

lation by a program using a plurality of translation tables. 4,500,952, Cl. 364-200.000.
Helms, Dirk, to Fa.Jungheinrich Unternehmensverwaltung KG. Swivel head for industrial robots. 4,499,790, Cl. 74-665.00C.
Henke, Guenter: *See*—
Herold, Julius; Gruber, Werner; and Henke, Guenter, 4,500,604, Cl. 428-414.000.
Henkel Kommanditgesellschaft auf Aktien: *See*—
Grunert, Heinz; Hahn, Fritz; Rall, Ulrich; Schumann, Klaus; Schwuger, Milan J.; and Smolka, Heinz G., 4,500,320, Cl. 8-442.000.
Herold, Julius; Gruber, Werner; and Henke, Guenter, 4,500,604, Cl. 428-414.000.
Hennekes, Daniel M.; Suica, David E.; and Beckman, Robert F., to Cincinnati Milacron Inc. Releasable tool mount for manipulator. 4,500,065, Cl. 248-542.000.
Henrick, Clive A., to Zoecon Corporation. Compositions. 4,500,737, Cl. 568-329.000.
Herberg, Helmut, to Siemens Aktiengesellschaft. FET Controlled thyristor. 4,500,902, Cl. 357-38.000.
Hermann Wangner GmbH & Co KG: *See*—
Borel, Georg. 4,499,927, Cl. 139-425.00A.
Herold, Julius; Gruber, Werner; and Henke, Guenter, to Henkel Kommanditgesellschaft auf Aktien. Bondings and composite films. 4,500,604, Cl. 428-414.000.
Herrmann, Willy: *See*—
Gerber, James E.; Kovacs, Robert J.; and Herrmann, Willy, 4,500,030, Cl. 228-125.000.
Hesston Corporation: *See*—
Goertz, Arnold E.; and Guinn, Ronald K., 4,500,042, Cl. 241-238.000.
Hewlett-Packard Company: *See*—
Buck, Roy T.; Cloutier, Frank L.; Erni, R. Ernst; Low, Robert N.; and Terry, F. Duncan, 4,500,895, Cl. 346-140.00R.
Guckenheimer, Peter U., 4,500,758, Cl. 200-5.00A.
Poole, John S.; Gere, Dennis R.; Bell, Raymond J.; and Nickerson, Mark A., 4,500,432, Cl. 210-659.000.
Higashi, Hidehiro: *See*—
Fuchikami, Jun; Higashi, Hidehiro; Inoue, Takashi; and Oba, Hiroyuki, 4,500,645, Cl. 502-65.000.
Higgins, Mary L.; and Muri, David L., to Motorola, Inc. Switch controller for obtaining a plurality of functions from a single switch in a two-way transceiver and method therefor. 4,501,017, Cl. 455-78.000.
Hihara, Toshio: *See*—
Niwa, Toshio; Hihara, Toshio; and Shimizu, Yukiharu, 4,500,455, Cl. 534-635.000.
Niwa, Toshio; and Hihara, Toshio, 4,500,710, Cl. 544-113.000.
Hildebrand, Bernard P.: *See*—
Burns, Richard H.; Hall, William M.; and Hildebrand, Bernard P., 4,500,163, Cl. 350-3.700.
Hill, Kenneth W.: *See*—
Winkelbauer, Howard M.; Hill, Kenneth W.; and Wang, Ke-Chin, 4,500,644, Cl. 501-98.000.
Hill, Phillip E.: *See*—
Lawrence, Robert H., Jr.; and Hill, Phillip E., 4,499,687, Cl. 47-58.000.
Hill, Richard W.; Skinner, Dewey F.; and Thorsness, Charles B., to United States of America, Energy. Silane-propane ignitor/burner. 4,499,945, Cl. 166-50.000.
Hills, Maynard J.: *See*—
Janisiewicz, Stanley W.; Hills, Maynard J.; and Lovell, Edward J., 4,500,246, Cl. 414-414.000.
Hinds, Kenneth W. Diesel fuel heater. 4,499,886, Cl. 123-557.000.
Hino, Toshiyuki; and Masuno, Katsuyoshi, to Mitsubishi Denki Kabushiki Kaisha. Ignition system for internal combustion engine. 4,499,888, Cl. 123-615.000.
Hinohara, Yoshikazu: *See*—
Honda, Masamitsu; Nagai, Hideaki; Takishima, Shoko; Kawamura, Akinori; Kawamura, Noriko; Dan, Takashi; Koizumi, Masuo; Murakami, Yasushi; Hinohara, Yoshikazu; Nakano, Hideki; and Takagaki, Yoshio, 4,500,714, Cl. 546-309.000.
Hioki, Shunichi: *See*—
Tanaka, Kyoichi; Tsuzuki, Akira; and Hioki, Shunichi, 4,500,441, Cl. 252-89.100.
Hiramoto, Tatsumi, to Ushio Denki Kabushiki Kaisha. Deposition process. 4,500,565, Cl. 427-39.000.
Hirano, Seiichi, to Epson Corporation. Serial thermal printer. 4,500,892, Cl. 346-76.0PH.
Hirano, Yoshinori, to Nissan Motor Company, Limited. Cylinder head for internal combustion engine. 4,499,866, Cl. 123-41.210.
Hirata, Sadao: *See*—
Maruhashi, Yoshitsugu; Kano, Fumio; Yamada, Muneki; and Hirata, Sadao, 4,500,677, Cl. 525-57.000.
Hiratani, Hajime: *See*—
Nakanishi, Koichiro; and Hiratani, Hajime, 4,500,514, Cl. 424-94.000.
Hirooka, Yasuhiro: *See*—
Komoda, Akira; Hirooka, Yasuhiro; Yoshihara, Takahisa; and Matsuda, Akira, 4,500,400, Cl. 204-206.000.
Hirosawa, Yoshiaki: *See*—
Katayama, Hiroomi; Hirosawa, Yoshiaki; and Fujii, Masahiko, 4,499,875, Cl. 123-416.000.
Hitachi Cable, Ltd.: *See*—
Kajioka, Hiroshi; Tokunaga, Toshihide; and Nakagawa, Junkichi, 4,500,168, Cl. 350-96.340.
Hitachi Engineering Kabushiki Kaisha: *See*—
Koshio, Yoshihiro; Kato, Tadao; and Kawano, Hikaru, 4,500,002, Cl. 209-534.000.
Hitachi Koki Haramachi Works, Ltd.: *See*—
Takeda, Mutsumi, 4,499,804, Cl. 83-399.000.
Hitachi, Ltd.: *See*—
Hanma, Kentaro; Murakami, Toshio; and Todaka, Yoshihiro, 4,500,925, Cl. 358-227.000.
Koike, Norio; Tsukada, Toshihisa; Baji, Toru; and Sasano, Akira, 4,500,915, Cl. 358-44.000.
Kubo, Kanji; Momose, Tsugio; and Izumi, Chikahiko, 4,500,959, Cl. 364-200.000.
Kuroda, Shigeaki; Senshu, Takao; Oguni, Kensaku; Mochizuki, Taketoshi; Yasuda, Hiromu; Ishibane, Kyuhei; Atsumi, Akira; Kimura, Hideyuki; and Hatada, Toshio, 4,500,035, Cl. 236-92.00B.
Kuwabara, Kouji; Sugawara, Hiroyuki; Shirakura, Toshiharu; Kawakubo, Yukio; and Sasaki, Kouji, 4,500,998, Cl. 372-61.000.
Miki, Masayuki; Suzuki, Seikou; and Sasayama, Takao, 4,499,880, Cl. 123-489.000.
Nihei, Mitsuo; and Nishi, Hidetoshi, 4,499,748, Cl. 72-238.000.
Nishiguchi, Akira; Usui, Sanpei; Oouchi, Tomihisa; and Iwai, Kazumi, 4,499,859, Cl. 122-18.000.
Noto, Yasuo; Naito, Shotaro; and Ohmae, Tsutomu, 4,500,820, Cl. 318-139.000.
Onuki, Jin; Soeno, Ko; Morita, Keiichi; and Onodera, Hisakithi, 4,500,904, Cl. 357-67.000.
Sato, Tetsuo; and Kominami, Yasuo, 4,500,932, Cl. 360-65.000.
Shimizu, Isao, 4,500,900, Cl. 357-36.000.
Sugimoto, Norihiko; Hamada, Nobuhiro; Masuda, Ikuro; and Sakurai, Jinichi, 4,500,951, Cl. 364-186.000.
Takatori, Hiroshi; and Suzuki, Toshiro, 4,500,999, Cl. 375-16.000.
Tanaka, Yoshito; Ichiryu, Ken; and Iwata, Naohiko, 4,500,865, Cl. 338-13.000.
Tsuboi, Nobuyoshi; Shima, Seiya; Kanasaki, Morio; and Nakazawa, Hayashi, 4,499,986, Cl. 198-322.000.
Tsuchiya, Masatoshi; Soeno, Ko; and Yoshida, Tomomasa, 4,499,774, Cl. 73-727.000.
Yatsuo, Tsutomu; Nagano, Takahiro; Oikawa, Saburo; and Horie, Akira, 4,500,903, Cl. 357-38.000.
Yuhara, Akitsuna; Hosaka, Norio; Fujita, Yuji; Kishimoto, Kiyoharu; and Yamada, Jun, 4,500,807, Cl. 310-313.00B.
Hobart, James L.: *See*—
Sasnett, Michael W.; Hobart, James L.; and Gibson, Larry A., 4,500,996, Cl. 372-19.000.
Hochstein, Peter A.; and Shih, Kelvin. Electrical timing control switch. 4,500,795, Cl. 307-141.000.
Hoechst Aktiengesellschaft: *See*—
Diery, Helmut; and Mees, Bernhard, 4,500,735, Cl. 564-286.000.
Seipke, Gerhard; Tripier, Dominique; and Johnscher, Gerd, 4,500,450, Cl. 260-112.00R.
Thoese, Klaus, 4,500,598, Cl. 428-331.000.
Hoefelmayr, Tilman; and Maier, Jakob, to Biomelktechnik Hoefelmayr & Co. Apparatus for conveying milk using an underpressure. 4,499,854, Cl. 119-14.320.
Hoffman, Wolfgang, to B & H Manufacturing Company, Inc. Container feed for labeling machine. 4,500,386, Cl. 156-449.000.
Hoffmann-La Roche Inc.: *See*—
Chan, Ka-Kong; Holland, George W.; and Rosen, Perry, 4,500,462, Cl. 260-405.500.
Hamilton, James G.; Sullivan, Ann C.; Tobias, Lawrence D.; and Triscari, Joseph, 4,500,540, Cl. 514-397.000.
Hohmann, Eugen: *See*—
Wohlgemuth, Juergen; and Hohmann, Eugen, 4,499,906, Cl. 128-776.000.
Holland, George W.: *See*—
Chan, Ka-Kong; Holland, George W.; and Rosen, Perry, 4,500,462, Cl. 260-405.500.
Hollmann, Bernd, to Claas Ohg. Method of baling, and baling press. 4,499,714, Cl. 56-341.000.
Holmberg, Gote: *See*—
Elwing, Ben; Foldi, Peter; and Holmberg, Gote, 4,499,824, Cl. 100-48.000.
Holset Engineering Company Limited: *See*—
Szczupak, David T.; Walsham, Brian E.; Hooley, Desmond J.; Flaxington, David; McKean, Peter S.; and Wescott, John D., 4,499,732, Cl. 60-602.000.
Holzschuh, Johannes: *See*—
Cyriax, Wilhelm; Tamboers, Gerhard; and Holzschuh, Johannes, 4,500,274, Cl. 425-185.000.
Honda Giken Kogyo Kabushiki Kaisha: *See*—
Aoki, Masanori, 4,500,101, Cl. 280-152.100.
Furukawa, Nobuyuki; and Sanbe, Mitsuhiro, 4,500,478, Cl. 261-52.000.
Ikenoya, Yasuo; Ueda, Shuso; and Araki, Masafumi, 4,499,724, Cl. 60-290.000.
Katayama, Hiroomi; Hirosawa, Yoshiaki; and Fujii, Masahiko, 4,499,875, Cl. 123-416.000.
Zaita, Katsuyuki; and Tahata, Michio, 4,500,477, Cl. 261-44.00B.
Honda, Masamitsu; Nagai, Hideaki; Takishima, Shoko; Kawamura, Akinori; Kawamura, Noriko; Dan, Takashi; Koizumi, Masuo; Murakami, Yasushi; Hinohara, Yoshikazu; Nakano, Hideki; and Takagaki, Yoshio, to Chugai Seiyaku Kabushiki Kaisha. 3-Substituted-ureido-N-pyridyl benzamides. 4,500,714, Cl. 546-309.000.
Honda, Naoto: *See*—
Sawa, Buntaro; and Honda, Naoto, 4,500,851, Cl. 331-2.000.

Honeywell Inc.: *See*—
Nishimoto, Ikuo, 4,500,797, Cl. 307-296.00R.
Vollmer, Rudolf, 4,500,036, Cl. 236-68.00B.
Honjo, Kazumi, to Niles Parts Company, Limited. Car cigar lighter. 4,500,774, Cl. 219-265.000.
Honodel, Charles A., to United States of America, Energy. Barrier breaching device. 4,499,828, Cl. 102-301.000.
Hood, Charles F.: *See*—
Fathauer, George H.; and Hood, Charles F., 4,499,766, Cl. 73-304.00C.
Fathauer, George H.; Hood, Charles F.; and Runck, Robin B., 4,499,767, Cl. 73-304.00C.
Hooley, Desmond J.: *See*—
Szczupak, David T.; Walsham, Brian E.; Hooley, Desmond J.; Flaxington, David; McKean, Peter S.; and Wescott, John D., 4,499,732, Cl. 60-602.000.
Hori, Yutaka; Sunakawa, Makoto; Takayama, Kikuo; Matsuoka, Naoki; and Moroishi, Yutaka, to Nitto Electric Industrial Co., Ltd. Pressure-sensitive adhesive composition. 4,500,683, Cl. 524-533.000.
Horie, Akira: *See*—
Yatsuo, Tsutomu; Nagano, Takahiro; Oikawa, Saburo; and Horie, Akira, 4,500,903, Cl. 357-38.000.
Horie, Seiji; Nakano, Junji; Nagata, Masayoshi; and Sato, Hideo, to Fuji Photo Film Co., Ltd. Electrophotographic light-sensitive printing materials. 4,500,622, Cl. 430-78.000.
Horie, Yoshihiro: *See*—
Hanamoto, Hiroyuki; and Horie, Yoshihiro, 4,500,957, Cl. 364-200.000.
Horn, Heinz: *See*—
Gerber, Heinz; Adam, Klaus; and Horn, Heinz, 4,499,750, Cl. 72-351.000.
Hortlik, Frantisek: *See*—
Junek, Jan; Skarka, Josef; Jaros, Frantisek; Hortlik, Frantisek; Hacova, Kveta; Vobornik, Vaclav; Ohlidal, Vladimi; and Lihtarova, Ludmila, 4,499,718, Cl. 57-301.000.
Hosaka, Norio: *See*—
Yuhara, Akitsuna; Hosaka, Norio; Fujita, Yuji; Kishimoto, Kiyoharu; and Yamada, Jun, 4,500,807, Cl. 310-313.00B.
Hosaka, Tomiharu: *See*—
Hotta, Shu; Hosaka, Tomiharu; and Shimotsuma, Wataru, 4,500,459, Cl. 260-396.00N.
Hoshida, Robert A.: *See*—
Madden, Allan C.; Cellucci, Robert; Hoshida, Robert A.; and MacKay, Duncan, 4,499,768, Cl. 73-462.000.
Hosokawa, Tomoyoshi; Matsuura, Ikutoshi; Takahashi, Hidenori; Ando, Kunio; and Tamura, Gakuzo, to Chugai Seiyaku Kabushiki Kaisha. Ascochlorin derivatives, and pharmaceutical composition containing the same. 4,500,544, Cl. 514-543.000.
Hosomizu, Tohru: *See*—
Ohno, Kenichi; Hosomizu, Tohru; and Ogawa, Rokutaro, 4,500,906, Cl. 357-71.000.
Hosono, Nagao, to Canon Kabushiki Kaisha. Image forming apparatus and a unit detachably used in the same. 4,500,195, Cl. 355-3.00R.
Hosonuma, Masashi: *See*—
Asano, Hisoshi; Shimamune, Takayuki; Goto, Toshiki; and Hosonuma, Masashi, 4,500,405, Cl. 204-290.00F.
Hotta, Seiko: *See*—
Sangu, Osamu; and Hotta, Seiko, 4,500,775, Cl. 219-497.000.
Hotta, Shu; Hosaka, Tomiharu; and Shimotsuma, Wataru, to Matsushita Electric Industrial Co., Ltd. Tetracyanoanthraquinodimethane compounds. 4,500,459, Cl. 260-396.00N.
House, David W., to UOP Inc. Hydrolysis of water-insoluble organic halides. 4,500,740, Cl. 568-796.000.
Howlett, James J.: *See*—
Zagranski, Raymond D.; Howlett, James J.; and Lappos, Nicholas D., 4,500,966, Cl. 364-432.000.
Hoyt, Robert M.; Bobbitt, Donald E.; Bartee, Gary E.; Garton, Stanley C.; and Pilliard, J. Paul, to A. B. Chance Company. Method and apparatus for anchoring retaining walls and the like, and installation therefor. 4,499,698, Cl. 52-157.000.
Hozumi, Kazuhiro: *See*—
Tsuchiya, Tatsuo; and Hozumi, Kazuhiro, 4,500,075, Cl. 267-8.00R.
Hrachovcova, Maria: *See*—
Durmis, Julius; Balogh, Alojz; Karvas, Milan; Hrachovcova, Maria; Masek, Jan; Caucik, Pavol; and Povazancova, Marta, 4,500,446, Cl. 252-403.000.
Hsieh, Hsin H.: *See*—
Cook, Frank T.; Nutt, Michael O.; and Hsieh, Hsin H., 4,500,717, Cl. 548-229.000.
Huang, Timothy D., to DAI-E Systems, Inc. Method for encoding Chinese characters. 4,500,872, Cl. 340-365.00R.
Huang, Tracy J.: *See*—
Chen, Nai Y.; Haag, Werner O.; Huang, Tracy J.; and Wong, Stephen S., 4,500,417, Cl. 208-111.000.
Huber, Johann; and Thanner, Otto, to Tyrolit Schleifmittelworke Swarovski K.G. Abrasive article. 4,500,325, Cl. 51-298.000.
Hubred, Gale L.; and Van Leirsburg, Dean A., to Chevron Research Company. Recovering metals from spent hydroprocessing catalysts. 4,500,495, Cl. 423-53.000.
Huffnagle, Clifton W.; and Morningstar, LeRoy J., to AMP Incorporated. Mounting and grounding clamp for shielded cable. 4,500,157, Cl. 339-97.00R.
Hugelshofer, Paul; Bruttel, Beat; Pfenninger, Heinz; and Lacroix, Roger, to Ciba-Geigy Corporation. Process for the preparation of concentrated fluid dye compositions. 4,500,321, Cl. 8-527.000.
Hughes Aircraft Company: *See*—
Gagnon, Ralph J.; and Cedarstrom, Roy A., 4,500,172, Cl. 350-331.00R.
Jensen, William E., 4,501,007, Cl. 377-60.000.
Lewyn, Lanny L.; and Lucas, Charles H., 4,500,846, Cl. 330-253.000.
Hughes Tool Company: *See*—
Watkins, Bruce J., 4,499,950, Cl. 166-285.000.
Hull, Frederick H., to Budd Company, The. Road simulator testing automotive and truck wheels and hubs. 4,499,759, Cl. 73-146.000.
Hunt, Arlon J.; Hansen, Leif J.; and Evans, David B., to United States of America, Energy. Solar heat receiver. 4,499,893, Cl. 126-449.000.
Huret et ses Fils: *See*—
Crepin, Herve , 4,500,302, Cl. 474-82.000.
Hurst, Fred J., Jr., to United States of America, Energy. Reductive stripping process for uranium recovery from organic extracts. 4,500,493, Cl. 423-10.000.
Husband, Fiona M.: *See*—
Rowley, Alan G.; and Husband, Fiona M., 4,500,497, Cl. 423-89.000.
Hussey, Ian G., to Environmental Equipment Corporation. Wayside wheelchair lift. 4,499,970, Cl. 187-9.00R.
Husson, Alan L.: *See*—
Nguyen, Tac H.; and Husson, Alan L., 4,499,974, Cl. 187-29.00R.
Hutchinson, Franklin D.: *See*—
Schmidt, William P.; and Hutchinson, Franklin D., 4,500,063, Cl. 248-475.100.
Huther, Werner, to Motoren-Und Turbinen-Union Munchen GmbH. Method of manufacture silicon nitride ceramic molded articles. 4,500,482, Cl. 264-65.000.
Hutson, Thomas, Jr., to Phillips Petroleum Company. Catalytic alkylation of hydrocarbons. 4,500,490, Cl. 422-62.000.
Hwang, Mau-Choung P.: *See*—
Duvall, William E.; and Hwang, Mau-Choung P., 4,500,923, Cl. 358-190.000.
Hyohdou, Masato: *See*—
Kato, Yukihiro; Kawahara, Hideo; and Hyohdou, Masato, 4,500,567, Cl. 427-255.300.
Ibuki, Yasuhiro: *See*—
Hasegawa, Katsuji; and Ibuki, Yasuhiro, 4,499,935, Cl. 144-209.00R.
Icaro Olivieri & C. S.p.A.: *See*—
Olivieri, Icaro, 4,499,674, Cl. 36-117.000.
Ichijima, Seigi: *See*—
Sakanoue, Kei; Yagihara, Morio; Ichijima, Seigi; and Nagao, Kimitoshi, 4,500,634, Cl. 430-544.000.
Ichiryu, Ken: *See*—
Tanaka, Yoshito; Ichiryu, Ken; and Iwata, Naohiko, 4,500,865, Cl. 338-13.000.
Idel, Karsten: *See*—
Ostlinning, Edgar; and Idel, Karsten, 4,500,702, Cl. 528-388.000.
Igashira, Toshihiko; Tanaka, Taro; and Sakakibara, Yasuyuki, to Nippon Soken, Inc. Fuel injection system for an internal combustion engine. 4,499,878, Cl. 123-478.000.
Iida, Hideyo: *See*—
Hayashi, Yutaka; Yamanaka, Mithuyuki; Iida, Hideyo; Shiba, Nobuyasu; Karasawa, Hideyuki; Mishuku, Toshio; and Itou, Atsuo, 4,500,743, Cl. 136-258.000.
Iijima, Hitoshi: *See*—
Matsuoka, Fumio; Iijima, Hitoshi; Yamazaki, Kisuke; Kasagi, Hiroshi; Nakashima, Yasuo; Sakuma, Kiyoshi; and Umehara, Mitsuo, 4,499,739, Cl. 62-212.000.
Ikari, Shinichi: *See*—
Shima, Toshiaki; Hamamuro, Naozi; Ikari, Shinichi; and Fuzishiro, Tuneo, 4,499,929, Cl. 141-1.100.
Ikeda, Satoshi: *See*—
Takeuchi, Hideo; Kaneko, Toshihisa; and Ikeda, Satoshi, 4,499,827, Cl. 101-425.000.
Ikekawa, Nobuo: *See*—
DeLuca, Hector F.; Tanaka, Yoko; Ikekawa, Nobuo; and Kobayashi, Yoshiro, 4,500,460, Cl. 260-397.200.
Ikenoya, Yasuo; Ueda, Shuso; and Araki, Masafumi, to Honda Giken Kogyo Kabushiki Kaisha. Exhaust gas cleaning device for internal combustion engine of motorcycle. 4,499,724, Cl. 60-290.000.
Ikutake, Hiroshi, to Nippon Piston Ring Co., Ltd. Process for manufacturing a piston ring. 4,499,643, Cl. 29-156.600.
Illinois Tool Works Inc.: *See*—
Pliml, Frank V., Jr., 4,500,237, Cl. 411-11.000.
Imae, Kiyoto; Aburaki, Shimpei; Narita, Yukio; Okumura, Jun; and Naito, Takayuki, to Bristol-Myers Company. Cephalosporin derivatives. 4,500,526, Cl. 514-226.000.
Imaizumi, Atsushi: *See*—
Suzuki, Yoji; Imaizumi, Atsushi; Yamaguchi, Hisao; Kanesaki, Masaharu; and Ono, Shoji, 4,500,639, Cl. 435-244.000.
Immink, Kornelis A.; Nijboer, Jakob G.; Ogawa, Hiroshi; and Odaka, Kentaro, to Sony Corporation. Method of coding binary data. 4,501,000, Cl. 375-25.000.
Inai Yuichi: *See*—
Sato, Akio; Nakajima, Kenji; Takahara, Yoshimasa; Kijima, Shizumasa; Inai, Yuichi; Kohara, Yoshiyuki; Kawakami, Yoshiyuki; and Tsurugi, Tomio, 4,500,463, Cl. 260-406.000.
Ing. C. Olivetti & C., S.p.A.: *See*—
Demonte, Flippo; and Figini, Mario, 4,500,216, Cl. 400-8.000.
Ingram, Gary L., to Spencer Wright Industries, Inc. Tufting machines. 4,499,835, Cl. 112-79.00R.

Inland Steel Company: *See—*
Kim, Yong-Wu; Coduti, Phillip L.; Sok, Brian A.; and Carter, William A., 4,500,561, Cl. 427-25.000.

Inmos Corporation: *See—*
Sud, Rahul; and Hardee, Kim C., 4,500,799, Cl. 307-449.000.

Inoue, Takashi: *See—*
Fuchikami, Jun; Higashi, Hidehiro; Inoue, Takashi; and Oba, Hiroyuki, 4,500,645, Cl. 502-65.000.

Inoue, Tokuta: *See—*
Kanda, Mutsumi; Nakanishi, Kiyoshi; Inoue, Tokuta; and Nakajima, Mikio, 4,499,868, Cl. 123-188.00M.

Insinger, Richard H., III; and Rodemann, Alfred H., to United States of America, Navy. Personal alpha contamination simulator and detector. 4,500,295, Cl. 434-218.000.

Institut Francais du Petrole: *See—*
Chevalier, Andre , 4,500,155, Cl. 339-94.00M.

Institut Organicheskogo Sinteza Akademii Nauk Latviiskoi SSR: *See—*
Grinberg, Grigory M.; Akifiev, Oleg N.; Pytel, Jury A.; Gilev, Anatoly P.; and Paberza, Monika Y., 4,500,516, Cl. 424-156.000.

Institut Pasteur: *See—*
Barme, Michel, 4,500,512, Cl. 424-89.000.

International Business Machines Corporation: *See—*
Binnig, Gerd K.; and Gerber, Christoph E., 4,499,737, Cl. 62-56.000.
Bretscher, Erwin; and Vettiger, Peter, 4,500,790, Cl. 250-492.200.
Bucek, Francis J.; and Paxhia, Frank V., 4,500,928, Cl. 358-296.000.
Cases, Moises; Kraft, Wayne R.; Stahl, William L., Jr.; and Thoma, Nandor G., 4,500,800, Cl. 307-468.000.
Chang, Ifay F., 4,500,955, Cl. 364-200.000.
Daniels, Raymond A., 4,500,198, Cl. 355-14.00D.
Duke, Alan H.; Hartung, Michael H.; Marschner, Frederick J.; and Nolan, Kenneth P., 4,500,954, Cl. 364-200.000.
Elander, Robert C.; Lennon, Richard E.; Matyas, Stephen M.; Meyer, Carl H. W.; Shuck, Robert E.; and Tuchman, Walter L., 4,500,750, Cl. 178-22.080.
Galwey, Ronald K.; and Kanazawa, Kay K., 4,500,840, Cl. 324-425.000.
Heller, Andrew R.; and Worley, William S., Jr., 4,500,952, Cl. 364-200.000.
Lipschutz, Lewis D., 4,500,945, Cl. 361-386.000.
Nickle, Allen F., 4,500,964, Cl. 364-300.000.

International Flavors & Fragrances Inc.: *See—*
Boden, Richard M.; Hanna, Marie R.; and Tyszkiewicz, Theodore J., 4,500,448, Cl. 252-522.00R.

International Paper Company: *See—*
Nowacki, Ulrich G., 4,500,306, Cl. 493-92.000.

International Power Technology, Inc.: *See—*
Cheng, Dah Y., 4,499,721, Cl. 60-39.050.

International Standard Electric Corporation: *See—*
Oswald, Thomas, 4,501,022, Cl. 455-601.000.

International Telecommunications Satellite Organization: *See—*
Shimbo, Osamu; Nguyen, Lan N.; and Dicks, Jack L., 4,500,984, Cl. 370-6.000.

International Telephone and Telegraph Corporation: *See—*
Turbak, Albin F.; Snyder, Fred W.; and Sandberg, Karen R., 4,500,546, Cl. 514-781.000.

Interpace Corporation: *See—*
Miggins, Michael R., 4,500,745, Cl. 174-31.00R.

Invacare Corporation: *See—*
Haury, Gilbert E.; Patel, Nathalal G.; Lockard, Walter G.; and Wiatrak, Thomas R., 4,500,102, Cl. 280-242.0WC.

IPCO Corporation: *See—*
Friedman, Abraham, 4,500,296, Cl. 433-225.000.

Irving, Edward; and Smith, Terence J., to Ciba-Geigy Corporation. Method of forming images from liquid masses. 4,500,629, Cl. 430-325.000.

Irwin, Robert S.; and Logullo, Francis M., Sr., to Du Pont de Nemours, E. I., and Company. Optically anisotropic melt forming copolyesters. 4,500,699, Cl. 528-128.000.

Ishibane, Kyuhei: *See—*
Kuroda, Shigeaki; Senshu, Takao; Oguni, Kensaku; Mochizuki, Taketoshi; Yasuda, Hiromu; Ishibane, Kyuhei; Atsumi, Akira; Kimura, Hideyuki; and Hatada, Toshio, 4,500,035, Cl. 236-92.00B.

Ishida, Hideaki, to Casio Computer Co., Ltd. Key data entry system for an electronic musical instrument. 4,499,807, Cl. 84-1.030.

Ishidoshiro, Hiroshi: *See—*
Sando, Yoshikazu; Nakano, Eiichi; and Ishidoshiro, Hiroshi, 4,500,318, Cl. 8-111.000.

Ishii, Kiyoshi; Murai, Masataka; and Yonekawa, Hitoshi, to Daicel Chemical Industries, Ltd. Semipermeable membrane elements. 4,500,426, Cl. 210-321.300.

Ishii, Yoshiyasu: *See—*
Nakao, Shinroku; Ishii, Yoshiyasu; and Matsuda, Hiroaki, 4,500,133, Cl. 297-131.000.

Ishikawa, Hitoshi: *See—*
Yamamoto, Kimihiko; and Ishikawa, Hitoshi, 4,499,837, Cl. 112-158.00A.

Ishikawa, Sakae: *See—*
Akano, Shinichi; Goto, Tsutomu; Watanabe, Hiroshi; Kuroda, Masato; Ishikawa, Sakae; and Matsumoto, Ryoichiro, 4,499,754, Cl. 73-861.120.

Ishikawa, Shozo; Katagiri, Kazuharu; Watanabe, Katsunori; Sakai, Kiyoshi; and Kitahara, Makoto, to Copyer Kabushiki Kaisha; and Canon Kabushiki Kaisha. Electrophotographic photosensitive member with oxadiazole containing disazo compound. 4,500,619, Cl. 430-59.000.

Ishitobi, Yoshimitsu; Fujii, Kouhei; and Nakatsuji, Fumio, to NEC Kansai, Ltd. Joystick controller using magnetosensitive elements with bias magnets. 4,500,867, Cl. 338-128.000.

Iskra, Michael J.: *See—*
Pieniak, Heinz A.; and Iskra, Michael J., 4,500,315, Cl. 604-379.000.

Isogai, Kiyoshi: *See—*
Kitagawa, Katsutoshi; Isogai, Kiyoshi; Ohmori, Nobuo; Takita, Naka; Okamoto, Makoto; Koga, Itsuo; and Ito, Kazuo, 4,500,099, Cl. 277-228.000.

Isoya, Yukinori: *See—*
Teramura, Mitsuyoshi; Takimoto, Masatami; Nakamura, Norihiko; Itoh, Takaaki; Katou, Takashi; and Isoya, Yukinori, 4,500,476, Cl. 261-44.00C.

Itaya, Masahiko: *See—*
Haneda, Satoshi; Itaya, Masahiko; and Tanaka, Minoru, 4,500,616, Cl. 430-45.000.

Itek Corporation: *See—*
Smyth, Bruce E., 4,500,202, Cl. 356-237.000.

Ito, Kazuo: *See—*
Kitagawa, Katsutoshi; Isogai, Kiyoshi; Ohmori, Nobuo; Takita, Naka; Okamoto, Makoto; Koga, Itsuo; and Ito, Kazuo, 4,500,099, Cl. 277-228.000.

Itoh, Hayami: *See—*
Nakaoji, Kazuhiko; Kamao, Mitsugu; Itoh, Hayami; Tatsumi, Shuhei; and Takao, Shoichi, 4,500,041, Cl. 241-16.000.

Itoh, Isamu: *See—*
Ohmura, Kunioki; Torigoe, Masaaki; Itoh, Isamu; and Hayashi, Katsumi, 4,500,632, Cl. 430-428.000.
Ono, Mitsunori; Itoh, Isamu; Mihayashi, Keiji; and Karino, Yukio, 4,500,636, Cl. 430-566.000.

Itoh, Isao: *See—*
Yazaki, Takao; Hattori, Kazuhide; Hattori, Satoru; Hayama, Kazuhide; and Itoh, Isao, 4,500,597, Cl. 428-317.700.

Itoh, Takaaki: *See—*
Teramura, Mitsuyoshi; Takimoto, Masatami; Nakamura, Norihiko; Itoh, Takaaki; Katou, Takashi; and Isoya, Yukinori, 4,500,476, Cl. 261-44.00C.

Itou, Atsuo: *See—*
Hayashi, Yutaka; Yamanaka, Mithuyuki; Iida, Hideyo; Shiba, Nobuyasu; Karasawa, Hideyuki; Mishuku, Toshio; and Itou, Atsuo, 4,500,743, Cl. 136-258.000.

Ivani, Edward J. Silicone-vinyl acetate composition for contact lenses. 4,500,695, Cl. 526-279.000.

Iwai, Hiroshi, to Tokyo Shibaura Denki Kabushiki Kaisha. Wafer exposure method and apparatus. 4,500,615, Cl. 430-30.000.

Iwai, Kazumi: *See—*
Nishiguchi, Akira; Usui, Sanpei; Oouchi, Tomihisa; and Iwai, Kazumi, 4,499,859, Cl. 122-18.000.

Iwata, Naohiko: *See—*
Tanaka, Yoshito; Ichiryu, Ken; and Iwata, Naohiko, 4,500,865, Cl. 338-13.000.

Iwata, Toshio, to Mitsubishi Denki Kabushiki Kaisha. Ignition timing control device for an internal combustion engine. 4,499,877, Cl. 123-425.000.

Izume, Masayuki, to Taiyo Ltd. Rotary business form printing press. 4,500,082, Cl. 270-20.100.

Izumi, Asashiro, to Kabushiki Kaisha Ishida Koko Seisakusho. Removable hopper mechanism in an automatic weighing apparatus. 4,499,962, Cl. 177-58.000.

Izumi, Chikahiko: *See—*
Kubo, Kanji; Momose, Tsugio; and Izumi, Chikahiko, 4,500,959, Cl. 364-200.000.

Izumi, Hiroshi, to Alps Electric Co., Ltd. Ceramic trimmer capacitor. 4,500,941, Cl. 361-293.000.

J. I. Case Company: *See—*
Maurer, Herman J.; Pedersen, Carl O.; and Nudd, Barry C., 4,500,250, Cl. 414-695.500.
Tucek, Frank J., 4,500,139, Cl. 305-10.000.

Jackson, Ernest V.: *See—*
Martin, Alan B.; and Jackson, Ernest V., 4,499,946, Cl. 166-57.000.

Jacobi, Stephen F.; Haight, Robert E.; Schletzbaum, John W.; Martin, Yolanda E.; and Lang, Stephen P., to Deere & Company. Filter monitoring system. 4,500,874, Cl. 340-607.000.

Jacobson, Albin K.; Rychnovsky, Raymond E.; and Visbeck, Cornelius N., to United States of America, Energy. Explosively separable casing. 4,499,829, Cl. 102-378.000.

Jacobson, Mark K.; and Belttari, Stanley C., to Boremaster Precision Tool & Mfg. Boring bar. 4,500,232, Cl. 408-153.000.

Jacobson, Robert G., to Zehntel, Inc. In-circuit digital tester for testing microprocessor boards. 4,500,993, Cl. 371-16.000.

Jagtap, Ashvinkumar N.: *See—*
Woods, John H.; Graves, Toby R.; Nasser, William E.; and Jagtap, Ashvinkumar N., 4,500,359, Cl. 106-270.000.

Jahn, Randy K.; and Liepins, Raimond, to United States of America, Energy. Di-p-xylylene polymer and method for making the same. 4,500,562, Cl. 427-27.000.

Jaillet, Andre : *See—*
Desjobert, Gilles; and Jaillet, Andre , 4,499,707, Cl. 53-429.000.

Jalava, Jouko S.: *See—*
Kuisma, Heikki T.; Lehto, Ari; and Jalava, Jouko S., 4,500,940, Cl. 361-286.000.

Janisiewicz, Stanley W.; Hills, Maynard J.; and Lovell, Edward J., to Universal Instruments Corporation. Indexed feed of electronic component supply tubes. 4,500,246, Cl. 414-414.000.

Janssen, Alexander P. Disposable cooking bags. 4,499,817, Cl. 99-403.000.

Janutka, William J., to Eaton Corporation. Self-powered nonregenerative fast gate turn-off FET. 4,500,801, Cl. 307-570.000.

Janutka, William J., to Eaton Corporation. Three terminal bidirectional source to source FET circuit. 4,500,802, Cl. 307-571.000.

Japan Bano'k Co. Ltd.: *See—*
Furutsu, Akira, 4,499,928, Cl. 140-93.200.

Japan Chemical Research Co., Ltd.: *See—*
Nakanishi, Koichiro; and Hiratani, Hajime, 4,500,514, Cl. 424-94.000.

Japan Spectroscopic Co., Ltd.: *See—*
Watanabe, Shinichiro, 4,500,205, Cl. 356-325.000.

Jaquen, Claude: *See—*
Courtois, Guy; and Jaquen, Claude, 4,500,227, Cl. 405-128.000.

Jaros, Frantisek: *See—*
Junek, Jan; Skarka, Josef; Jaros, Frantisek; Hortlik, Frantisek; Hacova, Kveta; Vobornik, Vaclav; Ohlidal, Vladimi; and Lihtarova, Ludmila, 4,499,718, Cl. 57-301.000.

Jensen, William E., to Hughes Aircraft Company. CCD differentiator. 4,501,007, Cl. 377-60.000.

Jess, Thurman S., to Cormed, Inc. Integral tube-loading assembly for peristaltic pump. 4,500,269, Cl. 418-45.000.

Jevnikar, Mary G.; and Kuch, Philip L., to Standard Oil Company, The. Process for the production of hydrogen and carbonyl sulfide from hydrogen sulfide and carbon monoxide using a multi-metal oxide/sulfide catalyst. 4,500,505, Cl. 423-416.000.

Johansson, Lars. Self-adjusting boat trailer cradle. 4,500,249, Cl. 414-534.000.

John Fluke Mfg. Co., Inc.: *See—*
Meyer, Donald G., 4,500,854, Cl. 331-117.00R.

John, Heinz, deceased; and by John nee Ruffler, Friedlinde, heir, to Lindauer Dornier Gesellschaft mbH. Device for individually separating and aligning heddles for threading. 4,499,638, Cl. 28-207.000.

John nee Ruffler, Friedlinde, heir: *See—*
John, Heinz, deceased; and John nee Ruffler, Friedlinde, heir, 4,499,638, Cl. 28-207.000.

Johnscher, Gerd: *See—*
Seipke, Gerhard; Tripier, Dominique; and Johnscher, Gerd, 4,500,450, Cl. 260-112.00R.

Johnsen, Anders E. Coupling. 4,500,235, Cl. 408-238.000.

Johnson, Christopher P., III: *See—*
Shanklin, James R., Jr.; and Johnson, Christopher P., III, 4,500,529, Cl. 514-235.000.

Johnson, David D.: *See—*
Peters, Penn A.; Biller, Cleveland J.; and Johnson, David D., 4,500,004, Cl. 212-80.000.

Johnson, Dwight N., to Fillpro Products, Inc. Flush valve. 4,499,616, Cl. 4-393.000.

Johnson & Johnson Dental Products Company: *See—*
Kumar, Narayan G., 4,500,657, Cl. 523-116.000.

Johnson, Luvern C., III. Convertible ski device. 4,500,108, Cl. 280-614.000.

Johnson, Lyle: *See—*
Mattingly, William R., Jr.; Johnson, Lyle; and Maher, Tommy B., 4,500,153, Cl. 339-89.00M.

Johnson Matthey Public Limited Company: *See—*
Wyatt, Michael; Leach, Gary M.; and Gould, Ashley M., 4,500,650, Cl. 502-204.000.

Johnson, William H. Energy efficient curing and drying system. 4,499,911, Cl. 131-302.000.

Johnston, Loren B., Jr., to RCA Corporation. System for segmentally refreshing the stored electron gun drive voltages of a flat panel display device. 4,500,815, Cl. 315-366.000.

Jones, Arthur A., to Nautilus Sports/Medical Industries, Inc. Weight lifting lower back exercising machine. 4,500,089, Cl. 272-117.000.

Jones, David G.; and Kwon, Oh K. Method and apparatus for monitoring wear particles in a liquid medium. 4,500,839, Cl. 324-204.000.

Jones, Howard: *See—*
Loev, Bernard; Jones, Howard; and Shroff, James R., 4,500,528, Cl. 514-228.000.
Loev, Bernard; Jones, Howard; and Suh, John T., 4,500,532, Cl. 514-256.000.

Jones, William A. Picture. 4,500,571, Cl. 428-13.000.

Jong, Jang T. Mixing faucet. 4,499,918, Cl. 137-606.000.

Jorgensen, Knut: *See—*
Else, George E.; Millward, Cyril; Dixon, Ronald H. T.; and Jorgensen, Knut, 4,500,352, Cl. 75-130.00B.

Jost, John W.; and Gallup, Darrell L., to Union Oil Company of California. Inhibiting scale precipitation from high temperature brine. 4,500,434, Cl. 210-696.000.

Jow, Long J.: *See—*
Jow, Long S.; and Jow, Long J., 4,499,793, Cl. 74-866.000.

Jow, Long S.; and Jow, Long J., to Transtech Industrial Corporation. Automatic gear shifting device. 4,499,793, Cl. 74-866.000.

Joy Manufacturing Company: *See—*
McDonald, Robert C.; and Macartney, Derek L., 4,500,228, Cl. 406-61.000.

Jumpeter, Alex, to Midland-Ross Corporation. Automatic minimum differential pressure control for dryer cylinders. 4,499,668, Cl. 34-41.000.

Junek, Jan; Skarka, Josef; Jaros, Frantisek; Hortlik, Frantisek; Hacova, Kveta; Vobornik, Vaclav; Ohlidal, Vladimi; and Lihtarova, Ludmila, to Vyzkumny ustav bavlnarsky. Apparatus for separating impurities from open-end spinning units. 4,499,718, Cl. 57-301.000.

Kabushiki Kaisha Daikin Seisakusho: *See—*
Nagano, Tamio, 4,499,981, Cl. 192-106.200.

Kabushiki Kaisha Ishida Koki Seisakusho: *See—*
Fukuda, Masao, 4,499,961, Cl. 177-25.000.

Kabushiki Kaisha Ishida Koko Seisakusho: *See—*
Izumi, Asashiro, 4,499,962, Cl. 177-58.000.

Kabushiki Kaisha Komatsu Seisakusho: *See—*
Tanabe, Toshiyuki, 4,499,792, Cl. 74-825.000.

Kabushiki Kaisha Meidensha: *See—*
Kashiwagi, Yoshiyuki; and Suzuki, Tsutai, 4,500,383, Cl. 156-285.000.

Kabushiki Kaisha Morita Seisakusho: *See—*
Kaneko, Kazuyoshi; and Tamura, Jun, 4,500,134, Cl. 297-170.000.

Kabushiki Kaisha Nippon Coinco: *See—*
Sugimoto, Osamu; and Akagawa, Masaki, 4,499,982, Cl. 194-1.00N.

Kabushiki Kaisha Suwa Seikosha: *See—*
Akazawa, Hiroyuki, 4,500,023, Cl. 226-76.000.

Kabushiki Kaisha Toyota Chuo Kenkyusho: *See—*
Takahashi, Hideaki; Hayakawa, Kiyoharu; Kondo, Haruyoshi; and Takeuchi, Takashi, 4,500,412, Cl. 204-425.000.

Kaczur, Jerry J.; and Coleman, John E., to Olin Corporation. Production of high purity stable ferrate salts. 4,500,499, Cl. 423-139.000.

Kadison Laboratories, Inc.: *See—*
Kadison, Sylvan; and Scheiner, David, 4,500,552, Cl. 426-96.000.

Kadison, Sylvan; and Scheiner, David, to Kadison Laboratories, Inc. Gelatin dessert product. 4,500,552, Cl. 426-96.000.

Kaiser, Roman: *See—*
Lamparsky, Dietmar; and Kaiser, Roman, 4,500,729, Cl. 560-225.000.

Kajioka, Hiroshi; Tokunaga, Toshihide; and Nakagawa, Junkichi, to Hitachi Cable, Ltd. Single polarization optical fibers. 4,500,168, Cl. 350-96.340.

Kallok, Michael J.; and Bornzin, Gene A., to Medtronic, Inc. Energy limiting cardioversion lead. 4,499,907, Cl. 128-786.000.

Kamaishi, Tadami; and Kitagawa, Takao, to Toray Industries, Incorporated. Graphic arts film and method of preparing same. 4,500,587, Cl. 428-204.000.

Kamao, Mitsugu: *See—*
Nakaoji, Kazuhiko; Kamao, Mitsugu; Itoh, Hayami; Tatsumi, Shuhei; and Takao, Shoichi, 4,500,041, Cl. 241-16.000.

Kamimura, Takaaki: *See—*
Nozaki, Hidetoshi; Kamimura, Takaaki; Hatayama, Tamothu; and Utagawa, Tadashi, 4,500,744, Cl. 136-258.000.

Kaminski, David C.; and Shea, Dennis W., to Dana Corporation. Actuator for roller clutch drive system. 4,499,980, Cl. 192-35.000.

Kamochi, Atsumi: *See—*
Saito, Junichi; Yasui, Kazuomi; Shiokawa, Kozo; and Kamochi, Atsumi, 4,500,346, Cl. 71-94.000.

Kan, Hsin-Kuo: *See—*
Babecki, Glenn R.; Escolar, Carlos; Garnant, Craig M.; Kan, Hsin-Kuo; Kaplan, Frank; Liu, Hueichi R.; MacLachlan, George F.; Matteo, Peter J.; McDonald, John F.; Palframan, John D.; Tran, Roger T.; Welt, Martin J.; Wendt, Timothy A.; Yates, Gregory S.; and Zislis, Paul M., 4,500,960, Cl. 364-200.000.

Kanasaki, Morio: *See—*
Tsuboi, Nobuyoshi; Shima, Seiya; Kanasaki, Morio; and Nakazawa, Hayashi, 4,499,986, Cl. 198-322.000.

Kanayama, Kenji; and Sugi, Hidekuni, to Nippondenso Co., Ltd. Three-phase flat coils. 4,500,806, Cl. 310-198.000.

Kanazawa, Kay K.: *See—*
Galwey, Ronald K.; and Kanazawa, Kay K., 4,500,840, Cl. 324-425.000.

Kanda, Mutsumi; Nakanishi, Kiyoshi; Inoue, Tokuta; and Nakajima, Mikio, to Toyota Jidosha Kabushiki Kaisha. Intake device of an internal combustion engine. 4,499,868, Cl. 123-188.00M.

Kando, Toru: *See—*
Morizumi, Masaaki; Kando, Toru; and Haraguchi, Keisuke, 4,500,184, Cl. 354-149.110.

Kaneko, Kazuyoshi; and Tamura, Jun, to Kabushiki Kaisha Morita Seisakusho. Dental treatment chair assembly. 4,500,134, Cl. 297-170.000.

Kaneko, Toshihisa: *See—*
Takeuchi, Hideo; Kaneko, Toshihisa; and Ikeda, Satoshi, 4,499,827, Cl. 101-425.000.

Kanesaki, Masaharu: *See—*
Suzuki, Yoji; Imaizumi, Atsushi; Yamaguchi, Hisao; Kanesaki, Masaharu; and Ono, Shoji, 4,500,639, Cl. 435-244.000.

Kanezuka, Toshiyuki: *See—*
Kigasawa, Kazuo; Ohtani, Hideaki; and Kanezuka, Toshiyuki, 4,500,511, Cl. 424-81.000.

Kano, Fumio: *See—*
Maruhashi, Yoshitsugu; Kano, Fumio; Yamada, Muneki; and Hirata, Sadao, 4,500,677, Cl. 525-57.000.

Kansas University Endowment Association, The: *See—*
Diederich, Dennis A.; Wiegmann, Thomas B.; and Pinnick, Robert V., 4,500,309, Cl. 604-5.000.

Kao Corporation: *See—*
Nakaoji, Kazuhiko; Kamao, Mitsugu; Itoh, Hayami; Tatsumi, Shuhei; and Takao, Shoichi, 4,500,041, Cl. 241-16.000.

Kapich, Davorin D., to GA Technologies Inc. Shaft seal system. 4,500,093, Cl. 277-15.000.

Kaplan, Frank: *See—*
Babecki, Glenn R.; Escolar, Carlos; Garnant, Craig M.; Kan, Hsin-Kuo; Kaplan, Frank; Liu, Hueichi R.; MacLachlan, George F.; Matteo, Peter J.; McDonald, John F.; Palframan, John D.;

Tran, Roger T.; Welt, Martin J.; Wendt, Timothy A.; Yates, Gregory S.; and Zialis, Paul M., 4,500,960, Cl. 364-200.000.

Karas, Bradley R.; and Baumgartner, Charles E., to General Electric Company. Bubble pressure barrier and electrode composite. 4,500,566, Cl. 427-115.000.

Karasawa, Hideyuki: *See*—
Hayashi, Yutaka; Yamanaka, Mithuyuki; Iida, Hideyo; Shiba, Nobuyasu; Karasawa, Hideyuki; Mishuku, Toshio; and Itou, Atsuo, 4,500,743, Cl. 136-258.000.

Karazim, Michael P.; Okashima, Bob Y.; and Ashburn, John J., to General Electric Company. Jet pump beam bolt retainer cutter. 4,499,691, Cl. 51-241.00S.

Karino, Yukio: *See*—
Ono, Mitsunori; Itoh, Isamu; Mihayashi, Keiji; and Karino, Yukio, 4,500,636, Cl. 430-566.000.

Karl Lautenschlager KG, Mobelbeschlagfabrik: *See*—
Lautenschlager, Gerhard W., 4,499,631, Cl. 16-370.000.
Lautenschlager, Karl, Jr.; and Lautenschlager, Horst, 4,500,140, Cl. 308-3.800.

Karr, Gerald S.: *See*—
Smith, Jay, III; and Karr, Gerald S., 4,500,879, Cl. 340-739.000.

Kartridg Pak Company, The: *See*—
Bloome, James A.; Meeker, Rick A.; Whicker, Jerry T.; and Foreman, Frederick J., 4,499,624, Cl. 15-97.00R.

Karvas, Milan: *See*—
Durmis, Julius; Balogh, Alojz; Karvas, Milan; Hrachovcova, Maria; Masek, Jan; Caucik, Pavol; and Povazancova, Marta, 4,500,446, Cl. 252-403.000.

Kasagi, Hiroshi: *See*—
Matsuoka, Fumio; Iijima, Hitoshi; Yamazaki, Kisuke; Kasagi, Hiroshi; Nakashima, Yasuo; Sakuma, Kiyoshi; and Umehara, Mitsuo, 4,499,739, Cl. 62-212.000.

Kasagi, Takao: *See*—
Wakayama, Masao; Takemura, Makoto; and Kasagi, Takao, 4,500,360, Cl. 106-286.500.

Kasahara, Hiroshi, to Nissin Kogyo Kabushiki Kaisha. Automotive tandem type master cylinder. 4,499,730, Cl. 60-585.000.

Kashiwagi, Yoshiyuki; and Suzuki, Tsutai, to Kabushiki Kaisha Meidensha. Process for bonding copper or copper-chromium alloy to ceramics, and bonded articles of ceramics and copper or copper-chromium alloy. 4,500,383, Cl. 156-285.000.

Kass, Lawrence. Metachromatic dye sorption and fluorescent light emmisive means for differential determination of developmental stages of neutrophilic granulocytic cells and other leukocytes. 4,500,509, Cl. 424-3.000.

Kassai Kabushikikaisha: *See*—
Kassai, Kenzou, 4,499,619, Cl. 5-99.00A.

Kassai, Kenzou, to Kassai Kabushikikaisha. Baby bed. 4,499,619, Cl. 5-99.00A.

Kaste, Robert P., to United States of America, Army. Bank firing attachment including pivotal locking lugs. 4,499,811, Cl. 89-14.500.

Kasuga, Muneo; Shimizu, Akira; and Nishio, Tadashi, to Olympus Optical Co., Ltd. Electrophotographic apparatus comprising detection assembly for detecting record paper shortage. 4,500,199, Cl. 355-14.0CU.

Katagi, Takashi; and Mano, Seiji, to Mitsubishi Denki Kabushiki Kaisha. Antenna system. 4,500,882, Cl. 343-372.000.

Katagiri, Kazuharu: *See*—
Ishikawa, Shozo; Katagiri, Kazuharu; Watanabe, Katsunori; Sakai, Kiyoshi; and Kitahara, Makoto, 4,500,619, Cl. 430-59.000.

Katayama, Hiroomi; Hirosawa, Yoshiaki; and Fujii, Masahiko, to New Nippon Electric Co., Ltd.; and Honda Giken Kogyo Kabushiki Kaisha. Control unit modifiable engine ignition control apparatus. 4,499,875, Cl. 123-416.000.

Kato, Hisatoyo, to Fuji Photo Film Co., Ltd. Noise erasing apparatus for stimulable phosphor sheet. 4,500,783, Cl. 250-327.200.

Kato, Tadao: *See*—
Koshio, Yoshihiro; Kato, Tadao; and Kawano, Hikaru, 4,500,002, Cl. 209-534.000.

Kato, Toranosuke: *See*—
Tokitsu, Naoki; Fujiwara, Toshitaka; Kato, Toranosuke; and Uno, Toshihiko, 4,500,868, Cl. 340-52.00F.

Kato, Yukihiro; Kawahara, Hideo; and Hyohdou, Masato, to Nippon Sheet Glass Co., Ltd. Method for forming tin oxide coating. 4,500,567, Cl. 427-255.300.

Katou, Takashi: *See*—
Teramura, Mitsuyoshi; Takimoto, Masatami; Nakamura, Norihiko; Itoh, Takaaki; Katou, Takashi; and Isoya, Yukinori, 4,500,476, Cl. 261-44.00C.

Katsen, Boris J.; Brinkworth, Robert T.; Kay, Daniel J.; and Riester, James A., to Graphic Controls Corp. Heat sensitive recording papers. 4,500,354, Cl. 106-21.000.

Katsumata, Ryoichi; Oka, Tetsuo; and Furuya, Akira, to Kyowa Hakko Kogyo Co., Ltd. Plasmids. 4,500,640, Cl. 435-253.000.

Katz, Manfred: *See*—
Antal, Paul S.; and Katz, Manfred, 4,499,716, Cl. 57-234.000.

Kaufman, Benjamin J.; Liu, Christopher S.; and Sung, Rodney L., to Texaco Inc. Reaction products of glycidyl derivatized polyolefins and 5-aminotetrazoles and lubricating oils containing same. 4,500,440, Cl. 252-51.50A.

Kaufmann, Peter, to Aquarius fur Dichte Bauten AG. Hose-like seal device for concrete joints. 4,499,925, Cl. 138-125.000.

Kawagishi, Toshio: *See*—
Sato, Tadahisa; Kawagishi, Toshio; and Furutachi, Nobuo, 4,500,630, Cl. 430-386.000.

Kawahara, Hideo: *See*—
Kato, Yukihiro; Kawahara, Hideo; and Hyohdou, Masato, 4,500,567, Cl. 427-255.300.

Kawakami, Yoshiyuki: *See*—
Sato, Akio; Nakajima, Kenji; Takahara, Yoshimasa; Kijima, Shizumasa; Inai, Yuichi; Kohara, Yoshiyuki; Kawakami, Yoshiyuki; and Tsurugi, Tomio, 4,500,463, Cl. 260-406.000.

Kawakubo, Yukio: *See*—
Kuwabara, Kouji; Sugawara, Hiroyuki; Shirakura, Toshiharu; Kawakubo, Yukio; and Sasaki, Kouji, 4,500,998, Cl. 372-61.000.

Kawamata, Motoo: *See*—
Oba, Masayuki; Kawamata, Motoo; Tsuboi, Hikotada; and Koga, Nobuhito, 4,500,719, Cl. 548-522.000.

Kawamura, Akinori: *See*—
Honda, Masamitsu; Nagai, Hideaki; Takishima, Shoko; Kawamura, Akinori; Kawamura, Noriko; Dan, Takashi; Koizumi, Masuo; Murakami, Yasushi; Hinohara, Yoshikazu; Nakano, Hideki; and Takagaki, Yoshio, 4,500,714, Cl. 546-309.000.

Kawamura, Noriko: *See*—
Honda, Masamitsu; Nagai, Hideaki; Takishima, Shoko; Kawamura, Akinori; Kawamura, Noriko; Dan, Takashi; Koizumi, Masuo; Murakami, Yasushi; Hinohara, Yoshikazu; Nakano, Hideki; and Takagaki, Yoshio, 4,500,714, Cl. 546-309.000.

Kawano, Hikaru: *See*—
Koshio, Yoshihiro; Kato, Tadao; and Kawano, Hikaru, 4,500,002, Cl. 209-534.000.

Kawasaki Jukogyo Kabushiki Kaisha: *See*—
Nakaoji, Kazuhiko; Kamao, Mitsugu; Itoh, Hayami; Tatsumi, Shuhei; and Takao, Shoichi, 4,500,041, Cl. 241-16.000.

Kawasaki, Kanjiro: *See*—
Kubo, Keishi; Watanabe, Hideo; Takigawa, Nobuhiro; Hagiri, Minoru; and Kawasaki, Kanjiro, 4,500,896, Cl. 346-204.000.

Kawasaki, Mikio: *See*—
Sakamoto, Eiichi; Kawasaki, Mikio; Ono, Kouji; Fukuoji, Kakujulo; and Fujimori, Noboru, 4,500,631, Cl. 430-413.000.

Kawasaki Steel Corporation: *See*—
Komoda, Akira; Hirooka, Yasuhiro; Yoshihara, Takahisa; and Matsuda, Akira, 4,500,400, Cl. 204-206.000.

Kawazoe, Shunji: *See*—
Chiba, Hiromasa; Obama, Kenjiro; Kawazoe, Shunji; Oka, Takahiro; and Sato, Akihiro, 4,500,682, Cl. 525-240.000.

Kay, Daniel J.: *See*—
Katsen, Boris J.; Brinkworth, Robert T.; Kay, Daniel J.; and Riester, James A., 4,500,354, Cl. 106-21.000.

Kech, Gunter: *See*—
Benz, Karl; and Kech, Gunter, 4,499,765, Cl. 73-290.00V.

Keeley, Charles: *See*—
Brecker, Lawrence R.; and Keeley, Charles, 4,500,665, Cl. 524-227.000.

Keglewitsch, Josef; and Stechschulte, Theodore J., to Marathon Electric Mfg. Corp. Electrical connector with sliding collar. 4,500,161, Cl. 339-242.000.

Keglewitsch, Josef; and Stechschulte, Theodore J., to Marathon Electric Manufacturing Corporation. Contact clip apparatus for blade-type contacts. 4,500,162, Cl. 339-252.00F.

Kehoe, Gary S.: *See*—
Puglia, Wayne J.; Kehoe, Gary S.; and Clark, K. Warren, 4,500,547, Cl. 426-3.000.

Keller, Werner: *See*—
Zaugg, Robert; and Keller, Werner, 4,500,018, Cl. 222-598.000.

Kellerhals, Hanspeter: *See*—
Allemann, Martin; and Kellerhals, Hanspeter, 4,500,782, Cl. 250-291.000.

Kelley, John E.: *See*—
Whetten, Nathan R.; and Kelley, John E., 4,500,785, Cl. 250-385.000.

Kelley, William J.; and Prince, Terry K., to Mattel, Inc. Toy cargo plane. 4,500,299, Cl. 446-230.000.

Kelly, Michael G., to American Hoechst Corporation. Multi-ring fluorinated carbamates with textile soil repellent activity. 4,500,438, Cl. 252-8.750.

Kelsey-Hayes Company: *See*—
Rozmus, Walter J.; and Dietrich, Jerry L., 4,500,009, Cl. 220-256.000.

Kemfast Textiles, Inc.: *See*—
Harris, Ronald R., 4,499,741, Cl. 66-171.000.

Kennedy, Alexander W.: *See*—
Gunn, Walter H.; and Kennedy, Alexander W., 4,500,610, Cl. 428-624.000.

Kensinger, Lex D.: *See*—
Brown, Christopher K.; Kensinger, Lex D.; Over, William R.; and Wion, Donald A., 4,499,648, Cl. 29-564.200.

Keramidas, Vassilis G.; and Lourenco, Jose A., to AT&T Bell Laboratories. LPE Growth on group III-V compound semiconductor substrates containing phosphorus. 4,500,367, Cl. 148-171.000.

Kervistin, Robert; Lardellier, Alain M. J.; Mazeaud, Georges; and Crozet, Francois E. G., to S.N.E.C.M.A. Means for controlling clearance in an intershaft bearing journal of a multi-spool gas turbine. 4,500,143, Cl. 384-467.000.

Khoshnevis, Behrokh. Incremental digitizer for encoding geometrical forms. 4,500,749, Cl. 178-18.000.

Kigasawa, Kazuo; Ohtani, Hideaki; and Kanezuka, Toshiyuki, to Grelan Pharmaceutical Co., Ltd. Antiinflammatory and analgesic gel. 4,500,511, Cl. 424-81.000.

Kijima, Shizumasa: *See*—
Sato, Akio; Nakajima, Kenji; Takahara, Yoshimasa; Kijima, Shizumasa; Inai, Yuichi; Kohara, Yoshiyuki; Kawakami, Yoshiyuki; and Tsurugi, Tomio, 4,500,463, Cl. 260-406.000.

Kilb, Donald A.; and Dierckxmeier, Richard A., to E. D. Coddington Manufacturing Company. Split stations surface grinding apparatus. 4,499,690, Cl. 51-56.00R.

Killingsworth, Emmett D., to Westinghouse Electric Corp. Meter encoding register having improved zeroing mechanism. 4,500,779, Cl. 250-231.0SE.

Kim-Kee Enterprises: *See*—
Kincheloe, Dan, 4,500,135, Cl. 297-250.000.

Kim, Kyusik. Liquid fuel prevaporization and back burning induction jet oval thrust transition tail pipe. 4,500,052, Cl. 244-12.100.

Kim, Sang Do. Shoes sole for ventilation and shock absorption. 4,499,672, Cl. 36-3.00B.

Kim, Yong-Wu; Coduti, Phillip L.; Sok, Brian A.; and Carter, William A., to Inland Steel Company. Minimization of spangling on hot dip galvanized steel strip. 4,500,561, Cl. 427-25.000.

Kimberly-Clark Corporation: *See*—
Damico, Joyce A., 4,500,316, Cl. 604-389.000.

Kimberly-Clark Limited: *See*—
Ridgewell, Terence E.; and Vallis, Keith, 4,500,120, Cl. 292-19.000.

Kimura, Hideyuki: *See*—
Kuroda, Shigeaki; Senshu, Takao; Oguni, Kensaku; Mochizuki, Taketoshi; Yasuda, Hiromu; Ishibane, Kyuhei; Atsumi, Akira; Kimura, Hideyuki; and Hatada, Toshio, 4,500,035, Cl. 236-92.00B.

Kimura, Kazuyoshi, Toshi Kimura, heirs: *See*—
Suzuki, Akira; Shioya, Yasumi; Watanabe, Norio; and Kimura, Keiichi, deceased, 4,500,427, Cl. 210-608.000.

Kimura, Keiichi, deceased: *See*—
Suzuki, Akira; Shioya, Yasumi; Watanabe, Norio; and Kimura, Keiichi, deceased, 4,500,427, Cl. 210-608.000.

Kimura, Yoshio: *See*—
Taya, Akira; Narita, Kazuo; Asada, Masao; and Kimura, Yoshio, 4,500,443, Cl. 252-301.40P.

Kinast, Gunther, to Bayer Aktiengesellschaft. Intermediate products for the preparation of Z-cephalosporins. 4,500,716, Cl. 548-196.000.

Kincheloe, Dan, to Kim-Kee Enterprises. Baby car seat. 4,500,135, Cl. 297-250.000.

King, Christopher J. H., to Monsanto Company. Divided electrochemical cell assembly. 4,500,403, Cl. 204-255.000.

King, Homer F., to H. King & Associates, Ltd. Display and storage unit. 4,500,148, Cl. 312-312.000.

King, John J.; Sellers, Ralph F.; and Castonguay, Richard N., to Ciba-Geigy Corporation. Modified amine hardener systems. 4,500,582, Cl. 428-116.000.

Kinsinger, Richard E., to General Electric Company. Hybrid switching device employing liquid metal contact. 4,500,934, Cl. 361-3.000.

Kipp, Robert M.: *See*—
Ayers, Ray R.; and Kipp, Robert M., 4,500,117, Cl. 285-3.000.

Kirner, Wilhelm, to Siemens Aktiengesellschaft. Device for covering and cleaning the discharge openings of ink printing heads. 4,500,894, Cl. 346-140.00R.

Kirovsky, Efim I.: *See*—
Eschenko, Vladislav Y.; Mussaev, Irsali K.; Talibdzhanov, Zakhidzhan S.; Leonov, Viktor A.; Bobrov, Anatoly D.; Kirovsky, Efim I.; Gritsenko, Vladimir A.; and Golovanov, Alexandr V., 4,500,282, Cl. 431-184.000.

Kiryu, Yuichi; and Sawada, Tadashi, to Mitsubishi Denki Kabushiki Kaisha. Multijoint manipulator. 4,500,251, Cl. 414-719.000.

Kish, Robert J.: *See*—
Fox, Albert D.; Kish, Robert J.; and Knight, Donn C., 4,500,074, Cl. 254-270.000.

Kishi, Norimasa; and Noso, Kazunori, to Nissan Motor Company, Limited. Speech recognition system for an automotive vehicle. 4,501,012, Cl. 381-43.000.

Kishimoto, Kiyoharu: *See*—
Yuhara, Akitsuna; Hosaka, Norio; Fujita, Yuji; Kishimoto, Kiyoharu; and Yamada, Jun, 4,500,807, Cl. 310-313.00B.

Kita, Nobuyuki; Matsumoto, Hiroshi; and Hagiwara, Hitoshi, to Fuji Photo Film Co., Ltd. Developer for light-sensitive lithographic printing plate precursor. 4,500,625, Cl. 430-149.000.

Kita, Yasushi; Moroi, Shirou; Sakanoue, Akira; and Nakano, Hisaji, to Central Glass Co., Ltd. Lubricant comprising a partially defluorinated graphite fluoride. 4,500,678, Cl. 252-58.000.

Kitagawa, Hironobu: *See*—
Kobayashi, Takuma; Kitagawa, Hironobu; and Kobayashi, Shigeo, 4,500,686, Cl. 525-408.000.

Kitagawa, Katsutoshi; Isogai, Kiyoshi; Ohmori, Nobuo; Takita, Naka; Okamoto, Makoto; Koga, Itsuo; and Ito, Kazuo, to Toyota Jidosha Kabushiki Kaisha; and Chuo Spring Co., Ltd. Elastic supporting and sealing member with thermal foaming strip. 4,500,099, Cl. 277-228.000.

Kitagawa, Takao: *See*—
Kamaishi, Tadami; and Kitagawa, Takao, 4,500,587, Cl. 428-204.000.

Kitagishi, Nozomu; and Tajima, Akira, to Canon Kabushiki Kaisha. Focusing device for a camera. 4,500,188, Cl. 354-406.000.

Kitahara, Makoto: *See*—
Ishikawa, Shozo; Katagiri, Kazuharu; Watanabe, Katsunori; Sakai, Kiyoshi; and Kitahara, Makoto, 4,500,619, Cl. 430-59.000.

Kitahara, Takahiro: *See*—
Ohmori, Akira; Tomihashi, Nobuyuki; and Kitahara, Takahiro, 4,500,694, Cl. 526-245.000.

Kitamura, Takanori; Matsumoto, Mitsuo; and Tamura, Masuhiko, to Kuraray Co., Ltd. Process for producing methyl lactate. 4,500,727, Cl. 560-179.000.

Kiyohara, Toyohiko, to Mitsubishi Denki Kabushiki Kaisha. Light triggered thyristor, including a light guide, whose parameters are related by an equation. 4,500,164, Cl. 350-96.100.

Klein, Ernst, to A&A Manufacturing Co., Inc. Cable carrier. 4,499,720, Cl. 59-78.100.

Klein, Gary G. High efficiency bicycle frame. 4,500,103, Cl. 280-281.00R.

Klein, Gary S., to Eaton Corporation. Flame retardent electrical cable. 4,500,748, Cl. 174-121.00A.

Kleinhans, William A., to Rockwell International Corporation. Electro-optic sensor for measuring angular orientation. 4,500,200, Cl. 356-152.000.

Klinner, Wilfred E., to National Research Development Corporation. Crop engaging apparatus and methods. 4,499,712, Cl. 56-16.400.

Klipfontein Organic Products Corporation Limited: *See*—
Morgan, David L., 4,500,506, Cl. 423-474.000.

Klockner-Humboldt-Deutz AG: *See*—
Klotmann, Fred; and Ramesohl, Hubert, 4,500,285, Cl. 432-103.000.

Klopfleisch, Kim A.: *See*—
Luebrecht, Donald; and Klopfleisch, Kim A., 4,499,971, Cl. 187-9.00R.

Klotmann, Fred; and Ramesohl, Hubert, to Klockner-Humboldt-Deutz AG. Arrangement for mounting a barrel ring on the casting of a rotary cylinder. 4,500,285, Cl. 432-103.000.

Knabe, Andreas: *See*—
Girodi, Erich; Bornowski, Gunter; Dejmek, Eberhard; Knabe, Andreas; Koch, Roland; Urbach, Bernd; and Weisselberg, Arnold, 4,500,764, Cl. 219-59.100.

Knepshield, William R.; Ogletree, David D.; and Sander, Nat, to KOI Associates. Surgical knife with controllably extendable blade and gauge therefor. 4,499,898, Cl. 128-305.000.

Knight, Donn C.: *See*—
Fox, Albert D.; Kish, Robert J.; and Knight, Donn C., 4,500,074, Cl. 254-270.000.

Knott, Joseph, to Siemens Aktiengesellschaft. Device for regenerating the carrier particles of a two-component developer consisting of carrier particles and toner. 4,500,194, Cl. 355-3.0DD.

Ko, Yu M.; and Cornick, Keith, to General Electric Company, p.l.c., The. Apparatus and method for locating the position of a fault occurring in an electric power transmission system with respect to a monitoring point. 4,500,834, Cl. 324-52.000.

Kobayashi, Hideki; and Hamada, Mitsuo, to Toray Silicone Company, Inc. Electrically conductive silicone rubber compositions. 4,500,447, Cl. 252-511.000.

Kobayashi, Seishichi: *See*—
Taira, Kazuo; Morofuji, Akihiko; Ueno, Hiroshi; and Kobayashi, Seishichi, 4,500,575, Cl. 428-35.000.

Kobayashi, Shigeo: *See*—
Kobayashi, Takuma; Kitagawa, Hironobu; and Kobayashi, Shigeo, 4,500,686, Cl. 525-408.000.

Kobayashi, Takuma; Kitagawa, Hironobu; and Kobayashi, Shigeo, to Toyo Boseki Kabushiki Kaisha. Polyester type block copolymer composition. 4,500,686, Cl. 525-408.000.

Kobayashi, Yoshiro: *See*—
DeLuca, Hector F.; Tanaka, Yoko; Ikekawa, Nobuo; and Kobayashi, Yoshiro, 4,500,460, Cl. 260-397.200.

Koch, Roland: *See*—
Girodi, Erich; Bornowski, Gunter; Dejmek, Eberhard; Knabe, Andreas; Koch, Roland; Urbach, Bernd; and Weisselberg, Arnold, 4,500,764, Cl. 219-59.100.

Kochendorfer, Heinrich: *See*—
Backe, Egbert; Muller, Rolf; Otto, Dieter; Leonardi, Cornelio; Kochendorfer, Heinrich; Fussner, Paul; Walker, Ewald; and Rommel, Rudi, 4,499,757, Cl. 73-119.00A.

Koga, Itsuo: *See*—
Kitagawa, Katsutoshi; Isogai, Kiyoshi; Ohmori, Nobuo; Takita, Naka; Okamoto, Makoto; Koga, Itsuo; and Ito, Kazuo, 4,500,099, Cl. 277-228.000.

Koga, Nobuhito: *See*—
Oba, Masayuki; Kawamata, Motoo; Tsuboi, Hikotada; and Koga, Nobuhito, 4,500,719, Cl. 548-522.000.

Kogo, Yasuo: *See*—
Minamisawa, Tsuyoshi; Kogo, Yasuo; and Nagata, Yasuhisa, 4,500,660, Cl. 523-428.000.

Kogyo Gijutsuin: *See*—
Hayashi, Yutaka; Yamanaka, Mithuyuki; Iida, Hideyo; Shiba, Nobuyasu; Karasawa, Hideyuki; Mishuku, Toshio; and Itou, Atsuo, 4,500,743, Cl. 136-258.000.

Kohama, Tokio: *See*—
Saito, Kimitaka; Kohama, Tokio; Egami, Tsuneyuki; Saito, Tsutomu; Nogami, Susumu; and Suzuki, Yukio, 4,499,882, Cl. 123-492.000.

Kohara, Yoshiyuki: *See*—
Sato, Akio; Nakajima, Kenji; Takahara, Yoshimasa; Kijima, Shizumasa; Inai, Yuichi; Kohara, Yoshiyuki; Kawakami, Yoshiyuki; and Tsurugi, Tomio, 4,500,463, Cl. 260-406.000.

Kohler, Robert D.: *See*—
Steffan, Leonard D.; and Kohler, Robert D., 4,499,920, Cl. 137-624.150.

Kohn, Erhard, to Telefunken Electronic GmbH. Method of manufacturing a field-effect transistor. 4,499,651, Cl. 29-571.000.

KOI Associates: *See—*
Knepshield, William R.; Ogletree, David D.; and Sander, Nat, 4,499,898, Cl. 128-305.000.
Koike, Kengo: *See—*
Yoshida, Hiroshi; Koike, Kengo; Shimano, Shizuo; Nakagawa, Taizo; and Ohmori, Kaoru, 4,500,536, Cl. 514-397.000.
Koike, Norio; Tsukada, Toshihisa; Baji, Toru; and Sasano, Akira, to Hitachi, Ltd. Color solid-state imager. 4,500,915, Cl. 358-44.000.
Koike, Shunji. Pocket for garments. 4,499,612, Cl. 2-250.000.
Koizumi, Masuo: *See—*
Honda, Masamitsu; Nagai, Hideaki; Takishima, Shoko; Kawamura, Akinori; Kawamura, Noriko; Dan, Takashi; Koizumi, Masuo; Murakami, Yasushi; Hinohara, Yoshikazu; Nakano, Hideki; and Takagaki, Yoshio, 4,500,714, Cl. 546-309.000.
Kojima, Shigezo: *See—*
Okada, Tokio; Tani, Haruhisa; Kojima, Shigezo; Tsuyama, Setsuya; Kurihara, Kazuhiko; and Yazawa, Hiroshi, 4,499,639, Cl. 28-282.000.
Kokai, Katsuaki; and Ohta, Takeo, to Nippon Steel Corporation. Process for producing a grain-oriented electromagnetic steel strip or sheet. 4,500,366, Cl. 148-111.000.
Kollmorgen Technologies Corporation: *See—*
Lassen, Charles L., 4,500,389, Cl. 156-643.000.
Komagata, Hideki: *See—*
Mitomi, Takeshi; Yoshimura, Eiji; and Komagata, Hideki, 4,500,581, Cl. 428-85.000.
Komakine, Takashi, to Tokyo Shibaura Denki Kabushiki Kaisha. Heat exchangers installed in fluidized beds. 4,499,944, Cl. 165-104.160.
Komatsubara, Yoshinobu: *See—*
Hamada, Takeshi; and Komatsubara, Yoshinobu, 4,500,501, Cl. 423-239.000.
Kominami, Yasuo: *See—*
Sato, Tetsuo; and Kominami, Yasuo, 4,500,932, Cl. 360-65.000.
Komoda, Akira; Hirooka, Yasuhiro; Yoshihara, Takahisa; and Matsuda, Akira, to Kawasaki Steel Corporation. Counter flow device for electroplating apparatus. 4,500,400, Cl. 204-206.000.
Komori Printing Machinery Co., Ltd.: *See—*
Uno, Chiyomatsu, 4,499,825, Cl. 101-167.000.
Kona Corporation: *See—*
Devellian, Richard D.; and Swenson, Paul M., 4,500,279, Cl. 425-548.000.
Kondo, Haruyoshi: *See—*
Takahashi, Hideaki; Hayakawa, Kiyoharu; Kondo, Haruyoshi; and Takeuchi, Takashi, 4,500,412, Cl. 204-425.000.
Kondo, Kiyoshi; and Matsui, Kiyohide, to Sagami Chemical Research-Center. Process for preparing dihalovinylcyclopropanecarboxylic acids. 4,500,733, Cl. 562-506.000.
Kondo, Syunichi: *See—*
Sano, Kenji; Kondo, Syunichi; and Sato, Hideo, 4,500,623, Cl. 430-83.000.
Kone OY: *See—*
Luomanen, Asko, 4,499,645, Cl. 29-445.000.
Makinen, Heimo; and Suur-Askola, Seppo, 4,499,972, Cl. 187-29.00R.
Koning, Menno G.: *See—*
Westhaver, Robert O.; Walker, Gary; and Koning, Menno G., 4,499,778, Cl. 74-5.00F.
Konishiroku Photo Industry Co., Ltd.: *See—*
Haneda, Satoshi; Itaya, Masahiko; and Tanaka, Minoru, 4,500,616, Cl. 430-45.000.
Menjo, Hiroshi; and Watanabe, Yoshikazu, 4,500,633, Cl. 430-505.000.
Sakamoto, Eiichi; Kawasaki, Mikio; Ono, Kouji; Fukuoji, Kakujulo; and Fujimori, Noboru, 4,500,631, Cl. 430-413.000.
Konno, Tatsuo: *See—*
Sunouchi, Akio; Suzuki, Ryuji; Fujino, Masahisa; and Konno, Tatsuo, 4,500,186, Cl. 354-234.000.
Konrad, Charles E.; Gareis, Ronald E.; and Lodhia, Amratlal C., to General Electric Company. Dual motor proportioning control. 4,500,818, Cl. 318-52.000.
Kopko, John J.; and Hays, Dan A., to Xerox Corporation. Self-spaced development system. 4,499,851, Cl. 118-658.000.
Kopstad, Guennar: *See—*
Tvedt, Kare E.; Kopstad, Guennar; and Haugen, Olav A., 4,499,670, Cl. 34-143.000.
Korenberg, Michael. Hot-box signalling devices. 4,501,006, Cl. 377-45.000.
Kornfeld, Edmund C.: *See—*
Bach, Nicholas J.; Kornfeld, Edmund C.; and Titus, Robert D., 4,500,545, Cl. 514-619.000.
Koshio, Yoshihiro; Kato, Tadao; and Kawano, Hikaru, to Musashi Co., Ltd.; and Hitachi Engineering Kabushiki Kaisha. Apparatus for sorting and counting a number of banknotes. 4,500,002, Cl. 209-534.000.
Kotter, Gustav; and Mutschlknaus, Peter, to Multimatic Maschinen GmbH & Co. Dry-cleaning apparatus. 4,499,744, Cl. 68-210.000.
Koumura, Noboru; Ayata, Naoki; Saito, Seiji; Suzuki, Hidetoshi; and Ozawa, Kunitaka, to Canon Kabushiki Kaisha. Original reading apparatus. 4,500,918, Cl. 358-75.000.
Kovacs, Ferenc: *See—*
Bullock, Lance W.; Vlahek, Josip; and Kovacs, Ferenc, 4,500,277, Cl. 425-387.100.
Kovacs, Robert J.: *See—*
Gerber, James E.; Kovacs, Robert J.; and Herrmann, Willy, 4,500,030, Cl. 228-125.000.
Koyama, Haruo: *See—*
Matsuda, Masanori; Koyama, Haruo; and Miyakawa, Nobuhiro, 4,500,897, Cl. 346-209.000.
Kozbur, Nestor: *See—*
Reba, Imants; Schutz, Rudolph W.; and Kozbur, Nestor, 4,499,801, Cl. 83-24.000.
Kozel, James A., deceased: *See—*
Rasmussen, Donald C., deceased; and Kozel, James A., deceased, 4,500,068, Cl. 251-205.000.
Kozel, Violet M., executor: *See—*
Rasmussen, Donald C., deceased; and Kozel, James A., deceased, 4,500,068, Cl. 251-205.000.
Kraft, Wayne R.: *See—*
Cases, Moises; Kraft, Wayne R.; Stahl, William L., Jr.; and Thoma, Nandor G., 4,500,800, Cl. 307-468.000.
Kraftwerk Union Aktiengesellschaft: *See—*
Kuhnke, Klaus; Bege, Dietmar; Puthawala, Anwer; and Wittrowsky, Gunter, 4,500,449, Cl. 252-628.000.
Siegfried, Peter; and Wenger, Martin, 4,500,323, Cl. 48-197.00R.
Trassl, Werner, 4,500,066, Cl. 251-26.000.
Kramer, Thomas, to Coca-Cola Company, The. Truck with exchangeable load carrier. 4,500,248, Cl. 414-459.000.
Krasselt, Manfred M.: *See—*
Apontoweil, Peter; and Krasselt, Manfred M., 4,500,638, Cl. 435-235.000.
Kraus, Walter: *See—*
Bohn, Hans; and Kraus, Walter, 4,500,451, Cl. 260-112.00R.
Krause, Brian W.: *See—*
Hay, Robert A., II; and Krause, Brian W., 4,499,749, Cl. 72-325.000.
Kreismer, Heinz: *See—*
Napp, Gerhard; Bieringer, Ulrich; Kreismer, Heinz; and Goseberg, Walter, 4,500,833, Cl. 323-359.000.
Kriz, Ronald D., to United States of America, Commerce. Systems for monitoring changes in elastic stiffness in composite materials. 4,499,770, Cl. 73-599.000.
Krogh, James A., to PPG Industries, Inc. Method for preparing N-benzyloxycarbonyl amino acids containing additional functionality. 4,500,726, Cl. 56-160.000.
Krohn, David A.; Buffone, Louis A.; and Vinarub, Edmond I., to Eotec Corporation. Method and components for remote reading of utility meters. 4,500,870, Cl. 340-347.00P.
Krojer, Hubert, to Dornier GmbH. Aircraft propulsion system arrangement. 4,500,055, Cl. 244-55.000.
Kroupa, Loretta A.; and Relyea, Elton H., to Dow Corning Corporation. Extrudable, curable polyorganosiloxane compositions. 4,500,659, Cl. 523-213.000.
Kruesi, Paul R.; and Kruesi, William H., to Cato Research, Inc. Ammonium chloride-ammonium hydroxide strip for the recovery of anhydrous zinc chloride. 4,500,498, Cl. 423-100.000.
Kruesi, William H.: *See—*
Kruesi, Paul R.; and Kruesi, William H., 4,500,498, Cl. 423-100.000.
Krug, Russell R.; and Schmidt, Peter C., to Chevron Research Company. Separation of reacted hydrocarbons and catalyst in fluidized catalytic cracking. 4,500,423, Cl. 208-161.000.
Kruger, Bruno: *See—*
Goyert, Wilhelm; Grimm, Wolfgang; Awater, Albert; Wagner, Hans; and Kruger, Bruno, 4,500,671, Cl. 524-494.000.
Kruit, Pieter: *See—*
Le Poole, Jan B.; and Kruit, Pieter, 4,500,787, Cl. 250-427.000.
Kruper, William J., Jr.; and Swart, Daniel J., to Dow Chemical Company, The. Carbon dioxide oxirane copolymers prepared using double metal cyanide complexes. 4,500,704, Cl. 528-405.000.
Krutenat, Richard C., to Exxon Research & Engineering Co. Method of forming a protective aluminum-silicon coating composition for metal substrates. 4,500,364, Cl. 148-6.14R.
KRW Energy Systems Inc.: *See—*
Hamm, James R.; and Young, William E., 4,499,722, Cl. 60-39.120.
Kub, Francis J.; and Evey, William M., to Westinghouse Electric Corp. Small dimension field effect transistor using phosphorous doped silicon glass reflow process. 4,499,653, Cl. 29-571.000.
Kubinyi, Hugo; Traut, Martin; and Gries, Josef, to BASF Aktiengesellscaft. Benzoylthio compounds, their preparation and their use as drugs. 4,500,467, Cl. 514-2.000.
Kubo, Kanji; Momose, Tsugio; and Izumi, Chikahiko, to Hitachi, Ltd. Apparatus for invalidating the content of an instruction buffer by program store compare check. 4,500,959, Cl. 364-200.000.
Kubo, Keishi; Watanabe, Hideo; Takigawa, Nobuhiro; Hagiri, Minoru; and Kawasaki, Kanjiro, to Ricoh Company, Ltd. Heat-sensitive recording medium affording patterns with different colors. 4,500,896, Cl. 346-204.000.
Kubota, Hajime, to Dai Nippon Insatsu Kabushiki Kaisha. Process for producing coincidently embossed decorative sheets. 4,500,373, Cl. 156-79.000.
Kubota, Hitoshi; Hamamatsu, Seiji; Yambe, Teluo; and Takahashi, Toshiyuki, to Nissan Motor Company, Limited; Tokico Ltd.; and Nippon Air Brake Co., Ltd. Fluid reservoir with fluid-level sensor. 4,500,761, Cl. 200-84.00C.
Kubota, Naohiro: *See—*
Minagawa, Motonobu; Kubota, Naohiro; Shibata, Toshihiro; and Arata, Ryozo, 4,500,663, Cl. 524-101.000.
Kuch, Philip L.: *See—*
Jevnikar, Mary G.; and Kuch, Philip L., 4,500,505, Cl. 423-416.000.
Kudelski, S.A.: *See—*
Kudelski, Stefan, 4,500,817, Cl. 318-7.000.
Kudelski, Stefan, to Kudelski, S.A.; and Ampex Corporation. Tape tension sensor and servo embodying same. 4,500,817, Cl. 318-7.000.

Kuhl, Henry Y.: *See—*
Kuhl, Jeffrey B., 4,499,623, Cl. 15-3.130.
Kuhl, Jeffrey B., to Kuhl, Henry Y. Egg cleaning apparatus. 4,499,623, Cl. 15-3.130.
Kuhlein, Klaus: *See—*
Engelhardt, Friedrich; Kuhlein, Klaus; Riegel, Ulrich; von Halasz, Sigmar; Dawson, Jeffery C.; and Reed, Anthony R., 4,500,437, Cl. 252-8.55C.
Kuhn, Franz; Lippek, Wilfried; Mollgaard, Klaus; and Redecker, Friedrich, to Dr.-Ing. Rudolf Hell GmbH. Apparatus for converting digital chrominance signals of a cartesian color coordinate system into digital color signals and saturation signals of a polar color coordinate system and a transformation circuit. 4,500,972, Cl. 364-526.000.
Kuhnke, Klaus; Bege, Dietmar; Puthawala, Anwer; and Wittrowsky, Gunter, to Kraftwerk Union Aktiengesellschaft. Method for solidifying boron-containing radioactive residues. 4,500,449, Cl. 252-628.000.
Kuisma, Heikki T.; Lehto, Ari; and Jalava, Jouko S., to Vaisala Oy. Capacitive humidity sensor and method for the manufacture of same. 4,500,940, Cl. 361-286.000.
Kulin, Ralph; Granzow, Daniel B.; and Danielsen, Brant R., to Baxter Travenol Laboratories, Inc. Device for providing antibacterial radiation. 4,500,788, Cl. 250-455.100.
Kumar, Narayan G., to Johnson & Johnson Dental Products Company. Dental restorative compositions having improved mechanical properties and hydrolytic stability. 4,500,657, Cl. 523-116.000.
Kunze, Dieter, to Siemens Aktiengesellschaft. Splice carrier for light waveguide cables. 4,500,166, Cl. 350-96.200.
Kuramochi, Koujiro; and Takahashi, Tokuyuki, to Toyota Jidosha Kabushiki Kaisha. Automatic transmission with overdrive housing including its own accumulator. 4,499,789, Cl. 74-740.000.
Kuramoto, Kenji, to Ebara Corporation. Apparatus for monitoring inside of treating column. 4,500,793, Cl. 250-574.000.
Kuraray Co., Ltd.: *See—*
Kitamura, Takanori; Matsumoto, Mitsuo; and Tamura, Masuhiko, 4,500,727, Cl. 560-179.000.
Kurihara, Kazuhiko: *See—*
Okada, Tokio; Tani, Haruhisa; Kojima, Shigezo; Tsuyama, Setsuya; Kurihara, Kazuhiko; and Yazawa, Hiroshi, 4,499,639, Cl. 28-282.000.
Kurihara, Yukitada: *See—*
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Kuroda, Masato: *See—*
Akano, Shinichi; Goto, Tsutomu; Watanabe, Hiroshi; Kuroda, Masato; Ishikawa, Sakae; and Matsumoto, Ryoichiro, 4,499,754, Cl. 73-861.120.
Kuroda Precision Industries Ltd.: *See—*
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Kuroda, Shigeaki; Senshu, Takao; Oguni, Kensaku; Mochizuki, Taketoshi; Yasuda, Hiromu; Ishibane, Kyuhei; Atsumi, Akira; Kimura, Hideyuki; and Hatada, Toshio, to Hitachi, Ltd. Expansion valve. 4,500,035, Cl. 236-92.00B.
Kuroki, Yoshifumi, to Asahi Kogaku Kogyo Kabushiki Kaisha. Camera system including flash and status indicating control circuit. 4,500,190, Cl. 354-416.000.
Kurtz, Leonard D.; and LiCausi, Joseph, to BioResearch Inc. Autotransfusion device with twisted collection bag. 4,500,308, Cl. 604-4.000.
Kusaka, Yosuke; and Fukuhara, Toru, to Nippon Kogaku K.K. Image plane deviation amount detecting device. 4,500,778, Cl. 250-204.000.
Kuwabara, Kouji; Sugawara, Hiroyuki; Shirakura, Toshiharu; Kawakubo, Yukio; and Sasaki, Kouji, to Hitachi, Ltd. Gas laser. 4,500,998, Cl. 372-61.000.
Kuwayama, Tetsuro: *See—*
Hashimoto, Seiji; Tanaka, Nobuyoshi; Suga, Akira; and Kuwayama, Tetsuro, 4,500,913, Cl. 358-44.000.
Kwon, Oh K.: *See—*
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Kyowa Hakko Kogyo Co., Ltd.: *See—*
Katsumata, Ryoichi; Oka, Tetsuo; and Furuya, Akira, 4,500,640, Cl. 435-253.000.
L.A.S. Ricouard S.A.: *See—*
Ricouard, Jacques; and Quillet, Jean-Pierre, 4,499,745, Cl. 70-285.000.
L. Schuler GmbH: *See—*
Gerber, Heinz; Adam, Klaus; and Horn, Heinz, 4,499,750, Cl. 72-351.000.
Lacour, Alain P.: *See—*
Platel, Alain Y.; Lacour, Alain P.; and Bourgery, Guy R., 4,500,531, Cl. 514-255.000.
Lacroix, Roger: *See—*
Hugelshofer, Paul; Bruttel, Beat; Pfenninger, Heinz; and Lacroix, Roger, 4,500,321, Cl. 8-527.000.
Lafortune, Lucien; and Rouette, Andre . Safety closure cap. 4,500,006, Cl. 215-224.000.
Lagana', Vincenzo; and Cavallanti, Virginio, to Snamprogetti S.p.A. Process for the production of urea. 4,500,734, Cl. 564-72.000.
LaGross, Dennis L.: *See—*
Plank, Vernon G.; Matthews, Anthony J.; Berthel, Robert O.; and LaGross, Dennis L., 4,499,761, Cl. 73-170.00R.
Lai, John T., to B. F. Goodrich Company, The. Polysubstituted α-aminoacetamides. 4,500,662, Cl. 524-99.000.
Lakshmanan, Pallavoor R., to Gulf Oil Corporation. Adhesive composition. 4,500,661, Cl. 524-77.000.
LaLonde, Paul D., to Donn Incorporated. Suspended ceiling with removable tee sections. 4,499,697, Cl. 52-98.000.
Lamparsky, Dietmar; and Kaiser, Roman, to Givaudan Corporation. 2-Methyl-2-buten-1-yl tiglate. 4,500,729, Cl. 560-225.000.
Lampe, Guy W.: *See—*
Madewell, James A.; Molitor, Edwin A.; Crowe, Norman P.; Lampe, Guy W.; and Pavey, Charles F., 4,500,245, Cl. 414-108.000.
Lampe, Louis F.: *See—*
Furst, Emanuel F.; Lampe, Louis F.; and Woods, William L., 4,499,903, Cl. 128-675.000.
Lampert, Heinz, to Werner Looser Maschinenbau + Hydraulik. Piston-cylinder device. 4,499,813, Cl. 92-31.000.
Lang, Kevin W.: *See—*
Liggett, Louis G.; Lang, Kevin W.; Wyss, Clement R.; and Williams, Richard A., 4,500,553, Cl. 426-101.000.
Lang, Richard D.: *See—*
Bolton, Theodore S.; Leech, Brad G.; and Lang, Richard D., 4,499,816, Cl. 98-40.260.
Lang, Stephen P.: *See—*
Jacobi, Stephen F.; Haight, Robert E.; Schletzbaum, John W.; Martin, Yolanda E.; and Lang, Stephen P., 4,500,874, Cl. 340-607.000.
Lange, Francois: *See—*
Rascle, Roger; and Lange, Francois, 4,500,486, Cl. 264-335.000.
Lange, Heinz; Rix, Albert; and Drogi, Dieter, to Olympia Werke AG. Method and apparatus for guiding the paper in typewriters or similar office machines. 4,500,219, Cl. 400-568.000.
Lange International S.A.: *See—*
Chalmers, Edward L., II, 4,499,676, Cl. 36-120.000.
Lange, Norbert: *See—*
Vock, Jurgen; Pinck, Peter; Lange, Norbert; Schmalfeld, Erwin; and Petersen, Kurt-Eckard, 4,500,770, Cl. 219-121.0LK.
Langston, Metty S. K., to General Foods Corporation. Anthocyanin colorant from grape pomace. 4,500,556, Cl. 426-540.000.
Lanier Business Products, Inc.: *See—*
Plunkett, Luther C., Jr., 4,500,753, Cl. 179-6.030.
Laplanche, Michel: *See—*
Astier, Jean-Francois; Bessaguet, Louis; and Laplanche, Michel, 4,500,272, Cl. 425-78.000.
Astier, Jean-Francois; Bessaguet, Louis; and LaPlanche, Michel, 4,500,280, Cl. 425-569.000.
Lappos, Nicholas D.: *See—*
Zagranski, Raymond D.; Howlett, James J.; and Lappos, Nicholas D., 4,500,966, Cl. 364-432.000.
Lardellier, Alain M. J.: *See—*
Kervistin, Robert; Lardellier, Alain M. J.; Mazeaud, Georges; and Crozet, Francois E. G., 4,500,143, Cl. 384-467.000.
Larsen, Richard R., to Pacific Scientific Company. Automatic bellows welder and method for using same. 4,500,026, Cl. 228-44.10R.
Lasag AG: *See—*
Roussel, Philippe, 4,499,897, Cl. 128-303.100.
Laser, Vadim. Method and apparatus for remotely reading and decoding bar codes. 4,500,776, Cl. 235-162.000.
Lasky, Richard J., to Trans-World Manufacturing Corporation. 3D Display. 4,500,088, Cl. 272-8.00M.
Lasoen, Jean J., to Massey-Ferguson Services N.V. Tractor draft sensing apparatus with sensing unit positioned outboard of each link. 4,499,775, Cl. 73-862.570.
Lassen, Charles L., to Kollmorgen Technologies Corporation. Process for the manufacture of substrates to interconnect electronic components. 4,500,389, Cl. 156-643.000.
LaTulip, Randy J., to Dow Chemical Company, The. Thermosetting polymers from aromatic aldehydes, azines and isopropenyl phenols. 4,500,690, Cl. 525-502.000.
Laurent, Henry: *See—*
Nickisch, Klaus; Bittler, Dieter; Laurent, Henry; Wiechert, Rudolf; and Losert, Wolfgang, 4,500,522, Cl. 514-173.000.
Lautenschlager, Gerhard W., to Karl Lautenschlager KG, Mobelbeschlagfabrik. Furniture hinge permitting door opening angle of 110 degree or more. 4,499,631, Cl. 16-370.000.
Lautenschlager, Horst: *See—*
Lautenschlager, Karl, Jr.; and Lautenschlager, Horst, 4,500,140, Cl. 308-3.800.
Lautenschlager, Karl, Jr.; and Lautenschlager, Horst, to Karl Lautenschlager KG, Mobelbeschlagfabrik. Slide for drawers and the like. 4,500,140, Cl. 308-3.800.
Law, Denny B., to Unique Functional Products. Vehicle suspension system. 4,500,113, Cl. 280-716.000.
Lawrence, Robert H., Jr.; and Hill, Phillip E., to Agrigenetics Research Associates Limited. Hybrid Brassica seed production. 4,499,687, Cl. 47-58.000.
Laws, William R.; and Reed, Geoffrey R., to Encomech Engineering Services Limited. Heat shield arrangements for a rolling mill. 4,499,746, Cl. 72-13.000.
Lawton, Carl W.: *See—*
Loomis, Robert W.; and Lawton, Carl W., 4,499,860, Cl. 122-510.000.
Leach, Gary M.: *See—*
Wyatt, Michael; Leach, Gary M.; and Gould, Ashley M., 4,500,650, Cl. 502-204.000.
Lear Siegler, Inc.: *See—*
Murphy, Randall T.; and Heling, Dennis, 4,500,136, Cl. 297-284.000.
Leavitt, Philip J.: *See—*
Fruzzetti, Paul R.; Leavitt, Philip J.; and Nuzzi, Frank J., 4,499,752, Cl. 73-40.700.

Lebreton, Jacques: *See—*
Lemaire, Edmond; and Lebreton, Jacques, 4,500,962, Cl. 364-200.000.

Leconte, Philippe: *See—*
Gauthier-Lafaye, Jean; Perron, Robert; Gallucci, Jacques; and Leconte, Philippe, 4,500,473, Cl. 260-548.000.

Lee, Agnes Y.: *See—*
Cole, Ernest R., Jr.; Lee, Agnes Y.; and Paulson, Danton L., 4,500,398, Cl. 204-117.000.

Lee, Calvin K.; and Rapacz, Deirdre T., to United States of America, Army. Composite thermal insulation liner. 4,500,592, Cl. 428-251.000.

Lee, Jimmy D. Polyurethane foamed in-situ against skin terpolymer comprising ethylene and propylene. 4,500,596, Cl. 428-317.500.

Lee, Joseph Y.: *See—*
D'Agostino, Vincent F.; Lee, Joseph Y.; Zapisek, Stephen; and Schore, George, 4,500,396, Cl. 204-107.000.

Lee, Kyung-Suk, to Daewoo Electronic Co. Telecontrol system for an audio recorder of a radio telephone. 4,500,752, Cl. 179-2.0EA.

Leech, Brad G.: *See—*
Bolton, Theodore S.; Leech, Brad G.; and Lang, Richard D., 4,499,816, Cl. 98-40.260.

Lefevre, Robert P.: *See—*
Ward, Michael A. V.; and Lefevre, Robert P., 4,499,872, Cl. 123-344.000.

Legrand: *See—*
Astier, Jean-Francois; Bessaguet, Louis; and Laplanche, Michel, 4,500,272, Cl. 425-78.000.
Astier, Jean-Francois; Bessaguet, Louis; and LaPlanche, Michel, 4,500,280, Cl. 425-569.000.

Lehner, Gerhard, to Friedmann & Maier Aktiengesellschaft. Control rod system for fuel injection devices for Diesel engines. 4,499,873, Cl. 123-372.000.

Lehto, Ari: *See—*
Kuisma, Heikki T.; Lehto, Ari; and Jalava, Jouko S., 4,500,940, Cl. 361-286.000.

Lehtola, Erkki T., to Tahka Oy. Method and device for turning a long. 4,499,989, Cl. 198-407.000.

Leibensperger, Donna C.: *See—*
Leibensperger, Robert L.; and Leibensperger, Donna C., 4,500,150, Cl. 339-28.000.

Leibensperger, Robert L.; and Leibensperger, Donna C. Device for electrifying dining table. 4,500,150, Cl. 339-28.000.

Leibowitz, Marshall; and George, Douglas A., to Timex Corporation. Electroluminescent lamp for liquid crystal display. 4,500,173, Cl. 350-345.000.

Leininger, Steven, to Tandy Corporation. Memory addressing system. 4,500,956, Cl. 364-200.000.

Leistner, Rolf; and Becker, Herbert, to Brose Fahrzeugteile GmbH und Co. Rotary drive transmission mechanism especially for motor vehicles. 4,499,787, Cl. 74-625.000.

Lejeune, Jean-Pierre: *See—*
Romand-Monnier, Jacques; and Lejeune, Jean-Pierre, 4,500,226, Cl. 403-13.000.

Lemaire, Edmond; and Lebreton, Jacques, to U.S. Philips Corporation. Computer system having an extended directly addressable memory space. 4,500,962, Cl. 364-200.000.

Lenard, Peter: *See—*
Beck, Ernst; Lenard, Peter; and Pokorny, Erich, 4,499,794, Cl. 76-75.000.

Lennon, Richard E.: *See—*
Elander, Robert C.; Lennon, Richard E.; Matyas, Stephen M.; Meyer, Carl H. W.; Shuck, Robert E.; and Tuchman, Walter L., 4,500,750, Cl. 178-22.080.

Lenz, Ehud: *See—*
Tur-Kaspa, Yosef; and Lenz, Ehud, 4,500,126, Cl. 294-86.00R.

Lenz, George R.: *See—*
Chorvat, Robert J.; Lenz, George R.; and Evans Radak, Suzanne, 4,500,708, Cl. 544-34.000.

Lenz, Henry G., to General Electric Company. Method of making a laminated rotor for a dynamoelectric machine. 4,499,660, Cl. 29-598.000.

Leonard, James K.: *See—*
Tuttle, Alan H.; Leonard, James K.; and Dlugosz, Henry J., 4,500,096, Cl. 277-53.000.

Leonardi, Cornelio: *See—*
Backe, Egbert; Muller, Rolf; Otto, Dieter; Leonardi, Cornelio; Kochendorfer, Heinrich; Fussner, Paul; Walker, Ewald; and Rommel, Rudi, 4,499,757, Cl. 73-119.00A.

Leong, David S., to Templeton Kenly & Company. Low profile jack construction. 4,500,072, Cl. 254-95.000.

Leonov, Viktor A.: *See—*
Eschenko, Vladislav Y.; Musaev, Irsali K.; Talibdzhanov, Zakhidzhan S.; Leonov, Viktor A.; Bobrov, Anatoly D.; Kirovsky, Efim I.; Gritsenko, Vladimir A.; and Golovanov, Alexandr V., 4,500,282, Cl. 431-184.000.

Le Poole, Jan B.; and Kruit, Pieter, to Nederlandse Centrale Organisatie Voor Toegepast Natuurwetenschappelijk Onderzoek. Method and a device for furnishing an ion stream. 4,500,787, Cl. 250-427.000.

Lerwill, William E.: *See—*
Ziolkowski, Antoni M.; and Lerwill, William E., 4,500,978, Cl. 367-142.000.

Leshchiner, Adolf: *See—*
Balazs, Endre A.; and Leshchiner, Adolf, 4,500,676, Cl. 525-54.200.

Lew, Hyok S. Chamfered roller mechanical transmission. 4,499,781, Cl. 74-193.000.

Lewandowski, Edward F.; and Peterson, Leroy L., to United States of America, Energy. Method of extruding and packaging a thin sample of reactive material including forming the extrusion die. 4,499,708, Cl. 53-432.000.

Lewandowski, Edward F.: *See—*
Groh, Edward F.; Cassidy, Dale A.; and Lewandowski, Edward F., 4,500,488, Cl. 376-409.000.

Lewis, Kathrine J., to Atlantic Richfield Company. Solar cell laminates. 4,499,658, Cl. 29-588.000.

Lewis, William D., to Epic International Corporation. Method and device for detecting dental cavities. 4,500,294, Cl. 433-215.000.

Lewyn, Lanny L.; and Lucas, Charles H., to Hughes Aircraft Company. Circuit for effecting improved slew rate of operational amplifiers. 4,500,846, Cl. 330-253.000.

Ley, Anthony J., to Enertec. Electronic devices. 4,500,973, Cl. 364-606.000.

Libby, Alfred F. Method for treating alcohol and drug addicts. 4,500,515, Cl. 424-154.000.

LiCausi, Joseph: *See—*
Kurtz, Leonard D.; and LiCausi, Joseph, 4,500,308, Cl. 604-4.000.

Licentia Patent-Verwaltungs-G.m.b.H.: *See—*
Napp, Gerhard; Bieringer, Ulrich; Kreismer, Heinz; and Goseberg, Walter, 4,500,833, Cl. 323-359.000.
Sommer, Karl H.; Sonntag, Alois; and Pikorz, Wolfgang, 4,500,901, Cl. 357-38.000.

Liebig, Heinrich. Interlocking toggle bolt. 4,500,239, Cl. 411-65.000.

Liepins, Raimond: *See—*
Jahn, Randy K.; and Liepins, Raimond, 4,500,562, Cl. 427-27.000.

Lieu, Dennis K.; and Cooper, Larry, to Sperry Corporation. Dehumidifier apparatus for disk drives. 4,499,736, Cl. 62-3.000.

Liggett, Louis G.; Lang, Kevin W.; Wyss, Clement R.; and Williams, Richard A., to General Foods Corporation. Method of producing a frozen dual-textured confection. 4,500,553, Cl. 426-101.000.

Lihtarova, Ludmila: *See—*
Junek, Jan; Skarka, Josef; Jaros, Frantisek; Hortlik, Frantisek; Hacova, Kveta; Vobornik, Vaclav; Ohlidal, Vladimi; and Lihtarova, Ludmila, 4,499,718, Cl. 57-301.000.

Lill, Melvin H., to FMC Corporation. Individual toe measuring system. 4,500,201, Cl. 356-152.000.

Lim, In C.: *See—*
Schmidt, Manfred; Witman, Mark W.; Reinert, Gerard E.; and Lim, In C., 4,500,653, Cl. 521-90.000.

Lima S.p.A.: *See—*
Reginato, Francesco, 4,500,058, Cl. 246-3.000.

Lindauer Dornier Gesellschaft mbH: *See—*
John, Heinz, deceased; and John nee Ruffler, Friedlinde, heir, 4,499,638, Cl. 28-207.000.

Linde Aktiengesellschaft: *See—*
Reimann, Hans; Frydman, Allen; and Fuchs, Uwe, 4,500,429, Cl. 210-616.000.

Linder, Ernst; Moser, Winfried; and Rieger, Franz, to Robert Bosch GmbH. Arrangement for controlling a internal combustion engine equipped with glow plugs. 4,499,867, Cl. 123-145.00A.

Lindner, Georg H., to M&T Chemicals Inc. Air operated diaphragm pump system. 4,500,264, Cl. 417-395.000.

Lion Corporation: *See—*
Nakaoji, Kazuhiko; Kamao, Mitsugu; Itoh, Hayami; Tatsumi, Shuhei; and Takao, Shoichi, 4,500,041, Cl. 241-16.000.

Lippek, Wilfried: *See—*
Kuhn, Franz; Lippek, Wilfried; Mollgaard, Klaus; and Redecker, Friedrich, 4,500,972, Cl. 364-526.000.

Lipschutz, Lewis D., to International Business Machines Corporation. Directly sealed multi-chip module. 4,500,945, Cl. 361-386.000.

Liquidometer Corporation: *See—*
Beane, Michael J., 4,500,881, Cl. 340-825.730.

Lisco, Richard J., to AT&T Bell Laboratories. Ringing signal generator employing delta-modulation power amplification techniques. 4,500,844, Cl. 330-10.000.

Lisov, Aleksandr I.: *See—*
Zsoka, Istvan; Madar, Laszlo ; Cubin, Anatoly A.; Gaivoronsky, Albert A.; Farukshin, Lev H.; Morzsic, Piotr A.; Lisov, Aleksandr I.; and Galusztainc, Vladilen A., 4,499,947, Cl. 166-179.000.

Liston, Allen L., to FMC Corporation. Adjustment means for operator controls. 4,499,963, Cl. 180-90.600.

Litchfield, John: *See—*
Pearson, Leonard L.; and Litchfield, John, 4,500,568, Cl. 427-294.000.

Litton Systems, Inc.: *See—*
MacNeal, Bruce E., 4,500,176, Cl. 350-376.000.
MacNeal, Bruce E., 4,500,177, Cl. 350-376.000.
Schebler, Bernard J., 4,499,914, Cl. 137-81.100.

Liu, Christopher S.: *See—*
Kaufman, Benjamin J.; Liu, Christopher S.; and Sung, Rodney L., 4,500,440, Cl. 252-51.50A.

Liu, Hucichi R.: *See—*
Babecki, Glenn R.; Escolar, Carlos; Garnant, Craig M.; Kan, Hsin-Kuo; Kaplan, Frank; Liu, Hueichi R.; MacLachlan, George F.; Matteo, Peter J.; McDonald, John F.; Palframan, John D.; Tran, Roger T.; Welt, Martin J.; Wendt, Timothy A.; Yates, Gregory S.; and Zislis, Paul M., 4,500,960, Cl. 364-200.000.

Lloyd, William A.: *See—*
Whitaker, Angus H.; McFarland, Keith E.; Lloyd, William A.; and Patrick, Willard J., 4,500,045, Cl. 242-57.100.

LMT Radio Professionnelle: *See—*
Marchand, Maurice; and Haentjens, Yan, 4,500,848, Cl. 330-285.000.

Lockard, Walter G.: *See—*
Haury, Gilbert E.; Patel, Nathalal G.; Lockard, Walter G.; and Wiatrak, Thomas R., 4,500,102, Cl. 280-242.0WC.

Lockheed Missiles & Space Company, Inc.: *See—*
Galbraith, Andrew D., 4,500,613, Cl. 429-69.000.

Lockstedt, Alan W.: *See—*
Vezirian, Edward; Quinones, Richard J.; and Lockstedt, Alan W., 4,499,642, Cl. 29-149.50R.

Lodhia, Amratlal C.: *See—*
Konrad, Charles E.; Gareis, Ronald E.; and Lodhia, Amratlal C., 4,500,818, Cl. 318-52.000.

Loev, Bernard; Shroff, James R.; and Desai, Rohit, to USV Pharmaceutical Corporation. Antihypertensive 4[(3-alkylamino-2-hydroxypropyl)-oxyiminomethyl phenyl]-1,4-dihydropyridines. 4,500,527, Cl. 514-223.000.

Loev, Bernard; Jones, Howard; and Shroff, James R., to USV Pharmaceutical Corporation. N-Substituted 1,4-dihydropyridines and pharmaceutical compositions. 4,500,528, Cl. 514-228.000.

Loev, Bernard; Jones, Howard; and Suh, John T., to USV Pharmaceutical Corporation. 1-(Substituted aminoalkyl)-1,4-dihydropyridines. 4,500,532, Cl. 514-256.000.

Logullo, Francis M., Sr.: *See—*
Irwin, Robert S.; and Logullo, Francis M., Sr., 4,500,699, Cl. 528-128.000.

Lok, Brent M. T.; Marcus, Bonita K.; and Flanigen, Edith, to Union Carbide Corporation. Titanium-containing molecular sieves. 4,500,651, Cl. 502-208.000.

Lombardino, Joseph G.; and Harbert, Charles A., to Pfizer Inc. Method of regulating the immune response with pyridine derivatives. 4,500,535, Cl. 514-277.000.

Long, Charles P. Accumulator for a carton filling and packing production line. 4,499,987, Cl. 198-347.000.

Long, Thomas F.: *See—*
Beyer, Henry R.; DeSipio, Richard G.; Long, Thomas F.; and Ritz, Joseph, 4,500,885, Cl. 343-456.000.
Naubereit, Henry; Long, Thomas F.; Picard, Salvatore R.; and Ritz, Joseph, 4,500,886, Cl. 343-456.000.

Longuet, Michel: *See—*
Peltier, Gerard; Longuet, Michel; and Midgley, Charles A., 4,500,591, Cl. 428-251.000.

Longview Fibre Company: *See—*
Nordstrom, Duane M., 4,500,381, Cl. 156-205.000.

Loomis, Robert W.; and Lawton, Carl W., to Combustion Engineering, Inc. Furnace buckstay design. 4,499,860, Cl. 122-510.000.

Looper, David W.: *See—*
Roberts, Don M.; and Looper, David W., 4,500,944, Cl. 361-384.000.

Lopato, Georgy P.: *See—*
Sidorenko, Georgy I.; Lopato, Georgy P.; Yakubovich, Vladimir M.; Nikitin, Yaroslav G.; Usachev, Oleg I.; and Vorobiev, Anatoly P., 4,499,904, Cl. 128-703.000.

Lorant, Stefan, to United Stirling AB. Hot gas engine. 4,499,727, Cl. 60-525.000.

Lord, John G., to Bergeson, Lloyd. Sail rigging and control system. 4,499,841, Cl. 114-98.000.

L'Oreal: *See—*
Gueret, Jean-Louis H., 4,500,939, Cl. 361-221.000.

Lori, Domenico: *See—*
Credali, Lino; Martini, Emilio; and Lori, Domenico, 4,500,594, Cl. 428-284.000.

Lormeau, Jean-Claude; Petitou, Maurice; and Choay, Jean, to Choay S.A. Mucopolysaccharides having biological properties, preparation and method of use. 4,500,519, Cl. 514-56.000.

Losert, Wolfgang: *See—*
Nickisch, Klaus; Bittler, Dieter; Laurent, Henry; Wiechert, Rudolf; and Losert, Wolfgang, 4,500,522, Cl. 514-173.000.

Louden, William G.; and Louden, William S., to Louden, William Gordon. Flat paper and method of manufacturing involving controlled drying conditions. 4,500,607, Cl. 428-511.000.

Louden, William Gordon: *See—*
Louden, William G.; and Louden, William S., 4,500,607, Cl. 428-511.000.

Louden, William S.: *See—*
Louden, William G.; and Louden, William S., 4,500,607, Cl. 428-511.000.

Lourenco, Jose A.: *See—*
Keramidas, Vassilis G.; and Lourenco, Jose A., 4,500,367, Cl. 148-171.000.

Lovell, Edward J.: *See—*
Janisiewicz, Stanley W.; Hills, Maynard J.; and Lovell, Edward J., 4,500,246, Cl. 414-414.000.

Lovercheck, Dale R.; and Curran, George P., to Conoco Inc. Hydride cold start container in fuel treatment and distribution apparatus and method. 4,499,864, Cl. 123-3.000.

Low, Robert N.: *See—*
Buck, Roy T.; Cloutier, Frank L.; Erni, R. Ernst; Low, Robert N.; and Terry, F. Duncan, 4,500,895, Cl. 346-140.00R.

LTV Aerospace and Defense Co.: *See—*
Patten, James W.; Moss, Ronald W.; and Forcht, Brennan A., 4,500,602, Cl. 428-408.000.

Lubcke, Hartmut; and Backhaus, Martin, to Nixdorf Computer AG. Circuit arrangement for the control of the transmission of digital signals, particularly PCM-signals, between stations of a time division multiplex telecommunication network particularly PCM-time division multiplex telecommunication network. 4,500,991, Cl. 370-88.000.

Lucas, Charles H.: *See—*
Lewyn, Lanny L.; and Lucas, Charles H., 4,500,846, Cl. 330-253.000.

Lucas Industries Public Limited Company: *See—*
Skinner, Robert T. J., 4,499,884, Cl. 123-506.000.

Lucas, Raymond, to Bobst SA. Device for severing blanks of a batch of die cut sheets. 4,500,022, Cl. 225-97.000.

Luciani, Wayne. Taping doughnut. 4,500,580, Cl. 428-43.000.

Luebrecht, Donald; and Klopfleisch, Kim A., to Crown Controls Corporation. Material handling vehicle having improved chain monitoring. 4,499,971, Cl. 187-9.00R.

Lundblad, Leif. Apparatus in banks, post offices and similar establishments for dispensing valuable papers. 4,500,013, Cl. 221-285.000.

Lundstrom, Kristian, to Tamfelt Oy AB. Conveyor felt for paper making and a method of manufacturing such a felt. 4,500,588, Cl. 428-212.000.

Lung-Tung, Chao. Method for the salvage of a sunken vessel. 4,499,840, Cl. 114-51.000.

Luomanen, Asko, to Kone OY. Procedure for manufacturing a roof element. 4,499,645, Cl. 29-445.000.

Lupke, Manfred A. A. Forming single wall bells in double wall pipe. 4,500,284, Cl. 425-511.000.

Luss, V. Gerold, to H. B. Fuller Co. Antimicrobial composition for a semipermeable membrane. 4,500,517, Cl. 424-162.000.

Lynch, Joseph M.; Pfafflin, James R.; Pecker, Calman; Cardenas, Raul; Cunningham, Seamus; Bozzone, Richard T., Sr.; and Borg, Sidney, to Process Research Development & Management, Inc. Method for the treatment of wastewater sludge. 4,500,428, Cl. 210-609.000.

Lyons, William G., III, to Brimfield Precision, Inc. Fiber-optic illuminated microsurgical scissors. 4,499,899, Cl. 128-305.000.

M.A.N. Maschinenfabrik Ausburg-Nurnberg AG: *See—*
Neitz, Alfred; D'Alfonso, Nunzio; and Pickel, Hans, 4,499,871, Cl. 123-276.000.

M-B-W Inc.: *See—*
Maass, Helmut, 4,499,779, Cl. 74-61.000.

M&T Chemicals Inc.: *See—*
Lindner, Georg H., 4,500,264, Cl. 417-395.000.

Maass, Helmut, to M-B-W Inc. Vibratory compactor. 4,499,779, Cl. 74-61.000.

Mabuchi Motor Co., Ltd.: *See—*
Akiyama, Takeshi, 4,500,804, Cl. 310-40.0MM.

Macartney, Derek L.: *See—*
McDonald, Robert C.; and Macartney, Derek L., 4,500,228, Cl. 406-61.000.

Machida, Toyotaka, to Victor Company of Japan, Ltd. Synchronizing signal generating apparatus. 4,500,909, Cl. 358-17.000.

Machnee, Cecil B., to Morris Rod-Weeder Co. Ltd. Dispensing wheel and shaft mounting arrangement therefor. 4,500,017, Cl. 222-288.000.

Machnee, Cecil B., to Morris Rod-Weeder Company, Limited. Agricultural implement hitch assembly. 4,500,105, Cl. 280-468.000.

MacKay, Duncan: *See—*
Madden, Allan C.; Cellucci, Robert; Hoshida, Robert A.; and MacKay, Duncan, 4,499,768, Cl. 73-462.000.

Mackay, Robert D., to AT&T Technologies, Inc. Solder-bearing lead. 4,500,149, Cl. 339-17.00C.

Mackey, Richard C., to Novation, Inc. Solid state off hook phone line load. 4,500,754, Cl. 179-81.00R.

MacLachlan, George F.: *See—*
Babecki, Glenn R.; Escolar, Carlos; Garnant, Craig M.; Kan, Hsin-Kuo; Kaplan, Frank; Liu, Hueichi R.; MacLachlan, George F.; Matteo, Peter J.; McDonald, John F.; Palframan, John D.; Tran, Roger T.; Welt, Martin J.; Wendt, Timothy A.; Yates, Gregory S.; and Zislis, Paul M., 4,500,960, Cl. 364-200.000.

MacNeal, Bruce E., to Litton Systems, Inc. Method and device for improving a conductive switching grid for switchable magnetic elements. 4,500,176, Cl. 350-376.000.

MacNeal, Bruce E., to Litton Systems, Inc. Method and device for creating switchable redundancy with a magnetic element. 4,500,177, Cl. 350-376.000.

Madar, Laszlo : *See—*
Zsoka, Istvan; Madar, Laszlo ; Cubin, Anatoly A.; Gaivoronsky, Albert A.; Farukshin, Lev H.; Morzsic, Piotr A.; Lisov, Aleksandr I.; and Galusztainc, Vladilen A., 4,499,947, Cl. 166-179.000.

Madden, Allan C.; Cellucci, Robert; Hoshida, Robert A.; and MacKay, Duncan, to Coats Wheel Balancer Corp. Cantilever support for an apparatus to determine the imbalance in a rotating object. 4,499,768, Cl. 73-462.000.

Madewell, James A.; Molitor, Edwin A.; Crowe, Norman P.; Lampe, Guy W.; and Pavey, Charles F., to Multifold-International, Inc. Machine for accumulating edgewise supported articles. 4,500,245, Cl. 414-108.000.

Maeda, Naoyuki: *See—*
Abe, Michio; and Maeda, Naoyuki, 4,499,964, Cl. 180-142.000.

Maestrelli, Gino, to Maestrelli S.P.A. Clothing drycleaning machine. 4,499,743, Cl. 68-18.00C.

Maestrelli S.P.A.: *See—*
Maestrelli, Gino, 4,499,743, Cl. 68-18.00C.

Maffrand, Jean-Pierre: *See—*
Frehel, Daniel; Maffrand, Jean-Pierre; and Vallee, Eric, 4,500,534, Cl. 514-301.000.

Magyar Szenhidrogenipari Kutatofejleszto Intezet: *See—*
Zsoka, Istvan; Madar, Laszlo ; Cubin, Anatoly A.; Gaivoronsky, Albert A.; Farukshin, Lev H.; Morzsic, Piotr A.; Lisov, Aleksandr I.; and Galusztainc, Vladilen A., 4,499,947, Cl. 166-179.000.

Maher, Galeb H., to Sprague Electric Company. Ag/Pd electroding powder and method for making. 4,500,368, Cl. 148-431.000.

Maher, Tommy B.: *See—*
Mattingly, William R., Jr.; Johnson, Lyle; and Maher, Tommy B., 4,500,153, Cl. 339-89.00M.

Mahr, Peter F., to North Sails, Inc. Sail cloth and sail made therefrom. 4,499,842, Cl. 114-103.000.

Maiden, Adrian J., to Ferranti, PLC. Non-dispersive optical determination of gas concentration. 4,500,207, Cl. 356-409.000.

Maier, Jakob: *See—*
Hoefelmayr, Tilman; and Maier, Jakob, 4,499,854, Cl. 119-14.320.

Mail-Ex Corporation: *See—*
Russell, Robert J., 4,499,705, Cl. 53-266.00A.

Maiocchi, John, to GTE Communications Products Corporation. Coating apparatus for bodies of electrical components having axial leads. 4,499,848, Cl. 118-45.000.

Majerus, John N.; and Walters, William P., to United States of America, Army. High lethality warheads. 4,499,830, Cl. 102-476.000.

Majima, Mitsue: *See—*
Sakamura, Yoshikazu; and Majima, Mitsue, 4,499,647, Cl. 29-509.000.

Makinen, Heimo; and Suur-Askola, Seppo, to Elevator GmbH; and Kone Oy. Speed control system for a motor with short-circuited rotor. 4,499,972, Cl. 187-29.00R.

Malbec, Yves; Boisot, Yves; Bontemps, Daniel; and Duhamel, Georges, to Thomson-CSF. Thermostat-controlled electric switch. 4,500,760, Cl. 200-83.00C.

Malpass, Dennis B., to Exxon Research & Engineering Co. Long chain branching in polyolefins from ziegler-natta catalysts. 4,500,648, Cl. 502-115.000.

Mandeberg, Richard D., to Research and Development Institute for Infosystems, Inc. Method and apparatus for standardizing nonstandard video signals. 4,500,908, Cl. 358-11.000.

Mannesmann Aktiengesellschaft: *See—*
Ehrich, Gerd; and Dobner, Eberhard, 4,499,960, Cl. 177-25.000.
Hasselmann, Heinz; and Muenzebrock, Anton, 4,500,969, Cl. 364-508.000.

Mano, Seiji: *See—*
Katagi, Takashi; and Mano, Seiji, 4,500,882, Cl. 343-372.000.

Manton, John C.; and Okin, Kenneth, to Digital Equipment Corporation. Memory controller with data rotation arrangement. 4,500,958, Cl. 364-200.000.

Marathon Electric Mfg. Corp.: *See—*
Keglewitsch, Josef; and Stechschulte, Theodore J., 4,500,161, Cl. 339-242.000.
Keglewitsch, Josef; and Stechschulte, Theodore J., 4,500,162, Cl. 339-252.00F.

Marchand, Maurice; and Haentjens, Yan, to LMT Radio Professionnelle. Field effect transistor microwave amplifier. 4,500,848, Cl. 330-285.000.

Marcus, Bonita K.: *See—*
Lok, Brent M. T.; Marcus, Bonita K.; and Flanigen, Edith, 4,500,651, Cl. 502-208.000.

Marissen, Roelof: *See—*
Schijve, Jacobus; Vogelesang, Laurens B.; and Marissen, Roelof, 4,500,589, Cl. 428-213.000.

Marschner, Frederick J.: *See—*
Duke, Alan H.; Hartung, Michael H.; Marschner, Frederick J.; and Nolan, Kenneth P., 4,500,954, Cl. 364-200.000.

Martel, Jacques; Tessier, Jean; and Demoute, Jean-Pierre, to Roussel Uclaf. Tetrahydrofuran-2-ones. 4,500,720, Cl. 549-313.000.

Martin, Alan B.; and Jackson, Ernest V., to Mason & Hanger-Silas Mason Co., Inc. Enhanced oil recovery process and apparatus. 4,499,946, Cl. 166-57.000.

Martin, Henry, to Ciba-Geigy Corporation. Oxime derivatives for protecting plant crops. 4,500,347, Cl. 71-97.000.

Martin, Raymond H.: *See—*
Garganese, Ugo S.; Griffin, John R.; and Martin, Raymond H., 4,500,289, Cl. 433-54.000.

Martin, Yolanda E.: *See—*
Jacobi, Stephen F.; Haight, Robert E.; Schletzbaum, John W.; Martin, Yolanda E.; and Lang, Stephen P., 4,500,874, Cl. 340-607.000.

Martini, Emilio: *See—*
Credali, Lino; Martini, Emilio; and Lori, Domenico, 4,500,594, Cl. 428-284.000.

Marton, Giulio, to Necchi, Societa per Azioni. Production of machine elements with protection cages connected therewith by means of a single casting operation. 4,499,939, Cl. 164-23.000.

Maruhashi, Yoshitsugu; Kano, Fumio; Yamada, Muneki; and Hirata, Sadao, to Toyo Seikan Kaisha, Ltd. Resin composition excellent in drawability. 4,500,677, Cl. 525-57.000.

Marx, Morris F., III, to AT&T Technologies, Inc. Methods for controlling vinyl plastic extrudate. 4,500,481, Cl. 264-40.600.

Masaki, Kouichi: *See—*
Ogawa, Hiroshi; Mizuno, Chiaki; Masaki, Kouichi; Suzuki, Masaaki; and Tamai, Yasuo, 4,500,599, Cl. 428-336.000.

Maschinenfabrik AD. Schulthess & Co. AG: *See—*
Gasser, Rene , 4,499,621, Cl. 8-158.000.

Masco Corp.: *See—*
Rasor, William, 4,500,020, Cl. 224-321.000.

Masek, Jan: *See—*
Durmis, Julius; Balogh, Alojz; Karvas, Milan; Hrachovcova, Maria; Masek, Jan; Caucik, Pavol; and Povazancova, Marta, 4,500,446, Cl. 252-403.000.

Mason & Hanger-Silas Mason Co., Inc.: *See—*
Martin, Alan B.; and Jackson, Ernest V., 4,499,946, Cl. 166-57.000.

Massachusetts Institute of Technology: *See—*
Schreiber, William F., 4,500,919, Cl. 358-78.000.

Massey-Ferguson Services N.V.: *See—*
Lasoen, Jean J., 4,499,775, Cl. 73-862.570.

Masuda, Akira: *See—*
Miyaki, Masahiko; Masuda, Akira; and Matsumura, Toshimi, 4,499,883, Cl. 123-503.000.

Masuda, Ikuro: *See—*
Sugimoto, Norihiko; Hamada, Nobuhiro; Masuda, Ikuro; and Sakurai, Jinichi, 4,500,951, Cl. 364-186.000.

Masuda, Tsuneaki: *See—*
Shimizu, Senzo; Nomura, Isao; Yamamiya, Kazuo; and Masuda, Tsuneaki, 4,500,668, Cl. 524-427.000.

Masugi, Takashi: *See—*
Takaya, Takao; Masugi, Takashi; Ogino, Takashi; and Tsuji, Kiyoshi, 4,500,709, Cl. 544-58.100.

Masuno, Katsuyoshi: *See—*
Hino, Toshiyuki; and Masuno, Katsuyoshi, 4,499,888, Cl. 123-615.000.

Masuzawa, Sigeaki: *See—*
Hashimoto, Shintaro; Masuzawa, Sigeaki; Shibata, Shinya; Tsuda, Hiroshi; and Nakano, Masahiro, 4,500,211, Cl. 368-63.000.

Maszalec, Judith A. Elastomeric compressible mixture. 4,500,353, Cl. 75-252.000.

Mathis, Ronald D.; Reed, Jerry O.; and Hagler, Gerald E., to Phillips Petroleum Company. Method of producing extrusion grade poly(arylene sulfide). 4,500,706, Cl. 528-502.000.

Matilainen, Jorma: *See—*
Uomala, Vilho; Sandstrom, Kjell; and Matilainen, Jorma, 4,500,092, Cl. 277-12.000.

Matrix Science Corporation: *See—*
Mattingly, William R., Jr.; Johnson, Lyle; and Maher, Tommy B., 4,500,153, Cl. 339-89.00M.

Matsuda, Akira: *See—*
Komoda, Akira; Hirooka, Yasuhiro; Yoshihara, Takahisa; and Matsuda, Akira, 4,500,400, Cl. 204-206.000.

Matsuda, Hiroaki: *See—*
Nakao, Shinroku; Ishii, Yoshiyasu; and Matsuda, Hiroaki, 4,500,133, Cl. 297-131.000.

Matsuda, Masanori; Koyama, Haruo; and Miyakawa, Nobuhiro, to Mita Industrial Co., Ltd. Heat-sensitive black recording element. 4,500,897, Cl. 346-209.000.

Matsui, Kiyohide: *See—*
Kondo, Kiyoshi; and Matsui, Kiyohide, 4,500,733, Cl. 562-506.000.

Matsukura, Masayuki; and Fukumura, Yukio, to Nippon Electric Co., Ltd. Frequency modulation transmitter. 4,501,019, Cl. 455-112.000.

Matsumoto, Hiroshi: *See—*
Kita, Nobuyuki; Matsumoto, Hiroshi; and Hagiwara, Hitoshi, 4,500,625, Cl. 430-149.000.

Matsumoto, Ken, to Eli Lilly and Company. 2,4,5-Triaryl pyrimidines and a method of treating pain, fever, thrombosis, inflammation and arthritis. 4,500,533, Cl. 514-256.000.

Matsumoto, Mitsuo: *See—*
Kitamura, Takanori; Matsumoto, Mitsuo; and Tamura, Masuhiko, 4,500,727, Cl. 560-179.000.

Matsumoto, Ryoichiro: *See—*
Akano, Shinichi; Goto, Tsutomu; Watanabe, Hiroshi; Kuroda, Masato; Ishikawa, Sakae; and Matsumoto, Ryoichiro, 4,499,754, Cl. 73-861.120.

Matsumura, Toshimi: *See—*
Miyaki, Masahiko; Masuda, Akira; and Matsumura, Toshimi, 4,499,883, Cl. 123-503.000.

Matsuoka, Fumio; Iijima, Hitoshi; Yamazaki, Kisuke; Kasagi, Hiroshi; Nakashima, Yasuo; Sakuma, Kiyoshi; and Umehara, Mitsuo, to Mitsubishi Denki Kabushiki Kaisha. Control device for refrigeration cycle. 4,499,739, Cl. 62-212.000.

Matsuoka, Naoki: *See—*
Hori, Yutaka; Sunakawa, Makoto; Takayama, Kikuo; Matsuoka, Naoki; and Moroishi, Yutaka, 4,500,683, Cl. 524-533.000.

Matsushita Electric Industrial Co., Ltd.: *See—*
Gotou, Makoto; and Okamoto, Hiroshi, 4,500,830, Cl. 323-267.000.
Hotta, Shu; Hosaka, Tomiharu; and Shimotsuma, Wataru, 4,500,459, Cl. 260-396.00N.
Ohta, Yoshio, 4,500,924, Cl. 358-213.000.
Tsuchiya, Tatsuo; and Hozumi, Kazuhiro, 4,500,075, Cl. 267-8.00R.

Matsushita, Yoshiaki: *See—*
Ohmura, Yamichi; and Matsushita, Yoshiaki, 4,500,388, Cl. 156-603.000.

Matsuura, Ikutoshi: *See—*
Hosokawa, Tomoyoshi; Matsuura, Ikutoshi; Takahashi, Hidenori; Ando, Kunio; and Tamura, Gakuzo, 4,500,544, Cl. 514-543.000.

Matt, Timothy S., to Nordson Corporation. Control circuit for a solenoid driver for a dispenser. 4,500,937, Cl. 361-153.000.

Mattel, Inc.: *See—*
Kelley, William J.; and Prince, Terry K., 4,500,299, Cl. 446-230.000.

Matteo, Peter J.: *See—*
Babecki, Glenn R.; Escolar, Carlos; Garnant, Craig M.; Kan, Hsin-Kuo; Kaplan, Frank; Liu, Hueichi R.; MacLachlan, George F.; Matteo, Peter J.; McDonald, John F.; Palframan, John D.; Tran, Roger T.; Welt, Martin J.; Wendt, Timothy A.; Yates, Gregory S.; and Zislis, Paul M., 4,500,960, Cl. 364-200.000.

Matteucci, Mark D.: *See—*
Caruthers, Marvin H.; and Matteucci, Mark D., 4,500,707, Cl. 536-27.000.

Matth. Hohner AG: *See—*
Deforeit, Christian J., 4,500,317, Cl. 84-1.240.

Matthews, Anthony J.: *See—*
Plank, Vernon G.; Matthews, Anthony J.; Berthel, Robert O.; and LaGross, Dennis L., 4,499,761, Cl. 73-170.00R.

Mattingly, William R., Jr.; Johnson, Lyle; and Maher, Tommy B., to Matrix Science Corporation. Self-locking electrical connector. 4,500,153, Cl. 339-89.00M.

Matyas, Stephen M.: *See—*
Elander, Robert C.; Lennon, Richard E.; Matyas, Stephen M.; Meyer, Carl H. W.; Shuck, Robert E.; and Tuchman, Walter L., 4,500,750, Cl. 178-22.080.

Maul Technology Corporation: *See—*
Parkell, Edward; and Newkirk, Mark C., 4,500,334, Cl. 65-334.000.

Maurer, Herman J.; Pedersen, Carl O.; and Nudd, Barry C., to J. I. Case Company. Backhoe swing mechanism. 4,500,250, Cl. 414-695.500.

Mauries, Reinhard: *See—*
Chardon, Manfred; Mauries, Reinhard; Rohner, Joachim; and Zumfeld, Heinz, 4,499,715, Cl. 57-22.000.

Mauser-Werke Oberndorf GmbH: *See—*
Repa, Otto, 4,499,684, Cl. 42-69.00A.

Maxner, Richard B., to USM Corporation. All lead sensor. 4,499,649, Cl. 29-566.300.

Mayer, Andreas; and Niederer, Adolf, to BBC Brown, Boveri & Company, Limited. Pressure wave supercharger with rolling bearings for the rotor. 4,500,260, Cl. 417-64.000.

Mayer, Jean P.; and Wittwer, Fritz, to Warner-Lambert Company. Foam capsules. 4,500,358, Cl. 106-122.000.

Mazeaud, Georges: *See—*
Kervistin, Robert; Lardellier, Alain M. J.; Mazeaud, Georges; and Crozet, Francois E. G., 4,500,143, Cl. 384-467.000.

McCallister, Ronald D.; and Crawford, James J., to Motorola, Inc. Multi-rate branch metric processor for maximum-likelihood convolutional decoder. 4,500,994, Cl. 371-43.000.

McCandless, Harry E., to RCA Corporation. Multibeam electron gun with composite electrode having plurality of separate metal plates. 4,500,808, Cl. 313-409.000.

McClure, John. Device for carrying fishing rods. 4,500,128, Cl. 294-146.000.

McCollum, Gregory J.: *See—*
Singer, Debra L.; McCollum, Gregory J.; Dowbenko, Rostyslaw; and O'Dwyer, James B., 4,500,680, Cl. 525-143.000.

McConnell, Matthew L.: *See—*
Roberts, Michael K.; Ottosen, Richard A.; and McConnell, Matthew L., 4,499,771, Cl. 73-632.000.

McDonald, Daniel P.; and Wade, James C., to Mississippi Chemical Corporation. Process for removing impurities from wet process of phosphoric acid. 4,500,502, Cl. 423-321.00R.

McDonald, John F.: *See—*
Babecki, Glenn R.; Escolar, Carlos; Garnant, Craig M.; Kan, Hsin-Kuo; Kaplan, Frank; Liu, Hueichi R.; MacLachlan, George F.; Matteo, Peter J.; McDonald, John F.; Palframan, John D.; Tran, Roger T.; Welt, Martin J.; Wendt, Timothy A.; Yates, Gregory S.; and Zislis, Paul M., 4,500,960, Cl. 364-200.000.

McDonald, Robert C.; and Macartney, Derek L., to Joy Manufacturing Company. Granular material pneumatic transport apparatus. 4,500,228, Cl. 406-61.000.

McEntyre, Stephen C.: *See—*
Clark, James M.; Secrist, Duane R.; Hardin, Scotty L.; and McEntyre, Stephen C., 4,500,401, Cl. 204-225.000.

McFarland, Keith E.: *See—*
Whitaker, Angus H.; McFarland, Keith E.; Lloyd, William A.; and Patrick, Willard J., 4,500,045, Cl. 242-57.100.

McFarlane, Richard H. Connecting assembly. 4,500,312, Cl. 604-263.000.

McGraw-Edison Company: *See—*
Tuttle, Alan H.; Leonard, James K.; and Dlugosz, Henry J., 4,500,096, Cl. 277-53.000.

McInerny, George P., to Technitrol, Inc. Stripper mechanism for document separating apparatus. 4,500,084, Cl. 271-35.000.

McKean, Peter S.: *See—*
Szczupak, David T.; Walsham, Brian E.; Hooley, Desmond J.; Flaxington, David; McKean, Peter S.; and Wescott, John D., 4,499,732, Cl. 60-602.000.

McKinley, Mark J.; and Sheridan, Dan P., to Dow Chemical Company, The. Composite mixtures for improving gel strength of water absorbent gels. 4,500,670, Cl. 524-445.000.

McKinney, Osborne K.; and Flores, David P., to Dow Chemical Company, The. Stabilized carboxyl-containing ethylene interpolymers. 4,500,664, Cl. 524-119.000.

McKnight, Hugh P.; Welty, Kenneth B.; and Dinius, Harold B., to Eli Lilly and Company. Syringe inspection apparatus. 4,500,247, Cl. 414-416.000.

McLean, Kenneth W., to Sperry Corporation. Deflector panel for disc mower-conditioner. 4,499,711, Cl. 56-13.600.

McMillan, John E., to General Electric Company. Electric lamp with external fuse lead. 4,500,811, Cl. 315-58.000.

McNeil, Roderick J. Apparatus and method for material disposal. 4,499,832, Cl. 110-238.000.

McWhorter, Fred A.; and Bates, William L. Eccentric adjustment for vehicle axle suspensions. 4,500,110, Cl. 280-680.000.

Mead Corporation, The: *See—*
Fishback, Alton J., 4,499,990, Cl. 198-411.000.

Medeiros, Charles W.; and Wagner, James B., to General Electric Company. Control valve test in cam controlled valve system. 4,499,756, Cl. 73-118.000.

Medtronic, Inc.: *See—*
Kallok, Michael J.; and Bornzin, Gene A., 4,499,907, Cl. 128-786.000.

Meehan, James E., to Slater Electric Inc. Self-contained electrical wiring device. 4,500,746, Cl. 174-48.000.

Meeker, Rick A.: *See—*
Bloome, James A.; Meeker, Rick A.; Whicker, Jerry T.; and Foreman, Frederick J., 4,499,624, Cl. 15-97.00R.

Mees, Bernhard: *See—*
Diery, Helmut; and Mees, Bernhard, 4,500,735, Cl. 564-286.000.

Meier, Gunter; Meier, Willi; and Hartwig, Jurgen, to Dorina Nahmaschinen GmbH. Sewing machine having an electronic control. 4,499,836, Cl. 112-158.00E.

Meier, Willi: *See—*
Meier, Gunter; Meier, Willi; and Hartwig, Jurgen, 4,499,836, Cl. 112-158.00E.

Meinan Machinery Works, Inc.: *See—*
Hasegawa, Katsuji; and Ibuki, Yasuhiro, 4,499,935, Cl. 144-209.00R.

Membrino, Hercules. Pad of plastic bags with support means. 4,500,000, Cl. 206-554.000.

Menasha Corporation: *See—*
Swingley, Harold E., Jr., 4,499,997, Cl. 206-509.000.

Mendelson, Mel I.: *See—*
Veltri, Richard D.; Galasso, Francis S.; and Mendelson, Mel I., 4,500,483, Cl. 264-81.000.

Menjo, Hiroshi; and Watanabe, Yoshikazu, to Konishiroku Photo Industry Co., Ltd. Silver halide photographic material. 4,500,633, Cl. 430-505.000.

Merck & Co., Inc.: *See—*
Woltersdorf, Otto W., 4,500,538, Cl. 514-367.000.
Wyvratt, Jean M., 4,500,736, Cl. 564-417.000.

Merck Patent Gesellschaft Mit Beschrankter Haftung: *See—*
Hausberg, Hans-Heinrich; Uhl, Jurgen; Seyfried, Christoph; and Minck, Klaus-Otto, 4,500,541, Cl. 514-466.000.

Merlin, Philip. Spool adaptor. 4,500,047, Cl. 242-71.900.

Mermelstein, Seymour: *See—*
Crampton, Arthur W.; Gray, Hollis L., Jr.; and Mermelstein, Seymour, 4,499,773, Cl. 73-718.000.

Merritt, Thomas D.; and Pasichinskyj, Mario J. Linear reciprocating electrical generator. 4,500,827, Cl. 322-3.000.

Metal Box p.l.c.: *See—*
Perigo, John A.; and Divall, John E., 4,499,932, Cl. 141-91.000.

Metallgesellschaft Aktiengesellschaft: *See—*
Simo, Thomas; Eisenlohr, Karl-Heniz; and Puxbaumer, Hans-Hermann, 4,500,415, Cl. 208-56.000.

Meulenbrug, Gerard C., to Nederlandse Industriele Maatschappij NEFIT N.V. Heater and a method of controlling the combustion in such a heater. 4,499,890, Cl. 126-116.00R.

Meussdoerffer, Johann-Nikolaus; Niederprum, Hans; Nieder-Vahrenholz, Hans-Georg; and Bockelmann, Wolfgang, to Bayer Aktiengesellschaft. Disintegration of chromites. 4,500,350, Cl. 75-1.00R.

Meyer, Carl H. W.: *See—*
Elander, Robert C.; Lennon, Richard E.; Matyas, Stephen M.; Meyer, Carl H. W.; Shuck, Robert E.; and Tuchman, Walter L., 4,500,750, Cl. 178-22.080.

Meyer, Donald G., to John Fluke Mfg. Co., Inc. Voltage-controlled RF oscillator employing wideband tunable LC resonator. 4,500,854, Cl. 331-117.00R.

Meyer, Louis W., to Dow Chemical Company, The. Compositions containing mold release agents. 4,500,442, Cl. 252-182.000.

Mezak, John A., to Eaton Corporation. Method for enhancing ferromagnetic coupling. 4,500,858, Cl. 333-202.000.

Miale, Joseph N.; and Chang, Clarence D., to Mobil Oil Corporation. Catalysis over activated inorganic oxides. 4,500,418, Cl. 208-114.000.

Miale, Joseph N.; and Chang, Clarence D., to Mobil Oil Corporation. Catalysis over activated zeolites. 4,500,419, Cl. 208-115.000.

Miale, Joseph N.; and Chang, Clarence D., to Mobil Oil Corporation. Catalysis over activated zeolites. 4,500,420, Cl. 208-116.000.

Miale, Joseph N.; and Chang, Clarence D., to Mobil Oil Corporation. Catalysis over activated zeolites. 4,500,422, Cl. 208-117.000.

Miale, Joseph N.: *See—*
Chang, Clarence D.; and Miale, Joseph N., 4,500,421, Cl. 208-116.000.

Micheron, Francois: *See—*
Broussoux, Dominique; Facoetti, Hugues; Ravinet, Pierre; Bernard, Daniel; and Micheron, Francois, 4,500,377, Cl. 156-164.000.

Mickiewicz, Stanley, to Codman & Shurtleff, Inc. Electrical transformer. 4,500,832, Cl. 323-340.000.

Microperipheral Corporation: *See—*
Darland, Michael L.; Stoner, Donald L.; Baker, James W., Jr.; and Sponhholtz, Michael A., 4,500,751, Cl. 179-2.0DP.

Midgley, Charles A.: *See—*
Peltier, Gerard; Longuet, Michel; and Midgley, Charles A., 4,500,591, Cl. 428-251.000.

Midland-Ross Corporation: *See—*
Jumpeter, Alex, 4,499,668, Cl. 34-41.000.

Miggins, Michael R., to Interpace Corporation. Hybrid electrical insulator bushing. 4,500,745, Cl. 174-31.00R.

Mihayashi, Keiji: *See—*
Ono, Mitsunori; Itoh, Isamu; Mihayashi, Keiji; and Karino, Yukio, 4,500,636, Cl. 430-566.000.

Mikami, Eiji: *See—*
Satake, Jiro; Arai, Tetsuzo; Tanaka, Kivokazu; Mikami, Eiji; Moriyasu, Tsuneo; and Nakagawa, Tadasu, 4,500,577, Cl. 428-36.000.

Miki, Masayuki; Suzuki, Seikou; and Sasayama, Takao, to Hitachi, Ltd. Air-fuel ratio controlling apparatus for internal combustion engine. 4,499,880, Cl. 123-489.000.

Mikola, James A., to Ford Motor Company. Replaceable lamp assembly for a sealable reflector housing. 4,500,946, Cl. 362-226.000.

Miles Laboratories, Inc.: *See*—
Brown, Karen K.; and Stewart, Richard C., 4,500,513, Cl. 424-89.000.

Miles, Ronald C.; Geren, George W.; and Peel, R. W., to Olin Corporation. Reference electrode. 4,500,402, Cl. 204-242.000.

Miller, Albert J., to Atlas Electronics International, Inc. Vehicle elapsed mileage indicator. 4,501,005, Cl. 377-20.000.

Miller, Edward A., to RCA Corporation. Distributor tube for CVD reactor. 4,499,853, Cl. 118-725.000.

Miller Hofft, Inc.: *See*—
Haeck, Paul J., 4,499,669, Cl. 34-102.000.

Miller, Hubert A., to AT&T Bell Laboratories. Dial pulse measurement circuitry. 4,501,003, Cl. 375-94.000.

Miller, Jon L. Fluid pressure releasing tool. 4,499,796, Cl. 81-5.10R.

Miller, Richard A., to Westinghouse Electric Corp. Apparatus and process for laser treating sheet material. 4,500,771, Cl. 219-121.0LH.

Miller, Timothy J. E., to General Electric Company. Method of commutation and converter circuit for switched reluctance motors. 4,500,824, Cl. 318-701.000.

Miller, Wiley W.: *See*—
Harris, Stephen K.; and Miller, Wiley W., 4,499,630, Cl. 16-121.000.

Milliken Research Corporation: *See*—
Greenway, John M., 4,499,637, Cl. 26-2.00R.

Millward, Cyril: *See*—
Else, George E.; Millward, Cyril; Dixon, Ronald H. T.; and Jorgensen, Knut, 4,500,352, Cl. 75-130.00B.

Milne, William G.; and Saruwatari, Minoru, to Tundra Holdings Ltd. Emergency escape system. 4,499,966, Cl. 182-3.000.

Minagawa, Motoi, to Takasago Perfumery Co., Ltd. Foam washing method. 4,499,620, Cl. 8-158.000.

Minagawa, Motonobu; Kubota, Naohiro; Shibata, Toshihiro; and Arata, Ryozo, to Adeka Argus Chemical Co., Ltd. Light stabilizing N,N,N-tris(2,2,6,6-tetramethyl-4-piperidone ketal)-1,3,5-triazine derivatives and light stabilized synthetic resin compositions. 4,500,663, Cl. 524-101.000.

Minamisawa, Tsuyoshi; Kogo, Yasuo; and Nagata, Yasuhisa, to Toho Belson Co., Ltd. Epoxy resin composition. 4,500,660, Cl. 523-428.000.

Minck, Klaus-Otto: *See*—
Hausberg, Hans-Heinrich; Uhl, Jurgen; Seyfried, Christoph; and Minck, Klaus-Otto, 4,500,541, Cl. 514-466.000.

Ministry of International Trade & Industry: *See*—
Enomoto, Yuji, 4,500,564, Cl. 427-39.000.
Ogura, Mutsuo, 4,500,204, Cl. 356-318.000.

Minnesota Mining and Manufacturing Company: *See*—
Brochman, Wilfred R., 4,500,011, Cl. 220-359.000.
Heinecke, Steven B., 4,499,896, Cl. 128-156.000.
Rametta, Anthony J., 4,500,608, Cl. 428-522.000.
Siedle, Allen R., 4,500,569, Cl. 427-304.000.
Skwor, Edward P., 4,500,025, Cl. 227-19.000.
Whitcomb, David R., 4,500,601, Cl. 428-403.000.

Minolta Camera Kabushiki Kaisha: *See*—
Hanamoto, Hiroyuki; and Horie, Yoshihiro, 4,500,957, Cl. 364-200.000.
Yamanaka, Akira, 4,500,191, Cl. 354-418.000.

Mion, Sergio, to A. Mion S.p.A. Nastrificio. Method and apparatus for cutting woven labels. 4,500,372, Cl. 156-73.300.

Misaka, Yoshiharu; Teraue, Takeshi; and Hatae, Masamiti, to Mitsubishi Chemical Industries, Limited. Process for producing cation exchange resins without swelling during sulphonation process. 4,500,652, Cl. 521-33.000.

Misch, Carl E. Method and apparatus for preparing mucosal tissue for the reception of denture anchoring intramucosal inserts. 4,500,292, Cl. 433-173.000.

Mishuku, Toshio: *See*—
Hayashi, Yutaka; Yamanaka, Mithuyuki; Iida, Hideyo; Shibe, Nobuyasu; Karasawa, Hideyuki; Mishuku, Toshio; and Itou, Atsuo, 4,500,743, Cl. 136-258.000.

Miskiewicz, Leonard A. Removable cap members for pliers. 4,499,798, Cl. 81-423.000.

Misono, Shinji: *See*—
Suzuki, Hiroaki; and Misono, Shinji, 4,500,672, Cl. 524-496.000.

Mississippi Chemical Corporation: *See*—
McDonald, Daniel P.; and Wade, James C., 4,500,502, Cl. 423-321.00R.

Mita Industrial Co., Ltd.: *See*—
Matsuda, Masanori; Koyama, Haruo; and Miyakawa, Nobuhiro, 4,500,897, Cl. 346-209.000.

Mitomi, Takeshi; Yoshimura, Eiji; and Komagata, Hideki, to Boseki Kabushiki Kaisha. Material for protecting human bodies from harmful or poisonous chemical substance. 4,500,581, Cl. 428-85.000.

Mitsubishi Chemical Industries, Limited: *See*—
Misaka, Yoshiharu; Teraue, Takeshi; and Hatae, Masamiti, 4,500,652, Cl. 521-33.000.
Niwa, Toshio; Hihara, Toshio; and Shimizu, Yukiharu, 4,500,455, Cl. 534-635.000.
Niwa, Toshio; and Hihara, Toshio, 4,500,710, Cl. 544-113.000.

Mitsubishi Denki Kabushiki Kaisha: *See*—
Fujii, Masao; and Nishiyama, Enju, 4,500,612, Cl. 429-26.000.
Hamano, Isao; Morishita, Akira; Akae, Yoshifumi; and Tanaka, Toshinori, 4,500,794, Cl. 290-38.00C.
Hino, Toshiyuki; and Masuno, Katsuyoshi, 4,499,888, Cl. 123-615.000.
Iwata, Toshio, 4,499,877, Cl. 123-425.000.
Katagi, Takashi; and Mano, Seiji, 4,500,882, Cl. 343-372.000.
Kiryu, Yuichi; and Sawada, Tadashi, 4,500,251, Cl. 414-719.000.
Kiyohara, Toyohiko, 4,500,164, Cl. 350-96.100.
Matsuoka, Fumio; Iijima, Hitoshi; Yamazaki, Kisuke; Kasagi, Hiroshi; Nakashima, Yasuo; Sakuma, Kiyoshi; and Umehara, Mitsuo, 4,499,739, Cl. 62-212.000.
Ooga, Hirotomo; and Sakurai, Hiromi, 4,499,657, Cl. 29-578.000.
Tsuji, Shintaro, 4,499,975, Cl. 187-29.00R.
Tsuruta, Keiji; and Tsutsumi, Nagayuki, 4,500,935, Cl. 361-333.000.
Yoshizumi, Toshiaki, 4,500,762, Cl. 200-144.0AP.

Mitsubishi Gas Chemical Company, Inc.: *See*—
Shimizu, Senzo; Nomura, Isao; Yamamiya, Kazuo; and Masuda, Tsuneaki, 4,500,668, Cl. 524-427.000.
Tanaka, Toru; Hataya, Masanori; Tanaka, Kazuo; Sakai, Yukio; and Hamada, Yasufumi, 4,500,730, Cl. 562-416.000.

Mitsubishi Petrochemical Co., Ltd.: *See*—
Yazaki, Takao; Hattori, Kazuhide; Hattori, Satoru; Hayama, Kazuhide; and Itoh, Isao, 4,500,597, Cl. 428-317.700.

Mitsubishi Yuka Fine Chemicals Co., Ltd.: *See*—
Yazaki, Takao; Hattori, Kazuhide; Hattori, Satoru; Hayama, Kazuhide; and Itoh, Isao, 4,500,597, Cl. 428-317.700.

Mitsui Engineering and Shipbuilding Company Limited: *See*—
Nakaoji, Kazuhiko; Kamao, Mitsugu; Itoh, Hayami; Tatsumi, Shuhei; and Takao, Shoichi, 4,500,041, Cl. 241-16.000.

Mitsui Mining Company Ltd.: *See*—
Hamada, Takeshi; and Komatsubara, Yoshinobu, 4,500,501, Cl. 423-239.000.

Mitsui Toatsu Chemicals, Incorporated: *See*—
Oba, Masayuki; Kawamata, Motoo; Tsuboi, Hikotada; and Koga, Nobuhito, 4,500,719, Cl. 548-522.000.

Mitutoyo Mfg. Co., Ltd.: *See*—
Sakamoto, Hitoshi; Sakagami, Seiji; and Nagashima, Shigeru, 4,500,097, Cl. 277-59.000.

Miyakawa, Nobuhiro: *See*—
Matsuda, Masanori; Koyama, Haruo; and Miyakawa, Nobuhiro, 4,500,897, Cl. 346-209.000.

Miyaki, Masahiko; Masuda, Akira; and Matsumura, Toshimi, to Nippondenso Co., Ltd. Distributor type fuel-injection pump for distributing fuel to cylinders of an internal combustion engine. 4,499,883, Cl. 123-503.000.

Miyanaga, Akiyoshi; and Kurihara, Yukitada, to Toyo Soda Manufacturing Co. Ltd. Separation of analysis of anions. 4,500,431, Cl. 210-656.000.

Miyano, Toshiyuki; and Ohmura, Hideo, to Tokyo Shibuara Denki Kabushiki Kaisha. Bundling apparatus. 4,499,709, Cl. 53-589.000.

Miyasaka, Kojiro: *See*—
Nagamine, Akio; Hayashi, Akira; Yoshida, Kazumasa; and Miyasaka, Kojiro, 4,500,614, Cl. 429-206.000.

Miyatake, Shigehiro: *See*—
Watanabe, Takashi; and Miyatake, Shigehiro, 4,500,914, Cl. 358-44.000.

Mizuno, Chiaki: *See*—
Ogawa, Hiroshi; Mizuno, Chiaki; Masaki, Kouichi; Suzuki, Masaaki; and Tamai, Yasuo, 4,500,599, Cl. 428-336.000.

Mizusawa, Mitutoyo; and Fujisawa, Masao, to Nissin Kogyo Kabushiki Kaisha. Brake oil pressure controlling valve device for vehicles. 4,500,138, Cl. 303-6.00C.

Mobay Chemical Corporation: *See*—
Schmidt, Manfred; Witman, Mark W.; Reinert, Gerard E.; and Lim, In C., 4,500,653, Cl. 521-90.000.

Mobil Oil Corporation: *See*—
Audeh, Costandi A., 4,499,949, Cl. 166-260.000.
Audeh, Costandi A., 4,500,414, Cl. 208-11.00R.
Chang, Clarence D.; and Miale, Joseph N., 4,500,421, Cl. 208-116.000.
Chen, Nai Y.; Haag, Werner O.; Huang, Tracy J.; and Wong, Stephen S., 4,500,417, Cl. 208-111.000.
Miale, Joseph N.; and Chang, Clarence D., 4,500,418, Cl. 208-114.000.
Miale, Joseph N.; and Chang, Clarence D., 4,500,419, Cl. 208-115.000.
Miale, Joseph N.; and Chang, Clarence D., 4,500,420, Cl. 208-116.000.
Miale, Joseph N.; and Chang, Clarence D., 4,500,422, Cl. 208-117.000.
Rankel, Lillian A.; and Valyocsik, Ernest W., 4,500,503, Cl. 423-329.000.

Mochizuki, Taketoshi: *See*—
Kuroda, Shigeaki; Senshu, Takao; Oguni, Kensaku; Mochizuki, Taketoshi; Yasuda, Hiromu; Ishibane, Kyuhei; Atsumi, Akira; Kimura, Hideyuki; and Hatada, Toshio, 4,500,035, Cl. 236-92.00B.

Modic, Frank J., to General Electric Company. Transparent membrane structures. 4,500,584, Cl. 428-145.000.

Mohn, Frank, to Framo Developments (UK) Limited. Electrically driven submersible pump system. 4,500,263, Cl. 417-360.000.

Molat, Joseph H. Changeable circuit controlling switch assembly. 4,500,877, Cl. 340-711.000.

Molin, Alexis, to Atlas Copco Aktiebolag. Apparatus for drilling rock. 4,499,953, Cl. 173-43.000.

Molins, Ltd.: *See*—
Dyett, Derek H.; Wood, Godfrey A.; and Seim, Albert D., II, 4,499,910, Cl. 131-95.000.

Molitor, Edwin A.: *See*—
Madewell, James A.; Molitor, Edwin A.; Crowe, Norman P.; Lampe, Guy W.; and Pavey, Charles F., 4,500,245, Cl. 414-108.000.

Mollgaard, Klaus: *See*—
Kuhn, Franz; Lippek, Wilfried; Mollgaard, Klaus; and Redecker, Friedrich, 4,500,972, Cl. 364-526.000.

Momose, Tsugio: *See*—
Kubo, Kanji; Momose, Tsugio; and Izumi, Chikahiko, 4,500,959, Cl. 364-200.000.

Mondek, Martin J.: *See*—
Hall, Charles B.; and Mondek, Martin J., 4,500,298, Cl. 440-62.000.

Monhardt, Richard J.; Orr, Alfred B.; and Wright, Joseph B., to United Technologies Corporation. Beam for a containment structure. 4,500,252, Cl. 415-9.000.

Monsanto Company: *See*—
DuFour, Daniel L., 4,500,679, Cl. 525-64.000.
King, Christopher J. H., 4,500,403, Cl. 204-255.000.

Montedison S.p.A.: *See*—
Caporiccio, Gerardo; Viola, Gian T.; and Corti, Costante, 4,500,739, Cl. 568-677.000.
Credali, Lino; Martini, Emilio; and Lori, Domenico, 4,500,594, Cl. 428-284.000.

Montesanto, Ernest C., to Ford Aerospace & Communications Corporation. Gravity and temperature compensating reflector support actuator. 4,500,170, Cl. 350-611.000.

Moore, George W.; and Carroll, Robert G., to United States of America, Air Force. Segmented zoned fuel injection system for use with a combustor. 4,499,735, Cl. 60-739.000.

Moran, Thomas M.; and DiBello, Benedict J., to Eaton Corporation. Bolt fastener. 4,500,240, Cl. 411-103.000.

Moreau, Claude. Mechanical device for concealing or displaying printed matter. 4,499,678, Cl. 40-1.600.

Morehouse, Laurence E. Physiological chair. 4,500,137, Cl. 297-458.000.

Morey, William A., to Rockwell International Corporation. Universal instrument flag receiver. 4,500,841, Cl. 328-146.000.

Morgan, David L., to Klipfontein Organic Products Corporation Limited. Production of calcium hypochlorite. 4,500,506, Cl. 423-474.000.

Morghen, Manfred, to General Dynamics Corporation/Convair Div. Removable and replaceable locating pin for locating a workpiece on a sub-plate for machining. 4,500,079, Cl. 269-47.000.

Mori, Chuzo, to Carl Manufacturing Co., Ltd. Punch for office use. 4,499,805, Cl. 83-468.000.

Mori, Haruhisa, to Fujitsu Limited. Laser treating implanted semiconductor surface through photo-resist layer. 4,500,365, Cl 148-1.500.

Mori, Kei. Optical energy collecting and transmitting apparatus using tubular light transmitting element. 4,500,167, Cl. 350-96.320.

Mori, Toshio, to Sony Corporation. Method for the preparation of a pyroelectric material. 4,500,397, Cl. 204-181.00T.

Morimoto, Kiyoshi; and Takagi, Toshinori, to Futaba Denshi Kogyo K.K. Energy conversion element. 4,500,741, Cl. 136-206.000.

Morimoto, Kiyoshi; and Takagi, Toshinori, to Futaba Denshi Kogyo K.K. Iron silicide thermoelectric conversion element. 4,500,742, Cl. 136-206.000.

Morimoto, Yoshiro: *See*—
Suzuki, Tadashi; Morimoto, Yoshiro; Hamada, Hideo; Suga, Masaaki; and Futagi, Masaaki, 4,499,979, Cl. 192-3.310.

Morishima, Norihisa: *See*—
Aya, Masahiro; Saito, Junichi; Yasui, Kazuomi; Shiokawa, Kozo; Morishima, Norihisa; and Goto, Toshio, 4,500,342, Cl. 71-93.000.

Morishita, Akira: *See*—
Hamano, Isao; Morishita, Akira; Akae, Yoshifumi; and Tanaka, Toshinori, 4,500,794, Cl. 290-38.00C.

Morita, Keiichi: *See*—
Onuki, Jin; Soeno, Ko; Morita, Keiichi; and Onodera, Hisakithi, 4,500,904, Cl. 357-67.000.

Moriyasu, Tsuneo: *See*—
Satake, Jiro; Arai, Tetsuzo; Tanaka, Kivokazu; Mikami, Eiji; Moriyasu, Tsuneo; and Nakagawa, Tadasu, 4,500,577, Cl. 428-36.000.

Morizumi, Masaaki; Kando, Toru; and Haraguchi, Keisuke, to Asahi Kogaku Kogyo Kabushiki Kaisha. Electronic flash camera. 4,500,184, Cl. 354-149.110.

Morningstar, LeRoy J.: *See*—
Huffnagle, Clifton W.; and Morningstar, LeRoy J., 4,500,157, Cl. 339-97.00R.

Morofuji, Akihiko: *See*—
Taira, Kazuo; Morofuji, Akihiko; Ueno, Hiroshi; and Kobayashi, Seishichi, 4,500,575, Cl. 428-35.000.

Moroi, Shirou: *See*—
Kita, Yasushi; Moroi, Shirou; Sakanoue, Akira; and Nakano, Hisaji, 4,500,678, Cl. 252-58.000.

Moroishi, Yutaka: *See*—
Hori, Yutaka; Sunakawa, Makoto; Takayama, Kikuo; Matsuoka, Naoki; and Moroishi, Yutaka, 4,500,683, Cl. 524-533.000.

Morr, Gary F.; and Duncan, William A., to United States of America, Army. Chemical pump with integral diffuser. 4,500,997, Cl. 372-58.000.

Morris Rod-Weeder Co. Ltd.: *See*—
Machnee, Cecil B., 4,500,017, Cl. 222-288.000.
Machnee, Cecil B., 4,500,105, Cl. 280-468.000.

Morris, Wilford V.: *See*—
Radtke, Robert P.; and Morris, Wilford V., 4,499,958, Cl. 175-329.000.

Morzsic, Piotr A.: *See*—
Zsoka, Istvan; Madar, Laszlo ; Cubin, Anatoly A.; Gaivoronsky, Albert A.; Farukshin, Lev H.; Morzsic, Piotr A.; Lisov, Aleksandr I.; and Galusztainc, Vladilen A., 4,499,947, Cl. 166-179.000.

Moser, Peter, to BBC Brown, Boveri & Company, Limited. Controllable exhaust gas turbocharger. 4,499,731, Cl. 60-602.000.

Moser, Winfried: *See*—
Linder, Ernst; Moser, Winfried; and Rieger, Franz, 4,499,867, Cl. 123-145.00A.

Moss, Ronald W.: *See*—
Patten, James W.; Moss, Ronald W.; and Forcht, Brennan A., 4,500,602, Cl. 428-408.000.

Mostek Corporation: *See*—
Shrivastava, Rituparna, 4,499,652, Cl. 29-571.000.

Motoren-Und Turbinen-Union Munchen GmbH: *See*—
Huther, Werner, 4,500,482, Cl. 264-65.000.

Motorola, Inc.: *See*—
Akram, M. Faheem, 4,500,831, Cl. 323-315.000.
Engles, Bruce E., 4,500,961, Cl. 364-200.000.
Gomersall, Earl R.; and Cipolla, Arthur F., 4,500,880, Cl. 340-825.350.
Higgins, Mary L.; and Muri, David L., 4,501,017, Cl. 455-78.000.
McCallister, Ronald D.; and Crawford, James J., 4,500,994, Cl. 371-43.000.
Shanley, Charles W.; and Braun, William V., 4,501,018, Cl. 455-83.000.

Motoyama, Takeshi; Onishi, Toshiyuki; and Yokoyama, Kunio, to Tokyo Shibaura Denki Kabushiki Kaisha. Control device for a refrigerator. 4,499,738, Cl. 62-155.000.

Moutou, Paul: *See*—
Hareng, Michel; and Moutou, Paul, 4,500,878, Cl. 340-713.000.

Muenzebrock, Anton: *See*—
Hasselmann, Heinz; and Muenzebrock, Anton, 4,500,969, Cl. 364-508.000.

Mukamal, Harold: *See*—
Ashlock, L. T.; Mukamal, Harold; and White, William H., 4,500,669, Cl. 524-440.000.

Mukunoki, Yasuo: *See*—
Takahashi, Osamu; Yamamura, Nobuo; Mukunoki, Yasuo; Ogawa, Shungi; and Nakagawa, Yutaka, 4,500,362, Cl. 106-309.000.

Muller, Hans, to DrM, Dr. Muller AG. Method and apparatus for cleaning pressure filters. 4,500,435, Cl. 210-798.000.

Muller, Rolf: *See*—
Backe, Egbert; Muller, Rolf; Otto, Dieter; Leonardi, Cornelio; Kochendorfer, Heinrich; Fussner, Paul; Walker, Ewald; and Rommel, Rudi, 4,499,757, Cl. 73-119.00A.

Multifold-International, Inc.: *See*—
Madewell, James A.; Molitor, Edwin A.; Crowe, Norman P.; Lampe, Guy W.; and Pavey, Charles F., 4,500,245, Cl. 414-108.000.

Multimatic Maschinen GmbH & Co.: *See*—
Kotter, Gustav; and Mutschlknaus, Peter, 4,499,744, Cl. 68-210.000.

Mumford, Eustace H., to Owens-Illinois, Inc. Multiple gob shearing mechanism operating in a straight line. 4,499,806, Cl. 83-527.000.

Murai, Masataka: *See*—
Ishii, Kiyoshi; Murai, Masataka; and Yonekawa, Hitoshi, 4,500,426, Cl. 210-321.300.

Murakami, Toshio: *See*—
Hanma, Kentaro; Murakami, Toshio; and Todaka, Yoshihiro, 4,500,925, Cl. 358-227.000.

Murakami, Yasushi: *See*—
Honda, Masamitsu; Nagai, Hideaki; Takishima, Shoko; Kawamura, Akinori; Kawamura, Noriko; Dan, Takashi; Koizumi, Masuo; Murakami, Yasushi; Hinohara, Yoshikazu; Nakano, Hideki; and Takagaki, Yoshio, 4,500,714, Cl. 546-309.000.

Muraoka, Yasuhiko: *See*—
Umezawa, Hamao; Fujii, Akio; Muraoka, Yasuhiko; Nakatani, Tokuji; Fukuoka, Takeyo; and Takahashi, Katsutoshi, 4,500,452, Cl. 260-112.50R.

Muri, David L.: *See*—
Higgins, Mary L.; and Muri, David L., 4,501,017, Cl. 455-78.000.

Murphy, Charles J., to Sperry Corporation. Convergence control apparatus for color cathode ray tube display systems. 4,500,816, Cl. 315-368.000.

Murphy, Randall T.; and Heling, Dennis, to Lear Siegler, Inc. Vehicle seat including improved adjustable side bolsters. 4,500,136, Cl. 297-284.000.

Murphy, Richard D.; Perez, Ricardo L.; and Clelford, Douglas H., to United Technologies Corporation. Aircraft short-term roll attitude retention system. 4,500,967, Cl. 364-434.000.

Murto, Tapio H., to Northern Telecom Limited. Electric hybrid circuits. 4,500,755, Cl. 179-170.0NC.

Mussev, Irsali K.: *See*—
Eschenko, Vladislav Y.; Mussev, Irsali K.; Talibdzhanov, Zakhidzhan S.; Leonov, Viktor A.; Bobrov, Anatoly D.; Kirovsky, Efim I.; Gritsenko, Vladimir A.; and Golovanov, Alexandr V., 4,500,282, Cl. 431-184.000.

Musashi Co., Ltd.: *See*—
Koshio, Yoshihiro; Kato, Tadao; and Kawano, Hikaru, 4,500,002, Cl. 209-534.000.

Mutschlknaus, Peter: *See*—
Kotter, Gustav; and Mutschlknaus, Peter, 4,499,744, Cl. 68-210.000.

N P S P "Novotex": *See*—
Dimitrov, Milko D., 4,499,717, Cl. 57-297.000.

Nabisco Brands, Inc.: *See—*
Puglia, Wayne J.; Kehoe, Gary S.; and Clark, K. Warren, 4,500,547, Cl. 426-3.000.

Nabulsi, Hazem, to Panavision, Inc. Automatic on-air registration system and method for color TV camera. 4,500,916, Cl. 358-51.000.

Nagai, Hideaki: *See—*
Honda, Masamitsu; Nagai, Hideaki; Takishima, Shoko; Kawamura, Akinori; Kawamura, Noriko; Dan, Takashi; Koizumi, Masuo; Murakami, Yasushi; Hinohara, Yoshikazu; Nakano, Hideki; and Takagaki, Yoshio, 4,500,714, Cl. 546-309.000.

Nagai, Hiroshi, to Nippon Furnace Kogyo Co., Ltd.; and Chichibu Cement Co. Ltd. Primary air supply unit of rotary kiln. 4,500,286, Cl. 432-106.000.

Nagami, Akira, to Nippon Electric Co., Ltd. Memory circuit. 4,500,974, Cl. 365-222.000.

Nagamine, Akio; Hayashi, Akira; Yoshida, Kazumasa; and Miyasaka, Kojiro, to Toshiba Battery Co., Ltd. Alkaline cell. 4,500,614, Cl. 429-206.000.

Nagano, Takahiro: *See—*
Yatsuo, Tsutomu; Nagano, Takahiro; Oikawa, Saburo; and Horie, Akira, 4,500,903, Cl. 357-38.000.

Nagano, Tamio, to Kabushiki Kaisha Daikin Seisakusho. Damper disc with concentric springs including hourglass-shaped springs to reduce the effect of centrifugal forces. 4,499,981, Cl. 192-106.200.

Nagao, Kimitoshi: *See—*
Sakanoue, Kei; Yagihara, Morio; Ichijima, Seigi; and Nagao, Kimitoshi, 4,500,634, Cl. 430-544.000.

Nagao, Nobuya: *See—*
Taguchi, Shinichiro; Nagao, Nobuya; and Ogihara, Yutaka, 4,500,931, Cl. 358-310.000.

Nagashima, Shigeru: *See—*
Sakamoto, Hitoshi; Sakagami, Seiji; and Nagashima, Shigeru, 4,500,097, Cl. 277-59.000.

Nagata, Masayoshi: *See—*
Horie, Seiji; Nakano, Junji; Nagata, Masayoshi; and Sato, Hideo, 4,500,622, Cl. 430-78.000.

Nagata, Yasuhisa: *See—*
Minamisawa, Tsuyoshi; Kogo, Yasuo; and Nagata, Yasuhisa, 4,500,660, Cl. 523-428.000.

Nagata, Yukiaki: *See—*
Sugino, Kenji; and Nagata, Yukiaki, 4,500,262, Cl. 417-214.000.

Naito, Hideki; Hara, Hiroshi; Aono, Toshiaki; Sato, Kozo; and Fujita, Shinsaku, to Fuji Photo Film Co., Ltd. Heat-developable color photographic material. 4,500,626, Cl. 430-203.000.

Naito, Hideki; and Yabuki, Yoshiharu, to Fuji Photo Film Co., Ltd. Heat developement of silver halide element with redox dye releaser and fog reducer. 4,500,627, Cl. 430-203.000.

Naito, Hideki: *See—*
Aono, Toshiaki; Hara, Hiroshi; and Naito, Hideki, 4,500,624, Cl. 430-138.000.

Naito, Shotaro: *See—*
Noto, Yasuo; Naito, Shotaro; and Ohmae, Tsutomu, 4,500,820, Cl. 318-139.000.

Naito, Takayuki: *See—*
Imae, Kiyoto; Aburaki, Shimpei; Narita, Yukio; Okumura, Jun; and Naito, Takayuki, 4,500,526, Cl. 514-226.000.

Nakagawa, Junkichi: *See—*
Kajioka, Hiroshi; Tokunaga, Toshihide; and Nakagawa, Junkichi, 4,500,168, Cl. 350-96.340.

Nakagawa, Katsumi: *See—*
Nakane, Takeshi; and Nakagawa, Katsumi, 4,500,864, Cl. 338-4.000.

Nakagawa, Tadasu: *See—*
Satake, Jiro; Arai, Tetsuzo; Tanaka, Kivokazu; Mikami, Eiji; Moriyasu, Tsuneo; and Nakagawa, Tadasu, 4,500,577, Cl. 428-36.000.

Nakagawa, Taizo: *See—*
Yoshida, Hiroshi; Koike, Kengo; Shimano, Shizuo; Nakagawa, Taizo; and Ohmori, Kaoru, 4,500,536, Cl. 514-397.000.

Nakagawa, Yohichi: *See—*
Takehara, Hidetoshi; Shioji, Shorbu; and Nakagawa, Yohichi, 4,500,693, Cl. 526-240.000.

Nakagawa, Yutaka: *See—*
Takahashi, Osamu; Yamamura, Nobuo; Mukunoki, Yasuo; Ogawa, Shungi; and Nakagawa, Yutaka, 4,500,362, Cl. 106-309.000.

Nakajima Dokosho Company Limited: *See—*
Nakajima, Masahiko, 4,500,027, Cl. 228-54.000.

Nakajima, Kenji: *See—*
Sato, Akio; Nakajima, Kenji; Takahara, Yoshimasa; Kijima, Shizumasa; Inai, Yuichi; Kohara, Yoshiyuki; Kawakami, Yoshiyuki; and Tsurugi, Tomio, 4,500,463, Cl. 260-406.000.

Nakajima, Masahiko, to Nakajima Dokosho Company Limited. Method of manufacturing soldering tips. 4,500,027, Cl. 228-54.000.

Nakajima, Mikio: *See—*
Kanda, Mutsumi; Nakanishi, Kiyoshi; Inoue, Tokuta; and Nakajima, Mikio, 4,499,868, Cl. 123-188.00M.

Nakamura, Masashi, to Nissan Motor Company, Limited. Method of producing electrode for liquid fuel cell. 4,500,395, Cl. 204-284.000.

Nakamura, Norihiko: *See—*
Teramura, Mitsuyoshi; Takimoto, Masatami; Nakamura, Norihiko; Itoh, Takaaki; Katou, Takashi; and Isoya, Yukinori, 4,500,476, Cl. 261-44.00C.

Nakane, Takeshi; and Nakagawa, Katsumi, to Aisin Seiki Kabushiki Kaisha. Pressure sensor. 4,500,864, Cl. 338-4.000.

Nakanishi, Hirotoshi: *See—*
Yamachika, Hiroshi; and Nakanishi, Hirotoshi, 4,500,721, Cl. 549-362.000.

Nakanishi, Kiyoshi: *See—*
Kanda, Mutsumi; Nakanishi, Kiyoshi; Inoue, Tokuta; and Nakajima, Mikio, 4,499,868, Cl. 123-188.00M.

Nakanishi, Koichiro; and Hiratani, Hajime, to Japan Chemical Research Co., Ltd. Process for preparing a heat-stable aqueous solution of human urine kallikrein and product prepared. 4,500,514, Cl. 424-94.000.

Nakano, Eiichi: *See—*
Sando, Yoshikazu; Nakano, Eiichi; and Ishidoshiro, Hiroshi, 4,500,318, Cl. 8-111.000.

Nakano, Hideki: *See—*
Honda, Masamitsu; Nagai, Hideaki; Takishima, Shoko; Kawamura, Akinori; Kawamura, Noriko; Dan, Takashi; Koizumi, Masuo; Murakami, Yasushi; Hinohara, Yoshikazu; Nakano, Hideki; and Takagaki, Yoshio, 4,500,714, Cl. 546-309.000.

Nakano, Hisaji: *See—*
Kita, Yasushi; Moroi, Shirou; Sakanoue, Akira; and Nakano, Hisaji, 4,500,678, Cl. 252-58.000.

Nakano, Junji: *See—*
Horie, Seiji; Nakano, Junji; Nagata, Masayoshi; and Sato, Hideo, 4,500,622, Cl. 430-78.000.

Nakano, Kenji: *See—*
Tajima, Shigeru; Okada, Hiroshi; and Nakano, Kenji, 4,500,822, Cl. 318-314.000.

Nakano, Masahiro: *See—*
Hashimoto, Shintaro; Masuzawa, Sigeaki; Shibata, Shinya; Tsuda, Hiroshi; and Nakano, Masahiro, 4,500,211, Cl. 368-63.000.

Nakao, Shinroku; Ishii, Yoshiyasu; and Matsuda, Hiroaki, to Combi Co., Ltd. Baby chair. 4,500,133, Cl. 297-131.000.

Nakao, Sho: *See—*
Shiba, Keisuke; Yazawa, Hiromi; Ohishi, Chikashi; and Nakao, Sho, 4,500,618, Cl. 430-49.000.

Nakaoji, Kazuhiko; Kamao, Mitsugu; Itoh, Hayami; Tatsumi, Shuhei; and Takao, Shoichi, to Lion Corporation; Kao Corporation; Mitsui Engineering and Shipbuilding Company Limited; Electric Power Development Company Limited; and Kawasaki Jukogyo Kabushiki Kaisha. Process for producing high-concentration slurry of coal. 4,500,041, Cl. 241-16.000.

Nakashima, Yasuo: *See—*
Matsuoka, Fumio; Iijima, Hitoshi; Yamazaki, Kisuke; Kasagi, Hiroshi; Nakashima, Yasuo; Sakuma, Kiyoshi; and Umehara, Mitsuo, 4,499,739, Cl. 62-212.000.

Nakatani, Tokuji: *See—*
Umezawa, Hamao; Fujii, Akio; Muraoka, Yasuhiko; Nakatani, Tokuji; Fukuoka, Takeyo; and Takahashi, Katsutoshi, 4,500,452, Cl. 260-112.50R.

Nakatsuji, Fumio: *See—*
Ishitobi, Yoshimitsu; Fujii, Kouhei; and Nakatsuji, Fumio, 4,500,867, Cl. 338-128.000.

Nakayama, Kazuaki, to Pioneoer Electronic Corporation. Low noise power amplifier circuit. 4,500,849, Cl. 330-300.000.

Nakayama, Takao, to Fuji Photo Film Co., Ltd. Method for preparing a lithographic printing plate and a light-sensitive material used therefor. 4,500,617, Cl. 430-49.000.

Nakazawa, Hayashi: *See—*
Tsuboi, Nobuyoshi; Shima, Seiya; Kanasaki, Morio; and Nakazawa, Hayashi, 4,499,986, Cl. 198-322.000.

Nakazima, Shigeko. Display panel and process for forming pattern therefor. 4,500,374, Cl. 156-83.000.

Napp, Gerhard; Bieringer, Ulrich; Kreismer, Heinz; and Goseberg, Walter, to Licentia Patent-Verwaltungs-G.m.b.H. Switched mode power supply transformer. 4,500,833, Cl. 323-359.000.

Narita, Kazuo: *See—*
Taya, Akira; Narita, Kazuo; Asada, Masao; and Kimura, Yoshio, 4,500,443, Cl. 252-301.40P.

Narita, Yukio: *See—*
Imae, Kiyoto; Aburaki, Shimpei; Narita, Yukio; Okumura, Jun; and Naito, Takayuki, 4,500,526, Cl. 514-226.000.

Nasser, William E.: *See—*
Woods, John H.; Graves, Toby R.; Nasser, William E.; and Jagtap, Ashvinkumar N., 4,500,359, Cl. 106-270.000.

Nathanielsz, to Cornell Research Foundation, Inc. Suppression of premature labor by use of aromatase inhibitors. 4,500,523, Cl. 514-178.000.

National Research Development Corporation: *See—*
Klinner, Wilfred E., 4,499,712, Cl. 56-16.400.
Perry, Forbes G. D., 4,499,782, Cl. 74-200.000.
Rowley, Alan G.; and Husband, Fiona M., 4,500,497, Cl. 423-89.000.

Naubereit, Henry; Beyer, Henry R.; DeSipio, Richard G.; and Picard, Salvatore R., to United States of America, Navy. Data link timing. 4,500,884, Cl. 343-456.000.

Naubereit, Henry; Long, Thomas F.; Picard, Salvatore R.; and Ritz, Joseph, to United States of America, Navy. Data link shift register operation. 4,500,886, Cl. 343-456.000.

Naul, George M., to Owens-Corning Fiberglas Corporation. Honeycomb structure. 4,500,583, Cl. 428-116.000.

Nautilus Sports/Medical Industries, Inc.: *See—*
Jones, Arthur A., 4,500,089, Cl. 272-117.000.

NEC Corporation: *See—*
Akashi, Fumio, 4,500,990, Cl. 370-85.000.

NEC Kansai, Ltd.: *See—*
Ishitobi, Yoshimitsu; Fujii, Kouhei; and Nakatsuji, Fumio, 4,500,867, Cl. 338-128.000.

Necchi, Societa per Azioni: *See—*
Marton, Giulio, 4,499,939, Cl. 164-23.000.

Nederlandse Centrale Organisatie Voor Toegepast Natuurwetenschappelijk Onderzoek: *See—*
Le Poole, Jan B.; and Kruit, Pieter, 4,500,787, Cl. 250-427.000.
van den Engh, Gerrit J.; Trask, Barbara J.; and Visser, Johannes W. M., 4,500,641, Cl. 435-291.000.

Nederlandse Industriele Maatschappij NEFIT N.V.: *See—*
Meulenbrug, Gerard C., 4,499,890, Cl. 126-116.00R.

Neitz, Alfred; D'Alfonso, Nunzio; and Pickel, Hans, to M.A.N. Maschinenfabrik Ausburg-Nurnberg AG. Fuel injection method and arrangement for direct-injection internal combustion engines. 4,499,871, Cl. 123-276.000.

Nelson, Delmer R., to A. O. Smith Harvestore Products, Inc. Breather bag construction for a sealed storage structure. 4,499,820, Cl. 99-646.00S.

Nelson, Victor H. Sector motor having latching means for rotor in multiple positions. 4,500,861, Cl. 335-253.000.

Nester, William H., to General Electric Company. Microstrip notch antenna. 4,500,887, Cl. 343-700.0MS.

Neumaier, Hermann: *See—*
Hausmann, Heinz; Niessen, Heinz J.; Telle, Otto; and Neumaier, Hermann, 4,500,348, Cl. 71-103.000.

Neville, David M., Jr.; and Youle, Richard J., to United States of America, Health and Human Services. Prevention of graft versus host disease following bone marrow transplantation. 4,500,637, Cl. 435-2.000.

New Hermes Incorporated: *See—*
Plotkin, Victor, 4,500,236, Cl. 409-86.000.

New Nippon Electric Co., Ltd.: *See—*
Katayama, Hiroomi; Hirosawa, Yoshiaki; and Fujii, Masahiko, 4,499,875, Cl. 123-416.000.

New York University: *See—*
Abele, Manlio, 4,501,009, Cl. 378-19.000.

Newkirk, Mark C.: *See—*
Parkell, Edward; and Newkirk, Mark C., 4,500,334, Cl. 65-334.000.

Nguyen, Khoi B., to Schlumberger Technology Corporation. Electrical connector. 4,500,156, Cl. 339-94.00C.

Nguyen, Lan N.: *See—*
Shimbo, Osamu; Nguyen, Lan N.; and Dicks, Jack L., 4,500,984, Cl. 370-6.000.

Nguyen, Tac H.; and Husson, Alan L., to Westinghouse Electric Corp. Terminal slowdown speed pattern generator. 4,499,974, Cl. 187-29.00R.

Nicholas, Rodney G., to Nicolet Instrument Corporation. Graphic recording system. 4,500,890, Cl. 346-29.000.

Nichols, Gary A.: *See—*
Stoltman, Donald D.; and Nichols, Gary A., 4,499,879, Cl. 123-480.000.

Nicholson, Myron D.; and Chiu, Herman; S., to Union Carbide Corporation. Inhibition of discoloration on cellulose food casings. 4,500,576, Cl. 428-36.000.

Nickerson, Mark A.: *See—*
Poole, John S.; Gere, Dennis R.; Bell, Raymond J.; and Nickerson, Mark A., 4,500,432, Cl. 210-659.000.

Nickisch, Klaus; Bittler, Dieter; Laurent, Henry; Wiechert, Rudolf; and Losert, Wolfgang, to Schering Aktiengesellschaft. 7α-Acylthio-15,16-methylene-3-oxo-17α-pregna-1,4-diene-21,17-carbolactones, their preparation and use as medicinal agents. 4,500,522, Cl. 514-173.000.

Nickle, Allen F., to International Business Machines Corporation. Dialog user error diagnosis, severity, and help technique. 4,500,964, Cl. 364-300.000.

Nickol, Friedrich W.; and Baeger, Holm, to VDO Adolf Schindling AG. Solderable layer system. 4,500,611, Cl. 428-686.000.

Nicolet Instrument Corporation: *See—*
Nicholas, Rodney G., 4,500,890, Cl. 346-29.000.
Schumann, Robert W., 4,500,182, Cl. 354-4.000.

Nicoll, Andrew R., to BBC Aktiengesellschaft Brown, Boveri & Cie. High temperature protective coating alloy. 4,500,489, Cl. 420-445.000.

Nicolon Corporation: *See—*
Scales, Michael J., 4,499,664, Cl. 29-714.000.

Nieder-Vahrenholz, Hans-Georg: *See—*
Meussdoerffer, Johann-Nikolaus; Niederprum, Hans; Nieder-Vahrenholz, Hans-Georg; and Bockelmann, Wolfgang, 4,500,350, Cl. 75-1.00R.

Niederer, Adolf: *See—*
Mayer, Andreas; and Niederer, Adolf, 4,500,260, Cl. 417-64.000.

Niederprum, Hans: *See—*
Meussdoerffer, Johann-Nikolaus; Niederprum, Hans; Nieder-Vahrenholz, Hans-Georg; and Bockelmann, Wolfgang, 4,500,350, Cl. 75-1.00R.

Niehaus, Frederick D. Combine concave structure. 4,499,908, Cl. 130-27.00K.

Nielsen Moulding Design Corporation: *See—*
Sherman, Charles F., 4,499,679, Cl. 40-152.100.

Niessen, Heinz J.: *See—*
Hausmann, Heinz; Niessen, Heinz J.; Telle, Otto; and Neumaier, Hermann, 4,500,348, Cl. 71-103.000.

Nieto, Antoliano. Polyhedral puzzle. 4,500,090, Cl. 273-153.00S.

Nifco Inc.: *See—*
Tanaka, Toshie, 4,499,636, Cl. 24-289.000.

Nigorikawa, Shigeru: *See—*
Ohyama, Tohru; and Nigorikawa, Shigeru, 4,500,920, Cl. 358-139.000.

Nigro, Louis V., to Gillette Company, The. Holder. 4,500,061, Cl. 248-359.00I.

Nihei, Mitsuo; and Nishi, Hidetoshi, to Hitachi, Ltd. Rolling mill. 4,499,748, Cl. 72-238.000.

Nihon Tokushu Noyaku Seizo K.K.: *See—*
Aya, Masahiro; Saito, Junichi; Yasui, Kazuomi; Shiokawa, Kozo; Morishima, Norihisa; and Goto, Toshio, 4,500,342, Cl. 71-93.000.
Saito, Junichi; Yasui, Kazuomi; Shiokawa, Kozo; and Kamochi, Atsumi, 4,500,346, Cl. 71-94.000.

Nijboer, Jakob G.: *See—*
Immink, Kornelis A.; Nijboer, Jakob G.; Ogawa, Hiroshi; and Odaka, Kentaro, 4,501,000, Cl. 375-25.000.

Nikitin, Yaroslav G.: *See—*
Sidorenko, Georgy I.; Lopato, Georgy P.; Yakubovich, Vladimir M.; Nikitin, Yaroslav G.; Usachev, Oleg I.; and Vorobiev, Anatoly P., 4,499,904, Cl. 128-703.000.

Niles Parts Company, Limited: *See—*
Honjo, Kazumi, 4,500,774, Cl. 219-265.000.

Nilsson, Goran A. Collapsible bow saw. 4,499,936, Cl. 145-33.00E.

Ninomiya, Yuichi; and Ohtsuka, Yoshimichi, to Nippon Hoso Kyokai. Noise reduction apparatus. 4,500,911, Cl. 358-36.000.

Nippon Air Brake Co., Ltd.: *See—*
Kubota, Hitoshi; Hamamatsu, Seiji; Yambe, Teluo; and Takahashi, Toshiyuki, 4,500,761, Cl. 200-84.00C.

Nippon Electric Co., Ltd.: *See—*
Hasegawa, Satoshi, 4,500,987, Cl. 370-60.000.
Matsukura, Masayuki; and Fukumura, Yukio, 4,501,019, Cl. 455-112.000.
Nagami, Akira, 4,500,974, Cl. 365-222.000.
Yoshida, Yasuharu; Seguchi, Hiroshi; and Tagashira, Yoshimi, 4,501,004, Cl. 375-102.000.

Nippon Furnace Kogyo Co., Ltd.: *See—*
Nagai, Hiroshi, 4,500,286, Cl. 432-106.000.

Nippon Gakki Seizo Kabushiki Kaisha: *See—*
Aoki, Eiichiro, 4,499,808, Cl. 84-1.030.

Nippon Hoso Kyokai: *See—*
Ninomiya, Yuichi; and Ohtsuka, Yoshimichi, 4,500,911, Cl. 358-36.000.

Nippon Kayaku Kabushiki Kaisha: *See—*
Umezawa, Hamao; Fujii, Akio; Muraoka, Yasuhiko; Nakatani, Tokuji; Fukuoka, Takeyo; and Takahashi, Katsutoshi, 4,500,452, Cl. 260-112.50R.
Yoshida, Hiroshi; Koike, Kengo; Shimano, Shizuo; Nakagawa, Taizo; and Ohmori, Kaoru, 4,500,536, Cl. 514-397.000.

Nippon Kogaku K.K.: *See—*
Kusaka, Yosuke; and Fukuhara, Toru, 4,500,778, Cl. 250-204.000.

Nippon Paint Kabushiki Kaisha: *See—*
Satake, Jiro; Arai, Tetsuzo; Tanaka, Kivokazu; Mikami, Eiji; Moriyasu, Tsuneo; and Nakagawa, Tadasu, 4,500,577, Cl. 428-36.000.

Nippon Piston Ring Co., Ltd.: *See—*
Ikutake, Hiroshi, 4,499,643, Cl. 29-156.600.

Nippon Sheet Glass Co., Ltd.: *See—*
Kato, Yukihiro; Kawahara, Hideo; and Hyohdou, Masato, 4,500,567, Cl. 427-255.300.

Nippon Shokubai Kagaku Kogyo Co., Ltd.: *See—*
Takehara, Hidetoshi; Shioji, Shorbu; and Nakagawa, Yohichi, 4,500,693, Cl. 526-240.000.

Nippon Soken, Inc.: *See—*
Fukami, Akira; Noguchi, Hiroki; and Hamaguchi, Hiroshi, 4,500,479, Cl. 261-98.000.
Igashira, Toshihiko; Tanaka, Taro; and Sakakibara, Yasuyuki, 4,499,878, Cl. 123-478.000.
Saito, Kimitaka; Kohama, Tokio; Egami, Tsuneyuki; Saito, Tsutomu; Nogami, Susumu; and Suzuki, Yukio, 4,499,882, Cl. 123-492.000.
Wakayama, Masao; Takemura, Makoto; and Kasagi, Takao, 4,500,360, Cl. 106-286.500.

Nippon Steel Corporation: *See—*
Kokai, Katsuaki; and Ohta, Takeo, 4,500,366, Cl. 148-111.000.

Nippondenso Co., Ltd.: *See—*
Kanayama, Kenji; and Sugi, Hidekuni, 4,500,806, Cl. 310-198.000.
Miyaki, Masahiko; Masuda, Akira; and Matsumura, Toshimi, 4,499,883, Cl. 123-503.000.
Sangu, Osamu; and Hotta, Seiko, 4,500,775, Cl. 219-497.000.
Takao, Mitsunori, 4,499,881, Cl. 123-492.000.
Tokitsu, Naoki; Fujiwara, Toshitaka; Kato, Toranosuke; and Uno, Toshihiko, 4,500,868, Cl. 340-52.00F.
Yamamoto, Yoshihisa, 4,499,876, Cl. 123-446.000.

Nisenson, Jules: *See—*
Waine, Martin; Rude, Edward T.; and Nisenson, Jules, 4,499,937, Cl. 160-41.000.

Nishazawa, Kimocjo: *See—*
Nishizawa, Junichi; Suzuki, Soubei; and Tamamushi, Takashige, 4,499,654, Cl. 29-571.000.

Nishi, Hidetoshi: *See—*
Nihei, Mitsuo; and Nishi, Hidetoshi, 4,499,748, Cl. 72-238.000.

Nishiguchi, Akira; Usui, Sanpei; Oouchi, Tomihisa; and Iwai, Kazumi, to Hitachi, Ltd. Vapor generator. 4,499,859, Cl. 122-18.000.

Nishihara, Teruyoshi, to Nissan Motor Company, Limited. AC Generator. 4,500,828, Cl. 322-46.000.

Nishikawa, Yoshikawzu, to Toho-Polymer Kabushika Kaisha. Keyboard key with embedded top character. 4,500,218, Cl. 400-490.000.

Nishimoto, Ikuo, to Honeywell Inc. Alternating polarity power supply control apparatus. 4,500,797, Cl. 307-296.00R.

Nishino, Hiroshi; Aibe, Toshio; and Noguchi, Katsuya, to Takeda Chemical Industries, Ltd. Process for removal of mercury vapor and adsorbent therefor. 4,500,327, Cl. 55-72.000.

Nishio, Tadashi: *See*—
Kasuga, Muneo; Shimizu, Akira; and Nishio, Tadashi, 4,500,199, Cl. 355-14.0CU.

Nishiyama, Enju: *See*—
Fujii, Masao; and Nishiyama, Enju, 4,500,612, Cl. 429-26.000.

Nishizawa, Junichi; Suzuki, Soubei; and Tamamushi, Takashige, to Nishazawa, Kimocjo. Method for fabricating semiconductor photodetector. 4,499,654, Cl. 29-571.000.

Nissan Motor Company, Limited: *See*—
Aoyama, Shunichi, 4,499,870, Cl. 123-198.00F.
Hirano, Yoshinori, 4,499,866, Cl. 123-41.210.
Kishi, Norimasa; and Noso, Kazunori, 4,501,012, Cl. 381-43.000.
Kubota, Hitoshi; Hamamatsu, Seiji; Yambe, Teluo; and Takahashi, Toshiyuki, 4,500,761, Cl. 200-84.00C.
Nakamura, Masashi, 4,500,395, Cl. 204-284.000.
Nishihara, Teruyoshi, 4,500,828, Cl. 322-46.000.
Suzuki, Tadashi; Morimoto, Yoshiro; Hamada, Hideo; Suga, Masaaki; and Futagi, Masaaki, 4,499,979, Cl. 192-3.310.

Nisshin Flour Milling Co., Ltd.: *See*—
Tanaka, Kenji; and Endo, Shigeru, 4,500,551, Cl. 426-62.000.

Nissin Kogyo Kabushiki Kaisha: *See*—
Kasahara, Hiroshi, 4,499,730, Cl. 60-585.000.
Mizusawa, Mitutoyo; and Fujisawa, Masao, 4,500,138, Cl. 303-6.00C.

Nitto Electric Industrial Co., Ltd.: *See*—
Hori, Yutaka; Sunakawa, Makoto; Takayama, Kikuo; Matsuoka, Naoki; and Moroishi, Yutaka, 4,500,683, Cl. 524-533.000.

Niwa, Toshio; Hihara, Toshio; and Shimizu, Yukiharu, to Mitsubishi Chemical Industries, Limited. Reactive disperse diaminopyridine azo dyes containing a fluorostriazine group. 4,500,455, Cl. 534-635.000.

Niwa, Toshio; and Hihara, Toshio, to Mitsubishi Chemical Industries, Limited. Quinophthalone dyes for cellulose-containing fibers. 4,500,710, Cl. 544-113.000.

Nixdorf Computer AG: *See*—
Lubcke, Hartmut; and Backhaus, Martin, 4,500,991, Cl. 370-88.000.

Nogami, Susumu: *See*—
Saito, Kimitaka; Kohama, Tokio; Egami, Tsuneyuki; Saito, Tsutomu; Nogami, Susumu; and Suzuki, Yukio, 4,499,882, Cl. 123-492.000.

Noguchi, Hiroki: *See*—
Fukami, Akira; Noguchi, Hiroki; and Hamaguchi, Hiroshi, 4,500,479, Cl. 261-98.000.

Noguchi, Katsuya: *See*—
Nishino, Hiroshi; Aibe, Toshio; and Noguchi, Katsuya, 4,500,327, Cl. 55-72.000.

Nolan, James D. Apparatus for coating the glass envelope and predetermined portions of the end caps of a fluorescent lamp. 4,499,850, Cl. 118-406.000.

Nolan, Kenneth P.: *See*—
Duke, Alan H.; Hartung, Michael H.; Marschner, Frederick J.; and Nolan, Kenneth P., 4,500,954, Cl. 364-200.000.

Nomura, Isao: *See*—
Shimizu, Senzo; Nomura, Isao; Yamamiya, Kazuo; and Masuda, Tsuneaki, 4,500,668, Cl. 524-427.000.

Norcross, Charles E., to C. S. Norcross & Sons. Slack adjuster. 4,499,978, Cl. 188-79.50K.

Nord, Keith W.: *See*—
Bacon, Forrest C.; and Nord, Keith W., 4,499,704, Cl. 53-156.000.

Norden, Alexander R. Sticks of parts and their use. 4,500,579, Cl. 428-43.000.

Nordica S.p.A.: *See*—
Perotto, Riccardo, 4,499,675, Cl. 36-119.000.

Nordquist, Albert W.: *See*—
Feagans, Frederick C.; and Nordquist, Albert W., 4,500,756, Cl. 200-5.00A.

Nordson Corporation: *See*—
Matt, Timothy S., 4,500,937, Cl. 361-153.000.

Nordstrom, Duane M., to Longview Fibre Company. Method and apparatus for making multiple ply paperboard. 4,500,381, Cl. 156-205.000.

Norsk Hydro a.s.: *See*—
Tag, Arne; Petterson, Bjorn R.; and Nygaard, Erik C., 4,500,369, Cl. 149-2.000.

Norson Industries, Inc.: *See*—
Bateson, Norman E., 4,500,230, Cl. 406-131.000.

North American Philips Lighting Corporation: *See*—
Graff, Eugene A., 4,500,810, Cl. 313-486.000.

North Sails, Inc.: *See*—
Mahr, Peter F., 4,499,842, Cl. 114-103.000.

Northern Telecom Limited: *See*—
Dubreuil, Luc; and Reed, Phillip J., 4,500,747, Cl. 174-76.000.
Murto, Tapio H., 4,500,755, Cl. 179-170.0NC.

Northrop Corporation: *See*—
Westhaver, Robert O.; Walker, Gary; and Koning, Menno G., 4,499,778, Cl. 74-5.00F.

Noso, Kazunori: *See*—
Kishi, Norimasa; and Noso, Kazunori, 4,501,012, Cl. 381-43.000.

Noto, Richard: *See*—
Smith, David C.; and Noto, Richard, 4,500,963, Cl. 364-300.000.

Noto, Yasuo; Naito, Shotaro; and Ohmae, Tsutomu, to Hitachi, Ltd. Protective control apparatus for electrical vehicle. 4,500,820, Cl. 318-139.000.

Novation, Inc.: *See*—
Mackey, Richard C., 4,500,754, Cl. 179-81.00R.

Nowacki, Ulrich G., to International Paper Company. Method and apparatus for erecting a carton with integral interior partitions. 4,500,306, Cl. 493-92.000.

Nozaki, Hidetoshi; Kamimura, Takaaki; Hatayama, Tamothu; and Utagawa, Tadashi, to Tokyo Shibaura Denki Kabushiki Kaisha. Photovoltaic device. 4,500,744, Cl. 136-258.000.

NSK-Warner K.K.: *See*—
Ono, Katsuyasu, 4,500,115, Cl. 280-808.000.

NSS, Industries, Inc.: *See*—
Ewing, Peter D., 4,500,224, Cl. 403-343.000.

Nudd, Barry C.: *See*—
Maurer, Herman J.; Pedersen, Carl O.; and Nudd, Barry C., 4,500,250, Cl. 414-695.500.

Nunez, Cesar L.: *See*—
Espinosa, Fausto L.; and Nunez, Cesar L., 4,500,826, Cl. 318-820.000.

Nutt, Michael O.: *See*—
Cook, Frank T.; Nutt, Michael O.; and Hsieh, Hsin H., 4,500,717, Cl. 548-229.000.

Nuzzi, Frank J.: *See*—
Fruzzetti, Paul R.; Leavitt, Philip J.; and Nuzzi, Frank J., 4,499,752, Cl. 73-40.700.

N.V. Raychem S.A.: *See*—
De Groot, Hubert, 4,500,371, Cl. 156-48.000.

N.V. Weefautomaten Picanol: *See*—
Roeseel, Henri J.; and Deconinck, Filip N., 4,501,008, Cl. 377-2.000.

Nygaard, Erik C.: *See*—
Tag, Arne; Petterson, Bjorn R.; and Nygaard, Erik C., 4,500,369, Cl. 149-2.000.

Oba, Hiroyuki: *See*—
Fuchikami, Jun; Higashi, Hidehiro; Inoue, Takashi; and Oba, Hiroyuki, 4,500,645, Cl. 502-65.000.

Oba, Masayuki; Kawamata, Motoo; Tsuboi, Hikotada; and Koga, Nobuhito, to Mitsui Toatsu Chemicals, Incorporated. Process for the preparation of N-alkenylphenylmaleimides and N,N'-[alkenylene-phenylene]bismalemides. 4,500,719, Cl. 548-522.000.

Obama, Kenjiro: *See*—
Chiba, Hiromasa; Obama, Kenjiro; Kawazoe, Shunji; Oka, Takahiro; and Sato, Akihiro, 4,500,682, Cl. 525-240.000.

Obenland, Gerhard, to Durr Automation+Fordertechnik GmbH. Feeding device having alternatively connectable slip-on gear units. 4,499,788, Cl. 74-661.000.

Occidental Chemical Corporation: *See*—
Cotter, Byron R.; and Tang, David Y., 4,500,471, Cl. 260-544.00D.

Odaka, Kentaro: *See*—
Immink, Kornelis A.; Nijboer, Jakob G.; Ogawa, Hiroshi; and Odaka, Kentaro, 4,501,000, Cl. 375-25.000.

Ode, Bengt; and Tornblom, Lars, to Ab Asea-Atom. Pump means for pumping a mixture of coarse-grained material and fluid. 4,500,261, Cl. 417-203.000.

Odenthal, Conrad J.; and Askew, Dennis D., to Tektronix, Inc. Electron gun having a low capacitance cathode and grid assembly. 4,500,809, Cl. 313-444.000.

O'Dwyer, James B.: *See*—
Singer, Debra L.; McCollum, Gregory J.; Dowbenko, Rostyslaw; and O'Dwyer, James B., 4,500,680, Cl. 525-143.000.

Oehley, Gernot F.: *See*—
Csaszar, Gabor; Oehley, Gernot F.; and Goldman, Fred M., 4,500,475, Cl. 261-36.00A.

Oetting, Hermann; and Heidemeyer, Paulus, to Volkswagenwerk Aktiengesellschaft. Hybrid drive arrangement. 4,499,965, Cl. 180-165.000.

Office National d'Etudes et de Recherche Aerospatiales: *See*—
Calvet, Pierre; and Platet, Bernard, 4,500,214, Cl. 374-36.000.

Officina Meccanica Giavelli S.p.A.: *See*—
Carraroli, Dario; and Giavelli, Giordano, 4,500,287, Cl. 432-246.000.

Ogawa, Akira: *See*—
Aoki, Kozo; Ogawa, Akira; and Tanabe, Osami, 4,500,635, Cl. 430-552.000.

Ogawa, Hiroshi; Mizuno, Chiaki; Masaki, Kouichi; Suzuki, Masaaki; and Tamai, Yasuo, to Fuji Photo Film Co., Ltd. Magnetic recording medium. 4,500,599, Cl. 428-336.000.

Ogawa, Hiroshi: *See*—
Immink, Kornelis A.; Nijboer, Jakob G.; Ogawa, Hiroshi; and Odaka, Kentaro, 4,501,000, Cl. 375-25.000.

Ogawa, Masaki; and Shiomura, Yasuro, to Bridgestone Tire Company Limited. Method of modifying vulcanized rubber surface with halogenating agents. 4,500,685, Cl. 525-343.000.

Ogawa, Rokutaro: *See*—
Ohno, Kenichi; Hosomizu, Tohru; and Ogawa, Rokutaro, 4,500,906, Cl. 357-71.000.

Ogawa, Shungi: *See*—
Takahashi, Osamu; Yamamura, Nobuo; Mukunoki, Yasuo; Ogawa, Shungi; and Nakagawa, Yutaka, 4,500,362, Cl. 106-309.000.

Oger, Jacques; Hauer, Jean-Claude; and Freis, Jean-Louis, to Pont-A-Mousson S.A. Manhole. 4,499,695, Cl. 52-19.000.

Ogihara, Yutaka: *See*—
Taguchi, Shinichiro; Nagao, Nobuya; and Ogihara, Yutaka, 4,500,931, Cl. 358-310.000.

Ogino, Takashi: *See*—
Takaya, Takao; Masugi, Takashi; Ogino, Takashi; and Tsuji, Kiyoshi, 4,500,709, Cl. 544-58.100.

Ogletree, David D.: *See*—
Knepshield, William R.; Ogletree, David D.; and Sander, Nat, 4,499,898, Cl. 128-305.000.

Oguni, Kensaku: *See*—
Kuroda, Shigeaki; Senshu, Takao; Oguni, Kensaku; Mochizuki, Taketoshi; Yasuda, Hiromu; Ishibane, Kyuhei; Atsumi, Akira; Kimura, Hideyuki; and Hatada, Toshio, 4,500,035, Cl. 236-92.00B.

Ogura, Mutsuo, to Agency of Industrial Science & Technology; and Ministry of International Trade & Industry. Scanning-type lithographic and image-pickup device using optical fiber. 4,500,204, Cl. 356-318.000.

Ohba, Hitoshi: *See*—
Tanaka, Motoaki; Toyama, Takanori; Ohba, Hitoshi; and Yamaguchi, Osamu, 4,500,649, Cl. 502-167.000.

Ohishi, Chikashi, to Fuji Photo Film Co., Ltd. Electrophotographic element with copolymer interlayer. 4,500,620, Cl. 430-60.000.

Ohishi, Chikashi: *See*—
Shiba, Keisuke; Yazawa, Hiromi; Ohishi, Chikashi; and Nakao, Sho, 4,500,618, Cl. 430-49.000.

Ohlidal, Vladimi: *See*—
Junek, Jan; Skarka, Josef; Jaros, Frantisek; Hortlik, Frantisek; Hacova, Kveta; Vobornik, Vaclav; Ohlidal, Vladimi; and Lihtarova, Ludmila, 4,499,718, Cl. 57-301.000.

Ohmae, Tsutomu: *See*—
Noto, Yasuo; Naito, Shotaro; and Ohmae, Tsutomu, 4,500,820, Cl. 318-139.000.

Ohmori, Akira; Tomihashi, Nobuyuki; and Kitahara, Takahiro, to Daikin Kogyo Co., Ltd. Optical materials. 4,500,694, Cl. 526-245.000.

Ohmori, Kaoru: *See*—
Yoshida, Hiroshi; Koike, Kengo; Shimano, Shizuo; Nakagawa, Taizo; and Ohmori, Kaoru, 4,500,536, Cl. 514-397.000.

Ohmori, Nobuo: *See*—
Kitagawa, Katsutoshi; Isogai, Kiyoshi; Ohmori, Nobuo; Takita, Naka; Okamoto, Makoto; Koga, Itsuo; and Ito, Kazuo, 4,500,099, Cl. 277-228.000.

Ohmura, Hideo: *See*—
Miyano, Toshiyuki; and Ohmura, Hideo, 4,499,709, Cl. 53-589.000.

Ohmura, Kunioki; Torigoe, Masaaki; Itoh, Isamu; and Hayashi, Katsumi, to Fuji Photo Film Co., Ltd. Process for stabilizing silver images. 4,500,632, Cl. 430-428.000.

Ohmura, Yamichi; and Matsushita, Yoshiaki, to Tokyo Shibaura Denki Kabushiki Kaisha. Method for forming monocrystalline semiconductor film on insulating film. 4,500,388, Cl. 156-603.000.

Ohno, Kenichi; Hosomizu, Tohru; and Ogawa, Rokutaro, to Fujitsu Limited. Multilevel masterslice LSI with second metal level programming. 4,500,906, Cl. 357-71.000.

Ohta, Takeo: *See*—
Kokai, Katsuaki; and Ohta, Takeo, 4,500,366, Cl. 148-111.000.

Ohta, Yoshio, to Matsushita Electric Industrial Co., Ltd. Solid state imaging apparatus. 4,500,924, Cl. 358-213.000.

Ohtani, Hideaki: *See*—
Kigasawa, Kazuo; Ohtani, Hideaki; and Kanezuka, Toshiyuki, 4,500,511, Cl. 424-81.000.

Ohtsuka, Yoshimichi: *See*—
Ninomiya, Yuichi; and Ohtsuka, Yoshimichi, 4,500,911, Cl. 358-36.000.

Ohyama, Tohru; and Nigorikawa, Shigeru, to Alps Electric Co., Ltd. RF Modulator. 4,500,920, Cl. 358-139.000.

Oikawa, Saburo: *See*—
Yatsuo, Tsutomu; Nagano, Takahiro; Oikawa, Saburo; and Horie, Akira, 4,500,903, Cl. 357-38.000.

Oishi, Kengo; and Suzuki, Osamu, to Fuji Photo Film Co., Ltd. Magnetic tape cassette. 4,500,050, Cl. 242-198.000.

Oka, Takahiro: *See*—
Chiba, Hiromasa; Obama, Kenjiro; Kawazoe, Shunji; Oka, Takahiro; and Sato, Akihiro, 4,500,682, Cl. 525-240.000.

Oka, Tetsuo: *See*—
Katsumata, Ryoichi; Oka, Tetsuo; and Furuya, Akira, 4,500,640, Cl. 435-253.000.

Okada, Hiroshi: *See*—
Tajima, Shigeru; Okada, Hiroshi; and Nakano, Kenji, 4,500,822, Cl. 318-314.000.

Okada, Tokio; Tani, Haruhisa; Kojima, Shigezo; Tsuyama, Setsuya; Kurihara, Kazuhiko; and Yazawa, Hiroshi, to Polymer Processing Research Institute Ltd. Process for broadening the width of a bundle of parallel filaments having a band form. 4,499,639, Cl. 28-282.000.

Okamoto, Hiroshi: *See*—
Gotou, Makoto; and Okamoto, Hiroshi, 4,500,830, Cl. 323-267.000.

Okamoto, Makoto: *See*—
Kitagawa, Katsutoshi; Isogai, Kiyoshi; Ohmori, Nobuo; Takita, Naka; Okamoto, Makoto; Koga, Itsuo; and Ito, Kazuo, 4,500,099, Cl. 277-228.000.

Okashima, Bob Y.: *See*—
Karazim, Michael P.; Okashima, Bob Y.; and Ashburn, John J., 4,499,691, Cl. 51-241.00S.

Okin, Kenneth: *See*—
Manton, John C.; and Okin, Kenneth, 4,500,958, Cl. 364-200.000.

Okumura, Jun: *See*—
Imae, Kiyoto; Aburaki, Shimpei; Narita, Yukio; Okumura, Jun; and Naito, Takayuki, 4,500,526, Cl. 514-226.000.

Older, Geoffrey I.; and Webb, Leigh S., to Air Products and Chemicals, Inc. Freezer. 4,499,740, Cl. 62-374.000.

Olin Corporation: *See*—
Breedis, John F.; and Fister, Julius C., 4,500,028, Cl. 228-117.000.
Fister, Julius C.; and Breedis, John F., 4,500,605, Cl. 428-469.000.
Ford, James M.; Dean, Robert A.; Woodard, Kenneth E., Jr.; and Branco, Antonio, 4,500,379, Cl. 156-172.000.
Kaczur, Jerry J.; and Coleman, John E., 4,500,499, Cl. 423-139.000.
Miles, Ronald C.; Geren, George W.; and Peel, R. W., 4,500,402, Cl. 204-242.000.

Oliver, Donald W.: *See*—
Culver, Richard B.; and Oliver, Donald W., 4,500,781, Cl. 250-269.000.

Olivieri, Icaro, to Icaro Olivieri & C. S.p.A. Ski boot with a device for registering its axial orientation in regard to the ski. 4,499,674, Cl. 36-117.000.

Olson, Edward A. Pet litter collecting device. 4,500,125, Cl. 294-1.0BA.

Olympia Werke AG: *See*—
Lange, Heinz; Rix, Albert; and Drogi, Dieter, 4,500,219, Cl. 400-568.000.

Olympus Optical Co., Ltd.: *See*—
Aoki, Masahiro, 4,500,189, Cl. 354-407.000.
Kasuga, Muneo; Shimizu, Akira; and Nishio, Tadashi, 4,500,199, Cl. 355-14.0CU.
Sato, Masaaki, 4,501,013, Cl. 381-86.000.
Takahashi, Susumu, 4,500,181, Cl. 350-574.000.
Takayama, Syuichi, 4,499,895, Cl. 128-6.000.
Tanikawa, Kowji, 4,500,183, Cl. 354-21.000.
Yamasaki, Masafumi, 4,500,192, Cl. 354-427.000.

Onishi, Toshiyuki: *See*—
Motoyama, Takeshi; Onishi, Toshiyuki; and Yokoyama, Kunio, 4,499,738, Cl. 62-155.000.

Ono, Katsuyasu, to NSK-Warner K.K. Mounting arrangement for through anchor. 4,500,115, Cl. 280-808.000.

Ono, Kouji: *See*—
Sakamoto, Eiichi; Kawasaki, Mikio; Ono, Kouji; Fukuoji, Kakujulo; and Fujimori, Noboru, 4,500,631, Cl. 430-413.000.

Ono, Mitsunori; Itoh, Isamu; Mihayashi, Keiji; and Karino, Yukio, to Fuji Photo Film Co., Ltd. Silver halide photographic light-sensitive material. 4,500,636, Cl. 430-566.000.

Ono, Shoji: *See*—
Suzuki, Yoji; Imaizumi, Atsushi; Yamaguchi, Hisao; Kanesaki, Masaharu; and Ono, Shoji, 4,500,639, Cl. 435-244.000.

Onodera, Hisakithi: *See*—
Onuki, Jin; Soeno, Ko; Morita, Keiichi; and Onodera, Hisakithi, 4,500,904, Cl. 357-67.000.

Onuki, Jin; Soeno, Ko; Morita, Keiichi; and Onodera, Hisakithi, to Hitachi, Ltd. Semiconductor device. 4,500,904, Cl. 357-67.000.

Ooga, Hirotomo; and Sakurai, Hiromi, to Mitsubishi Denki Kabushiki Kaisha. Method of making a semiconductor device having protected edges. 4,499,657, Cl. 29-578.000.

Oouchi, Tomihisa: *See*—
Nishiguchi, Akira; Usui, Sanpei; Oouchi, Tomihisa; and Iwai, Kazumi, 4,499,859, Cl. 122-18.000.

Oppitz, Hans, to Eltac Nogler & Daum KG. Reinforcing or carrier element for structural material. 4,500,410, Cl. 204-299.00R.

Ormbey, Lee S. Method of removing salts of the alkali earth metal group from water. 4,500,433, Cl. 210-669.000.

Orr, Alfred B.: *See*—
Monhardt, Richard J.; Orr, Alfred B.; and Wright, Joseph B., 4,500,252, Cl. 415-9.000.

Orth, Eugene C.; and Ebenhoch, Sebastian, to Waukesha Cutting Tools, Inc. Trepanning tool. 4,500,234, Cl. 408-206.000.

Ortwein, Hermann: *See*—
Braitsch, Hans; Ortwein, Hermann; and Vorwald, Josef, 4,500,037, Cl. 238-2.000.

Osada, Toshihiko: *See*—
Ban, Yasutaka; and Osada, Toshihiko, 4,500,789, Cl. 250-492.200.

Osaka, Hiroshi: *See*—
Tomizawa, Akimori; and Osaka, Hiroshi, 4,500,921, Cl. 358-174.000.

Osborn, Alfred W., to Rolls-Royce Limited. Mounting system for coupled turboshaft gas turbine engines. 4,500,054, Cl. 244-54.000.

Ostlinning, Edgar; and Idel, Karsten, to Bayer Aktiengesellschaft. Anhydrous preparation of polyarylene sulfide in one vessel reaction system. 4,500,702, Cl. 528-388.000.

Oswald, Thomas, to International Standard Electric Corporation. Optical transmission system and method. 4,501,022, Cl. 455-601.000.

Oswalt, Stephen M.: *See*—
Rabito, Thomas G.; Oswalt, Stephen M.; and Cline, Richard L., 4,500,606, Cl. 428-480.000.

Otto, Dieter: *See*—
Backe, Egbert; Muller, Rolf; Otto, Dieter; Leonardi, Cornelio; Kochendorfer, Heinrich; Fussner, Paul; Walker, Ewald; and Rommel, Rudi, 4,499,757, Cl. 73-119.00A.

Ottosen, Richard A.: *See*—
Roberts, Michael K.; Ottosen, Richard A.; and McConnell, Matthew L., 4,499,771, Cl. 73-632.000.

Outboard Marine Corporation: *See*—
Billingsley, Henry C.; and Clark, Amos M., 4,499,887, Cl. 123-575.000.
Hall, Charles B.; and Mondek, Martin J., 4,500,298, Cl. 440-62.000.

Over, William R.: *See*—
Brown, Christopher K.; Kensinger, Lex D.; Over, William R.; and Wion, Donald A., 4,499,648, Cl. 29-564.200.

Overberg, Karl W.: *See*—
Garrett, William G.; and Overberg, Karl W., 4,499,673, Cl. 361-56.000.

Overlack, Claus: *See*—
Reppel, Werner; and Overlack, Claus, 4,500,378, Cl. 156-160.000.

Owens-Corning Fiberglas Corporation: *See*—
Naul, George M., 4,500,583, Cl. 428-116.000.
Turner, Larry S., 4,499,702, Cl. 52-555.000.

Wong, Robert; Flautt, Martin C.; and Haines, Richard M., 4,500,600, Cl. 428-391.000.

Owens-Illinois, Inc.: *See*—
Bieringer, Robert J., 4,500,203, Cl. 356-240.000.
Mumford, Eustace H., 4,499,806, Cl. 83-527.000.
Steffan, Leonard D.; and Kohler, Robert D., 4,499,920, Cl. 137-624.150.
Stoll, Andy J., III, 4,500,007, Cl. 220-71.000.

Oy Wartsila Ab: *See*—
Uomala, Vilho; Sandstrom, Kjell; and Matilainen, Jorma, 4,500,092, Cl. 277-12.000.

Ozawa, Kunitaka: *See*—
Koumura, Noboru; Ayata, Naoki; Saito, Seiji; Suzuki, Hidetoshi; and Ozawa, Kunitaka, 4,500,918, Cl. 358-75.000.

Ozawa, Takashi, to Fuji Xerox Co., Ltd. Original reading device. 4,500,927, Cl. 358-293.000.

P.I.V. Antrieb Werner Reimers GmbH & Co. KG: *See*—
Rattunde, Manfred, 4,500,305, Cl. 474-201.000.

Paalman, H. Hunter; and Drapeau, Denis, to Dow Chemical Company, The. Selective removal of H_2S from steam also containing CO_2. 4,500,500, Cl. 423-224.000.

Paberza, Monika Y.: *See*—
Grinberg, Grigory M.; Akifiev, Oleg N.; Pytel, Jury A.; Gilev, Anatoly P.; and Paberza, Monika Y., 4,500,516, Cl. 424-156.000.

Pabley, Avtar S. Saltwater and hard water bentonite mud. 4,500,436, Cl. 252-8.50A.

Pacific Scientific Company: *See*—
Larsen, Richard R., 4,500,026, Cl. 228-44.10R.

Pacific Western Systems, Inc.: *See*—
Ellenberger, Charles E.; Bower, George L.; and Snow, William R., 4,500,563, Cl. 427-38.000.
Staudacher, George E., 4,500,836, Cl. 324-73.0AT.

Pacifici, Joseph A.; and Bryant, Clifford A., to West Point Pepperell, Inc. Apparatus for uniformly applying either liquid or foam compositions to a moving web. 4,500,039, Cl. 239-193.000.

Page, Philip R.: *See*—
Villax, Ivan; and Page, Philip R., 4,500,458, Cl. 260-351.500.

Paisley, Kirk E.: *See*—
Fazio, Michael J.; and Paisley, Kirk E., 4,500,728, Cl. 560-222.000.

Palframan, John D.: *See*—
Babecki, Glenn R.; Escolar, Carlos; Garnant, Craig M.; Kan, Hsin-Kuo; Kaplan, Frank; Liu, Hueichi R.; MacLachlan, George F.; Matteo, Peter J.; McDonald, John F.; Palframan, John D.; Tran, Roger T.; Welt, Martin J.; Wendt, Timothy A.; Yates, Gregory S.; and Zislis, Paul M., 4,500,960, Cl. 364-200.000.

Panavision, Inc.: *See*—
Nabulsi, Hazem, 4,500,916, Cl. 358-51.000.

Paper, Calmenson & Co.: *See*—
Reinhardt, Paige J., 4,500,766, Cl. 219-76.100.

Papizan, John L. Fishing seat tray. 4,500,059, Cl. 248-205.100.

Parish, James M., to B. F. Goodrich Company, The. Method and apparatus for releasing a submerged life raft. 4,499,844, Cl. 114-367.000.

Parkell, Edward; and Newkirk, Mark C., to Maul Technology Corporation. Glass stream cutting apparatus. 4,500,334, Cl. 65-334.000.

Pasichinskyj, Mario J.: *See*—
Merritt, Thomas D.; and Pasichinskyj, Mario J., 4,500,827, Cl. 322-3.000.

Patel, Nathalal G.: *See*—
Haury, Gilbert E.; Patel, Nathalal G.; Lockard, Walter G.; and Wintrak, Thomas R., 4,500,102, Cl. 280-242.0WC.

Patrick, Willard J.: *See*—
Whitaker, Angus H.; McFarland, Keith E.; Lloyd, William A.; and Patrick, Willard J., 4,500,045, Cl. 242-57.100.

Patten, James W.; Moss, Ronald W.; and Forcht, Brennan A., to LTV Aerospace and Defense Co. Composite protective coating for carbon-carbon substrates. 4,500,602, Cl. 428-408.000.

Paulson, Bernard S.; Paulson, Bruce H.; Clark, Brian K.; and Briesemeister, Richard A., to Pixall Corporation. Self-cleaning support roller for an endless conveyor belt. 4,499,992, Cl. 198-498.000.

Paulson, Bruce H.: *See*—
Paulson, Bernard S.; Paulson, Bruce H.; Clark, Brian K.; and Briesemeister, Richard A., 4,499,992, Cl. 198-498.000.

Paulson, Danton L.: *See*—
Cole, Ernest R., Jr.; Lee, Agnes Y.; and Paulson, Danton L., 4,500,398, Cl. 204-117.000.

Paurat, Friedrich W.; and Paurat, Roland. Belt-type bulk-material conveyor for underground use. 4,499,993, Cl. 198-819.000.

Paurat, Roland: *See*—
Paurat, Friedrich W.; and Paurat, Roland, 4,499,993, Cl. 198-819.000.

Pavey, Charles F.: *See*—
Madewell, James A.; Molitor, Edwin A.; Crowe, Norman P.; Lampe, Guy W.; and Pavey, Charles F., 4,500,245, Cl. 414-108.000.

Paxhia, Frank V.: *See*—
Bucek, Francis J.; and Paxhia, Frank V., 4,500,928, Cl. 358-296.000.

PCB Piezotronics, Inc.: *See*—
Riggs, Michael T., 4,499,751, Cl. 73-4.00R.

PDL Industries Limited: *See*—
Cook, David L., 4,500,008, Cl. 220-242.000.

Peachee, C. Theodore, Jr., to Emerson Electric Co. Method of fabricating die cast rotor with one piece oil return/rotor shaft securement member. 4,499,661, Cl. 29-598.000.

Pearson, Leonard L.; and Litchfield, John, to Cole Polymers Limited. Preservation of structures. 4,500,568, Cl. 427-294.000.

Pecker, Calman: *See*—
Lynch, Joseph M.; Pfafflin, James R.; Pecker, Calman; Cardenas, Raul; Cunningham, Seamus; Bozzone, Richard T., Sr.; and Borg, Sidney, 4,500,428, Cl. 210-609.000.

Pedersen, Carl O.: *See*—
Maurer, Herman J.; Pedersen, Carl O.; and Nudd, Barry C., 4,500,250, Cl. 414-695.500.

Peel, R. W.: *See*—
Miles, Ronald C.; Geren, George W.; and Peel, R. W., 4,500,402, Cl. 204-242.000.

Pehl, Willis G.: *See*—
Bockwinkel, Joe L.; and Pehl, Willis G., 4,499,701, Cl. 52-555.000.

Peil, William: *See*—
Bitting, Ricky F.; and Peil, William, 4,500,821, Cl. 318-254.000.

Peloza, Kirk B., to Eaton Corporation. Fluid pressure signal transducer. 4,499,915, Cl. 137-85.000.

Peltier, Gerard; Longuet, Michel; and Midgley, Charles A., to Polysar International S.A. Foam rubber backings for composite materials having glass fiber substrates coated with PVC. 4,500,591, Cl. 428-251.000.

Penney, William H. Can puncturing and emptying device. 4,500,015, Cl. 222-83.500.

Pentel Kabushiki Kaisha: *See*—
Hashimoto, Junichi, 4,500,220, Cl. 401-53.000.

Penz, Perry A.; and Sampsell, Jeffrey B., to Texas Instruments Incorporated. Process for plastic LCD fill hole sealing. 4,500,171, Cl. 350-320.000.

Perez, Ricardo L.: *See*—
Murphy, Richard D.; Perez, Ricardo L.; and Clelford, Douglas H., 4,500,967, Cl. 364-434.000.

Perigo, John A.; and Divall, John E., to Metal Box p.l.c. Separable couplings for containers. 4,499,932, Cl. 141-91.000.

Perkins, Derek: *See*—
Austin, James W.; Bradburn, Ronald G.; Cromwell, Clarence A.; Gratch, Eitan; Groiss, Erich; Perkins, Derek; and Walker, Robert A., 4,500,496, Cl. 423-55.000.

Perkins, Frederick M., to Perko, Inc. Tri spherical lens assembly. 4,500,947, Cl. 362-311.000.

Perkins, Thomas K., to Atlantic Richfield Company. Viscous oil recovery using controlled pressure well pair drainage. 4,499,948, Cl. 166-248.000.

Perko, Inc.: *See*—
Perkins, Frederick M., 4,500,947, Cl. 362-311.000.

Permelec Electrode Ltd.: *See*—
Asano, Hisoshi; Shimamune, Takayuki; Goto, Toshiki; and Hosonuma, Masashi, 4,500,405, Cl. 204-290.00F.

Perotto, Riccardo, to Nordica S.p.A. Ski boot inner shoe. 4,499,675, Cl. 36-119.000.

Perron, Robert: *See*—
Gauthier-Lafaye, Jean; Perron, Robert; Gallucci, Jacques; and Leconte, Philippe, 4,500,473, Cl. 260-548.000.
Gauthier-Lafaye, Jean; and Perron, Robert, 4,500,474, Cl. 260-549.000.

Perry, Forbes G. D., to National Research Development Corporation. Transmission units of the toroidal race rolling friction type. 4,499,782, Cl. 74-200.000.

Personal Products Company: *See*—
Pieniak, Heinz A.; and Iskra, Michael J., 4,500,315, Cl. 604-379.000.

Persoon, Eric H. J.; and Abeysekera, Ratnayake M. S. S., to U.S. Philips Corporation. Device for the dynamic adjustment of a black/white discrimination threshold for the processing of images containing grey values. 4,501,016, Cl. 382-22.000.

Peter, Emmett B., III: *See*—
Rayfield, Wilson P.; Peter, Emmett B., III; and Shultz, Richard E., 4,500,085, Cl. 271-207.000.

Peters, Hartmut; and Ramcke, Bernd, to E.C.H. Will (GmbH & Co.). Machine for making ruled pads or the like. 4,500,241, Cl. 412-37.000.

Peters, Penn A.; Biller, Cleveland J.; and Johnson, David D., to United States of America, Agriculture. Transport carriage. 4,500,004, Cl. 212-80.000.

Petersen, Kurt-Eckard: *See*—
Vock, Jurgen; Pinck, Peter; Lange, Norbert; Schmalfeld, Erwin; and Petersen, Kurt-Eckard, 4,500,770, Cl. 219-121.0LK.

Peterson, Leroy L.: *See*—
Lewandowski, Edward F.; and Peterson, Leroy L., 4,499,708, Cl. 53-432.000.

Peterson, Richard R., to Sioux Technology, Inc. Locker shelf assembly. 4,500,146, Cl. 312-257.0SM.

Petitou, Maurice: *See*—
Lormeau, Jean-Claude; Petitou, Maurice; and Choay, Jean, 4,500,519, Cl. 514-56.000.

Petrarch Systems Inc.: *See*—
Arkles, Barry C., 4,500,688, Cl. 525-431.000.

Petrofsky, Jerrold S.; Phillips, Chandler A.; Glaser, Roger M.; and Heaton, Harry H., III, to Wright State University. System and method for treating paralyzed persons. 4,499,900, Cl. 128-423.00W.

Petrolite Corporation: *See*—
French, Eddie; and Braga, Thomas G., 4,500,445, Cl. 252-387.000.
Woods, John H.; Graves, Toby R.; Nasser, William E.; and Jagtap, Ashvinkumar N., 4,500,359, Cl. 106-270.000.

Petschauer, Thomas W.: *See*—
Bennett, Donald B.; Thorsrud, Lee T.; and Petschauer, Thomas W., 4,500,988, Cl. 370-85.000.

Petterson, Bjorn R.: *See*—
Tag, Arne; Petterson, Bjorn R.; and Nygaard, Erik C., 4,500,369, Cl. 149-2.000.

Pettingell, James T., to Hancock, Robert D. Method and apparatus for manufacturing a hot spot thermocouple. 4,500,031, Cl. 228-179.000.

Petty-Weeks, Bruce C.; and Zeitlin, Martin A., to Standard Oil Company (Indiana). Process for removal and recycle of p-toluic acid from terephthalic acid crystallizer solvent. 4,500,732, Cl. 562-486.000.

Peyton, Richard H.: *See*—
Thorton, Donald I.; and Peyton, Richard H., 4,500,425, Cl. 210-136.000.

Pfafflin, James R.: *See*—
Lynch, Joseph M.; Pfafflin, James R.; Pecker, Calman; Cardenas, Raul; Cunningham, Seamus; Bozzone, Richard T., Sr.; and Borg, Sidney, 4,500,428, Cl. 210-609.000.

Pfenninger, Heinz: *See*—
Hugelshofer, Paul; Bruttel, Beat; Pfenninger, Heinz; and Lacroix, Roger, 4,500,321, Cl. 8-527.000.

Pfizer Inc.: *See*—
Lombardino, Joseph G.; and Harbert, Charles A., 4,500,535, Cl. 514-277.000.

Philipp Holzmann Aktiengesellschaft: *See*—
Baumann, Theodor; and Schreyegg, Otmar, 4,499,699, Cl. 52-169.100.

Phillips, Chandler A.: *See*—
Petrofsky, Jerrold S.; Phillips, Chandler A.; Glaser, Roger M.; and Heaton, Harry H., III, 4,499,900, Cl. 128-423.00W.

Phillips, Donald E., to Rockwell International Corporation. Wide range phase detector utilizing a plurality of stacked detector modules. 4,500,852, Cl. 331-12.000.

Phillips Petroleum Company: *See*—
Beardmore, David H., 4,500,281, Cl. 431-3.000.
DuBroff, Richard E., 4,500,976, Cl. 367-48.000.
Hutson, Thomas, Jr., 4,500,490, Cl. 422-62.000.
Mathis, Ronald D.; Reed, Jerry O.; and Hagler, Gerald E., 4,500,706, Cl. 528-502.000.
Tillman, Willie, 4,500,491, Cl. 422-150.000.
Walters, John P., 4,499,930, Cl. 141-8.000.

Piaggi, Alberto. Processes for manufacturing specific products suitable for the storage, transport, preparation and consumption of food, and drinks and products obtained by said processes, such as plates, soup plates, vessels, cups, glasses and the like. 4,500,573, Cl. 428-35.000.

Picard, Salvatore R.: *See*—
Naubereit, Henry; Beyer, Henry R.; DeSipio, Richard G.; and Picard, Salvatore R., 4,500,884, Cl. 343-456.000.
Naubereit, Henry; Long, Thomas F.; Picard, Salvatore R.; and Ritz, Joseph, 4,500,886, Cl. 343-456.000.

Pickel, Hans: *See*—
Neitz, Alfred; D'Alfonso, Nunzio; and Pickel, Hans, 4,499,871, Cl. 123-276.000.

Pieniak, Heinz A.; and Iskra, Michael J., to Personal Products Company. Superthin absorbent product. 4,500,315, Cl. 604-379.000.

Pike, Winthrop S., to RCA Corporation. Diode simulator circuit. 4,500,798, Cl. 307-317.00R.

Pikorz, Wolfgang: *See*—
Sommer, Karl H.; Sonntag, Alois; and Pikorz, Wolfgang, 4,500,901, Cl. 357-38.000.

Pilgram, Kurt H.; and Price, Thomas P., to Shell Oil Company. Isoxazolotriazindiones and plant growth inhibiting use thereof. 4,500,345, Cl. 71-93.000.

Pilliard, J. Paul: *See*—
Hoyt, Robert M.; Bobbitt, Donald E.; Bartee, Gary E.; Garton, Stanley C.; and Pilliard, J. Paul, 4,499,698, Cl. 52-157.000.

Pinck, Peter: *See*—
Vock, Jurgen; Pinck, Peter; Lange, Norbert; Schmalfeld, Erwin; and Petersen, Kurt-Eckard, 4,500,770, Cl. 219-121.0LK.

Pinnick, Robert V.: *See*—
Diederich, Dennis A.; Wiegmann, Thomas B.; and Pinnick, Robert V., 4,500,309, Cl. 604-5.000.

Pioneer Electronic Corporation: *See*—
Sugihara, Masanori, 4,500,049, Cl. 242-186.000.
Takemasa, Kaoru, 4,499,783, Cl. 74-411.000.

Pioneoer Electronic Corporation: *See*—
Nakayama, Kazuaki, 4,500,849, Cl. 330-300.000.

Pitney Bowes Inc.: *See*—
Buan, Danilo P.; and Eckert, Alton B., 4,500,780, Cl. 250-231.0SE.
Dannatt, Hugh St. L., 4,500,197, Cl. 355-8.000.

Pixall Corporation: *See*—
Paulson, Bernard S.; Paulson, Bruce H.; Clark, Brian K.; and Briesemeister, Richard A., 4,499,992, Cl. 198-498.000.

Plank, Vernon G.; Matthews, Anthony J.; Berthel, Robert O.; and LaGross, Dennis L., to United States of America, Air Force. Snow scale/rate meter. 4,499,761, Cl. 73-170.00R.

Plannja AB: *See*—
Gustafsson, Erik, 4,499,700, Cl. 52-478.000.

Plastic Specialties and Technologies, Inc.: *See*—
Gerteisen, Steven R.; Wenger, Richard M.; and Cannavo, Glenn M., 4,500,595, Cl. 428-294.000.

Platel, Alain Y.; Lacour, Alain P.; and Bourgery, Guy R., to Delalande S.A. Therapeutical use of (1-cinnamoyl or 1-phenethylcarbonyl) piperazine derivatives. 4,500,531, Cl. 514-255.000.

Platet, Bernard: *See*—
Calvet, Pierre; and Platet, Bernard, 4,500,214, Cl. 374-36.000.

Platt, Clark I., to Whirlpool Corporation. Vacuum cleaning apparatus. 4,499,628, Cl. 15-419.000.

Pletsch, Hubert: *See*—
Wolf, Franz-Josef; and Pletsch, Hubert, 4,500,300, Cl. 464-83.000.

Pliml, Frank V., Jr., to Illinois Tool Works Inc. Tension indicating washer for smooth and irregular surfaces. 4,500,237, Cl. 411-11.000.

Plotkin, Victor, to New Hermes Incorporated. Engraving apparatus. 4,500,236, Cl. 409-86.000.

Plunkett, Luther C., Jr., to Lanier Business Products, Inc. Telephone answering apparatus with recorded time of day and date. 4,500,753, Cl. 179-6.030.

Plurichemie Anstalt: *See*—
Villax, Ivan; and Page, Philip R., 4,500,458, Cl. 260-351.500.

Pokorny, Erich: *See*—
Beck, Ernst; Lenard, Peter; and Pokorny, Erich, 4,499,794, Cl. 76-75.000.

Polak, Anthony J.; and Beuhler, Allyson J., to UOP Inc. Polymer blended membranes. 4,500,667, Cl. 524-406.000.

Polygram GmbH: *See*—
Bluthgen, Bjorn, 4,501,014, Cl. 381-94.000.

Polymer Processing Research Institute Ltd.: *See*—
Okada, Tokio; Tani, Haruhisa; Kojima, Shigezo; Tsuyama, Setsuya; Kurihara, Kazuhiko; and Yazawa, Hiroshi, 4,499,639, Cl. 28-282.000.

Polysar International S.A.: *See*—
Peltier, Gerard; Longuet, Michel; and Midgley, Charles A., 4,500,591, Cl. 428-251.000.

Polytronics, Inc.: *See*—
Bertsch, Jack, 4,500,160, Cl. 339-166.00R.

Pont-A-Mousson S.A.: *See*—
Oger, Jacques; Hauer, Jean-Claude; and Freis, Jean-Louis, 4,499,695, Cl. 52-19.000.

Poole, John S.; Gere, Dennis R.; Bell, Raymond J.; and Nickerson, Mark A., to Hewlett-Packard Company. Automated sample concentrator for trace components. 4,500,432, Cl. 210-659.000.

Pope, John R., to USM Corporation. Horn for use in transmitting ultrasonic vibrations. 4,499,845, Cl. 116-137.00A.

Porat, Chaim; and Sadeh, Yaacov, to Beta Engineering & Development Ltd. Testing device for an intrusion detection system. 4,500,873, Cl. 340-515.000.

Post Office, The: *See*—
Ferro, Berkeley M.; and Walker, Aubrey D., 4,500,116, Cl. 283-92.000.

Povazancova, Marta: *See*—
Durmis, Julius; Balogh, Alojz; Karvas, Milan; Hrachovcova, Maria; Masek, Jan; Caucik, Pavol; and Povazancova, Marta, 4,500,446, Cl. 252-403.000.

Poznansky, Abraham: *See*—
Bond, Armand P.; Poznansky, Abraham; and Grobner, Paul J., 4,500,351, Cl. 75-128.00N.

PPG Industries, Inc.: *See*—
Krogh, James A., 4,500,726, Cl. 56-160.000.
Singer, Debra L.; McCollum, Gregory J.; Dowbenko, Rostyslaw; and O'Dwyer, James B., 4,500,680, Cl. 525-143.000.

Pratt-Read Corporation: *See*—
Feagans, Frederick C.; and Nordquist, Albert W., 4,500,756, Cl. 200-5.00A.

Pressaco, Pierre; and Carre , Jean-Jacques, to Societe Anonyme D.B.A. Servo-motor for power-assisted braking. 4,499,812, Cl. 91-376.00R.

Presto Lock, Inc.: *See*—
Bako, Lazlo; and Scelba, Stephen S., 4,499,681, Cl. 42-1.00Y.

Prete, Ralph, to Stone Safety Corporation. Chopping type electrical converter. 4,500,949, Cl. 363-28.000.

Price, Thomas P.: *See*—
Pilgram, Kurt H.; and Price, Thomas P., 4,500,345, Cl. 71-93.000.

Prima Valves International (Proprietary) Limited: *See*—
Scragg, Edgar P., 4,499,686, Cl. 47-48.500.

Prince Corporation: *See*—
Fleming, Dennis J., 4,500,131, Cl. 296-97.00K.

Prince, Terry K.: *See*—
Kelley, William J.; and Prince, Terry K., 4,500,299, Cl. 446-230.000.

Process Research Development & Management, Inc.: *See*—
Lynch, Joseph M.; Pfafflin, James R.; Pecker, Calman; Cardenas, Raul; Cunningham, Seamus; Bozzone, Richard T., Sr.; and Borg, Sidney, 4,500,428, Cl. 210-609.000.

Prolingheuer, Ernst-Christoph: *See*—
Rasshofer, Werner; and Prolingheuer, Ernst-Christoph, 4,500,656, Cl. 521-164.000.

Prosnitz, Donald: *See*—
Szoke, Abraham; and Prosnitz, Donald, 4,500,843, Cl. 330-4.300.

Protectair Limited: *See*—
Young, David E., 4,500,313, Cl. 604-280.000.

Prussin, Samuel: *See*—
Young, Robert W.; Prussin, Samuel; and Gaylord, Norman G., 4,500,337, Cl. 71-67.000.
Young, Robert W.; Prussin, Samuel; and Gaylord, Norman G., 4,500,339, Cl. 71-67.000.

Prussin, Samuel, deceased: *See*—
Young, Robert W.; Prussin, Samuel, deceased; and Gaylord, Norman G., 4,500,338, Cl. 71-67.000.

Prussin, Shirley, executor: *See*—
Young, Robert W.; Prussin, Samuel, deceased; and Gaylord, Norman G., 4,500,338, Cl. 71-67.000.

Puglia, Wayne J.; Kehoe, Gary S.; and Clark, K. Warren, to Nabisco Brands, Inc. Reduced-shrink bubble gum. 4,500,547, Cl. 426-3.000.

Puthawala, Anwer: *See*—
Kuhnke, Klaus; Bege, Dietmar; Puthawala, Anwer; and Wittrowsky, Gunter, 4,500,449, Cl. 252-628.000.

Putman, Richard E., to Westinghouse Electric Corp. Industrial process control apparatus and method. 4,500,950, Cl. 364-138.000.

Puxbaumer, Hans-Hermann: *See—*
Simo, Thomas; Eisenlohr, Karl-Heniz; and Puxbaumer, Hans-Hermann, 4,500,415, Cl. 208-56.000.

Pytel, Jury A.: *See—*
Grinberg, Grigory M.; Akifiev, Oleg N.; Pytel, Jury A.; Gilev, Anatoly P.; and Paberza, Monika Y., 4,500,516, Cl. 424-156.000.

Quicksteel Engineering Pty. Ltd.: *See—*
Quittner, John P., 4,500,225, Cl. 404-6.000.

Quillet, Jean-Pierre: *See—*
Ricouard, Jacques; and Quillet, Jean-Pierre, 4,499,745, Cl. 70-285.000.

Quin, Dorothy L., administratrix: *See—*
Quin, Murray L., deceased, 4,500,796, Cl. 307-147.000.

Quin, Murray L., deceased (by Quin, Dorothy L., administratrix), to Emerson Electric Co. System and method of electrically interconnecting multiple lighting fixtures. 4,500,796, Cl. 307-147.000.

Quinones, Richard J.: *See—*
Vezirian, Edward; Quinones, Richard J.; and Lockstedt, Alan W., 4,499,642, Cl. 29-149.50R.

Quittner, John P., to Quicksteel Engineering Pty. Ltd. Transferable roadway lane divider. 4,500,225, Cl. 404-6.000.

R. R. Donnelley & Sons Company: *See—*
Wong, Did-Bun, 4,500,083, Cl. 270-54.000.

Rabito, Thomas G.; Oswalt, Stephen M.; and Cline, Richard L., to Ashland Oil, Inc. Sealer for polyester and method of use to obtain laminates. 4,500,606, Cl. 428-480.000.

Raden, Daniel S.: *See—*
Carlsen, Russell O.; Casati, Francois M.; and Raden, Daniel S., 4,500,654, Cl. 521-129.000.

Radovsky, Everett S. Flush and refill device. 4,499,615, Cl. 4-366.000.

Radtke, Robert P., to Strata Bit Corporation. Method of drill bit manufacture. 4,499,795, Cl. 76-108.00A.

Radtke, Robert P.; and Morris, Wilford V., to Strata Bit Corporation. Drag blade bit with diamond cutting elements. 4,499,958, Cl. 175-329.000.

Raidel, John E. Wide base air spring suspension system. 4,500,112, Cl. 280-693.000.

Raker, John W.: *See—*
Ruetschle, Rudolph H.; and Raker, John W., 4,499,834, Cl. 112-2.000.

Rall, Ulrich: *See—*
Grunert, Heinz; Hahn, Fritz; Rall, Ulrich; Schumann, Klaus; Schwuger, Milan J.; and Smolka, Heinz G., 4,500,320, Cl. 8-442.000.

Ralston Purina Company: *See—*
Chu, Wayne S., 4,500,555, Cl. 426-479.000.

Ramcke, Bernd: *See—*
Peters, Hartmut; and Ramcke, Bernd, 4,500,241, Cl. 412-37.000.

Ramesohl, Hubert: *See—*
Klotmann, Fred; and Ramesohl, Hubert, 4,500,285, Cl. 432-103.000.

Rametta, Anthony J., to Minnesota Mining and Manufacturing Company. Anaerobically-curing compositions. 4,500,608, Cl. 428-522.000.

Ramsey, Maynard, III: *See—*
Chang, Joseph J.; and Ramsey, Maynard, III, 4,499,901, Cl. 128-635.000.

Rankel, Lillian A.; and Valyocsik, Ernest W., to Mobil Oil Corporation. Process for the preparation of mordenite utilizing transition metal complexes during crystallization. 4,500,503, Cl. 423-329.000.

Rao, S. Prabhakara: *See—*
Brothers, Lance E.; and Rao, S. Prabhakara, 4,500,357, Cl. 106-90.000.

Rapacz, Deirdre T.: *See—*
Lee, Calvin K.; and Rapacz, Deirdre T., 4,500,592, Cl. 428-251.000.

Rascle, Roger; and Lange, Francois, to Thomson-CSF. Method for removal of a data carrier disk after molding. 4,500,486, Cl. 264-335.000.

Rasmussen, Donald C., deceased (by Rasmussen, Jaunice O., executor); and Kozel, James A., deceased (by Kozel, Violet M., executor), to Singer Company, The. Air valve. 4,500,068, Cl. 251-205.000.

Rasmussen, Jaunice O., executor: *See—*
Rasmussen, Donald C., deceased; and Kozel, James A., deceased, 4,500,068, Cl. 251-205.000.

Rasor, William, to Masco Corp. Article carrier with adjustably positionable bracket. 4,500,020, Cl. 224-321.000.

Rasshofer, Werner; and Prolingheuer, Ernst-Christoph, to Bayer Aktiengesellschaft. Process for the preparation of a cellular polyurethane. 4,500,656, Cl. 521-164.000.

Ratigalas, Max, to Thomson-CSF. Method for coding binary data and a device decoding coded data. 4,500,871, Cl. 340-347.0DD.

Rattunde, Manfred, to P.I.V. Antrieb Werner Reimers GmbH & Co. KG. Side-bar chain for infinitely variable cone pulley transmissions. 4,500,305, Cl. 474-201.000.

Rautio, Kauko. Cutter for square timber hewing machine. 4,499,934, Cl. 144-176.000.

Ravinet, Pierre: *See—*
Broussoux, Dominique; Facoetti, Hugues; Ravinet, Pierre; Bernard, Daniel; and Micheron, Francois, 4,500,377, Cl. 156-164.000.

Ray, Siba P.: *See—*
Weyand, John D.; Woods, Robert W.; DeYoung, David H.; and Ray, Siba P., 4,500,406, Cl. 204-293.000.

Rayfield, Wilson P.; Peter, Emmett B., III; and Shultz, Richard E., to Burroughs Corporation. Oscillating wheel paper item stacking apparatus. 4,500,085, Cl. 271-207.000.

Raytheon Company: *See—*
Varteresian, Michael G.; and Steele, S. Robert, 4,499,659, Cl. 29-589.000.

RCA Corporation: *See—*
Bolger, Thomas V., 4,500,912, Cl. 358-31.000.
Coyle, Peter J., 4,499,996, Cl. 206-444.000.
Duvall, William E.; and Hwang, Mau-Choung P., 4,500,923, Cl. 358-190.000.
Hamalainen, Kaarlo J.; and Reitmeier, Glenn A., 4,500,930, Cl. 358-310.000.
Harwood, Leopold A., 4,500,910, Cl. 358-28.000.
Johnston, Loren B., Jr., 4,500,815, Cl. 315-366.000.
McCandless, Harry E., 4,500,808, Cl. 313-409.000.
Miller, Edward A., 4,499,853, Cl. 118-725.000.
Pike, Winthrop S., 4,500,798, Cl. 307-317.00R.
Turner, Robert L., 4,499,995, Cl. 206-312.000.
Wierschke, Donald J., 4,500,393, Cl. 204-5.000.
Wilbur, Leonard P., Jr.; and Van Renssen, Marinus, 4,500,767, Cl. 219-78.010.

Reams, Walter: *See—*
Fontana, Jack J.; and Reams, Walter, 4,500,674, Cl. 524-650.000.

Reba, Imants; Schutz, Rudolph W.; and Kozbur, Nestor, to Crown Zellerbach Corporation. Web slitting and grooving method. 4,499,801, Cl. 83-24.000.

Redecker, Friedrich: *See—*
Kuhn, Franz; Lippek, Wilfried; Mollgaard, Klaus; and Redecker, Friedrich, 4,500,972, Cl. 364-526.000.

Redmond, Russell J.; and Ash, Jessica B., to American Hospital Supply Corporation. External ventricular drainage assembly. 4,500,311, Cl. 604-246.000.

Reed, Anthony R.: *See—*
Engelhardt, Friedrich; Kuhlein, Klaus; Riegel, Ulrich; von Halasz, Sigmar; Dawson, Jeffery C.; and Reed, Anthony R., 4,500,437, Cl. 252-8.55C.

Reed, Geoffrey R.: *See—*
Laws, William R.; and Reed, Geoffrey R., 4,499,746, Cl. 72-13.000.

Reed, Jerry O.: *See—*
Mathis, Ronald D.; Reed, Jerry O.; and Hagler, Gerald E., 4,500,706, Cl. 528-502.000.

Reed, Phillip J.: *See—*
Dubreuil, Luc; and Reed, Phillip J., 4,500,747, Cl. 174-76.000.

Reese, James A.; and Dean, Raymond H., to Tempmaster Corporation. Electronic control arrangement for system powered HVAC terminal units. 4,500,034, Cl. 236-49.000.

Regan, John R.: *See—*
Suh, John T.; Barton, Jeffrey N.; and Regan, John R., 4,500,713, Cl. 546-165.000.

Regge, Dieter, to Windmoller & Holscher. Central gear driven flexographic printing press accommodating different diameter plate cylinders. 4,499,826, Cl. 101-181.000.

Regie Nationale des Usines Renault: *See—*
Brisabois, Roger, 4,499,791, Cl. 74-700.000.

Reginato, Francesco, to Lima S.p.A. Modular control panel for miniature-railway switches. 4,500,058, Cl. 246-3.000.

Reiji, Oguma; and Akihiro, Hirai, to Toshiba Ceramics Co., Ltd. Infrared absorbing quartz glass with iron and aluminum. 4,500,642, Cl. 501-54.000.

Reimann, Hans; Frydman, Allen; and Fuchs, Uwe, to Linde Aktiengesellschaft. Process for the biological purification of waste water. 4,500,429, Cl. 210-616.000.

Reinert, Gerard E.: *See—*
Schmidt, Manfred; Witman, Mark W.; Reinert, Gerard E.; and Lim, In C., 4,500,653, Cl. 521-90.000.

Reinhardt, Paige J., to Paper, Calmenson & Co. Method of fusion of inserts to snow plow runners. 4,500,766, Cl. 219-76.100.

Reister, Richard A. Refrigerator shelf doors. 4,500,147, Cl. 312-291.000.

Reitmeier, Glenn A.: *See—*
Hamalainen, Kaarlo J.; and Reitmeier, Glenn A., 4,500,930, Cl. 358-310.000.

Relyea, Elton H.: *See—*
Kroupa, Loretta A.; and Relyea, Elton H., 4,500,659, Cl. 523-213.000.

Ren, Chung-Li; Thompson, Matthew V.; and Wang, Han-Chiu, to AT&T Bell Laboratories. Filter for existing waveguide structures. 4,500,859, Cl. 333-208.000.

Rentch, Bruce W. Phonograph record and album frame. 4,499,994, Cl. 206-45.190.

Repa, Otto, to Mauser-Werke Oberndorf GmbH. Trigger mechanism. 4,499,684, Cl. 42-69.00A.

Reppel, Werner; and Overlack, Claus, to Casimir Kast GmbH & Co. KG. Process and an apparatus for producing wooden components designed for resisting flexural loads. 4,500,378, Cl. 156-160.000.

Research and Development Institute for Infosystems, Inc.: *See—*
Mandeberg, Richard D., 4,500,908, Cl. 358-11.000.

Respiratory Care, Inc.: *See—*
Cambio, Orlando D., Jr., 4,500,480, Cl. 261-104.000.

Restaurant Technology, Inc.: *See—*
Strong, William K., 4,499,818, Cl. 99-483.000.

Rhone-Poulenc Chimie de Base: *See—*
Gauthier-Lafaye, Jean; Perron, Robert; Gallucci, Jacques; and Leconte, Philippe, 4,500,473, Cl. 260-548.000.
Gauthier-Lafaye, Jean; and Perron, Robert, 4,500,474, Cl. 260-549.000.

Rhone-Poulenc-Textile: *See—*
Desjobert, Gilles; and Jaillet, Andre , 4,499,707, Cl. 53-429.000.

Richards, Powell: *See—*
Srivastava, Suresh C.; Fawwaz, Rashid A.; and Richards, Powell, 4,500,508, Cl. 424-1.100.

Richardson, Ryden L.: *See—*
Simpson, Howard D.; Richardson, Ryden L.; and Baron, Kenneth, 4,500,424, Cl. 208-216.0PP.

Ricoh Company, Ltd.: *See—*
Kubo, Keishi; Watanabe, Hideo; Takigawa, Nobuhiro; Hagiri, Minoru; and Kawasaki, Kanjiro, 4,500,896, Cl. 346-204.000.
Shimada, Masaru; and Sasaki, Masaomi, 4,500,355, Cl. 106-22.000.
Shimura, Akira, 4,500,196, Cl. 355-3.0DD.
Tomita, Satoru; Shimura, Akira; and Yokota, Takashi, 4,499,849, Cl. 118-652.000.

Ricoh Systems, Inc.: *See—*
Wurster, Herbert K., 4,500,621, Cl. 430-72.000.

Ricouard, Jacques; and Quillet, Jean-Pierre, to L.A.S. Ricouard S.A. Combination cylinder lock. 4,499,745, Cl. 70-285.000.

Ridgewell, Terence E.; and Vallis, Keith, to Kimberly-Clark Limited. Catch or lock. 4,500,120, Cl. 292-19.000.

Riegel, Ulrich: *See—*
Engelhardt, Friedrich; Kuhlein, Klaus; Riegel, Ulrich; von Halasz, Sigmar; Dawson, Jeffery C.; and Reed, Anthony R., 4,500,437, Cl. 252-8.55C.

Rieger, Franz: *See—*
Linder, Ernst; Moser, Winfried; and Rieger, Franz, 4,499,867, Cl. 123-145.00A.

Riester, James A.: *See—*
Katsen, Boris J.; Brinkworth, Robert T.; Kay, Daniel J.; and Riester, James A., 4,500,354, Cl. 106-21.000.

Riggs, Michael T., to PCB Piezotronics, Inc. Dynamic pressure generator. 4,499,751, Cl. 73-4.00R.

Riollet, Gilbert; and Bessay, Raymond, to Alsthom-Atlantique. Valve for adjusting the rate of flow of a gaseous fluid. 4,500,070, Cl. 251-282.000.

Riollet, Gilbert: *See—*
Bessay, Raymond; and Riollet, Gilbert, 4,500,256, Cl. 415-191.000.

Ritter, Gerhard: *See—*
Schmidt, Gerhard; Ritter, Klaus; and Ritter, Gerhard, 4,500,763, Cl. 219-58.000.

Ritter, Klaus: *See—*
Schmidt, Gerhard; Ritter, Klaus; and Ritter, Gerhard, 4,500,763, Cl. 219-58.000.

Ritz, Joseph: *See—*
Beyer, Henry R.; DeSipio, Richard G.; Long, Thomas F.; and Ritz, Joseph, 4,500,885, Cl. 343-456.000.
Naubereit, Henry; Long, Thomas F.; Picard, Salvatore R.; and Ritz, Joseph, 4,500,886, Cl. 343-456.000.

Ritzer, Alan: *See—*
Ward, William J., III; Ritzer, Alan; Carroll, Kenneth M.; and Flock, John W., 4,500,724, Cl. 556-472.000.

Rix, Albert: *See—*
Lange, Heinz; Rix, Albert; and Drogi, Dieter, 4,500,219, Cl. 400-568.000.

Rizzo, John S., to AT&T Technologies, Inc. Contacting a surface for plating thereon. 4,500,394, Cl. 204-15.000.

Robert Bosch GmbH: *See—*
Ahner, Peter; Harer, Helmut; and Schustek, Siegfried, 4,500,772, Cl. 219-209.000.
Linder, Ernst; Moser, Winfried; and Rieger, Franz, 4,499,867, Cl. 123-145.00A.
Romann, Peter; Sauer, Rudolf; and Steinrucken, Heinrich, 4,500,866, Cl. 338-126.000.

Roberts, Don M.; and Looper, David W., to Halliburton Company. Enclosure for electronic components. 4,500,944, Cl. 361-384.000.

Roberts, Michael K.; Ottosen, Richard A.; and McConnell, Matthew L., to Bion Corporation. Ultrasound visualization systems. 4,499,771, Cl. 73-632.000.

Roberts, Todd N.: *See—*
Fiorina, Mark A.; and Roberts, Todd N., 4,499,764, Cl. 73-253.000.

Robinson, James E., to UHV Instruments Ltd. Vacuum sample introduction unit. 4,499,776, Cl. 73-863.850.

Rochat, Alain C.; and Cassar, Luigi, to Ciba-Geigy Corporation. Process for producing bismethine isoindolines. 4,500,718, Cl. 548-471.000.

Roche, William J., to GTE Products Corporation. Electronic ballast circuit. 4,500,812, Cl. 315-171.000.

Rockwell International Corporation: *See—*
Carver, John H., 4,500,986, Cl. 370-58.000.
Frankel, Milton B.; and Wilson, Edgar R., 4,499,723, Cl. 60-211.000.
Grantham, LeRoy F., 4,499,833, Cl. 110-342.000.
Hallford, Ben R., 4,500,847, Cl. 330-277.000.
Kleinhans, William A., 4,500,200, Cl. 356-152.000.
Morey, William A., 4,500,841, Cl. 328-146.000.
Phillips, Donald E., 4,500,852, Cl. 331-12.000.
Schulz, David W.; and Spaulding, Gail E., 4,500,033, Cl. 228-219.000.
Weber, James L., 4,499,976, Cl. 188-71.900.
Yeh, Pochi A., 4,500,178, Cl. 350-404.000.

Rodemann, Alfred H.: *See—*
Insinger, Richard H., III; and Rodemann, Alfred H., 4,500,295, Cl. 434-218.000.

Roehl, Ernest O. Method of extracting perchlorethylene from dry cleaner filter cartridges. 4,500,363, Cl. 134-10.000.

Rohner, Joachim: *See—*
Chardon, Manfred; Mauries, Reinhard; Rohner, Joachim; and Zumfeld, Heinz, 4,499,715, Cl. 57-22.000.

Rolls-Royce Limited: *See—*
Dodd, Alec G.; and Hamblett, Martin, 4,500,258, Cl. 416-97.00R.
Osborn, Alfred W., 4,500,054, Cl. 244-54.000.

Romand-Monnier, Jacques; and Lejeune, Jean-Pierre, to Alsthom-Atlantique. Coupling device, an electric motor fitted with said device and a method of coupling two electric motors together. 4,500,226, Cl. 403-13.000.

Romann, Peter; Sauer, Rudolf; and Steinrucken, Heinrich, to Robert Bosch GmbH. Electric potentiometer. 4,500,866, Cl. 338-126.000.

Rommel, Rudi: *See—*
Backe, Egbert; Muller, Rolf; Otto, Dieter; Leonardi, Cornelio; Kochendorfer, Heinrich; Fussner, Paul; Walker, Ewald; and Rommel, Rudi, 4,499,757, Cl. 73-119.00A.

Rooney, Craig E., to Engineering Research Applications, Inc. Momentary digital encoding device for keyboards. 4,500,757, Cl. 200-5.00A.

Rosen, Perry: *See—*
Chan, Ka-Kong; Holland, George W.; and Rosen, Perry, 4,500,462, Cl. 260-405.500.

Rosseel, Henri J.; and Deconinck, Filip N., to N.V. Weefautomaten Picanol. Device for electronically controlling loom components. 4,501,008, Cl. 377-2.000.

Rossell Electronique SA: *See—*
Rossell, Jame, 4,500,768, Cl. 219-86.250.

Rossell, Jame, to Rossell Electronique SA. Electrode mounting support. 4,500,768, Cl. 219-86.250.

Roto-Finish Company, Inc.: *See—*
Balz, Gunther W., 4,499,692, Cl. 51-313.000.

Rouette, Andre : *See—*
Lafortune, Lucien; and Rouette, Andre , 4,500,006, Cl. 215-224.000.

Roussel, Philippe, to Lasag AG. Optical head of an installation for observation and treatment of the eye by laser radiation. 4,499,897, Cl. 128-303.100.

Roussel Uclaf: *See—*
Bianchi, Mario; and Barzaghi, Fernando, 4,500,731, Cl. 514-452.000.
Martel, Jacques; Tessier, Jean; and Demoute, Jean-Pierre, 4,500,720, Cl. 549-313.000.

Rova, Jan-Erik. Arrangement in spring suspension systems particularly for vehicles. 4,500,076, Cl. 267-8.00R.

Rovsek, Edward. Game box. 4,500,091, Cl. 273-269.000.

Rowley, Alan G.; and Husband, Fiona M., to National Research Development Corporation. Removal of toxic metals from aqueous solution. 4,500,497, Cl. 423-89.000.

Rozmus, Walter J.; and Dietrich, Jerry L., to Kelsey-Hayes Company. Sealed container. 4,500,009, Cl. 220-256.000.

Rozniecki, Edward J. Gas expansion motor. 4,500,254, Cl. 415-75.000.

Rude, Edward T.: *See—*
Waine, Martin; Rude, Edward T.; and Nisenson, Jules, 4,499,937, Cl. 160-41.000.

Rudell, Elliot A.; Shumate, Michael E.; and Cernansky, Joseph S., to Rudell, Elliot A. Bicycle and doll mechanism. 4,500,104, Cl. 280-289.00D.

Ruetschle, Rudolph H.; and Raker, John W., to Harris Graphics Corporation. Reject assembly for sheet material handling apparatus. 4,499,834, Cl. 112-2.000.

Ruggieri, Daniela: *See—*
Bernardi, Luigi; Temperilli, Aldemio; Ruggieri, Daniela; Arcari, Giuliana; and Salvati, Patricia, 4,500,712, Cl. 546-67.000.

Ruhl, Edward A., to Sharp Die & Mold Company, Inc., a subsidiary of R & R Plastic Material, Inc. Quick change locator clamp assembly for plastic molding machine. 4,500,275, Cl. 425-192.00R.

Runck, Robin B.: *See—*
Brenton, Ronald G.; and Runck, Robin B., 4,499,640, Cl. 29-25.410.
Fathauer, George H.; Hood, Charles F.; and Runck, Robin B., 4,499,767, Cl. 73-304.00C.

Rundo, John R., to BF Goodrich Company, The. Method of retro-fitting windows. 4,499,703, Cl. 52-746.000.

Ruoff, Eugen: *See—*
Bindel, Rudolf; and Ruoff, Eugen, 4,500,100, Cl. 277-235.00B.

Rusboldt, Timothy C. Ice bearing assembly. 4,500,215, Cl. 384-319.000.

Russell, Robert J., to Mail-Ex Corporation. Semi-automatic insertion machine for envelopes. 4,499,705, Cl. 53-266.00A.

Rychnovsky, Raymond E.: *See—*
Jacobson, Albin K.; Rychnovsky, Raymond E.; and Visbeck, Cornelius N., 4,499,829, Cl. 102-378.000.

Rye, Palle: *See—*
Bradley, Wilson E., Jr.; and Rye, Palle, 4,500,330, Cl. 55-257.0PV.

Ryman Engineering Company: *See—*
Fatula, James J., Sr.; and Carroll, Martin J., 4,499,693, Cl. 51-322.000.

S.I.C.A. Pulposec de Chevrieres: *See—*
Berry, Jean-Luc, 4,499,823, Cl. 100-121.000.

S.N.E.C.M.A.: *See—*
Kervistin, Robert; Lardellier, Alain M. J.; Mazeaud, Georges; and Crozet, Francois E. G., 4,500,143, Cl. 384-467.000.

Sadeh, Yaacov: *See—*
Porat, Chaim; and Sadeh, Yaacov, 4,500,873, Cl. 340-515.000.

Sagami Chemical ResearchCenter: *See—*
Kondo, Kiyoshi; and Matsui, Kiyohide, 4,500,733, Cl. 562-506.000.

Saito, Junichi; Yasui, Kazuomi; Shiokawa, Kozo; and Kamochi, Atsumi, to Nihon Tokushu Noyaku Seizo K.K. Substituted phenoxypropionates and herbicidal compositions containing same and their herbicidal use. 4,500,346, Cl. 71-94.000.

Saito, Junichi: *See—*
Aya, Masahiro; Saito, Junichi; Yasui, Kazuomi; Shiokawa, Kozo; Morishima, Norihisa; and Goto, Toshio, 4,500,342, Cl. 71-93.000.

Saito, Kimitaka; Kohama, Tokio; Egami, Tsuneyuki; Saito, Tsutomu; Nogami, Susumu; and Suzuki, Yukio, to Nippon Soken, Inc.; and

Toyota Jidosha Kabushiki Kaisha. System for controlling air-fuel ratio in internal combustion engine. 4,499,882, Cl. 123-492.000.

Saito, Seiji: *See—*
Koumura, Noboru; Ayata, Naoki; Saito, Seiji; Suzuki, Hidetoshi; and Ozawa, Kunitaka, 4,500,918, Cl. 358-75.000.

Saito, Tsutomu: *See—*
Saito, Kimitaka; Kohama, Tokio; Egami, Tsuneyuki; Saito, Tsutomu; Nogami, Susumu; and Suzuki, Yukio, 4,499,882, Cl. 123-492.000.

Sakagami, Seiji: *See—*
Sakamoto, Hitoshi; Sakagami, Seiji; and Nagashima, Shigeru, 4,500,097, Cl. 277-59.000.

Sakai, Kiyoshi: *See—*
Ishikawa, Shozo; Katagiri, Kazuharu; Watanabe, Katsunori; Sakai, Kiyoshi; and Kitahara, Makoto, 4,500,619, Cl. 430-59.000.

Sakai, Yukio: *See—*
Tanaka, Toru; Hataya, Masanori; Tanaka, Kazuo; Sakai, Yukio; and Hamada, Yasufumi, 4,500,730, Cl. 562-416.000.

Sakakibara, Yasuyuki: *See—*
Igashira, Toshihiko; Tanaka, Taro; and Sakakibara, Yasuyuki, 4,499,878, Cl. 123-478.000.

Sakamoto, Eiichi; Kawasaki, Mikio; Ono, Kouji; Fukuoji, Kakujulo; and Fujimori, Noboru, to Konishiroku Photo Industry Co., Ltd. Radiographic image forming process. 4,500,631, Cl. 430-413.000.

Sakamoto, Hitoshi; Sakagami, Seiji; and Nagashima, Shigeru, to Mitutoyo Mfg. Co., Ltd. Seal device in displacement measuring instrument. 4,500,097, Cl. 277-59.000.

Sakamura, Yoshikazu; and Majima, Mitsue. Blind nut fastening method. 4,499,647, Cl. 29-509.000.

Sakanoue, Akira: *See—*
Kita, Yasushi; Moroi, Shirou; Sakanoue, Akira; and Nakano, Hisaji, 4,500,678, Cl. 252-58.000.

Sakanoue, Kei; Yagihara, Morio; Ichijima, Seigi; and Nagao, Kimitoshi, to Fuji Photo Film Co., Ltd. Silver halide color photographic material. 4,500,634, Cl. 430-544.000.

Sakuma, Kiyoshi: *See—*
Matsuoka, Fumio; Iijima, Hitoshi; Yamazaki, Kisuke; Kasagi, Hiroshi; Nakashima, Yasuo; Sakuma, Kiyoshi; and Umehara, Mitsuo, 4,499,739, Cl. 62-212.000.

Sakura, Yasuhiro; Takai, Yoshihiro; and Suzuki, Michio, to Tokyo Electric Co., Ltd. Thermal-printing device with defective resistive heating element detection mode. 4,500,893, Cl. 346-76.0PH.

Sakurai, Hiromi: *See—*
Ooga, Hirotomo; and Sakurai, Hiromi, 4,499,657, Cl. 29-578.000.

Sakurai, Jinichi: *See—*
Sugimoto, Norihiko; Hamada, Nobuhiro; Masuda, Ikuro; and Sakurai, Jinichi, 4,500,951, Cl. 364-186.000.

Sakurai, Masaki: *See—*
Sugiyama, Hiroyuki; Sakurai, Masaki; Abe, Ryozo; and Yoshihara, Kenji, 4,500,983, Cl. 369-77.200.

Sala, Alberto: *See—*
Winters, Giorgio; Sala, Alberto; and Barone, Domenico, 4,500,525, Cl. 514-210.000.

Salvati, Patricia: *See—*
Bernardi, Luigi; Temperilli, Aldemio; Ruggieri, Daniela; Arcari, Giuliana; and Salvati, Patricia, 4,500,712, Cl. 546-67.000.

Sammler, Louis S.: *See—*
Taylor, Dale F.; and Sammler, Louis S., 4,500,413, Cl. 204-435.000.

Sampsell, Jeffrey B.: *See—*
Penz, Perry A.; and Sampsell, Jeffrey B., 4,500,171, Cl. 350-320.000.

Sanbe, Mitsuhiro: *See—*
Furukawa, Nobuyuki; and Sanbe, Mitsuhiro, 4,500,478, Cl. 261-52.000.

Sandberg, Karen R.: *See—*
Turbak, Albin F.; Snyder, Fred W.; and Sandberg, Karen R., 4,500,546, Cl. 514-781.000.

Sander, Nat: *See—*
Knepshield, William R.; Ogletree, David D.; and Sander, Nat, 4,499,898, Cl. 128-305.000.

Sando Iron Works Co., Ltd.: *See—*
Sando, Yoshikazu; Nakano, Eiichi; and Ishidoshiro, Hiroshi, 4,500,318, Cl. 8-111.000.

Sando, Yoshikazu; Nakano, Eiichi; and Ishidoshiro, Hiroshi, to Sando Iron Works Co., Ltd. Method for desizing, scouring and bleaching textile product. 4,500,318, Cl. 8-111.000.

Sands, Clifton A.: *See—*
Schmidt, John C.; Sands, Clifton A.; and Campbell, Donald N., 4,500,391, Cl. 204-1.00T.

Sandstrom, Kjell: *See—*
Uomala, Vilho; Sandstrom, Kjell; and Matilainen, Jorma, 4,500,092, Cl. 277-12.000.

Sandvik, Leonard E., to Deere & Company. Adjustable seat leveling mechanism. 4,500,062, Cl. 248-371.000.

Sangu, Osamu; and Hotta, Seiko, to Nippondenso Co., Ltd. Method and apparatus for detecting an open circuit in a glow plug group for combination with a glow plug heating control circuit. 4,500,775, Cl. 219-497.000.

Sano, Kenji; Kondo, Syunichi; and Sato, Hideo, to Fuji Photo Film Co., Ltd. Photoconductive compositions comprising an organic photoconductor and a thioamide compound and electrophotographic light-sensitive materials using the compositions. 4,500,623, Cl. 430-83.000.

Sanofi, S.A.: *See—*
Frehel, Daniel; Maffrand, Jean-Pierre; and Vallee, Eric, 4,500,534, Cl. 514-301.000.

Santrade Ltd.: *See—*
Trotter, Donald J., 4,500,765, Cl. 219-73.210.

Sardella, Louis M.; and Ward, William F., Sr., to Ward Machinery Company, The. Air lift for blank stackers. 4,500,244, Cl. 414-92.000.

Saruwatari, Minoru: *See—*
Milne, William G.; and Saruwatari, Minoru, 4,499,966, Cl. 182-3.000.

Sasaki, Kouji: *See—*
Kuwabara, Kouji; Sugawara, Hiroyuki; Shirakura, Toshiharu; Kawakubo, Yukio; and Sasaki, Kouji, 4,500,998, Cl. 372-61.000.

Sasaki, Masaomi: *See—*
Shimada, Masaru; and Sasaki, Masaomi, 4,500,355, Cl. 106-22.000.

Sasano, Akira: *See—*
Koike, Norio; Tsukada, Toshihisa; Baji, Toru; and Sasano, Akira, 4,500,915, Cl. 358-44.000.

Sasayama, Takao: *See—*
Miki, Masayuki; Suzuki, Seikou; and Sasayama, Takao, 4,499,880, Cl. 123-489.000.

Sasnett, Michael W.; Hobart, James L.; and Gibson, Larry A., to Coherent, Inc. High power fundamental mode laser. 4,500,996, Cl. 372-19.000.

Satake, Jiro; Arai, Tetsuzo; Tanaka, Kivokazu; Mikami, Eiji; Moriyasu, Tsuneo; and Nakagawa, Tadasu, to Sumitomo Kinzoku Kogyo Kabushiki Kaisha; and Nippon Paint Kabushiki Kaisha. Metal pipe coated with thermoplastic synthetic resin. 4,500,577, Cl. 428-36.000.

Sato, Akihiro: *See—*
Chiba, Hiromasa; Obama, Kenjiro; Kawazoe, Shunji; Oka, Takahiro; and Sato, Akihiro, 4,500,682, Cl. 525-240.000.

Sato, Akio; Nakajima, Kenji; Takahara, Yoshimasa; Kijima, Shizumasa; Inai, Yuichi; Kohara, Yoshiyuki; Kawakami, Yoshiyuki; and Tsurugi, Tomio, to Eisai Co., Ltd.; and Agency of Industrial Science & Technology. Polyprenyl carboxylic acid derivatives. 4,500,463, Cl. 260-406.000.

Sato, Hachiro, to Fukoku Kogyo Company Limited. Continuous press. 4,499,822, Cl. 100-117.000.

Sato, Hideo: *See—*
Horie, Seiji; Nakano, Junji; Nagata, Masayoshi; and Sato, Hideo, 4,500,622, Cl. 430-78.000.
Sano, Kenji; Kondo, Syunichi; and Sato, Hideo, 4,500,623, Cl. 430-83.000.

Sato, Kozo: *See—*
Naito, Hideki; Hara, Hiroshi; Aono, Toshiaki; Sato, Kozo; and Fujita, Shinsaku, 4,500,626, Cl. 430-203.000.

Sato, Masaaki, to Olympus Optical Co., Ltd. Car stereo set. 4,501,013, Cl. 381-86.000.

Sato, Tadahisa; Kawagishi, Toshio; and Furutachi, Nobuo, to Fuji Photo Film Co., Ltd. Method for forming magenta color image. 4,500,630, Cl. 430-386.000.

Sato, Tetsuo; and Kominami, Yasuo, to Hitachi, Ltd. Signal processing circuit. 4,500,932, Cl. 360-65.000.

Sauer, Rudolf: *See—*
Romann, Peter; Sauer, Rudolf; and Steinrucken, Heinrich, 4,500,866, Cl. 338-126.000.

Savioli, Giulio V., to United States of America, Army. Auxiliary trigger for firearm. 4,499,683, Cl. 42-69.00R.

Sawa, Buntaro; and Honda, Naoto, to Tokyo Shibaura Denki Kabushiki Kaisha. Plural phase lock loop signal regeneration circuit. 4,500,851, Cl. 331-2.000.

Sawada, Tadashi: *See—*
Kiryu, Yuichi; and Sawada, Tadashi, 4,500,251, Cl. 414-719.000.

Sbrizzai, Marino. Hydraulic machine. 4,499,725, Cl. 60-506.000.

Scales, Michael J., to Nicolon Corporation. Articulated mat revetment assembly machine. 4,499,664, Cl. 29-714.000.

Scelba, Stephen S.: *See—*
Bako, Lazlo; and Scelba, Stephen S., 4,499,681, Cl. 42-1.00Y.

Schaefer, Karl P.: *See—*
Downing, Gerald T.; and Schaefer, Karl P., 4,500,223, Cl. 402-20.000.

Schafer, Otmar U. Apparatus having a dryer for organic substances. 4,499,943, Cl. 165-95.000.

Schaff, Fredrick L.; and Gottlieb, Milton, to Westinghouse Electric Corp. Method and apparatus for light chopping by acousto-optic refraction. 4,500,175, Cl. 350-358.000.

Schaffner, John P.: *See—*
Sundberg, Jack G.; Schaffner, John P.; and Conlon, Daniel J., 4,500,268, Cl. 418-1.000.

Schaller, Albert R. Centrifugal brake device, especially for the automatic winding of an electrical cable. 4,500,048, Cl. 242-107.300.

Schebler, Bernard J., to Litton Systems, Inc. Selector valve for an aircraft on board oxygen generation system with high pressure oxygen backup. 4,499,914, Cl. 137-81.100.

Scheiner, David: *See—*
Kadison, Sylvan; and Scheiner, David, 4,500,552, Cl. 426-96.000.

Scheller, Andor, to Exxon Research & Engineering Co. Pass through stretch wrapping process. 4,499,706, Cl. 53-399.000.

Schemmann, Hugo; and Bertram, Leo, to U.S. Philips Corporation. Self-starting single-phase synchronous motor. 4,500,825, Cl. 318-792.000.

Scher, Herbert B., to Stauffer Chemical Company. Microencapsulated chelating agents and their use in removing metal ions from aqueous solutions. 4,500,494, Cl. 423-24.000.

Schering Aktiengesellschaft: *See—*
Nickisch, Klaus; Bittler, Dieter; Laurent, Henry; Wiechert, Rudolf; and Losert, Wolfgang, 4,500,522, Cl. 514-173.000.

Schijve, Jacobus; Vogelesang, Laurens B.; and Marissen, Roelof, to Technische Hogeschool Delft. Laminate of aluminum sheet material and aramid fibers. 4,500,589, Cl. 428-213.000.

Schirmer, Ulrich: *See—*
Becker, Rainer; Theobald, Hans; Schirmer, Ulrich; Spiegler, Wolfgang; Seufert, Walter; and Wuerzer, Bruno, 4,500,340, Cl. 71-90.000.

Schisler, Robert C.; and Eisenzimmer, George W., to Goodyear Tire & Rubber Company, The. Inflatable oil well hole plug with reinforcing wires. 4,500,095, Cl. 277-34.000.

Schlegel Lining Technology GmbH: *See—*
Hammer, Heiner I., 4,499,923, Cl. 138-109.000.

Schletzbaum, John W.: *See—*
Jacobi, Stephen F.; Haight, Robert E.; Schletzbaum, John W.; Martin, Yolanda E.; and Lang, Stephen P., 4,500,874, Cl. 340-607.000.

Schlumberger Technology Corporation: *See—*
Nguyen, Khoi B., 4,500,156, Cl. 339-94.00C.

Schmalfeld, Erwin: *See—*
Vock, Jurgen; Pinck, Peter; Lange, Norbert; Schmalfeld, Erwin; and Petersen, Kurt-Eckard, 4,500,770, Cl. 219-121.0LK.

Schmidt, Gerhard; Ritter, Klaus; and Ritter, Gerhard, to EVG Entwicklungs- u. Verwertungs-Gesellschaft m.b.H. Method and apparatus for the production of welded grid bodies. 4,500,763, Cl. 219-58.000.

Schmidt, John C.; Sands, Clifton A.; and Campbell, Donald N., to Allied Corporation. Method of and system for real time differential pulse detection. 4,500,391, Cl. 204-1.00T.

Schmidt, Manfred; Witman, Mark W.; Reinert, Gerard E.; and Lim, In C., to Mobay Chemical Corporation. Blowing agents for thermoplastic compositions. 4,500,653, Cl. 521-90.000.

Schmidt, Peter C.: *See—*
Krug, Russell R.; and Schmidt, Peter C., 4,500,423, Cl. 208-161.000.

Schmidt, Robert R.: *See—*
Forster, Heinz; Eue, Ludwig; and Schmidt, Robert R., 4,500,341, Cl. 71-92.000.

Schmidt, William P.; and Hutchinson, Franklin D. Fender mount for a mirror. 4,500,063, Cl. 248-475.100.

Schmitz, Herman J. R., to U.S. Philips Corporation. Device for displaying digital information incorporating selection of picture pages and-/or resolution enhancement. 4,500,875, Cl. 340-703.000.

Schneider, Earl L. Broom handle holding attachment for an industrial broom. 4,499,626, Cl. 15-146.000.

Schnell, Heinrich. Apparatus for winding bolts of cloth or the like. 4,500,044, Cl. 242-56.00A.

Scholl, Frederick W.; and Coden, Michael H., to Codenoll Technology Corporation. Method and apparatus for aligning optical fibers. 4,500,165, Cl. 350-96.200.

Schonhut, Kurt, to Ferdinand Menrad, Firma. Side bridge for metal spectacles. 4,500,179, Cl. 351-137.000.

Schore, George: *See—*
D'Agostino, Vincent F.; Lee, Joseph Y.; Zapisek, Stephen; and Schore, George, 4,500,396, Cl. 204-107.000.

Schoumaker, Raoul J. P.: *See—*
Anderson, William C.; Boundy, Bruce K.; and Schoumaker, Raoul J. P., 4,500,060, Cl. 248-349.000.

Schouten, Henry G., to American Home Products Corporation. Preparation of alkoxy methyl ethers. 4,500,738, Cl. 568-433.000.

Schreiber, William F., to Massachusetts Institute of Technology. Color reproduction system. 4,500,919, Cl. 358-78.000.

Schreyegg, Otmar: *See—*
Baumann, Theodor; and Schreyegg, Otmar, 4,499,699, Cl. 52-169.100.

Schuller, James T., to UMC Industries, Inc. Vendor change return control. 4,499,985, Cl. 194-10.000.

Schultze, Eckart F.: *See—*
Barber, Ralph R.; and Schultze, Eckart F., 4,500,069, Cl. 251-282.000.

Schulz, David W.; and Spaulding, Gail E., to Rockwell International Corporation. Method for expelling entrapped air from reactive metallic layups prior to diffusion bonding. 4,500,033, Cl. 228-219.000.

Schumacher, Berthold W. Fluid flow energy converter. 4,500,239, Cl. 416-122.000.

Schumann, Klaus: *See—*
Grunert, Heinz; Hahn, Fritz; Rall, Ulrich; Schumann, Klaus; Schwuger, Milan J.; and Smolka, Heinz G., 4,500,320, Cl. 8-442.000.

Schumann, Robert W., to Nicolet Instrument Corporation. Photoplotter. 4,500,182, Cl. 354-4.000.

Schustek, Siegfried: *See—*
Ahner, Peter; Harer, Helmut; and Schustek, Siegfried, 4,500,772, Cl. 219-209.000.

Schutz, Rudolph W.: *See—*
Reba, Imants; Schutz, Rudolph W.; and Kozbur, Nestor, 4,499,801, Cl. 83-24.000.

Schutz, Udo. Wide-necked container of a synthetic resin with removable lid. 4,500,010, Cl. 220-320.000.

Schwuger, Milan J.: *See—*
Grunert, Heinz; Hahn, Fritz; Rall, Ulrich; Schumann, Klaus; Schwuger, Milan J.; and Smolka, Heinz G., 4,500,320, Cl. 8-442.000.

Scott, Gary L., to Western Geophysical Co of America. Optical seismic transducer. 4,500,979, Cl. 367-149.000.

Scragg, Edgar P., to Prima Valves International (Proprietary) Limited. Plant watering device. 4,499,686, Cl. 47-48.500.

Secrist, Duane R.: *See—*
Clark, James M.; Secrist, Duane R.; Hardin, Scotty L.; and McEntyre, Stephen C., 4,500,401, Cl. 204-225.000.

Seguchi, Hiroshi: *See—*
Yoshida, Yasuharu; Seguchi, Hiroshi; and Tagashira, Yoshimi, 4,501,004, Cl. 375-102.000.

Seim, Albert D., II: *See—*
Dyett, Derek H.; Wood, Godfrey A.; and Seim, Albert D., II, 4,499,910, Cl. 131-95.000.

Seipke, Gerhard; Tripier, Dominique; and Johnscher, Gerd, to Hoechst Aktiengesellschaft. Polypeptide having an action on the immunological system, process for its isolation and purification, its use, agents containing this compound, and its cleavage products, their use and agents containing these products. 4,500,450, Cl. 260-112.00R.

Seismograph Service Corporation: *See—*
Ziolkowski, Antoni M.; and Lerwill, William E., 4,500,978, Cl. 367-142.000.

Sellers, Ralph F.: *See—*
King, John J.; Sellers, Ralph F.; and Castonguay, Richard N., 4,500,582, Cl. 428-116.000.

Senes, Michel: *See—*
Denise, Bernard; Hamon, Christian; Senes, Michel; and Sneeden, Raymond, 4,500,646, Cl. 502-78.000.

Senshu, Takao: *See—*
Kuroda, Shigeaki; Senshu, Takao; Oguni, Kensaku; Mochizuki, Taketoshi; Yasuda, Hiromu; Ishibane, Kyuhei; Atsumi, Akira; Kimura, Hideyuki; and Hatada, Toshio, 4,500,035, Cl. 236-92.00B.

Seppamaki, John W. Flue control device. 4,499,891, Cl. 126-292.000.

Sepulveda, Luis F., to Challenger Caribbean Corporation; Challenger Zinsco, Inc.; and Commander Electrical Equipment, Inc. Circuit breaker having an integrated power trap arm. 4,500,863, Cl. 337-70.000.

Seragnoli, Enzo, to G.D Societa' per Azioni. Cigarette manufacturing machine. 4,499,909, Cl. 131-84.00R.

Sermersheim, DeWayne T.; and Baxter, Jack L., to Cummins Engine Company, Inc. Idler mechanism. 4,500,303, Cl. 474-112.000.

Seufert, Walter: *See—*
Becker, Rainer; Theobald, Hans; Schirmer, Ulrich; Spiegler, Wolfgang; Seufert, Walter; and Wuerzer, Bruno, 4,500,340, Cl. 71-90.000.

Sevenson Company: *See—*
Steiner, Marvin B.; and Steiner, Roy I., 4,500,209, Cl. 366-157.000.

Seyfried, Christoph: *See—*
Hausberg, Hans-Heinrich; Uhl, Jurgen; Seyfried, Christoph; and Minck, Klaus-Otto, 4,500,541, Cl. 514-466.000.

Shahrokh-Khani, Jane A., executor: *See—*
Weissenbach, Joseph, deceased; and Shahrokh-Khani, Jane A., executor, 4,499,885, Cl. 123-525.000.

Shakertown Corporation: *See—*
Bockwinkel, Joe L.; and Pehl, Willis G., 4,499,701, Cl. 52-555.000.

Shank, Joseph L., to DynaGel Incorporated. Cross-linked protein composition using aluminum salts of acetic acid. 4,500,453, Cl. 260-117.000.

Shanklin, James R., Jr.; and Johnson, Christopher P., III, to A. H. Robins Company, Incorporated. Method of treating cardiac disorders with N-(aryloxyalkyl)-N'-(aminoalkyl)ureas. 4,500,529, Cl. 514-235.000.

Shanley, Charles W.; and Braun, William V., to Motorola, Inc. Simplex transceiver employing a common piezoelectric element for transmitting and receiving. 4,501,018, Cl. 455-83.000.

Sharp Die & Mold Company, Inc., a subsidiary of R & R Plastic Material, Inc.: *See—*
Ruhl, Edward A., 4,500,275, Cl. 425-192.00R.

Sharp Kabushiki Kaisha: *See—*
Hashimoto, Shintaro; Masuzawa, Sigeaki; Shibata, Shinya; Tsuda, Hiroshi; and Nakano, Masahiro, 4,500,211, Cl. 368-63.000.
Watanabe, Takashi; and Miyatake, Shigehiro, 4,500,914, Cl. 358-44.000.

Shea, Dennis W.: *See—*
Kaminski, David C.; and Shea, Dennis W., 4,499,980, Cl. 192-35.000.

Shedd, Harold E. Power source isolator. 4,500,862, Cl. 337-32.000.

Shell Oil Company: *See—*
Ayers, Ray R.; and Kipp, Robert M., 4,500,117, Cl. 285-3.000.
Ayers, Ray R., 4,500,151, Cl. 339-59.00R.
Blytas, George C., 4,500,333, Cl. 62-17.000.
Pilgram, Kurt H.; and Price, Thomas P., 4,500,345, Cl. 71-93.000.
van Dongen, Robert H.; and Stork, Willem H. J., 4,500,416, Cl. 208-86.000.

Sheridan, Dan P.: *See—*
McKinley, Mark J.; and Sheridan, Dan P., 4,500,670, Cl. 524-445.000.

Sherman, Charles F., to Nielsen Moulding Design Corporation. Anti-theft frame hanging system. 4,499,679, Cl. 40-152.100.

Shiba, Keisuke; Yazawa, Hiromi; Ohishi, Chikashi; and Nakao, Sho, to Fuji Photo Film Co., Ltd. Electrophotographic process for producing printing plate and plate making machine. 4,500,618, Cl. 430-49.000.

Shiba, Nobuyasu: *See—*
Hayashi, Yutaka; Yamanaka, Mithuyuki; Iida, Hideyo; Shiba, Nobuyasu; Karasawa, Hideyuki; Mishuku, Toshio; and Itou, Atsuo, 4,500,743, Cl. 136-258.000.

Shibata, Shinya: *See—*
Hashimoto, Shintaro; Masuzawa, Sigeaki; Shibata, Shinya; Tsuda, Hiroshi; and Nakano, Masahiro, 4,500,211, Cl. 368-63.000.

Shibata, Tadashi, to Tokyo Shibaura Denki Kabushiki Kaisha. Stacked semiconductor device with sloping sides. 4,500,905, Cl. 357-68.000.
Shibata, Toshihiro: *See*—
Minagawa, Motonobu; Kubota, Naohiro; Shibata, Toshihiro; and Arata, Ryozo, 4,500,663, Cl. 524-101.000.
Shih, Kelvin: *See*—
Hochstein, Peter A.; and Shih, Kelvin, 4,500,795, Cl. 307-141.000.
Shima, Seiya: *See*—
Tsuboi, Nobuyoshi; Shima, Seiya; Kanasaki, Morio; and Nakazawa, Hayashi, 4,499,986, Cl. 198-322.000.
Shima, Toshiaki; Hamamuro, Naozi; Ikari, Shinichi; and Fuzishiro, Tuneo, to Shin-Kobe Electric Machinery Co., Ltd. Process of producing a plate for a lead storage battery. 4,499,929, Cl. 141-1.100.
Shimada, Masaru; and Sasaki, Masaomi, to Ricoh Company, Ltd. Aqueous ink composition. 4,500,355, Cl. 106-22.000.
Shimamune, Takayuki: *See*—
Asano, Hisoshi; Shimamune, Takayuki; Goto, Toshiki; and Hosonuma, Masashi, 4,500,405, Cl. 204-290.00F.
Shimano, Shizuo: *See*—
Yoshida, Hiroshi; Koike, Kengo; Shimano, Shizuo; Nakagawa, Taizo; and Ohmori, Kaoru, 4,500,536, Cl. 514-397.000.
Shimbo, Osamu; Nguyen, Lan N.; and Dicks, Jack L., to International Telecommunications Satellite Organization. Equalizer for reducing crosstalk between two FDM/FM carriers in a satellite communications system. 4,500,984, Cl. 370-6.000.
Shimizu, Akira: *See*—
Kasuga, Muneo; Shimizu, Akira; and Nishio, Tadashi, 4,500,199, Cl. 355-14.0CU.
Shimizu, Isao, to Hitachi, Ltd. Emitter ballast resistor configuration. 4,500,900, Cl. 357-36.000.
Shimizu, Senzo; Nomura, Isao; Yamamiya, Kazuo; and Masuda, Tsuneaki, to Mitsubishi Gas Chemical Company, Inc. Resin composition for molding materials. 4,500,668, Cl. 524-427.000.
Shimizu, Yukiharu: *See*—
Niwa, Toshio; Hihara, Toshio; and Shimizu, Yukiharu, 4,500,455, Cl. 534-635.000.
Shimotsuma, Wataru: *See*—
Hotta, Shu; Hosaka, Tomiharu; and Shimotsuma, Wataru, 4,500,459, Cl. 260-396.00N.
Shimura, Akira, to Ricoh Company, Ltd. Photoconductive element cleaning apparatus and residual toner collecting apparatus. 4,500,196, Cl. 355-3.0DD.
Shimura, Akira: *See*—
Tomita, Satoru; Shimura, Akira; and Yokota, Takashi, 4,499,849, Cl. 118-652.000.
Shin-Kobe Electric Machinery Co., Ltd.: *See*—
Shima, Toshiaki; Hamamuro, Naozi; Ikari, Shinichi; and Fuzishiro, Tuneo, 4,499,929, Cl. 141-1.100.
Shinryo Air Conditioning Co., Ltd.: *See*—
Suzuki, Akira; Shioya, Yasumi; Watanabe, Norio; and Kimura, Keiichi, deceased, 4,500,427, Cl. 210-608.000.
Shioji, Shorbu: *See*—
Takehara, Hidetoshi; Shioji, Shorbu; and Nakagawa, Yohichi, 4,500,693, Cl. 526-240.000.
Shiokawa, Kozo: *See*—
Aya, Masahiro; Saito, Junichi; Yasui, Kazuomi; Shiokawa, Kozo; Morishima, Norihisa; and Goto, Toshio, 4,500,342, Cl. 71-93.000.
Saito, Junichi; Yasui, Kazuomi; Shiokawa, Kozo; and Kamochi, Atsumi, 4,500,346, Cl. 71-94.000.
Shiomura, Yasuro: *See*—
Ogawa, Masaki; and Shiomura, Yasuro, 4,500,685, Cl. 525-343.000.
Shioya, Yasumi: *See*—
Suzuki, Akira; Shioya, Yasumi; Watanabe, Norio; and Kimura, Keiichi, deceased, 4,500,427, Cl. 210-608.000.
Shipley Company Inc.: *See*—
Castner, B. Christian, 4,499,852, Cl. 118-690.000.
Shirai, Kazunari; and Tanaka, Izumi, to Fujitsu Limited. Semiconductor memory device and process for producing the same. 4,500,899, Cl. 357-23.000.
Shirakura, Toshiharu: *See*—
Kuwabara, Kouji; Sugawara, Hiroyuki; Shirakura, Toshiharu; Kawakubo, Yukio; and Sasaki, Kouji, 4,500,998, Cl. 372-61.000.
Shirato, Takehide, to Fujitsu Limited. Mask ROM-type semiconductor memory device. 4,500,975, Cl. 365-104.000.
Shrivastava, Rituparna, to Mostek Corporation. Method of forming a MOSFET with both improved breakdown resistance and less hot-electron effects. 4,499,652, Cl. 29-571.000.
Shroff, James R.: *See*—
Loev, Bernard; Shroff, James R.; and Desai, Rohit, 4,500,527, Cl. 514-223.000.
Loev, Bernard; Jones, Howard; and Shroff, James R., 4,500,528, Cl. 514-228.000.
Shuck, Robert E.: *See*—
Elander, Robert C.; Lennon, Richard E.; Matyas, Stephen M.; Meyer, Carl H. W.; Shuck, Robert E.; and Tuchman, Walter L., 4,500,750, Cl. 178-22.080.
Shuey, Kenneth C.; and Doughman, Charles L., to Westinghouse Electric Corp. Detection of DC content in an AC waveform. 4,500,837, Cl. 324-102.000.
Shulman, Cindy B., to Exxon Research & Engineering Co. Thermoplastic blend of polyolefin, isobutylene-backbone elastomer and ethylene copolymer. 4,500,681, Cl. 525-222.000.
Shultz, Richard E.: *See*—
Rayfield, Wilson P.; Peter, Emmett B., III; and Shultz, Richard E., 4,500,085, Cl. 271-207.000.
Shum, Lanson Y., to Westinghouse Electric Corp. Split-ball type wrist and manipulating assembly for robot. 4,499,784, Cl. 74-479.000.
Shumate, Michael E.: *See*—
Rudell, Elliot A.; Shumate, Michael E.; and Cernansky, Joseph S., 4,500,104, Cl. 280-289.00D.
Sibley, James N. Support means for a rotating frame animal body trap. 4,499,685, Cl. 43-96.000.
Sick, Erwin, to Erwin Sick GmbH Optik-Elektronik. Apparatus for seeking faults in wide material webs. 4,500,208, Cl. 356-431.000.
Sidorenko, Georgy I.; Lopato, Georgy P.; Yakubovich, Vladimir M.; Nikitin, Yaroslav G.; Usachev, Oleg I.; and Vorobiev, Anatoly P., to Belorussky Nauchnoissledovatelsky Institut Kardiologii. Heart monitoring device. 4,499,904, Cl. 128-703.000.
Siedle, Allen R., to Minnesota Mining and Manufacturing Company. Palladium (II) bis (hexafluoroacetylacetonate), adducts derived therefrom and uses thereof. 4,500,569, Cl. 427-304.000.
Siegfried, Peter; and Wenger, Martin, to Kraftwerk Union Aktiengesellschaft. Process for the gasification of raw carboniferous materials. 4,500,323, Cl. 48-197.00R.
Siemens Aktiengesellschaft: *See*—
Fladerer, Heinrich, 4,500,992, Cl. 370-100.000.
Grassme, Ulrich, 4,501,010, Cl. 378-38.000.
Herberg, Helmut, 4,500,902, Cl. 357-38.000.
Kirner, Wilhelm, 4,500,894, Cl. 346-140.00R.
Knott, Joseph, 4,500,194, Cl. 355-3.0DD.
Kunze, Dieter, 4,500,166, Cl. 350-96.200.
Wohlgemuth, Juergen; and Hohmann, Eugen, 4,499,906, Cl. 128-776.000.
Zeitraeg, Rolf, 4,500,869, Cl. 340-347.0DD.
SIG Schweizerische Industrie-Gesellschaft: *See*—
Gasser, Markus, 4,499,988, Cl. 198-369.000.
Silva, Roy F., to Stauffer Chemical Company. Fermentation aid for conventional baked goods. 4,500,548, Cl. 426-19.000.
Simo, Thomas; Eisenlohr, Karl-Heniz; and Puxbaumer, Hans-Hermann, to Metallgesellschaft Aktiengesellschaft. Process of converting non-distillable residues of mixed-base or paraffin-base crude hydrocarbon oils. 4,500,415, Cl. 208-56.000.
Simon, Jaime; Crump, Druce K.; and Wilson, David A., to Dow Chemical Company, The. Metal ion control compounds based on norbornane. 4,500,469, Cl. 260-502.50E.
Simon, Jaime: *See*—
Crump, Druce K.; Simon, Jaime; and Wilson, David A., 4,500,356, Cl. 106-90.000.
Simpson, Howard D.; Richardson, Ryden L.; and Baron, Kenneth, to Union Oil Company of California. Desulfurization catalyst and process. 4,500,424, Cl. 208-216.0PP.
Simpson, Jack R., to Container Graphics Corporation. Rotary cutting die with scrap ejection. 4,499,802, Cl. 83-117.000.
Singer Company, The: *See*—
Blackwood, John; Graham, Thomas G.; and Brauch, Robert B., 4,499,839, Cl. 112-317.000.
Burns, Richard H.; Hall, William M.; and Hildebrand, Bernard P., 4,500,163, Cl. 350-3.700.
Rasmussen, Donald C., deceased; and Kozel, James A., deceased, 4,500,068, Cl. 251-205.000.
Voza, Alfonse N., 4,499,838, Cl. 112-266.100.
Wojtanek, Guy A., 4,500,212, Cl. 368-108.000.
Singer, Debra L.; McCollum, Gregory J.; Dowbenko, Rostyslaw; and O'Dwyer, James B., to PPG Industries, Inc. Aromatic acid catalysts providing improved humidity resistance. 4,500,680, Cl. 525-143.000.
Sioux Technology, Inc.: *See*—
Peterson, Richard R., 4,500,146, Cl. 312-257.0SM.
Skach, Edward J., Jr., to Dow Chemical Company, The. Production of round salt coated metal granules. 4,500,349, Cl. 75-0.50B.
Skarka, Josef: *See*—
Junek, Jan; Skarka, Josef; Jaros, Frantisek; Hortlik, Frantisek; Hacova, Kveta; Vobornik, Vaclav; Ohlidal, Vladimi; and Lihtarova, Ludmila, 4,499,718, Cl. 57-301.000.
Skinner, Dewey F.: *See*—
Hill, Richard W.; Skinner, Dewey F.; and Thorsness, Charles B., 4,499,945, Cl. 166-50.000.
Skinner, Robert T. J., to Lucas Industries Public Limited Company. Fuel injection pumps. 4,499,884, Cl. 123-506.000.
Skwor, Edward P., to Minnesota Mining and Manufacturing Company. Bone stapler. 4,500,025, Cl. 227-19.000.
SL Industries, Inc.: *See*—
Hammill, S. Scott, 4,500,152, Cl. 339-61.00M.
Slaten, Gary G., to Discovision Associates. Stamper and method for injection molding information bearing member. 4,500,392, Cl. 204-5.000.
Slater Electric Inc.: *See*—
Meehan, James E., 4,500,746, Cl. 174-48.000.
Slovenska vysoka skola technika: *See*—
Tkac, Alexander; and Cvengros, Jan, 4,500,390, Cl. 159-6.100.
Smith, David C.; and Noto, Richard, to United States of America, Army. Automatic layout program for hybrid microcircuits (HYPAR). 4,500,963, Cl. 364-300.000.
Smith, Donald W., to Gala Industries, Inc. Underwater pelletizer with adjustable blade assembly. 4,500,271, Cl. 425-67.000.
Smith Engineering: *See*—
Smith, Jay, III; and Karr, Gerald S., 4,500,879, Cl. 340-739.000.
Smith International, Inc.: *See*—
Garrett, William R., 4,499,924, Cl. 138-110.000.
Vezirian, Edward; Quinones, Richard J.; and Lockstedt, Alan W., 4,499,642, Cl. 29-149.50R.

Smith, Jay, III; and Karr, Gerald S., to Smith Engineering. Circuitry for controlling a CRT beam. 4,500,879, Cl. 340-739.000.
Smith, Kenneth M. Universal framing layout tool. 4,499,666, Cl. 33-174.00B.
Smith, Lilburn R.: *See*—
Cottle, Wilbur W., Jr.; and Smith, Lilburn R., 4,500,051, Cl. 244-3.160.
Smith, Lonnie M., to Durbin-Durgo, Inc. Adjustable load binder. 4,500,073, Cl. 254-258.000.
Smith, Richard W., to Wangner Systems Corporation. Dryer fabric having reduced permeability in the area of the pintle joint. 4,500,590, Cl. 428-222.000.
Smith, Robert M.: *See*—
Boya, Donald R.; and Smith, Robert M., 4,500,408, Cl. 204-298.000.
Smith, Terence J.: *See*—
Irving, Edward; and Smith, Terence J., 4,500,629, Cl. 430-325.000.
Smith, Thomas M. Infra-red generators and use. 4,500,283, Cl. 431-328.000.
Smolka, Heinz G.: *See*—
Grunert, Heinz; Hahn, Fritz; Rall, Ulrich; Schumann, Klaus; Schwuger, Milan J.; and Smolka, Heinz G., 4,500,320, Cl. 8-442.000.
Smyers, William H., Jr.: *See*—
Greenberg, Mishel; Smyers, William H., Jr.; and Chernack, Milton, 4,499,905, Cl. 128-727.000.
Smyth, Bruce E., to Itek Corporation. Printed circuit board defect detection of detecting maximum line width violations. 4,500,202, Cl. 356-237.000.
Snamprogetti S.p.A.: *See*—
Lagana', Vincenzo; and Cavallanti, Virginio, 4,500,734, Cl. 564-72.000.
Sneeden, Raymond: *See*—
Denise, Bernard; Hamon, Christian; Senes, Michel; and Sneeden, Raymond, 4,500,646, Cl. 502-78.000.
Snow, William R.: *See*—
Ellenberger, Charles E.; Bower, George L.; and Snow, William R., 4,500,563, Cl. 427-38.000.
Snyder, Fred W.: *See*—
Turbak, Albin F.; Snyder, Fred W.; and Sandberg, Karen R., 4,500,546, Cl. 514-781.000.
Snyder, Kurt I.: *See*—
Christie, Alan M.; and Snyder, Kurt I., 4,500,487, Cl. 376-283.000.
Societe Alsacienne de Construction de Materiel Textile: *See*—
Faessler, Rene , 4,499,719, Cl. 57-417.000.
Societe Anonyme D.B.A.: *See*—
Pressaco, Pierre; and Carre , Jean-Jacques, 4,499,812, Cl. 91-376.00R.
Tanguy, Christian, 4,499,922, Cl. 137-625.240.
Societe Chimique de la Grande Paroisse, Azote et Producits Chimiques: *See*—
Denise, Bernard; Hamon, Christian; Senes, Michel; and Sneeden, Raymond, 4,500,646, Cl. 502-78.000.
Societe Europeenne de Propulsion: *See*—
Brunet, Maurice, 4,500,142, Cl. 308-10.000.
Societe Nationale Industrielle Aerospatiale: *See*—
Duwelz, Alain J., 4,500,057, Cl. 244-161.000.
Soeno, Ko: *See*—
Onuki, Jin; Soeno, Ko; Morita, Keiichi; and Onodera, Hisakithi, 4,500,904, Cl. 357-67.000.
Tsuchiya, Masatoshi; Soeno, Ko; and Yoshida, Tomomasa, 4,499,774, Cl. 73-727.000.
Sok, Brian A.: *See*—
Kim, Yong-Wu; Coduti, Phillip L.; Sok, Brian A.; and Carter, William A., 4,500,561, Cl. 427-25.000.
Sole, Carlos M.; and Vallvey, Juan A., to Colores Hispania, S.A. Process for the preparation of treated lead chromate based pigments. 4,500,361, Cl. 106-298.000.
Solomon, Frank, to Diamond Shamrock Chemicals Company. Three layer laminated matrix electrode. 4,500,647, Cl. 502-101.000.
Sommer, Karl H.; Sonntag, Alois; and Pikorz, Wolfgang, to Licentia Patent-Verwaltungs-G.m.b.H. Thyristor having n^+- main and auxiliary emitters and a p^+ ring forming a p^+n^+ junction with the main emitter. 4,500,901, Cl. 357-38.000.
Sonntag, Alois: *See*—
Sommer, Karl H.; Sonntag, Alois; and Pikorz, Wolfgang, 4,500,901, Cl. 357-38.000.
Sony Corporation: *See*—
Immink, Kornelis A.; Nijboer, Jakob G.; Ogawa, Hiroshi; and Odaka, Kentaro, 4,501,000, Cl. 375-25.000.
Mori, Toshio, 4,500,397, Cl. 204-181.00T.
Tajima, Shigeru; Okada, Hiroshi; and Nakano, Kenji, 4,500,822, Cl. 318-314.000.
Takeuchi, Tetsuo, 4,499,662, Cl. 29-622.000.
Yoshida, Tadao, 4,500,982, Cl. 369-50.000.
Sottolana, Giulio. Shoe bottom for general footwear including heel, instep, plantar, support and insole. 4,499,671, Cl. 36-24.500.
Spanset Inter AG: *See*—
van de Kamp, Dieter, 4,500,578, Cl. 428-36.000.
Spaulding, Gail E.: *See*—
Schulz, David W.; and Spaulding, Gail E., 4,500,033, Cl. 228-219.000.
Spease, Arthur L.: *See*—
Bennett, William G.; and Spease, Arthur L., 4,499,785, Cl. 74-501.00R.
Specht, Theodore R.; and Cham, Edward J., to Westinghouse Electric Corp. Advance and retard phase-shift transformer. 4,500,829, Cl. 323-215.000.
Spector, Dov; and Spector, Yehiel. Fire and explosion detection and suppression system and actuation circuitry therefor. 4,499,952, Cl. 169-61.000.
Spector, Yehiel: *See*—
Spector, Dov; and Spector, Yehiel, 4,499,952, Cl. 169-61.000.
Spectrospin AG: *See*—
Allemann, Martin; and Kellerhals, Hanspeter, 4,500,782, Cl. 250-291.000.
Spencer Wright Industries, Inc.: *See*—
Ingram, Gary L., 4,499,835, Cl. 112-79.00R.
Sperry Corporation: *See*—
Bennett, Donald B.; Thorsrud, Lee T.; and Petschauer, Thomas W., 4,500,988, Cl. 370-85.000.
Fabian, Walter; and Spooner, Frank H., 4,499,656, Cl. 29-576.00E.
Lieu, Dennis K.; and Cooper, Larry, 4,499,736, Cl. 62-3.000.
McLean, Kenneth W., 4,499,711, Cl. 56-13.600.
Murphy, Charles J., 4,500,816, Cl. 315-368.000.
Spiegel, Nikolaus: *See*—
Fischer, Rudolf; and Spiegel, Nikolaus, 4,499,760, Cl. 73-159.000.
Spiegler, Wolfgang: *See*—
Becker, Rainer; Theobald, Hans; Schirmer, Ulrich; Spiegler, Wolfgang; Seufert, Walter; and Wuerzer, Bruno, 4,500,340, Cl. 71-90.000.
Spitzer, Wayne A.; and Goodson, Theodore, Jr., to Eli Lilly and Company. Preparation of 4-fluoroazetidinones using $FClO_3$. 4,500,456, Cl. 260-239.00A.
Sponhnholtz, Michael A.: *See*—
Darland, Michael L.; Stoner, Donald L.; Baker, James W., Jr.; and Sponhnholtz, Michael A., 4,500,751, Cl. 179-2.0DP.
Spooner, Frank H.: *See*—
Fabian, Walter; and Spooner, Frank H., 4,499,656, Cl. 29-576.00E.
Sprague Electric Company: *See*—
Maher, Galeb H., 4,500,368, Cl. 148-431.000.
Sprague, Peter W.; and Heikes, James E., to E. R. Squibb & Sons, Inc. 7-Oxabicycloheptaine prostaglandin intermediates and method for preparing same. 4,500,723, Cl. 549-459.000.
Srivastava, Suresh C.; Fawwaz, Rashid A.; and Richards, Powell, to United States of America, Energy. Radionuclide labeled lymphocytes for therapeutic use. 4,500,508, Cl. 424-1.100.
Stahl, Gunther R., to General Electric Company. Tool holder clamping means. 4,499,800, Cl. 82-36.00R.
Stahl, William L., Jr.: *See*—
Cases, Moises; Kraft, Wayne R.; Stahl, William L., Jr.; and Thoma, Nandor G., 4,500,800, Cl. 307-468.000.
Staiger, M. Daniel, to United States of America, Energy. Valve for controlling solids flow. 4,500,231, Cl. 406-198.000.
Standard Oil Company, The: *See*—
Burrington, James D.; and Blachman, Marc W., 4,500,468, Cl. 260-465.80D.
Jevnikar, Mary G.; and Kuch, Philip L., 4,500,505, Cl. 423-416.000.
Standard Oil Company (Indiana): *See*—
Petty-Weeks, Bruce C.; and Zeitlin, Martin A., 4,500,732, Cl. 562-486.000.
Stephens, James R., 4,500,701, Cl. 528-363.000.
West, C. Thomas; and Basalay, Robert J., 4,500,439, Cl. 252-46.400.
Stanton and Staveley Limited: *See*—
Else, George E.; Millward, Cyril; Dixon, Ronald H. T.; and Jorgensen, Knut, 4,500,352, Cl. 75-130.00B.
Staudacher, George E., to Pacific Western Systems, Inc. Automatic wafer prober with programmable tester interface. 4,500,836, Cl. 324-73.0AT.
Stauffer Chemical Company: *See*—
Bender, Fredric G.; Everson, Charles W.; and Swartz, William E., 4,500,559, Cl. 426-646.000.
Chang, Pei K., 4,500,454, Cl. 260-123.500.
Edging, Thomas E., 4,500,557, Cl. 426-563.000.
Scher, Herbert B., 4,500,494, Cl. 423-24.000.
Silva, Roy F., 4,500,548, Cl. 426-19.000.
Stechschulte, Theodore J.: *See*—
Keglewitsch, Josef; and Stechschulte, Theodore J., 4,500,161, Cl. 339-242.000.
Keglewitsch, Josef; and Stechschulte, Theodore J., 4,500,162, Cl. 339-252.00F.
Steele, S. Robert: *See*—
Varteresian, Michael G.; and Steele, S. Robert, 4,499,659, Cl. 29-589.000.
Steffan, Leonard D.; and Kohler, Robert D., to Owens-Illinois, Inc. Apparatus for controlling a valve. 4,499,920, Cl. 137-624.150.
Steffens, Bert. Method and apparatus for separating the components of cellulose sanitary articles. 4,500,040, Cl. 241-14.000.
Steiner, Marvin B.; and Steiner, Roy I., to Sevenson Company. Feed mixing apparatus. 4,500,209, Cl. 366-157.000.
Steiner, Roy I.: *See*—
Steiner, Marvin B.; and Steiner, Roy I., 4,500,209, Cl. 366-157.000.
Steinrucken, Heinrich: *See*—
Romann, Peter; Sauer, Rudolf; and Steinrucken, Heinrich, 4,500,866, Cl. 338-126.000.
Stellram GmbH: *See*—
Dehn, Dieter, 4,500,233, Cl. 408-182.000.
Stephens, James R., to Standard Oil Company (Indiana). Co-polyoxadiazoles based on 5-t-butylisosphthalic acid. 4,500,701, Cl. 528-363.000.

Stern, Eric W.: *See—*
Amundsen, Alan R.; and Stern, Eric W., 4,500,465, Cl. 260-429.00R.
Stevens, Donn E., to Bausch & Lomb Incorporated. Motorized refraction apparatus. 4,500,180, Cl. 351-234.000.
Stewart, Richard C.: *See—*
Brown, Karen K.; and Stewart, Richard C., 4,500,513, Cl. 424-89.000.
Steyr-Daimler-Puch Aktiengesellschaft: *See—*
Visek, Tomas, 4,499,869, Cl. 123-195.00C.
Stifter, Francis J., to Electronic Specialists. Oscillator phase lock system. 4,500,853, Cl. 331-18.000.
Stockinger, Friedrich; and Haug, Theobald, to Ciba-Geigy Corporation. Phenol-novolaks containing amino groups. 4,500,691, Cl. 525-503.000.
Stoll, Andy J., III, to Owens-Illinois, Inc. Parrot-beakable freestanding plastic drum assemblage for handling heavy materials. 4,500,007, Cl. 220-71.000.
Stoll, Kurt. Three-way air valve. 4,499,921, Cl. 137-627.500.
Stollberg, Theodore A.: *See—*
Bergeron, Ned; and Stollberg, Theodore A., 4,499,846, Cl. 116-272.000.
Stoltman, Donald D.; and Nichols, Gary A., to General Motors Corporation. Fuel supply system for an internal combustion engine. 4,499,879, Cl. 123-480.000.
Stone, Emory B. Nut harvester. 4,499,713, Cl. 56-328.00R.
Stone Safety Corporation: *See—*
Prete, Ralph, 4,500,949, Cl. 363-28.000.
Stoner, Donald L.: *See—*
Darland, Michael L.; Stoner, Donald L.; Baker, James W., Jr.; and Sponhnholtz, Michael A., 4,500,751, Cl. 179-2.0DP.
Stopinc Aktiengesellschaft: *See—*
Zaugg, Robert; and Keller, Werner, 4,500,018, Cl. 222-598.000.
Stork, Willem H. J.: *See—*
van Dongen, Robert H.; and Stork, Willem H. J., 4,500,416, Cl. 208-86.000.
Strahorn, Francis W.: *See—*
Cochran, Stanley R.; and Strahorn, Francis W., 4,500,278, Cl. 425-445.000.
Strata Bit Corporation: *See—*
Radtke, Robert P., 4,499,795, Cl. 76-108.00A.
Radtke, Robert P.; and Morris, Wilford V., 4,499,958, Cl. 175-329.000.
Stratford, Graham: *See—*
Gesing, Adam J.; and Stratford, Graham, 4,500,643, Cl. 501-96.000.
Strong, William K., to Restaurant Technology, Inc. Method and apparatus for holding freshly prepared fried food products. 4,499,818, Cl. 99-483.000.
Studer, Philip A.: *See—*
Evans, Jack; and Studer, Philip A., 4,500,265, Cl. 417-417.000.
Sud, Rahul; and Hardee, Kim C., to Inmos Corporation. Bootstrap driver circuits for an MOS memory. 4,500,799, Cl. 307-449.000.
Suga, Akira: *See—*
Hashimoto, Seiji; Tanaka, Nobuyoshi; Suga, Akira; and Kuwayama, Tetsuro, 4,500,913, Cl. 358-44.000.
Suga, Masaaki: *See—*
Suzuki, Tadashi; Morimoto, Yoshiro; Hamada, Hideo; Suga, Masaaki; and Futagi, Masaaki, 4,499,979, Cl. 192-3.310.
Sugawara, Hiroyuki: *See—*
Kuwabara, Kouji; Sugawara, Hiroyuki; Shirakura, Toshiharu; Kawakubo, Yukio; and Sasaki, Kouji, 4,500,998, Cl. 372-61.000.
Sugi, Hidekuni: *See—*
Kanayama, Kenji; and Sugi, Hidekuni, 4,500,806, Cl. 310-198.000.
Sugihara, Masanori, to Pioneer Electronic Corporation. Device for automatically stopping a tape recorder. 4,500,049, Cl. 242-186.000.
Sugimoto, Norihiko; Hamada, Nobuhiro; Masuda, Ikuro; and Sakurai, Jinichi, to Hitachi, Ltd. Plant control system. 4,500,951, Cl. 364-186.000.
Sugimoto, Osamu; and Akagawa, Masaki, to Kabushiki Kaisha Nippon Coinco. Vend possible judgement device for a vending machine. 4,499,982, Cl. 194-1.00N.
Sugino, Kenji; and Nagata, Yukiaki, to Sugino Machine Limited. Variable pressure and displacement reciprocating pump. 4,500,262, Cl. 417-214.000.
Sugino Machine Limited: *See—*
Sugino, Kenji; and Nagata, Yukiaki, 4,500,262, Cl. 417-214.000.
Sugiura, Katsuhiko, to Fuji Jukogyo Kabushiki Kaisha. System for controlling the ignition timing of an engine. 4,499,874, Cl. 123-407.000.
Sugiyama, Hiroyuki, to Victor Company of Japan, Ltd. Jitter compensation system in a rotary recording medium reproducing apparatus. 4,500,981, Cl. 369-43.000.
Sugiyama, Hiroyuki; Sakurai, Masaki; Abe, Ryozo; and Yoshihara, Kenji, to Victor Company of Japan, Ltd. Rotary recording medium reproducing apparatus. 4,500,983, Cl. 369-77.200.
Suh, John T.; Barton, Jeffrey N.; and Regan, John R., to USV Pharmaceutical Corporation. Therapeutic dipeptides. 4,500,713, Cl. 546-165.000.
Suh, John T.: *See—*
Loev, Bernard; Jones, Howard; and Suh, John T., 4,500,532, Cl. 514-256.000.
Suica, David E.: *See—*
Hennekes, Daniel M.; Suica, David E.; and Beckman, Robert F., 4,500,065, Cl. 248-542.000.
Sullivan, Ann C.: *See—*
Hamilton, James G.; Sullivan, Ann C.; Tobias, Lawrence D.; and Triscari, Joseph, 4,500,540, Cl. 514-397.000.
Sullivan, William N., to United States of America, Energy. Wind turbine spoiler. 4,500,257, Cl. 416-32.000.
Sumitomo Chemical Company Limited: *See—*
Yamachika, Hiroshi; and Nakanishi, Hirotoshi, 4,500,721, Cl. 549-362.000.
Sumitomo Kinzoku Kogyo Kabushiki Kaisha: *See—*
Satake, Jiro; Arai, Tetsuzo; Tanaka, Kivokazu; Mikami, Eiji; Moriyasu, Tsuneo; and Nakagawa, Tadasu, 4,500,577, Cl. 428-36.000.
Sumka, Elmer H.: *See—*
De Lorenzi, John J.; and Sumka, Elmer H., 4,499,973, Cl. 187-29.000.
Sunakawa, Makoto: *See—*
Hori, Yutaka; Sunakawa, Makoto; Takayama, Kikuo; Matsuoka, Naoki; and Moroishi, Yutaka, 4,500,683, Cl. 524-533.000.
Sundberg, Jack G.; Schaffner, John P.; and Conlon, Daniel J., to Chandler Evans Inc. Rotary pump having brake means with thermal fuse. 4,500,268, Cl. 418-1.000.
Sung, Rodney L.: *See—*
Kaufman, Benjamin J.; Liu, Christopher S.; and Sung, Rodney L., 4,500,440, Cl. 252-51.50A.
Sunouchi, Akio; Suzuki, Ryuji; Fujino, Masahisa; and Konno, Tatsuo, to Canon Kabushiki Kaisha. Shutter control device for camera. 4,500,186, Cl. 354-234.000.
Sunter, Thomas C., to Air Preheater Company, Inc., The. Method for sequentially cleaning filter elements in a multiple chamber fabric filter. 4,500,326, Cl. 55-21.000.
Susami, Larry: *See—*
Hauck, Robert B.; and Susami, Larry, 4,501,011, Cl. 378-196.000.
Suur-Askola, Seppo: *See—*
Makinen, Heimo; and Suur-Askola, Seppo, 4,499,972, Cl. 187-29.00R.
Suyderhoud, Henri G.: *See—*
Virupaksha, Krishnamoorthy; and Suyderhoud, Henri G., 4,500,842, Cl. 328-150.000.
Suzuki, Akira; Shioya, Yasumi; Watanabe, Norio; and Kimura, Keiichi, deceased (by Kimura, Kazuyoshi, Toshi Kimura, heirs), to Shinryo Air Conditioning Co., Ltd. Activated-sludge process for wastewater treatment. 4,500,427, Cl. 210-608.000.
Suzuki, Hidetoshi: *See—*
Koumura, Noboru; Ayata, Naoki; Saito, Seiji; Suzuki, Hidetoshi; and Ozawa, Kunitaka, 4,500,918, Cl. 358-75.000.
Suzuki, Hiroaki; and Misono, Shinji, to Tokai Carbon Co., Ltd. Rubber composition comprising furnace carbon black. 4,500,672, Cl. 524-496.000.
Suzuki, Masaaki: *See—*
Ogawa, Hiroshi; Mizuno, Chiaki; Masaki, Kouichi; Suzuki, Masaaki; and Tamai, Yasuo, 4,500,599, Cl. 428-336.000.
Suzuki, Michio: *See—*
Sakura, Yasuhiro; Takai, Yoshihiro; and Suzuki, Michio, 4,500,893, Cl. 346-76.0PH.
Suzuki, Osamu: *See—*
Oishi, Kengo; and Suzuki, Osamu, 4,500,050, Cl. 242-198.000.
Suzuki, Ryoichi; and Tokuda, Ryuji, to Canon Kabushiki Kaisha. Indicating apparatus for camera. 4,500,193, Cl. 354-471.000.
Suzuki, Ryuji: *See—*
Sunouchi, Akio; Suzuki, Ryuji; Fujino, Masahisa; and Konno, Tatsuo, 4,500,186, Cl. 354-234.000.
Suzuki, Seikou: *See—*
Miki, Masayuki; Suzuki, Seikou; and Sasayama, Takao, 4,499,880, Cl. 123-489.000.
Suzuki, Soubei: *See—*
Nishizawa, Junichi; Suzuki, Soubei; and Tamamushi, Takashige, 4,499,654, Cl. 29-571.000.
Suzuki, Tadashi; Morimoto, Yoshiro; Hamada, Hideo; Suga, Masaaki; and Futagi, Masaaki, to Nissan Motor Company, Limited. Lock-up control system for lock-up torque converter for lock-up type automatic transmission. 4,499,979, Cl. 192-3.310.
Suzuki, Toshiro: *See—*
Takatori, Hiroshi; and Suzuki, Toshiro, 4,500,999, Cl. 375-16.000.
Suzuki, Tsutai: *See—*
Kashiwagi, Yoshiyuki; and Suzuki, Tsutai, 4,500,383, Cl. 156-285.000.
Suzuki, Yoji; Imaizumi, Atsushi; Yamaguchi, Hisao; Kanesaki, Masaharu; and Ono, Shoji, to Teijin Limited. Culturing Bordetella in media containing etherified cyclodextrin. 4,500,639, Cl. 435-244.000.
Suzuki, Yukio: *See—*
Saito, Kimitaka; Kohama, Tokio; Egami, Tsuneyuki; Saito, Tsutomu; Nogami, Susumu; and Suzuki, Yukio, 4,499,882, Cl. 123-492.000.
Svoboda, Josef, to TMC Corporation. Ski brake. 4,500,106, Cl. 280-605.000.
Svoboda, Josef; and Szabo, Emilie, to TMC Corporation. Ski brake. 4,500,107, Cl. 280-605.000.
Swanson, Richard G., to Esco Design, Inc. Electromechanical linear actuator. 4,500,805, Cl. 310-80.000.
Swaringen, Roy A.: *See—*
Wisowaty, James C.; Swaringen, Roy A.; and Yeowell, David A., 4,500,711, Cl. 544-258.000.
Swart, Daniel J.: *See—*
Kruper, William J., Jr.; and Swart, Daniel J., 4,500,704, Cl. 528-405.000.

Swartz, William E.: *See—*
Bender, Fredric G.; Everson, Charles W.; and Swartz, William E., 4,500,559, Cl. 426-646.000.
Swedlow, Inc.: *See—*
Ashlock, L. T.; Mukamal, Harold; and White, William H., 4,500,669, Cl. 524-440.000.
Swenson, Paul M.: *See—*
Devellian, Richard D.; and Swenson, Paul M., 4,500,279, Cl. 425-548.000.
Swift, Allan W., to E. J. Brooks Company. Seal of the padlock type. 4,500,124, Cl. 292-318.000.
Swindler, Danny E., to Texas Instruments Incorporated. Electronic printer mechanism with movable printhead assembly. 4,500,217, Cl. 400-320.000.
Swingley, Harold E., Jr., to Menasha Corporation. Tote box. 4,499,997, Cl. 206-509.000.
Syme, Duncan C., to Vermont Castings, Inc. Method and apparatus for improved construction of fuel burning heating assemblies. 4,499,889, Cl. 126-75.000.
Szabo, Emilie: *See—*
Svoboda, Josef; and Szabo, Emilie, 4,500,107, Cl. 280-605.000.
Szczupak, David T.; Walsham, Brian E.; Hooley, Desmond J.; Flaxington, David; McKean, Peter S.; and Wescott, John D., to Holset Engineering Company Limited. Turbocharger having a variable inlet area turbine. 4,499,732, Cl. 60-602.000.
Szoke, Abraham; and Prosnitz, Donald, to United States of America, Energy. Multifrequency, single pass free electron laser. 4,500,843, Cl. 330-4.300.
Tag, Arne; Petterson, Bjorn R.; and Nygaard, Erik C., to Norsk Hydro a.s. Emulsion explosive. 4,500,369, Cl. 149-2.000.
Tagashira, Yoshimi: *See—*
Yoshida, Yasuharu; Seguchi, Hiroshi; and Tagashira, Yoshimi, 4,501,004, Cl. 375-102.000.
Taguchi, Shinichiro; Nagao, Nobuya; and Ogihara, Yutaka, to Tokyo Shibaura Denki Kabushiki Kaisha. Signal sampling gate circuit. 4,500,931, Cl. 358-310.000.
Tahata, Michio: *See—*
Zaita, Katsuyuki; and Tahata, Michio, 4,500,477, Cl. 261-44.00B.
Tahka Oy: *See—*
Lehtola, Erkki T., 4,499,989, Cl. 198-407.000.
Taira, Kazuo; Morofuji, Akihiko; Ueno, Hiroshi; and Kobayashi, Seishichi, to Toyo Seikan Kaisha, Ltd. Hot-melt adhesive of a copolyester of a dibasic acid with a polyhydric alcohol. 4,500,575, Cl. 428-35.000.
Taiyo Ltd.: *See—*
Izume, Masayuki, 4,500,082, Cl. 270-20.100.
Taiyo Yuden Kabushiki Kaisha: *See—*
Hayashi, Yutaka; Yamanaka, Mithuyuki; Iida, Hideyo; Shiba, Nobuyasu; Karasawa, Hideyuki; Mishuku, Toshio; and Itou, Atsuo, 4,500,743, Cl. 136-258.000.
Tajima, Akira: *See—*
Kitagishi, Nozomu; and Tajima, Akira, 4,500,188, Cl. 354-406.000.
Tajima, Shigeru; Okada, Hiroshi; and Nakano, Kenji, to Sony Corporation. Digital capstan servo circuit. 4,500,822, Cl. 318-314.000.
Takagaki, Yoshio: *See—*
Honda, Masamitsu; Nagai, Hideaki; Takishima, Shoko; Kawamura, Akinori; Kawamura, Noriko; Dan, Takashi; Koizumi, Masuo; Murakami, Yasushi; Hinohara, Yoshikazu; Nakano, Hideki; and Takagaki, Yoshio, 4,500,714, Cl. 546-309.000.
Takagi, Toshinori: *See—*
Morimoto, Kiyoshi; and Takagi, Toshinori, 4,500,741, Cl. 136-206.000.
Morimoto, Kiyoshi; and Takagi, Toshinori, 4,500,742, Cl. 136-206.000.
Takahara, Yoshimasa: *See—*
Sato, Akio; Nakajima, Kenji; Takahara, Yoshimasa; Kijima, Shizumasa; Inai, Yuichi; Kohara, Yoshiyuki; Kawakami, Yoshiyuki; and Tsurugi, Tomio, 4,500,463, Cl. 260-406.000.
Takahashi, Hideaki; Hayakawa, Kiyoharu; Kondo, Haruyoshi; and Takeuchi, Takashi, to Kabushiki Kaisha Toyota Chuo Kenkyusho. Oxygen sensor with heater. 4,500,412, Cl. 204-425.000.
Takahashi, Hidenori: *See—*
Hosokawa, Tomoyoshi; Matsuura, Ikutoshi; Takahashi, Hidenori; Ando, Kunio; and Tamura, Gakuzo, 4,500,544, Cl. 514-543.000.
Takahashi, Katsutoshi: *See—*
Umezawa, Hamao; Fujii, Akio; Muraoka, Yasuhiko; Nakatani, Tokuji; Fukuoka, Takeyo; and Takahashi, Katsutoshi, 4,500,452, Cl. 260-112.50R.
Takahashi, Osamu; Yamamura, Nobuo; Mukunoki, Yasuo; Ogawa, Shungi; and Nakagawa, Yutaka, to Fuji Photo Film Co., Ltd. Process for preparing aqueous dispersion of pigment. 4,500,362, Cl. 106-309.000.
Takahashi, Susumu, to Olympus Optical Co., Ltd. Illuminating optical system for endoscopes. 4,500,181, Cl. 350-574.000.
Takahashi, Tokuyuki: *See—*
Kuramochi, Koujiro; and Takahashi, Tokuyuki, 4,499,789, Cl. 74-740.000.
Takahashi, Toshiyuki: *See—*
Kubota, Hitoshi; Hamamatsu, Seiji; Yambe, Teluo; and Takahashi, Toshiyuki, 4,500,761, Cl. 200-84.00C.
Takahashi, Yonosuke: *See—*
Wada, Minoru; Takahashi, Yonosuke; and Hasegawa, Eiichi, 4,500,889, Cl. 346-1.100.
Takai, Yoshihiro: *See—*
Sakura, Yasuhiro; Takai, Yoshihiro; and Suzuki, Michio, 4,500,893, Cl. 346-76.0PH.
Takao, Mitsunori, to Nippondenso Co., Ltd. Method and apparatus for controlling internal combustion engines. 4,499,881, Cl. 123-492.000.
Takao, Shoichi: *See—*
Nakaoji, Kazuhiko; Kamao, Mitsugu; Itoh, Hayami; Tatsumi, Shuhei; and Takao, Shoichi, 4,500,041, Cl. 241-16.000.
Takasago Perfumery Co., Ltd.: *See—*
Minagawa, Motoi, 4,499,620, Cl. 8-158.000.
Takatori, Hiroshi; and Suzuki, Toshiro, to Hitachi, Ltd. Line equalizer. 4,500,999, Cl. 375-16.000.
Takaya, Takao; Masugi, Takashi; Ogino, Takashi; and Tsuji, Kiyoshi, to Fujisawa Pharmaceutical Co., Ltd. Thiinyl and oxothiolyl derivatives. 4,500,709, Cl. 544-58.100.
Takayama, Kikuo: *See—*
Hori, Yutaka; Sunakawa, Makoto; Takayama, Kikuo; Matsuoka, Naoki; and Moroishi, Yutaka, 4,500,683, Cl. 524-533.000.
Takayama, Syuichi, to Olympus Optical Co., Ltd. Endoscope system with an electric bending mechanism. 4,499,895, Cl. 128-6.000.
Takeda Chemical Industries, Ltd.: *See—*
Nishino, Hiroshi; Aibe, Toshio; and Noguchi, Katsuya, 4,500,327, Cl. 55-72.000.
Takeda, Mutsumi, to Hitachi Koki Haramachi Works, Ltd. Safety device for a meat slicer. 4,499,804, Cl. 83-399.000.
Takehara, Hidetoshi; Shioji, Shorbu; and Nakagawa, Yohichi, to Nippon Shokubai Kagaku Kogyo Co., Ltd. Water soluble copolymer method for manufacture therefore and use thereof. 4,500,693, Cl. 526-240.000.
Takemasa, Kaoru, to Pioneer Electronic Corporation. Tape recording machine. 4,499,783, Cl. 74-411.000.
Takemura, Makoto: *See—*
Wakayama, Masao; Takemura, Makoto; and Kasagi, Takao, 4,500,360, Cl. 106-286.500.
Takeuchi, Hideo; Kaneko, Toshihisa; and Ikeda, Satoshi, to Dai Nippon Insatsu Kabushiki Kaisha. System for automatically removing dust from plate cylinders of printing press. 4,499,827, Cl. 101-425.000.
Takeuchi, Takashi: *See—*
Takahashi, Hideaki; Hayakawa, Kiyoharu; Kondo, Haruyoshi; and Takeuchi, Takashi, 4,500,412, Cl. 204-425.000.
Takeuchi, Tetsuo, to Sony Corporation. Injection molding method for making a switch. 4,499,662, Cl. 29-622.000.
Takezoe, Fumihiko; and Fujii, Junichi, to Fuji Facom Corporation; and Fuji Electric Company Limited. Data transfer abnormality processing system. 4,500,953, Cl. 364-200.000.
Takigami, Katsuhiko; and Tokushuku, Keiko, to Tokyo Shibaura Denki Kabushiki Kaisha. Pressure-applied type semiconductor device. 4,500,907, Cl. 357-79.000.
Takigawa, Nobuhiro: *See—*
Kubo, Keishi; Watanabe, Hideo; Takigawa, Nobuhiro; Hagiri, Minoru; and Kawasaki, Kanjiro, 4,500,896, Cl. 346-204.000.
Takimoto, Masatami: *See—*
Teramura, Mitsuyoshi; Takimoto, Masatami; Nakamura, Norihiko; Itoh, Takaaki; Katou, Takashi; and Isoya, Yukinori, 4,500,476, Cl. 261-44.00C.
Takishima, Shoko: *See—*
Honda, Masamitsu; Nagai, Hideaki; Takishima, Shoko; Kawamura, Akinori; Kawamura, Noriko; Dan, Takashi; Koizumi, Masuo; Murakami, Yasushi; Hinohara, Yoshikazu; Nakano, Hideki; and Takagaki, Yoshio, 4,500,714, Cl. 546-309.000.
Takita, Naka: *See—*
Kitagawa, Katsutoshi; Isogai, Kiyoshi; Ohmori, Nobuo; Takita, Naka; Okamoto, Makoto; Koga, Itsuo; and Ito, Kazuo, 4,500,099, Cl. 277-228.000.
Talibdzhanov, Zakhidzhan S.: *See—*
Eschenko, Vladislav Y.; Musaev, Irsali K.; Talibdzhanov, Zakhidzhan S.; Leonov, Viktor A.; Bobrov, Anatoly D.; Kirovsky, Efim I.; Gritsenko, Vladimir A.; and Golovanov, Alexandr V., 4,500,282, Cl. 431-184.000.
Tamai, Yasuo: *See—*
Ogawa, Hiroshi; Mizuno, Chiaki; Masaki, Kouichi; Suzuki, Masaaki; and Tamai, Yasuo, 4,500,599, Cl. 428-336.000.
Tamamushi, Takashige: *See—*
Nishizawa, Junichi; Suzuki, Soubei; and Tamamushi, Takashige, 4,499,654, Cl. 29-571.000.
Tamboers, Gerhard: *See—*
Cyriax, Wilhelm; Tamboers, Gerhard; and Holzschuh, Johannes, 4,500,274, Cl. 425-185.000.
Tamfelt Oy AB: *See—*
Lundstrom, Kristian, 4,500,588, Cl. 428-212.000.
Tamura, Gakuzo: *See—*
Hosokawa, Tomoyoshi; Matsuura, Ikutoshi; Takahashi, Hidenori; Ando, Kunio; and Tamura, Gakuzo, 4,500,544, Cl. 514-543.000.
Tamura, Jun: *See—*
Kaneko, Kazuyoshi; and Tamura, Jun, 4,500,134, Cl. 297-170.000.
Tamura, Masuhiko: *See—*
Kitamura, Takanori; Matsumoto, Mitsuo; and Tamura, Masuhiko, 4,500,727, Cl. 560-179.000.
Tanabe, Osami: *See—*
Aoki, Kozo; Ogawa, Akira; and Tanabe, Osami, 4,500,635, Cl. 430-552.000.
Tanabe, Toshiyuki, to Kabushiki Kaisha Komatsu Seisakusho. Apparatus for angularly positioning a rotary member. 4,499,792, Cl. 74-825.000.
Tanaka, Izumi: *See—*
Shirai, Kazunari; and Tanaka, Izumi, 4,500,899, Cl. 357-23.000.
Tanaka, Kazuo: *See—*
Tanaka, Toru; Hataya, Masanori; Tanaka, Kazuo; Sakai, Yukio; and Hamada, Yasufumi, 4,500,730, Cl. 562-416.000.

Tanaka, Kenji; and Endo, Shigeru, to Nisshin Flour Milling Co., Ltd. Agents for improving bread in quality and bread containing same. 4,500,551, Cl. 426-62.000.

Tanaka, Kivokazu: *See*—
Satake, Jiro; Arai, Tetsuzo; Tanaka, Kivokazu; Mikami, Eiji; Moriyasu, Tsuneo; and Nakagawa, Tadasu, 4,500,577, Cl. 428-36.000.

Tanaka, Kyoichi; Tsuzuki, Akira; and Hioki, Shunichi, to Toyo Contact Lens Co., Ltd. Contact lens cleaning and storage composition. 4,500,441, Cl. 252-89.100.

Tanaka, Minoru: *See*—
Haneda, Satoshi; Itaya, Masahiko; and Tanaka, Minoru, 4,500,616, Cl. 430-45.000.

Tanaka, Motoaki; Toyama, Takanori; Ohba, Hitoshi; and Yamaguchi, Osamu, to Wako Pure Chemical Industries, Ltd. Process for producing aqueous suspension containing organic azo compound as polymerization initiator. 4,500,649, Cl. 502-167.000.

Tanaka, Nobuyoshi: *See*—
Hashimoto, Seiji; Tanaka, Nobuyoshi; Suga, Akira; and Kuwayama, Tetsuro, 4,500,913, Cl. 358-44.000.

Tanaka, Taro: *See*—
Igashira, Toshihiko; Tanaka, Taro; and Sakakibara, Yasuyuki, 4,499,878, Cl. 123-478.000.

Tanaka, Toru; Hataya, Masanori; Tanaka, Kazuo; Sakai, Yukio; and Hamada, Yasufumi, to Mitsubishi Gas Chemical Company, Inc. Process for producing aromatic polycarboxylic acid. 4,500,730, Cl. 562-416.000.

Tanaka, Toshie, to Nifco Inc. Removable two-piece retaining means. 4,499,636, Cl. 24-289.000.

Tanaka, Toshinori: *See*—
Hamano, Isao; Morishita, Akira; Akae, Yoshifumi; and Tanaka, Toshinori, 4,500,794, Cl. 290-38.00C.

Tanaka, Yoko: *See*—
DeLuca, Hector F.; Tanaka, Yoko; Ikekawa, Nobuo; and Kobayashi, Yoshiro, 4,500,460, Cl. 260-397.200.

Tanaka, Yoshito; Ichiryu, Ken; and Iwata, Naohiko, to Hitachi, Ltd. Fluid leakage detecting element. 4,500,865, Cl. 338-13.000.

Tandy Corporation: *See*—
Leininger, Steven, 4,500,956, Cl. 364-200.000.

Tang, David Y.: *See*—
Cotter, Byron R.; and Tang, David Y., 4,500,471, Cl. 260-544.00D.

Tanguy, Christian, to Societe Anonyme D.B.A. Rotary distributor for a hydraulic servo-mechanism. 4,499,922, Cl. 137-625.240.

Tani, Haruhisa: *See*—
Okada, Tokio; Tani, Haruhisa; Kojima, Shigezo; Tsuyama, Setsuya; Kurihara, Kazuhiko; and Yazawa, Hiroshi, 4,499,639, Cl. 28-282.000.

Taniguchi, Masahiko: *See*—
Tomioka, Susumu; and Taniguchi, Masahiko, 4,500,384, Cl. 156-290.000.

Tanikawa, Kowji, to Olympus Optical Co., Ltd. Film cassette and a photographing device using the same. 4,500,183, Cl. 354-21.000.

Tappan Company, The: *See*—
Harris, Stephen K.; and Miller, Wiley W., 4,499,630, Cl. 16-121.000.

Tarao, Ryokichi: *See*—
Yemoto, Jiichiro; Tarao, Ryokichi; and Yamamoto, Yoshio, 4,500,725, Cl. 556-482.000.

Tatsumi, Shuhei: *See*—
Nakaoji, Kazuhiko; Kamao, Mitsugu; Itoh, Hayami; Tatsumi, Shuhei; and Takao, Shoichi, 4,500,041, Cl. 241-16.000.

Taya, Akira; Narita, Kazuo; Asada, Masao; and Kimura, Yoshio, to Tokyo Shibaura Denki Kabushiki Kaisha. Blue-green emitting halophosphate phosphor. 4,500,443, Cl. 252-301.40P.

Taylor, Dale F.; and Sammler, Louis S., to General Electric Company. Sintered ceramic article with porous region. 4,500,413, Cl. 204-435.000.

Taylor, Gary N., to AT&T Bell Laboratories. Process of making solid state devices using silicon containing organometallic plasma developed resists. 4,500,628, Cl. 430-311.000.

Technion Research & Development Foundation Ltd.: *See*—
Tur-Kaspa, Yosef; and Lenz, Ehud, 4,500,126, Cl. 294-86.00R.
Yarnitzky, Chaim N., 4,500,411, Cl. 204-413.000.

Technische Hogeschool Delft: *See*—
Schijve, Jacobus; Vogelesang, Laurens B.; and Marissen, Roelof, 4,500,589, Cl. 428-213.000.

Technitrol, Inc.: *See*—
McInerny, George P., 4,500,084, Cl. 271-35.000.

Teijin Limited: *See*—
Suzuki, Yoji; Imaizumi, Atsushi; Yamaguchi, Hisao; Kanesaki, Masaharu; and Ono, Shoji, 4,500,639, Cl. 435-244.000.

Tektronix, Inc.: *See*—
Odenthal, Conrad J.; and Askew, Dennis D., 4,500,809, Cl. 313-444.000.

Teleflex Incorporated: *See*—
Bennett, William G.; and Spease, Arthur L., 4,499,785, Cl. 74-501.00R.

Telefunken Electronic GmbH: *See*—
Kohn, Erhard, 4,499,651, Cl. 29-571.000.

Telle, Otto: *See*—
Hausmann, Heinz; Niessen, Heinz J.; Telle, Otto; and Neumaier, Hermann, 4,500,348, Cl. 71-103.000.

Temperilli, Aldemio: *See*—
Bernardi, Luigi; Temperilli, Aldemio; Ruggieri, Daniela; Arcari, Giuliana; and Salvati, Patricia, 4,500,712, Cl. 546-67.000.

Templeton Kenly & Company: *See*—
Leong, David S., 4,500,072, Cl. 254-95.000.

Tempmaster Corporation: *See*—
Reese, James A.; and Dean, Raymond H., 4,500,034, Cl. 236-49.000.

Teramura, Mitsuyoshi; Takimoto, Masatami; Nakamura, Norihiko; Itoh, Takaaki; Katou, Takashi; and Isoya, Yukinori, to Toyota Jidosha Kabushiki Kaisha; and Aisan Industry Co., Ltd. Variable venturi type carburetor. 4,500,476, Cl. 261-44.00C.

Teraue, Takeshi: *See*—
Misaka, Yoshiharu; Teraue, Takeshi; and Hatae, Masamiti, 4,500,652, Cl. 521-33.000.

Terry, F. Duncan: *See*—
Buck, Roy T.; Cloutier, Frank L.; Erni, R. Ernst; Low, Robert N.; and Terry, F. Duncan, 4,500,895, Cl. 346-140.00R.

Tessier, Jean: *See*—
Martel, Jacques; Tessier, Jean; and Demoute, Jean-Pierre, 4,500,720, Cl. 549-313.000.

Texaco Inc.: *See*—
Bordages, John W., 4,499,799, Cl. 81-446.000.
Brennan, Michael E., 4,500,655, Cl. 521-163.000.
Kaufman, Benjamin J.; Liu, Christopher S.; and Sung, Rodney L., 4,500,440, Cl. 252-51.50A.
Vuong, Dinh-Cuong, 4,500,324, Cl. 48-197.00R.

Texas A&M University: *See*—
Fenn, Lloyd B., 4,500,335, Cl. 71-28.000.

Texas Instruments Incorporated: *See*—
Cottle, Wilbur W., Jr.; and Smith, Lilburn R., 4,500,051, Cl. 244-3.160.
Ehni, George J., 4,500,845, Cl. 330-86.000.
Penz, Perry A.; and Sampsell, Jeffrey B., 4,500,171, Cl. 350-320.000.
Swindler, Danny E., 4,500,217, Cl. 400-320.000.

Textron, Inc.: *See*—
Dulin, Kerry, 4,500,936, Cl. 361-152.000.
Dulin, Kerry, 4,500,938, Cl. 361-153.000.

Thanner, Otto: *See*—
Huber, Johann; and Thanner, Otto, 4,500,325, Cl. 51-298.000.

Theobald, Hans: *See*—
Becker, Rainer; Theobald, Hans; Schirmer, Ulrich; Spiegler, Wolfgang; Seufert, Walter; and Wuerzer, Bruno, 4,500,340, Cl. 71-90.000.

Therond, Marcel P. Hydraulic press mechanism. 4,499,728, Cl. 60-570.000.

Thiokol Corporation: *See*—
Grey, James T., Jr., 4,500,114, Cl. 280-742.000.

Thoese, Klaus, to Hoechst Aktiengesellschaft. Drafting film. 4,500,598, Cl. 428-331.000.

Thoma, Nandor G.: *See*—
Cases, Moises; Kraft, Wayne R.; Stahl, William L., Jr.; and Thoma, Nandor G., 4,500,800, Cl. 307-468.000.

Thomas, Charles H., to Westinghouse Electric Corp. Low cost polyester modified phenolic resin containing a combination of long and short chain alkylphenols. 4,500,689, Cl. 525-442.000.

Thompson, David A., to Corning Glass Works. Volatile metal complexes. 4,500,722, Cl. 549-429.000.

Thompson, Matthew V.: *See*—
Ren, Chung-Li; Thompson, Matthew V.; and Wang, Han-Chiu, 4,500,859, Cl. 333-208.000.

Thompson, Monty R. Manual work-feeding device and guard body for shaping machines. 4,499,933, Cl. 144-134.00A.

Thomson-CSF: *See*—
Broussoux, Dominique; Facoetti, Hugues; Ravinet, Pierre; Bernard, Daniel; and Micheron, Francois, 4,500,377, Cl. 156-164.000.
Demuth, Dietmar, 4,499,902, Cl. 128-660.000.
Gimel, Bernard; and DeFay, Christian, 4,500,891, Cl. 346-76.0PH.
Hareng, Michel; and Moutou, Paul, 4,500,878, Cl. 340-713.000.
Malbec, Yves; Boisot, Yves; Bontemps, Daniel; and Duhamel, Georges, 4,500,760, Cl. 200-83.00C.
Rascle, Roger; and Lange, Francois, 4,500,486, Cl. 264-335.000.
Ratigalas, Max, 4,500,871, Cl. 340-347.0DD.

Thorsness, Charles B.: *See*—
Hill, Richard W.; Skinner, Dewey F.; and Thorsness, Charles B., 4,499,945, Cl. 166-50.000.

Thorsrud, Lee T.: *See*—
Bennett, Donald B.; Thorsrud, Lee T.; and Petschauer, Thomas W., 4,500,988, Cl. 370-85.000.

Thorton, Donald I.; and Peyton, Richard H., to Allied Corporation. Pump valve for liquid separator. 4,500,425, Cl. 210-136.000.

Tillman, Willie, to Phillips Petroleum Company. Changing oil tubes in a carbon black reactor. 4,500,491, Cl. 422-150.000.

Tillyard, Malcolm: *See*—
Hanson, Raymond; and Tillyard, Malcolm, 4,500,773, Cl. 219-215.000.

Timex Corporation: *See*—
Leibowitz, Marshall; and George, Douglas A., 4,500,173, Cl. 350-345.000.

Timpte Industries, Inc.: *See*—
Harms, Orville L., 4,500,123, Cl. 292-259.00A.

Tincher, Jon D., to General Motors Corporation. Rotary weld gun support with electrical coupling. 4,500,769, Cl. 219-86.330.

Titus, Robert D.: *See*—
Bach, Nicholas J.; Kornfeld, Edmund C.; and Titus, Robert D., 4,500,545, Cl. 514-619.000.

Tkac, Alexander; and Cvengros, Jan, to Slovenska vysoka skola technika. Elastic scraper for high-capacity film device. 4,500,390, Cl. 159-6.100.

TMC Corporation: *See*—
Svoboda, Josef, 4,500,106, Cl. 280-605.000.
Svoboda, Josef; and Szabo, Emilie, 4,500,107, Cl. 280-605.000.

Tobias, Lawrence D.: *See*—
Hamilton, James G.; Sullivan, Ann C.; Tobias, Lawrence D.; and Triscari, Joseph, 4,500,540, Cl. 514-397.000.

Todaka, Yoshihiro: *See*—
Hanma, Kentaro; Murakami, Toshio; and Todaka, Yoshihiro, 4,500,925, Cl. 358-227.000.

Toho Belson Co., Ltd.: *See*—
Minamisawa, Tsuyoshi; Kogo, Yasuo; and Nagata, Yasuhisa, 4,500,660, Cl. 523-428.000.

Toho-Polymer Kabushika Kaisha: *See*—
Nishikawa, Yoshikawzu, 4,500,218, Cl. 400-490.000.

Tokai Carbon Co., Ltd.: *See*—
Suzuki, Hiroaki; and Misono, Shinji, 4,500,672, Cl. 524-496.000.
Yamamoto, Akira, 4,500,504, Cl. 423-345.000.

Tokai TRW & Co. Ltd.: *See*—
Abe, Michio; and Maeda, Naoyuki, 4,499,964, Cl. 180-142.000.

Tokico Ltd.: *See*—
Kubota, Hitoshi; Hamamatsu, Seiji; Yambe, Teluo; and Takahashi, Toshiyuki, 4,500,761, Cl. 200-84.00C.

Tokitsu, Naoki; Fujiwara, Toshitaka; Kato, Toranosuke; and Uno, Toshihiko, to Nippondenso Co., Ltd.; and Toyota Jidosha Kogyo Kabushiki Kaisha. Automotive driving instruction system. 4,500,868, Cl. 340-52.00F.

Tokuda, Ryuji: *See*—
Suzuki, Ryoichi; and Tokuda, Ryuji, 4,500,193, Cl. 354-471.000.

Tokunaga, Toshihide: *See*—
Kajioka, Hiroshi; Tokunaga, Toshihide; and Nakagawa, Junkichi, 4,500,168, Cl. 350-96.340.

Tokushuku, Keiko: *See*—
Takigami, Katsuhiko; and Tokushuku, Keiko, 4,500,907, Cl. 357-79.000.

Tokyo Electric Co., Ltd.: *See*—
Sakura, Yasuhiro; Takai, Yoshihiro; and Suzuki, Michio, 4,500,893, Cl. 346-76.0PH.

Tokyo Shibaura Denki Kabushiki Kaisha: *See*—
Futaki, Kenji; and Dekura, Hitoshi, 4,500,971, Cl. 364-513.500.
Iwai, Hiroshi, 4,500,615, Cl. 430-30.000.
Komakine, Takashi, 4,499,944, Cl. 165-104.160.
Motoyama, Takeshi; Onishi, Toshiyuki; and Yokoyama, Kunio, 4,499,738, Cl. 62-155.000.
Nozaki, Hidetoshi; Kamimura, Takaaki; Hatayama, Tamothu; and Utagawa, Tadashi, 4,500,744, Cl. 136-258.000.
Ohmura, Yamichi; and Matsushita, Yoshiaki, 4,500,388, Cl. 156-603.000.
Sawa, Buntaro; and Honda, Naoto, 4,500,851, Cl. 331-2.000.
Shibata, Tadashi, 4,500,905, Cl. 357-68.000.
Taguchi, Shinichiro; Nagao, Nobuya; and Ogihara, Yutaka, 4,500,931, Cl. 358-310.000.
Takigami, Katsuhiko; and Tokushuku, Keiko, 4,500,907, Cl. 357-79.000.
Taya, Akira; Narita, Kazuo; Asada, Masao; and Kimura, Yoshio, 4,500,443, Cl. 252-301.40P.
Yoshimaru, Tomohisa, 4,500,926, Cl. 358-256.000.

Tokyo Shibuara Denki Kabushiki Kaisha: *See*—
Miyano, Toshiyuki; and Ohmura, Hideo, 4,499,709, Cl. 53-589.000.

Tomihashi, Nobuyuki: *See*—
Ohmori, Akira; Tomihashi, Nobuyuki; and Kitahara, Takahiro, 4,500,694, Cl. 526-245.000.

Tomioka, Susumu; and Taniguchi, Masahiko, to Chisso Corporation. Process for producing a non-woven fabric of hot-melt-adhered composite fibers. 4,500,384, Cl. 156-290.000.

Tomita, Satoru; Shimura, Akira; and Yokota, Takashi, to Ricoh Company, Ltd. Apparatus for cleaning a recording medium. 4,499,849, Cl. 118-652.000.

Tomizawa, Akimori; and Osaka, Hiroshi, to Clarion Co., Ltd. AGC Arrangement for a television system. 4,500,921, Cl. 358-174.000.

Toombs, Chauncey E. Lubricating oil salvaging block assembly. 4,499,969, Cl. 184-106.000.

Toray Industries, Incorporated: *See*—
Kamaishi, Tadami; and Kitagawa, Takao, 4,500,587, Cl. 428-204.000.

Toray Silicone Company, Inc.: *See*—
Kobayashi, Hideki; and Hamada, Mitsuo, 4,500,447, Cl. 252-511.000.

Torigoe, Masaaki: *See*—
Ohmura, Kunioki; Torigoe, Masaaki; Itoh, Isamu; and Hayashi, Katsumi, 4,500,632, Cl. 430-428.000.

Tornblom, Lars: *See*—
Ode, Bengt; and Tornblom, Lars, 4,500,261, Cl. 417-203.000.

Tosaka, Yoichi: *See*—
Haraguchi, Shosuke; and Tosaka, Yoichi, 4,500,185, Cl. 354-209.000.

Toshiba Battery Co., Ltd.: *See*—
Nagamine, Akio; Hayashi, Akira; Yoshida, Kazumasa; and Miyasaka, Kojiro, 4,500,614, Cl. 429-206.000.

Toshiba Ceramics Co., Ltd.: *See*—
Reiji, Oguma; and Akihiro, Hirai, 4,500,642, Cl. 501-54.000.

Toti, Andrew J. Patterned metal blind slat and method and apparatus for producing the same. 4,499,938, Cl. 160-236.000.

Townsend, Herbert E.: *See*—
Hart, Robert G.; and Townsend, Herbert E., 4,500,399, Cl. 204-181.00C.

Toyama, Takanori: *See*—
Tanaka, Motoaki; Toyama, Takanori; Ohba, Hitoshi; and Yamaguchi, Osamu, 4,500,649, Cl. 502-167.000.

Toyo Boseki Kabushiki Kaisha: *See*—
Kobayashi, Takuma; Kitagawa, Hironobu; and Kobayashi, Shigeo, 4,500,686, Cl. 525-408.000.

Toyo Contact Lens Co., Ltd.: *See*—
Tanaka, Kyoichi; Tsuzuki, Akira; and Hioki, Shunichi, 4,500,441, Cl. 252-89.100.

Toyo Seikan Kaisha, Ltd.: *See*—
Maruhashi, Yoshitsugu; Kano, Fumio; Yamada, Muneki; and Hirata, Sadao, 4,500,677, Cl. 525-57.000.
Taira, Kazuo; Morofuji, Akihiko; Ueno, Hiroshi; and Kobayashi, Seishichi, 4,500,575, Cl. 428-35.000.

Toyo Soda Manufacturing Co. Ltd.: *See*—
Miyanaga, Akiyoshi; and Kurihara, Yukitada, 4,500,431, Cl. 210-656.000.

Toyota Jidosha Kabushiki Kaisha: *See*—
Kanda, Mutsumi; Nakanishi, Kiyoshi; Inoue, Tokuta; and Nakajima, Mikio, 4,499,868, Cl. 123-188.00M.
Kitagawa, Katsutoshi; Isogai, Kiyoshi; Ohmori, Nobuo; Takita, Naka; Okamoto, Makoto; Koga, Itsuo; and Ito, Kazuo, 4,500,099, Cl. 277-228.000.
Kuramochi, Koujiro; and Takahashi, Tokuyuki, 4,499,789, Cl. 74-740.000.
Saito, Kimitaka; Kohama, Tokio; Egami, Tsuneyuki; Saito, Tsutomu; Nogami, Susumu; and Suzuki, Yukio, 4,499,882, Cl. 123-492.000.
Teramura, Mitsuyoshi; Takimoto, Masatami; Nakamura, Norihiko; Itoh, Takaaki; Katou, Takashi; and Isoya, Yukinori, 4,500,476, Cl. 261-44.00C.

Toyota Jidosha Kogyo Kabushiki Kaisha: *See*—
Tokitsu, Naoki; Fujiwara, Toshitaka; Kato, Toranosuke; and Uno, Toshihiko, 4,500,868, Cl. 340-52.00F.

Tran, Roger T.: *See*—
Babecki, Glenn R.; Escolar, Carlos; Garnant, Craig M.; Kan, Hsin-Kuo; Kaplan, Frank; Liu, Hueichi R.; MacLachlan, George F.; Matteo, Peter J.; McDonald, John F.; Palframan, John D.; Tran, Roger T.; Welt, Martin J.; Wendt, Timothy A.; Yates, Gregory S.; and Zislis, Paul M., 4,500,960, Cl. 364-200.000.

Trans-World Manufacturing Corporation: *See*—
Lasky, Richard J., 4,500,088, Cl. 272-8.00M.

Transilwrap Company, Inc.: *See*—
Foster, William J., 4,500,382, Cl. 156-272.800.

Transtech Industrial Corporation: *See*—
Jow, Long S.; and Jow, Long J., 4,499,793, Cl. 74-866.000.

Trask, Barbara J.: *See*—
van den Engh, Gerrit J.; Trask, Barbara J.; and Visser, Johannes W. M., 4,500,641, Cl. 435-291.000.

Trassl, Werner, to Kraftwerk Union Aktiengesellschaft. Electrohydraulic control actuator for turbine valves. 4,500,066, Cl. 251-26.000.

Traut, Martin: *See*—
Kubinyi, Hugo; Traut, Martin; and Gries, Josef, 4,500,467, Cl. 514-2.000.

Tripier, Dominique: *See*—
Seipke, Gerhard; Tripier, Dominique; and Johnscher, Gerd, 4,500,450, Cl. 260-112.00R.

Triscari, Joseph: *See*—
Hamilton, James G.; Sullivan, Ann C.; Tobias, Lawrence D.; and Triscari, Joseph, 4,500,540, Cl. 514-397.000.

Trotter, Donald J., to Santrade Ltd. Flux retainer. 4,500,765, Cl. 219-73.210.

Trusock, George J.; Bauer, James J.; and Gandhi, Bhupen, to Clark Equipment Company. Auxiliary electric power supply for electric work vehicles. 4,500,819, Cl. 318-106.000.

Trutzschler GmbH & Co. KG: *See*—
Trutzschler, Hermann, 4,499,633, Cl. 19-105.000.

Trutzschler, Hermann, to Trutzschler GmbH & Co. KG. Apparatus for separating fiber tufts from an airstream. 4,499,633, Cl. 19-105.000.

Tsuboi, Hikotada: *See*—
Oba, Masayuki; Kawamata, Motoo; Tsuboi, Hikotada; and Koga, Nobuhito, 4,500,719, Cl. 548-522.000.

Tsuboi, Nobuyoshi; Shima, Seiya; Kanasaki, Morio; and Nakazawa, Hayashi, to Hitachi, Ltd. Control apparatus for passenger conveyor. 4,499,986, Cl. 198-322.000.

Tsuchiya, Masatoshi; Soeno, Ko; and Yoshida, Tomomasa, to Hitachi, Ltd. Semiconductor pressure transducer. 4,499,774, Cl. 73-727.000.

Tsuchiya, Tatsuo; and Hozumi, Kazuhiro, to Matsushita Electric Industrial Co., Ltd.; and Kuroda Precision Industries Ltd. Air pressure shock absorber. 4,500,075, Cl. 267-8.00R.

Tsuda, Hiroshi: *See*—
Hashimoto, Shintaro; Masuzawa, Sigeaki; Shibata, Shinya; Tsuda, Hiroshi; and Nakano, Masahiro, 4,500,211, Cl. 368-63.000.

Tsuji, Kiyoshi: *See*—
Takaya, Takao; Masugi, Takashi; Ogino, Takashi; and Tsuji, Kiyoshi, 4,500,709, Cl. 544-58.100.

Tsuji, Shintaro, to Mitsubishi Denki Kabushiki Kaisha. Control apparatus for elevators. 4,499,975, Cl. 187-29.00R.

Tsukada, Toshihisa: *See*—
Koike, Norio; Tsukada, Toshihisa; Baji, Toru; and Sasano, Akira, 4,500,915, Cl. 358-44.000.

Tsurugi, Tomio: *See*—
Sato, Akio; Nakajima, Kenji; Takahara, Yoshimasa; Kijima, Shizumasa; Inai, Yuichi; Kohara, Yoshiyuki; Kawakami, Yoshiyuki; and Tsurugi, Tomio, 4,500,463, Cl. 260-406.000.

Tsuruta, Keiji; and Tsutsumi, Nagayuki, to Mitsubishi Denki Kabushiki Kaisha. Package substation in tank with separate chambers. 4,500,935, Cl. 361-333.000.

Tsutsumi, Nagayuki: *See—*
Tsuruta, Keiji; and Tsutsumi, Nagayuki, 4,500,935, Cl. 361-333.000.
Tsuyama, Setsuya: *See—*
Okada, Tokio; Tani, Haruhisa; Kojima, Shigezo; Tsuyama, Setsuya; Kurihara, Kazuhiko; and Yazawa, Hiroshi, 4,499,639, Cl. 28-282.000.
Tsuzuki, Akira: *See—*
Tanaka, Kyoichi; Tsuzuki, Akira; and Hioki, Shunichi, 4,500,441, Cl. 252-89.100.
Tucek, Frank J., to J. I. Case Company. Crawler track support system with vertically extensible centra rollers. 4,500,139, Cl. 305-10.000.
Tuchman, Walter L.: *See—*
Elander, Robert C.; Lennon, Richard E.; Matyas, Stephen M.; Meyer, Carl H. W.; Shuck, Robert E.; and Tuchman, Walter L., 4,500,750, Cl. 178-22.080.
Tucker, Daniel. Chlorine generator device. 4,500,404, Cl. 204-266.000.
Tucker, Harold A., to B. F. Goodrich Company, The. Hydrophosphonylated derivatives of glycidyl ether polymers. 4,500,684, Cl. 525-327.300.
Tuckey, Charles H., to Walbro Corporation. Gear rotor fuel pump. 4,500,270, Cl. 418-133.000.
Tundra Holdings Ltd.: *See—*
Milne, William G.; and Saruwatari, Minoru, 4,499,966, Cl. 182-3.000.
Tur-Kaspa, Yosef; and Lenz, Ehud, to Technion Research & Development Foundation Ltd. Object-gripping device and industrial robot including same. 4,500,126, Cl. 294-86.00R.
Turbak, Albin F.; Snyder, Fred W.; and Sandberg, Karen R., to International Telephone and Telegraph Corporation. Suspensions containing microfibrillated cellulose. 4,500,546, Cl. 514-781.000.
Turner, Larry S., to Owens-Corning Fiberglas Corporation. Five-tab strip shingles. 4,499,702, Cl. 52-555.000.
Turner, Robert L., to RCA Corporation. Video disc package. 4,499,995, Cl. 206-312.000.
Tuten, William J.; and Crosby, Kennith D., to Creative Technology Corp. Selective scrap metal collection apparatus. 4,499,984, Cl. 194-4.00C.
Tuttle, Alan H.; Leonard, James K.; and Dlugosz, Henry J., to McGraw-Edison Company. Turbine shaft seal assembly. 4,500,096, Cl. 277-53.000.
Tvedt, Kare E.; Kopstad, Guennar; and Haugen, Olav A., to C. Reichert Optische Werke, AG. Device for handling thin sections, in particular cryosections, and process for freeze-drying thin sections. 4,499,670, Cl. 34-143.000.
Tyrolit Schleifmittelworke Swarovski K.G.: *See—*
Huber, Johann; and Thanner, Otto, 4,500,325, Cl. 51-298.000.
Tyszkiewicz, Theodore J.: *See—*
Boden, Richard M.; Hanna, Marie R.; and Tyszkiewicz, Theodore J., 4,500,448, Cl. 252-522.00R.
Ueda, Shuso: *See—*
Ikenoya, Yasuo; Ueda, Shuso; and Araki, Masafumi, 4,499,724, Cl. 60-290.000.
Ueno, Hiroshi: *See—*
Taira, Kazuo; Morofuji, Akihiko; Ueno, Hiroshi; and Kobayashi, Seishichi, 4,500,575, Cl. 428-35.000.
Uhl, Jurgen: *See—*
Hausberg, Hans-Heinrich; Uhl, Jurgen; Seyfried, Christoph; and Minck, Klaus-Otto, 4,500,541, Cl. 514-466.000.
UHV Instruments Ltd.: *See—*
Robinson, James E., 4,499,776, Cl. 73-863.850.
UMC Industries, Inc.: *See—*
Schuller, James T., 4,499,985, Cl. 194-10.000.
Umehara, Mitsuo: *See—*
Matsuoka, Fumio; Iijima, Hitoshi; Yamazaki, Kisuke; Kasagi, Hiroshi; Nakashima, Yasuo; Sakuma, Kiyoshi; and Umehara, Mitsuo, 4,499,739, Cl. 62-212.000.
Umezawa, Hamao; Fujii, Akio; Muraoka, Yasuhiko; Nakatani, Tokuji; Fukuoka, Takeyo; and Takahashi, Katsutoshi, to Nippon Kayaku Kabushiki Kaisha. (Amido)N-substituted bleomycins, salts thereof and process for preparation thereof. 4,500,452, Cl. 260-112.50R.
Union Carbide Corporation: *See—*
Lok, Brent M. T.; Marcus, Bonita K.; and Flanigen, Edith, 4,500,651, Cl. 502-208.000.
Nicholson, Myron D.; and Chiu, Herman; S., 4,500,576, Cl. 428-36.000.
Union Oil Company of California: *See—*
Jost, John W.; and Gallup, Darrell L., 4,500,434, Cl. 210-696.000.
Simpson, Howard D.; Richardson, Ryden L.; and Baron, Kenneth, 4,500,424, Cl. 208-216.0PP.
Unique Functional Products: *See—*
Law, Denny B., 4,500,113, Cl. 280-716.000.
United Security Products, Inc.: *See—*
Greene, Ted R., 4,500,943, Cl. 361-383.000.
United States of America
Agriculture: *See—*
Peters, Penn A.; Biller, Cleveland J.; and Johnson, David D., 4,500,004, Cl. 212-80.000.
Air Force: *See—*
Cole, Eugene O.; and Yeterian, Vahan H., 4,500,206, Cl. 356-376.000.
Moore, George W.; and Carroll, Robert G., 4,499,735, Cl. 60-739.000.
Plank, Vernon G.; Matthews, Anthony J.; Berthel, Robert O.; and LaGross, Dennis L., 4,499,761, Cl. 73-170.00R.
Webb, George, 4,500,255, Cl. 415-189.000.
Army: *See—*
Bosselaers, Robert J.; and Elder, Richard B., 4,500,857, Cl. 332-9.00R.
Conway, Gregory J., 4,499,769, Cl. 73-587.000.
Gutleber, Frank S., 4,500,883, Cl. 343-383.000.
Kaste, Robert P., 4,499,811, Cl. 89-14.500.
Lee, Calvin K.; and Rapacz, Deirdre T., 4,500,592, Cl. 428-251.000.
Majerus, John N.; and Walters, William P., 4,499,830, Cl. 102-476.000.
Morr, Gary F.; and Duncan, William A., 4,500,997, Cl. 372-58.000.
Savioli, Giulio V., 4,499,683, Cl. 42-69.00R.
Smith, David C.; and Noto, Richard, 4,500,963, Cl. 364-300.000.
Commerce: *See—*
Kriz, Ronald D., 4,499,770, Cl. 73-599.000.
Energy: *See—*
Carr, Kenneth R., 4,499,753, Cl. 73-59.000.
Christie, Alan M.; and Snyder, Kurt I., 4,500,487, Cl. 376-283.000.
David, Stan A.; and Woodhouse, John J., 4,499,758, Cl. 73-159.000.
Fontana, Jack J.; and Reams, Walter, 4,500,674, Cl. 524-650.000.
Groh, Edward F.; Cassidy, Dale A.; and Lewandowski, Edward F., 4,500,488, Cl. 376-409.000.
Haas, Wendall M. B., 4,499,772, Cl. 73-666.000.
Hill, Richard W.; Skinner, Dewey F.; and Thorsness, Charles B., 4,499,945, Cl. 166-50.000.
Honodel, Charles A., 4,499,828, Cl. 102-301.000.
Hunt, Arlon J.; Hansen, Leif J.; and Evans, David B., 4,499,893, Cl. 126-449.000.
Hurst, Fred J., Jr., 4,500,493, Cl. 423-10.000.
Jacobson, Albin K.; Rychnovsky, Raymond E.; and Visbeck, Cornelius N., 4,499,829, Cl. 102-378.000.
Jahn, Randy K.; and Liepins, Raimond, 4,500,562, Cl. 427-27.000.
Lewandowski, Edward F.; and Peterson, Leroy L., 4,499,708, Cl. 53-432.000.
Srivastava, Suresh C.; Fawwaz, Rashid A.; and Richards, Powell, 4,500,508, Cl. 424-1.100.
Staiger, M. Daniel, 4,500,231, Cl. 406-198.000.
Sullivan, William N., 4,500,257, Cl. 416-32.000.
Szoke, Abraham; and Prosnitz, Donald, 4,500,843, Cl. 330-4.300.
Whetten, Nathan R.; and Kelley, John E., 4,500,785, Cl. 250-385.000.
Zwick, Stanley A.; and Ackerman, John P., 4,499,663, Cl. 29-623.100.
Health and Human Services: *See—*
Neville, David M., Jr.; and Youle, Richard J., 4,500,637, Cl. 435-2.000.
Interior: *See—*
Campoli, Alan A.; and Garcia, Fred, 4,500,329, Cl. 55-189.000.
Cole, Ernest R., Jr.; Lee, Agnes Y.; and Paulson, Danton L., 4,500,398, Cl. 204-117.000.
National Aeronautics and Space Administration: *See—*
Evans, Jack; and Studer, Philip A., 4,500,265, Cl. 417-417.000.
Yamakawa, Kazuo A., 4,500,492, Cl. 422-199.000.
Navy: *See—*
Beyer, Henry R.; DeSipio, Richard G.; Long, Thomas F.; and Ritz, Joseph, 4,500,885, Cl. 343-456.000.
Insinger, Richard H., III; and Rodemann, Alfred H., 4,500,295, Cl. 434-218.000.
Naubereit, Henry; Beyer, Henry R.; DeSipio, Richard G.; and Picard, Salvatore R., 4,500,884, Cl. 343-456.000.
Naubereit, Henry; Long, Thomas F.; Picard, Salvatore R.; and Ritz, Joseph, 4,500,886, Cl. 343-456.000.
U.S. Philips Corporation: *See—*
Lemaire, Edmond; and Lebreton, Jacques, 4,500,962, Cl. 364-200.000.
Persoon, Eric H. J.; and Abeysekera, Ratnayake M. S. S., 4,501,016, Cl. 382-22.000.
Schemmann, Hugo; and Bertram, Leo, 4,500,825, Cl. 318-792.000.
Schmitz, Herman J. R., 4,500,875, Cl. 340-703.000.
Van Roessel, Frederik J., 4,500,922, Cl. 358-188.000.
U.S. Product Development Company: *See—*
Adell, Robert, 4,499,689, Cl. 49-462.000.
United Stirling AB: *See—*
Bratt, Christer, 4,499,726, Cl. 60-517.000.
Lorant, Stefan, 4,499,727, Cl. 60-525.000.
United Technologies Corporation: *See—*
Bullis, Robert H.; and Couch, Robert P., 4,499,755, Cl. 73-116.000.
Monhardt, Richard J.; Orr, Alfred B.; and Wright, Joseph B., 4,500,252, Cl. 415-9.000.
Murphy, Richard D.; Perez, Ricardo L.; and Clelford, Douglas H., 4,500,967, Cl. 364-434.000.
Veltri, Richard D.; Galasso, Francis S.; and Mendelson, Mel I., 4,500,483, Cl. 264-81.000.
Wilcox, Ernest W.; and Wilson, Jack W., Jr., 4,500,098, Cl. 277-170.000.
Zagranski, Raymond D.; Howlett, James J.; and Lappos, Nicholas D., 4,500,966, Cl. 364-432.000.
Universal Instruments Corporation: *See—*
Ackerman, Daniel W., 4,500,032, Cl. 228-180.00A.
Janisiewicz, Stanley W.; Hills, Maynard J.; and Lovell, Edward J., 4,500,246, Cl. 414-414.000.
University of Alabama for the University of Alabama in Birmingham, The Board of Trustees of the: *See—*
Urry, Dan W., 4,500,700, Cl. 528-328.000.

University of Arizona Foundation: *See—*
Furst, Emanuel F.; Lampe, Louis F.; and Woods, William L., 4,499,903, Cl. 128-675.000.
University of Delaware: *See—*
Bodge, Kevin R.; and Dean, Robert G., 4,499,762, Cl. 73-170.00A.
University of Southern California: *See—*
Feinberg, Jack, 4,500,855, Cl. 332-7.510.
University Patents, Inc.: *See—*
Caruthers, Marvin H.; and Matteucci, Mark D., 4,500,707, Cl. 536-27.000.
Uno, Chiyomatsu, to Komori Printing Machinery Co., Ltd. Ink wiping device for intaglio rotary printing machines. 4,499,825, Cl. 101-167.000.
Uno, Toshihiko: *See—*
Tokitsu, Naoki; Fujiwara, Toshitaka; Kato, Toranosuke; and Uno, Toshihiko, 4,500,868, Cl. 340-52.00F.
Uomala, Vilho; Sandstrom, Kjell; and Matilainen, Jorma, to Oy Wartsila Ab. Valve cover sealing arrangement. 4,500,092, Cl. 277-12.000.
UOP Inc.: *See—*
House, David W., 4,500,740, Cl. 568-796.000.
Polak, Anthony J.; and Beuhler, Allyson J., 4,500,667, Cl. 524-406.000.
Upjohn Company, The: *See—*
VanRheenen, Verlan H., 4,500,461, Cl. 260-397.450.
Urbach, Bernd: *See—*
Girodi, Erich; Bornowski, Gunter; Dejmek, Eberhard; Knabe, Andreas; Koch, Roland; Urbach, Bernd; and Weisselberg, Arnold, 4,500,764, Cl. 219-59.100.
Urban, Joseph, to Crown Cork & Seal Company, Inc. Nitrogen injector system. 4,499,931, Cl. 141-67.000.
Urry, Dan W., to University of Alabama for the University of Alabama in Birmingham, The Board of Trustees of the. Elastomeric composite material comprising a polypentapeptide having an amino acid of opposite chirality in position three. 4,500,700, Cl. 528-328.000.
Usachev, Oleg I.: *See—*
Sidorenko, Georgy I.; Lopato, Georgy P.; Yakubovich, Vladimir M.; Nikitin, Yaroslav G.; Usachev, Oleg I.; and Vorobiev, Anatoly P., 4,499,904, Cl. 128-703.000.
Ushio Denki Kabushiki Kaisha: *See—*
Hiramoto, Tatsumi, 4,500,565, Cl. 427-39.000.
USM Corporation: *See—*
Garner, Derek H., 4,499,622, Cl. 12-14.500.
Hanson, Raymond; and Tillyard, Malcolm, 4,500,773, Cl. 219-215.000.
Maxner, Richard B., 4,499,649, Cl. 29-566.300.
Pope, John R., 4,499,845, Cl. 116-137.00A.
Usui, Sanpei: *See—*
Nishiguchi, Akira; Usui, Sanpei; Oouchi, Tomihisa; and Iwai, Kazumi, 4,499,859, Cl. 122-18.000.
USV Pharmaceutical Corporation: *See—*
Loev, Bernard; Shroff, James R.; and Desai, Rohit, 4,500,527, Cl. 514-223.000.
Loev, Bernard; Jones, Howard; and Shroff, James R., 4,500,528, Cl. 514-228.000.
Loev, Bernard; Jones, Howard; and Suh, John T., 4,500,532, Cl. 514-256.000.
Suh, John T.; Barton, Jeffrey N.; and Regan, John R., 4,500,713, Cl. 546-165.000.
Utagawa, Tadashi: *See—*
Nozaki, Hidetoshi; Kamimura, Takaaki; Hatayama, Tamothu; and Utagawa, Tadashi, 4,500,744, Cl. 136-258.000.
Vaessen, Leonardus M. A.: *See—*
Willemsen, Henricus P.; Vaessen, Leonardus M. A.; and van der Hoorn, Rudolf J. G. A., 4,500,485, Cl. 264-313.000.
Vaisala Oy: *See—*
Kuisma, Heikki T.; Lehto, Ari; and Jalava, Jouko S., 4,500,940, Cl. 361-286.000.
Varkia, Esa, 4,499,763, Cl. 73-170.00R.
Valcom Limited: *See—*
Brandigampola, Don E., 4,500,888, Cl. 343-873.000.
Vallee, Eric: *See—*
Frehel, Daniel; Maffrand, Jean-Pierre; and Vallee, Eric, 4,500,534, Cl. 514-301.000.
Vallis, Keith: *See—*
Ridgewell, Terence E.; and Vallis, Keith, 4,500,120, Cl. 292-19.000.
Vallvey, Juan A.: *See—*
Sole, Carlos M.; and Vallvey, Juan A., 4,500,361, Cl. 106-298.000.
Valyocsik, Ernest W.: *See—*
Rankel, Lillian A.; and Valyocsik, Ernest W., 4,500,503, Cl. 423-329.000.
Van Doorne's Transmissie B.V.: *See—*
Cadee , Theodorus P. M., 4,500,301, Cl. 474-28.000.
van de Kamp, Dieter, to Spanset Inter AG. Endless loop articles of manufacture, straps shaped therefrom, and mats made from such straps. 4,500,578, Cl. 428-36.000.
van den Engh, Gerrit J.; Trask, Barbara J.; and Visser, Johannes W. M., to Nederlandse Centrale Organisatie voor Toegepast Natuurwetenschappelijk Onderzoek. Flow cytometer for identifying algae by chlorophyll fluorescence. 4,500,641, Cl. 435-291.000.
van der Hoorn, Rudolf J. G. A.: *See—*
Willemsen, Henricus P.; Vaessen, Leonardus M. A.; and van der Hoorn, Rudolf J. G. A., 4,500,485, Cl. 264-313.000.
Van Derlin, Donald H. Belt clamp for conveyor belts. 4,500,127, Cl. 294-104.000.
Vander Meer, Richard H.: *See—*
Cole, Rodger E.; and Vander Meer, Richard H., 4,500,229, Cl. 406-88.000.
van Dijk, Jacobus C.; and von Michalofski, Erik. Apparatus for electro-acoustic energy conversion. 4,501,015, Cl. 381-103.000.
van Dongen, Robert H.; and Stork, Willem H. J., to Shell Oil Company. Process for the preparation of hydrocarbon oil distillates. 4,500,416, Cl. 208-86.000.
Van Hijfte, Willy H. P.; and Vanmarcke, Luc A., to Compagnie Neerlandaise de l'Azote (Societe Anonyme). Process for making granules containing urea as the main component. 4,500,336, Cl. 71-29.000.
Van Leirsburg, Dean A.: *See—*
Hubred, Gale L.; and Van Leirsburg, Dean A., 4,500,495, Cl. 423-53.000.
Vanmarcke, Luc A.: *See—*
Van Hijfte, Willy H. P.; and Vanmarcke, Luc A., 4,500,336, Cl. 71-29.000.
Vann, Roy R., to GEO Vann, Inc. Ball switch device and method. 4,499,951, Cl. 166-297.000.
Van Renssen, Marinus: *See—*
Wilbur, Leonard P., Jr.; and Van Renssen, Marinus, 4,500,767, Cl. 219-78.010.
VanRheenen, Verlan H., to Upjohn Company, The. Cyanohydrin process. 4,500,461, Cl. 260-397.450.
Van Roessel, Frederik J., to U.S. Philips Corporation. Synchronous demodulation circuit for a carrier which is amplitude-modulated by a video signal. 4,500,922, Cl. 358-188.000.
Varga, John M. Carding engine. 4,499,632, Cl. 19-98.000.
Varga, John M. J. Gas compressor or blower. 4,499,814, Cl. 92-169.000.
Varian Associates, Inc.: *See—*
Boys, Donald R.; and Graves, Walter E., 4,500,407, Cl. 204-298.000.
Boys, Donald R.; and Smith, Robert M., 4,500,408, Cl. 204-298.000.
Boys, Donald R.; and Graves, Walter E., 4,500,409, Cl. 204-298.000.
Fruzzetti, Paul R.; Leavitt, Philip J.; and Nuzzi, Frank J., 4,499,752, Cl. 73-40.700.
Varkia, Esa, to Vaisala Oy. Means for attaching a sounding balloon. 4,499,763, Cl. 73-170.00R.
Varteresian, Michael G.; and Steele, S. Robert, to Raytheon Company. Semiconductor structures and manufacturing methods. 4,499,659, Cl. 29-589.000.
Vassiliou, Eustathios. Hollow wall anchor. 4,500,238, Cl. 411-30.000.
VDO Adolf Schindling AG: *See—*
Nickol, Friedrich W.; and Baeger, Holm, 4,500,611, Cl. 428-686.000.
VEB Gaskombinat Schwarze Pumpe: *See—*
Girodi, Erich; Bornowski, Gunter; Dejmek, Eberhard; Knabe, Andreas; Koch, Roland; Urbach, Bernd; and Weisselberg, Arnold, 4,500,764, Cl. 219-59.100.
VEGA Grieshaber GmbH & Co. KG: *See—*
Benz, Karl; and Kech, Gunter, 4,499,765, Cl. 73-290.00V.
Veltri, Richard D.; Galasso, Francis S.; and Mendelson, Mel I., to United Technologies Corporation. Manufacture of hollow CVD silicon nitride articles. 4,500,483, Cl. 264-81.000.
Vermilyea, Mark E., to General Electric Company. Winding support and method for NMR magnet axisymmetric correction coils. 4,500,860, Cl. 335-216.000.
Vermont Castings, Inc.: *See—*
Syme, Duncan C., 4,499,889, Cl. 126-75.000.
Vettiger, Peter: *See—*
Bretscher, Erwin; and Vettiger, Peter, 4,500,790, Cl. 250-492.200.
Vezirian, Edward; Quinones, Richard J.; and Lockstedt, Alan W., to Smith International, Inc. Composite bearing. 4,499,642, Cl. 29-149.50R.
Victor Company of Japan, Ltd.: *See—*
Machida, Toyotaka, 4,500,909, Cl. 358-17.000.
Sugiyama, Hiroyuki, 4,500,981, Cl. 369-43.000.
Sugiyama, Hiroyuki; Sakurai, Masaki; Abe, Ryozo; and Yoshihara, Kenji, 4,500,983, Cl. 369-77.200.
Vilen, Erik O., to Blakeslee, A division of Blako, Inc. Mixing apparatus. 4,500,210, Cl. 366-207.000.
Villax, Ivan; and Page, Philip R., to Plurichemie Anstalt. New improved process for the preparation of α-6-deoxytetracyclines. 4,500,458, Cl. 260-351.500.
Vinarub, Edmond I.: *See—*
Krohn, David A.; Buffone, Louis A.; and Vinarub, Edmond I., 4,500,870, Cl. 340-347.00P.
Viola, Gian T.: *See—*
Caporiccio, Gerardo; Viola, Gian T.; and Corti, Costante, 4,500,739, Cl. 568-677.000.
Virupaksha, Krishnamoorthy; and Suyderhoud, Henri G., to Communications Satellite Corporation. Adaptive gain variable bit rate NIC processor. 4,500,842, Cl. 328-150.000.
Virupaksha, Krishnamoorthy; and Campanella, Samuel J., to Communications Satellite Corporation. Variable slope delta coding processor using adaptive prediction. 4,501,001, Cl. 375-30.000.
Visbeck, Cornelius N.: *See—*
Jacobson, Albin K.; Rychnovsky, Raymond E.; and Visbeck, Cornelius N., 4,499,829, Cl. 102-378.000.
Visek, Tomas, to Steyr-Daimler-Puch Aktiengesellschaft. Reciprocating internal combustion engine. 4,499,869, Cl. 123-195.00C.
Visser, Johannes W. M.: *See—*
van den Engh, Gerrit J.; Trask, Barbara J.; and Visser, Johannes W. M., 4,500,641, Cl. 435-291.000.

Vlahek, Josip: *See—*
Bullock, Lance W.; Vlahek, Josip; and Kovacs, Ferenc, 4,500,277, Cl. 425-387.100.

Vlattas, Isidoros, to Ciba-Geigy Corporation. Process for preparing imidazobenzothiadiazepines. 4,500,472, Cl. 260-245.500.

Vobornik, Vaclav: *See—*
Junek, Jan; Skarka, Josef; Jaros, Frantisek; Hortlik, Frantisek; Hacova, Kveta; Vobornik, Vaclav; Ohlidal, Vladimi; and Lihtarova, Ludmila, 4,499,718, Cl. 57-301.000.

Vock, Jurgen; Pinck, Peter; Lange, Norbert; Schmalfeld, Erwin; and Petersen, Kurt-Eckard, to Hauni-Werke Korber & Co. KG. Apparatus for making perforations in running webs of paper or the like. 4,500,770, Cl. 219-121.0LK.

Vogelesang, Laurens B.: *See—*
Schijve, Jacobus; Vogelesang, Laurens B.; and Marissen, Roelof, 4,500,589, Cl. 428-213.000.

Volin, Frank. Wheelchair width adjuster. 4,500,109, Cl. 280-650.000.

Volkswagenwerk Aktiengesellschaft: *See—*
Oetting, Hermann; and Heidemeyer, Paulus, 4,499,965, Cl. 180-165.000.

Vollmer, Rudolf, to Honeywell Inc. Actuating mechanism. 4,500,036, Cl. 236-68.00B.

Vollmer Werke Maschinenfabrik GmbH: *See—*
Beck, Ernst; Lenard, Peter; and Pokorny, Erich, 4,499,794, Cl. 76-75.000.

von Halasz, Sigmar: *See—*
Engelhardt, Friedrich; Kuhlein, Klaus; Riegel, Ulrich; von Halasz, Sigmar; Dawson, Jeffery C.; and Reed, Anthony R., 4,500,437, Cl. 252-8.55C.

von Michalofski, Erik: *See—*
van Dijk, Jacobus C.; and von Michalofski, Erik, 4,501,015, Cl. 381-103.000.

von Weissenfluh, Hans C., to Hawe-Neos Dental Dr. H. v. Weissenfluh S.A. Angular mold for dental use. 4,500,288, Cl. 433-40.000.

Vorobiev, Anatoly P.: *See—*
Sidorenko, Georgy I.; Lopato, Georgy P.; Yakubovich, Vladimir M.; Nikitin, Yaroslav G.; Usachev, Oleg I.; and Vorobiev, Anatoly P., 4,499,904, Cl. 128-703.000.

Vorwald, Josef: *See—*
Braitsch, Hans; Ortwein, Hermann; and Vorwald, Josef, 4,500,037, Cl. 238-2.000.

Voza, Alfonse N., to Singer Company, The. Pattern data storage by equations in an electronically controlled sewing machine. 4,499,838, Cl. 112-266.100.

Vredestein N.V.: *See—*
Willemsen, Henricus P.; Vaessen, Leonardus M. A.; and van der Hoorn, Rudolf J. G. A., 4,500,485, Cl. 264-313.000.

Vsesojuzny Nauchno-Issledovatelsky Institut Burovoi Technici: *See—*
Zaoka, Istvan; Madar, Laszlo ; Cubin, Anatoly A.; Gaivoronsky, Albert A.; Farukshin, Lev H.; Morzsic, Piotr A.; Lisov, Aleksandr I.; and Galusztainc, Vladilen A., 4,499,947, Cl. 166-179.000.

Vuong, Dinh-Cuong, to Texaco Inc. Method of reducing the nickel content in waste water. 4,500,324, Cl. 48-197.00R.

Vyzkumny ustav bavlnarsky: *See—*
Junek, Jan; Skarka, Josef; Jaros, Frantisek; Hortlik, Frantisek; Hacova, Kveta; Vobornik, Vaclav; Ohlidal, Vladimi; and Lihtarova, Ludmila, 4,499,718, Cl. 57-301.000.

W. H. Brady Co.: *See—*
Downing, Gerald T.; and Schaefer, Karl P., 4,500,223, Cl. 402-20.000.

W. R. Grace Australia Limited: *See—*
Bullock, Lance W.; Vlahek, Josip; and Kovacs, Ferenc, 4,500,277, Cl. 425-387.100.

W. R. Grace & Co.: *See—*
Guthrie, James L.; and Wojcik, Ronald T., 4,500,703, Cl. 523-400.000.

W. Schlafhorst & Co.: *See—*
Chardon, Manfred; Mauries, Reinhard; Rohner, Joachim; and Zumfeld, Heinz, 4,499,715, Cl. 57-22.000.

Wada, Minoru; Takahashi, Yonosuke; and Hasegawa, Eiichi, to Fuji Photo Film Co., Ltd. Method for recording light information. 4,500,889, Cl. 346-1.100.

Wada, Noriaki, to Bando Chemical Industries, Ltd. Rubber composition containing non-tackiness-imparting agent and conveyor belt having surface layer made of vulcanizate of said composition. 4,500,666, Cl. 524-232.000.

Wade, James C.: *See—*
McDonald, Daniel P.; and Wade, James C., 4,500,502, Cl. 423-321.00R.

Waggoner, Dennis H. Lumber assembly machine. 4,500,385, Cl. 156-380.400.

Wagner, Hans: *See—*
Goyert, Wilhelm; Grimm, Wolfgang; Awater, Albert; Wagner, Hans; and Kruger, Bruno, 4,500,671, Cl. 524-494.000.

Wagner, James B.: *See—*
Medeiros, Charles W.; and Wagner, James B., 4,499,756, Cl. 73-118.000.

Waine, Martin; Rude, Edward T.; and Nisenson, Jules, to General Clutch Corp. Window shade system for reducing heat transport through windows. 4,499,937, Cl. 160-41.000.

Waite & Son Limited: *See—*
Clading-Boel, John P., 4,500,222, Cl. 401-209.000.

Wakayama, Masao; Takemura, Makoto; and Kasagi, Takao, to Nippon Soken, Inc. Sliding member made of fiber-reinforced metal. 4,500,360, Cl. 106-286.500.

Wakeman, Philip E. D., to Canada, Her Majesty in Right of. Spectrum surveillance receiver system. 4,501,020, Cl. 455-226.000.

Wako Pure Chemical Industries, Ltd.: *See—*
Tanaka, Motoaki; Toyama, Takanori; Ohba, Hitoshi; and Yamaguchi, Osamu, 4,500,649, Cl. 502-167.000.

Walbro Corporation: *See—*
Tuckey, Charles H., 4,500,270, Cl. 418-133.000.

Walker, Aubrey D.: *See—*
Ferro, Berkeley M.; and Walker, Aubrey D., 4,500,116, Cl. 283-92.000.

Walker, Ewald: *See—*
Backe, Egbert; Muller, Rolf; Otto, Dieter; Leonardi, Cornelio; Kochendorfer, Heinrich; Fussner, Paul; Walker, Ewald; and Rommel, Rudi, 4,499,757, Cl. 73-119.00A.

Walker, Gary: *See—*
Westhaver, Robert O.; Walker, Gary; and Koning, Menno G., 4,499,778, Cl. 74-5.00F.

Walker, Robert A.: *See—*
Austin, James W.; Bradburn, Ronald G.; Cromwell, Clarence A.; Gratch, Eitan; Groiss, Erich; Perkins, Derek; and Walker, Robert A., 4,500,496, Cl. 423-55.000.

Walrath, Craig D., to Westinghouse Electric Corp. Electro-optical tracking system with adaptive bearing friction compensation. 4,500,823, Cl. 318-632.000.

Walsham, Brian E.: *See—*
Szczupak, David T.; Walsham, Brian E.; Hooley, Desmond J.; Flaxington, David; McKean, Peter S.; and Wescott, John D., 4,499,732, Cl. 60-602.000.

Walters, John P., to Phillips Petroleum Company. Method for storing gas samples. 4,499,930, Cl. 141-8.000.

Walters, William P.: *See—*
Majerus, John N.; and Walters, William P., 4,499,830, Cl. 102-476.000.

Wang, Han-Chiu: *See—*
Ren, Chung-Li; Thompson, Matthew V.; and Wang, Han-Chiu, 4,500,859, Cl. 333-208.000.

Wang, Ke-Chin: *See—*
Winkelbauer, Howard M.; Hill, Kenneth W.; and Wang, Ke-Chin, 4,500,644, Cl. 501-98.000.

Wang, Nui, to Girlock Limited. Integral park brake mechanism. 4,499,977, Cl. 188-72.600.

Wangner Systems Corporation: *See—*
Smith, Richard W., 4,500,590, Cl. 428-222.000.

Ward, Connie T. Shadecloth fixing pin. 4,499,635, Cl. 24-150.00R.

Ward, Henry D., Jr.; and West, John B., to Ward Machinery Company, The. Blank stacking apparatus. 4,500,243, Cl. 414-50.000.

Ward Machinery Company, The: *See—*
Sardella, Louis M.; and Ward, William F., Sr., 4,500,244, Cl. 414-92.000.
Ward, Henry D., Jr.; and West, John B., 4,500,243, Cl. 414-50.000.

Ward, Michael A. V.; and Lefevre, Robert P., to Combustion Electromagnetics, Inc. Ultra lean burn carburetted adiabatic engine. 4,499,872, Cl. 123-344.000.

Ward, William F., Sr.: *See—*
Sardella, Louis M.; and Ward, William F., Sr., 4,500,244, Cl. 414-92.000.

Ward, William J., III; Ritzer, Alan; Carroll, Kenneth M.; and Flock, John W., to General Electric Company. Method for making alkylhalosilanes. 4,500,724, Cl. 556-472.000.

Warner-Lambert Company: *See—*
Mayer, Jean P.; and Wittwer, Fritz, 4,500,358, Cl. 106-122.000.

Watanabe, Hideo: *See—*
Kubo, Keishi; Watanabe, Hideo; Takigawa, Nobuhiro; Hagiri, Minoru; and Kawasaki, Kanjiro, 4,500,896, Cl. 346-204.000.

Watanabe, Hiroshi: *See—*
Akano, Shinichi; Goto, Tsutomu; Watanabe, Hiroshi; Kuroda, Masato; Ishikawa, Sakae; and Matsumoto, Ryoichiro, 4,499,754, Cl. 73-861.120.

Watanabe, Katsunori: *See—*
Ishikawa, Shozo; Katagiri, Kazuharu; Watanabe, Katsunori; Sakai, Kiyoshi; and Kitahara, Makoto, 4,500,619, Cl. 430-59.000.

Watanabe, Norio: *See—*
Suzuki, Akira; Shioya, Yasumi; Watanabe, Norio; and Kimura, Keiichi, deceased, 4,500,427, Cl. 210-608.000.

Watanabe, Shinichiro, to Japan Spectroscopic Co., Ltd. Spectrophotometer. 4,500,205, Cl. 356-325.000.

Watanabe, Takashi; and Miyatake, Shigehiro, to Sharp Kabushiki Kaisha. Color imaging array and color imaging device. 4,500,914, Cl. 358-44.000.

Watanabe, Yoshikazu: *See—*
Menjo, Hiroshi; and Watanabe, Yoshikazu, 4,500,633, Cl. 430-505.000.

Watkins, Bruce J., to Hughes Tool Company. Wellhead stabilization. 4,499,950, Cl. 166-285.000.

Watkins, William L. H.: *See—*
Gandhi, Haren S.; and Watkins, William L. H., 4,499,863, Cl. 123-3.000.

Waukesha Cutting Tools, Inc.: *See—*
Orth, Eugene C.; and Ebenhoch, Sebastian, 4,500,234, Cl. 408-206.000.

Webb, George, to United States of America, Air Force. Spacer structure. 4,500,255, Cl. 415-189.000.

Webb, Leigh S.: *See—*
Older, Geoffrey I.; and Webb, Leigh S., 4,499,740, Cl. 62-374.000.

Weber, James L., to Rockwell International Corporation. Slack adjuster for a disc brake. 4,499,976, Cl. 188-71.900.

Weber, John W. Protective fabric and fire curtain with a metallic laminate. 4,500,593, Cl. 428-257.000.

Weedall, Dennis L. Lighting system. 4,500,813, Cl. 315-276.000.

Weetall, Howard H., to Corning Glass Works. Wine stabilization using immobilized tannic acid. 4,500,554, Cl. 426-323.000.

Weiss, Edward L., to General Signal Corporation. Fiber optic data highway. 4,501,021, Cl. 455-601.000.

Weisselberg, Arnold: *See—*
Girodi, Erich; Bornowski, Gunter; Dejmek, Eberhard; Knabe, Andreas; Koch, Roland; Urbach, Bernd; and Weisselberg, Arnold, 4,500,764, Cl. 219-59.100.

Weissenbach, Joseph, deceased; and by Shahrokh-Khani, Jane A., executor. Supplemental system for fuel agency. 4,499,885, Cl. 123-525.000.

Wells, Rickey D.: *See—*
Bagwell, Bobby F.; and Wells, Rickey D., 4,500,071, Cl. 254-423.000.

Welt, Martin J.: *See—*
Babecki, Glenn R.; Escolar, Carlos; Garnant, Craig M.; Kan, Hsin-Kuo; Kaplan, Frank; Liu, Hueichi R.; MacLachlan, George F.; Matteo, Peter J.; McDonald, John F.; Palframan, John D.; Tran, Roger T.; Welt, Martin J.; Wendt, Timothy A.; Yates, Gregory S.; and Zislis, Paul M., 4,500,960, Cl. 364-200.000.

Welty, Kenneth B.: *See—*
McKnight, Hugh P.; Welty, Kenneth B.; and Dinius, Harold B., 4,500,247, Cl. 414-416.000.

Wendt, Timothy A.: *See—*
Babecki, Glenn R.; Escolar, Carlos; Garnant, Craig M.; Kan, Hsin-Kuo; Kaplan, Frank; Liu, Hueichi R.; MacLachlan, George F.; Matteo, Peter J.; McDonald, John F.; Palframan, John D.; Tran, Roger T.; Welt, Martin J.; Wendt, Timothy A.; Yates, Gregory S.; and Zislis, Paul M., 4,500,960, Cl. 364-200.000.

Wenger, Martin: *See—*
Siegfried, Peter; and Wenger, Martin, 4,500,323, Cl. 48-197.00R.

Wenger, Richard M.: *See—*
Gerteisen, Steven R.; Wenger, Richard M.; and Cannavo, Glenn M., 4,500,595, Cl. 428-294.000.

Werner, Lester W. Adjustable bed with single crank and push-button control assembly. 4,499,618, Cl. 5-68.000.

Werner Looser Maschinenbau+Hydraulik: *See—*
Lampert, Heinz, 4,499,813, Cl. 92-31.000.

Wescott, John D.: *See—*
Szczupak, David T.; Walsham, Brian E.; Hooley, Desmond J.; Flaxington, David; McKean, Peter S.; and Wescott, John D., 4,499,732, Cl. 60-602.000.

West, C. Thomas; and Basalay, Robert J., to Standard Oil Company (Indiana). Hydrocarbon-soluble polyamine-molybdenum compositions, lubricants and gasoline containing same. 4,500,439, Cl. 252-46.400.

West, Jana L.: *See—*
Grappendorf, Richard H.; and West, Jana L., 4,499,959, Cl. 175-330.000.

West, John B.: *See—*
Ward, Henry D., Jr.; and West, John B., 4,500,243, Cl. 414-50.000.

West Point Pepperell, Inc.: *See—*
Pacifici, Joseph A.; and Bryant, Clifford A., 4,500,039, Cl. 239-193.000.

Western Geophysical Co of America: *See—*
Scott, Gary L., 4,500,979, Cl. 367-149.000.

Westhaver, Robert O.; Walker, Gary; and Koning, Menno G., to Northrop Corporation. Flexure mount assembly for a dynamically tuned gyroscope and method of manufacturing same. 4,499,778, Cl. 74-5.00F.

Westinghouse Electric Corp.: *See—*
Anderson, William C.; Boundy, Bruce K.; and Schoumaker, Raoul J. P., 4,500,060, Cl. 248-349.000.
De Lorenzi, John J.; and Sumka, Elmer H., 4,499,973, Cl. 187-29.000.
Killingsworth, Emmett D., 4,500,779, Cl. 250-231.0SE.
Kub, Francis J.; and Evey, William M., 4,499,653, Cl. 29-571.000.
Miller, Richard A., 4,500,771, Cl. 219-121.0LH.
Nguyen, Tac H.; and Husson, Alan L., 4,499,974, Cl. 187-29.00R.
Putman, Richard E., 4,500,950, Cl. 364-138.000.
Schaff, Fredrick L.; and Gottlieb, Milton, 4,500,175, Cl. 350-358.000.
Shuey, Kenneth C.; and Doughman, Charles L., 4,500,837, Cl. 324-102.000.
Shum, Lanson Y., 4,499,784, Cl. 74-479.000.
Specht, Theodore R.; and Cham, Edward J., 4,500,829, Cl. 323-215.000.
Thomas, Charles H., 4,500,689, Cl. 525-442.000.
Walrath, Craig D., 4,500,823, Cl. 318-632.000.

Westvaco Corporation: *See—*
DeLigt, John, 4,500,376, Cl. 156-159.000.

Weyand, John D.; Woods, Robert W.; DeYoung, David H.; and Ray, Siba P., to Aluminum Company of America. Inert electrode connection. 4,500,406, Cl. 204-293.000.

Whetten, Nathan R.; and Kelley, John E., to United States of America, Energy. Radiation detector having a multiplicity of individual detecting elements. 4,500,785, Cl. 250-385.000.

Whicker, Jerry T.: *See—*
Bloome, James A.; Meeker, Rick A.; Whicker, Jerry T.; and Foreman, Frederick J., 4,499,624, Cl. 15-97.00R.

Whirlpool Corporation: *See—*
Platt, Clark I., 4,499,628, Cl. 15-419.000.

Whitaker, Angus H.; McFarland, Keith E.; Lloyd, William A.; and Patrick, Willard J., to Xerox Corporation. Laterally translatable roll apparatus. 4,500,045, Cl. 242-57.100.

Whitcomb, David R., to Minnesota Mining and Manufacturing Company. Chelating polymers for modifying metal surface properties. 4,500,601, Cl. 428-403.000.

White, Jonathan C., to AT&T Bell Laboratories. Bromine anti-stokes raman laser. 4,500,995, Cl. 372-3.000.

White, William H.: *See—*
Ashlock, L. T.; Mukamal, Harold; and White, William H., 4,500,669, Cl. 524-440.000.

Whitehall Corporation: *See—*
Copeland, James R., 4,500,980, Cl. 367-154.000.

Wiatrak, Thomas R.: *See—*
Haury, Gilbert E.; Patel, Nathalal G.; Lockard, Walter G.; and Wiatrak, Thomas R., 4,500,102, Cl. 280-242.0WC.

Wiechert, Rudolf: *See—*
Nickisch, Klaus; Bittler, Dieter; Laurent, Henry; Wiechert, Rudolf; and Losert, Wolfgang, 4,500,522, Cl. 514-173.000.

Wiegand, Herbert; and Baumer, Klaus, to Deutsche Forschungs- und Versuchsanstalt fur Luft- und Raumfahrt e.V. Method and apparatus for the injection of alcohol fuels, more particularly for direct injection diesel engines. 4,499,861, Cl. 123-1.00A.

Wiegand, Herbert: *See—*
Baumer, Klaus; and Wiegand, Herbert, 4,499,862, Cl. 123-1.00A.

Wiegmann, Thomas B.: *See—*
Diederich, Dennis A.; Wiegmann, Thomas B.; and Pinnick, Robert V., 4,500,309, Cl. 604-5.000.

Wierschke, Donald J., to RCA Corporation. Method for the manufacture of record stampers. 4,500,393, Cl. 204-5.000.

Wikholm, Bert S., to Alfa-Laval AB. Apparatus for regulation of gas feed for gas consumption. 4,500,322, Cl. 48-191.000.

Wilbur, Leonard P., Jr.; and Van Renssen, Marinus, to RCA Corporation. Shadow mask washer/spring welding apparatus. 4,500,767, Cl. 219-78.010.

Wilcox, Ernest W.; and Wilson, Jack W., Jr., to United Technologies Corporation. Gas seal for rotating components. 4,500,098, Cl. 277-170.000.

Wilhelm, John R. Water closet modifications. 4,499,617, Cl. 4-441.000.

Willemsen, Henricus P.; Vaessen, Leonardus M. A.; and van der Hoorn, Rudolf J. G. A., to Vredestein N.V. Method for the production of a hose of a shape-cured elastomeric material, such as vulcanized rubber, especially an automotive radiator coolant hose. 4,500,485, Cl. 264-313.000.

Williams International Corporation: *See—*
Hall, Robert T., 4,499,940, Cl. 164-36.000.

Williams, John W., to Boeing Company, The. Strut steering and retracting apparatus. 4,499,843, Cl. 114-280.000.

Williams, Richard A.: *See—*
Liggett, Louis G.; Lang, Kevin W.; Wyss, Clement R.; and Williams, Richard A., 4,500,553, Cl. 426-101.000.

Wilson, David A., to Dow Chemical Company, The. Metal ion control agents based on dicyclopentadiene derivatives. 4,500,470, Cl. 260-502.50E.

Wilson, David A.: *See—*
Crump, Druce K.; Simon, Jaime; and Wilson, David A., 4,500,356, Cl. 106-90.000.
Simon, Jaime; Crump, Druce K.; and Wilson, David A., 4,500,469, Cl. 260-502.50E.

Wilson, Edgar R.: *See—*
Frankel, Milton B.; and Wilson, Edgar R., 4,499,723, Cl. 60-211.000.

Wilson, Jack W., Jr.: *See—*
Wilcox, Ernest W.; and Wilson, Jack W., Jr., 4,500,098, Cl. 277-170.000.

Wilson, James M., to Ferro Corporation. Temperature stable monolithic capacitors and ceramic compositions for producing same. 4,500,942, Cl. 361-320.000.

Wilson, Kentner B.: *See—*
Cannon, Lee E.; and Wilson, Kentner B., 4,499,650, Cl. 29-568.000.

Wilson, Neill R. Self-adjusting locking wrench. 4,499,797, Cl. 81-367.000.

Wimnell, Nils-Erik: *See—*
Gasparini, Aldo; and Wimnell, Nils-Erik, 4,499,892, Cl. 126-446.000.

Windmoller & Holscher: *See—*
Regge, Dieter, 4,499,826, Cl. 101-181.000.

Winkelbauer, Howard M.; Hill, Kenneth W.; and Wang, Ke-Chin, to Dresser Industries, Inc. Preparation and composition of sialon grain and powder. 4,500,644, Cl. 501-98.000.

Winters, Giorgio; Sala, Alberto; and Barone, Domenico, to Gruppo Lepetit S.p.A. Pharmacologically active pyrazolo/4,3-c/pyridines. 4,500,525, Cl. 514-210.000.

Wion, Donald A.: *See—*
Brown, Christopher K.; Kensinger, Lex D.; Over, William R.; and Wion, Donald A., 4,499,648, Cl. 29-564.200.

Wisconsin Alumni Research Foundation: *See—*
DeLuca, Hector F.; Tanaka, Yoko; Ikekawa, Nobuo; and Kobayashi, Yoshiro, 4,500,460, Cl. 260-397.200.

Wisowaty, James C.; Swaringen, Roy A.; and Yeowell, David A., to Burroughs Wellcome Co. Synthesis of leucovorin. 4,500,711, Cl. 544-258.000.

Witman, Mark W.: *See—*
Schmidt, Manfred; Witman, Mark W.; Reinert, Gerard E.; and Lim, In C., 4,500,653, Cl. 521-90.000.

Wittrowsky, Gunter: *See—*
Kuhnke, Klaus; Bege, Dietmar; Puthawala, Anwer; and Wittrowsky, Gunter, 4,500,449, Cl. 252-628.000.

Wittwer, Fritz: *See—*
Mayer, Jean P.; and Wittwer, Fritz, 4,500,358, Cl. 106-122.000.

WOCO Franz-Josef Wolf & Co.: *See—*
Wolf, Franz-Josef; and Pletsch, Hubert, 4,500,300, Cl. 464-83.000.

Woenker, William E., to Chem-Elec, Inc. Strip material take-up apparatus. 4,500,046, Cl. 242-67.10R.

Wohlgemuth, Juergen; and Hohmann, Eugen, to Siemens Aktiengesellschaft. Percussion instrument. 4,499,906, Cl. 128-776.000.

Wojcik, Ronald T.: *See—*
Guthrie, James L.; and Wojcik, Ronald T., 4,500,703, Cl. 523-400.000.

Wojtanek, Guy A., to Singer Company, The. Expanded interval timer drive mechanism. 4,500,212, Cl. 368-108.000.

Wolf, Franz-Josef; and Pletsch, Hubert, to WOCO Franz-Josef Wolf & Co. Rotationally elastic coupling. 4,500,300, Cl. 464-83.000.

Wolfe, David L., to Dow Chemical Company, The. Elastomeric polyether-containing impact polymer products. 4,500,687, Cl. 525-412.000.

Woltersdorf, Otto W., to Merck & Co., Inc. Benzothiazolesulfonamide derivatives for the topical treatment of elevated intraocular pressure. 4,500,538, Cl. 514-367.000.

Wong, Dennis W. Diagnostic composition for radiologic imaging of neoplasms in the body and method of preparation. 4,500,507, Cl. 424-1.100.

Wong, Did-Bun, to R. R. Donnelley & Sons Company. Collating and binding system and method with postage indication. 4,500,083, Cl. 270-54.000.

Wong, Robert; Flautt, Martin C.; and Haines, Richard M., to Owens-Corning Fiberglas Corporation. Size composition for glass fibers. 4,500,600, Cl. 428-391.000.

Wong, Stephen S.: *See—*
Chen, Nai Y.; Haag, Werner O.; Huang, Tracy J.; and Wong, Stephen S., 4,500,417, Cl. 208-111.000.

Woo, Ji Y., to Bendix Corporation, The. Suspension assembly for a wheel and brake. 4,500,111, Cl. 280-688.000.

Wood, Godfrey A.: *See—*
Dyett, Derek H.; Wood, Godfrey A.; and Seim, Albert D., II, 4,499,910, Cl. 131-95.000.

Woodard, Kenneth E., Jr.: *See—*
Ford, James M.; Dean, Robert A.; Woodard, Kenneth E., Jr.; and Branco, Antonio, 4,500,379, Cl. 156-172.000.

Woodhouse, John J.: *See—*
David, Stan A.; and Woodhouse, John J., 4,499,758, Cl. 73-159.000.

Woods, John H.; Graves, Toby R.; Nasser, William E.; and Jagtap, Ashvinkumar N., to Petrolite Corporation. Wax composition useful as a beeswax substitute. 4,500,359, Cl. 106-270.000.

Woods, Robert W.: *See—*
Weyand, John D.; Woods, Robert W.; DeYoung, David H.; and Ray, Siba P., 4,500,406, Cl. 204-293.000.

Woods, William L.: *See—*
Furst, Emanuel F.; Lampe, Louis F.; and Woods, William L., 4,499,903, Cl. 128-675.000.

Woodward, Robert B.: *See—*
Gosteli, Jacques; Ernest, Ivan; and Woodward, Robert B., 4,500,457, Cl. 260-245.20R.

Worley, William S., Jr.: *See—*
Heller, Andrew R.; and Worley, William S., Jr., 4,500,952, Cl. 364-200.000.

Wormser, Alex F., to Wormser Engineering, Inc. Fluidized bed fuel burning. 4,499,857, Cl. 122-4.00D.

Wormser Engineering, Inc.: *See—*
Wormser, Alex F., 4,499,857, Cl. 122-4.00D.

Wright, Harold A., to Atlantic Richfield Company. Process for bead size control in vinyl aromatic suspension polymerization using sodium polystyrenesulphonate. 4,500,692, Cl. 526-201.000.

Wright, Joseph B.: *See—*
Monhardt, Richard J.; Orr, Alfred B.; and Wright, Joseph B., 4,500,252, Cl. 415-9.000.

Wright State University: *See—*
Petrofsky, Jerrold S.; Phillips, Chandler A.; Glaser, Roger M.; and Heaton, Harry H., III, 4,499,900, Cl. 128-423.00W.

Wuerzer, Bruno: *See—*
Becker, Rainer; Theobald, Hans; Schirmer, Ulrich; Spiegler, Wolfgang; Seufert, Walter; and Wuerzer, Bruno, 4,500,340, Cl. 71-90.000.

Wurster, Herbert K., to Ricoh Systems, Inc. Sensitive electrophotographic plates containing squaric acid methine dyes suspended in a binder. 4,500,621, Cl. 430-72.000.

Wyatt, Michael; Leach, Gary M.; and Gould, Ashley M., to Johnson Matthey Public Limited Company. Three-way catalysts for purification of exhaust gas and method for the preparation of the catalysts. 4,500,650, Cl. 502-204.000.

Wyss, Clement R.: *See—*
Liggett, Louis G.; Lang, Kevin W.; Wyss, Clement R.; and Williams, Richard A., 4,500,553, Cl. 426-101.000.

Wyvratt, Jean M., to Merck & Co., Inc. Hydrogenation of 3-trichlorovinylnitrobenzene. 4,500,736, Cl. 564-417.000.

Xerox Corporation: *See—*
Garavuso, Gerald M., 4,500,086, Cl. 271-225.000.
Kopko, John J.; and Hays, Dan A., 4,499,851, Cl. 118-658.000.
Whitaker, Angus H.; McFarland, Keith E.; Lloyd, William A.; and Patrick, Willard J., 4,500,045, Cl. 242-57.100.

Yabuki, Yoshiharu: *See—*
Naito, Hideki; and Yabuki, Yoshiharu, 4,500,627, Cl. 430-203.000.

Yagihara, Morio: *See—*
Sakanoue, Kei; Yagihara, Morio; Ichijima, Seigi; and Nagao, Kimitoshi, 4,500,634, Cl. 430-544.000.

Yakubovich, Vladimir M.: *See—*
Sidorenko, Georgy I.; Lopato, Georgy P.; Yakubovich, Vladimir M.; Nikitin, Yaroslav G.; Usachev, Oleg I.; and Vorobiev, Anatoly P., 4,499,904, Cl. 128-703.000.

Yamachika, Hiroshi; and Nakanishi, Hirotoshi, to Sumitomo Chemical Company Limited. Process for producing benzaldehydes. 4,500,721, Cl. 549-362.000.

Yamada, Jun: *See—*
Yuhara, Akitsuna; Hosaka, Norio; Fujita, Yuji; Kishimoto, Kiyoharu; and Yamada, Jun, 4,500,807, Cl. 310-313.00B.

Yamada, Mitsuhiko, to Dainippon Screen Seizo Kabushiki Kaisha. Method of filing set-up data for a photo-electric scanner and an apparatus for reading such data in the form of graphs. 4,500,917, Cl. 358-75.000.

Yamada, Muneki: *See—*
Maruhashi, Yoshitsugu; Kano, Fumio; Yamada, Muneki; and Hirata, Sadao, 4,500,677, Cl. 525-57.000.

Yamaguchi, Hisao: *See—*
Suzuki, Yoji; Imaizumi, Atsushi; Yamaguchi, Hisao; Kanesaki, Masaharu; and Ono, Shoji, 4,500,639, Cl. 435-244.000.

Yamaguchi, Osamu: *See—*
Tanaka, Motoaki; Toyama, Takanori; Ohba, Hitoshi; and Yamaguchi, Osamu, 4,500,649, Cl. 502-167.000.

Yamakawa, Kazuo A., to United States of America, National Aeronautics and Space Administration. Apparatus and method to keep the walls of a free-space reactor free from deposits of solid materials. 4,500,492, Cl. 422-199.000.

Yamamiya, Kazuo: *See—*
Shimizu, Senzo; Nomura, Isao; Yamamiya, Kazuo; and Masuda, Tsuneaki, 4,500,668, Cl. 524-427.000.

Yamamoto, Akira, to Tokai Carbon Co., Ltd. Process for preparing silicon carbide whiskers. 4,500,504, Cl. 423-345.000.

Yamamoto, Kimihiko; and Ishikawa, Hitoshi, to Aisin Seiki Kabushiki Kaisha. Stitch pattern selector in sewing machines. 4,499,837, Cl. 112-158.00A.

Yamamoto, Yoshihisa, to Nippondenso Co., Ltd. Fuel injection control for internal combustion engines. 4,499,876, Cl. 123-446.000.

Yamamoto, Yoshio: *See—*
Yemoto, Jiichiro; Tarao, Ryokichi; and Yamamoto, Yoshio, 4,500,725, Cl. 556-482.000.

Yamamura, Nobuo: *See—*
Takahashi, Osamu; Yamamura, Nobuo; Mukunoki, Yasuo; Ogawa, Shungi; and Nakagawa, Yutaka, 4,500,362, Cl. 106-309.000.

Yamanaka, Akira, to Minolta Camera Kabushiki Kaisha. Photography modes switchable camera. 4,500,191, Cl. 354-418.000.

Yamanaka, Mithuyuki: *See—*
Hayashi, Yutaka; Yamanaka, Mithuyuki; Iida, Hideyo; Shiba, Nobuyasu; Karasawa, Hideyuki; Mishuku, Toshio; and Itou, Atsuo, 4,500,743, Cl. 136-258.000.

Yamasaki, Masafumi, to Olympus Optical Co., Ltd. Automatic exposure controller for a camera. 4,500,192, Cl. 354-427.000.

Yamatake-Honeywell Co., Ltd.: *See—*
Akano, Shinichi; Goto, Tsutomu; Watanabe, Hiroshi; Kuroda, Masato; Ishikawa, Sakae; and Matsumoto, Ryoichiro, 4,499,754, Cl. 73-861.120.

Yamazaki, Kisuke: *See—*
Matsuoka, Fumio; Iijima, Hitoshi; Yamazaki, Kisuke; Kasagi, Hiroshi; Nakashima, Yasuo; Sakuma, Kiyoshi; and Umehara, Mitsuo, 4,499,739, Cl. 62-212.000.

Yambe, Teluo: *See—*
Kubota, Hitoshi; Hamamatsu, Seiji; Yambe, Teluo; and Takahashi, Toshiyuki, 4,500,761, Cl. 200-84.00C.

Yarnitzky, Chaim N., to Technion Research & Development Foundation Ltd., a part interest. Automatically operated polarographic analyzer. 4,500,411, Cl. 204-413.000.

Yarrow, Harry A. Ankle joint and coupling for artificial limbs. 4,499,613, Cl. 3-31.000.

Yasuda, Hiromu: *See—*
Kuroda, Shigeaki; Senshu, Takao; Oguni, Kensaku; Mochizuki, Taketoshi; Yasuda, Hiromu; Ishibane, Kyuhei; Atsumi, Akira; Kimura, Hideyuki; and Hatada, Toshio, 4,500,035, Cl. 236-92.00B.

Yasui, Kazuomi: *See—*
Aya, Masahiro; Saito, Junichi; Yasui, Kazuomi; Shiokawa, Kozo; Morishima, Norihisa; and Goto, Toshio, 4,500,342, Cl. 71-93.000.
Saito, Junichi; Yasui, Kazuomi; Shiokawa, Kozo; and Kamochi, Atsumi, 4,500,346, Cl. 71-94.000.

Yates, Gregory S.: *See—*
Babecki, Glenn R.; Escolar, Carlos; Garnant, Craig M.; Kan, Hsin-Kuo; Kaplan, Frank; Liu, Hueichi R.; MacLachlan, George F.; Matteo, Peter J.; McDonald, John F.; Palframan, John D.; Tran, Roger T.; Welt, Martin J.; Wendt, Timothy A.; Yates, Gregory S.; and Zislis, Paul M., 4,500,960, Cl. 364-200.000.

Yatsuo, Tsutomu; Nagano, Takahiro; Oikawa, Saburo; and Horie, Akira, to Hitachi, Ltd. Semiconductor GTO switching device with radially elongated cathode emitter regions of increasing length. 4,500,903, Cl. 357-38.000.

Yazaki, Takao; Hattori, Kazuhide; Hattori, Satoru; Hayama, Kazuhide; and Itoh, Isao, to Mitsubishi Petrochemical Co., Ltd.; and Mitsubishi Yuka Fine Chemicals Co., Ltd. Composite heat-insulating material and process for the production thereof. 4,500,597, Cl. 428-317.700.

Yazawa, Hiromi: *See—*
Shiba, Keisuke; Yazawa, Hiromi; Ohishi, Chikashi; and Nakao, Sho, 4,500,618, Cl. 430-49.000.

Yazawa, Hiroshi: *See—*
Okada, Tokio; Tani, Haruhisa; Kojima, Shigezo; Tsuyama, Setsuya; Kurihara, Kazuhiko; and Yazawa, Hiroshi, 4,499,639, Cl. 28-282.000.

Yeagley, Henry L. Organic waste bioconverter and method. 4,499,614, Cl. 4-111.100.

Yeh, Pochi A., to Rockwell International Corporation. Iso-index birefringent filters. 4,500,178, Cl. 350-404.000.

Yemoto, Jiichiro; Tarao, Ryokichi; and Yamamoto, Yoshio, to Chisso Corporation. Silane derivative and fragrant article. 4,500,725, Cl. 556-482.000.

Yeowell, David A.: *See—*
Wisowaty, James C.; Swaringen, Roy A.; and Yeowell, David A., 4,500,711, Cl. 544-258.000.

Yerman, Alexander J., to General Electric Company. Electrical assembly including a conductor pattern bonded to a non-metallic substrate and method of fabricating such assembly. 4,500,029, Cl. 228-123.000.

Yeterian, Vahan H.: *See—*
Cole, Eugene O.; and Yeterian, Vahan H., 4,500,206, Cl. 356-376.000.

Yoder, Clarence T. Travel trailer frame support. 4,500,132, Cl. 296-171.000.

Yokota, Takashi: *See—*
Tomita, Satoru; Shimura, Akira; and Yokota, Takashi, 4,499,849, Cl. 118-652.000.

Yokoyama, Kunio: *See—*
Motoyama, Takeshi; Onishi, Toshiyuki; and Yokoyama, Kunio, 4,499,738, Cl. 62-155.000.

Yonekawa, Hitoshi: *See—*
Ishii, Kiyoshi; Murai, Masataka; and Yonekawa, Hitoshi, 4,500,426, Cl. 210-321.300.

Yoshida, Hiroshi; Koike, Kengo; Shimano, Shizuo; Nakagawa, Taizo; and Ohmori, Kaoru, to Nippon Kayaku Kabushiki Kaisha. Derivatives of N,N'-substituted azolecarboxamide and agricultural and horticultural fungicidal or nematicidal composition containing same as active ingredients. 4,500,536, Cl. 514-397.000.

Yoshida, Kazumasa: *See—*
Nagamine, Akio; Hayashi, Akira; Yoshida, Kazumasa; and Miyasaka, Kojiro, 4,500,614, Cl. 429-206.000.

Yoshida, Tadao, to Sony Corporation. Servo circuit for a motor for reproducing a PCM audio disk. 4,500,982, Cl. 369-50.000.

Yoshida, Tomomasa: *See—*
Tsuchiya, Masatoshi; Soeno, Ko; and Yoshida, Tomomasa, 4,499,774, Cl. 73-727.000.

Yoshida, Yasuharu; Seguchi, Hiroshi; and Tagashira, Yoshimi, to Nippon Electric Co., Ltd. Device for eliminating FM or like interference from a digital microwave signal. 4,501,004, Cl. 375-102.000.

Yoshihara, Kenji: *See—*
Sugiyama, Hiroyuki; Sakurai, Masaki; Abe, Ryozo; and Yoshihara, Kenji, 4,500,983, Cl. 369-77.200.

Yoshihara, Takahisa: *See—*
Komoda, Akira; Hirooka, Yasuhiro; Yoshihara, Takahisa; and Matsuda, Akira, 4,500,400, Cl. 204-206.000.

Yoshimaru, Tomohisa, to Tokyo Shibaura Denki Kabushiki Kaisha. Data-recording apparatus. 4,500,926, Cl. 358-256.000.

Yoshimura, Eiji: *See—*
Mitomi, Takeshi; Yoshimura, Eiji; and Komagata, Hideki, 4,500,581, Cl. 428-85.000.

Yoshizumi, Toshiaki, to Mitsubishi Denki Kabushiki Kaisha. Resistor-type disconnecting switch for circuit breaker. 4,500,762, Cl. 200-144.0AP.

Youle, Richard J.: *See—*
Neville, David M., Jr.; and Youle, Richard J., 4,500,637, Cl. 435-2.000.

Young, David E., to Protectair Limited. Urethral catheter. 4,500,313, Cl. 604-280.000.

Young, Robert W.; Prussin, Samuel; and Gaylord, Norman G. Adherent controlled release microbiocides containing hydrolyzable silanes and organic titanium compounds. 4,500,337, Cl. 71-67.000.

Young, Robert W.; Prussin, Samuel, deceased (by Prussin, Shirley, executor); and Gaylord, Norman G. Adherent controlled release microbiocides containing hydrolyzable organic titanium compounds. 4,500,338, Cl. 71-67.000.

Young, Robert W.; Prussin, Samuel; and Gaylord, Norman G. Adherent controlled release microbiocides containing hydrolyzable silanes. 4,500,339, Cl. 71-67.000.

Young, William E.: *See—*
Hamm, James R.; and Young, William E., 4,499,722, Cl. 60-39.120.

Yuhara, Akitsuna; Hosaka, Norio; Fujita, Yuji; Kishimoto, Kiyoharu; and Yamada, Jun, to Hitachi, Ltd. Surface acoustic wave transmission device for a low frequency signal below 30 MHz. 4,500,807, Cl. 310-313.00B.

Zagranski, Raymond D.; Howlett, James J.; and Lappos, Nicholas D., to United Technologies Corporation. Super contingency aircraft engine control. 4,500,966, Cl. 364-432.000.

Zaita, Katsuyuki; and Tahata, Michio, to Honda Giken Kogyo Kabushiki Kaisha. Sliding throttle valve type carburetor. 4,500,477, Cl. 261-44.00B.

Zapisek, Stephen: *See—*
D'Agostino, Vincent F.; Lee, Joseph Y.; Zapisek, Stephen; and Schore, George, 4,500,396, Cl. 204-107.000.

Zaromb, Solomon. Power generation apparatus and methods. 4,499,734, Cl. 60-673.000.

Zaugg, Robert; and Keller, Werner, to Stopinc Aktiengesellschaft. Rotary sliding closure unit and liquid melt container employing the same. 4,500,018, Cl. 222-598.000.

Zbinden, Paul: *See—*
Habicht, Ernst; and Zbinden, Paul, 4,500,542, Cl. 514-465.000.

Zehntel, Inc.: *See—*
Jacobson, Robert G., 4,500,993, Cl. 371-16.000.

Zeitlin, Martin A.: *See—*
Petty-Weeks, Bruce C.; and Zeitlin, Martin A., 4,500,732, Cl. 562-486.000.

Zeitraeg, Rolf, to Siemens Aktiengesellschaft. Method for conversion of linearly encoded into non-linearly encoded digital signals. 4,500,869, Cl. 340-347.0DD.

Zellweger Uster Ltd.: *See—*
Aeppli, Kurt, 4,500,792, Cl. 250-560.000.

Zimmardi, Francesco P. Jewelry clasp. 4,499,634, Cl. 24-116.00A.

Zimmerly, Harry L., to Halkey-Roberts Corporation. Bore lubricator. 4,499,968, Cl. 184-18.000.

Zimmerly, Harry L., to Halkey-Roberts Corp. Multiple firing inflator. 4,500,014, Cl. 222-5.000.

Ziolkowski, Antoni M.; and Lerwill, William E., to Seismograph Service Corporation. Seismographic method and apparatus using scaled sound sources. 4,500,978, Cl. 367-142.000.

Zislis, Paul M.: *See—*
Babecki, Glenn R.; Escolar, Carlos; Garnant, Craig M.; Kan, Hsin-Kuo; Kaplan, Frank; Liu, Hueichi R.; MacLachlan, George F.; Matteo, Peter J.; McDonald, John F.; Palframan, John D.; Tran, Roger T.; Welt, Martin J.; Wendt, Timothy A.; Yates, Gregory S.; and Zislis, Paul M., 4,500,960, Cl. 364-200.000.

Zoecon Corporation: *See—*
Henrick, Clive A., 4,500,737, Cl. 568-329.000.

Zsoka, Istvan; Madar, Laszlo; Cubin, Anatoly A.; Gaivoronsky, Albert A.; Farukshin, Lev H.; Morzsic, Piotr A.; Lisov, Aleksandr I.; and Galusztainc, Vladilen A., to Magyar Szenhidrogenipari Kutatofejleszto Intezet; and Vsesojuzny Nauchno-Issledovatelsky Institut Burovoi Technici. Packer for separation of zones in a well bore. 4,499,947, Cl. 166-179.000.

Zukausky, Keith E., to Eaton Corporation. Pilot operated low flow valve. 4,500,067, Cl. 251-38.000.

Zumfeld, Heinz: *See—*
Chardon, Manfred; Mauries, Reinhard; Rohner, Joachim; and Zumfeld, Heinz, 4,499,715, Cl. 57-22.000.

Zwick, Stanley A.; and Ackerman, John P., to United States of America, Energy. Method of fabricating a monolithic core for a solid oxide fuel cell. 4,499,663, Cl. 29-623.100.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 19TH DAY OF FEBRUARY, 1985

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Arthur D. Little, Inc.: *See*—
Loeffler, Herbert H.; and Tishler, Samuel W., Re. 31,833, Cl. 99-332.000.

Efamol Limited: *See*—
Horrobin, David F., Re. 31,836, Cl. 514-474.000.

Horrobin, David F., to Efamol Limited. Pharmaceutical and dietary composition. Re. 31,836, Cl. 514-474.000.

Loeffler, Herbert H.; and Tishler, Samuel W., to Arthur D. Little, Inc. Food cooking apparatus. Re. 31,833, Cl. 99-332.000.

Manetta, Peter J. Accumulating lift and carry conveyor. Re. 31,834, Cl. 198-751.000.

Rannenberg, George C., to United Technologies Corporation. Pneumatic supply system having variable geometry compressor. Re. 31,835, Cl. 417-282.000.

Tishler, Samuel W.: *See*—
Loeffler, Herbert H.; and Tishler, Samuel W., Re. 31,833, Cl. 99-332.000.

United Technologies Corporation: *See*—
Rannenberg, George C., Re. 31,835, Cl. 417-282.000.

LIST OF REEXAMINATION PATENTEES

TO WHOM

CERTIFICATES WERE ISSUED

Albany International Corp.: *See*—
Lopatin, George; Coplan, Myron J.; and Walton, James P., Jr., B1 4,342,811, Cl. 428-220.000.

Braddick, Britt O.; and Lindsey, Hiram E., to Texas Iron Works, Inc. Method for positioning a liner on a tubular member in a well bore with a retrievable pack off bushing therebetween. B1 3,920,075, 2-19-85, Cl. 166-290.000.

Braddick, Britt O.; and Lindsey, Hiram E., to Texas Iron Works, Inc. Apparatus for positioning a liner on a tubular member in a well bore with a retrievable pack off bushing therebetween. B1 4,281,711, 2-19-85, Cl. 166-118.000.

Coplan, Myron J.: *See*—
Lopatin, George; Coplan, Myron J.; and Walton, James P., Jr., B1 4,342,811, Cl. 428-220.000.

Dahlstrom, Baesley I.: *See*—
Hill, James E.; Dahlstrom, Baesley I.; and Fisher, Robert D., B1 4,194,685, Cl. 235-375.000.

Dynetics Engineering Corp.: *See*—
Hill, James E.; Dahlstrom, Baesley I.; and Fisher, Robert D., B1 4,194,685, Cl. 235-375.000.

Fisher, Robert D.: *See*—
Hill, James E.; Dahlstrom, Baesley I.; and Fisher, Robert D., B1 4,194,685, Cl. 235-375.000.

Hill, James E.; Dahlstrom, Baesley I.; and Fisher, Robert D., to Dynetics Engineering Corp. Verifying insertion system apparatus and method of operation. B1 4,194,685, 2-19-85, Cl. 235-375.000.

Lindsey, Hiram E.: *See*—
Braddick, Britt O.; and Lindsey, Hiram E., B1 3,920,075, Cl. 166-290.000.
Braddick, Britt O.; and Lindsey, Hiram E., B1 4,281,711, Cl. 166-118.000.

Lopatin, George; Coplan, Myron J.; and Walton, James P., Jr., to Albany International Corp. Open-celled microporous sorbent-loaded textile fibers and films and methods of fabricating same. B1 4,342,811, 2-19-85, Cl. 428-220.000.

Texas Iron Works, Inc.: *See*—
Braddick, Britt O.; and Lindsey, Hiram E., B1 3,920,075, Cl. 166-290.000.
Braddick, Britt O.; and Lindsey, Hiram E., B1 4,281,711, Cl. 166-118.000.

Walton, James P., Jr.: *See*—
Lopatin, George; Coplan, Myron J.; and Walton, James P., Jr., B1 4,342,811, Cl. 428-220.000.

LIST OF DESIGN PATENTEES

Albanese, Anthony F., to I.P.F. International, Inc. Chair. 277,621, 2-19-85, Cl. D6-334.000.

Amano, Kazunori: *See*—
Kojima, Nobuyuki; Sekigawa, Youichi; and Amano, Kazunori, 277,697, Cl. D23-121.000.

American Tourister, Inc.: *See*—
Bomes, Harvey J.; Migliore, John J.; Pulichino, John; and Barber, Jack, 277,618, Cl. D3-71.000.
Bomes, Harvey J.; Migliore, John J.; Pulichino, John; and Barber, Jack, 277,619, Cl. D3-71.000.

Apple Computer, Inc.: *See*—
Dresselhaus, William F.; Campbell, Kenneth S.; Twyman, Clive R.; and Dayton, Douglas C., 277,673, Cl. D14-106.000.

Aqua-Leisure Industries, Inc.: *See*—
Fireman, Simon C., 277,614, Cl. D2-234.000.

AT&T Bell Laboratories: *See*—
Genaro, Donald M.; Gotway, Jerome M.; Hall, Norris R.; and McGarvey, John N., 277,665, Cl. D14-60.000.

AT&T Information Systems Inc.: *See*—
Bhat, Ghanshyam A.; Chan, Eric P. P.; Lamancusa, John S.; Sylvester, Gordon E.; and Varela, Jose R., 277,666, Cl. D14-63.000.

AT&T Technologies, Inc.: *See*—
Wilt, William L., 277,664, Cl. D14-60.000.

Avery, Ronald G.: *See*—
Kahl, William G., Jr.; and Avery, Ronald G., 277,652, Cl. D10-106.000.

Barber, Jack: *See*—
Bomes, Harvey J.; Migliore, John J.; Pulichino, John; and Barber, Jack, 277,618, Cl. D3-71.000.
Bomes, Harvey J.; Migliore, John J.; Pulichino, John; and Barber, Jack, 277,619, Cl. D3-71.000.

Baume & Mercier S.A.: *See*—
Glauser, Alain, 277,649, Cl. D10-32.000.

Becker, James H., to Marketing International, Inc. Cart for handling biological tissue. 277,708, 2-19-85, Cl. D34-20.000.

Bello, Paul A. Pet food dish holder. 277,705, 2-19-85, Cl. D30-16.000.

Bhat, Ghanshyam A.; Chan, Eric P. P.; Lamancusa, John S.; Sylvester, Gordon E.; and Varela, Jose R., to AT&T Information Systems Inc. Housing for a telephone station handset. 277,666, 2-19-85, Cl. D14-63.000.

Black & Decker Inc.: *See*—
Somers, Robert I., 277,638, Cl. D8-62.000.

Blodee, Leif, to Riblet Products Corporation. Combined tub and shower stall. 277,695, 2-19-85, Cl. D23-49.000.

Blome, Fred C. Document holder. 277,631, 2-19-85, Cl. D6-311.000.

Bomes, Harvey J.; Migliore, John J.; Pulichino, John; and Barber, Jack, to American Tourister, Inc. Carry-on luggage. 277,618, 2-19-85, Cl. D3-71.000.

Bomes, Harvey J.; Migliore, John J.; Pulichino, John; and Barber, Jack, to American Tourister, Inc. Portfolio case. 277,619, 2-19-85, Cl. D3-71.000.

Bourque, Rene, to Warrington Inc. Goaler skate. 277,693, 2-19-85, Cl. D21-225.000.

Brown, Jeffrey C., to John Fluke Mfg. Co., Inc. Electronic instrument for logging data. 277,670, 2-19-85, Cl. D14-100.000.

Bulgari, Marina, to Marina B. Creation S.A. Ashtray with fish-like pattern. 277,702, 2-19-85, Cl. D27-23.000.

B.V. Machine-en Metaalwarenfabriek "Dremefa": *See*—
Drexler, Joannes H., 277,640, Cl. D8-88.000.

Cafaro, John A.; and Palmer, Jerry P., to General Motors Corporation. Vehicle wheel. 277,661, 2-19-85, Cl. D12-211.000.

Campbell, Kenneth S.: *See*—
Dresselhaus, William F.; Campbell, Kenneth S.; Twyman, Clive R.; and Dayton, Douglas C., 277,673, Cl. D14-106.000.

Cerberus AG: *See*—
Kahl, William G., Jr.; and Avery, Ronald G., 277,652, Cl. D10-106.000.

Chan, Eric P. P.: *See*—
Bhat, Ghanshyam A.; Chan, Eric P. P.; Lamancusa, John S.; Sylvester, Gordon E.; and Varela, Jose R., 277,666, Cl. D14-63.000.

Chaplin, John B., to Textron Inc. Surface effect ship. 277,657, 2-19-85, Cl. D12-5.000.

Chatani, Yasushi; and Tsuchikura, Toshio, to Kawada Co., Ltd. Toy block. 277,686, 2-19-85, Cl. D21-108.000.

Chen, Cheng C. Necktie. 277,617, 2-19-85, Cl. D2-354.000.

Chuboff, David P.; and Goldman, Arnold S., to Zenith Electronics Corporation. Wall projection CTV unit. 277,669, 2-19-85, Cl. D14-84.000.

Cooper Group Deutschland GmbH, The: *See*—
Rittmann, Gunther, 277,636, Cl. D8-30.000.

CPG Products Corp.: *See*—
Miller, Douglas R.; and Smith, George D., 277,684, Cl. D21-59.000.

Cridland, Michael; and Moriconi, David P., to Victor Technologies, Inc. Computer console. 277,671, 2-19-85, Cl. D14-100.000.

Cridland, Michael; and Moriconi, David P., to Victor Technologies, Inc. Computer console. 277,672, 2-19-85, Cl. D14-100.000.

Cutler, Gordon, to Quaker Oats Company, The. Toy truck. 277,687, 2-19-85, Cl. D21-128.000.

D.I. Retail Planning & Design Ltd.: *See*—
Newman, David E. J., 277,698, Cl. D24-4.000.

Dayton, Douglas C.: *See*—
Dresselhaus, William F.; Campbell, Kenneth S.; Twyman, Clive R.; and Dayton, Douglas C., 277,673, Cl. D14-106.000.
Usab, Karen L.; and Dayton, Douglas C., 277,674, Cl. D14-113.000.

deCandia, Giovanni, to International Telephone and Telegraph Corporation. Outdoor luminaire. 277,701, 2-19-85, Cl. D26-67.000.

Dehls, Allan W. Bird feeder. 277,704, 2-19-85, Cl. D30-15.000.

Doggett, Lawrence A., to Hobart Corporation. Food processor power unit. 277,634, 2-19-85, Cl. D7-386.000.

Doman, Donald W.; and Segor, Philip F., to Kohler Co. Combined overflow hood and drain control. 277,696, 2-19-85, Cl. D23-69.000.

Drackett Company, The: *See*—
Jones, David A., 277,648, Cl. D9-445.000.
Lane, James, 277,647, Cl. D9-377.000.

Dresselhaus, William F.; Campbell, Kenneth S.; Twyman, Clive R.; and Dayton, Douglas C., to Apple Computer, Inc. Computer. 277,673, 2-19-85, Cl. D14-106.000.

Drexler, Joannes H., to B.V. Machine-en Metaalwarenfabriek "Dremefa". Plastic tire lever. 277,640, 2-19-85, Cl. D8-88.000.

Esprit de Corp: *See*—
Evans, Jonathan M., 277,626, Cl. D6-317.000.

Evans, Jonathan M., to Esprit de Corp. Mobile clothiing display rack. 277,626, 2-19-85, Cl. D6-317.000.

Extran Corporation: *See*—
King, Edwin M., 277,658, Cl. D12-101.000.

Fambrough, David G. Holder and ground anchor unit for rectangular fence posts. 277,643, 2-19-85, Cl. D8-373.000.

Fireman, Simon C., to Aqua-Leisure Industries, Inc. Swim goggles. 277,614, 2-19-85, Cl. D2-234.000.

Friedrich, Kenneth L.: *See*—
TePastte, Jeffrey H.; and Friedrich, Kenneth L., 277,637, Cl. D8-47.000.

Frost, George H.: *See*—
Hayes, Robert R.; and Frost, George H., 277,641, Cl. D8-101.000.

Gamm, Robert J., to Kangaroos U.S.A., Inc. Pocketed boot. 277,615, 2-19-85, Cl. D2-274.000.

Gamm, Robert J., to Kangaroos U.S.A., Inc. Athletic shoe with counter pocket. 277,616, 2-19-85, Cl. D2-309.000.

Genaro, Donald M.; Gotway, Jerome M.; Hall, Norris R.; and McGarvey, John N., to AT&T Bell Laboratories. Telephone base with extender. 277,665, 2-19-85, Cl. D14-60.000.

General Electric Company: *See*—
Huntington, Robert R.; and Schaefer, Henry A., 277,662, Cl. D13-5.000.

General Motors Corporation: *See*—
Cafaro, John A.; and Palmer, Jerry P., 277,661, Cl. D12-211.000.

Giugiaro, Giorgetto, to Nihon Melber Kabushiki Kaisha. Vehicle wheel. 277,660, 2-19-85, Cl. D12-204.000.

Glassford, Joseph B. Sign post assembly. 277,683, 2-19-85, Cl. D20-17.000.

Glauser, Alain, to Baume & Mercier S.A. Wrist watch. 277,649, 2-19-85, Cl. D10-32.000.

Goldman, Arnold S.: *See*—
Chuboff, David P.; and Goldman, Arnold S., 277,669, Cl. D14-84.000.

Gotway, Jerome M.: *See*—
Genaro, Donald M.; Gotway, Jerome M.; Hall, Norris R.; and McGarvey, John N., 277,665, Cl. D14-60.000.

Haley, Paul E.: *See*—
Stevens, Albert F.; and Haley, Paul E., 277,624, Cl. D6-422.000.

Hall, Norris R.: *See*—
Genaro, Donald M.; Gotway, Jerome M.; Hall, Norris R.; and McGarvey, John N., 277,665, Cl. D14-60.000.

Hannah, Bruce R., to Knoll International, Inc. Combined desk and return. 277,625, 2-19-85, Cl. D6-422.000.

Hattori, Kenneth M., Jr., to Hedman Company, The. Continuous form check signer. 277,680, 2-19-85, Cl. D18-5.000.

Hattori, Shigeru: *See*—
Hoshi, Norio; and Hattori, Shigeru, 277,659, Cl. D12-110.000.

Hayes, Robert R.; and Frost, George H., to Oatey Co. Planing tool. 277,641, 2-19-85, Cl. D8-101.000.

Heber, Larry P.; and Penza, Blayde M., to IDS Products, Inc. Baby bottle holder. 277,700, 2-19-85, Cl. D24-48.000.

Hedman Company, The: *See*—
Hattori, Kenneth M., Jr., 277,680, Cl. D18-5.000.

Herbstler, Horst D.: *See*—
Terzian, Rouben T.; and Herbstler, Horst D., 277,668, Cl. D14-69.000.

Herron, Tom A. Wheel balancer. 277,651, 2-19-85, Cl. D10-82.000.

Hinsperger, Cornelius A. Grommet tab. 277,642, 2-19-85, Cl. D8-356.000.

Hobart Corporation: *See*—
Doggett, Lawrence A., 277,634, Cl. D7-386.000.

Honda Giken Kogyo Kabushiki Kaisha: *See*—
Hoshi, Norio; and Hattori, Shigeru, 277,659, Cl. D12-110.000.

Hoover Company, The: *See*—
Wareham, Richard A., 277,706, Cl. D32-18.000.

Hoshi, Norio; and Hattori, Shigeru, to Honda Giken Kogyo Kabushiki Kaisha. Motorcycle. 277,659, 2-19-85, Cl. D12-110.000.

Howard Machinery Limited: *See*—
Linger, Barry A., 277,677, Cl. D15-27.000.

Hung, Michael. Mini air compressor and the like. 277,675, 2-19-85, Cl. D15-7.000.

Huntington, Robert R.; and Schaefer, Henry A., to General Electric Company. Radio battery charger. 277,662, 2-19-85, Cl. D13-5.000.

I.P.F. International, Inc.: *See*—
Albanese, Anthony F., 277,621, Cl. D6-334.000.

IDS Products, Inc.: *See*—
Heber, Larry P.; and Penza, Blayde M., 277,700, Cl. D24-48.000.

Immuno Concepts, Inc.: *See*—
Valencia, Donald W., 277,699, Cl. D24-29.000.

Interlego A.G.: *See*—
Olsen, Flemming H., 277,685, Cl. D21-59.000.

International Telephone and Telegraph Corporation: *See*—
deCandia, Giovanni, 277,701, Cl. D26-67.000.

Ishida, Katsuhiro, to Sharp Corporation. Calculator. 277,681, 2-19-85, Cl. D18-7.000.

Jagoe, Louis W. Clock face. 277,653, 2-19-85, Cl. D10-123.000.

John Fluke Mfg. Co., Inc.: *See*—
Brown, Jeffrey C., 277,670, Cl. D14-100.000.

Johnston, Clarence, deceased: *See*—
Johnston, Katherine D.; Johnston, Clarence, deceased; and Johnston, Katherine D., heir, 277,656, Cl. D11-81.000.

Johnston, Katherine D.; Johnston, Clarence, deceased; and by Johnston, Katherine D., heir. Jewelry slide. 277,656, 2-19-85, Cl. D11-81.000.

Johnston, Katherine D., heir: *See*—
Johnston, Katherine D.; Johnston, Clarence, deceased; and Johnston, Katherine D., heir, 277,656, Cl. D11-81.000.

Jones, David A., to Drackett Company, The. Aerosol can overcap. 277,648, 2-19-85, Cl. D9-445.000.

Jorgensen, Helge D., to Superfos Emballage a/s. Combined covered pail and detachable rim. 277,646, 2-19-85, Cl. D9-352.000.

Kahl, William G., Jr.; and Avery, Ronald G., to Cerberus AG. Passive infrared intrusion detector unit. 277,652, 2-19-85, Cl. D10-106.000.

Kangaroos U.S.A., Inc.: *See*—
Gamm, Robert J., 277,615, Cl. D2-274.000.
Gamm, Robert J., 277,616, Cl. D2-309.000.

Kawada Co., Ltd.: *See*—
Chatani, Yasushi; and Tsuchikura, Toshio, 277,686, Cl. D21-108.000.

Kilham, Peter. Tiered bird feeder. 277,703, 2-19-85, Cl. D30-14.000.

King, Edwin M., to Extran Corporation. Mobile battery carriage. 277,658, 2-19-85, Cl. D12-101.000.

Kitamura, Koichiro, to Kitamura Machinery Co., Ltd. Machining center. 277,679, 2-19-85, Cl. D15-127.000.

Kitamura Machinery Co., Ltd.: *See*—
Kitamura, Koichiro, 277,679, Cl. D15-127.000.

Knoll International, Inc.: *See*—
Hannah, Bruce R., 277,625, Cl. D6-422.000.

Kohler Co.: *See*—
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CLASS 187

9 R 4,499,970
4,499,971
29 4,499,973
29 R 4,499,972
4,499,974
4,499,975

CLASS 188

71.9 4,499,976
72.6 4,499,977
79.5 K 4,499,978

CLASS 192

3.31 4,499,979
35 4,499,980
106.2 4,499,981

CLASS 194

1 G 4,499,983
1 N 4,499,982
4 C 4,499,984
10 4,499,985

CLASS 198

322 4,499,986
347 4,499,987
369 4,499,988
407 4,499,989
411 4,499,990
472 4,499,991
498 4,499,992
751 Re.31,834
819 4,499,993

CLASS 200

5 A 4,500,756
4,500,757
4,500,758
81.9 R 4,500,759
83 C 4,500,760
84 C 4,500,761
144 AP 4,500,762

CLASS 204

1 T 4,500,391
5 4,500,392
4,500,393
15 4,500,394
107 4,500,396
117 4,500,398
181 C 4,500,399
181 T 4,500,397
206 4,500,400
225 4,500,401
242 4,500,402
255 4,500,403
266 4,500,404
284 4,500,395
290 F 4,500,405
293 4,500,406
298 4,500,407
4,500,408
4,500,409
299 R 4,500,410
413 4,500,411
425 4,500,412
435 4,500,413

CLASS 206

45.19 4,499,994
312 4,499,995
444 4,499,996
509 4,499,997
541 4,499,998
546 4,499,999
554 4,500,000
597 4,500,001

CLASS 208

11 R 4,500,414
56 4,500,415
86 4,500,416
111 4,500,417
114 4,500,418
115 4,500,419
116 4,500,420
4,500,421
117 4,500,422
161 4,500,423
216 PP 4,500,424

CLASS 209

534 4,500,002
573 4,500,003

CLASS 210

136 4,500,425
321.3 4,500,426
608 4,500,427
609 4,500,428
616 4,500,429
638 4,500,430
656 4,500,431
659 4,500,432
669 4,500,433
696 4,500,434
798 4,500,435

CLASS 212

80 4,500,004

CLASS 215

203 4,500,005
224 4,500,006

CLASS 219

58 4,500,763
59.1 4,500,764
73.21 4,500,765
76.1 4,500,766
78.01 4,500,767
86.25 4,500,768
86.33 4,500,769
121 LH 4,500,771
121 LK 4,500,770
209 4,500,772
215 4,500,773
265 4,500,774
497 4,500,775

CLASS 220

71 4,500,007
242 4,500,008
256 4,500,009
320 4,500,010
359 4,500,011

CLASS 221

173 4,500,012
285 4,500,013

CLASS 222

5 4,500,014
83.5 4,500,015
153 4,500,016
288 4,500,017
598 4,500,018

CLASS 224

222 4,500,019
321 4,500,020

CLASS 225

4,500,021
49 4,500,022
97

CLASS 226

76 4,500,023

CLASS 227

19 4,500,024
4,500,025

CLASS 228

44.1 R 4,500,026
54 4,500,027
117 4,500,028
123 4,500,029
125 4,500,030
179 4,500,031
180 A 4,500,032
219 4,500,033

CLASS 235

162 4,500,776
375 B1 4,194,685
487 4,500,777

CLASS 236

49 4,500,034
68 B 4,500,036
92 B 4,500,035

CLASS 238

2 4,500,037

CLASS 239

85 4,500,038
193 4,500,039

CLASS 241

14 4,500,040
16 4,500,041
238 4,500,042

CLASS 242

45 4,500,043
56 A 4,500,044
57.1 4,500,045
67.1 R 4,500,046
71.9 4,500,047
107.3 4,500,048
186 4,500,049
198 4,500,050

CLASS 244

3.16 4,500,051
12.1 4,500,052
54 4,500,053
4,500,054
55 4,500,055
137 R 4,500,056
161 4,500,057

CLASS 246

3 4,500,058

CLASS 248

205.1 4,500,059
349 4,500,060
359 I 4,500,061
371 4,500,062
475.1 4,500,063
539 4,500,064
542 4,500,065

CLASS 250

204 4,500,778
231 SE 4,500,779
4,500,780
269 4,500,781
291 4,500,782
327.2 4,500,783
341 4,500,784
385 4,500,785
389 4,500,786
427 4,500,787
455.1 4,500,788
492.2 4,500,789
4,500,790
493.1 4,500,791
560 4,500,792
574 4,500,793

CLASS 251

26 4,500,066
38 4,500,067
205 4,500,068
282 4,500,069
4,500,070

CLASS 252

8.5 A 4,500,436
8.55 C 4,500,437
8.75 4,500,438
46.4 4,500,439
51.5 A 4,500,440
58 4,500,678
89.1 4,500,441
182 4,500,442
301.4 P 4,500,443
315.7 4,500,444
387 4,500,445
403 4,500,446
511 4,500,447
522 R 4,500,448
628 4,500,449

CLASS 254

95 4,500,072
258 4,500,073
270 4,500,074
423 4,500,071

CLASS 260

112 R 4,500,450
4,500,451
112.5 R 4,500,452
117 4,500,453
123.5 4,500,454
239 A 4,500,456
245.2 R 4,500,457
245.5 4,500,472
351.5 4,500,458
396 N 4,500,459
397.2 4,500,460
397.45 4,500,461
405.5 4,500,462
406 4,500,463
413 4,500,464
429 R 4,500,465
429.9 4,500,466
465.8 D 4,500,468
502.5 E 4,500,469
4,500,470
544 D 4,500,471
548 4,500,473
549 4,500,474

CLASS 261

36 A 4,500,475
44 B 4,500,477
44 C 4,500,476
52 4,500,478
98 4,500,479
104 4,500,480

CLASS 264

40.6 4,500,481
65 4,500,482
81 4,500,483
107 4,500,484
313 4,500,485
335 4,500,486

CLASS 267

8 R 4,500,075
4,500,076

CLASS 269

45 4,500,077
46 4,500,078
47 4,500,079
56 4,500,080
93 4,500,081

CLASS 270

20.1 4,500,082
54 4,500,083

CLASS 271

35 4,500,084
207 4,500,085
225 4,500,086
293 4,500,087

CLASS 272

8 M 4,500,088
117 4,500,089

CLASS 273

153 S 4,500,090
269 4,500,091

CLASS 277

12 4,500,092
15 4,500,093
31 4,500,094
34 4,500,095
53 4,500,096
59 4,500,097
170 4,500,098
228 4,500,099
235 B 4,500,100

CLASS 280

152.1 4,500,101
242 WC 4,500,102
281 R 4,500,103
289 D 4,500,104
468 4,500,105
605 4,500,106
4,500,107
614 4,500,108
650 4,500,109
680 4,500,110
688 4,500,111
693 4,500,112
716 4,500,113
742 4,500,114
808 4,500,115

CLASS 283

92 4,500,116

CLASS 285

3 4,500,117
247 4,500,118
276 4,500,119

CLASS 290

38 C 4,500,794

CLASS 292

19 4,500,120
79 4,500,121
161 4,500,122
259 A 4,500,123
318 4,500,124

CLASS 294

1 BA 4,500,125
86 R 4,500,126
104 4,500,127
146 4,500,128
172 4,500,129

CLASS 296

65 R 4,500,130
97 K 4,500,131
171 4,500,132

CLASS 297

131 4,500,133
170 4,500,134
250 4,500,135
284 4,500,136
458 4,500,137

CLASS 303

6 C 4,500,138

CLASS 305

10 4,500,139

CLASS 307

141 4,500,795
147 4,500,796
296 R 4,500,797
317 R 4,500,798
449 4,500,799
468 4,500,800
570 4,500,801
571 4,500,802

CLASS 308

3.8 4,500,140
4 R 4,500,141
10 4,500,142

CLASS 310

11 4,500,803
40 MM 4,500,804
80 4,500,805
198 4,500,806
313 B 4,500,807

CLASS 312

61 4,500,145
257 SM 4,500,146
291 4,500,147
312 4,500,148

CLASS 313

409 4,500,808
444 4,500,809
486 4,500,810

CLASS 315

58 4,500,811
171 4,500,812
276 4,500,813
323 4,500,814
366 4,500,815
368 4,500,816

CLASS 318

7 4,500,817
52 4,500,818
106 4,500,819
139 4,500,820
254 4,500,821
314 4,500,822
632 4,500,823
701 4,500,824
792 4,500,825
820 4,500,826

CLASS 322

3 4,500,827
46 4,500,828

CLASS 323

215 4,500,829
267 4,500,830
315 4,500,831
340 4,500,832
359 4,500,833

CLASS 324

52 4,500,834
58.5 R 4,500,835
73 AT 4,500,836
102 4,500,837
117 R 4,500,838
204 4,500,839
425 4,500,840

CLASS 328

146 4,500,841
150 4,500,842

CLASS 330

4.3 4,500,843
10 4,500,844
86 4,500,845
253 4,500,846
277 4,500,847
285 4,500,848
300 4,500,849
307 4,500,850

CLASS 331

2 4,500,851
12 4,500,852
18 4,500,853
117 R 4,500,854

CLASS 332

7.51 4,500,855
9 R 4,500,856
4,500,857

CLASS 333

202 4,500,858
208 4,500,859

CLASS 335

216 4,500,860
253 4,500,861

CLASS 337

32 4,500,862
70 4,500,863

CLASS 338

4 4,500,864
13 4,500,865
126 4,500,866
128 4,500,867

CLASS 339

17 C 4,500,149
28 4,500,150
59 R 4,500,151
61 M 4,500,152
89 M 4,500,153
4,500,154
94 C 4,500,156
94 M 4,500,155
97 R 4,500,157
122 R 4,500,158
147 R 4,500,159
166 R 4,500,160
242 4,500,161
252 F 4,500,162

CLASS 340

52 F 4,500,868
347 DD 4,500,869
4,500,871
347 P 4,500,870
365 R 4,500,872
515 4,500,873
607 4,500,874
703 4,500,875
709 4,500,876
711 4,500,877
713 4,500,878
739 4,500,879
825.35 4,500,880
825.73 4,500,881

CLASS 343

372 4,500,882
383 4,500,883
456 4,500,884
4,500,885
4,500,886
700 MS 4,500,887
873 4,500,888

CLASS 346

1.1 4,500,889

29 4,500,890
76 PH 4,500,891
4,500,892
4,500,893
140 R 4,500,894
4,500,895
204 4,500,896
209 4,500,897

CLASS 350

3.7 4,500,163
96.10 4,500,164
96.20 4,500,165
4,500,166
96.32 4,500,167
96.34 4,500,168
288 4,500,169
320 4,500,171
331 R 4,500,172
345 4,500,173
357 4,500,174
358 4,500,175
376 4,500,176
4,500,177
404 4,500,178
574 4,500,181
611 4,500,170

CLASS 351

137 4,500,179
234 4,500,180

CLASS 354

4 4,500,182
21 4,500,183
149.11 4,500,184
209 4,500,185
234 4,500,186
266 4,500,187
406 4,500,188
407 4,500,189
416 4,500,190
418 4,500,191
427 4,500,192
471 4,500,193

CLASS 355

3 DD 4,500,194
4,500,196
3 R 4,500,195
8 4,500,197
14 CU 4,500,199
14 D 4,500,198

CLASS 356

152 4,500,200
4,500,201
237 4,500,202
240 4,500,203
318 4,500,204
325 4,500,205
376 4,500,206
409 4,500,207
431 4,500,208

CLASS 357

23 4,500,898
4,500,899
36 4,500,900
38 4,500,901
4,500,902
4,500,903
67 4,500,904
68 4,500,905
71 4,500,906
79 4,500,907

CLASS 358

11 4,500,908
17 4,500,909
28 4,500,910
31 4,500,912
36 4,500,911
44 4,500,913
4,500,914
4,500,915
51 4,500,916
75 4,500,917
4,500,918
78 4,500,919
139 4,500,920
174 4,500,921
188 4,500,922
190 4,500,923
213 4,500,924
227 4,500,925
256 4,500,926
293 4,500,927
296 4,500,928
299 4,500,929
310 4,500,930
4,500,931

CLASS 360

65 4,500,932
69 4,500,933

CLASS 361

3 4,500,934
56 4,499,673
152 4,500,936
153 4,500,937
4,500,938
221 4,500,939
286 4,500,940
293 4,500,941
320 4,500,942
333 4,500,935
383 4,500,943
384 4,500,944
386 4,500,945

CLASS 362

226 4,500,946
311 4,500,947
382 4,500,948

CLASS 363

28 4,500,949

CLASS 364

138 4,500,950
186 4,500,951
200 4,500,952
4,500,953
4,500,954
4,500,955
4,500,956
4,500,957
4,500,958
4,500,959
4,500,960
4,500,961
4,500,962
300 4,500,963
4,500,964
400 4,500,965
432 4,500,966
434 4,500,967
471 4,500,968
508 4,500,969
513 4,500,970
513.5 4,500,971
526 4,500,972
606 4,500,973

CLASS 365

104 4,500,975
222 4,500,974

CLASS 366

157 4,500,209
207 4,500,210

CLASS 367

48 4,500,976
108 4,500,977
142 4,500,978
149 4,500,979
154 4,500,980

CLASS 368

63 4,500,211
108 4,500,212
208 4,500,213

CLASS 369

43 4,500,981
50 4,500,982
77.2 4,500,983

CLASS 370

6 4,500,984
14 4,500,985
58 4,500,986
60 4,500,987
85 4,500,988
4,500,989
4,500,990
88 4,500,991
100 4,500,992

CLASS 371

16 4,500,993
43 4,500,994

CLASS 372

3 4,500,995
19 4,500,996
58 4,500,997
61 4,500,998

CLASS 374

36 4,500,214

CLASS 375

16 4,500,999
25 4,501,000
30 4,501,001
86 4,501,002
94 4,501,003
102 4,501,004

CLASS 376

283 4,500,487
409 4,500,488

CLASS 377

2 4,501,008
20 4,501,005
45 4,501,006
60 4,501,007

CLASS 378

19 4,501,009
38 4,501,010
196 4,501,011

CLASS 381

43 4,501,012
86 4,501,013
94 4,501,014
103 4,501,015

CLASS 382

22 4,501,016

CLASS 384

319 4,500,215
463 4,500,144
467 4,500,143

CLASS 400

8 4,500,216
320 4,500,217
490 4,500,218
568 4,500,219

CLASS 401

53 4,500,220
82 4,500,221
209 4,500,222

CLASS 402

20 4,500,223

CLASS 403

13 4,500,226
343 4,500,224

CLASS 404

6 4,500,225

CLASS 405

128 4,500,227

CLASS 406

61 4,500,228
88 4,500,229
131 4,500,230
198 4,500,231

CLASS 408

153 4,500,232
182 4,500,233
206 4,500,234
238 4,500,235

CLASS 409

86 4,500,236

CLASS 411

11 4,500,237
30 4,500,238
65 4,500,239
103 4,500,240

CLASS 412

37 4,500,241

CLASS 414

24.5 4,500,242
50 4,500,243
92 4,500,244
108 4,500,245
414 4,500,246
416 4,500,247
459 4,500,248
534 4,500,249
695.5 4,500,250
719 4,500,251

CLASS 415

9 4,500,252
53 T 4,500,253
75 4,500,254
189 4,500,255
191 4,500,256

CLASS 416

32 4,500,257
97 R 4,500,258
122 4,500,259

CLASS 417

64 4,500,260
203 4,500,261
214 4,500,262
282 Re.31,835
360 4,500,263
395 4,500,264
417 4,500,265
474 4,500,266
552 4,500,267

CLASS 418

1 4,500,268
45 4,500,269
133 4,500,270

CLASS 420

445 4,500,489

CLASS 422

62 4,500,490
150 4,500,491
199 4,500,492

CLASS 423

10 4,500,493
24 4,500,494
53 4,500,495
55 4,500,496
89 4,500,497
100 4,500,498
139 4,500,499
224 4,500,500
239 4,500,501
321 R 4,500,502
329 4,500,503
345 4,500,504
416 4,500,505
474 4,500,506

CLASS 424

1.1 4,500,507
4,500,508
3 4,500,509
80 4,500,510
81 4,500,511
89 4,500,512
4,500,513
94 4,500,514
154 4,500,515
156 4,500,516
162 4,500,517

CLASS 425

67 4,500,271
78 4,500,272
143 4,500,273
185 4,500,274
192 R 4,500,275
297 4,500,276
387.1 4,500,277
445 4,500,278
511 4,500,284
548 4,500,279
569 4,500,280

CLASS 426

3 4,500,547
19 4,500,548
33 4,500,549
38 4,500,550
62 4,500,551
96 4,500,552
101 4,500,553
323 4,500,554
479 4,500,555
540 4,500,556
563 4,500,557
622 4,500,558
646 4,500,559

CLASS 427

8 4,500,560
25 4,500,561
27 4,500,562
38 4,500,563
39 4,500,564
4,500,565
115 4,500,566
255.3 4,500,567
294 4,500,568
304 4,500,569
345 4,500,570

CLASS 428

13 4,500,571
34 4,500,572
35 4,500,573
4,500,574
4,500,575
36 4,500,576
4,500,577
4,500,578
43 4,500,579
4,500,580
85 4,500,581
116 4,500,582
4,500,583
145 4,500,584
152 4,500,585
174 4,500,586
204 4,500,587
212 4,500,588
213 4,500,589
220 B1 4,342,811
222 4,500,590
251 4,500,591
257 4,500,592
4,500,593
284 4,500,594
294 4,500,595
317.5 4,500,596
317.7 4,500,597
331 4,500,598
336 4,500,599
391 4,500,600
403 4,500,601
408 4,500,602
409 4,500,603
414 4,500,604
469 4,500,605
480 4,500,606
511 4,500,607
522 4,500,608
610 4,500,609
624 4,500,610
686 4,500,611

CLASS 429

26 4,500,612
69 4,500,613
206 4,500,614

CLASS 430

30 4,500,615
45 4,500,616
49 4,500,617
4,500,618
59 4,500,619
60 4,500,620
72 4,500,621
78 4,500,622
83 4,500,623
138 4,500,624
149 4,500,625
203 4,500,626
4,500,627
311 4,500,628
325 4,500,629
386 4,500,630
413 4,500,631
428 4,500,632
505 4,500,633
544 4,500,634
552 4,500,635
566 4,500,636

CLASS 431

3 4,500,281
184 4,500,282
328 4,500,283

CLASS 432

103 4,500,285
106 4,500,286
246 4,500,287

CLASS 433

40 4,500,288
54 4,500,289
4,500,290
173 4,500,292
213 4,500,291
215 4,500,294
225 4,500,296

CLASS 434

114 4,500,293
218 4,500,295

CLASS 435

2 4,500,637
235 4,500,638
244 4,500,639
253 4,500,640
291 4,500,641

CLASS 440

27 4,500,297
62 4,500,298

CLASS 446

230 4,500,299

CLASS 455

78 4,501,017
83 4,501,018
112 4,501,019
226 4,501,020
601 4,501,021
4,501,022

CLASS 464

83 4,500,300

CLASS 474

28 4,500,301
82 4,500,302
112 4,500,303
138 4,500,304
201 4,500,305

CLASS 493

92 4,500,306
196 4,500,307

CLASS 501

54 4,500,642
96 4,500,643
98 4,500,644

CLASS 502

65 4,500,645
78 4,500,646
101 4,500,647
115 4,500,648
167 4,500,649
204 4,500,650
208 4,500,651

CLASS 514

2 4,500,467
4,500,518
56 4,500,519
63 4,500,520
81 4,500,521
173 4,500,522
178 4,500,523
210 4,500,525
223 4,500,527
226 4,500,526
228 4,500,528
235 4,500,529
250 4,500,524
255 4,500,530
4,500,531
256 4,500,532
4,500,533
277 4,500,535
301 4,500,534
364 4,500,539
367 4,500,538
383 4,500,537
397 4,500,536
4,500,540
452 4,500,731
465 4,500,542
466 4,500,541
469 4,500,543
474 Re.31,836
543 4,500,544
619 4,500,545
781 4,500,546

CLASS 521

33 4,500,652
90 4,500,653
129 4,500,654
163 4,500,655
164 4,500,656

CLASS 523

116 4,500,657
117 4,500,658
213 4,500,659
400 4,500,703
428 4,500,660

CLASS 524

77 4,500,661
99 4,500,662
101 4,500,663
119 4,500,664
227 4,500,665
232 4,500,666
406 4,500,667
427 4,500,668
440 4,500,669
445 4,500,670
494 4,500,671
496 4,500,672
533 4,500,683
548 4,500,673
650 4,500,674
762 4,500,675

CLASS 525

54.2 4,500,676
57 4,500,677
64 4,500,679
143 4,500,680
222 4,500,681
240 4,500,682
327.3 4,500,684
343 4,500,685
408 4,500,686
412 4,500,687
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CLASS 526

201 4,500,692
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245 4,500,694
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CLASS 528

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	4,500,698		CLASS 536	309	4,500,714	459	4,500,723	486	4,500,732	796	4,500,740
128	4,500,699	27	4,500,707		CLASS 548		CLASS 556	506	4,500,733		CLASS 604
328	4,500,700		CLASS 544	140	4,500,715	472	4,500,724		CLASS 564	4	4,500,308
363	4,500,701	34	4,500,708	196	4,500,716	482	4,500,725	72	4,500,734	5	4,500,309
388	4,500,702	58.1	4,500,709	229	4,500,717		CLASS 560	286	4,500,735	228	4,500,310
405	4,500,704	113	4,500,710	471	4,500,718	179	4,500,727	417	4,500,736	246	4,500,311
417	4,500,705	258	4,500,711	522	4,500,719	222	4,500,728		CLASS 568	263	4,500,312
502	4,500,706		CLASS 546		CLASS 549	225	4,500,729	329	4,500,737	280	4,500,313
	CLASS 534	67	4,500,712	313	4,500,720		CLASS 562	433	4,500,738	346	4,500,314
635	4,500,455	165	4,500,713	362	4,500,721	416	4,500,730	677	4,500,739	379	4,500,315
				429	4,500,722					389	4,500,316

CLASSIFICATION OF DESIGNS

D2—	234	277,614		520	277,622	D9—	352	277,646	D13—	5	277,662		123	277,678	D22—	25	277,694
	274	277,615		574	277,627		377	277,647	D14—	58	277,663		127	277,679	D23—	49	277,695
	309	277,616	D7—	76	277,632		445	277,648		60	277,664	D18—	5	277,680		69	277,696
	354	277,617			277,633	D10—	32	277,649			277,665		7	277,681		121	277,697
D3—	54	277,620		386	277,634		78	277,650		63	277,666	D19—	47	277,682	D24—	4	277,698
	71	277,618	D8—	18	277,635		82	277,651		68	277,667	D20—	17	277,683		29	277,699
		277,619		30	277,636		106	277,652		69	277,668	D21—	59	277,684		48	277,700
D6—	311	277,631		47	277,637		123	277,653		84	277,669			277,685	D26—	67	277,701
	317	277,626		62	277,638	D11—	2	277,654		100	277,670		108	277,686	D27—	23	277,702
	334	277,621		72	277,639		31	277,655			277,671		128	277,687	D30—	14	277,703
	422	277,624		88	277,640		81	277,656			277,672		133	277,688		15	277,704
		277,625		101	277,641	D12—	5	277,657		106	277,673		134	277,689		16	277,705
	423	277,623		356	277,642		101	277,658		113	277,674		135	277,690	D32—	18	277,706
	500	277,629		373	277,643		110	277,659	D15—	7	277,675		210	277,691	D34—	6	277,707
	501	277,630		396	277,644		204	277,660		13	277,676		219	277,692		20	277,708
	514	277,628		402	277,645		211	277,661		27	277,677		225	277,693			

CLASSIFICATION OF PLANTS

P.—	34	5,406									

GEOGRAPHICAL INDEX OF RESIDENCE OF INVENTORS

(U.S. States, Territories and Armed Forces, the Commonwealth of Puerto Rico, and the Canal Zone)

Alabama	1	Kentucky	21	Oregon	41
Alaska	2	Louisiana	22	Pennsylvania	42
American Samoa	3	Maine	23	Puerto Rico	43
Arizona	4	Maryland	24	Rhode Island	44
Arkansas	5	Massachusetts	25	South Carolina	45
California	6	Michigan	26	South Dakota	46
Canal Zone	7	Minnesota	27	Tennessee	47
Colorado	8	Mississippi	28	Texas	48
Connecticut	9	Missouri	29	Utah	49
Delaware	10	Montana	30	Vermont	50
District of Columbia	11	Nebraska	31	Virginia	51
Florida	12	Nevada	32	Virgin Islands	52
Georgia	13	New Hampshire	33	Washington	53
Guam	14	New Jersey	34	West Virginia	54
Hawaii	15	New Mexico	35	Wisconsin	55
Idaho	16	New York	36	Wyoming	56
Illinois	17	North Carolina	37	U.S. Air Force	57
Indiana	18	North Dakota	38	U.S. Army	58
Iowa	19	Ohio	39	U.S. Navy	59
Kansas	20	Oklahoma	40		

(First number in listing denotes location according to above key. Refer to patent number in body of the Official Gazette to obtain details as to inventor name, location, etc.)

PATENTS

01 :	4,500,700		4,500,104		4,500,879		4,500,967		4,500,067		4,500,923
04 :	4,499,688		4,500,113		4,500,890	10 :	4,499,716		4,500,068	19 :	4,499,624
	4,499,766		4,500,128		4,500,916		4,500,238		4,500,072		4,499,908
	4,499,767		4,500,129		4,500,933		4,500,344		4,500,083		4,499,914
	4,499,903		4,500,135		4,500,943		4,500,432		4,500,148		4,499,963
	4,499,984		4,500,137		4,500,952		4,500,520		4,500,210		4,500,062
	4,500,206		4,500,153		4,500,965		4,500,699		4,500,212		4,500,110
	4,500,273		4,500,163		4,500,993		4,500,705		4,500,237		4,500,250
	4,500,392		4,500,170		4,500,996	12 :	4,499,735		4,500,298		4,500,841
	4,500,816		4,500,172		4,500,997		4,499,762		4,500,312		4,500,852
	4,500,831		4,500,176		4,501,005		4,499,901		4,500,382		4,500,874
	4,500,954		4,500,177		4,501,007		4,499,968		4,500,439		4,500,986
	4,500,970		4,500,178	08 :	4,499,676		4,500,014		4,500,453	20 :	4,499,627
	4,500,994		4,500,200		4,499,687		4,500,015		4,500,475		4,500,034
05 :	4,499,886		4,500,201		4,499,770		4,500,026		4,500,488		4,500,042
06 :	4,499,613		4,500,294		4,499,771		4,500,085		4,500,543		4,500,242
	4,499,616		4,500,299		4,499,781		4,500,089		4,500,552		4,500,290
	4,499,629		4,500,307		4,499,933		4,500,098		4,500,576		4,500,309
	4,499,642		4,500,311		4,500,123		4,500,158		4,500,654		4,500,757
	4,499,658		4,500,345		4,500,229		4,500,295		4,500,667	21 :	4,499,946
	4,499,667		4,500,363		4,500,328		4,500,306		4,500,673	22 :	4,499,846
	4,499,691		4,500,386		4,500,436		4,500,403		4,500,701		4,500,059
	4,499,710		4,500,404		4,500,498		4,500,800		4,500,708		4,500,491
	4,499,721		4,500,407		4,500,707		4,500,827		4,500,726		4,500,717
	4,499,723		4,500,408		4,500,799		4,500,877		4,500,732	24 :	4,499,617
	4,499,733		4,500,409	09 :	Re.31,835		4,500,881		4,500,740		4,499,653
	4,499,736		4,500,423		4,499,625		4,500,947		4,500,788		4,499,811
	4,499,768		4,500,424		4,499,755		4,501,017		4,500,850		4,499,830
	4,499,772		4,500,434		4,499,777		4,501,018		4,500,880		4,499,841
	4,499,800		4,500,484		4,499,832	13 :	4,499,664		4,500,908		4,500,064
	4,499,809		4,500,492		4,499,842		4,499,668		4,500,936		4,500,175
	4,499,818		4,500,494		4,499,860		4,499,713		4,500,938		4,500,243
	4,499,828		4,500,495		4,499,937		4,499,990		4,500,985		4,500,244
	4,499,833		4,500,500		4,500,028		4,500,039		4,501,002		4,500,265
	4,499,858		4,500,507		4,500,038		4,500,375		4,194,685		4,500,330
	4,499,885		4,500,515		4,500,087		4,500,481	18 :	4,499,669		4,500,380
	4,499,893		4,500,539		4,500,173		4,500,753		4,499,995		4,500,391
	4,499,894		4,500,555		4,500,197		4,500,862		4,500,046		4,500,530
	4,499,938		4,500,613		4,500,252	16 :	4,499,957		4,500,111		4,500,637
	4,499,945		4,500,621		4,500,268		4,500,001		4,500,132		4,500,703
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	4,499,955		4,500,737		4,500,535		4,500,231		4,500,154		4,500,842
	4,499,956		4,500,754		4,500,548	17 :	4,499,663		4,500,215		4,500,856
	4,499,970		4,500,758		4,500,580		4,499,705		4,500,230		4,500,984
	4,499,987		4,500,777		4,500,582		4,499,708		4,500,247		4,501,001
	4,500,016		4,500,786		4,500,605		4,499,734		4,500,303	25 :	Re.31,833
	4,500,031		4,500,814		4,500,658		4,499,786		4,500,343		4,499,615
	4,500,033		4,500,836		4,500,713		4,499,820		4,500,393		4,499,649
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	4,500,052		4,500,843		4,500,805		4,499,915		4,500,533		4,499,659
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	4,500,079		4,500,855		4,500,949		4,499,991		4,500,561		4,499,752
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DESIGN PATENTS

04 : 277,656
06 : 277,626
277,635
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Vol. 1051 Number 4

OFFICIAL GAZETTE

of the

UNITED STATES PATENT AND TRADEMARK OFFICE

PATENTS

February 26, 1985

PUBLISHED WEEKLY BY AUTHORITY OF CONGRESS

OFFICIAL GAZETTE of the
UNITED STATES PATENT AND TRADEMARK OFFICE
February 26, 1985 Volume 1051 Number 4

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The following are mailed under direction of the Superintendent of Documents, Government Printing Office, Washington, D.C., 20402, to whom all subscriptions should be made payable and all communications addressed:

THE OFFICIAL GAZETTE (PATENT SECTION), issued weekly.
THE OFFICIAL GAZETTE (TRADEMARK SECTION), issued weekly.
GENERAL INFORMATION concerning PATENTS.
GENERAL INFORMATION concerning TRADEMARKS.

COPIES OF PATENTS are furnished by the Patent and Trademark Office at $1.00 each; PLANT PATENTS in color, $8.00 each; copies of TRADEMARKS at $1.00 each. Address orders to the Commissioner of Patents and Trademarks, Washington, D.C., 20231.

Printing authorized by Section 11(a)3 of Title 35, U.S. Code P.T.O.

PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty (PCT) Information

For information concerning the PCT member countries see the notice appearing in the *Official Gazette* at 1050 O.G. 330 on Jan. 15, 1985.

For use of the European Patent Office as a Searching Authority for PCT applications filed in the United States Receiving Office, see the notice appearing in the *Official Gazette* at 1022 O.G. 52 on Sept. 28, 1982.

Domestic PCT fees were increased on Oct. 1, 1982 by a rule change to 37 CFR 1.445 that was published in the *Official Gazette* at 1021 O.G. 11 on Aug. 10, 1982.

The Search fee for the European Patent Office was changed as of Jan. 3, 1985 and was announced in the *PCT Gazette* at No. 26/1984 page 3241 on Nov. 8, 1984.

International PCT fees were changed by the PCT Assembly effective Jan. 1, 1985 and were announced in the *Official Gazette* at 1050 O.G. 330 on Jan. 15, 1985.

The current schedule of PCT fees is as follows:

Transmittal fee	$ 125.00
Search fee	
U.S. Patent and Trademark Office as Searching Authority	
· No corresponding prior U.S. national application filed	500.00
· Corresponding prior U.S. national application filed	250.00
European Patent Office as Searching Authority	
· All cases	690.00
International fees	
Basic fee (first 30 pages)	265.00
Basic Supplemental fee (for each page over 30)	5.00
Designation fee (for each national or regional office)	64.00
Designation fee for 11th and subsequent designations	no charge

GERALD J. MOSSINGHOFF,
Commissioner of Patents and Trademarks.

Dec. 24, 1984.

Notice of Maintenance Fees Payable

Title 37, Code of Federal Regulations, Section 1.362(d), effective Nov. 1, 1984, provides that maintenance fees may be paid without surcharge for a six-month period beginning 3, 7, and 11 years after the date of issue of patents based on applications filed on or after Dec. 12, 1980. An additional six-month grace period is provided by 35 U.S.C. 41(b) and 37 CFR 1.362(e) for payment of the maintenance fee with the surcharge set forth in 37 CFR 1.20(k) or (l), effective Nov. 1, 1984. If the maintenance fee is not paid in a patent requiring such payment, the patent will expire on the 4th, 8th or 12th anniversary of the grant.

Attention is drawn to the patents which were issued on Feb. 23, 1982 for which maintenance fees due at 3 years and six months may now be paid. The patents have patent numbers within the following ranges:

Plant Patents	None
Utility Patents	4,316,286 through 4,317,286

Reissue Patents based on the above identified patents.

No maintenance fees are required for design patents.

Payments of maintenance fees in patents should be directed to "Commissioner of Patents and Trademarks, Box M. Fee, Washington, D.C. 20231."

The current amounts of the maintenance fees due at 3 years and six months are set forth in 37 CFR 1.20(e) and (h), which are reproduced below:

37 CFR §1.20 Post-issuance fees

"(e) For maintaining an original or reissue patent, except a design patent, based on an application filed on or after Dec. 12, 1980 and before Aug. 27, 1982, in force beyond 4 years; the fee is due by three years and six months after the original grant . . . $ 200.00"

"(h) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Aug. 27, 1982, in force beyond 4 years; the fee is due by three years and six months after the original grant:
By a small entity (§1.9(f)) . . . . . $ 200.00
By other than a small entity . . . . . $ 400.00"

The amounts of the surcharges, effective Nov. 1, 1984, are set forth in 37 CFR 1.20(k)-(m), which are reproduced below:

"(k) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Dec. 12, 1980 and before Aug. 27, 1982 . . . . . $ 100.00"

"(l) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Aug. 27, 1982:
By a small entity (§1.9(f)) . . . . . $ 50.00
By other than a small entity . . . . . $ 100.00"

"(m) Surcharge for accepting a maintenance fee after expiration of a patent for non-timely payment of a maintenance fee on a patent based on an application filed on or after Aug. 27, 1982, where the delay in payment is shown to the satisfaction of the Commissioner to have been unavoidable . . . . . $ 500.00"

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.19(a)).

4,096,505, Re. S.N. 679,036, Filed Dec. 6, 1984, Cl. 354/246, FOCAL PLANE SHUTTER FOR CAMERAS, Eiichi Onda, et al., Owner of Record: *Seiko Koki Kabushiki Kaisha, Tokyo, Japan,* Attorney or Agent: Robert E. Burns, Ex. Gp.: 211

4,248,392, Re. S.N. 663,676, Filed Oct. 19, 1984, Cl. 242/099, APPARATUS FOR APPLICATION OF SHEET-LIKE MATERIALS AND FILMS, John C. Parry, Owner of Record: *Inventor,* Attorney or Agent: Walter G. Finch, Ex. Gp.: 245

4,334,690, Re. S.N. 547,646, Filed May 21, 1984, Cl. 280/11.21, TRAINER/LEARNER SKATE, Reuben B. Klamer, et al., Owner of Record: *Trend Products Group, Los Angeles, Calif.,* Attorney or Agent: Sherman O. Parrett, et al., Ex. Gp.: 316

4,365,046, Re. S.N. 683,888, Filed Dec. 20, 1984, Cl. 525/438, PROCESS TO CONTROL THE CURING REACTION BETWEEN A COPOLYESTER RESIN AND AN EPOXIDE COMPOUND, AND A COMPOSITION FORMED FOR THAT PROCESS, Patrick Pesata, Jr., et al., Owner of Record: *Goodyear Tire & Rubber Co., Akron, Ohio,* Attorney or Agent: Alvin T. Rockhill, et al., Ex. Gp.: 155

4,377,882, Re. S.N. 677,365, Filed Dec. 3, 1984, Cl. 015/335, VACUUM CLEANING APPLIANCES, James Dyson, Owner of Record: *Prototypes, Ltd., Bath BA1, England,* Attorney or Agent: Ian C. McLeod, Ex. Gp.: 242

4,397,413, Re. S.N. 679,400, Filed Dec. 7, 1984, Cl. 228/174, PROCESS FOR MANUFACTURING PLASTICALLY DEFORMED LIGHT METAL OBJECTS HAVING A CONNECTOR PART OF A DIFFERENT METAL, Alfred Wagner, et al., Owner of Record: *Swiss Aluminium Ltd., Chippis, Switzerland,* Attorney or Agent: Gregory P. LaPointe, et al., Ex. Gp.: 325

4,399,282, Re. S.N. 676,248, Filed Nov. 29, 1984, Cl. 546/048, CAMPTOTHECIN DERIVATIVES, Tadashi Miyasaka, et al., Owner of Record: *Kabushiki Kaisha Yakult Honsha, Tokyo, Japan,* Attorney or Agent: Raymond C. Stewart, et al., Ex. Gp.: 122

4,472,510, Re. S.N. 682,739, Filed Dec. 17, 1984, Cl. 501/012, CARBON-CONTAINING MONOLITHIC GLASSES AND CERAMICS PREPARED BY A SOL-GEL PROCESS, James R. January, Owner of Record: *Dow Corning Corp., Midland, Mich.,* Attorney or Agent: Richard A. Kaba, et al., Ex. Gp.: 118

4,474,670, Re. S.N. 679,517, Filed Dec. 7, 1984, Cl. 252/32.7E, HINDERED PHENYL ESTERS OF CYCLIC BORATES AND LUBRICANTS CONTAINING SAME, Milton Braid, et al., Owner of Record: *Mobil Oil Corp., New York, N.Y.,* Attorney or Agent: Alexander J. McKillop, et al., Ex. Gp.: 118

4,481,188, Re. S.N. 682,859, Filed Dec. 18, 1984, Cl. 424/089, VACCINES, Peter Apontoweil, et al., Owner of Record: *Gist-Brocades N.V., Ma Delft, The Netherlands,* Attorney or Agent: Charles A. Muserlian, Ex. Gp.: 123

REQUESTS FOR REEXAMINATION FILED

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.19(a)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b)).

No Publications This Issue.

Errata

"All reference to Patent No. 4,494,378 to Oswald O. Kytta, et al. of Ind. for 'FLUID PRESSURIZING DEVICE' appearing in the Official Gazette of Jan. 22, 1985, should be deleted since no patent was granted."

"All reference to Patent No. 4,496,395 to Ernest M. Jost of Mass. for 'ELECTRICAL CONTACT MATERIAL COMPRISING SILVER, CADMIUM OXIDE AND CUPRIC SALT' appearing in the Official Gazette of Jan. 29, 1985, should be deleted since no patent was granted."

"All reference to Patent No. 4,496,422 to Ronald A. Dery, et al. of N.C. for 'ANICOTROPICALLY CONDUCTIVE ADHESIVE COMPOSITION' appearing in the Official Gazette of Jan. 29, 1985, should be deleted since no patent was granted."

Service by Publication

A petition to cancel each of the registrations identified below having been filed, and the notice of such proceedings sent by certified mail to each registrant at the last known address having been returned by the Postal Service as undeliverable, notice is hereby given that unless the registrants listed herein, their assigns or legal representatives, shall enter an appearance within thirty days from the date of this publication, the cancellation will be proceeded with as in the case of default.

The Games Preserve, Fleetwood, Pa., Reg. No. 1,137,658, for the mark THE GAMES PRESERVE and design, Canc. No. 14,190.

The Tayston Corp., Lexington, Ky., Reg. No. 1,216,036, for the mark T TAYSTON'S COOKIE JAR and design, Canc. No. 14,207.

Family Orchards, Inc., Berkeley, Calif., Reg. No. 1,118,367, for the mark MOUNTAIN MUNCHIES, Canc. No. 14,312.

First Multifund Advisory Corp., assignee of First Multifund of America, Inc., New York, N.Y., Reg. No. 877,935, for the mark MULTIFUND, Canc. No. 14,328.

Max Lutz, dba Max Lutz Co. and Max Lutz Co., McAllen, Tex., Reg. No. 793,021, for the mark MAX PACK, Canc. No. 14,368.

Clenet Coachworks, Inc., Santa Barbara, Calif., Reg. No. 1,102,074, for the mark CLENET, Canc. No. 14,398.

National Market Equipment Co., Inc., assignee of Fred Kuhn, dba, National Market Equipment Co., Madison Heights, Mich., Reg. No. 562,869, for the mark NATIONAL, Canc. No. 14,413.

Jambor Tool & Stamping Co., Milwaukee, Wis., Reg. Nos. 239,770 and 411,191, for the mark "BULL DOG" and design, Canc. 14,425.

Edwin Clapp & Son, Inc., Boston, Mass., Reg. No. 75,659, for the mark EDWIN CLAPP and design, Canc. 14,483.

ERMA S. BROWN,
Deputy Clerk of the Trademark Trial and Appeal Board.
For MARGARET M. LAURENCE,
Assistant Commissioner for Trademarks.

Status of PTO Services

The following is an update of the status of PTO services for January 1985:

Service Item	FY 1985 Performance Goal (Calendar Days)	Monthly Average	Comment
Filing Receipts:			
Patents	22	32	Due to automation problems.
Trademarks	30	39	Due to contractor problems.
Patent/Trademark Copies:			
Window Coupons	5	98% within 5 days	
Mail Coupons	29	99% within 29 days*	
Letter Orders	34	99% within 34 days*	
Date of oldest unfilled order		January 4, 1985**	
Date being processed		January 23, 1985**	
Certified Copies:			
Trademark Registrations	30	24	
Status Copies (excluding title)	15	96% within 15 days	
Applications-As-Filed	20	98% within 7 days	
File-Wrapper/Contents	N/A	92% within 7 days	
Walk-up Certification	1	94% within 24 hours	
Trademark Search Library:			
Filing Drawings	21	44	Delays due to holidays.
Filing Reg. Certificates	3	13	Delays due to GPO Printing.
Assignments:			
Patents	25	23	
Trademarks	25	18	
Avg. Days from Issue Fee Payment to Issue Date	90–100	89	
Patent Official Gazette:			
In Bookstore	Issue Date	On schedule	
Mailed	Issue Date	Avg. 2 days late	
Patent Grants Mailed	Issue Date	Avg. 11 days late	Delay due to new printing contractor.
Patent Copies Available	Issue Date	98% 4 days late	Delay due to new printing contractor.
Trademark Copies Available	Issue Date	98% 7 days late	
Trademark Official Gazette:			
In Bookstore	Issue Date	Issue Date	
Mailed	Issue Date	Issue Date	
Trademark Regs. Mailed	Issue Date	Avg. 6 days late	GPO failed to deliver covers on time.

*Figures include postal processing and delivery time.
**Dates are day of receipt for (1) the single oldest order and (2) the majority of orders in process.

IMPROVEMENTS TO SERVICE

As a result of the 1984 Public User Survey summarized in the Nov. 22, 1984 Official Gazette, the PTO developed an Action Plan to address problem areas. Some specific actions taken so far are these:

- *Official Searching* — The number of computer terminals used to access the automated system for locating files has been increased, as well as the number of employees serving the public during peak hours. These actions have reduced the length of waiting lines and have enhanced employees' ability to give requesters more individual attention.
  To aid the public in reporting poor, as well as excellent, service received from employees, the names of employees servicing the public have been posted, as well as the unit's supervisor. Also placed in a highly visible area is the Help Us Help You campaign poster and cards by which the public is asked to comment on the quality of services received.
  The number of days for the Official Search Unit to close out and formally notify the requester of the results of the official search process has been reduced from 30 to 15. This will improve the timeliness of the search notification and decrease the time a requester must wait prior to requesting a file to be reconstructed should the official search be unsuccessful.
  An official search status telephone line has been established effective Feb. 4, 1985. This number can be called anytime after an official search is placed to determine its status. The phone number is (703) 557–9690.
  When a requested abandoned or patented file cannot be found at the Records Center, an official search is being initiated by the PTO immediately, rather than waiting for five days, as was the prior practice.

A report identifying the locations in which "lost" files were found was issued to PTO managers and supervisors. The report also emphasized the importance of using the automated Patent Application Location and Monitoring System (PALM). It is felt that widespread publication of problem areas will lead to a greater sensitivity to this problem and improved location control. The most difficulty has been in locating files which are stored in the GSA Federal Records Center in Suitland, Md. The PTO has been meeting regularly with the GSA Records Center managers to analyze causes of unsuccessful searches for files. All boxes in the Record Center were inventoried to ensure accession numbers are properly identified.

- *Integrity of Assignment Card Files* — Regular integrity checks of the Assignment card files has been reemphasized and follow-up random sampling has been implemented. Also training for new file clerks has been reviewed and reemphasized.
- *Patented File Histories* — The greatest source of public frustration has not been with retrieval of files under the PTO's direct control, but with older files located at the GSA's Federal Records Center in Suitland, Md. The PTO is now holding files obtained from the Records Center for at least three weeks after the files are returned by a requester. This provides for quicker access to files that are of interest to multiple requesters. It also enables the PTO to return files to the Records Center in bulk, thus enhancing the possibility of a more prompt refile.
  Discussions with the Records Center management are continuing in an effort to upgrade the level of service provided to the PTO. Thus far, these discussions have resulted in the Records Center tightening their controls and standards for processing PTO requests. In addition, the Records Center has agreed to adopt our recommendation to individually track each of our requests throughout the retrieval process, and commitments have been made by the Center's Director for a more rapid turnaround of our requests.
  The amount of time a requester can have a file held for them has been reduced from 10 days to 5 days. This expedites the availability of a file to other requesters.
  Additional equipment has been installed in the File Information Unit (Record Room) for use by employees in querying the Files Repository to determine the availability of file histories. Also, an additional PTO employee is assigned during peak operating hours to respond to public requests. These actions have resulted in shorter lines and quicker service.
- *Trademark File Histories* — The responsibility for retrieving and distributing trademark file histories has been centralized under the control of one organizational unit.
  The number of deliveries and pick-ups of trademark files to and from the Files Repository has been increased from two to five trips daily, resulting in a quicker file turnaround time.
  The distribution of these files is being strictly controlled to ensure the appropriate individual receives the requested file. In the prior procedures, files ordered were placed on a table where anyone could take any file they wanted.
  A system to allow requests for trademark files to be placed in the File Information Unit near the Patent Search Room, as well as in the Trademark Search Room has been implemented. This is an added convenience to those members of the public who conduct business in both the Patent Public Search Room and the Trademark Search Room.
  Bar code labels were placed on all active trademarks and records have been entered into the new automated TRAM system. Terminals available in the Trademark Search Library allow the user to query the system and instantaneously determine whether or not the trademark is active and available in the File Repository.

HELPFUL HINTS FROM THE PTO

- *Submission of Corrected Drawings in Allowed Patent Applications* — When drawings need to be corrected in an allowed application, the applicant is *required* to submit *acceptable* corrected drawings within a three-month shortened statutory period. Within that three-month period, two weeks should be allowed for review of the correction by the Office. If a correction is determined to be unacceptable by the Office, the applicant must arrange to have an acceptable correction re-submitted within the original three-month period to avoid the necessity of obtaining an extension of time and of paying the extension fee. Therefore, the applicant should file corrected drawings as soon as possible following the setting of the three-month shortened statutory period.
- *Requests for Allowed Patent Application Files* — Applicants or attorneys requesting files from the Publishing Division, Office of Publications, should make their request at least twenty-four hours in advance to ensure file availability. Attention is especially directed to out-of-town requesters who visit the Office, anticipating same day service. Although the Office is usually able to respond promptly, unexpected inconvenience can be avoided if arrangements are made in advance. Inquiries and requests should be directed to the Correspondence Section at (703) 557–6397 or (703) 557–6398 between the hours of 8:30 a.m. through 5:00 p.m. on weekdays.
- *PTO Special Boxes* — The special box numbers have been established to allow forwarding of particular types of mail to the appropriate areas as quickly as possible. Such mail is forwarded directly to the appropriate area without being opened. Therefore, if any documents other than the specified type identified for each box are addressed to that box, they will be delayed in reaching the appropriate area for which they were intended.
  We have been experiencing problems with Box 9 being used for other than coupon orders for copies of patents and trademark registrations.
  The following special boxes should be used only for their specified purpose.

Address to:
Box_____
Commissioner of Patents and Trademarks
Washington, D.C. 20231

Box 4 — Mail for the Office of Legislation and International Affairs.
Box 5 — "No fee" mail related to trademarks.
Box 7 — Reissue applications for patents involved in litigation and any subsequently filed papers for these applications.
Box 8 — All papers for the Office of the Solicitor.
Box 9 — Coupon orders for U.S. patent and trademark copies.
Box 10 — Orders for certified copies of patent and trademark applications.
Box 12 — Contributions to the Examiner Education Program.
Box Interference — Communications relating to Interferences and Applications and patents involved in Interference.
Box M. Fee — Correspondence related to a patent that is subject to the payment of a Maintenance Fee.
Box Pat. Ext. — Applications for patent term extension.
Box PCT — Mail related to applications filed under the Patent Cooperation Treaty.
Box Reexam — Mail related to reexamination applications.

Feb. 4, 1985.

THERESA A. BRELSFORD
Assistant Commissioner for Administration.

PATENT NOTICES

Certificates of Correction for the Week of Feb. 26, 1985

D. 273,786	4,433,265	4,459,128	4,467,224
D. 275,317	4,434,821	4,459,173	4,467,518
4,243,677	4,436,090	4,459,212	4,467,652
4,257,984	4,437,329	4,459,493	4,467,976
4,273,805	4,437,986	4,459,992	4,468,004
4,295,301	4,440,487	4,460,449	4,468,365
4,296,004	4,440,889	4,460,502	4,468,422
4,310,482	4,441,477	4,460,577	4,468,441
4,321,002	4,442,517	4,460,662	4,468,445
4,322,240	4,443,509	4,460,726	4,468,696
4,330,363	4,444,151	4,460,838	4,469,098
4,333,484	4,444,385	4,460,932	4,469,126
4,334,883	4,444,909	4,461,324	4,469,249
4,343,179	4,444,994	4,461,500	4,469,363
4,343,317	4,446,757	4,461,713	4,469,474
4,344,882	4,447,501	4,461,801	4,469,595
4,352,740	4,447,726	4,462,053	4,469,599
4,362,534	4,448,003	4,462,271	4,469,710
4,366,151	4,448,121	4,462,314	4,469,797
4,373,021	4,448,568	4,462,408	4,470,115
4,379,700	4,448,942	4,462,444	4,470,144
4,382,277	4,449,005	4,462,488	4,470,168
4,386,588	4,449,123	4,462,651	4,470,529
4,391,739	4,449,837	4,463,004	4,470,607
4,402,008	4,450,018	4,463,329	4,470,631
4,402,445	4,450,279	4,463,369	4,470,662
4,404,153	4,451,642	4,463,557	4,470,672
4,406,399	4,451,940	4,463,761	4,470,796
4,408,241	4,452,141	4,464,323	4,470,827
4,409,478	4,452,482	4,464,563	4,470,899
4,412,788	4,453,034	4,464,660	4,470,984
4,415,112	4,453,212	4,464,732	4,471,361
4,416,735	4,454,188	4,465,042	4,471,477
4,421,288	4,454,288	4,465,063	4,471,590
4,421,905	4,454,490	4,465,092	4,471,633
4,422,108	4,454,632	4,465,111	4,471,718
4,424,589	4,455,624	4,465,462	4,472,044
4,425,333	4,455,665	4,465,485	4,472,337
4,426,317	4,455,901	4,465,743	4,472,452
4,426,476	4,456,404	4,465,822	4,472,603
4,427,529	4,456,525	4,465,914	4,472,738
4,427,801	4,456,907	4,465,919	4,472,772
4,429,532	4,456,979	4,465,924	4,473,046
4,430,123	4,457,174	4,465,927	4,473,102
4,431,527	4,457,368	4,465,981	4,473,156
4,432,109	4,457,489	4,466,435	4,473,168
4,432,386	4,457,767	4,466,515	4,473,239
4,433,005	4,457,950	4,466,591	4,473,320
4,433,069	4,457,977	4,466,872	
4,433,154	4,458,939	4,466,873	
4,433,160	4,459,121	4,466,919	

Disclaimers

3,919,548.—*David E. Porter,* Burlingame, Calif. X-RAY ENERGY SPECTROMETER SYSTEM. Patent dated Nov. 11, 1975. Disclaimer filed Dec. 17, 1984, by the assignee, *Kevex Corp.*

Hereby enters this disclaimer to all claims of said patent.

4,373,459.—*William H. Dunn,* Frankford Township, Sussex County; *Stephen A. Garron,* Elizabeth; *Leonard I. Horey,* West Orange; *John W. Wurst,* Chester Township, Morris County, all of N.J. ELECTRONICALLY CONTROLLED SEWING MACHINE ARRANGED TO SEW A SEQUENCE OF STITCH PATTERNS. Patent dated Feb. 15, 1983. Disclaimer filed Dec. 10, 1984, by the assignee, *The Singer Co.*

Hereby enters this disclaimer to claims 1 and 2 of said patent.

4,456,690.—*Michael Cais* and *Moshe Shimoni,* Haifa, Israel. NON-CENTRIFUGATION METHOD FOR IMMUNOASSAY OF MATERIALS. Patent dated June 26, 1984. Disclaimer filed Sept. 4, 1984, by the assignee, *Technion Research and Development Foundation Ltd.*

The term of this patent subsequent to June 12, 2001 has been disclaimed.

4,485,031.—*Franciszek Olstowski,* Freeport, and *Richard D. Peffley,* Lake Jackson, Tex. COMPATIBLE MIXTURES OF AMINATED POLYETHER POLYOLS AND LOW MOLECULAR WEIGHT GLYCOLS. Patent dated Nov. 27, 1984. Disclaimer filed Dec. 10, 1984, by the assignee, *The Dow Chemical Co.*

The term of this patent subsequent to Nov. 27, 2001 has been disclaimed.

4,486,434.—*George S. Sach,* Welwyn, England. HISTAMINE H_1-ANTAGONISTS. Patent dated Dec. 4, 1984. Disclaimer filed Dec. 17, 1984, by the assignee, *Smith Kline & French Laboratories Ltd.*

The term of this patent subsequent to Apr. 24, 2001 has been disclaimed.

Disclaimer and Dedication

3,378,276.—*George M. Fulmer,* Silver Spring, Md. HYDRAULICALLY OPERATED DEMOUNTABLE RUNNING GEAR WITH DIAGONAL RAMS. Patent dated Apr. 16, 1968. Disclaimer and Dedication filed Jan. 26, 1983, by the assignee, *The Union Corp.*

Hereby disclaims and dedicates to the Public the term subsequent to Apr. 16, 1985.

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	Buffalo and Erie County Public Library	(716) 856-7525 Ext. 267
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North Carolina	Raleigh: D. H. Hill Library, N.C. State University	(919) 737-3280
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	Columbus: Ohio State University Libraries	(614) 422-6286
	Toledo/Lucas County Public Library	(419) 255-7055 Ext. 212
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	Pittsburgh: Carnegie Library of Pittsburgh	(412) 622-3138
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	Milwaukee Public Library	(414) 278-3043

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*Collection organized by subject matter.

PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner
JAMES E. DENNY, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF January 19, 1985

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL METALLURGICAL, INORGANIC, PETROLEUM AND ELECTRICAL CHEMISTRY, AND ENGINEERING, GROUP 110—D. E. TALBERT, Director	7-25-83
ORGANIC CHEMISTRY AND BIOTECHNOLOGY, GROUP 120—C. E. VAN HORN, Director	6-01-83
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 130—R. F. WHITE, Director	5-02-83
HIGH POLYMER CHEMISTRY, PLASTICS, COATING, PHOTOGRAPHY, STOCK MATERIALS AND COMPOSITIONS, GROUP 150—J. O. THOMAS, Director	1-24-83
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—B. R. GRAY, Director	8-01-81
SPECIAL LAWS ADMINISTRATION, GROUP 220—K. L. CAGE, Director	10-12-80
INFORMATION PROCESSING, STORAGE, AND RETRIEVAL, GROUP 230—E. LEVY, Director	1-12-81
RECEPTACLES, CLEANING, WINDING, AND MEASURING, GROUP 240—G. M. FORLENZA, Director	5-03-83
ELECTRONIC AND OPTICAL SYSTEMS AND DEVICES, GROUP 250—S. S. MATTHEWS, Director	10-01-80
COMMUNICATIONS, MEASURING, TESTING AND LAMP/DISCHARGE GROUP, GROUP 260—S. G. KUNIN, Director	2-13-80
DESIGN, GROUP 290—K. L. CAGE, Director	9-23-82
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—(Vacant)	4-17-83
MATERIAL SHAPING, ARTICLE MANUFACTURING AND TOOLS, GROUP 320—S. N. ZAHARNA, Director	3-19-83
MECHANICAL TECHNOLOGIES AND HUSBANDRY PERSONAL TREATMENT INFORMATION, GROUP 330—R. E. AEGERTER, Director	10-29-82
SOLAR, HEAT, POWER, AND FLUID ENGINEERING DEVICES, GROUP 340—D. J. STOCKING, Director	12-21-81
GENERAL CONSTRUCTIONS, PETROLEUM AND MINING ENGINEERING, GROUP 350—A. L. SMITH, Director	12-04-81

Expiration of patents: The patents within the range of numbers indicated below expire during January 1985, except those which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

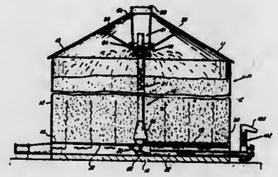
Patents ..... Numbers 3,360,800 to 3,366,969, inclusive
Plant Patents ..... Numbers 2,784 to 2,793 inclusive

REEXAMINATIONS

FEBRUARY 26, 1985

Matter enclosed in heavy brackets [ ] appears in the patent but forms no part of this reexamination specification; matter printed in italics indicates additions made by reexamination.

B1 3,765,547 (306th)
APPARATUS FOR CIRCULATING GRAIN STORED IN A CIRCULAR BIN
Charles C. Shivvers, Corydon, Iowa
Reexamination Request No. 90/000,367, Apr. 27, 1983.
Reexamination Certificate for Patent No. 3,765,547, issued Oct. 16, 1973, Ser. No. 79,654, Oct. 9, 1970.
Division of Ser. No. 638,257, May 15, 1967, Pat. No. 3,563,399.
Int. Cl.[3] B65G *65/46;* B01F *15/02*
U.S. Cl. 366—131



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1–4** is confirmed.

1. Apparatus for circulating a free-flowing grain for drying purposes within a circular storage bin having a ventilated bottom wall comprising:

a. a sweep auger unenclosed over the full length thereof adapted to swing horizontally on said bottom wall about a vertical axis located centrally of said bin,

b. an upright auger rotatable about said vertical axis having a grain receiving inlet at the lower end thereof and a grain outlet at the upper end thereof for returning the grain into the bin, and

c. coacting means on said sweep auger and upright auger for moving material from the inner end of said sweep auger into said grain receiving inlet,

d. said sweep auger having a flighting and shaft relatively formed over the axial length of the auger such that, as the sweep auger is horizontally rotated, any given axially extended section of the auger has the capacity to move inwardly of the auger all of the grain picked up by that portion of the auger projected outwardly from said axially extended section plus the grain picked up by the axially extended section, whereby to remove a horizontal layer of grain of uniform thickness from the floor of the bin during each revolution of horizontal rotation thereof.

B1 4,219,204 (307th)
ANTI-EXTRUSION SEALS AND PACKINGS
Frederick B. Pippert, Houston, Tex., assignor to Utex Industries, Inc., Houston, Tex.
Reexamination Request No. 90/000,322, Feb. 3, 1983.
Reexamination Certificate for Patent No. 4,219,204, issued Aug. 26, 1980, Ser. No. 965,033, Nov. 30, 1978.
Int. Cl.[3] F16J *15/22, 15/32*
U.S. Cl. 277—188 A

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

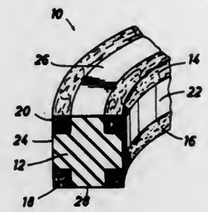
Claims **3, 11–13, 20, 28–30** and **44–46** are cancelled.

Claims **1, 18** and **35** are determined to be patentable as amended.

Claims **2, 4–10, 14–17, 19, 21–27, 31–34** and **36–43**, dependent on an amended claim, are determined to be patentable.

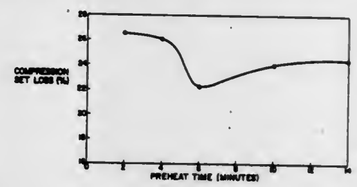
1. An anti-extrusion sealing device comprising:

a generally non-metallic body section, said body section having at least one sealing surface, and



an anti-extrusion section [contiguous] *bonded to* at least a portion of said body section, said anti-extrusion section serving to resist extrusion forces acting on said body section adjacent said anti-extrusion section, said anti-extrusion section being comprised of a knitted material *consisting of a continuous series of interlocking loops in tubular fashion, said knitted material being pre-formed into the desired volume and configuration prior to bonding to said body section*, at least some of the filaments of said knitted material being metallic in nature.

B1 4,305,796 (308th)
METHODS OF PREPARING POLYIMIDES AND ARTIFACTS COMPOSED THEREOF
John Gagliani; Raymond Lee, and Anthony L. Wilcoxson, all of San Diego, Calif., assignors to IML Corporation
Reexamination Request No. 90/000,589, Jul. 11, 1984.
Reexamination Certificate for Patent No. 4,305,796, issued Dec. 15, 1981, Ser. No. 186,629, Sep. 12, 1980.
Int. Cl.[3] C08G *18/14, 63/40*
U.S. Cl. 204—159.19



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims **1–24** and **29–37** are cancelled.

Claim **25** is determined to be patentable as amended.

Claims **26–28**, dependent on an amended claim, are determined to be patentable.

New claim **38** is added and determined to be patentable.

25. A method of preparing a polyimide with a cellular structure which comprises the steps of: forming a primary diamine, 3,3',4,4'-benzophenone-tetracarboxylic acid ester solution by dissolving one or more diamines and the aforesaid acid or an anhydride thereof in a lower alkyl alcohol; atomizing said solution; drying the droplets obtained by atomizing the diamine, ester solution with a heated gas *in a chamber, the outlet temperature of the chamber being limited to a maximum of 80° C.* to form a dry, particulate, nonpolymeric precursor; and exposing said precursor to microwave radiation having a frequency of at least 915 [mHz] *MHz* for periods of sufficient duration to develop a cellular physical structure and to at least partially develop a polyimide chemical structure.

B1 3,769,254 (309th)

HIGH STRENGTH PRESSURE-SENSITIVE ADHESIVES

Carl C. Anderson, Gibsonia; Rudolf Maska, and Suryya K. Das, both of Pittsburgh, all of Pa., assignors to National Starch and Chemical Corporation, New York, N.Y.

Reexamination Request No. 90/000,483, Dec. 15, 1983.
Reexamination Certificate for Patent No. 3,769,254, issued Sep. 4, 1973, Ser. No. 175,691, Aug. 27, 1971.
Continuation-in-part of Ser. No. 26,145, Apr. 6, 1970, abandoned.
Int. Cl.³ C08K *5/04, 5/07*
U.S. Cl. 524—398

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims 1-12, 25, and 27 is confirmed.

Claim 22 is cancelled.

Claims 13 and 23 are determined to be patentable as amended.

Claims 14-21, 24, 26 and 28, dependent on an amended claim, are determined to be patentable.

New claims 29-43 are added and determined to be patentable.

13. A pressure-sensitive adhesive composition which when dry forms a tacky adhesive of high cohesive strength, said composition comprising an adhesive polymer formed by the reaction of

(A) a normally tacky interpolymer of monomers consisting essentially of

(1) at least about 40 percent by weight of one or more alkyl acrylates having an average of from about 4 to about 10 carbon atoms in the alkyl groups,

(2) from about 0.2 to about 20 percent by weight of an acrylic monomer containing one or more COOH groups, and

(3) up to about 59.8 percent by weight of one or more copolymerizable monomers containing an ethylenically unsaturated linkage as the only reactive functional group, said copolymerizable monomers having no more than 25 carbon atoms in the molecule; and

(B) a *chelated* metal alkoxide having the formula $R_nT(OR_1)_z$ wherein T is a metal selected from the group consisting of Groups II, III, IV, and V of the Periodic Table, R is selected from the group consisting of alkyl radicals of from 1 to 8 carbon atoms and aryl radicals of from 6 to 16 carbon atoms, R_1 is selected from the group consisting of aliphatic and substituted aliphatic radicals containing from 1 to 18 carbon atoms, n is an integer whose value is 0 or greater and z is an integer whose value is at least 2 wherein the sum of n+z is greater than 1 and is equal to the valence of the metal represented by T.

B1 4,062,647 (310th)

CLAY-CONTAINING FABRIC SOFTENING DETERGENT COMPOSITIONS

Thomas D. Storm, Waterloo, Belgium, and Joseph P. Nirschl, Fairfield, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Reexamination Request No. 90/000,298, Nov. 26, 1982.
Reexamination Certificate for Patent No. 4,062,647, issued Dec. 13, 1977, Ser. No. 486,274, Jul. 8, 1974.
Continuation-in-part of Ser. No. 271,943, Jul. 14, 1972, abandoned.
Int. Cl.³ C09K *3/16;* C11D *3/12, 3/14;* D06M *11/06*
U.S. Cl. 8—137

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims 1, 4, and 8 are determined to be patentable as amended.

Claims 2, 3, 5-7, 9, and 10, dependent on an amended claim, are determined to be patentable.

New claim 11 is added and determined to be patentable.

1. A granular, built laundry detergent composition consisting essentially of:

(a) from about 5% to about 20% by weight of a water soluble non-soap synthetic detergent compound selected from the group consisting of anionic synthetic detergents, nonionic synthetic detergents, ampholytic synthetic detergents, [zwitterionics] *zwitterionic* synthetic detergents, and mixtures thereof;

(b) from about 10% to about 60% by weight of [an organic or inorganic] *a polyphosphate* detergent builder salt; and

(c) from about 1% to about [50%] 15% by weight of a smectite clay selected from the group consisting of sodium and calcium montmorillonites, sodium saponites, sodium hectorites, lithium and magnesium hectorites, lithium and magnesium saponites, and mixtures thereof, having a cation exchange capacity of at least about 60 meq/100 g.,

said composition providing a solution pH of from about 7 to about 12 when dissolved in water at a concentration of about 0.12% by weight.

REISSUES

FEBRUARY 26, 1985

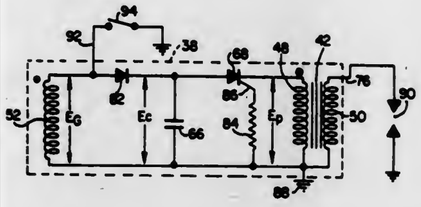
Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 31,837

SINGLE CORE CONDENSER DISCHARGE IGNITION SYSTEM

Bob O. Burson, East Longmeadow, Mass., assignor to R. E. Phelon Company, Inc., East Longmeadow, Mass.

Original No. 4,036,201, dated Jul. 19, 1977, Ser. No. 572,908, Apr. 29, 1975. Application for reissue Jun. 25, 1979, Ser. No. 51,983
Int. Cl.³ F02P *3/06, 3/08*
U.S. Cl. 123—601 **10 Claims**



1. A capacitor discharge system for an internal combustion engine comprising a permanent magnet means rotated about a circular path in synchronism with the operation of said engine, a core of ferromagnetic material mounted adjacent said circular path and having one portion providing a path for the varying flux generated by the movement of said magnet means past said core, a charging winding and a transformer core portion, said charging winding being offset from said primary and secondary windings radially with respect to said circular path; said charging winding and primary winding being wound on said one core portion such that the voltages induced therein by said varying flux each includes half wave voltages of opposite polarity, a charging circuit including a capacitor connected across said charging winding and a diode poled to pass half wave voltages of one polarity for charging said capacitor and maintaining said capacitor charged when the voltage generated in said charging winding is opposite said one polarity, circuit means connecting said capacitor with said primary winding for discharging said capacitor through said primary winding and including an electronic switch means having anode, cathode and control electrodes, the anodecathode junction of said switch means interconnecting the ends of said charging winding and said primary winding which are simultaneously at the same polarity, said control electrode being connected to the other end of said primary winding, the polarity of which is opposite said same polarity, said switch means being nonconductive during the charging of said capacitor by said one polarity of the voltage generated in said charging coil and being rendered conductive by voltage generated in the primary winding opposite said same polarity whereby said capacitor is charged during one complete half cycle of voltage generated in the charging coil and discharged during the next half wave voltage generated in said charging winding.

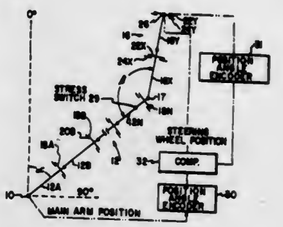
Re. 31,838

IRRIGATION APPARATUS

David Seckler, Fort Collins, Colo., and David Porat, Brookline, Mass., assignors to Valmont Industries, Inc., Valley, Nebr.

Original No. 3,802,627, dated Apr. 9, 1974, Ser. No. 306,545, Nov. 15, 1972. Application for reissue Sep. 19, 1980, Ser. No. 201,903
Int. Cl.³ A01G *25/09*
U.S. Cl. 239—177 R **39 Claims**

1. Irrigating apparatus for supplying water to a non-circular area, comprising a rotatable main arm assembly *mounted at one end to a fixed base pivot and rotatable thereabout* for supplying water to a first portion of said area, an extension arm assembly at the *other* end of said main arm assembly for supplying water to portions of said area outside of said first portion, *said extension arm assembly and main arm assembly each being supported on one or more support towers, with each assembly supporting a plurality of spaced irrigating sprinklers, said main arm assembly support towers having wheels and wheel driving means,* means for moving said extension arm assembly with respect to said main arm assembly, and control means for operating said moving means to move said extension arm assembly relative to said main arm assembly to irrigate said portions outside of said first portion as said main arm rotates.

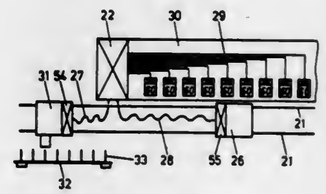


Re. 31,839

BOBBIN TRANSPORT APPARATUS AND METHOD

Heinz Schippers; Gerd Muennekehoff, both of Remscheid, and Udo Teich, Sprochhoevel, all of Fed. Rep. of Germany, assignors to Barmag Barmer Maschinenfabrik AG, Remscheid, Fed. Rep. of Germany

Original No. 4,351,494, dated Sep. 28, 1982, Ser. No. 191,349, Sep. 26, 1980. Application for reissue Sep. 28, 1983, Ser. No. 536,898
Claims priority, application Fed. Rep. of Germany, Sep. 29, 1979, 2939675; Nov. 14, 1979, 2945861
Int. Cl.³ B65H *54/26*
U.S. Cl. 242—35.5 A **29 Claims**



18. A movable quality control measuring apparatus in combination with a textile yarn processing machine having a plurality of yarn winding stations aligned along at least one side thereof and with the winding stations each having a bobbin mounting means, said apparatus comprising

a movable carriage adapted for movement to a position adjacent each winding station,

means mounted on said carriage for receiving and supporting a bobbin, and

measuring means mounted on said carriage for determining at least one quality control related physical characteristic of a support bobbin.

Re. 31,840

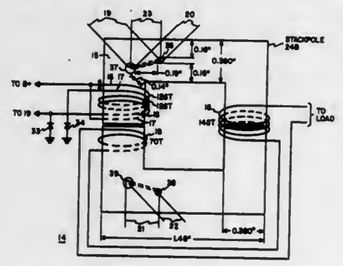
TRANSFORMER FOR USE IN A STATIC INVERTER

James E. Harris, Liverpool; Robert McFadyen, Syracuse; William Peil, North Syracuse, and Nicholas A. Schmidtz, Liverpool, all of N.Y., assignors to General Electric Co., Syracuse, N.Y.

Original No. 4,259,716, dated Mar. 31, 1981, Ser. No. 28,405, Apr. 9, 1979. Application for reissue Jul. 7, 1982, Ser. No. 396,171

Int. Cl.³ H01F *31/00*; H02M *1/08*

U.S. Cl. 363—97 **10 Claims**



10. In combination,

(1) a core of substantially linear magnetic material for main flux [persing] *persuing* a closed magnetic path, a pair of apertures in a localized region of the core, a first aperture being arranged before a second aperture along said magnetic path, said first aperture dividing the magnetic path into a first and second branch, and the second aperture dividing the magnetic path into a third and fourth branch, with a fifth branch being formed between said apertures, the first and fourth branches forming a first diagonal pair of branches and the second and third branches forming a second diagonal pair of branches,

(2) a primary winding encircling said magnetic core for generating a main flux in said closed magnetic path when an alternating voltage is applied thereto,

(3) a first control winding encircling said fifth branch for generating a circulating flux forming two counterrotating loops, one around each aperture, when an alternating current is supplied thereto, the flux in said two loops combining additively in said fifth branch,

[(4) means for energizing] said primary winding and said first control winding with alternating quantities having a *suitable* fixed relative phase [so that], *generating a combined flux in which* the flux in one of the loops combines *additively* with said main flux [additively] in each of said first diagonal pair of branches and subtractively in each of said second diagonal pair of branches, predisposing a branch in said first diagonal pair to saturate first as the energization increases, said energization being increased until saturation is approached, [and]

[(5)] (4) a second control winding encircling said fifth branch for deriving an electrical quantity whose sign reverses as a function of the magnetic state of said core, *and*

(5) a junction transistor switching device for applying alternating current to said primary winding and to said first control winding, said device exhibiting appreciable stored charge, and

(6) means coupling said second control winding across the input junction of said transistor for applying a current to said switching device in a sense aiding normal conduction in the absence of saturation, and in a sense inhibiting conduction when saturation occurs.

PLANT PATENTS

GRANTED FEBRUARY 26, 1985

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

5,407

MINIATURE ROSE PLANT—PUCKER UP

Cecilia L. D. Bennett, 489 Minot Ave., Chula Vista, Calif. 92010

Filed Aug. 22, 1983, Ser. No. 525,453

Int. Cl.³ A01H *5/00*

U.S. Cl. Plt.—10 **1 Claim**

1. A new and distinct variety of miniature rose plant named 'Pucker Up' of hardy, dwarf, moderate growth, attractive appearance, substantially as illustrated and described, characterized by its blooms of brilliant Orient Red with velvety petals, enhanced occasionally by an overlay of Chrysanthemum Crimson, easy to propagate form cuttings, with flowers borne usually one to a stem, but occasionally in sprays of 3 to 5 or more.

5,408

CHRYSANTHEMUM PLANT NAMED CHARDONNAY

William E. Duffett, Salinas, Calif., assignor to Yoder Brothers, Inc., Barberton, Ohio

Filed Jun. 16, 1983, Ser. No. 504,730

Int. Cl.³ A01H *5/00*

U.S. Cl. Plt.—74 **1 Claim**

1. A new and distinct plant of *Chrysanthemum morifolium*, Ramat., named Chardonnay, as described and illustrated, and particularly characterized as to uniqueness by the combined characteristics of flat capitulum form; daisy capitulum type; white ray floret color; diameter across face of capitulum ranging from 70 to 90 mm. at maturity; uniform nine week flowering response; tall plant height when grown single stem; 85 to 110 mm. peduncles on open, normally terminal sprays; slow development of light green discs; and 13° C. minimum temperature tolerance for initiation and development of flowering buds.

5,409

CHRYSANTHEMUM PLANT NAMED CHAMP

William E. Duffett, Salinas, Calif., assignor to Yoder Brothers, Inc., Barberton, Ohio

Filed Jun. 16, 1983, Ser. No. 505,085

Int. Cl.³ A01H *5/00*

U.S. Cl. Plt.—78 **1 Claim**

1. A new and distinct cultivar of *Chrysanthemum morifolium*, Ramat., named Champ as described and illustrated, and particularly characterized as to uniqueness by the combined characteristics of flat capitulum form; decorative capitulum type; golden yellow summer ray floret color; golden bronze winter ray floret color; diameter across face of capitulum ranging from 70 to 90 mm. at maturity; uniform nine week flowering response; medium plant height and spreading branching pattern that adapts equally well to pinched disbud or spray pot mum programs.

PATENTS

GRANTED FEB. 26, 1985

ERRATA

For CLASS	See PATENT NO.
051–083	4,501,110
384–619	4,501,454
502–167	4,501,685
514–017	4,501,733
514–198	4,501,734
514–046	4,501,735
514–167	4,501,737
514–167	4,501,738
514–203	4,501,739
514–283	4,501,740
514–202	4,501,741
514–226	4,501,742
514–201	4,501,743
514–245	4,501,744
514–222	4,501,745
514–357	4,501,746
514–342	4,501,747
514–318	4,501,748
514–326	4,501,749
514–369	4,501,750
514–374	4,501,751
514–414	4,501,752
514–447	4,501,753
514–456	4,501,754
514–456	4,501,755
514–120	4,501,756
514–267	4,501,890
548–484	4,501,923
328–026	4,502,013
361–332	4,502,132

PATENTS

GRANTED FEBRUARY 26, 1985

GENERAL AND MECHANICAL

4,501,023
NECK SUPPORT
Johnny B. Bilberry, 133 Holcomb Dr., Shreveport, La. 71103
Filed Sep. 8, 1981, Ser. No. 299,653
Int. Cl.³ A41D *13/00*
U.S. Cl. 2—2 **6 Claims**

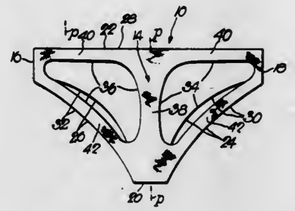


1. A neck support for use in cooperation with protective athletic equipment to protect an athlete from neck injury comprising:

(a) a generally elongated, yieldable collar shaped substantially into a circle around the athlete's neck, and collar laces extending from the ends of said collar for securing said ends together beneath the athlete's chin; and

(b) a pair of generally rectangular-shaped, relatively stiff, but yieldable front supports carried by said collar and extending downwardly from said collar beneath the athlete's chin and a plurality of apertures in spaced relationship in said front supports for securing said front supports to the protective athletic equipment.

4,501,024
BATHING TRUNKS
Peter J. Russo, 719 Nut Plains Rd., Guilford, Conn. 06437
Filed Dec. 5, 1983, Ser. No. 558,058
Int. Cl.³ A41D *5/00*
U.S. Cl. 2—67 **5 Claims**



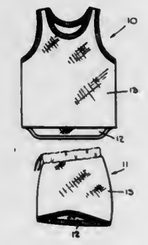
1. Bathing trunks having a median plane and superposed substantially triangular front and rear panels symmetrical about said plane and joined at the corners, with the adjacent sides of the panels between the joined corners being non-joined to form waist and leg openings, and said rear panel having two cut-outs symmetrical about said plane and leaving between them a first band-like panel part of a width to cover the cleavage between a wearer's buttocks, with said cut-outs exposing a wearer's buttocks.

4,501,025
COMPOSITE FABRIC FOR SPORTSWEAR
Lawrence Kuznetz, 66 Joyce Rd., Plainview, N.Y. 11803
Filed Jul. 28, 1983, Ser. No. 518,133
Int. Cl.³ H41D *27/08*
U.S. Cl. 2—243 A **7 Claims**

1. An article of sportswear fabricated of a composite fabric which when worn by an athlete undergoing strenuous physical activity, functions to regulate the factors causing perspiration and evaporative cooling in a manner conducive to optimum performance; said fabric comprising:

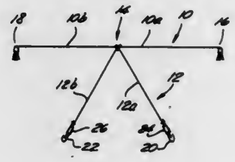
A a porous open weave hydrophobic inner fabric inner layer in contact with the skin of the wearer and formed on non-absorbing black-hued fibers which act to absorb infrared energy emitted by the wearer and to transmit perspiration away from the skin;

B a porous open weave hydrophilic outer fabric layer joined to the inner layer and exposed to the atmosphere to receive the transmitted perspiration from the inner layer, said outer layer being formed of absorbent fibers having good wicking properties which act to absorb the transmitted perspiration and to disperse it throughout the exposed surface of the outer layer to promote evaporative cooling at a controlled rate; and



C a metallic coating formed on the exposed surface of the outer layer to reflect ultraviolet radiation impinging thereon.

4,501,026
BELT-LIKE ORNAMENTAL MEMBER
Joseph T. Seneca, 401-Rte. 22 Regency Village, North Plainfield, N.J. 07060
Filed Aug. 15, 1983, Ser. No. 522,807
Int. Cl.³ A41C *19/22*
U.S. Cl. 2—308 **18 Claims**

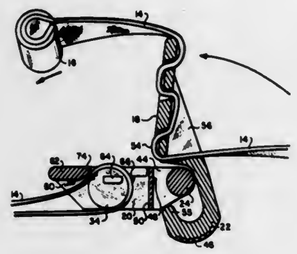


1. An ornamental member for use over a garment such as pants having a waistband and leg portions, the member comprising a first portion, a second portion, and means for connecting said second portion to said first portion, said first portion comprising first and second parts adapted to extend in opposite directions from the rear of the waistband to the front thereof to encircle the garment, said first and second parts being joined together, proximate the front of the waistband with the free ends thereof extending downwardly along the front of the garment, said second portion being adapted to extend downwardly along the rear of the garment from said connecting means, between the leg portions and upwardly along the front thereof, the second portion comprising third and fourth parts adapted to be connected at spaced locations proximate the front of the waistband at either side of the point where said first and second parts are joined.

4,501,027
QUICK RELEASE WEIGHT BELT AND BUCKLE THEREFOR

Mark S. Olsson, 4968 Diane Pl., San Diego, Calif. 92117

Filed Sep. 27, 1982, Ser. No. 423,630
Int. Cl.³ A41F 9/00
U.S. Cl. 2—321 20 Claims



1. A belt comprising:
a buckle having a male part and a female part;
the male part being formed of an elongate first body having a transversely extending hook formed at a forward end thereof and at least one transversely extending slot formed in the remaining portion of the first body;
the female part being formed of a second elongate body having a transversely extending post at a forward end thereof and a transversely extending cavity separating the post from the remaining portion of the second body, the hook, post and cavity being dimensioned and configured so that the hook can be inserted into the cavity to engage and surround the post when the first and second bodies extend at an angle relative to one another and so that the bodies can thereafter be rotated so that they are in substantial longitudinal alignment, the remaining portion of the second body having at least one transversely extending slot;
an elongate piece of webbing having a first end threaded through the slot in the first body and a second end threaded through the slot in the second body, the length of the webbing being sufficient so that the portion extending between the male and female parts of the buckle can encircle a person's waist when the hook is in engagement with the post and the first and second bodies are in longitudinal alignment; and
handle means attached to the first end of the webbing for permitting a person to pull the first end of the webbing to rotate the first body from substantial longitudinal alignment and engagement with the second body through a sufficient angle so that the bodies will disengage.

4,501,028
LIGHTWEIGHT REFLECTIVE BELT

George T. Gottschall, 2020 E. 22nd St., Fremont, Nebr. 68025

Filed May 25, 1983, Ser. No. 497,861
Int. Cl.³ A41F 3/02
U.S. Cl. 2—338 8 Claims

1. A lightweight reflective belt, comprising,
an elongated belt member having opposite ends and inner and outer layers of a thin supple material,
a center layer of a soft spongy material, and
means for securing said inner, outer and center layers together whereby said center layer imparts body to the layered belt member,
said means for securing said inner, outer and central layers together comprising multiple spaced-apart lengths of stitching for a quilted effect,
coacting fastener means on the opposite ends of the belt member and operative for length adjustably securing said opposite ends together,
said outer layer having a bright reflective surface over substantially the entire outer layer whereby, upon securement

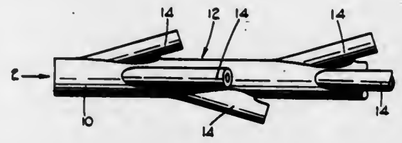


of the opposite ends so that the belt member loosely rests on a wearer's hips, the visibility of the wearer is increased.

4,501,029
TENDON REPAIR

Derek J. W. McMinn, 26 Chesterwood Rd., Kings Heath, Birmingham 13, England

Filed Apr. 13, 1983, Ser. No. 484,606
Claims priority, application United Kingdom, Apr. 22, 1982, 8211608
Int. Cl.³ A61F 1/24, 1/00; A61B 17/04
U.S. Cl. 3—1 7 Claims



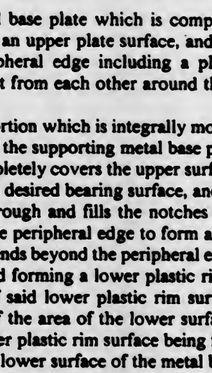
1. A device for assisting in repair of a severed tendon, comprising a main tube for insertion between a replacement tendon and its sheath, and a plurality of transversely extending passages which communicate with the bore of said main tube at intervals over substantially the whole length thereof, the lengths of said passages being at least equal to the minimum required lengths of blood vessels between the tendon and its sheath which will permit free movement of the tendon within the sheath.

4,501,030
METHOD OF LEAFLET ATTACHMENT FOR PROSTHETIC HEART VALVES

Ernest Lane, Huntington Beach, Calif., assignor to American Hospital Supply Corporation, Evanston, Ill.

Filed Aug. 17, 1981, Ser. No. 293,667
Int. Cl.³ A61F 1/00
U.S. Cl. 3—1.5 30 Claims

1. A prosthetic heart valve subject to a force when in use comprising:
means defining a plurality of valve leaflets;
means for mounting said valve leaflets for opening and closing movement and in a configuration suitable for a prosthetic heart valve; and
said mounting means including first means for attaching at least one of the valve leaflets to said mounting means and second means including first and second members responsive to the force on the valve when the valve is in use for clamping a region of said one valve leaflet between said first and second members to augment the attachment

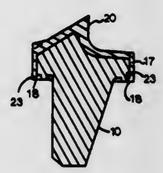


provided by said first means and reduce the stress on said first means.

4,501,031
METAL AND PLASTIC COMPOSITE TIBIAL COMPONENT FOR KNEE JOINT

John M. McDaniel, Warsaw, and Clayton R. Miller, Bremen, both of Ind., assignors to Zimmer, Inc., Warsaw, Ind.

Filed Jan. 22, 1981, Ser. No. 227,329
Int. Cl.³ A61F 1/03
U.S. Cl. 3—1.911 6 Claims

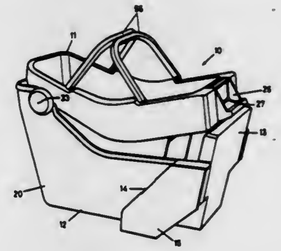


1. A load bearing tibial component of a knee prosthesis comprising:
(a) a supporting metal base plate which is comprised of a lower plate surface, an upper plate surface, and a peripheral edge, the peripheral edge including a plurality of notches spaced apart from each other around the peripheral edge, and;
(b) a plastic bearing portion which is integrally molded onto the upper surface of the supporting metal base plate, such that the plastic completely covers the upper surface of the metal base to form a desired bearing surface, and wherein the plastic flows through and fills the notches and completely surrounds the peripheral edge to form a thickness of plastic which extends beyond the peripheral edge of the metal base plate, and forming a lower plastic rim surface wherein the area of said lower plastic rim surface is no greater than 15% of the area of the lower surface of the metal base, said lower plastic rim surface being flush with the perimeter of the lower surface of the metal base plate, creating a metal/plastic seam, and wherein the area of the plastic rim is substantially less than the area of the lower metal plate surface, and wherein a secure mechanical interlock is created between the metal plate and plastic portion.

4,501,032
CHILD RESTRAINT BASSINET

Robert B. Heath, and Colin M. Nagel, both of Adelaide, Australia, assignors to Rainsfords Metal Products Pty. Ltd., Lonsdale, Australia

Filed Aug. 11, 1982, Ser. No. 407,043
Claims priority, application Australia, Aug. 20, 1981, PF0346
Int. Cl.³ A47D 7/04
U.S. Cl. 5—94 14 Claims



1. A bassinet assembly comprising two sub-assemblies, one incorporating a support base and the other incorporating a bassinet, and a hinge operatively coupling a forward end of the bassinet sub-assembly near its upper edge to a corresponding end of the support base for movement relative thereto,
one of said sub-assemblies comprising a trigger latch near its rear end, said trigger latch comprising a latch surface which abuts a complementary surface on the other said sub-assembly and thereby restrains the bassinet, but said trigger latch being of such weight that, upon being subjected to an acceleration force exceeding a threshold level being applied to the assembly in a rearward direction, the trigger latch moves to disengage from abutment with said complementary surface and allows downward and forward hinging movement of the bassinet sub-assembly with respect to the support base, said hinging movement being arrested by engagement of the surfaces of the bassinet against surfaces of the base,
one of said sub-assemblies also comprising a finger latch having a surface which releasably engages a surface of the other said sub-assembly and releasably retains the bassinet sub-assembly from upward and rearward movement with respect to the base sub-assembly.

4,501,033
BED FRAME HAVING SWIVEL BRACKET FOR HEADBOARD MOUNTING

Jason H. Kessel, and Henry Alperin, both of Sharon, Mass., assignors to West End and Hub Spring Company, Stoughton, Mass.

Filed May 23, 1983, Ser. No. 497,005
Int. Cl.³ A47C 19/00; F16C 11/00
U.S. Cl. 5—200 R 20 Claims

9. Apparatus providing a wide range of lateral adjustment for mounting a headboard to a bed frame, comprising:
first and second side rails for supporting a bed;
first and second plates each having at least one aperture for mounting a headboard;
first means for mounting said first plate to said first side rail for rotation in the plane of the first plate between a first position where said at least one aperture is to one side of said first side rail, and a second position, where said at least one aperture is to the other side of said first side rail; and
second means for mounting said second plate to said second side rail for rotation in the plane of the second plate between a first position, where said at least one aperture is to one side of said second side rail, and a second position,

where said at least one aperture is to the other side of said second side rail.

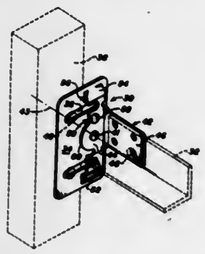
18. A bed frame operable to mount headboards of varying lateral dimensions, comprising:

a first side rail;

a first bracket having an arm and an apertured flange at a right angle thereto, said apertured flange is fastened to an end of said side rail, and said arm has first and second slots respectively intermediate a corresponding one of its ends and its center, and third and fourth slots respectively intermediate a corresponding one of its ends and a respective one of said first and said second slots;

a first plate having two elongated, spaced-apart apertures, an upstanding post, and confronting flanges each defining an arm-receiving slot;

means for rotatably mounting said first plate eccentrically to the arm of said first bracket for rotation in the plane of the first plate, said elongated slot extends in a first rotation position to one side of said first side rail, and extends in a second rotation position to the other side of said side rail, and wherein said post abuts said first slot in said first position, and abuts said second slot in said second position, and wherein the ends of said arm in both said first and said



second rotation positions is received and captured by corresponding ones of said arm-receiving slots;

a second side rail;

a second bracket having an arm and an apertured flange at a right angle thereto, said apertured flange is fastened to an end of said side rail, and said arm has first and second slots respectively intermediate a corresponding one of its ends and its center point, and third and fourth slots respectively intermediate a corresponding one of its ends, and a respective one of said first and second slots;

a second plate having two elongated apertures, an upstanding post, and confronting flanges, each defining an arm-receiving slot; and

means for rotatably mounting said second plate eccentrically to said second bracket for rotation in the plane of the second plate, said elongated slots extend in a first rotation position to one side of said second side rail, and extends in a second rotation position to the other side of said second side rail, and wherein said post abuts said first slot in said first position and abuts said second slot in said second position, with the ends of said arms being captured, and received in corresponding ones of said arm-receiving slots.

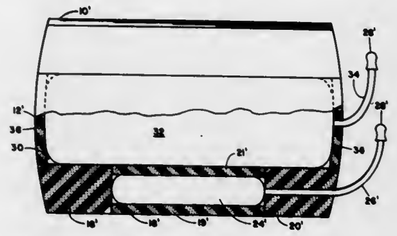
4,501,034

INFLATABLE PILLOW

Monte H. Greenawalt, 45 McClellan Blvd., Davenport, Iowa 52803

Filed Oct. 27, 1983, Ser. No. 546,248
Int. Cl.³ A47G 9/00
U.S. Cl. 5—441 **3 Claims**

1. A pillow of the class described, comprising first and second, elongated side-by-side elements substantially coextensive in length and adhered together to present a composite body having upper and lower surfaces, the first element upper surface being adapted to receive the neck of a reclining person and the upper surface of the second element being adapted to receive the head of such reclining person, said first element including first and second end-to-end sections, said first section being made up of relatively dense yieldable material of preselected firmness substantially throughout its length, said second section including a compartment therein exclusive of the first section, an air bladder contained within said compartment and selectively inflatable to vary the firmness of the upper surface of the second section relative to the firmness of the first section, said second element including a compartment with a



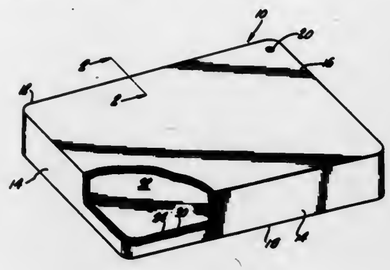
second air bladder being selectably inflatable to vary the firmness of the second element, and said second element being inflated as to possess, throughout its length, less firmness than the first section and less firmness than the second section when the bladder is inflated to a degree equal to or exceeding the firmness of the first section, said pillow including a third element flanking and adhered to the second element at the side thereof opposite to the first element, said third element being so constructed as to possess substantially the firmness of the first section of the first element.

4,501,035

SELF-SEALING WATERBED MATTRESS

Charles P. Hall, Muir Beach, and Joseph Philipson, Pasadena, both of Calif., assignors to Monterey Manufacturing Co., Carson, Calif.

Continuation of Ser. No. 134,628, Mar. 27, 1980, Pat. No. 4,382,305. This application Sep. 22, 1982, Ser. No. 421,369
The portion of the term of this patent subsequent to May 10, 2000, has been disclaimed.
Int. Cl.³ A47C 27/08
U.S. Cl. 5—451 **4 Claims**



1. A self-sealing waterbed mattress comprising a polymeric, flexible, puncturable envelope and a flexible internal liner separated from the envelope by a layer of viscous, water-resistant, sealing material for sealing leaks in the envelope, the sealing material at 110° F. not being capable of flowing through a puncture in the envelope and at 60° F. being capable of flowing into a puncture in the envelope and sealing the envelope against water leaks through the puncture, the layer of the sealing material being less than about 50 mils thick, wherein

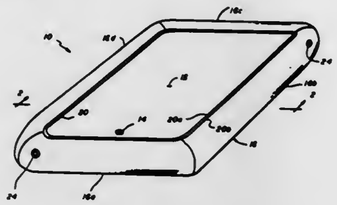
when water is in the mattress the water is within the internal liner.

4,501,036

FLOATATION SLEEP SYSTEM

Philip J. Santo, 12 Mountain Rd., Rochester, N.Y. 14625

Filed Dec. 15, 1982, Ser. No. 450,023
Int. Cl.³ A47C 27/10
U.S. Cl. 5—452 **7 Claims**



1. An improved floatation system, for supporting a human body, comprising:

a first chamber formed of flexible, dimensionally stable, fluid impervious material and adaptd to contain a fluid;

a second chamber formed of flexible, dimensionally stable, fluid impervious material and adapted to contain pressurized air, said second chamber surrounding the marginal perimeter of said first chamber for supporting such first chamber;

means, adjacent to said first chamber and extending through said second chamber, for dividing said second chamber into independent cells; and

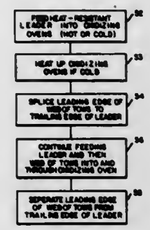
a plurality of valves, associated with said independent cells respectively, adapted to enable said cells to be independently pressurized.

4,501,037

METHOD FOR INTRODUCING HEAT-SENSITIVE MATERIAL INTO A HOT ENVIRONMENT

Khin M. Lay, Gardena; Stephen E. Palguta, Redondo Beach; Ramon B. Fernandez, Torrance, and Santiago C. Cabalquinto, Lawndale, all of Calif., assignors to Hitco, Newport Beach, Calif.

Filed Apr. 11, 1983, Ser. No. 483,922
Int. Cl.³ D06B 3/12, 23/04
U.S. Cl. 8—149.2 **11 Claims**



1. A method of introducing an elongated web of heat-sensitive material into an oven under tension in an arrangement in which the elongated web is generally continuously fed into and through a complex path within the oven comprising the steps of:

feeding a leader in the form of an elongated web of heat-resistant material through at least a substantial portion of the complex path within the oven so that a trailing edge thereof remains outside of the oven and a nominal amount of tension is established in the leader;

providing an elongated web of heat-sensitive material adjacent the oven, the web of heat-sensitive material having a leading edge;

splicing the trailing edge of the leader to the leading edge of the web of heat-sensitive material; and

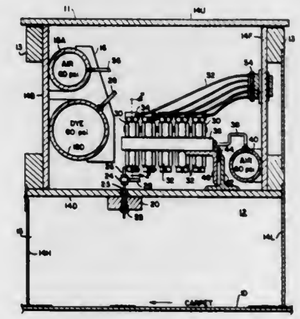
continuing to feed the leader and then the web of heat-sensitive material into and through the oven.

4,501,038

METHOD AND APPARATUS FOR SPRAY TREATING TEXTILE MATERIAL

Billy J. Otting, Lafayette, Ga., assignor to Otting International, Inc., Lafayette, Ga.

Filed Jun. 23, 1982, Ser. No. 391,468
Int. Cl.³ D06B 1/02
U.S. Cl. 8—151 **33 Claims**



1. A method of treating a continuously moving textile web comprising the steps of:

(a) conveying the web past at least one treating station,

(b) mixing gas and treating liquid in a plurality of separate mixing chambers disposed at said at least one treating station, and

(c) spraying the mixed gas and treating liquid onto the web through a plurality of spray nozzles, each spray nozzle communicating with a corresponding one of said mixing chambers.

14. Apparatus for treating a continuously moving textile web comprising:

(a) a plurality of gas valves,

(b) a plurality of liquid valves, each liquid valve corresponding on a one-to-one basis with one of said gas valves,

(c) a plurality of mixing chambers, each mixing chamber connected to a corresponding one of said gas valves and a corresponding one of said liquid valves for receiving gas and liquid respectively and for mixing gas and liquid,

(d) a plurality of spray nozzles for receiving mixed gas and liquid from a corresponding one of said mixing chambers and for spraying mixed gas and liquid towards said textile web, and

(e) control means for selectively controlling said gas valves and said liquid valves to control the pattern of spray out of said spray nozzles.

4,501,039

SHEET-DYEING METHOD AND APPARATUS

Eckhard Godau, Via Crespera 50, CH-6932 Breganzone, Switzerland

Division of Ser. No. 218,817, Dec. 22, 1980, Pat. No. 4,416,124. This application Jul. 15, 1983, Ser. No. 514,308
Claims priority, application Fed. Rep. of Germany, Dec. 12, 1979, 2951695; Dec. 4, 1980, 3045646; Dec. 4, 1980, 3045647
Int. Cl.³ D06B 23/00
U.S. Cl. 8—151.2 **1 Claim**

1. A method of dyeing a strand which comprises the steps of:

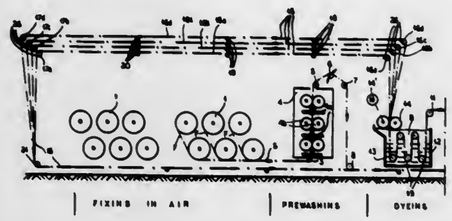
(a) passing said strand consisting of a plurality of parallel

filaments along a first linear horizontal path portion and then into a dyeing bath at the end of said first horizontal path portion;

(b) within said bath passing a multiplicity of lengths of said strand jointly back and forth in contact with said bath until said lengths jointly emerge from said bath in a planar array formed by plied strands;

(c) squeezing said planar array of plied strands upon its emergence from said bath between a pair of rollers;

(d) subjecting the lengths of said strand upon their emergence from said rollers to a separation from their common



plane and then guiding said separated lengths along parallel linear horizontal paths in vertically spaced relationship;

(e) combining the separated lengths of said strand at the ends of said paths in vertically spaced relationship again into a planar array and feeding the combined lengths of plied strand in a further planar array horizontally;

(f) joining the horizontally displaced combined lengths of the last mentioned array with the strand along said first horizontal path portion for passage therewith into said bath; and

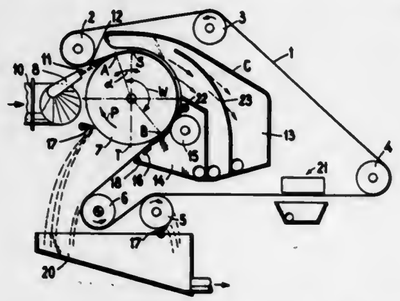
(g) treating the strand along the vertically spaced horizontal paths with a gas.

4,501,040

METHOD AND APPARATUS FOR WASHING STOCK SUSPENSIONS BY REMOVING UNDESIRED MATERIAL THROUGH AN ENDLESS WIRE

Mario Bioadetti, Schio, Italy, and Roland Baur, Weingarten, Switzerland, assignors to Escher Wyss GmbH, Ravensburg, Fed. Rep. of Germany

Continuation of Ser. No. 226,200, Jan. 19, 1981, abandoned. This application Aug. 5, 1982, Ser. No. 405,525
Claims priority, application Switzerland, Feb. 6, 1980, 931/80
Int. Cl.³ D21C *9/06*
U.S. Cl. 8—156 **13 Claims**



1. A method of washing a stock suspension for removing therefrom undesired materials, comprising the steps of:

inteeding a stock suspension from which undesired materials are to be removed between a rotatable solid cylinder and an endless revolving wire;

tensioning the wire against the surface of the rotatable solid cylinder throughout a major part of a web forming zone located between a run-on location and a run-off location of the wire at the solid cylinder;

exerting pressure on the stock suspension between the wire and the surfce or the rotatable solid cylinder by means of the tensioned wire in order to outwardly express through the wire undesired materials contained in the stock suspension while forming a fibrous web from the stock suspension between the wire and the surface of the rotatable solid cylinder;

employing a contact roll which contacts the wire and dewaters the fiber web while being formed between the wire and the solid cylinder in the web forming zone and following said contact roll there is produced a suction action, so that free water still located in the web and at the wire adheres to the surface of said counter roll;

immediately prior to said contact roll fiber material located between the wire and the solid cylinder is flushed with a water jet to loosen said fiber material;

outfeeding the web from between the solid cylinder and the wire at said run-off location of the wire from the solid cylinder; and

disintegrating the web formed from the stock suspension between the rotatable slid cylinder and the wire upon departure of the web from between the rotatable solid cylinder and the wire.

6. A wire machine for washing a stock suspension to remove therefrom undesired materials, comprising:

a rotatable solid cylinder;

an endless revoling wire band to which there is infed the material which is to be filtered in the form of a suspension in a liquid and constituting a stock suspension;

said wire band being trained about a portion of the circumference of the rotatable solid cylinder;

an infeed device for forming a flat jet of the stock suspension;

said wire band and rotatable solid cylinder coacting with one another such that there is formed between the rotatable solid cylinder and the wire band travelling onto the rotatable solid cylinder and substantially wedge-shaped intermediate space;

said flat jet being directed towards said wedge-shaped intermediate space;

means for tensioning said wire band against at least a major part of said circumferential portion of said rotatable solid cylinder about which there is trained said wire band to form between said wire band and said rotatable solid cylinder a web forming zone;

means for removing solid constituents of the stock suspension adhering to the rotatable solid cylinder and the wire band and for disintegrating any web formed from the stock suspension between the rotatable solid cylinder and the wire band in said web forming zone;

a catch container operatively associated with said rotatable solid cylinder;

said catch container being provided with at least two chambers which are repsectively operatively associated with different portions of an angle of wrap of the wire band at the rotatable solid clinder;

said catch container is provided with a perforated partition wall which is previous to water and dividing said catch container into said at least two chambers;

said perforated partition wall being dimensioned so as to separate solid materials from water; and

separate discharge means located to each side of said perforated partition wall.

4,501,041

PROCESS OF FORMING FRICTION

Richard B. Wallace, Bloomfield Hills, Mich., assignor to The Oakland Corporation, Troy, Mich.

Filed May 31, 1983, Ser. No. 499,260
Int. Cl.³ B21D *53/24*; B21K *1/64*
U.S. Cl. 10—86 A **9 Claims**



1. The method of making friction nuts which have their internal thread groove convolutions substantially filled from end to end except for substantially less than a full convolution at at least one end thereof which comprises substantially filling the thread groove convolutions in the nuts from end to end with fluid slurry consisting of thermoplastic resin particles and a liquid carrier while leaving the opening through the nut radially inwardly of the thread crests substantially clear, drying the slurry to leave within the thread grooves a form-sustaining deposit consisting of a coherent mass of resin particles, threadedly engaging a tool having a threaded end conforming substantially to the end of the mating member with which the nut is to be used with each nut, thereafter effecting a controlled relative rotation and advance between the nut and tool of equivalent to substantially less than a full turn of threaded engagement to displace friction material from the end of the thread groove convolution in the nut to shape the deposit to provide for substantially free initial engagement between the nuts and their mating part.

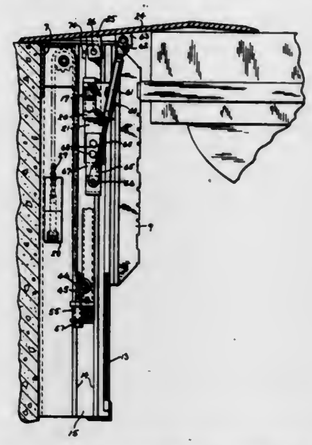
4,501,042

FRONT-OF-DOCK DOCKBOARD

Mark A. DiFonzo, Brookfield, Wis., assignor to Kelley Company, Milwaukee, Wis.

Continuation-in-part of Ser. No. 110,124, Jan. 7, 1980, abandoned. This application Oct. 13, 1981, Ser. No. 310,499
Int. Cl.³ B65G *69/28*
U.S. Cl. 14—71.3 **12 Claims**

1. A dockboard to be mounted on a loading dock having an upper surface and a front wall, comprising a generally rectangular frame disposed adjacent the front wall of the dock, guide means for mounting the frame for vertical movement relative to the dock, a pair of elongated tubular guideways disposed on said frame adjacent the sides thereof, a guide bar mounted for sliding vertical movement within each guideway, and a deck plate pivotally connected to the upper ends of the guide bars, said deck plate being liftable vertically from a first vertical lower storage position in which the deck plate is disposed generally vertically along the front wall of the dock to a second higher vertical position where at the lower end of the deck plate is above a bed of a carrier disposed adjacent the front wall of the dock so that the deck plate can be pivoted about said guide bars to a generally horizontal position and lowered to a cross traffic position to span the distance between the dock and the bed of said carrier with the rear end of the deck plate supported on the dock and thr forward end of the deck plate supported on the carrier, the forward end of the deck plate being biased downwardly so that the deck plate will assume a generally vertical position when the carrier is removed from its location adjacent the front wall of the dock and said deck plate will descend by gravity to said storage position, the sliding



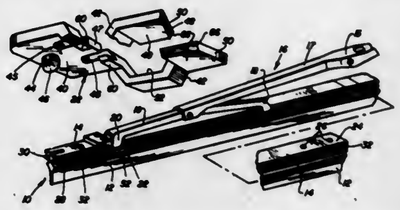
connection of the guide bars to said frame permitting the deck plate to tilt as a load passs over the deck plate when in the cross traffic position.

4,501,043

RETAINER CLIP FOR WINDSHIELD WIPER BLADE ASSEMBLIES

John J. Plisky, Munster, Ind., assignor to The Anderson Company of Indiana, Michigan City, Ind.

Filed Nov. 22, 1983, Ser. No. 554,249
Int. Cl.³ B60S *1/02*
U.S. Cl. 15—250.42 **10 Claims**



1. In a windshield wiper structure including an elongated squeegee, an elongated flexor mounting said squeegee and having a top surface opposite said squeegee and opposed side surfaces, said top surface including a plurality of apertures and said side surfaces each including at least one longitudinal groove, a claw retaining clip comprising a relatively rigid base having a locking post extending from one side thereof for entry into a selected one of said apertures, a pair of relatively resilient spaced fingers extending in generally parallel relation from said base and each terminating in hook-like elements directed toward the other one of said fingers and displaced from the plane of said base and spaced from each other such that when said base is in substantial abutment with said top surface, said hook-like elements will be received in a corresponding one of said grooves in the adjacent one of said side surfaces, the ends of said fingers remote from said base each having a cam surface, which when engaged by a claw, will allow the claw to cam said fingers and said hook-like elements apart as the claw moves toward said base, each of said fingers having a claw receiving recess intermediate its ends, opposed walls of each said recess being configured to capture a claw and restrain movement of the claw toward or away from said base in the

direction of elongation of said squeegee and said flexor, and two facing projections, one on each finger intermediate its ends and displaced from the plane of said base so as to enter the groove on the adjacent side surface, said recesses being located between the projection and the hook-like element on the associated finger.

4,501,044

APPARATUS FOR CLEANING COMPONENTS USED IN ELECTROLYTIC SMELTING

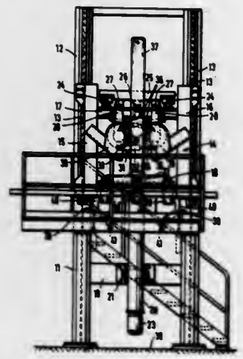
Hans-Horst Schulze, Lünen; Heribert Loweg, Werne, and Karl-Heinz Schneider, Lünen, all of Fed. Rep. of Germany, assignors to Gewerkschaft Eisenhutte Westfalia, Lunen, Fed. Rep. of Germany

Filed Dec. 20, 1983, Ser. No. 563,485

Claims priority, application Fed. Rep. of Germany, Dec. 22, 1982, 3247368

Int. Cl.³ B08B *1/04*; A46B *13/02*

U.S. Cl. 15—312 R **14 Claims**



1. In an apparatus for cleaning components usable in electrodes for electrolytic smelting; said apparatus including a pair of rotatable cleaning brushes mounted in cowls from which air can be extracted to withdraw material removed from a component during cleaning and means for adjustably moving the brushes in relation to a component to be cleaned to bring the brushes into contact with opposed surfaces of the component; the improvement comprising the cowls being displaceable in relation to the associated cleaning brushes and means is provided for subjecting the cowls to displacement force to urge the cowls towards the opposed surfaces independently of the brushes.

4,501,045

SELF-LOCKING HINGE

Jack C. Boyer, Cedar Falls, Iowa, assignor to Deere & Company, Moline, Ill.

Filed May 5, 1983, Ser. No. 491,693

Int. Cl.³ E05D *11/10*

U.S. Cl. 16—331 **2 Claims**

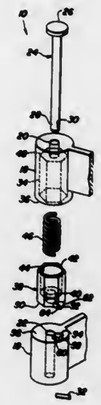
1. A self-locking hinge comprising:

(a) a first cylindrical hinge member having a multi-sided socket formed therein and an axial bore formed therethrough;

(b) a second cylindrical hinge member equal in diameter to said first hinge member having an axial bore formed therethrough and having a notch formed in an end thereof which extends radially from said bore, the outer end surface of said notch being spaced apart from the outer periphery of said second hinge member;

(c) a detent having an exterior surface sized and shaped to engage with the interior surface of said socket in a plurality of angular positions of said detent and which contains an axial bore formed therethrough, said detent having a tooth formed on an end thereof which is designed to engage with said notch, said tooth and notch being shaped to permit rotation of said first hinge member relative to said second hinge member in one direction while preventing relative rotation in an opposite direction, the extent of rotation being contingent on the angular displacement of said tooth from said notch as determined by the angular position at which said detent is inserted into said socket, said detent further having an enlarged bore formed in an end thereof which is opposite to said end which contains said tooth;

(d) a spring positioned in said enlarged bore formed in said detent and extending outward therefrom for biasing said



detent towards said second hinge member to facilitate engagement of said tooth into said notch upon rotation of said first hinge member relative to said second hinge member;

(e) a pivot pin extending through said axial bore formed in said first and second hinge members and said detent for pivotally joining said members together, said pivot pin having an enlarged first end which contacts an upper surface of said first hinge member and a second end which extends beyond a bottom surface of said second hinge member; and

(f) means cooperating with said second end of said pivot pin for axially retaining said detent and said second hinge members in abutting contact.

4,501,046

METHOD AND APPARATUS FOR PRODUCING SYNTHETIC MULTIFILAMENT YARN

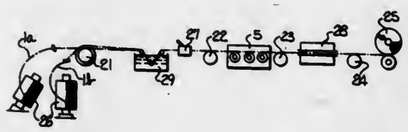
Eberhard Krenzer, Ennepetal-Rüggeberg, Fed. Rep. of Germany, assignor to Barmag Barmer Maschinenfabrik AG, Remscheid, Fed. Rep. of Germany

Filed Mar. 31, 1982, Ser. No. 363,846

Claims priority, application Fed. Rep. of Germany, Apr. 1, 1981, 3113017; Apr. 24, 1981, 3116304; Jul. 4, 1981, 3126519; Oct. 17, 1981, 3141343

Int. Cl.³ D01G *1/08*

U.S. Cl. 19—0.35 **38 Claims**



1. A method of producing a synthetic yarn having certain physical characteristics, such as appearance, bulk, and hand,

which are normally associated with those of conventional yarn formed of staple fibers, and comprising the steps of

advancing a continuous multifilament yarn having loops, coils, bows and the like formed in the filaments thereof along a path of travel, while

enlarging at least some of the loops, coils, bows and the like in the advancing yarn by guiding the advancing yarn onto and around at least one rotating roller such that the portion of the yarn running onto the roller contacts the portion of the yarn leaving the roller and clampingly engages the projecting loops, coils, bows and the like of the leaving yarn portion.

4,501,047

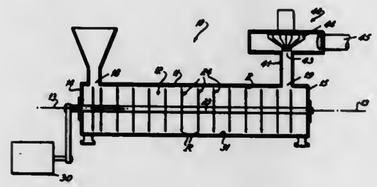
METHOD AND APPARATUS FOR SEPARATING FIBERS

William H. Wrassman, 5710 Shadyhollow Ln., Cincinnati, Ohio 45230

Filed Jan. 13, 1983, Ser. No. 457,769

Int. Cl.³ D01G *9/04*, *13/00*

U.S. Cl. 19—85 **15 Claims**



12. Apparatus for separating fibers of fibrous agglomerates such as asbestos, aramid polymers, carbon fibers, Mylar fibers, and nylon fibers, comprising,

a housing presenting a cylindrical processing chamber,

a shaft rotatable in said chamber, the shaft having a series of radial blades mounted to it along its length, the blades presenting picklike pointed tips, the chamber presenting a narrow annular space outwardly of the tips,

means for rotating the shaft to provide a blade tip speed of at least 5000 feet per minute,

an inlet adjacent one end of said chamber,

an outlet adjacent a second end of said chamber, and

means providing an airstream from said inlet to said outlet through the chamber, the air stream being of sufficient velocity to carry fibers but not agglomerates to said outlet.

4,501,048

METHOD AND APPARATUS FOR FORMING A SLIVER

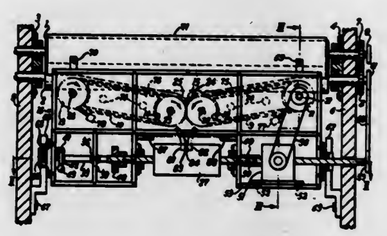
John M. Varga, Halifax, England, assignor to Carding Specialists (Canada) Ltd., Toronto, Canada

Filed Sep. 23, 1982, Ser. No. 422,095

Claims priority, application United Kingdom, Sep. 24, 1981, 8128884

Int. Cl.³ D01G *15/46*; D01H *5/72*

U.S. Cl. 19—106 R **24 Claims**



1. A method for forming a sliver from a web of fibres leaving the upper part of a horizontally extending delivery roller of a cotton type carding engine, the method comprising delivering the web downwardly from the upper part of the delivery roller into proximity with a surface of power driven selvedge support means, moving the surface of the selvedge support means at a level wholly below the uppermost part of the delivery roller in a direction that is generally longitudinal of the delivery roller and into a sliver-forming nip, delivering the downwardly-travelling web into the nip, applying tension to the web between the delivery roller and the nip, and delivering the sliver from the nip.

4,501,049

DISPOSABLE ONE-PIECE SECURITY SEALING DEVICE

Donald Adamson, Warlingham, England, assignor to Envopak Limited, Kent, England

Continuation of Ser. No. 411,217, Aug. 25, 1982, Pat. No. 4,470,173. This application Jul. 12, 1984, Ser. No. 630,162

Claims priority, application United Kingdom, Aug. 27, 1981, 8126121; Apr. 20, 1982, 8211382

Int. Cl.³ B65D *77/10*, *33/34*

U.S. Cl. 24—30.5 P **5 Claims**



1. A disposable one-piece security sealing device for enclosing an article which includes a strap of flexible material having an enclosure at one end thereof with a passage formed therein for engaging the other end of said strap whereby said other end of said strap is irremovably insertable to an adjustable extent comprising a tab formed as an extension of said strap around and beyond said enclosure, and a line of weakness which extends around said enclosure and terminates in a side edge of said strap whereby tearing along said line of weakness the end of the strap having said tab is separated from said enclosure.

4,501,050

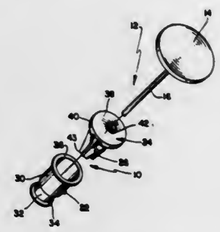
CLUTCH FOR POST EARRINGS

Marcos Fountoulakis, 24 Freemont St., Providence, R.I. 02906

Filed Oct. 20, 1983, Ser. No. 543,625

Int. Cl.³ A44B *9/00*

U.S. Cl. 24—155 R **4 Claims**



1. A clutch for post earrings and the like comprising:

a. a housing which is open at one end thereof and has an aperture through the opposite end thereof, said housing

having a generally outwardly extending peripheral flange at the open end thereof;

b. a cap member made of a sheet metal and received on the open end of said housing, said cap member comprising a substantially circular main portion having a substantially centrally disposed aperture therethrough and a generally inwardly extending peripheral flange having a pair of notches therein, said notches being disposed in substantially opposite portions of said cap member flange, said housing flange being captured betwen said cap member main portion and said cap member flange to secure said cap member to said housing; and

c. a pair of resilient leaves made of said sheet metal which extend integrally inwardly from said cap member main portion at said notches, said leaves converging with respect to each other and substantially meeting in face-to-face relation for receiving a post therebetween, said post being receivable in said clutch so that it extends through said cap member and housing apertures and is received in frictional engagement between said leaves.

4,501,051

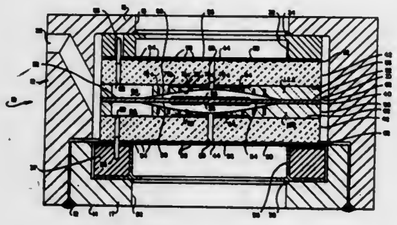
HIGH ACCURACY DIFFERENTIAL PRESSURE CAPACITIVE TRANSDUCER AND METHODS FOR MAKING SAME

Robert L. Bell, Chatsworth, and Richard A. Lathlaen, Thousand Oaks, both of Calif., assignors to Combustion Engineering, Inc., Windsor, Conn.

Division of Ser. No. 262,545, May 11, 1981, Pat. No. 4,458,537. This application Mar. 29, 1984, Ser. No. 594,505

Int. Cl.³ G01L *9/12*

U.S. Cl. 29—25.41 **11 Claims**



2. In a method of making a differential pressure capacitance transducer of the type having a sensing diaphragm sandwiched between a pair of insulating reference plates, the steps of:

forming a planar surface on each reference plate;

depositing an electrode on the planar surface of each plate;

providing a thick film printing screen;

forming a series of concentric rings on one surface of the screen, each ring having a uniform height above the surface of the screen, the heights of the various rings varying in accordance with a predetermined contour;

forming a peripheral mask on the surface of the screen, the mask having a circular opening concentric with the rings and larger than the outermost ring, the height of the mask being the same as the height of the outermost ring;

placing the assembly comprising the screen, rings and peripheral masks over the planar surface of the reference plate with the outer edges of the rings facing the surface;

forcing a liquid glass composition through the screen from the other surface thereof while pressing the screen toward the planar surface so that the outer edges of all the rings engage the planar surface;

removing the screen;

drying the glass composition;

firing the reference plates to fuse and bond the glass layers;

sandwiching the sensing diaphragm between the reference plates with portions of the glass layers surrounding the contoured portions thereof in contact with the sensing diaphragm; and

firing the assembly to fuse and bond the plates and sensing diaphragm.

4,501,052

METHOD OF MANUFACTURING CANTILEVERED COMPOSITE STRUCTURE

Max Mengeringhausen, Steinachstr. 5, 8700 Würzburg, Fed. Rep. of Germany

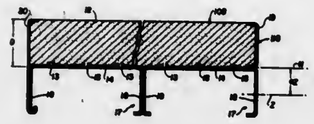
Filed Nov. 29, 1982, Ser. No. 445,107

Claims priority, application Fed. Rep. of Germany, Nov. 27, 1981, 8134667

Int. Cl.³ B23P *17/00*

U.S. Cl. 29—155 R **2 Claims**





2. Process for the continuous manufacture of troughs of a material with high tensile strength and high elasticity modulus as outside reinforcement for cantilevered composite structure plates with a filler material of low tensile strength and low elasticity modulus, and also with sliding armatures in the trough floor in the form of holes which have funnel-shaped edges projecting over the inside of the trough, characterized by the following steps:

(a) continuously roll deforming a trough-shaped profile having a floor and side shanks on an elongated rolled-out strip material;

(b) continuously impressing holes with funnel-shaped edges projecting over the future inside of the trough, during the longitudinal movement of the trough-shaped profile, at least in its floor;

(c) with continuous longitudinal movement of the trough-shaped profile, gluing a matallic foil, drawn from a roll, on the future outside of the trough to close the holes therein;

(d) with continuous longitudinal movement of the profile, separating from the trough-shaped profile trough-shaped pieces of the lengths of the desired composite structure plate;

(e) forming a trough floor from one or a plurality of lengths the trough-shaped profile pieces having outwardly extending flex-resistant ribs of the composite structure plate, wherein when said trough floor is formed from a plurality of trough-shaped profile pieces, said pieces are connected compactly with each other on their shanks which project downward, engaging on each other, e.g. by rolled seam or point welding, screwing or riveting; and,

(f) connecting the one or plurality of pieces trough floor by rolled seam or point welding, screwing or riveting with a frame forming the side walls of the trough.

4,501,053

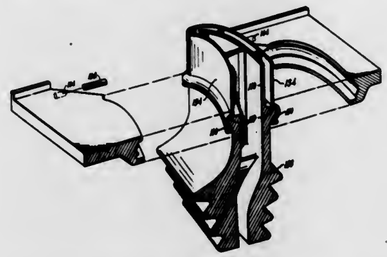
METHOD OF MAKING ROTOR BLADE FOR A ROTARY MACHINE

Harold M. Craig, and Ernest Feder, both of West Hartford, Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Jun. 14, 1982, Ser. No. 388,349

Int. Cl.³ B21K *3/04*; B23P *15/02, 15/04*

U.S. Cl. 29—156.8 R **15 Claims**



1. A method for making a coolable rotor blade for an axial flow rotary machine which has a spanwisely extending spar having a root section having cooling air passages extending therethrough and an airfoil section and which has a shell for defining the airfoil surface of the rotor blade, which includes the steps of:

forming a spanwisely extending spar with a projection on the spar which extends chordwisely about the spar;

joining the shell to the airfoil section of the spar and to the projection on the spar such that the shell extends telescopically over and against a portion of the projection on the spar; and

forming a platform about the spar and the shell such that the platform extends over the projection on the spar and over and against the portion of the shell extending over the projection on the spar to trap the shell between the platform and the projection on the spar.

4,501,054

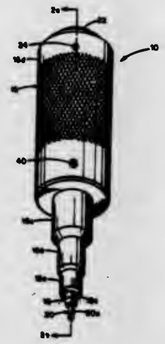
HAND TOOL FOR INSTALLING COMPRESSION RINGS ON RADIAL POSITIONING DEVICES

Thomas A. Morgan, Billerica, Mass., assignor to Honeywell Information Systems Inc., Waltham, Mass.

Filed Sep. 29, 1983, Ser. No. 537,304

Int. Cl.³ B23D *19/02*

U.S. Cl. 29—235 **30 Claims**



1. A hand tool for installing compression rings on radial positioning devices, said tool comprising:

a pair of reciprocable coaxial cylindrical shaped elements, a first outer element having a front section and a second inner element having a plurality of sections, a first section having a shaft section which extends beyond a cam shaped front section positionable within said rings and a second section having a tapered portion; and,

a hollow handle member having a longitudinal cylindrical cavity with an opening at one end, said reciprocable coaxial elements being slidably mounted in said cavity so that both front sections extend through said opening and the other end of said elements being independently spring biased, said handle member further including mode control means located transverse to said longitudinal cavity and including a portion of said first reciprocable element, said shaft section when depressed into said handle member preconditioning said mode control means for locking of said first element onto said handle member enabling said rings positioned by said shaft section to be installed onto said front section and said mode control means in the absence of said preconditioning, locking said first and second reciprocable elements together for ejecting said rings onto said devices when said cam shaped section is depressed into said handle member.

4,501,055

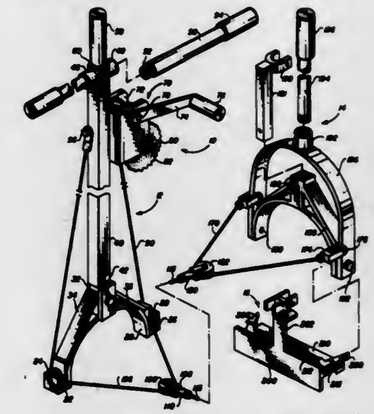
TOOL FOR COUPLING PIPE SECTIONS

Leroy George, 7915 West Orangewood, Glendale, Ariz. 85303

Filed Dec. 29, 1983, Ser. No. 566,780

Int. Cl.³ B23P *19/04*

U.S. Cl. 29—237 **6 Claims**



1. An apparatus for moving the end of a second pipe section into sealing engagement with the collar of a first pipe section having an annular seal therein, said apparatus comprising:

(a) a first pipe engaging member including:

(i) a collar adapted to complimentarily engage at least a portion of the outer diameter of said first section in a position in abutment with the associated hub; and

(ii) winch means carried on said first pipe engaging member;

(iii) cable means having a first end connected at said winch;

(b) a second pipe engaging member including:

(i) a collar adapted to complimentarily engage at least a portion of the outer diameter of said second pipe section;

(ii) a yoke pivotally attached to said collar at first pivot locations; and

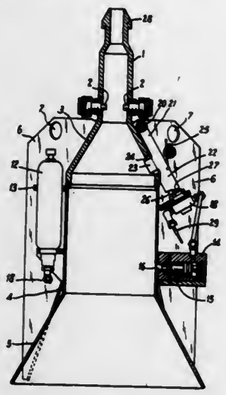
(iii) said cable having a second end secured to said yoke at pivot locations offset from said pivot locations whereby actuation of said winch will exert a joining force between said first and second pipe engaging members.

4,501,056

TOOL FOR DISCONNECTING A GUIDELINE CONNECTOR AND A PROCESS FOR USING SAME

Yvon Castel, and Michel Iato, both of Pau, France, assignors to Societe Nationale Elf Aquitaine (Production), France

Filed Apr. 20, 1983, Ser. No. 486,743
Claims priority, application France, Apr. 26, 1982, 82 07122
Int. Cl.³ B23P *19/04*
U.S. Cl. 29—252 **7 Claims**



1. A tool for disconnecting a guideline connector on a guide column of an underwater station, said connector being locked in a sleeve forming an extension of the guide column by retractable locking heads housed in diametrically opposite positions, inside a bore in the body of the connector and penetrating inside corresponding apertures formed in the body of the sleeve, said connector having helical ramps; said tool including two diametrically opposite disconnect fingers having inner ends to exert a thrust on the locking heads so as to cause said heads to retract inside the bore of the connector body characterized in that:

said tool comprises a re-entry cone having an upper cylindrical part (1) adapted to cap the top of the connector;

said tool including swivel pins (2) cooperating with said ramps to angularly position the re-entry cone with respect to said locking heads,

said cone including a truncated cone-shaped part (3) below said upper cylindrical part (1), a wider cylindrical part (4) below said cone shaped part (3) for housing the connector body, and a lower upturned funnel portion (5);

oppositely disposed hydraulic cylinders (14 and 14*a*) mounted on said cylindrical part (4) exteriorly of said cone; and

control means exteriorly of said cone including valve means (18) for actuating said hydraulic cylinders (14 and 14*a*);

said control means including an inwardly directed contact element (23) projecting through and inwardly of the inner surface of the truncated part (3) and responsive to the pressure exerted by the connector body to actuate valve means (18) when the re-entry cone rests with its weight on the guideline connector for activating said hydraulic cylinders (14 and 14*a*) to cause retraction of said locking heads.

4,501,057

CARPENTER'S LEVEL HOLDING DEVICE AND METHOD FOR PLUMBING A WALL PARTITION

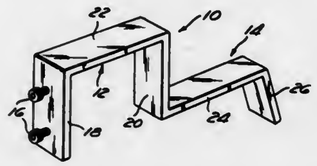
Louis M. Palomera, 4091 Manzanita, Irvine, Calif. 92714

Filed May 27, 1983, Ser. No. 498,940
Int. Cl.³ B23P *19/04*; G01C *9/00*
U.S. Cl. 29—407 **8 Claims**

1. A method to plumb and secure a wall partition comprising:

securing a carpenter's level in a bracket having a first portion sized to mount said level and a second portion extending in a direction perpendicular to said first portion adapted to attach said bracket to the wall partition;

placing said second portion of said bracket in a generally contiguous orientation to the header of said wall partition



to self-maintain said level upon the wall partition in a plane parallel to the vertical plane of the wall partition;

adjusting the vertical position of the wall partition by use of the site of said carpenter's level; and

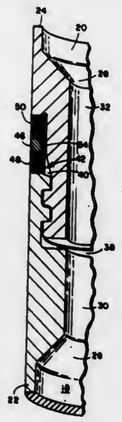
anchoring said wall partition in said adjusted position.

4,501,058

METHOD OF PRE-STRESSING A STRUCTURAL MEMBER

Jerome C. Schutzler, Orange County, Calif., assignor to PDA Engineering, Santa Ana, Calif.

Continuation-in-part of Ser. No. 70,167, Aug. 27, 1979, Pat. No. 4,294,559. This application Sep. 24, 1981, Ser. No. 305,135
Int. Cl.³ B23P *11/02*
U.S. Cl. 29—446 **4 Claims**



1. A process for providing a pre-stress on a structural member comprising:

providing a first portion of said structural member;

providing a second portion of said structural member;

providing a fastening means between said first and second structural portions fastening same together;

providing a Nitinol member configured for placement against said first and second portions;

cooling said Nitinol member sufficiently to allow said Nitinol member to be compressively deformed; compressively deforming said cooled Nitinol member; placing said cooled and deformed Nitinol member between said first and second portions; and,

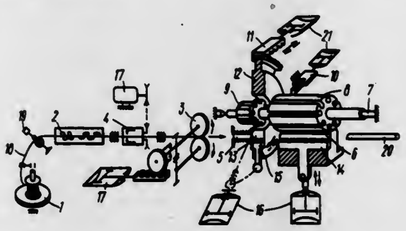
maintaining said Nitinol member between said first and second strctural portions while at the same time allowing said Nitinol member to expand from its compressively deformed state when approaching an elevated temperature for driving said first and second structural portions away from each other while being secured by said fastening means.

4,501,059

MACHINE FOR LAYING CONDUCTORS INTO SLOTS

Pavel I. Bukhteev, Moscow; Grigory Y. Posleider, Kherson; Viktor M. Kartavtsev, Kherson, and Vladimir S. Bytsak, Kherson, all of U.S.S.R., assignors to Nauchno-Issledovatelsky I Experimentalny Institut Avtomovilnogo Elektrooborudovania I Avtopriborov, Moscow, U.S.S.R.

Filed Apr. 13, 1982, Ser. No. 367,810
Int. Cl.³ H02K *15/00*
U.S. Cl. 29—564.5 **2 Claims**



1. A machine for making conductor sections from insulated wire and for installing said sections in armature slots of an electrical machine with ends of said sections installed in peripheral slots of a commutator for said armature according to a predetermined layout, said armature slots being oriented parallel to the axis of rotation of said armature, said commutator having a peripherally slotted portion coaxial with said armature and disposed adjacent to and axially spaced from a first end of said armature, said machine comprising:

(a) an unreeling device for providing insulated wire;

(b) a device for feeding and straightening the wire provided by said unreeling device;

(c) feeding means for intermittently feeding predetermined lengths of the wire straightened by said device;

(d) stripping means for removing the insulation from the portion of said wire corresponding to the end of each of said predetermined lengths and the beginning of the next succeeding predetermined length of the wire fed by said feeding means;

(e) cutting means for cutting the wire intermittently fed by said feeding means into predetermined cut lengths, said cutting means being aligned with said stripping means so that both ends of each cut length of wire are stripped of insulation;

(f) a receiving tray having a slot aligned with said cutting means for receiving successive cut lengths of said wire;

(g) mounting means for mounting the armature and commutator for rotation about the axis of rotation thereof, with the armature slots disposed parallel and adjacent to the slot of said receiving tray, and the slotted portion of said commutator disposed adjacent said cutting means;

(h) indexing means for rotating said armature and commutator so that successive armature slots are brought into alignment with the slot of said receiving tray;

(i) first pusher means operatively associated with said receiving tray and mounted for intermittent reciprocating movement toward and away from said armature to install each cut length of wire disposed in the slot of said receiving tray, in a corresponding armature slot;

(j) a rotary disk at least partially surrounding and coaxial with the slotted portion of said commutator, said disk adjoining said cutting means and being rotatable about said axis, said disk having a portion alignable with said cutting means for engaging one end of each cut length of wire;

(k) positioning means for rotating said disk to bring an end of each cut length of wire into alignment with a corresponding slot of said commutator according to said predetermined layout; and

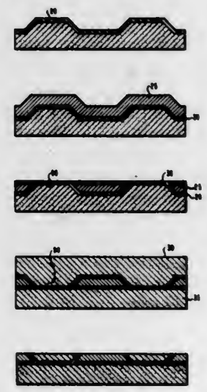
(l) second pusher means operatively associated with said rotary disk and mounted for intermittent reciprocating movement toward and away from said slotted portion of said commutator, to install each said one end of each said cut length of wire in the corresponding commutator slot.

4,501,060

DIELECTRICALLY ISOLATED SEMICONDUCTOR DEVICES

Robert C. Frye, Piscataway; Joseph E. Griffith, New Providence, and Yiu H. Wong, Berkeley Heights, all of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Jan. 24, 1983, Ser. No. 460,399
Int. Cl.³ H01L *21/306, 21/76*
U.S. Cl. 29—576 W **6 Claims**



1. A process for producing a dielectrically isolated silicon region comprising the steps of (1) contacting a first and second body so that a silicon oxide and OH moieties are present at the interface between said first and second body and fusing said first and second bodies, wherein said fusion is accomplished by producing an electrical potential drop across said interface of less than 100 volts and subjecting said interface to a temperature of at least 1050 degrees C. whereby said silicon oxide forms at least a portion of said dielectric isolation for a region of single crystal silicon in said first or second body and (2) forming a device in said single crystal region of silicon.

4,501,061

FLUORINE PLASMA OXIDATION OF RESIDUAL SULFUR SPECIES

Gerald Wonnacott, Santa Cruz, Calif., assignor to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed May 31, 1983, Ser. No. 499,747
Int. Cl.³ C23F *1/02*
U.S. Cl. 29—591 **8 Claims**

1. An improved method for defining interconnect patterns in semiconductor devices having a titanium-tungsten barrier layer intermediate a silicon substrate and an aluminum conductor layer, said barrier layer being resistant to etching with a fluorine-containing plasma, said method including the steps of:

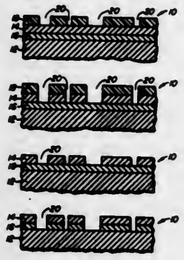
applying a positive photoresist layer including active sulfur species over the aluminum;

patterning the photoresist layer to define the desired interconnect pattern;

etching the aluminum layer in the pattern defined by the photoresist layer;

stripping the remaining photoresist layer using an oxygen plasma whereby residual sulfur species are left on the aluminum; and

etching the titanium-tungsten layer in the pattern defined by the photoresist and aluminum layers with a liquid oxidant; wherein the improvement comprises exposing the semicon-



ductor device to a fluorine-containing plasma to remove said residual sulfur species without substantially affecting the titanium-tungsten barrier layer prior to etching the titanium-tungsten layer.

4,501,062

STABILIZED SUPER-CONDUCTOR HAVING A DIFFUSION-INHIBITING LAYER THEREIN AND METHOD OF PRODUCING SAME

Hans Hillmann, and Engelbert Springer, both of Rodenbach, Fed. Rep. of Germany, assignors to Vacuumschmelze GmbH, Fed. Rep. of Germany

Filed Feb. 28, 1983, Ser. No. 470,179

Claims priority, application Fed. Rep. of Germany, Feb. 27, 1982, 3207159

Int. Cl.³ H01B *12/00*

U.S. Cl. 29—599 **10 Claims**



1. In a method of producing a stabilized super-conductor having a cross-sectional region of a super-conductor material consisting of an intermetallic compound containing at least two elements and having a cross-sectional region of a material which is normally conductive at operating temperatures of the super-conductive material, with a layer of a diffusion-inhibiting material positioned between the cross-sectional regions of the normally conductive material and the super-conductive material whereby a stabilized super-conductor cross-section is first assembled from all said materials and the assembled structure is subsequently deformed one or several times with intermediate annealing for reducing the cross-section of such structure until a desired cross-section dimension is attained, wherein the improvement comprises:

arranging, prior to deformation for attainment of a desired cross-section dimension, a plurality of individual rod-shaped segments, at least some of which are composed of a diffusion-inhibiting material, between said regions of normally conductive material and super-conductive material; and

subjecting the so-assembled structure to deformation conditions sufficient to combine said individual segments into a diffusion-inhibiting layer while attaining a desired conductor cross-section dimension.

4,501,063

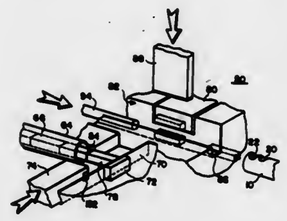
STYLUS ARM INSERTION APPARATUS

Ronald K. McNeely, Indianapolis, Ind., assignor to RCA Corporation, New York, N.Y.

Filed Jun. 29, 1983, Ser. No. 509,093

Int. Cl.³ B23P *21/00*

U.S. Cl. 29—711 **20 Claims**



1. An article insertion apparatus comprising:

(A) a first passageway along which articles are fed one at a time;

(B) a second passageway in communication with said first passageway and having an abutment surface against which said articles in said first passageway are sequentially fed;

(C) a third passageway substantially parallel to and spaced from said first passageway; said third passageway having a reference surface to which said articles are consecutively presented;

(D) means for selectively mounting a workpiece in alignment with said third passageway;

(E) a transfer element reciprocably mounted in said second passageway; said transfer element, when advanced, displacing an article in engagement with said abutment surface in said second passageway to a position against said reference surface in said third passageway, while preventing the next article in said first passageway from entering into said second passageway; said transfer element, upon withdrawal, allowing said next article in said first passageway to come into engagement with said abutment surface in said second passageway; and

(F) a drive element reciprocably mounted in said third passageway for inserting an article in said third passageway into said workpiece.

4,501,064

MICRO COMPONENT ASSEMBLY MACHINE

Robert D. DiNozzi, Beverly, Mass.; Stanley R. Vancelette, Manchester, N.H.; Lionel E. Powell, Natick, Mass.; George F. McLean, Jr., Middleton, Mass.; Leon F. Sieger, Wakefield, Mass., and Ronald C. Mason, Hamilton, Mass., assignors to USM Corporation, Farmington, Conn.

Filed Sep. 8, 1981, Ser. No. 299,979

Int. Cl.³ H05K *3/30*; B23P *19/00*

U.S. Cl. 29—832 **20 Claims**

1. The method of placing chip-type micro-electronic components on a printed circuit board comprising:

a. providing a plurality of component supply means each having a plurality of components;

b. selecting a component from a component supply means;

c. transferring a component to an enclosed conveyor;

d. transporting a component in the enclosed conveyor to a receiving means;

e. transferring a component from the receiving means to a placement means;

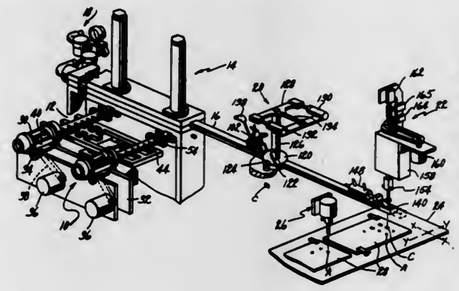
f. placing a component on a printed circuit board.

3. A machine for automatically placing chip-type electronic components on the conductive lands of a substrate, said machine comprising:

a. a component supply means located on support means and containing a plurality of components;

b. a conveyor having one end located on said support means for transporting the components from said supply means for receiving means;

c. means to transfer the components from said supply means and place the components on said conveyor;



d. a verifier coacting with said machine and located on said conveyor to determine whether a given component is acceptable;

e. means to receive said components from the opposite end of said conveyor;

f. said receiving means including a placement head adapted to receive the component from said conveyor and position the components on the substrate at a predetermined desired location;

g. said conveyor including an air track that passes through the transfer mechanism and transports the components to the placement means, and

h. electrical control means associated with said machine functional to actuate each element of the machine in proper sequence.

4,501,065

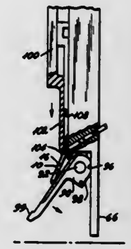
WIRE PIN INSERTION METHOD AND APPARATUS

Albert W. Zemek, Windsor, N.Y., and Arthur T. Carlsen, Hallstead, Pa., assignors to Universal Instruments Corporation, Binghamton, N.Y.

Filed Sep. 3, 1982, Ser. No. 414,906

Int. Cl.³ H05K *3/00*

U.S. Cl. 29—845 **6 Claims**



1. A method for cyclically inserting and driving a wire pin of a string of end-to-end connected pins into a substrate hole, each of said pins having a longitudinal axis and preformed, reduced cross-section areas of interconnection between pins of said string to provide a front end and a rear end for each pin, said method comprising the steps of:

receiving said pin with said longitudinal axis at an angle to a central axis of said hole;

engaging said pin rear end and changing said angle and engaging said front end to urge a portion of said pin into a guide slot during said angle changing and generally aligning said longitudinal and central axes for said inserting, said guide slot having internal faces;

separating said pin from said string;

yieldingly engaging said front end and preventing loss of control of said pin during said angle changing; and

driving said pin into said hole while engaging and urging said rear end into sliding engagement with said faces of said slot during said driving and prior to said inserting, such that guiding and said aligning of said pin occurs.

4. An apparatus for cyclically inserting and driving a wire pin of a string of end-to-end connected pins into a hole of a substrate, each of said pins having a longitudinal axis, reduced cross-section areas of interconnection between pins of said string to provide a front end and a rear end for each pin, and means, enlarged in at least one cross-sectional dimension relative to a pin body cross-section, for providing an interference fit in said hole, said apparatus comprising:

means for supporting said apparatus adjacent said substrate;

means operatively associated with said support means for receiving said pin with said longitudinal axis at an angle to a central axis of said hole;

means, operatively associated with and moveable relative to said receiving means, for engaging said pin and changing said angle and generally aligning said longitudinal and central axes for said inserting, said pin being fed to said engaging means from said receiving means;

means, moveable relative to and operatively associated with said angle changing means, for yieldingly engaging and preventing loss of control of said pin during said angle changing;

means, operatively associated with said angle changing means, for engaging said interference fit providing means after said angle changing and for separating said pin from said string by applying a force threto generally parallel to said longitudinal axis;

means, operatively associated with and moveable relative to said separating means, for driving said pin into said hole and effecting said interference fit; and

means, operatively associated with said engaging and driving means, for actuating said engaging and driving means.

4,501,066

DUAL HEADED RAZOR SYSTEM

Conrad T. Sceberras, 3101 S. Capa Dr., Hacienda Heights, Calif. 91745

Filed Apr. 11, 1983, Ser. No. 483,657

Int. Cl.³ B26B *21/14, 21/00, 21/08*

U.S. Cl. 30—50 **5 Claims**



1. A razor system for use in shaving in both to and fro

strokes without removal from the surface being shaved comprising:

an elongated handle having a pair of spaced apart parallel channel shaped members having the mid-length thereof fixedly and immovably secured to and facing away from one end thereof each having out turned lips along the upper edges of their respective sidewalls and lying in a common plane inclined acutely to the longitudinal axis of said handle;

a pair of detachable razor heads telescopically assembled to a respective one of said channel shaped members;

said heads each having a blade clamped therein and lying in planes flaring outwardly in opposite directions and away from the common plane through the lips of said channel shaped members at substantially the same acute angle;

the adjacent lateral edges of said blades lying parallel to one another and being unsharpened and the other lateral edges being parallel and sharpened and remote from one another; and

said heads each having a low height end wall along each end having the outer edge thereof lying in a plane spaced closely outwardly of the sharpened edges of a respective one of said blades.

4,501,067

RAZORS AND SHAVING UNITS FOR RAZORS

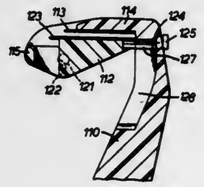
David S. Duncan, London, England, assignor to Wilkinson Sword Limited, High Wycombe, England

Filed Mar. 23, 1983, Ser. No. 478,178

Claims priority, application United Kingdom, Apr. 3, 1982, 8209979; Dec. 6, 1982, 8234699

Int. Cl.³ B26B *21/14, 21/00, 21/08, 21/28*

U.S. Cl. 30—63 **4 Claims**



1. A razor blade assembly comprising a pair of blades each having a cutting edge; a guardbar; a top cap which covers a substantial portion of each blade and cooperates with the guardbar in locating the blade edges correctly with respect to the skin of a person shaving; and means mounting the guardbar for movement relative to the top cap from a position in which each blade edge is correctly exposed for shaving, to a position in which the guardbar screens each blade from contact with the person handling the blade assembly, said mounting means including a platform pivotable relative to said top cap and on which the guardbar is rigidly mounted, one of said blades being rigidly secured to the top cap and the other of said blades being rigidly secured to the platform, said blade edges being staggered with respect to each other when correctly exposed for shaving.

4,501,068

POCKETKNIFE HONE

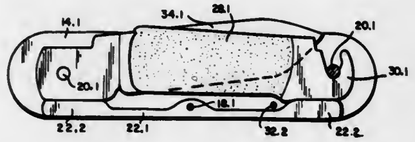
Richard C. J. Palson, Medfield, Mass., assignor to The Phillips Manufacturing Company, Canton, Mass.

Filed Apr. 14, 1983, Ser. No. 484,899

Int. Cl.³ B26B *5/00*

U.S. Cl. 30—138 **6 Claims**

1. A pocketknife comprising a handle defining a blade-receiving chamber longitudinally thereof, a pivot pin fixed to the handle at each end within the chamber, a knife blade pivotally mounted at one end on the pivot at one end of the chamber, a sharpening blade pivotally mounted at one end on the pivot pin at the other end of the chamber, said knife blade and sharpening blade being dimensioned to be sheathed within the chamber in parallel relation to each other for movement from a sheathed position within the chamber to a position extending therefrom, spring means yieldably engaged with the proximal end of the knife blade and the proximal end of the sharpening



blade for holding the blades in sheathed and extended positions, and means pivotally connecting the sharpening blade to its pivot pin, structured to detachably connect said one end of the sharpening blade to its pivot pin, said means retaining the sharpening blade pivotally engaged with the pivot pin when in its sheathed position and releasing the sharpening blade from its pivot pin when in its extended position.

4,501,069

CUTTER FOR WALL PAPERS

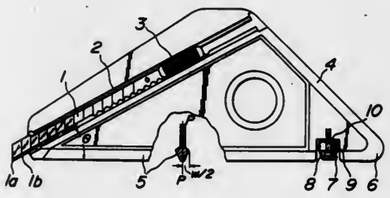
Seiji Kohno, Sagamihara, Japan, assignor to Kabushiki Kaisha Tajima Seisakusho, Tokyo, Japan

Filed Nov. 25, 1983, Ser. No. 554,961

Claims priority, application Japan, Sep. 22, 1983, 58-145878[U]

Int. Cl.³ B26B *1/08*

U.S. Cl. 30—293 **8 Claims**



1. A cutter for wall papers comprising a sheath receiving an exchangeable cutting blade slidably therein so as to extend and retract its cutting tip from and into said sheath, and a grip for holding said sheath embedded therein and substantially triangular whose base is its longest edge and defines a slide edge extending at a relatively small acute angle with a cutting edge of said cutting blade and having a V-shaped cross-section symmetrical with respect to a phantom plane containing said cutting blade extending slightly beyond a line of prolongation of said slide edge, said grip being formed in said slide edge with a notch near a rear end opposite to said cutting tip, and a frusto-conical roller freely rotatable in said notch and slightly extending on both sides of the slide edge, thereby reducing sliding resistance of the slide edge.

4,501,070

PIPE THREAD GAUGING TOOL

Stephen L. Jiles, 1513 Dogwood Ave., Anaheim, Calif. 92801

Filed Jan. 23, 1984, Ser. No. 572,826

Int. Cl.³ G01B *3/36*

U.S. Cl. 33—199 R **12 Claims**

1. A tool for gauging pipe threads accurately, including:

a base portion having an opening therethrough for supporting therein a ring gauge;

a body portion mechanically coupled to said base portion, said body portion having an opening therethrough for communication with said opening in said base portion;

an anvil portion supported from said body portion and having an axial opening therethrough coaxial with said opening on said body portion;

a shaft, having first and second ends, slidably retained in said opening through said anvil and extending, at its first end, into said opening in said base portion and, at its second end, extending beyond said anvil portion;

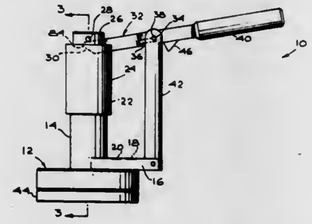
a hammer, secured to said second end of said shaft, said hammer having first and second faces;

a slot diametrically disposed in said hammer and passing through said first face of said hammer;

a bolt traversing said slot near said first face;

a pivot arm supporting from said base portion and having, proximate its upper end, a pivot rod positioned substantially parallel with said bolt traversing said slot in said hammer;

a handle having a grip end and an actuating end with a top and having a slot therein for cooperating with said pivot rod to permit pivoting and sliding of said handle about and along said pivot rod, said slot having first and second ends, said slot having such position in said handle that said



actuating end of said handle is movable about said pivot rod and along said slot to the first end of said slot, in which position said handle is, at its actuating end, under and in engagement with said bolt near the tip of said actuating end;

said first end of said shaft bearing flange means;

said body portion including a flange portion positioned in said opening therethrough at the end of said body portion proximate to said anvil portion

a compression spring encompassing said shaft in the region between said flange means on said shaft and said flange portion in said body portion and sized, diametrically, to engage said flange means and said flange portion, upon compression of said spring;

whereby, upon depression of said grip end of said handle said actuating end thereof moves said hammer portion away from said anvil portion and compresses said compression spring, storing potential energy therein, which energy is released upon depressing said grip end of said handle until said actuating end of said handle is disengaged from said bolt and said hammer is urged forcefully toward said anvil portion by said potential energy in said spring.

4,501,071

MOUNTING SYSTEM FOR OPTICAL SIGHTING DEVICES

Heinz J. Manske, Mitchell, Ind., assignor to John W. B. Foringer, Bedford, Ind.

Filed Dec. 27, 1982, Ser. No. 453,756

Int. Cl.³ F41G *3/00*

U.S. Cl. 33—245 **7 Claims**

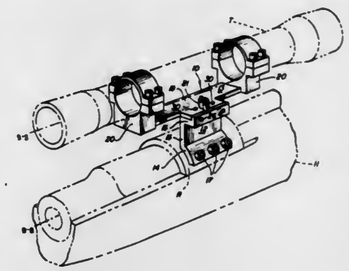
1. A mounting system for repeatedly attaching and detaching an optical sighting device having a sighting axis to and from a guided device having a base axis while preserving precise alignment between said axes, said system comprising, in combination:

(a) a base member adapted for fixed attachment to said device;

(b) a mounting platform defined on said base member;

(c) a holder member including means for securing the optical sighting device thereto;

(d) means for detachably locating said holder member on said mounting platform of said base member, said means including first and second pairs of precisely spaced com-



plemental locating elements, said first pair being oriented transversely of the base axis, said second pair being oriented in a different direction from said first pair such that each pair of said elements is adapted to enter into complemental engagement simultaneously to oppose relative movement between said base and holder members in any direction along the plane of said mounting platform; and

(e) means for detachably clamping said holder member to said base mounting platform with said locating elements in complemental engagement.

4,501,072

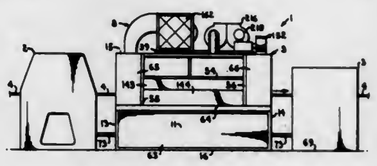
DRYER AND PRINTED MATERIAL AND THE LIKE

Cecil T. Jacobi, Jr.; Charles G. Maupin; James B. Woodsmall; William J. Brown; Bruce E. Thomas, all of Marshall; Walton D. Owens, Slater; Robert J. Cunningham, and Rocky D. Smith, both of Marshall, all of Mo., assignors to Amjo, Inc., Marshall, Mo.

Filed Jul. 11, 1983, Ser. No. 512,724

Int. Cl.³ F26B *3/34, 13/00;* **F27B** *9/06*

U.S. Cl. 34—1 **30 Claims**



23. A method of drying a web of printed material, which comprises the steps of:

(a) detecting movement of a printed material web with respect to a dryer;

(b) moving a pair of heater panel assemblies each including a heat lamp to a closed position whereat said heat lamps are in close proximity to said printed material web from an open position with said heat lamps spaced relatively further from said printed material web, said movements being guided by guide means;

(c) actuating said heat lamps; and

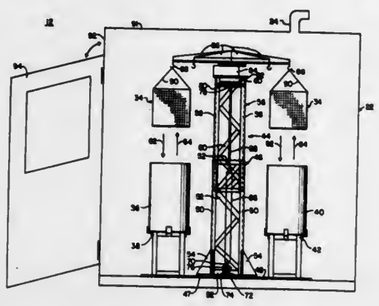
(d) blowing air from an air blower through a duct to at least one said heater panel assembly for communication with said printed material in said dryer to facilitate drying said printed material.

4,501,073

APPARATUS AND METHOD FOR DEHYDRATING METAL PIECES

Mark J. Walz, Northboro, Mass., assignor to Nuclear Metals, Inc., Concord, Mass.

Filed Jan. 24, 1983, Ser. No. 460,647
Int. Cl.³ F26B *3/00, 19/00*; C21D *1/62*; F27B *15/00*
U.S. Cl. 34—9 27 Claims



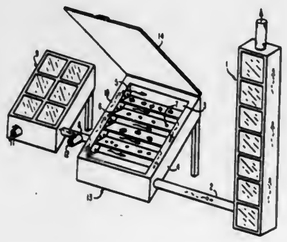
19. A method of dehydrating metal pieces comprising: introducing said pieces into an oil heated to the boiling point of water to boil off the water; and removing said pieces from said oil.

4,501,074

CONVECTION POWERED SOLAR FOOD DRYER

Louis R. O'Hare, 1041 Ponderosa, Apt. 2, Fort Collins, Colo. 80521

Filed Feb. 17, 1981, Ser. No. 234,970
Int. Cl.³ F26B *9/06*
U.S. Cl. 34—93 2 Claims



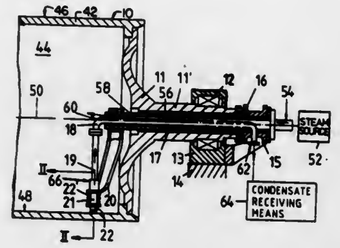
1. A solar powered food dryer comprising;
(1) a draft producing means in the form of a black box solar collector that is long and rectangular in shape with its length disposed vertically to provide a solar activated convection column, said draft production means having an opening at the top and a duct attached at the bottom and said duct being in fluidflow communication between the internal cavity of said convection column and,
(2) an air dryer means in the form of a compartment the walls of which support shelves for holding foodstuffs to be dryer and said compartment having a door and having sides surmounted by a plurality of plenum chambers in fluidflow communication with the drying compartment by means of small holes in the compartment and plenum walls, said plurality of plenums being comprised of essentially two plenums, one plenum being in upstream fluidflow communication with the drying compartment and the other in downstream communication and situated on another side of the compartment in such a way that air leaving the upstream plenum will diffuse approximately evenly through the drying chamber to this downstream plenum and said downstream plenum being in fluidflow relationship with the convection column duct to direct the convection-produced draft into the dryer compartment and said upstream plenum being in fluidflow communication by means of ducting to
(3) a solar air heating and temperature regulating means in the form of a black box solar collector with an air inlet valve attached to an air inlet port and said heating collector having an exit port connected to ducting which is in fluidflow communication both with the air dryer means and with a valve opening to ambient air.

4,501,075

APPARATUS FOR REMOVING CONDENSATE FROM A STEAM HEATED ROTATABLE DRYING CYLINDER AND THE LIKE

Karl Jenkner, Heidenheim; Karl Steiner, and Robert Wolf, both of Herbrechtingen, all of Fed. Rep. of Germany, assignors to J. M. Voith, GmbH, Heidenheim, Fed. Rep. of Germany

Filed Dec. 6, 1982, Ser. No. 446,959
Claims priority, application Fed. Rep. of Germany, Dec. 10, 1981, 3148948
Int. Cl.³ F26B *25/20*
U.S. Cl. 34—125 6 Claims



1. An intake structure for receiving therein condensate from an inner chamber of a steam heated drying cylinder assembly which is rotatable about an axis of rotation, which has a generally cylindrical inner surface defining a portion of said inner chamber and against which said condensate forms, and which has a stationary condensate-transporting conduit means for delivering condensate to a receiving area externally of said drying cylinder assembly, said intake structure comprising nozzle-like body means, inlet opening means formed in said nozzle-like body means, an outlet formed in said nozzle-like body means and being effective for communication with said stationary condensate-transporting conduit means, said inlet opening means being juxtaposed to and open towards said cylindrical inner surface when said nozzle-like body means is operatively connected to said stationary condensate-transporting conduit means in order to achieve said communication with said outlet, said nozzle-like body means comprising a generally forwardly situated end surface and a rearwardly disposed end surface, said inlet opening means having a generally forwardly situated end portion and a rearwardly disposed end portion, said rearwardly disposed end portion being defined by a rearwardly situated end wall of said nozzle-like body means, said nozzle-like body means when operatively connected to said stationary condensate-transporting conduit means being so positioned as to have said forwardly and rearwardly disposed inlet opening end portions so arranged with respect to each other and said forwardly situated end surface and said rearwardly disposed end surface so arranged with respect to each other as to result in the rotating cylindrical inner surface first traversing said forwardly situated end surface and forwardly situated end portion and subsequently traverse said rearwardly situated end portion followed by traversing said rearwardly situated end wall and said rearwardly disposed end surface, and wherein said rearwardly

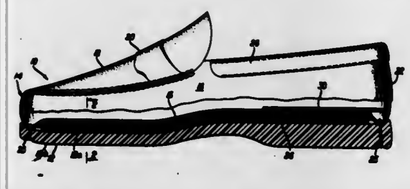
situated end wall carries said rearwardly disposed end surface and comprises a generally inner surface means effective for scooping at least a portion of said condensate from said rotating cylindrical inner surface and directing such scooped condensate into said stationary condensate-transporting conduit means, wherein the inner width of said inlet opening means when measured parallel to said axis of rotation is as a maximum generally equal to the diameter of the flow passage defined by said condensate-transporting conduit means, wherein said forwardly situated inlet end portion extends as a recess-like opening through said forwardly situated end surface, said recess-like opening being so formed through said forwardly situated end surface as to result in those portions of said forwardly situated end surface which are located at opposite sides of said recess-like opening extending toward said cylindrical inner surface, and wherein the flow area of said recess-like opening is in the order of 0.1 to 0.2 of the cross-sectional flow area defined by said condensate-transporting conduit means.

4,501,076

SHOE CONSTRUCTION

Stephen G. Dodds, Farmington, Me., assignor to Chesebrough-Pond's Inc., Greenwich, Conn.

Filed Oct. 25, 1982, Ser. No. 436,394
Int. Cl.³ A43B *3/14*
U.S. Cl. 36—11 5 Claims



1. A true moc shoe comprising an upper having a vamp with unitary bottom and side portions, a sole coextensive with said vamp bottom portion, said sole having an upper contacting surface and a contact walking surface, a plurality of stitches extending around a peripheral portion of said sole and stitching said sole directly to said vamp bottom portion, and a layer of cushioning material abutting said vamp and the upper contacting surface of said sole, wherein said cushioning layer is sized to be substantially coextensive with said sole and has edges spaced from said stitches, and wherein said stitches apply a force on portions adjacent said cushioning layer edges for tightly securing said layer in place between said vamp and sole.
2. A shoe as defined in claim 1, wherein said sole is formed of flexible rubber.

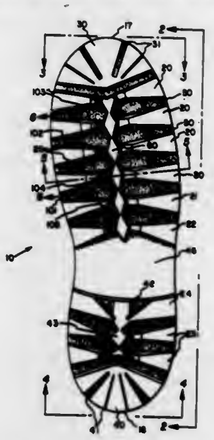
4,501,077

SOLE FOR BOOTS AND SHOES

Delton W. Young, Belmont, Mass., assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Apr. 1, 1983, Ser. No. 481,183
Int. Cl.³ A43B *13/04, 13/00*
U.S. Cl. 36—32 R 15 Claims

1. A sole for boots, shoes and the like, including a heel at the rear end of said sole, said sole having a pair of edges which extend the length of said sole, comprising:
(a) said heel having a rear portion at the rear end of said heel and a breast at the front of said heel, said breast being substantially perpendicular to the length of the sole;
(b) a toe portion at the front end of said sole
(c) a shank area adjacent to said heel; and
(d) a tread portion extending continuously between said toe portion and said shank area; said tread portion comprising:
(1) a plurality of main lugs which are substantially perpendicular to the length of the sole, with said lugs increasing in width from the inside to the outer edge of the sole; and
(2) a continuous center lug which is substantially parallel



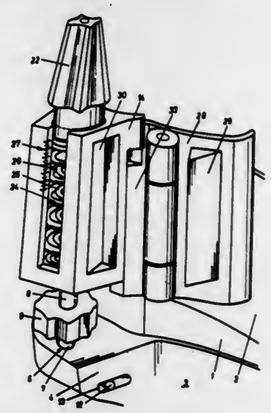
to the length of the sole and being connected to said plurality of main lugs on both of its sides, said center lug is approximately an equal distance from the edges of said sole.

4,501,078

SKIING BOOT

Ernst Kopp, Graz, Austria, assignor to Skischuhfabrik Dynafit Gesellschaft m.b.H., Graz, Austria

Filed Sep. 27, 1982, Ser. No. 423,742
Claims priority, application Austria, Sep. 30, 1981, 4189/81
Int. Cl.³ A43B *5/04*
U.S. Cl. 36—121 9 Claims



1. A skiing boot comprising:
a foot part,
a gaiter pivotably mounted on the foot part,
a slider slidably mounted on the gaiter,
an adjustable spring means cooperating with the slider for exerting a force opposing a bending forward movement of the gaiter;
a releasable coupling means for coupling the gaiter and slider,
means for adjusting the stress on the adjustable spring means, and
means interconnecting the slider and the foot part for adjust-

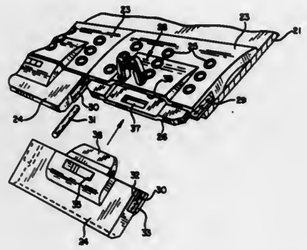
ing the inclination of the gaiter relative to the foot part, the inclination of the gaiter relative to the foot part being adjustable independent of the stress on the adjustable spring means and the stress on the adjustable spring means being adjustable independent of the inclination of the gaiter relative to the foot part when the releasable coupling means couples the slider and the gaiter in a coupling position.

4,501,079

TWO PIECE CUTTING EDGE CONSTRUCTION

Frederick C. Hahn, Aloha, and Larren F. Jones, Beaverton, both of Oreg., assignors to ESCO Corporation, Portland, Oreg.

Filed Aug. 24, 1983, Ser. No. 526,001
Int. Cl.³ E02F *3/76*
U.S. Cl. 37—141 R **13 Claims**



1. A multi-part cutting edge structure comprising: a plurality of adapter parts adapted to be secured to an earth moving unit in side-by-side relation and projecting forwardly therefrom,

a cutting edge part adapted to be removably mounted on each adapter part by rearward movement relative thereto and projecting forwardly to provide side-by-side cutting edge parts,

each of said parts being generally plate-like and having forwardly-extending side edges, each side edge having a forwardly-extending groove therein to cooperate with the groove of the adjacent part in defining a forwardly-extending, elongated, generally tubular recess,

an elongated pin in each recess extending forwardly to span both a pair of adapter parts and their associated cutting edge parts to stabilize the same,

each adapter part and the cutting edge part mounted thereon being equipped with alignable openings for the receipt of a lock, and

a lock extending through said openings when aligned and rigidly coupling said parts together against forward disassembling movement of said cutting edge part, said lock including resilient means for lock removal by the application of a force transverse to the direction of said rearward movement.

4,501,080

WORKPIECE STAND

Homer C. Rich, 1100 S. Noland Rd., Independence, Mo. 64050

Filed Sep. 2, 1983, Ser. No. 529,139
Int. Cl.³ D06C *3/08*
U.S. Cl. 38—102.7 **10 Claims**

1. A workpiece stand, which comprises:

(a) a base including:

(1) a base cylinder with upper and lower ends and a standard receiver extending therebetween, said standard receiver including a threaded portion; and

(2) a plurality of legs extending radially outwardly from said base cylinder;

(b) a standard including threaded upper and lower ends, said standard lower end being threadably received in said standard receiver;

(c) a universal joint assembly including:

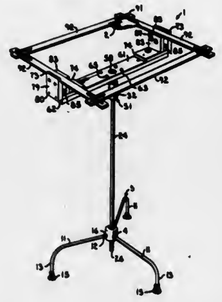
(1) a casing with upper and lower ends;

(2) a casing bore extending between said casing upper and lower ends and including a threaded portion and a lip restricting the diameter of said bore adjacent said casing upper end;

(3) a screw plug threadably received in said casing bore threaded portion, said screw plug having a threaded screw plug receiver extending therethrough and adapted to receive said standard upper end;

(4) a spring positioned in said casing bore and engaging said standard upper end;

(5) a mounting bracket having a ball end positioned within said casing bore and urged by said spring against said



lip, a shank attached to and extending from said ball end and a plate mounted on said shank;

(d) a cross arm with opposite ends and a middle attached to said mounting bracket plate; and

(e) a pair of clamps each attached to a respective cross arm opposite end, each said clamp including:

(1) a clamp base plate mounted on said cross arm opposite end and longitudinally movable relative thereto;

(2) an outer clamp upright connectd to said base plate;

(3) an inner clamp upright positioned in spaced relation with respect to said outer clamp upright;

(4) a spacer positioned between and engaging said clamp uprights; and

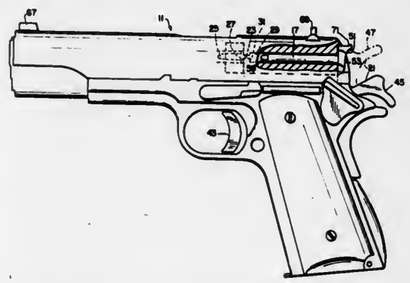
(5) connector means enagaging said uprights and adapted for drawing said uprights together.

4,501,081

DRY FIRE UNIT

Michael T. Izumi, 601 N. Virgil Ave., Los Angeles, Calif. 90004

Filed Sep. 29, 1982, Ser. No. 428,431
Int. Cl.³ F41C *27/00*
U.S. Cl. 42—1 R **8 Claims**



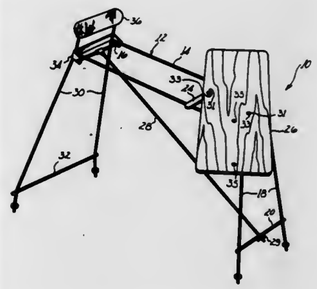
1. In combination with a gun having a frame, a hammer movable from a cocked position to an energy releasing position, a firing pin receiving means in the frame, a cartridge chamber, a removable firing pin assembly including a firing pin and a spring to actuate the firing pin, and said firing pin receiving means terminating in a firing pin hole through which the firing pin may travel to contact and fire a cartridge in the cartridge chamber, a dry firing unit which comprises a shaft of energy absorbing material adapted to be removably disposed in the firing pin receiving means, and a projection at one end of said shaft protruding longitudinally and laterally from said firing pin receiving means in the path of travel of said hammer to contact and absorb energy from said hammer, said unit being shorter in its longitudinal extent into the firing pin receiving means than the firing pin assembly.

4,501,082

PORTABLE BENCH REST

F. Joseph Phillips, 313 Fourth Ave., Bradley Beach, N.J. 07720; Paul E. Phillips, 213 Laurel Pl., Neptune, N.J. 07752; Peter J. Phillips, 1902 B St., Belmar, N.J. 07719, and Brian Phillips, 213 Laurel Pl., Neptune, N.J. 07753

Filed Apr. 13, 1983, Ser. No. 484,458
Int. Cl.³ F41C *29/00*
U.S. Cl. 42—94 **3 Claims**



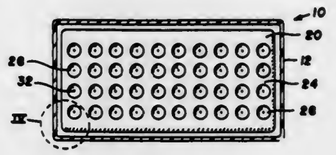
1. A shooting bench comprising a frame which includes an upper cross member and leg means pivotally connected at each end of said cross member, said leg means each being shiftable about its pivot connection to said cross member between a collapsed position overlying the cross member and an extended position depending from the cross member, said leg means for supporting said cross member upon the ground in a rigid position when in said extended positions, rest means carried by one of said leg means positionable above said cross member when said one leg means is shifted into its said extended position for supporting a rifle or similar device, a brace removably connected between said cross member and a said leg means when in its said extended position, and platform means secured to said cross member for supporting the arms of the rifle user, said platform means including a plurality of selectively spaced openings, said upper cross member having openings formed therein alignable with at least two of said openings formed in said platform means depending upon the desired angular orientation of the platform means in a generally horizontal plane relative to the upper cross member, securing members extending through said aligned openings in the upper cross member and platform means for securing the platform means to the cross member in said desired angular orientation.

4,501,083

METHOD FOR FORMING AND HOLDING CHEESE FISH BAIT

Robert Ong, 10964 Wellworth St., Apt. 103, Los Angeles, Calif. 90024

Filed Sep. 29, 1982, Ser. No. 427,889
Int. Cl.³ A01K *85/00*
U.S. Cl. 43—4.5 **3 Claims**



1. A method for making baited hooks for fishing comprising the steps of:

(a) providing a flat surface having a plurality of indentations therein each being of a diameter and depth adapted to receive a fish hook therein;

(b) providing a vent to atmosphere in the bottom of each said indentation;

(c) mixing fish bait to a spreadable but non-flowing consistency;

(d) inserting the spreadable fish bait across into said indentations;

(e) inserting fish hooks into the fish bait in respective ones of said indentations; and,

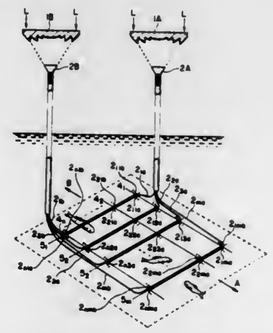
(f) withdrawing said fish hooks in combination with the fish bait.

4,501,084

FISHING NET

Kei Mori, No. 3-16-3-501, Kaminoge, Setagaya-ku, Tokyo, Japan

Filed Aug. 4, 1983, Ser. No. 520,337
Claims priority, application Japan, Aug. 11, 1982, 57-139297
Int. Cl.³ A01K *75/02*
U.S. Cl. 43—17.5 **4 Claims**



1. A fishing net including a photoconductive cable comprising a plurality of optical fibers having light-emitting portions, said light-emitting portions are divided into a first group adapted to emit light having a favorable influence upon fish and a second group adapted to emit light having an adverse influence upon fish, and the direction of light emanating from said first group of light-emitting portions is counter to that of light emanating from said second group of light-emitting portions, whereby fish are influenced in traveling into said net by said light of favorable influence and discouraged from leaving by said light having said adverse influence.

4,501,085
CASTING ROD
Lant I. Barnes, 10811 Clearbrook La., Dallas, Tex. 75218
Filed Dec. 31, 1981, Ser. No. 336,504
Int. Cl.³ A01K *91/02*
U.S. Cl. 43—19 **1 Claim**



1. In a projecting device including: a housing providing an elongated cylinder chamber and an elongated guide passage forwardly thereof; an elongated push rod disposed partially within said housing chamber and passage, having a piston mounted adjacent to its rearward end for coaction with said cylinder chamber and having means at its exposed forward end for carrying a plug to be projected; a valve in said housing for controlling the flow of pressurized gas into said cylinder chamber to impel said piston and push rod forward; an actuator pin disposed in said housing for actuating said valve; a spring biased hammer for impacting said actuator pin; and trigger means for locking said hammer in a cocked position and for releasing said hammer to impact said actuator pin; the improvement comprising

said valve comprising a ball closure member, and an annular seat member providing a band seal with said ball closure member; and spring means urging said ball closure member into sealing engagement with said seat member;

said annular seat member providing a central passage for gas flow and for receiving said actuator pin to engage and unseat said ball closure member;

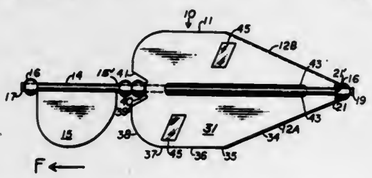
said housing including an inner tubular wall defining said cylinder chamber, and an outer wall defining a hammer chamber; said hammer being disposed for reciprocation in said hammer chamber;

a biasing compression spring disposed in said hammer chamber for urging said hammer rearward;

said housing outer wall having a longitudinal slot, and said hammer having a radially projecting pin extending through said longitudinal slot to enable manual shifting of said hammer;

and safety means comprising a slot extending laterally and rearwardly from said longitudinal slot; said safety slot being configured to receive said hammer pin; and said hammer pin being maintained in said safety slot by said hammer biasing spring.

4,501,086
FISH ATTRACTOR VARIABLE SPEED SLIDING ATTRACTOR BLADE
William A. Bunce, 355 Overbrook Dr., Folsom, Calif. 95630
Filed Oct. 13, 1983, Ser. No. 541,540
Int. Cl.³ A01K *85/00*
U.S. Cl. 43—42.2 **10 Claims**



1. A fish attractor blade adapted to be used with lures or bait and to be disposed upon a fishing line, which comprises:

an elongated hollow tubular member having a component securing means at opposite ends thereof,
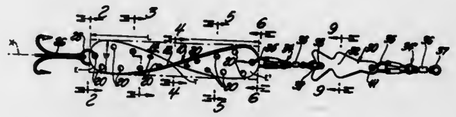
a forward rudder blade depending outwardly from said tubular member,

a pair of spaced bore centering tabs disposed on said tubular member,

a main body portion having a front end and a back end, comprised of two mirror image, spaced horizontally, aligned planar segments interconnected at opposite ends thereof to form a planar member; one end of each of which is mounted upon the first of said tabs, at the front, and the back end is mounted 180° opposed on the second of said centering tabs to provide an angular disposition relative to said tabs, each planar segment having an inwardly depending trailing edge,

each side of the planar member having an oppositely disposed triangular turning fin, one of which is disposed upwardly and the other downwardly from the respective trailing edges of the said segments of the planar member.

4,501,087
FISHING EQUIPMENT
Bradley E. Blomquist, 3210 Lake George Rd., Lake Orion, Mich. 48035
Filed Jun. 10, 1982, Ser. No. 387,045
Int. Cl.³ A01K *85/00*
U.S. Cl. 43—42.06 **2 Claims**



1. A fishing lure of the type to be cast and retrieved or trolled, said lure comprising a body having width, length, thickness, sides and leading and trailing ends, said body being formed to provide a twisted configuration and having a longitudinal axis, said body having a plurality of separate turbulence producing means formed thereon spaced between said axis and said sides, fishook means provided at said trialing end and fishing line attaching means at said leading end, whereby said body is caused to revolve about said longitudinal axis when said lure is trolled or retrieved, the rotational speed in distance traveled of each of said plurality of turbulence producing means being greater than the rotational speed at said axis by reason of said means being spaced from said axis and near said sides and thus causing greater water turbulence than if said means were at said axis, said fishing line attaching means including means for preventing lure twist from twisting the fishing line, said latter means including a combination of at least one swivel and a flat anti-twist element extending on both sides of said axis so as to be acted upon by water resistance on both sides of said axis, said flat element being formed in the shape of a minnow, including a head, a body with fins on both sides and a fluked tail, said shape being substantially symmetrical with respect to said axis, said lure simulating a fish attacking a minnow.

4,501,088
FLY TRAP WITH DISPOSABLE COLLECTOR
J. Roger Boisvert, 6638 Beeman Ave.; Samuel Schultz, 12619 Archwood St., both of North Hollywood, Calif. 91606, and Robert Blaugrund, 510 Leslie La., Beverly Hills, Calif. 90210
Filed Jan. 5, 1983, Ser. No. 455,748
Int. Cl.³ A01M *1/10*
U.S. Cl. 43—118 **7 Claims**

1. A fly trap comprising first screen means forming a generally vertical outer wall,

second screen means forming a generally vertical second wall concentrically disposed within said first wall to thereby define a central region (I) surrounded by generally annular region (II), means forming a plurality of openings about and through the surface of said vertical second wall for flies to migrate from region (I) to region (II), roof means connecting and covering said first and second screen means at their upper ends, floor means interconnecting and closing the bottom ends of the screen means and having a plurality of openings therein positioned about and through the bottom of region II to provide a egress for falling flies,

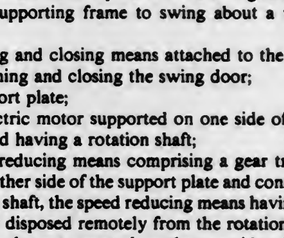
means including floor means forming a plurality of inlet porches constructed to provide insect entry from the outside of the outer wall through the inside of the inner wall said porches including tapered walls which diverge downwardly into full contact with the floor means and converge to form a fly entrance at the inner wall on which and through which the flies enter from the outside into the central region (I), means for receiving a fly attractant in said central region (I), said tapered walls also forming within region I interior walls which converge towards the lower openings, said inner and outer walls and porch walls being significantly more vertical than the angle of repose of dead flies, said outer wall, inner wall and roof, together with porch walls, defining a generally annular



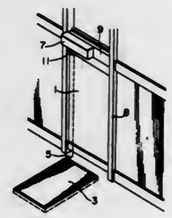
region encircling the first region about a substantial vertical extent thereof, said annular region being horizontally continuous about the first region except where interrupted slightly at the lower extreme by porch walls so that well fed flies in region I are attracted to region II by the light, air and flies flitting about in region II to enter into that region from the region I, and flies outside the trap are attracted by the attractant and by the sight and noise of flitting flies in region II, the latter being able to encircle the region I in their general activity, the supply of flies in region II being continually replenished from region I and being kept fresh and moving by attrition of the tired, falling flies which are readily and directly removed by falling through the floor openings, chute means connected to the floor openings and depending downwardly to form a third region III in the shape of a downwardly convergent walls lying below the floor and forming a slide for dead and dying flies, means forming a removable container for receiving the dead and dying flies and connected to the lowermost end of the chute.

4,501,089
FROST CONTROL
Kenneth J. Cobden, Mildura, Australia, assignor to Cobden Turbines Pty. Ltd., Mildura, Australia
Filed Dec. 3, 1982, Ser. No. 446,723
Claims priority, application Australia, Aug. 10, 1982, PF5308
Int. Cl.³ A01G *13/00*
U.S. Cl. 47—2 **5 Claims**

1. Apparatus for the frost control of agricultural and horticultural crops, said apparatus comprising a tower supporting at its upper end a radial flow fan, means to drive said fan to rotate about a vertical axis to draw air axially into the fan from above the inversion layer and discharge this air radially over the crop, said fan including a plurality of peripheral aerofoil shaped vertical blades mounted on an annular ring at the periphery of the fan, each blade being curved with a convex surface thereof facing in the direction of rotation and having a leading edge and a trailing edge, said convex surface including a straight portion adjacent the leading edge, a curved central portion and a straight portion adjacent the trailing edge, the cord line of the said blades being between 15° and 25° from a radial line of the fan, the point of highest position from the cord line being toward the leading edge of the blade, the leading edge being innermost and the trailing edge being at the periphery of the fan whereby on rotation the air flows axially into the fan interior intermediate said blades and then curves to have a generally radial component before being encountered by the blades.



4,501,090
AUTOMATIC DOOR OPERATOR FOR SWING DOORS
Kei Yoshida; Masayuki Murokawa, and Toshiaki Nomura, all of Tokyo, Japan, assignors to Chikura Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Dec. 30, 1982, Ser. No. 454,867
Claims priority, application Japan, Apr. 12, 1982, 57-60472
Int. Cl.³ E05F *13/00*
U.S. Cl. 49—264 **3 Claims**



1. An automatic door operator for a swing door supported by a door supporting frame to swing about a vertical axis, comprising:

(a) opening and closing means attached to the swing door, for opening and closing the swing door;

(b) a support plate;

(c) an electric motor supported on one side of the support plate and having a rotation shaft;

(d) speed reducing means comprising a gear train disposed on the other side of the support plate and connected to the rotation shaft, the speed reducing means having a last gear member disposed remotely from the rotation shaft;

(e) a door closer supported on the one side of the support plate, including:

a hollow cylinder having closed opposite ends and containing an oil therein;

a piston member slidably and sealingly fitted into the cylinder and axially spring-biased to close the door, the piston member having a first passage and a second passage formed therethrough, each of said passages communicating one side of the cylinder to the other side, the second passage having a check valve incorporated therein so that

the check valve is closed when the piston member is moved in a direction to close the door; and

a rack member attached to the piston member to extend in the axial direction of the cylinder;

a drive shaft perpendicularly passing through and rotatably supported by the support plate so as to be connected to the opening and closing means for driving the opening and closing means, the drive shaft passing through the wall of the cylinder and having a pinion mounted on one end portion thereof to engage with the rack member of the piston member, and the drive shaft further having the last gear of the speed reducing means mounted on the other end portion thereof;

(g) control means for electrically controlling the motor to swing the door;

(h) sensing means for sensing a body accessing the door to thereby provide an electric signal to the control means to energize the motor to open the swing door; and

(i) detecting means for detecting an open angle degree of the swing door, the detecting means including:

a program cam operatively connected to the drive shaft for being rotated; and

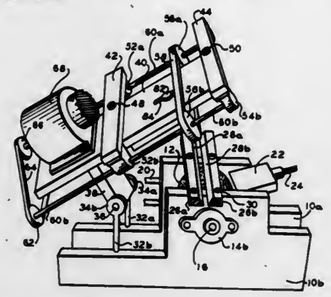
a photo detector for detecting the shape of the program cam to thereby provide an open angle degree signal to the control means for controlling the rotation of the motor.

4,501,091

APPARATUS FOR PREPARING AN OPTICAL WORKPIECE

Wayne R. Ignatuk, Morris Plains, and Frank M. Plocic, Bridgewater, both of N.J., assignors to Litton Systems, Inc., Morris Plains, N.J.

Filed Sep. 24, 1982, Ser. No. 422,818
Int. Cl.³ B24B *9/14*
U.S. Cl. 51—102 **12 Claims**



1. Apparatus for preparing an optical workpiece comprising:

an abrasive cylindrical drum for shaping a portion of said workpiece;

a pair of adjustably-mounted, elongated complementary guides mounted proximate to and extending alongside said abrasive cylindrical drum, said guides being sized and adjustably spaced to allow said workpiece to span said guides and roll upon them; and

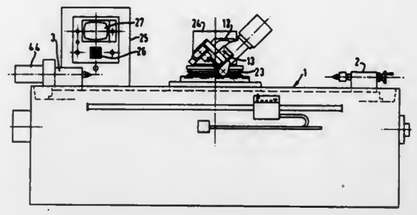
drive means mounted alongside said guides for rolling said workpiece on said guides, said drive means being comprised of an endless belt mounted to circulate along a path with a portion of said path being parallel to said guides, said guides being positioned between said drive means and said abrasive cylindrical drum, said workpiece being positionable between said drive means and guides to protrude beyond said guides and reach said abrasive cylindrical drum.

4,501,092

AUTOMATIC GRINDING

Ronald L. Archibald, Bushey, England, assignor to Staveley Machine Tools Limited, London, England

Filed Sep. 14, 1982, Ser. No. 417,840
Claims priority, application United Kingdom, Sep. 15, 1981, 8127827
Int. Cl.³ B24B *49/00*
U.S. Cl. 51—165 R **6 Claims**



1. A machine for automatically performing grinding operations at predetermined locations along a workpiece comprising: an elongated fixed bed provided with means to receive and secure the workpiece to said bed against axial displacement relative to said bed, a sensing and grinding assembly mounted on said bed, said assembly including a first member mounted to be movable longitudinally relative to said bed, a second member mounted on said first member to be movable in a substantially vertical direction relative to said first member, a third member mounted on said second member to be transversely shiftable relative to both said second member and to said bed, a work head pivotally mounted on said third member to be rotatable relative to said third member about a substantially horizontal axis, a sensing probe and a grinding tool mounted in spaced relation on said work head, a central control unit including a micro-processor for controlling the operation of the individual elements of said sensing and grinding assembly in accordance with operating instructions and sensed information recorded in said control unit, means activated by said control unit for moving said sensing and grinding assembly in one direction along the entire length of the workpiece secured to said bed,, means operating said sensing probe during movement of said assembly in said one direction to sense and record in said control unit each location at which grinding is to be performed, means activated by said control unit for moving said sensing and grinding assembly along said workpiece in the opposite direction, and means operating said grinding tool during movement of said assembly in said opposite direction to effect the required degree of grinding at each recorded location sensed by sensing probe during movement in said one direction.

4,501,093

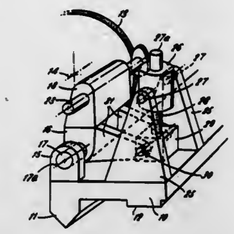
PROFILE MACHINING APPARATUS

Allan J. Fisher, Cambridge, England, assignor to The Newall Engineering Company Limited, Peterborough, England

Filed Dec. 13, 1982, Ser. No. 449,565
Claims priority, application United Kingdom, Jun. 21, 1982, 8217890
Int. Cl.³ B29B *49/00*
U.S. Cl. 51—165.71 **14 Claims**

1. A profile forming apparatus comprising means for rotatably mounting a workpiece while the profile is to be formed thereon, means for rotating the workpiece at a speed controlled by a predetermined programme, a rotary machine tool for removing stock from a portion of the workpiece held by the mounting means, the machine tool being rotatable about an axis parallel to the axis of rotation of the workpiece, a work table for supporting said mounting means for rocking movement about an axis parallel to the axis of rotation of the workpiece, means to feed the machine tool at a predetermined rate

and by a predetermined distance to remove a required amount of stock from the workpiece and drive means for rocking the workpiece mounting means in accordance with the predetermined programme to determine the dimensions and shape of the profile to be machined on the workpiece by the machine tool, wherein the improvement comprises lever means provided on said workpiece mounting means extending transversely to the axis of rocking movement thereof for connection to said drive means, the drive means comprising a high torque



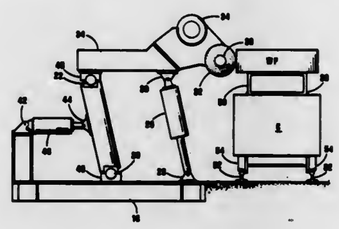
low inertia reversible electric drive motor, mounting means on the work table for supporting the drive motor, trunnion means for mounting the drive motor in said motor mounting means to tilt about an axis parallel to the axis of rocking of the workpiece mounting means, the drive motor having a ball screw means output shaft and a nut in which the ball screw means engages and further trunnion means pivotably connected to said lever means to tilt about an axis parallel to the rocking axis of the workpiece mounting means.

4,501,094

WORKPIECE PROFILE-FOLLOWING CONTROL SYSTEM FOR CONDITIONING GRINDERS

John P. Veale, Snohomish County, Wash., assignor to Western Gear Machinery Co., Everett, Wash.

Filed Nov. 22, 1982, Ser. No. 443,168
Int. Cl.³ B24B *7/02*
U.S. Cl. 51—165.71 **6 Claims**



1. A control system for a conditioner grinder for grinding elongated workpieces, said system comprising:

actuator means for moving said grinding wheel in a first direction normal to a surface of the workpiece to be ground and in a second direction parallel to the surface to be ground and perpendicular to the longitudinal axis of the workpiece;

first transducer means for measuring an operating parameter of said grinding wheel;

first control means receiving an output from said first transducer means for controlling said actuator means to maintain said operating parameter at a predetermined value;

workpiece manipulation means for reciprocatingly moving said workpiece along its longitudinal axis with respect to said grinding wheel during a plurality of grinding passes;

gauging means for determining the curvature of said workpiece about an axis perpendicular to the surface of said workpiece being ground and for generating a signal indicative of the curvature-induced offset of said workpiece at a location on said workpiece adjacent said grinding wheel as said workpiece longitudinally moves with respect to said grinding wheel during each grinding pass; and

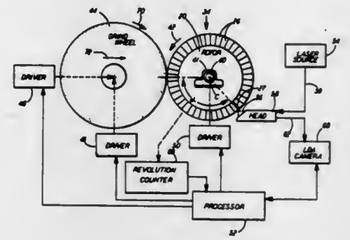
second control means receiving the curvature indication from said gauging means for controlling said actuator means to move said grinding wheel in said second direction by an amount corresponding to said curvature indicative signal, thereby compensating for any curvature in said workpiece about an axis normal to the surface of said workpiece being ground.

4,501,095

METHOD AND APPARATUS FOR GRINDING TURBINE ENGINE ROTOR ASSEMBLIES USING DYNAMIC OPTICAL MEASUREMENT SYSTEM

William H. Drinkuth, Amston; Robert J. Bires, Glastonbury; Robert J. Miller, Vernon, and Franklin G. Selleck, Portland, all of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Jun. 7, 1983, Ser. No. 501,982
Int. Cl.³ B24B *49/12*
U.S. Cl. 51—165.72 **12 Claims**



1. Apparatus from machining the tips of blades in a rotor assembly having removable spaced apart blades radially mounted around the periphery of a disk comprised of:

(a) support means for holding a rotor assembly comprised of a disk and a plurality of removable blades along an axis of a machine base and for rotating the assembly thereabout in a first direction at a speed of at least 1000 rpm, to cause each spaced apart blade tip to move along a circumferential path with a tangential velocity of at least 25 m/s;

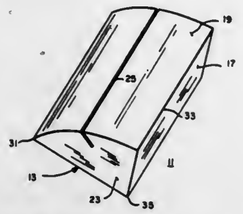
(b) machining means for progressively removing material from the blade tips at a first circumferential path location while the blade tips are moving past the location with said velocity, to thereby change the length of the blades;

(c) gaging means for measuring, at a second circumferential path location spaced apart from said first location, the radial position with respect to said axis of each of the individual blade tips as material is being removed from the rotating blade tips by the machining means and as blade tips pass by the second path location with an interval time of less than 0.004 seconds, the gaging means providing a blade length signal for each of the individual blade tips;

(d) means for identifying each blade on the rotating assembly, the means providing an angular position signal; and

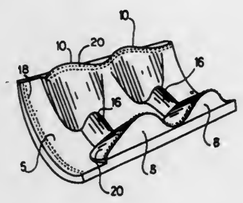
(e) a processor responsive to the blade length signals and the angular position signal, for providing a blade length reading for each identified blade in the rotor assembly while it is being machined, and for controlling the rate at which material is removed from the tips by said machining means, to enable machining of the tips of the blades to a desired radial position.

4,501,096
HAND-HELD SANDING DEVICE
Sergei G. Lukianoff, 1049 Folger Ave., Berkeley, Calif. 94701
Filed Dec. 30, 1982, Ser. No. 454,608
Int. Cl.³ B24D *15/00*
U.S. Cl. 51—391 12 Claims



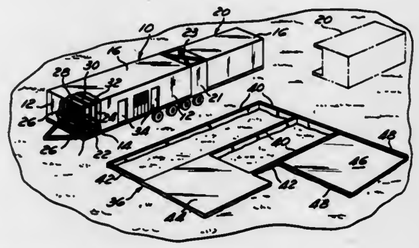
1. A hand-held sanding device for use with sandpaper or other abrasive sheet material, comprising
a resilient block having three laterally extending intersecting block faces forming block perimeter surfaces about which said abrasive sheet material can be wrapped, and two end surfaces defining the length of said block, said three intersecting block faces consisting of one substantially flat bottom surface, one substantially flat side surface substantially perpendicular to said bottom surface, and one top surface extending in a single convex curvature from said bottom surface upwardly to said side surface, the intersection of said top, bottom and side surfaces forming three laterally extending block corners,
said curved top surface having a receiving slot formed therein intermediate and substantially parallel to the laterally extending edges of said curved top surface, said receiving slot being of a width to snuggly receive the two ends of abrasive sheet material when tightly wrapped around the block perimeter surface to hold same in its tightly wrapped position.

4,501,097
RIDGE ELEMENT FOR CORRUGATED ROOFS
Johannes Rosenkilde, Gröddevej 12, Ikast, Denmark
PCT No. PCT/DK81/00090, § 371 Date Jun. 21, 1982, § 102(e) Date Jun. 21, 1982
PCT Filed Oct. 20, 1981, Ser. No. 395,042
Claims priority, application Denmark, Oct. 21, 1980, 4444/80
Int. Cl.³ E04D *1/36*
U.S. Cl. 52—57 6 Claims



1. A ridge element for corrugated roofings bridging a top gap between opposed inclined roof portions, said ridge element having a substantially smooth arched shell portion having on a concave underside opposed wing portions profiled so as to be generally engageable with standard corrugations of the roofing, characterized in that the ridge element is a rigid monolithic member, the opposed wing portions are provided along respective outer longitudinal edges with downwardly projecting flange portions, lower edges of said projecting flange portions are shaped to accommodate, in use, a standard corrugation of the roofing when a ridge angle is between 90° and 140°, said flange portions are constituted by outer end portions of partly cylindrical protrusions on the underside of the ridge element, a generator direction of the protrusions of the opposed wing portions forming an angle with each other which is between 45° and 90°.

4,501,098
HYBRID HOME CONSTRUCTION TECHNIQUE
James H. Gregory, Irvine, Calif., assignor to Heritage Homes, Inc., Ridgecrest, Calif.
Filed Jul. 19, 1982, Ser. No. 399,906
Int. Cl.³ E04H *1/00*
U.S. Cl. 52—79.1 3 Claims

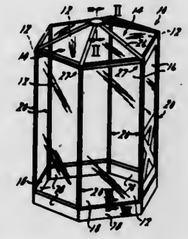


1. A method of building a house comprising:
constructing a pair of house modules in a factory, said modules each having a generally rectangular shape and one or more rooms as well as substantially all the mechanical and electrical systems for the house, said modules being constructed in end to end aligned relation with their adjacent end walls being spaced from each other to provide a work area during construction and with structural support means interconnecting the two modules so that they may be shipped as a single unit;
constructing a foundation at a building site for the house including a matrix of footings conventionally constructed in position to provide supporting surfaces for receiving the modules as well as adjacent structures of the house;
transporting the module unit on a single trailer to the building site;
removing or disconnecting the support means interconnecting the two modules so that the modules are separately movable;
moving one of said modules onto the foundation and then moving the second module onto the foundation positioning it in side by side relation with the first module;
fixing the modules to each other; and
constructing by conventional techniques the remaining structural portions of the house.

4,501,099
STRUCTURE FOR A MODULAR GREENHOUSE AND THE LIKE
Premakaran T. Boaz, 16842 Yorkshire, Livonia, Mich. 48154
Filed Jul. 26, 1982, Ser. No. 402,027
Int. Cl.³ E04B *7/00*
U.S. Cl. 52—82 6 Claims

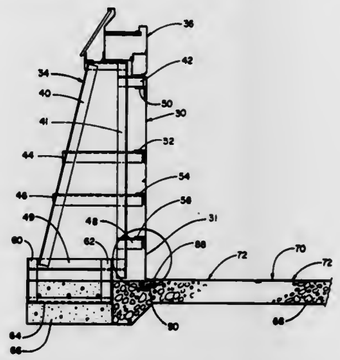
1. A modular building having a hexagonal shape comprising:
six vertical supports having a Y-shaped cross-section formed from three legs equally spaced from each other;
a first leg of each support forming an adhering surface for a panel of one side of the building;
a second leg of each support forming an adhering surface for a panel of an adjacent side of the building;
a third leg extending outward from the center of the building and forming an adhering surface for a panel;
a panel being adhered to said first and second legs of two consecutive supports respectively forming a respective wall of the building;

six roof supports connected together at their inner ends and radially extending outwardly therefrom;
said roof supports having their outer ends in proximity to said first and second legs of said vertical supports;
six horizontal supports having first and second flanges extending substantially at right angles to each other;
said horizontal supports each having end sections where said first and second flanges are offset inwardly a thickness of said legs of said vertical support and a thickness of said roof support respectively and abutting inside surfaces of



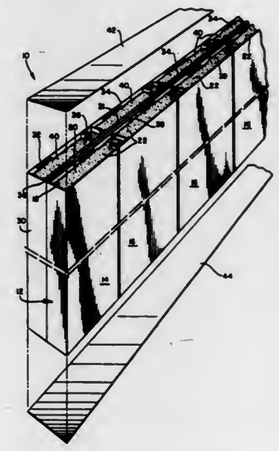
said respective leg and roof support such that outside surfaces of said leg and said first flange of said horizontal support are substantially coplaner at a sealing area defined thereon and the outside surfaces of said roof support and said second flange of said horizontal support are substantially aligned at a sealing area defined thereon;
said legs of said vertical supports and said first flanges of said horizontal supports at said defined sealing area being constructed to adheringly support a set of glass panes; and
said roof supports being constructed to adheringly support a second set of glass panes.

4,501,100
METHOD AND APPARATUS FOR MAKING SWIMMING POOLS
John F. Corna, Columbus, and Marcel H. Blais, Westerville, both of Ohio, assignors to Statewide Pools, Inc., Columbus, Ohio
Filed Jul. 16, 1982, Ser. No. 398,949
Int. Cl.³ E04H *3/18*
U.S. Cl. 52—169.7 21 Claims



13. For use in fabricating a swimming pool, a universal bottom wall panel module adapted to interfit with a plurality of like panels comprising: a rectangular sheet having a first pair of intersecting edges formed to provide offsets and underlap flanges, and having a second pair of intersecting edges having overlap flanges, whereby said panel modules are adapted to be positioned in tandem to form rows and with said rows being in parallel relationship with each other, wherein the overlap flanges of one panel module are adapted to overlap the underlap flanges of an adjacent panel module to form a mosaic bottom for a swimming pool.

4,501,101
FIRE RATED COMPONENT WALL SYSTEM
Alan H. Davis, Vernon, Tex., assignor to Combined America Industries, Inc., Dallas, Tex.
Filed Nov. 4, 1982, Ser. No. 439,315
Int. Cl.³ E04B *1/74*
U.S. Cl. 52—404 9 Claims



1. A fire rated component wall system, comprising:
a first parallelepiped shaped wall unit having one elongated major surface as an outer surface and a second opposite major surface as an inner surface, said outer surface being formed from interlocking steel panels including means for supporting said inner surface a predetermined distance from said outer surface to define a plurality of compartments therebetween, and said inner surface being formed from a layer of fire retardant material;
a second parallelepiped shaped wall unit having one elongated major surface as an outer surface and a second opposite major surface as an inner surface, said outer surface being formed from interlocking steel panels including means for supporting said inner surface a predetermined distance from said outer surface to define a plurality of compartments therebetween, and said inner surface being formed from a layer of fire retardant material;
said interlocking steel panels further including
a first end panel having a first front planar panel section extending to an inwardly projecting slot having first and second elongated sides extending inwardly, said second side being a predetermined distance shorter than said first side, a second front panel section parallel to and recessed from said first panel section a predetermined distance as determined by said second side of said slot, a rib projecting inwardly and normally from said second front panel section, and an end panel section extending from the opposite end of said first front panel section, said end panel section extending a predetermined distance beyond said rib as determined by the thickness of said layer of fire retardant material;
at least one interior panel having a first planar front panel section, an insert member forming one end of said panel and projecting inwardly to said inner surface, a generally U-shaped slot at the opposite end of said front panel section, said slot having first and second elongated sides extending inwardly, said second side being a predeter-

mined distance shorter than said first member, a second planar front panel section parallel to and recessed from said first front panel section and recessed a predetermined distance as determined by the length of said second elongated side of said slot, and a rib projecting inwardly and normally from said recessed panel section as the other end of said panel, said rib supporting said interior layer of fire retardant material; and

a second end panel having a front planar surface, an end section extending from one end of said end panel and projecting inwardly a predetermined distance beyond the rib supporting member of said interior panel to cover the width of the layer of fire retardant material, the insert member at the opposite end of said front panel section interlocking with an adjoining U-shaped slot of said interior panel section, said first and second end panels and said interior panels are interconnected by inserting said insert members into said U-shaped slots to provide a planar outer surface of said first and second units; and

means for joining said first and second wall units along their opposing inner surfaces, whereby said outer surfaces of said first and second units form outer steel surfaces of the fire rated component wall system.

4,501,102

COMPOSITE WOOD BEAM AND METHOD OF MAKING SAME

James Knowles, 1275 Club Dr., Bloomfield Hills, Mich. 48013

Continuation of Ser. No. 113,370, Jan. 18, 1980, abandoned. This application Mar. 11, 1982, Ser. No. 356,997

Int. Cl.³ E04C *3/292, 3/02*

U.S. Cl. 52—690 **8 Claims**



1. In a composite beam formed of a pair of vertically spaced apart, elongated wood chords which are interconnected along their lengths, and with an elongated wood filler strip spanning and filling the space between and fastened to the chords, the elongated wood chords and elongated wood filler strip each having elongated faces and elongated edges and with the elongated edges of the strip being parallel to and in contact with elongated edges of the adjacent chords, and with the beam being formed to support a predetermined load having longitudinal and normal force components relative to the chords, the improvement comprising:

the wood strip being fastened to both of the chords by means of a number of elongated generally plate-like mechanical fasteners, each of which is embedded substantially equally into the faces of the wood strip and a chord for joining together adjacent portions of both the wood strip and a chord;

each said fastener being arranged at an acute angle from the vertical so that each fastener slopes upwardly and toward its nearest beam end for placing the fastener under tension under the application of downwardly directed loads upon the beam, whereby the fastener resists the tendency of the chords and strip to separate, but rather tends to compress together corresponding chord and wood strip elongated edge portions under such beam load and consequently maintains substantial frictional contact between adjacent contacting chord and strip elongated edges for absorption of part of the longitudinally directed shear force components of the applied beam load, and for increasing the load bearing capacity of the beam; and

wherein said wood strip is located over the portion of the beam where the direction of the longitudinal force component changes, so that one part of the length of the wood strip overlaps chord portions having longitudinal shear force components of one direction, and the opposite part of the length of the wood strip overlaps chord portions having their longitudinal shear force components oppositely directed, and with the fasteners on opposite sides of the location where the force direction changes being correspondingly angled upwardly toward their nearest beam end so that the fasteners are all ordinarily under tension when the beam is loaded, regardless of the two different longitudinal shear force component directions.

4,501,103

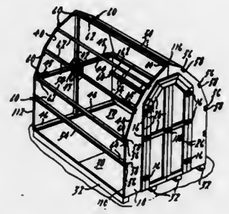
BUILDING CONSTRUCTION AND PURLIN HANGER THEREFOR WITH METHOD OF CONSTRUCTION

Dennis P. Markey, West Bloomfield, and George J. Rosen, Franklin, both of Mich., assignors to Marco Wood Products, Inc., Walled Lake, Mich.

Division of Ser. No. 360,078, Mar. 3, 1982, Pat. No. 4,425,742. This application Oct. 11, 1983, Ser. No. 540,770

Int. Cl.³ E04B *1/00*

U.S. Cl. 52—745 **2 Claims**



1. A method for constructing a storage hut comprising front and rear walls, each said wall having an interior surface and an exterior surface, purlins, hanger means to attach said purlins to said walls, said hanger means including means for attachment to the exterior surface of one of said walls, floor means, means for locating said walls on said floor means, means for attaching said walls to said floor means, and brace means for bracing said walls to said floor, which comprises the steps of:

preparing the floor means;

attaching the walls to the floor and bracing the walls by connecting said brace means between the floor means and each wall;

attaching hanger means to each end of said purlins:

attaching said purlins to the exterior surfaces of said walls by said hanger means; and

removing said brace means.

4,501,104

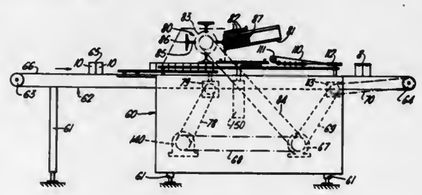
MULTIPACKS OF CONTAINERS

Christopher J. Griffin, London, and Bernard H. Oxborrow, Swindon, both of England, assignors to Metal Box, P.L.C., Reading, England

Filed Sep. 10, 1982, Ser. No. 416,491

Int. Cl.³ B65B *27/04*

U.S. Cl. 53—48 **7 Claims**



1. Apparatus for attaching blanks of a heat-sealable sheet material to multipacks each comprising a plurality of containers in an array and a sheet plastics coupler having apertures

through which end closures of the containers project and which are dimensioned so that the containers are tightly held by tension in the coupler material, each blank having a plane portion by which it overlies and substantially covers the end closures of a said multipack and a plurality of tabs integrally joined to the plane portion along two opposed sides thereof and foldable downwardly in relation to the plane portion to heat sealed connection with the coupler along opposed sides of the multipack, the apparatus comprising conveyor means for transporting a succession of said multipacks along a generally horizontal path, a reservoir for plurality of said blanks, applicator means operating in timed relation to said conveyor means to place blanks individually upon said multipacks moving along said conveyor means with the tabs of said blanks disposed laterally in relation to the conveyor path and, along each side of the conveyor path, heating means for directing hot gas onto said tabs and onto the lateral surfaces of said coupler whereby to render them heat-sealable together, folding means for folding the tabs downwardly adjacent said lateral surfaces of the coupler, and pressure means for holding the tabs against the coupler to heat-seal the same together, said conveyor means comprising a locating side conveyor disposed to receive the multipacks wit the blanks thereon downstream of the applicator means and having dog members arranged to engage individual multipacks between adjacent containers within said individual multipacks, so as to locate the multipacks as they are carried in substantially continuous succession through the heating means, folding means and pressure means, each dog of the locating side conveyor being arranged to engage both a multipack and the respective blank thereon so as to locate the blank in relation to the multipack until the heat-seals have been made.

4,501,105

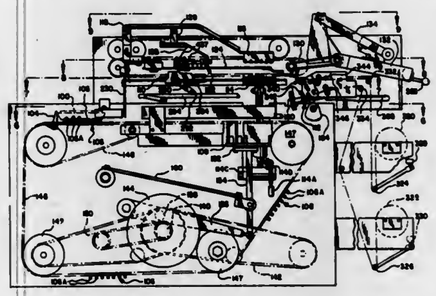
FILM SUPPLY MONITOR FOR FILM WRAPPING MACHINE

Robert M. Rogers, Troy; Fritz F. Treiber, Centerville, and Russell E. Bowers, Trotwood, all of Ohio, assignors to Hobart Corporation, Troy, Ohio

Filed Apr. 26, 1982, Ser. No. 371,682

Int. Cl.³ B65B *59/02*

U.S. Cl. 53—64 **2 Claims**



1. In a film wrapping machine including means for drawing a section of stretchable film from a continuous supply of said film into said machine, said film being threaded over a tensioning roller prior to being drawn into said machine such that said tensioning roller maintains a substantially constant force on said film and is displaced by a defined amount upon draw of a minimum length of film into said machine, an improved machine control system comprising:

sensing means coupled to said tensioning roller for detecting said defined amount of displacement caused by film being drawn into said machine and for generating a signal indicating such film draw; and

interruption means for stopping the operation of said machine upon failure to receive said signal.

4,501,106

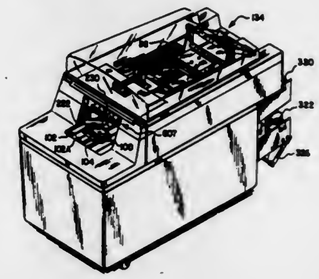
WRAPPING CONTROL SYSTEM FOR FILM WRAPPING MACHINE

Fritz F. Treiber, Centerville, and Russell E. Bowers, Trotwood, both of Ohio, assignors to Hobart Corporation, Troy, Ohio

Filed Apr. 26, 1982, Ser. No. 371,681

Int. Cl.³ B65B *59/02*

U.S. Cl. 53—66 **9 Claims**



1. In a film wrapping machine including film gripper means for pulling a section of stretchable film from one of at least two different width rolls of film to a position for wrapping a package, clamping means for engaging the opposite sides of said section of film for stretching said film section prior to wrapping a package, and folding means for wrapping said section of film about a package, an improved control system comprising:

first film selection means for automatically selecting one of said film widths for each package to be wrapped in response to signals identifying size characteristics of each package;

package sensing means for generating said size characteristic identifying signals; and

timing means for synchronizing the film gripper means and the clamping means with the folding means dependent upon the film width selected whereby the film tension control during package wrapping is individualized for each film width selected by said film wrapping machine.

4,501,107

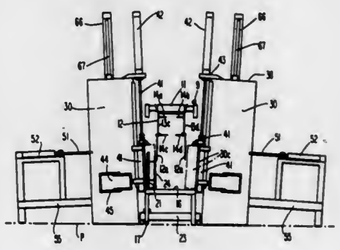
BATT STACKER AND LOADER AND METHOD THEREFOR

Tony S. Piotrowski, Prairie Village, Kans., assignor to Certain-Teed Corporation, Valley Forge, Pa.

Filed Dec. 29, 1982, Ser. No. 454,422

Int. Cl.³ B65B *1/24*

U.S. Cl. 53—438 **17 Claims**



13. In an improved apparatus for removing insulation batts from a delivery zone of a production line or the like by collecting and stacking the batts, transferring the stacks, compressing the stacks into a smaller volume and moving the smaller volume to a container, the improvement comprising:

(a) a first surface located below the delivery zone for receiving batts therefrom;
(b) a batt transfer device for engaging batts and moving collections of batts generally horizontally from and to opposite lateral sides of said first surface and having generally vertically disposed batt engaging means for contacting the batts that include guides projecting through a plurality of laterally running slots in said first surface, said guides being connected to a transfer power means for moving said guide;
(c) a plurality of packing chambers located immediately adjacent said first surface and on opposite lateral sides thereof, each said chamber having
(i) at its base, a generally horizontally extending floor,
(ii) a plurality of generally horizontal lifting members in a normally recessed relationship with openings in said chamber floor that comprise a first position for receiving the collection of batts from the batt transfer device at said first position but which are movable from said openings upon lifting to a second higher position, being powered to said second higher position by a lifting power means for guided raising and lowering of said lifting members,
(iii) generally vertically disposed wall surfaces extending around said floor and holding fingers extendingly disposed through an aperture in a said wall into said chamber in a horizontal direction at said second higher position to removably retain the collection of batts while said lifting members lower to said first position, said fingers being connected to a finger-moving power means for back and forth movement,
(iv) a vertically movable horizontally disposed plate mounted for movement from the upper end of said chamber with plate drive power source connected thereto for forcing said plate into the collection of batts against said chamber floor thereby comprising a smaller unit, and
(v) a snout extending outwardly from an aperture in said chamber wall adjacent said floor comprising means for removably receiving a container applied thereto, a horizontally extendable ram inwardly of and adjacent to an aperture in said chamber wall and opposite of said wall having the snout and aperture, and ram power means for moving said ram in a pushing relation to the unit from said back wall aperture, through said aperture and snout and into the container.

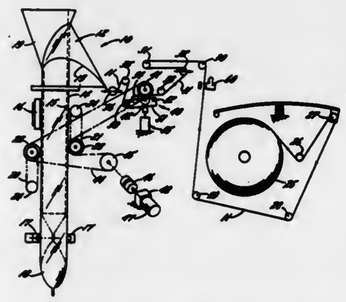
14. A method for receiving a plurality of insulation batts from delivery zone of a production line or the like by collecting the batts into stacks, transferring the stacks into one of a plurality of bagging chambers, retaining the stacks while other stacks are transferred in, compressing all stacks and transferring the compressed unit of insulation batts into a container, comprising the steps of:
(a) collecting and stacking the batts on a first surface having opposite, lateral sides as said batts proceed off a production line;
(b) moving the collection of batts off of either lateral side of said first surface with a reciprocating motion directed horizontally across said first surface and into a first position in a first packing chamber;
(c) raising the collection of batts from said first position to a second higher position thereabove;
(d) extending holding fingers underneath the collection of batts to retain the collection in said second higher position;
(e) receiving successive collections of batts in said first position in said first chamber and raising said successive collections up to said second higher position;
(f) retracting and extending said holding fingers to retain the successive collections of batts in said second higher position;
(g) compressing the collections of batts in said chamber into a smaller volume;
(h) transferring a collection of batts by said batt transfer device into a second bagging chamber for stacking and compressing therein; and
(i) removing the smaller volume of compressed batts from the inside of said first chamber into a waiting container.

4,501,108
METHOD OF SEALING A TUBULAR RECEPTACLE
Arne Johansson, Roskilde, Denmark, assignor to A/S Nunc, Roskilde, Denmark
Filed Mar. 22, 1982, Ser. No. 360,843
Claims priority, application Deamark, Mar. 25, 1981, 1352/81
Int. Cl.³ B65B *53/02, 63/08*
U.S. Cl. 53—440 **2 Claims**



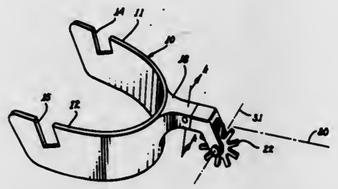
1. A method of freezing a sample of a biological material comprising introducing said sample into a cylindrical container made from a plastic material and having a removable lid; inserting said container in a preformed tubular body made from a heat-shrinkable material, said tubular body having a length greater than that of the cylindrical container; heating the tubular body to a temperature sufficiently high to cause the heat-shrinkable material thereof to shrink; compressing the tubular body in zones adjacent to the ends of the container to cause the tubular body to melt together in said zones; and inserting the sealed container thus obtained in a freezing liquid.

4,501,109
PACKAGING MACHINE WITH IMPROVED WEB FEEDING SYSTEM
Claude E. Monsees, Durham, N.C., assignor to Rexham Corporation, New York, N.Y.
Filed May 3, 1982, Ser. No. 374,040
Int. Cl.³ B65B *9/10, 9/12, 41/16*
U.S. Cl. 53—451 **15 Claims**



1. A machine for forming, filling and sealing packages, said machine being of the type in which a web of flexible material is pulled from a supply and past means for forming the web into tubing, in which product to be packaged is delivered into the tubing, and in which sealing operations are performed on the tubing to form packages, said machine comprising pay off means located between said supply and said forming means for pulling said web from said supply, pull down means located downstream of said forming means and acting on said tubing to pull said web past said forming means, means for driving said pull down means at a linear speed which is effective to pull a predetermined length of web past said forming means in a predetermined time interval, means for driving said pay off means for the same time interval as said pull down means and at a linear speed which is greater than the linear speed of said pull down means, and means for sensing the tension of said web at a location between said pay off means and said forming means and for causing said pay off means to slip relative to said web as an inverse function of said tension.

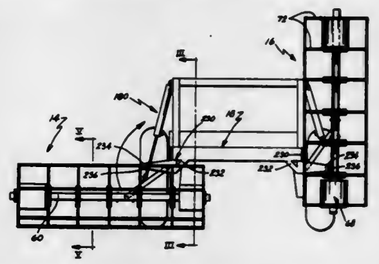
4,501,110
RIDING SPURS
Charles E. Kibler, 12051 N. Ranch La., Scottsdale, Ariz. 85260
Filed Mar. 14, 1984, Ser. No. 589,344
Int. Cl.³ A43C *17/00*
U.S. Cl. 54—83 R **9 Claims**



1. In a spur having a body attachable to a rider's foot, the improvement comprising:
a. a shank extending from said body rearwardly of the rider's foot;
b. a rowel mounting member freely rotatably secured to said shank for rotation, during use of said spur, about a first axis;
c. a rowel rotatably mounted on said member for rotation about a second axis perpendicular to the axis of rotation of said mounting member;
d. said mounting member and rowel freely rotating as a unit about said first axis when said spur contacts the side of an animal.

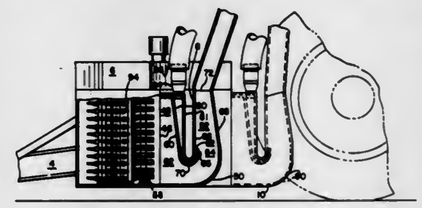
4,501,111
CRANBERRY HARVESTER
Lee W. Abbott, Box No. 1, Speedwell, Chatsworth, N.J. 08019
Filed Sep. 16, 1982, Ser. No. 418,723
Int. Cl.³ A01D *46/28*
U.S. Cl. 56—8 **29 Claims**

1. A wet harvesting apparatus to remove fruit from a bed of vines, said harvesting apparatus comprising:
a wheeled chassis;
a reel support frame having a base and a pair of legs;
mounting means operatively connected between said support frame and said chassis for mounting said frame to said chassis so that said frame may tilt and move vertically to conform to the surface of the bed;
a harvesting reel rotatably supported from the legs of said support frame;
drive means connected to said reel for rotating said reel to remove fruit from the vines; and
reel lift means connected to said support frame for raising said reel for cleaning purposes and for over-road travel, said reel lift means including a pivot arm extending from said chassis and having an end defining a pivot point



positioned to contact said base of said support frame as said reel is raised.

4,501,112
COTTON HARVESTING MACHINE PNEUMATIC DUCT SYSTEM
Guy N. Thedford; Robert M. Fachini, both of Naperville, and Dennis K. Sullivan, Elmhurst, all of Ill., assignors to International Harvester Co., Chicago, Ill.
Filed Jun. 27, 1984, Ser. No. 625,474
Int. Cl.³ A01D *45/18*
U.S. Cl. 56—13.3 **10 Claims**

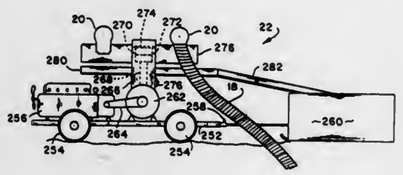


1. A cotton harvesting machine with a duct system for pneumatically transporting cotton from a harvesting means to a conveyor tube comprising:
a duct having an inlet port generally exposed to the harvesting means for receiving cotton from said harvesting means, said duct being U-shaped, and said duct including:
a descending leg, said descending leg having a wall generally opposite said duct inlet port and said descending leg having an outlet generally located at its lower end;
an elbow for receiving cotton from said descending leg outlet and said elbow having an upper and lower wall and said elbow redirecting the cotton to an outlet in a generally upward direction;
an ascending leg receiving cotton from said elbow outlet, said ascending leg having front and rear walls and said ascending leg having an outlet generally in the upward direction aligned with the conveyor tube; and
a U-shaped air supply line, said air supply line being adjacent said descending leg rear wall and said elbow upper wall, said air supply line having a nozzle outlet adjacent the forward side of said ascending leg, said nozzle outlet directing an air flow in a generally upward direction.

4,501,113
FRUIT HARVESTING MACHINE

Curtis E. Gerber, 4015 Bayshore Blvd., 8C, Tampa, Fla. 33611

Division of Ser. No. 271,943, Jun. 9, 1981, Pat. No. 4,388,798.
This application Sep. 29, 1982, Ser. No. 427,630
Int. Cl.³ A01D *46/00, 46/10*
U.S. Cl. 56—328 R 5 Claims

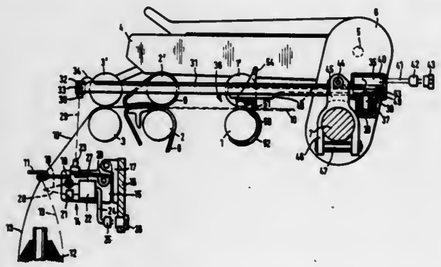


1. A transport for a fruit harvesting machine, comprising in combination:
a frame;
means for connecting the vacuum source of the fruit harvesting machine to said frame;
a housing connected to the vacuum source;
an input conduit of the said vacuum source extending into said housing;
filter means connected about said input conduit for filtering fluid passing towards said vacuum source;
a manifold connected to said housing; and
means for connecting at least one of the discharge valves of the fruit harvesting machine to said manifold such that said discharge valve is connected in fluid communication with the vacuum source.

4,501,114
APPARATUS FOR CONTROLLING PASSAGE OF MATERIAL THROUGH TEXTILE SPINNING OR TWISTING MACHINE

Michael von Ronai-Horvath, Ludwigsburg, and Bernhard Schönung, Filderstadt, both of Fed. Rep. of Germany, assignors to SKF Kugellagerfabriken GmbH, Schweinfurt, Fed. Rep. of Germany

Filed Jun. 10, 1982, Ser. No. 387,193
Claims priority, application Fed. Rep. of Germany, Jun. 13, 1981, 3123476
Int. Cl.³ D01H *13/16*
U.S. Cl. 57—81 13 Claims

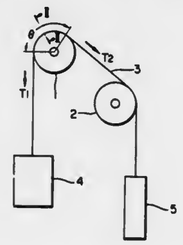


1. Apparatus for regulating the passage of moving material through a textile spinning machine or the like comprising a first assembly having means operable for controlling the entry of said material into said machine, a second assembly located downstream from said first assembly for determining the continuity of said material moving through said machine comprising means for impinging a light source on said material, means for sensing the light reflected from said moving material and for converting said reflected light into an electrical signal of alternating intensity, means for modulating said alternating intensity electrical signal, and light emitting means responsive to said modulated alternating intensity electrical signal for emitting a modulated light beam, and a third assembly for producing a command signal for operating said control means comprising a receiver for said modulated light beam spaced remotely from and arranged in line of sight with said light emitting means providing an electrical output and means for converting said electrical output into an alternating voltage comprising an amplifier receiving the output of said receiver, and an identification circuit responsive to said amplifier for rectifying the output signal and a pulse generator providing a pulse for operating said means for controlling the entry of said material.

4,501,115
TRACTION TYPE ELEVATOR SYSTEM

Katsuhiko Suzuki, Nagoya, and Seihachi Naganuma, Kawasaki, both of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha; Tokyo Rope Mfg., Co., Ltd. and Hakko Kouyu Co., Ltd., all of Tokyo, Japan

Filed Apr. 6, 1983, Ser. No. 482,704
Claims priority, application Japan, Apr. 12, 1982, 57-60485
Int. Cl.³ D02G *3/36, 3/06;* C09K *3/14*
U.S. Cl. 57—220 19 Claims



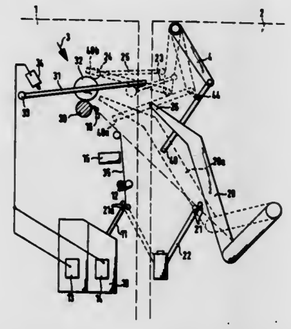
1. A traction type elevator system comprising a wire rope place around a drive sheave including a soft-solid or greasy agent coated on the wire rope which increases the coefficient of friction or traction between the wire rope and the drive sheave, said agent having a drip point higher than 55 degrees C. and a rate of evaporation of less than 1 weight percent at 105 degrees C. during an interval of eight hours and being comprised of a thickener in an amount sufficient to provide said drip point and a suitable viscosity and at least one of a polybutene or a liquid polyisobutylene as a basic constituent.

4,501,116
PROCESS FOR WINDING A NEWLY JOINED THREAD ONTO A TUBE NEWLY INSERTED IN A SPOOLING DEVICE

Edmund Schuller; Walter Mayer, both of Ingolstadt; Eugen Hini, Lenting; Erich Bock, Wettstetten, and Kurt Lovas, Bohmfeld, all of Fed. Rep. of Germany, assignors to Schubert & Salzer, Ingolstadt, Fed. Rep. of Germany

Filed Jul. 8, 1982, Ser. No. 396,278
Claims priority, application Fed. Rep. of Germany, Jun. 13, 1981, 3123494
Int. Cl.³ D01H *15/00*
U.S. Cl. 57—263 6 Claims

1. A process for exchanging a full bobbin for a empty tube in a spooling device on an open-end spinning mechanism, wherein on reaching the desired spool size the open-end spinning mechanism is stopped and its fiber collecting surface is cleaned, said process comprising the following steps:
cleaning said fiber collecting surface of the open-end spinning mechanism after a thread break;
returning the thread from said full bobbin to the open-end spinning mechanism after said cleaning of the spinning mechanism and effecting a thread-joining operation;
withdrawing the thread from said open-end spinning mechanism after said thread-joining and guiding the joined thread away together with the thread join by means of a suction device;

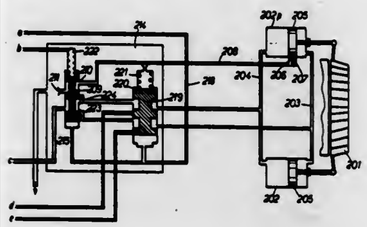


severing a thread section extending from the suction device to said full bobbin;
removing said full bobbin from said spooling device and exchanging an empty tube in its place;
transferring said thread delivered by the open-end spinning mechanism to said suction device to said empty tube; and
severing said thread end extending into said suction device.

4,501,117
DEVICE FOR CONTROLLING AND REGULATING THE CROSS SECTION OF A VARIABLE AREA PROPULSIVE NOZZLE

Guy M. C. Canivet, Boissise le Roi, France, assignor to Societe Nationale d'Etude de Construction de Moteurs d'Aviation, Paris, France

Filed Nov. 16, 1983, Ser. No. 552,383
Claims priority, application France, Nov. 29, 1982, 82 19949
Int. Cl.³ F02K *1/17*
U.S. Cl. 60—235 15 Claims

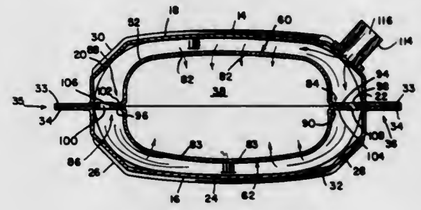


1. In an aircraft turbojet engine having a variable area propulsive nozzle, first supply means to supply fuel to the engine under normal operating conditions, second supply means to supply fuel to the engine under emergency operating conditions in case of failure or malfunction of the first supply means, switching means movable between first and second positions to switch the fuel supply from the first supply means to the second supply means and hydraulic cylinder means including a piston and a rod connected to movable flaps so as to vary the cross sectional area of the propulsive nozzle, the improved apparatus for controlling the operation of the variable nozzle comprising: (a) means to direct an actuating fluid into the hydraulic cylinder means when the switching means is moved into the second position such that the cross sectional area of the propulsive nozzle is reduced; and, (b) orifice means associated with at least one of the hydraulic cylinders to limit the travel of the piston in the cylinder thereby limiting the amount of reduction of the nozzle area so as to prevent overloading the compressor of the turbojet engine.

4,501,118
CATALYTIC CONVERTER HOUSING

Timothy Z. Thayer, Hope, and Frank W. Shaw, Columbus, both of Ind., assignors to Arvin Industries, Inc., Columbus, Ind.

Filed May 16, 1983, Ser. No. 494,611
Int. Cl.³ F01N *3/28*
U.S. Cl. 60—301 10 Claims



1. In a catalytic converter having a longitudinally disposed body portion comprising first and second shell halves having a wall defining an interior through which a combustion product can flow, the body having an inlet through which the combustion product can flow into the interior of the body and an outlet through which the combustion product can flow out of the interior of the body,
a reducing catalyst disposed in the interior of the body proximal to the inlet,
an oxidizing catalyst disposed in the interior of the body proximal to the outlet, and
means for providing a passageway between the body interior containing the reducing catalyst and the body interior containing the oxidizing catalyst, the improvement comprising first and second manifold halves, each half including
a pair of flanges extending perimetrally substantially completely around the interior wall of one shell half, the manifold flanges being disposed substantially parallel to the interior wall and coupled thereto,
the manifold flanges including a portion recessed inwardly from the interior wall and first and second mating sections, the recessed portion including means for introducing air into the passageway between the reducing catalyst and the oxidizing catalyst,
the first mating section including a stud, and the second mating section including an aperture, the aperture of said second mating section being sized and positioned to receive the stud of the first mating section,
and wherein each shell half includes a portion of the interior wall for attaching the pair of flanges of the manifold halves, the portion having a greater longitudinal extent than the longitudinal extent of the pair of manifold flanges.

4,501,119
PUMP JACK

George E. Stanton, Orient, Ohio, assignor to NuJack Oil Pump Company, Columbus, Ohio

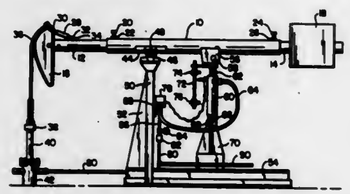
Filed Feb. 28, 1983, Ser. No. 470,587
The portion of the term of this patent subsequent to Jul. 24, 2001, has been disclaimed.
Int. Cl.³ F15B *13/04*
U.S. Cl. 60—398 13 Claims

1. A pump jack including in combination a mounting base having mounted thereon a support member, a rocker arm pivotally mounted on said support member, said rocker arm

being divided by said pivotal mounting into a sucker rod limb and a drive limb, the sucker rod limb having a sucker rod attached to its end most remote from the pivotal mounting, and the drive limb having one end of a piston of a pneumatic motor pivotally attached thereto intermediate the pivotal mounting and the end of the drive limb remote from said mounting,

said piston extending from a cylinder mounted on said mounting base,

said sucker rod projecting into a well casing, gas under pressure exiting from said casing, means for delivering



said exiting gas to said cylinder to drive said piston in one direction,

switch means for opening and closing the cylinder to the gas to thereby reciprocate the piston within the cylinder and pivot the rocker arm about said pivotal mounting,

means for adjusting the length of the stroke of said piston,

two means for adjusting the length of the sucker rod limb without changing the length of the drive limb,

means for adjusting the length of the drive limb without changing the length of the sucker rod limb.

4,501,120

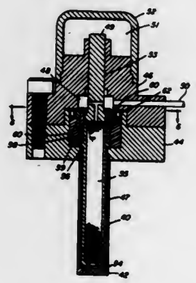
REFRIGERATION SYSTEM WITH CLEARANCE SEALS

Noel J. Holland, Burlington, Mass., assignor to Helix Technology Corporation, Waltham, Mass.

Continuation-in-part of Ser. No. 241,418, Mar. 6, 1981, abandoned, which is a continuation-in-part of Ser. No. 135,141, Mar. 28, 1980, abandoned. This application Sep. 9, 1982, Ser. No. 416,350

Int. Cl.³ F25B *9/00*

U.S. Cl. 62—6 **16 Claims**



1. In a refrigerator having a displacer which reciprocates in a housing, there being a working volume of gas and a spring volume of gas in contact with end surfaces of the displacer and separated by a fluid seal surrounding the displacer, the displacer being driven entirely by pressure differentials between the working volume and the spring volume with the phase relationship between the pressure differential and the displacer movement being dependent on a retarding force on the displacer, the improvement of:

a clearance seal of cooperating clearance seal elements comprising ceramic material between the working volume and the spring volume to provide virtually dragless fluid sealing;

a clearance seal of cooperating clearance seal elements comprising ceramic material around the displacer, between portions of the working volume at opposite ends of the displacer, to provide virtually dragless fluid sealing; and

means other than fluid seals for loading the displacer and thus retarding movement of the displacer.

4,501,121

METHOD OF HEAT EXCHANGE AND REFRIGERATING DEVICES

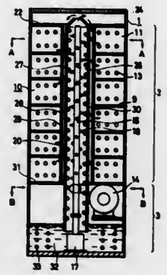
Masahiko Izumi, 13-14, 2-chome, Nishimagome, Oota-ku, Tokyo, Japan

Filed Mar. 28, 1983, Ser. No. 479,809

Claims priority, application Japan, Apr. 23, 1982, 57-67259

Int. Cl.³ F24F *3/16*

U.S. Cl. 62—78 **6 Claims**



1. A method of providing a flow of air saturated with water comprising the steps of flowing air upwardly through a heat exchanger, positioning said heat exchanger generally vertically, providing an evaporator coil or a refrigerating machine inside said heat exchanger, providing a supply of water at the lower end of said heat exchanger, spraying water from said supply of water inside said heat exchanger onto said evaporator coil, flowing air to be saturated with said water through the inside of said heat exchanger in contact with said coil and with said sprayed water therein, and providing an amount of water in said step of spraying water larger than the amount of water said flow of air is capable of carrying, whereby the excess water in the form of the larger droplets thereof automatically returns to said supply of water by falling downwardly through said heat exchanger.

4,501,122

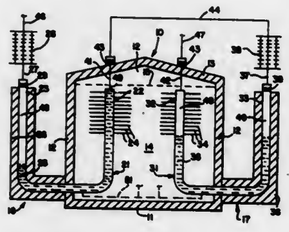
LIQUID PISTON HEAT PUMP

Donald R. Cutler, Bolingbrook, Ill., assignor to Chicago Bridge & Iron Company, Oak Brook, Ill.

Filed Aug. 25, 1983, Ser. No. 526,461

Int. Cl.³ F25B *1/00*

U.S. Cl. 62—116 **15 Claims**



1. A heat pump system comprising:

(a) a plurality of adjacent substantially similar piston bodies, each body having an evaporator end section and a condenser end section;

(b) a working fluid in each of said piston bodies and said fluid being the same in all of said piston bodies, said fluid forming a liquid piston and a vapor above said piston;

(c) a condenser associated with each piston bodies, each of paid condensers having a drain end connected to said condenser end section of the associated piston body, and

(d) a plurality of vapor pipes, one of said pipes connecting said feed end of each condenser to said evaporator end of an adjacent piston body, there being a free flow of said vapor through said vapor pipes from said evaporator end section of each body to said feed end of the associated condenser and said vapor pipes being substantially devoid of regenerators; and,

(e) said evaporator end section of each body being adapted to be located in a relatively warm first area and said condensers being adapted to be located in a relatively cooler second area, and said pistons being adapted to oscillate because of the temperature difference between said first and second areas.

4,501,123

COOLING APPARATUS FOR MACHINERY

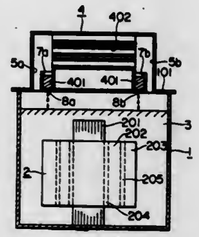
Teruo Ina, Takarazuka, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 17, 1983, Ser. No. 552,913

Claims priority, application Japan, Dec. 3, 1982, 57-213012

Int. Cl.³ F25D *15/00*

U.S. Cl. 62—119 **5 Claims**



1. A cooling apparatus for machinery comprising:

a tank having a body of vaporizable refrigerant sealed therein and in which the machinery to be cooled is immersed;

a condensing means above said tank and having a plurality of cooling tubes therein;

distributing pipes connecting said tank to said condensing means, and distributing pipes each extending from the tip of said tank to said cooling tubes for conveying vapor phase vaporizable refrigerant generated within said tank as the result of heating by the heat generated in said machinery to said cooling tubes; and

a condensed refrigerant accumulating means positioned in said distributing pipes and filling only a portion of the cross-section of the respective distributing pipe for receiving liquid refrigerant condensed in said cooling tubes and having restricted passage means extending into said tank for returning liquid refrigerant to said tank, said restricted passage being sufficiently small that when liquid refrigerant is accumulated in said accumulating means the vapor phase of said vaporizable refrigerant from said tank cannot penetrate through it.

4,501,124

APPARATUS FOR LEAKAGE DETECTION OF CRYOGENIC MATERIALS

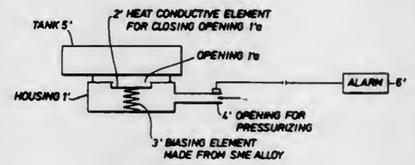
Edward B. Shone; Robert W. Wilson, and Gordon L. Cunningham, all of Chester, England, assignors to Shell Oil Company, Houston, Tex.

Continuation of Ser. No. 458,685, Jan. 17, 1983, abandoned. This application Jan. 17, 1984, Ser. No. 571,146

Claims priority, application United Kingdom, Sep. 18, 1980, 8030160

Int. Cl.³ G01K *13/00*

U.S. Cl. 62—129 **1 Claim**



1. A device for detecting a leak of cryogenic material from a structure containing the material and triggering an alarm, the device comprising a heat-conductive element located to receive cryogenic material falling from the cryogenic material-containing structure, a biasing element made from a shape memory effect alloy which contacts the heat-conductive element and is operative to effect a displacement of the heat-conductive element according to the cryogenic temperature to which the biasing element is subjected, a housing provided with an opening which is closed in the absence of a leak of the cryogenic material onto the heat-conductive element, another opening in said housing for receiving pressurized fluid medium, and means for conveying a pressure drop signal from said housing to trigger an alarm.

4,501,125

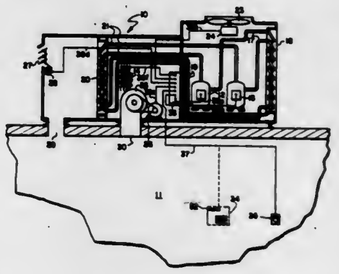
TEMPERATURE CONDITIONING SYSTEM STAGING CONTROL AND METHOD

Doyoung Han, La Crosse, Wis., assignor to The Trane Company, La Crosse, Wis.

Filed Dec. 5, 1983, Ser. No. 557,983

Int. Cl.³ F25B *7/00*

U.S. Cl. 62—175 **15 Claims**



1. A control for a temperature conditioning system having a plurality of stages that may be selectively energized to meet a temperature conditioning demand in a zone, said control comprising

a. a temperature sensor disposed within the zone;

b. means for selecting a zone setpoint temperature; and

c. means responsive to the temperature sensor and the setpoint selecting means, for controlling the temperature conditioning stages as a function both of the deviation of the zone temperature from the setpoint temperature, and

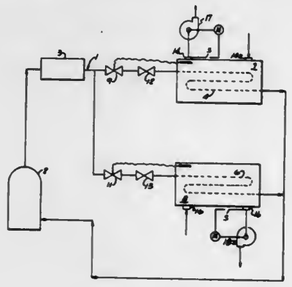
of the rate of change of the temperature in the zone, said control means including means for selectively energizing or de-energizing the stages of temperature conditioning depending upon the range in which the deviation of the zone temperature from the setpoint temperature lies, and predefined limits for the rate of change in the zone temperature that are associated with that range.

4,501,126

METHOD AND APPARATUS FOR LIQUID FREEZING

John P. Norton, Creve Coere, Mo., assignor to Engineered Air Systems, Inc., St. Louis, Mo.

Division of Ser. No. 474,164, Mar. 10, 1983, Pat. No. 4,459,812. This application Jan. 9, 1984, Ser. No. 569,177
Int. Cl.³ F25D *17/02*
U.S. Cl. 62—185 **3 Claims**



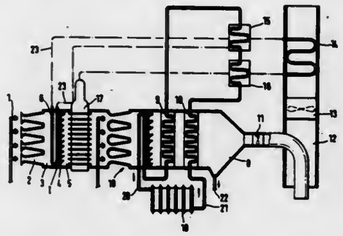
1. Apparatus for rapidly freezing a cool pack chamber comprising: a refrigeration system including a compressor, a condenser, first and second evaporators in said system, first and second liquid chiller chambers respectively enclosing said first and second evaporators, each chiller chamber having fluid inlet and outlet conduit sets provided with quick disconnect fittings and a pump to circulate a liquid cooling medium therethrough, said refrigeration system further including temperature regulating means for said evaporators whereby a first liquid cooling medium in said first chiller chamber can be maintained at a temperature slightly above the freeze point to bring said first medium to a slush-like state and a second liquid cooling medium in said second chiller chamber can be maintained at a temperature below the freeze point of said first liquid cooling medium and an independent cool pack comprising a separately portable heat transfer envelope defining an uninterrupted flow through cool pack chamber including a first set of fluid inlet and outlet conduits disposed in said heat transfer envelope and provided with quick disconnect coupler fittings sized and positioned to connect respectively with the fluid outlet and fluid inlet set of said first liquid chiller chamber to allow introduction of said slush-like medium into said cool pack chamber, a heat exchange element disposed in said cool-pack chamber extending in uninterrupted fashion substantially throughout said chamber, said heat exchange element including a second fluid inlet and outlet conduit set disposed in said heat transfer envelope and provided with quick disconnect coupler fittings sized and positioned to connect respectively with the fluid outlet and fluid inlet set of said second liquid chiller chamber to allow introduction of said liquid cooling medium from said second chiller chamber which is below the freeze point of said slush-like medium introduced into said cool pack chamber from said first liquid chiller to cause said slush-like medium to freeze.

4,501,127

HEATING SYSTEM INCORPORATING AN ABSORPTION-TYPE HEAT PUMP AND METHODS FOR THE OPERATION THEREOF

Hans Sommers, Essen, and Theo Jannemann, Dorsten, both of Fed. Rep. of Germany, assignors to Ruhrgas Aktiengesellschaft, Essen, Fed. Rep. of Germany

Filed Oct. 29, 1981, Ser. No. 316,355
Claims priority, application Fed. Rep. of Germany, Oct. 29, 1980, 3040628; Apr. 3, 1981, 3113417
Int. Cl.³ F25B *27/02, 15/00*
U.S. Cl. 62—238.3 **43 Claims**



1. In a heating system with a fuel gas-fired absorption-type heat pump having a refrigerant solution loop of generator, condenser, evaporator and absorber, in which the generator is located in the flue duct of the gas burner and in which the refrigerant solution loop is coupled to the heating water loop by means of heat exchangers:
the gas burner is an aerated gas burner combusting a fuel-lean mixture;
said burner having at least one fuel delivery orifice, at least one parallel mixer tube receiving the fuel gas from the orifice and entraining combustion air;
mixer means receiving the fuel gas and entrained air;
a burner plate of high thermal conductance on which the fuel gas and air mixture is burned and a sealed combustion chamber receiving the burning mixture;
said combustion chamber being connected downstream to said flue duct;
said generator being arranged so that the distance between the burner plate and the generator is less than approximately 50 mm.;
said burner plate having a plurality of mixture passing ports leading to said combustion chamber distributed across the entire burner plate, said ports being not less than 4 ports for each square centimeter; and
a closed refrigerant piping system including piping means for passing rich refrigerant solution from said absorber to said generator, said piping means including means for cooling said burner plate by transfering heat from said burner plate to said rich solution before said generator, said cooling means being bonded to the surface of said burner plate opposite from said generator.

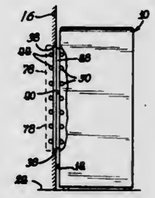
4,501,128

HEAT RECLAMATION

Paul H. Gallagher, 2530 Crawford Ave., Evanston, Ill. 60201

Filed May 5, 1982, Ser. No. 374,936
Int. Cl.³ F28D *7/08*
U.S. Cl. 62—238.6 **9 Claims**

1. Heat reclamation apparatus incorporating,
(a) a water system including a cold water inlet and hot water outlet, and
(b) a movable refrigerator separate from and operable independently of the water system, and generating heat as a necessary function of its operation,
wherein,
the water system includes a receptor heat exchanger unit through which the water flows, and which has a first exposed surface,
the refrigerator includes a donor heat exchanger unit having a second exposed surface receiving the heat generated by the refrigerator, and
the refrigerator is movable into and out of a position in which its said second exposed surface is in heat transfer engagement with said first exposed surface, and those exposed surfaces are also detached and separate items without interconnection except loose contact engagement.



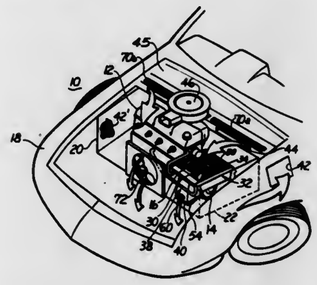
the receptor heat exchanger unit is mounted in the wall structure with said first exposed surface thereof lying substantially flush in said wall surface, and
the donor heat exchanger unit is so positioned in the appliance that the second exposed surface of that unit is adjacent an exterior surface of the appliance, and the appliance is so positionable in said space, adjacent the wall, that the donor heat exchanger unit engages the receptor heat exchanger unit.

4,501,129

INTEGRAL ENGINE AIR CONDITIONING SYSTEM

Herbert N. Charles, Chatham, Canada, assignor to Canadian Fram Limited, Chatham, Canada

Filed Jan. 24, 1983, Ser. No. 460,229
Int. Cl.³ B60H *3/04*
U.S. Cl. 62—239 **2 Claims**



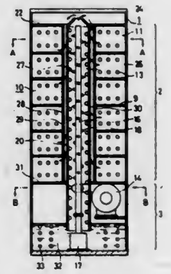
1. An air conditioning system for cooling an internal compartment of a vehicle having an engine forwardly mounted relative to the internal compartment including an engine driven compressor, an evaporator communicated with the internal compartment, at least one condenser connected in circuit with the compressor and evaporator, comprising:
compartment means for providing an enclosed volume formed by a hood, inner fender liners, vehicle firewall and belly pan linking same;
air inlet means situated on the vehicle and positioned on a portion of the vehicle forward of the internal compartment that does not receive ram air, and for communicating the non-ram air to the compartment means, and wherein at least one condenser is situated relative to said air inlet means to receive the non-ram air prior to communication to said compartment means;
blower means driven by the vehicle's engine and having an inlet positioned within said compartment means and an outlet adapted to discharge air out from said compartment means;
damper means responsive to at least one air conditioning parameter, mounted in series with said blower, for controlling the air flow therethrough and
an auxiliary fan positioned at the perimeter of said compartment means, responsive to control signals input thereto for withdrawing air from said compartment means and for increasing the air flow across said condensers.

4,501,130

REFRIGERATING DEVICE

Masahiko Izumi, 13-14, 2-chome, Nishimagome, Oota-ku, Tokyo, Japan

Continuation of Ser. No. 479,809, Mar. 28, 1983,. This application Apr. 24, 1984, Ser. No. 603,650
Claims priority, application Japan, Apr. 23, 1982, 57-067259
Int. Cl.³ A47F *3/04*
U.S. Cl. 62—247 **8 Claims**

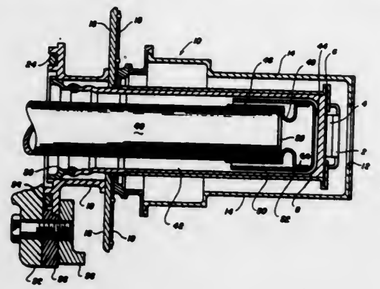


1. A refrigerated showcase wherein a flow of water saturated air is brought into direct contact with the goods displayed in the showcase, said showcase being oriented generally vertically, said showcase being divided into a main showcase space, a generally horizontal machinery and water storage space below said main space, and a generally vertical return space at the back of said main space, access door means at the front of said main space, a vertically disposed heat exchange means positioned at the back of said main space and interconnecting said main and water storage spaces, an evaporator coil means forming part of a refrigerating machine, means to position said evaporator coil means on the inside of said heat exchanger, pump means for pumping water from said water supply into said heat exchanger, nozzle means, said pump means pumping said water from said water supply through said nozzle means and into the inside of said heat exchanger, fan means, said fan means comprising means to pump air from said return space into said heat exchanger, whereby said air from said fan means flows through said heat exchanger in contact with said evaporator means and said sprayed water therein to thereby become saturated with water, means to flow said air through said heat exchanger from the lower end to the upper end thereof, whereby any excess water in the form of the larger droplets thereof automatically returns to said water supply by falling downwardly through said heat exchanger into said water supply, means to flow the water saturated air exiting from said heat exchanger into said main space, and means to return the air flow from said main space to a suction side of said fan via said return space.

4,501,131
CRYOGENIC COOLER FOR PHOTOCONDUCTIVE CELLS

Virginia R. Gaskin, Orlando; Eugene P. Horvath, Longwood, and Richard M. Jansson, Maitland, all of Fla., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jan. 3, 1984, Ser. No. 567,727
Int. Cl.³ F25B 19/00
U.S. Cl. 62—514 R 4 Claims



1. In the apparatus for maintaining an electromagnetic radiation detector at extremely low temperatures wherein the detector is placed in a cryogenic cooler in the form of a Dewar vacuum chamber mating with a refrigerator cold finger including a tip which cools the Dewar chamber, a thermal coupling heat transfer mechanism comprising;

(1) a circumferentially crimped temperature conducting tubular member slideably mounted on, and thermally engaging the end of, the cold finger, with its annular or radial crimp adapted to retain a shim between the tip of the cold finger and the crimp,

(a) the tubular member being sufficiently thin-gauged so that its thinness in combination with the crimp permits the tubular member to flex, avoiding damage to the Dewar chamber should physical contact occur during assembly,

(b) the diameter of the tubular member upper portion above the radial crimp being enlarged so that the tube sides are in close proximity to the Dewar chamber walls; and

(2) a heat transfer cap integral with the enlarged tubular member upper portion adapted to be radiantly cooled thereby, and to be spaced from the Dewar wall a distance slightly exceeding the differential of expansion of the thermal coupling,

(a) the sides of said cap extending downwardly over the tubular member and cold finger top and along the Dewar chamber wall providing an increased Dewar wall cooling surface.

4,501,132
PRESSER FOOT MECHANISM IN A KNITTING MACHINE

John Flavell, Coundon; Keith Jeffcoat, Nuneaton, and Max W. Betts, Coventry, all of United Kingdom, assignors to Courtaulds PLC, London, England

Continuation-in-part of Ser. No. 848,296, Nov. 3, 1977, abandoned. This application Jul. 15, 1981, Ser. No. 283,509
Int. Cl.³ D04B 7/04
U.S. Cl. 66—64 1 Claim

1. In a flat knitting machine having two opposed needle beds each having a needle array containing needles operated by a cam system located in a cam box arranged to move, in use, along said needle arrays, and also having a support mounted for movement in synchronism with the cam box along the needle arrays, a presser foot assembly for pressing down on fabric as it is knitted, comprising:

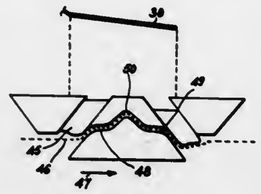
(a) a supporting arm mounted on said support and projecting generally downward therefrom;

(b) a slider;

(c) structure on said supporting arm mounting said slider for sliding movement along said arm substantially midway between said needle beds;

(d) a unitary presser foot carried entirely on said slider;

(e) said presser foot being thereby mounted for sliding movement on said supporting arm in a generally up-and-down direction;



(f) resilient means arranged to urge said slider downwardly on said supporting arm;

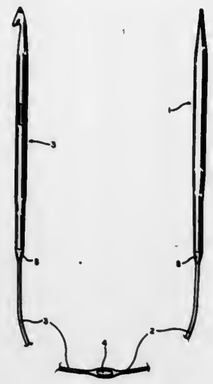
(g) said presser foot being located in a position in relation to said cam system such that the presser foot extends from a region in advance of the rising needles to the rear of the fully raised needles in said machine; and

(h) said presser foot thus providing a resiliently mounted slidably raisable element controlling stitches on the needles of the machine over descending as well as rising movement of said needles.

4,501,133
DUAL NEEDLE ARRANGEMENT

Gisela Kretzschmar, Wesseling, and Jutta Selter, Altena, both of Fed. Rep. of Germany, assignors to Gustav Selter, Altena, Fed. Rep. of Germany

Filed Jul. 1, 1982, Ser. No. 394,108
Claims priority, application Fed. Rep. of Germany, Jul. 4, 1981, 3126451; Nov. 11, 1981, 8132901[U]
Int. Cl.³ D04B 35/02
U.S. Cl. 66—117 7 Claims



1. A knitting and crocheting needle arrangement comprising:

a knitting needle having a tip and a rear end;

a hook-type crocheting needle also having a tip and a rear end;

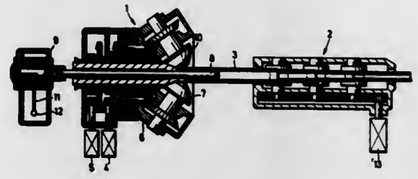
a flexible cord connected between said rear ends of said needles; and

an eye in said cord generally midway between said rear ends and dimensioned and positioned such that a filament threaded through said eye can be laid into goods crocheted or knitted by said arrangement.

4,501,134
ROLLING MILL PLANTS

Karl-Hans Staat, Homberg/Ratingen, and Hermann Möltner, Grevenbroich, both of Fed. Rep. of Germany, assignors to Kocks Technik GmbH & Co., Hilden, Fed. Rep. of Germany

Filed May 10, 1983, Ser. No. 493,216
Claims priority, application Fed. Rep. of Germany, Jun. 3, 1982, 3220921
Int. Cl.³ B21B 23/00
U.S. Cl. 72—8 4 Claims

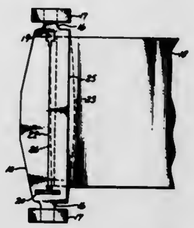


1. A rolling mill plant for rolling tubular product comprising a planetary skew rolling mill and a reducing or sizing rolling line which is disposed a short distance therebeyond on a common pass line, drive means for driving said planetary skew rolling mill, drive means for said reducing or sizing roll line, a mandrel rod in said planetary skew rolling mill for rolling tubular blooms therein, mounting means adjacent said planetary skew rolling mill for holding said mandrel, a torque measuring device at the mandrel mounting means for regulating the planetary skew rolling mill drive means operatively connected between the mandrel rod and its mounting means, a tension and compression measuring device operatively connected to the reducing or sizing rolling line which is effective in either direction relative to the rolling direction to measure the axial load in the work material and which regulates the drive of the reducing or sizing rolling line, whereby stressing of the work material in the region between the planetary skew rolling mill and the reducing or sizing rolling line is avoided.

4,501,135
STRESS SENSOR FOR YIELD-POINT DETECTION IN A STRETCH PRESS

David E. Chivens, Mission Viejo, Calif., and Laramie J. Cloward, Chehalis, Wash., assignors to L & F Industries, Huntington Park, Calif.

Filed Feb. 9, 1982, Ser. No. 347,305
Int. Cl.³ B21C 51/00
U.S. Cl. 72—302 7 Claims



1. In combination with a stretch press having a base, and an elongated gripping-jaw assembly having a frame supported on the base, the assembly being adapted to grip a metal part to be stretch formed by the press, an improved sensor for monitoring tensile stress in the part during stretch forming, the sensor comprising:

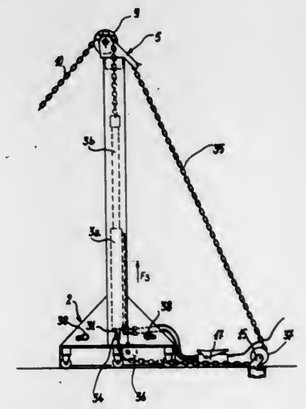
a light source for projecting a light beam along the jaw assembly, the source being rigidly secured to the jaw assembly so the beam is deflected as the jaw assembly is elastically deformed by reaction force of the part during stretch forming; and

means secured to the jaw assembly for monitoring deflection of the beam, and for generating a signal related to beam position and hence to tensile stress in the part, the signal being comparable to a second signal related to part strain whereby a stress-strain relationship in the part can be monitored during stretch forming.

4,501,136
DEVICE FOR STRAIGHTENING AUTOMOBILE BODIES OR THE LIKE

Germain Celette, Vienne, France, assignor to Celette S.A., Vienne, France

Filed Apr. 27, 1982, Ser. No. 372,314
Claims priority, application France, Mar. 30, 1982, 82 05395
Int. Cl.³ B21D 1/12
U.S. Cl. 72—447 9 Claims



1. A device for straightening vehicle bodies comprising

a vertical column having a guide pulley supported at an upper end thereof and being carried upon a movable base,

a traction jack vertically disposed within said vertical column and having a body portion and an operating rod extending from said body portion,

a traction chain for connection to the vehicle to be straightened when applying a straightening force to the vehicle body,

said traction chain having one end coupled within the interior of said vertical column to the operating rod of said traction jack and another end passing out from the interior of said vertical column over said guide pulley supported at the upper end thereof for connection to the vehicle body upon which a straightening force is to be applied,

a collar carried on said vertical column and selectively positionable in a vertical direction relative thereto, said collar including a guide pulley positioned to engage said traction chain for applying a straightening force to the vehicle body in a predetermined direction at a vertical height determined by the selective positioning of said collar,

a first retaining means engageable with said collar for attaching said device to the ground to secure said device in a fixed position while applying a straightening force to a vehicle body,

said movable base including a guide pulley supported thereby with a second retaining means passing thereabout, said second retaining means being secured at one end to said collar and at an opposite end to said body portion of said traction jack,

said device being movable about the vehicle body to be straightened, free from any connection therewith other than said traction chain for applying a straightening force thereto,

said movable base upon which said vertical column is carried having a horizontal bottom wall which is disposed a short distance above the ground, and

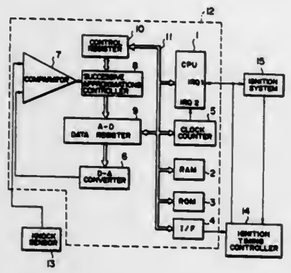
runner wheels carried by said movable base and having resilient pads positioned between said movable base and said runner wheels so that upon application of a straightening force to the vehicle through said traction chain, said horizontal bottom wall will compress said resilient pads and contact the ground to enhance the stability of the device during use.

4,501,137

METHOD FOR DETECTING KNOCKING IN INTERNAL COMBUSTION ENGINE

Keiji Aoki, and Shinichiro Tanaka, both of Shizuoka, Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Mar. 15, 1983, Ser. No. 475,650
Claims priority, application Japan, Jun. 7, 1982, 57-97351
Int. Cl.³ G01L *23/22*
U.S. Cl. 73—35 **11 Claims**



1. A method for detecting knocking in an internal combustion engine using a knock sensor, the method comprising the steps of:

calculating a mean value of an output signal of the knock sensor;

sensing a value corresponding to the rotational speed of the engine;

determining a constant such that said constant is a large value when the engine rotational speed is within a low speed range and a high speed range, and is a small value when the engine rotational speed is within a intermediate speed range;

calculating a reference value by multiplying said mean value by said constant;

comparing an instantaneous output signal of the knock sensor with said reference value; and

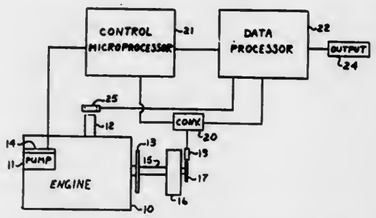
producing a knocking signal indicative of the occurrence of knocking when said instantaneous output signal exceeds the reference value.

4,501,138

DYNAMIC ENGINE POWER ASSESSMENT

James C. McCandless, Sheboygan, Wis., assignor to International Harvester Co., Chicago, Ill.

Filed Mar. 10, 1983, Ser. No. 474,212
Int. Cl.³ G01M *15/00*
U.S. Cl. 73—116 **11 Claims**



9. A method of determining the acceptability for sale of one of a series of mass produced internal combustion engines, engines of said series having a predetermined average rotational inertial, I, comprising:

mounting a newly manufactured engine of said series on a test facility having means for measuring the speed of rotation of said engine and being characterized by the lack of a calibrated power absorbing and measuring device;

starting said engine and performing a gross evaluation of its operation;

operating said engine at a low speed;

accelerating said engine at wide open throttle to a high speed without dissipating power therefrom;

measuring the speed of rotation of said engine during said accelerating step;

determining during said accelerating step the mean angular acceleration of engine within at least two small discrete speed intervals corresponding respectively to at least two test speeds above said low speed and below said high speed;

computing engine torque at said test speeds according to the equation $T=I\alpha$ wherein I is said predetermined average rotational inertia of said engine series and portions of said test facility driven thereby and α is determined means acceleration in said discrete intervals;

comparing said computed torques to predetermined ranges of acceptable torques for said engine series;

and rejecting said engine if said computed torques are outside said predetermined ranges.

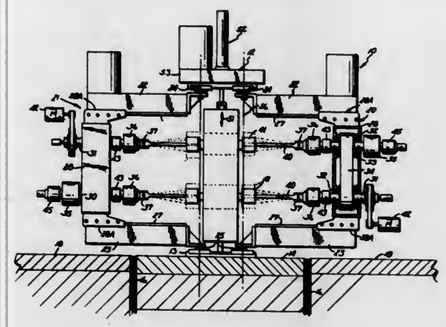
4,501,139

TEST SYSTEM FOR TESTING FRONT WHEEL DRIVE COMPONENTS OF AUTOMOBILES

Paul S. Petersen, Minnetonka, Minn., assignor to MTS Systems Corporation, Eden Prairie, Minn.

Filed Aug. 26, 1983, Ser. No. 526,920
Int. Cl.³ G01M *15/00*
U.S. Cl. 73—118 **19 Claims**

1. A four square test apparatus for testing rotating specimens under torsion including a main frame, first means supported on said main frame for mounting at least one pair of test members to be tested for rotation about generally parallel, spaced axes, said first means comprising a subframe having at least a pair of support members, each support member extending laterally of the subframe and laterally of the axis of rotation of the test members on both sides of the subframe to form end guide portions, a pair of elongated guide members mounted on said main frame, the end guide portion of both support members on one lateral side of the subframe being slidably mounted on one of the guide members and the end guide portion of both support members on the other lateral side of the subframe being slidably mounted on the other of the guide members, means for loading said test members in torsion relative to each other while supported on said main frame, means for rotating said test members simultaneously, and means for moving said first means reciprocally as guided by the guide members during rotation of both of said test members.

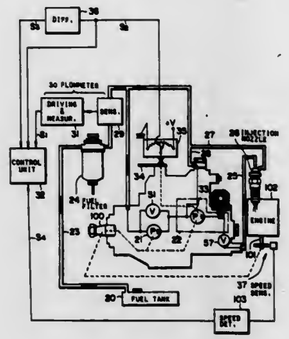


4,501,140

FUEL INJECTION RATE DEDUCING SYSTEM FOR A DIESEL ENGINE

Toyoaki Nakagawa, Yokosuka; Masao Nakajima, Atsugi; Yoshihisa Kawamura, and Nobukazu Kanesaki, both of Yokosuka, all of Japan, assignors to Nissan Motor Company, Limited, Japan

Filed Sep. 29, 1982, Ser. No. 428,221
Claims priority, application Japan, Nov. 20, 1981, 56-186497
Int. Cl.³ F02M *59/00*
U.S. Cl. 73—119 A **12 Claims**



1. A fuel injection rate deducing system for a diesel engine, comprising:

(a) a fuel injection pump having an inlet, an outlet, and an overflow outlet, the outlet being connected to the engine for conducting fuel from the injection pump to the engine to effect fuel injection, the overflow outlet being internally connected to the inlet;

(b) a fuel feed line connected to the inlet of the injection pump for conducting fuel to the injection pump;

(c) a fuel feed pump disposed in the feed line for driving fuel into the injection pump via the feed line;

(d) a fuel return line connecting the overflow outlet of the injection pump to the feed line at a position upstream of the feed pump, whereby at least some of the fuel conducted to the injection pump via the inlet thereof exits from the injection pump via the overflow outlet thereof and then re-enters the feed pump via the return line and the feed line; and

(e) means for measuring the rate of fuel flow through the feed line upstream of the connection of the return line to the feed line,

wherein the injection pump is driven by the engine and has movable means for determining the rate of fuel injection in accordance with position of the movable means and wherein the measuring means generates a signal indicative of the rate of fuel flow through the feed line, and further comprising

means for sensing the position of the movable means and generating a signal indicative thereof,

means responsive to the movable means position signal for determining the velocity of movement of the movable means and generating a signal indicative thereof,

means responsive to the movable means velocity signal for judging whether or not the velocity of movement of the movable means is within a preset range and generating a signal indicative thereof,

means for sensing the rotational speed of the engine and generating a signal indicative thereof, and

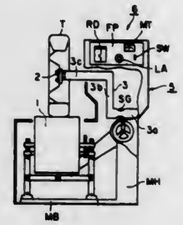
means responsive to the signal generated by the judging means, the movable means position signal, the fuel flow rate signal, and the engine speed signal for deducing the rate of fuel injection on the basis of the rate of fuel flow through the feed line when the velocity of movement of the movable means is within the preset range and deducing the rate of fuel injection on the basis of the position of the movable means and the rotational speed of the engine when the velocity of movement of the movable means is out of the preset range.

4,501,141

APPARATUS FOR MEASURING TIRE UNIFORMITY

Shigewo Takayanagi, Nagoya; Junzo Hasegawa, Obu; Hayashi Yasutaka, Nagoya; Shunichi Doi, Nagoya, and Satoru Matsushima, Nagoya, all of Japan, assignors to Kabushiki Kaisha Toyota Chuo Kenkyusho and Toyota Jidosha Kabushiki Kaisha, both of Aichi, Japan

Filed Nov. 9, 1982, Ser. No. 440,464
Claims priority, application Japan, Nov. 19, 1981, 56-186433
Int. Cl.³ G01M *17/02*
U.S. Cl. 73—146 **20 Claims**



1. A tire uniformity measuring apparatus comprising:

a drum for rotatively driving a tire to be measured;

a rotatable shaft having an attachment for securing the tire in position;

a movable member rotatably supporting said rotatable shaft and being movable with respect to said drum about a fulcrum which lies substantially in a contact plane which includes the surface in which said drum and the tire meet as they are held against each other while in rolling movement, the axis of said fulcrum being positioned in a direction perpendicular to the axes of said drum and said tire, a said movable member including a portion capable of movement in dependence on a load acting between said drum and the tire being measured;

a load applying means for applying a predetermined load to the tire by changing the interaxial distance between said drum and said rotatable shaft by moving said drum;

a displacement detecting means for detecting a displacement

of said rotatable shaft as a function of said movement of said movable member in dependence on a variation in a load applied radially to the tire while the latter is rotated by said drum; and

display means for displaying the variation in the load applied radially of the tire in response to the displacement of said movable member;

whereby the variation in the load imposed on the tire can be measured.

4,501,142

TIRE PRESSURE GAUGE

Tien T. Huang, No. 4, 30 La., Wu-Chuang St., Pan-Chiao City, Taipei, Taiwan

Filed Mar. 29, 1983, Ser. No. 480,123
Int. Cl.³ B60C *23/02*; G01L *7/08*
U.S. Cl. 73—146.8 **2 Claims**



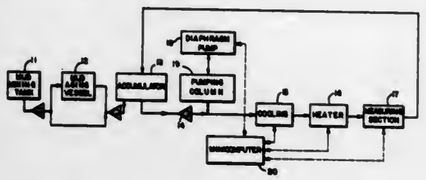
1. A tire pressure gauge of the type having a tube member with first and second ends in which a diaphragm member is provided crosswise and is suspended by a spring to sense the pressure of a tire to which said first end is attached, and in which an indicator rod is movably provided lengthwise to be actuated by said diaphragm to extend outwardly through said second end of said tube member for visible indication, wherein the improvement is made such that said indicator rod is provided with an axial bore open through one of its ends and closed at another end thereof, and that a writing means having an ink holder is received in said axial bore and is mounted in a fixed relationship with said indicator rod.

4,501,143

PREPARATION UNIT FOR A DRILLING MUD TESTING SYSTEM

Maurice Prior, Duncanville, and M. Scott Quigley, Garland, both of Tex., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Jul. 29, 1983, Ser. No. 518,569
Int. Cl.³ G01N *33/24*
U.S. Cl. 73—153 **6 Claims**



1. A system for testing drilling mud comprising:

measuring means for testing the parameters of said drilling mud;

an accumulator for pressurizing said drilling mud;

means for pumping pressurized drilling mud through a closed recirculating path through said measuring means;

means for mixing and aging drilling mud to prepare drilling mud for testing; and

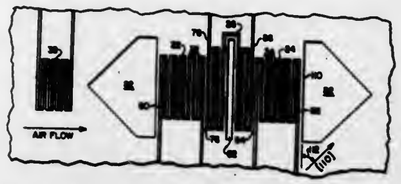
means for selectively supplying prepared drilling mud from said last named means to said accumulator to introduce drilling mud into the closed recirculating path of said system.

4,501,144

FLOW SENSOR

Robert E. Higashi; Robert G. Johnson, and Philip J. Bohrer, all of Minneapolis, Minn., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Sep. 30, 1982, Ser. No. 429,598
Int. Cl.³ G01F *1/68*
U.S. Cl. 73—204 **60 Claims**



1. A flow sensor, comprising:

a thin film heater suspended in air by thin film dielectric;

a pair of thin film heat sensors suspended in air by thin film dielectric and disposed on opposite sides of the heater;

means for operating the heater at a temperature elevated above ambient, thus creating a no-flow temperature gradient in the air above and adjacent to the heater, the temperature within the no-flow gradient making a transition between the elevated temperature and substantially ambient temperature;

the sensors being located sufficiently close to the heater to be located substantially within the no-flow temperature gradient; and

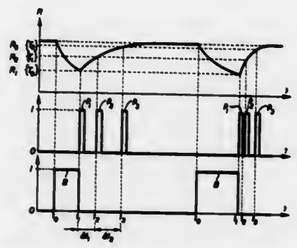
the heater and the sensors being substantially thermally isolated so that a primary path of heat between the heater and the sensors is air.

4,501,145

IMMERSION THERMAL EXCHANGE PARAMETER DETERMINATION

Jean-Charles Boegli, Lucinges, France, and Yves Trouillet, Vesenaz, Switzerland, assignors to Battelle Memorial Institute, Carouge, Switzerland

PCT No. PCT/CH82/00087, § 371 Date Mar. 10, 1983, § 102(e) Date Mar. 10, 1983, PCT Pub. No. WO83/00227, PCT Pub. Date Jan. 20, 1983
PCT Filed Jul. 9, 1982, Ser. No. 496,960
Claims priority, application Switzerland, Jul. 13, 1981, 4563/81
Int. Cl.³ G01F *1/68*; G01N *27/18*
U.S. Cl. 73—204 **3 Claims**



1. A process for the determination of at least one instanta-

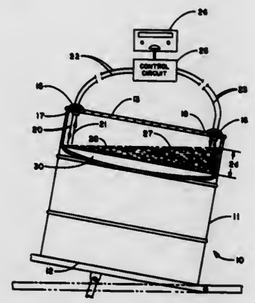
neous parameter of a fluid linked to the thermal exchange of a probe immersed in said fluid, comprising the steps of raising the temperature of said probe immersed in said fluid to a first given value, setting a second and a third value of the temperature of said probe, measuring the times elapsed as the temperature goes from the first to the second value and from the second value to the third value, and calculating from the resulting measurement at least one parameter linked to the coefficient of thermal exchange and the temperature of the fluid.

4,501,146

DETECTION OF FREE LIQUID IN CONTAINERS OF SOLIDIFIED RADIOACTIVE WASTE

Wilbur O. Greenhalgh, Richland, Wash., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jan. 27, 1983, Ser. No. 461,283
Int. Cl.³ G01F *23/28*
U.S. Cl. 73—290 B **4 Claims**



1. A method for nondestructively detecting liquids on the top surface of solidified material contained in a sealed enclosure comprising: providing a pair of devices utilizing wave energy for measuring the level of contents contained in the enclosure, mounting said devices in the top wall of the sealed enclosure at diametrically opposed locations, respectively, adjacent the periphery of said top wall, tilting said enclosure toward one of said measuring devices while simultaneously measuring by said device the level of said contents at the two diametrically spaced locations, noting and determining the level value of said contents measured by one of said one devices when the level value measured by the other of said devices remains constant, whereby any measured difference of level values of the contents between the two spaced locations indicates the presence of liquid within the sealed enclosure.

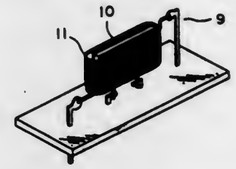
4,501,147

CONTROL CIRCUIT FOR A HUMIDITY SENSOR

Takashi Niwa, Nara, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

PCT No. PCT/JP82/00010, § 371 Date Sep. 10, 1982, § 102(e) Date Sep. 10, 1982, PCT Pub. No. WO82/02596, PCT Pub. Date Aug. 5, 1982
PCT Filed Jan. 13, 1982, Ser. No. 420,220
Claims priority, application Japan, Jan. 16, 1981, 56-5259
Int. Cl.³ G01W *1/00*; H05B *6/68*
U.S. Cl. 73—336.5 **5 Claims**

1. In a circuit arrangement comprising a humidity sensor with a humidity responsive region and a heater for heating said humidity responsive region, a power supply circuit for supplying power to said heater, a means for switching on and off the power supplied from said power supply circuit to said heater, a resistor connected in series with said humidity responsive region of said humidity sensor, a means for supplying a voltage across said humidity responsive region and said resistor, and an amplifier circuit for amplifying a voltage which appears across said resistor, a control circuit for said humidity sensor having a means to change the resistance value of said resistor such that a curve of said amplifier circuit's output voltage vs. the resistance of said humidity sensor's humidity responsive region



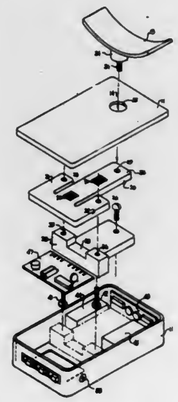
characteristic present during humidity detection is different from that present during detection of the temperature of said humidity responsive region being heated by said heater.

4,501,148

MANUAL MUSCLE TESTER

James A. Nicholas, 22 Cayuga Rd., Scarsdale, N.Y. 10583, and Richard Krukowski, 205 Washington Ave., Chatham, N.J. 07928

Filed Jan. 5, 1982, Ser. No. 337,304
Int. Cl.³ G01L *5/02*, *1/18*
U.S. Cl. 73—379 **21 Claims**



20. A small, portable and self-contained manual muscle testing instrument including:

(a) a housing having first and second broad faces spaced apart by narrower wall portions,

(b) force responsive actuator means communicating between the interior and the exterior of the housing and having means located on the same side of the housing as the first broad face for engagement by a test subject whose muscular strength is to be assessed,

(c) the second broad face comprising a relatively flat area for engagement by at least one hand of a test administrator in force transmitting relation to the instrument in opposition to force applied to the actuator means by the test subject,

(d) transducer means within the housing connected with the actuator means for producing an electrical signal representative of the force applied between the subject and the administrator, and

(e) digital display means for representing said force,

said relatively flat area for engagement by at least one hand of a test administrator and the force responsive actuator means being opposite one another whereby a test administrator can manually exert force on the instrument via the second broad face, in a direction perpendicular to that

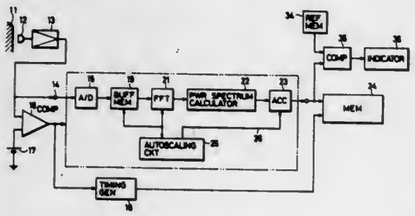
face and in opposition to the force exerted by the test subject consistent with known subjective muscle tests to produce on the digital display means an accurate representation of the force developed between the administrator and the subject.

4,501,149

MICRO FRACTURE DETECTOR

Junichi Kosno, Oi; Yukihiro Ueda, Fuji; Hiroaki Niitsuma, and Noriyoshi Chubachi, both of Sendai, all of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Oct. 20, 1983, Ser. No. 543,707
Claims priority, application Japan, Oct. 29, 1982, 57-191335
Int. Cl.³ G01N *29/04*; G06F *15/332*
U.S. Cl. 73—587 **11 Claims**



1. A micro fracture detector comprising:
a pickup for sensing, as an electric signal, an acoustic emission resulting from a micro fracture of an object;
an amplifier connected to the pickup, for amplifying the output of the pickup;
an A/D converter connected to the amplifier, for sampling the amplified output with a fixed period and converting each sampled value into a digital signal;
a fast Fourier transform processor comprised of a cascade connection of a plurality of stages, each including first and second input memories, a third memory having stored therein a rotation vector and an arithmetic unit for performing a Butterfly operation through using a pipelined architecture;
control means for controlling the fast Fourier transform processor so that one of the first and second input memories and the third memory are read out to perform the Butterfly operation through using the pipelined architecture and the operation result is written into that one of the first and second input memories of the next stage which has not been read out, thereby to perform a pipelined operation by all the stages as a whole, and for writing the digital signal from the A/D converter into the first and second input memories alternately for each fixed number of sampling operations;
address generating means for generating a common address for accessing the memories of each stage; and
means for calculating the power of each spectral component obtained as the operation result of the last one of the stages to obtain a signal corresponding to the fracture.

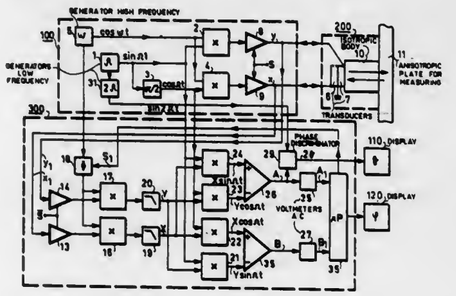
4,501,150

ACOUSTIC POLARIMETER

Jean Rouge, Paris, France, assignor to Thomson-CSF, Paris, France

Filed Apr. 5, 1983, Ser. No. 482,193
Claims priority, application France, Apr. 6, 1982, 82 05966
Int. Cl.³ G01N *29/00*
U.S. Cl. 73—628 **2 Claims**

1. An acoustic polarimeter for determining the birefringence parameters θ and ϕ of a plate with parallel faces comprising:
an elongated body of isotropic material having parallel end faces made from a meterial propogating acoustic waves of the frequency $\omega 2\pi$;
a means for fixing said plate to one of the end most faces of said elongated isotropic body;
a pair of transducers having their linear transfers axis of polarization at 90° from each other placed at the other end face of said elongated body of isotropic material;
a means for applying electrical signals to said first and second transducers being respectively of the form $\cos \Omega t \cos \omega t$ and $\sin \Omega t \cos \omega t$, where $\Omega/2\pi$ is of a low frequency $(\Omega << \omega)$;
means for receiving through said transducers the signals x_1 and y_1 reflected from the rear face of said birefrigent plate;
a first phase shifter supplying the signal $\cos(\omega t + \phi)$;
multiplying means for multiplying said signals x_1 and y_1 by the signal produced by said phase shifter;
processing and filtering means for providing signals X and Y wherein said signals X and Y are both multiplied by the signals $\cos \Omega t$ and $\sin \Omega t$;
differential amplifier means supplying an alternate signal A such that $A = X \cos \Omega t - Y \sin \Omega t$;
second differential amplifier means supplying the alternate signal B such that $B = X \cos \Omega t - Y \sin \Omega t$;



a phase meter and display for obtaining ϕ from signal A and a signal $\sin 2\Omega t$;
two ac voltmeter means for receiving said alternating signals A and B at the alternating frequency Ω;
means for supplying digitalized values of amplitude A_1 and B_1;
second phase shift means;
means for generating a signal s_1 for controlling said second phase shift means;
means for computing the zero crossing of said signals being provided to said second phase shift means;
first memory means for storing the value of B_1 at the point at which the zero crossing of signal A_1 occurs;
second memory means for storing the signal A_1 at the point at which B_1 has its zero crossing;
means for computing ϕ based on the formula of arc tan (value stored in said second memory means/value stored in said first memory means);
display means for displaying the value of ϕ.

4,501,151

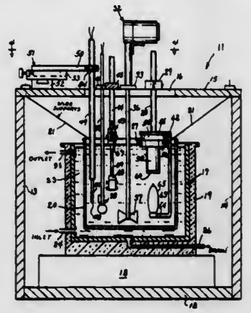
ULTRASONIC THERAPY APPLICATOR THAT MEASURES DOSAGE

Chris L. Christman, Silver Spring, Md., assignor to The United States of America as represented by the Department of Health and Human Services, Washington, D.C.

Division of Ser. No. 266,379, May 22, 1981, Pat. No. 4,390,026. This application Dec. 2, 1982, Ser. No. 446,408
Int. Cl.³ G01H *1/00*
U.S. Cl. 73—646 **11 Claims**

1. A thermal probe for measuring ultrasonic energy density within an acoustic exposure receptacle containing liquid, comprising an elongated support, a body of acoustically absorbing material secured to an end portion of the elongated support,

said body being so configured as to interact with said ultrasonic energy in an omnidirectional manner, a first thermocouple mounted in the interior of said acoustically absorbing body, a reference thermocouple mounted on said support adjacent to and outside of said body; means to permit said body



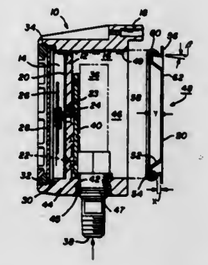
of acoustically absorbing liquid together with said first thermocouple therein, said reference thermocouple and the adjacent position of said support to function when immersed in said liquid; and circuit means differentially connecting the two thermocouples.

4,501,152

TEMPERATURE COMPENSATOR FOR LIQUID FILLED PRESSURE GAUGE

Richard H. Wetterhorn, Fairfield, and Walter J. Ferguson, Middlebury, both of Conn., assignors to Dresser Industries, Inc., Dallas, Tex.

Filed Mar. 9, 1983, Ser. No. 473,829
Int. Cl.³ G01L *19/14*; G01P *1/02*
U.S. Cl. 73—738 **5 Claims**



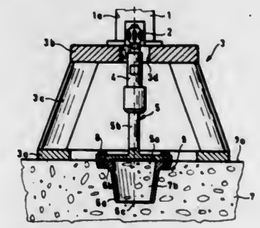
1. In a fluid filled pressure gauge including a condition responsive element operative to produce displacement in response to exposed condition changes to which it is sensitive, output means operably connected to said condition responsive element for reflecting the displacement position thereof; a gauge case housing said condition responsive element and said output means and having an internal volume adapted to contain the fluid fill; and compensator means for offsetting temperature induced expansion of the fluid fill, the improvement in said compensator means comprising:
(a) a cover plate adapted to be received in an opening defined in the rear of said case;
(b) an annulus extending laterally away from the inside face of said cover plate and having a negative draft contained on its circumferential surface extending from the distal end of the annulus toward the inside face of said cover plate; and
(c) a diaphragm mounted transversely in tension relation folded over said annulus onto the circumference surface thereof to define an enclosed space contained between said cover plate, said diaphragm and said annulus, the outside diameter of the diaphragm on said circumference being sized to provide a friction fit with the inside diameter surface of said coverplate opening for securing said cover plate in said case.

4,501,153

TEST MACHINE FOR DETERMINING CONCRETE STRENGTH

Ferenc Mehes, Báthori u. 24., Budapest, Hungary (1054), and András Mózes, Karpat u. 54., Budapest, Hungary (1133)

PCT No. PCT/HU82/00006, § 371 Date Oct. 4, 1982, § 102(e) Date Oct. 4, 1982, PCT Pub. No. WO82/02949, PCT Pub. Date Sep. 2, 1982
PCT Filed Feb. 23, 1982, Ser. No. 440,211
Claims priority, application Hungary, Feb. 23, 1981, 432/81
Int. Cl.³ G01N *3/08, 33/38*
U.S. Cl. 73—803 **9 Claims**



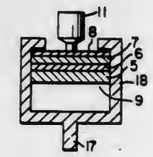
1. A test machine for determining the strength of concrete, comprising a loading unit for loading the concrete until destruction by applying tensile stress to a portion of the concrete, a support for supporting the loading unit against a surface of the concrete to be tested, a breaking cup adapted to be embedded in wet concrete which when hardened is to be tested, said breaking cup being hollow and having an open inner end which is the end embedded deepest in the concrete, the side walls of said cup converging toward said open inner end, and means connecting said loading unit with said cup to draw said cup out of the concrete after the concrete is set, thereby to fracture the concrete along a plane extending across said open inner end of the breaking cup.

4,501,154

METHOD FOR MEASURING AN ADHESIVE STRENGTH OF A MULTI-LAYER MATERIAL

Sanae Mori, Nagoya, Japan, assignor to Daido Metal Company Ltd., Nagoya, Japan

Filed Apr. 8, 1983, Ser. No. 483,089
Claims priority, application Japan, Apr. 16, 1982, 57-63702
Int. Cl.³ G01N *19/04*
U.S. Cl. 73—827 **3 Claims**



1. A method for measuring adhesive strength of a multi-layer material, said method comprising:
placing a mold on one surface of said multi-layer material to be tested;

casting a brazing metal into said mold to form and secure a resulting cast structure to said one surface of the multi-layer material, said structure including a first column portion connected to and extending substantially upright from said one surface, an intermediate portion extending upright from the upper end of said first column portion and diverging upward in diameter, and a second column portion extending from the upper end of said intermediate portion;

selecting said first column portion to have a length sufficiently small to prevent breakage thereof while measuring the adhesive strength of said multi-layer material

causing one of a pair of chucks of a tension tester to grasp said second column portion of the cast structure and the other of said chucks to grasp said multi-layer material or a holder adapted for mounting therein said multi-layer material; and

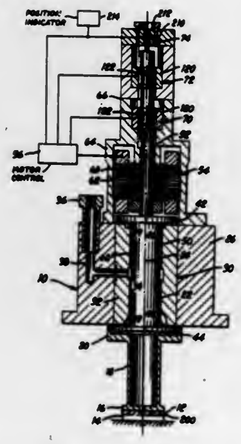
applying a tensile force to the respective layers of said multi-layer material in a direction transverse to said layers.

4,501,155

COMPENSATED RHEOMETER

Ronald F. Garritano, Flemington, N.J., assignor to Rheometrics, Inc., Piscataway, N.J.

Filed Jun. 29, 1983, Ser. No. 509,219
Int. Cl.³ G01N 3/22
U.S. Cl. 73—847 **21 Claims**



1. In an apparatus for the evaluation of rheological characteristics of a test specimen through analysis of torsional forces and angular positions in a rotor coupled to the test specimen and suspended within a stator by a low friction bearing for rotation relative to the stator within a range of angular positions about a longitudinal axis of rotation and in a predetermined longitudinal position along the longitudinal axis, the nature of the bearing being such that bearing torque is applied to the rotor at at least some of the angular positions, the apparatus including force-applying means for applying selected torque to the rotor at any of the angular positions, the improvement comprising:

command means for defining selected angular positions of the rotor within the range of angular positions thereof;

position-determining means for determining the actual angular position of the rotor relative to the stator throughout the range of angular positions;

bearing compensation means coupled to the force-applying means, the command means and the position-determining means for actuating the force-applying means in response to compensation information derived from deviations from any one selected angular position of the rotor and a corresponding actual angular position to balance the rotor at the one selected angular position against the bearing torque at the one selected angular position; and

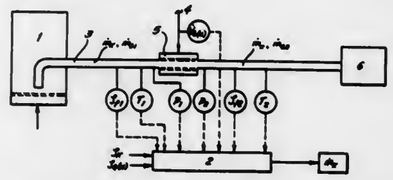
storage means for storing such compensation information for a plurality of selected angular positions of the rotor, whereby compensation information is made available for balancing the rotor against the bearing torque at any selected angular position within the range of angular positions.

4,501,156

METHOD OF AND DEVICE FOR MEASURING A MASS STREAM OF FINELY DIVIDED FINE-GRAINED SOLID FUELS

Horst Kretschmer; Günter Tietze, both of Freiberg; Norbert Beiermann, Brand-Erbisdorf; Manfred Schingnitz, and Peter Goehler, both of Freiberg, all of German Democratic Rep., assignors to Brennstoffinstitut Freiberg, Freiberg, German Democratic Rep.

Filed Jul. 19, 1982, Ser. No. 399,968
Claims priority, application German Democratic Rep., Jul. 17, 1981, 231890
Int. Cl.³ G01F 1/74
U.S. Cl. 73—861.04 **2 Claims**



1. A method of measuring a mass stream of a finely divided, fine-grained solid material conveyed pneumatically by a conveying gas through a supply pipe leading from a dosing container to a gasification reactor or a heater, comprising the steps of passing the mass stream in the supply pipe through a gas mixing device including a porous filtering pipe permeable to gas and impermeable to the dusty fuel, injecting an auxiliary gas through the filtering pipe into the supply pipe at a rate sufficient to reduce the flow density of the mass stream, measuring grain density ρ_k, gas density $\rho_{G(N)}$ at normal conditions, temperature T_1, pressure P_1, initial flow density ρ_{Λ} of the mass stream before the mixing device, flow density $\rho_{\Lambda 2}$ of the mass stream after the mixing device, temperature T_2 and pressure P_2, after the mixing device; applying the measured parameters to a computer for computing the desired value m_K of the mass stream per a time unit according to the formulas

$$m_K = \dot{V}_{G(2)} \cdot \frac{\rho_K(\rho_{\Lambda} - \rho_{G1}) \cdot (\rho_{\Lambda 2} - \rho_{G2})}{(\rho_K - \rho_{G1}) \cdot (\rho_{\Lambda} - \rho_{\Lambda 2})} \cdot \tag{2}$$

$$\left[1 + \frac{P_1}{P_2} - 1\right)\left(\frac{\rho_K - \rho_{\Lambda}}{\rho_K - \rho_{G1}}\right)\Bigg]^{-1}$$

$$\rho_{G1} = \rho_{G(N)} \cdot \frac{P_1}{P_N} \cdot \frac{T_N}{T_1} \tag{2.1}$$

$$\rho_{G2} = \rho_{G(N)} \cdot \frac{P_2}{P_N} \cdot \frac{T_N}{T_2} \tag{2.2}$$

$$\dot{V}_{G(2)} = \dot{V}_{G(N)} \frac{T_2}{T_N} \cdot \frac{P_N}{P_2} \tag{2.3}$$

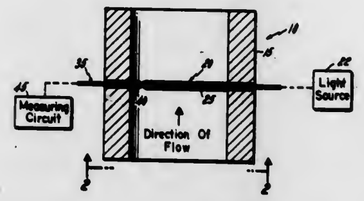
wherein ρ_{G1} is the density of the conveying gas, ρ_{G2} is the density of the combined conveying and auxiliary gases after the mixing device, and $V_{G(2)}$ is the rate of flow of the injected gas.

4,501,157

VORTEX SHEDDING FLOW MEASURING TRANSDUCER

Robert H. Perkinson, Somers; Brian G. Donnelly, West Suffield, and Carl S. Dudash, Enfield, all of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Nov. 15, 1982, Ser. No. 441,886
Int. Cl.³ G01F 1/32
U.S. Cl. 73—861.24 **2 Claims**



1. A digital flow measuring transducer comprising a conduit for accommodating a flow of fluid therethrough, said transducer being characterized by:

a first optical fiber cantilevered to a wall of said conduit, said first optical fiber conducting a continuous optical signal from the exterior of said conduit to the interior thereof, flow past said first optical fiber inducing the periodic formation and shedding of vortices therefrom, said vortex shedding causing a vibration of said first optical fiber; and

a second optical fiber disposed in said conduit and spaced from said first optical fiber for receiving said optical signal after a modulation thereof by said first optical fiber, said second optical fiber being periodically aligned with said first optical fiber as a result of the vibration thereof to effect said modulation of said signal at said second optical fiber, the frequency of said modulated signal being indicative of the rate at which said vortices are shed from said first optical fiber and the rate of fluid flow through said conduit;

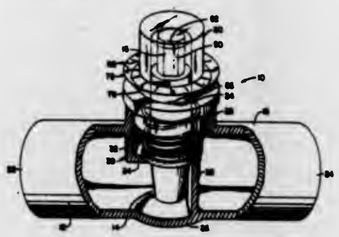
said first and second optical fibers at adjacent ends thereof being optically opaque with the exception of aligned transparent slit apertures therein, the transmission of said optical signal from the slit aperture of said first optical fiber to the slit aperture of said second optical fiber effectively reducing the threshold vibratory amplitude of said first optical fiber required for detection of said vortex shedding by said flow measuring transducer.

4,501,158

LIQUID FLOW INDICATOR AND VALVE DEVICE

Robert W. Pelikan, 245 Alvarado Ave., Los Altos, Calif. 94022

Filed Jul. 29, 1983, Ser. No. 518,367
Int. Cl.³ G01F 1/26
U.S. Cl. 73—861.58 **2 Claims**



1. A device for controlling the flow of liquids in a conduit comprising in combination:

housing means defining a path along which a flow of liquid is confined, said housing means including a clear portion,

a float in said housing means visible through said clear portion of the housing means and being movable between a closed position wherein it blocks the flow of liquid in a reverse direction along said path and a plurality of open positions wherein it allows the flow of liquid in a forward direction along said path, and

means associated with said float for indicating a forward flow of liquids through the device as well as the rate of forward flow of liquid, said means for indicating the rate of forward flow of liquids consisting of (a) indicia on said float which is visiable through said clear portion of the housing and is adapted to indicate the displacement of the float from its position, said displacement being proportional to the rate of flow of the liquid, and (b) a calibrated clear ring having an inner circular surface which is contiguous with said clear portion of the housing, a radial circular surface extending perpendicularly away from said inner circular surface, and a reflective beveled circular surface connecting said inner and radial circular surfaces, one of said inner and beveled circular surfaces having a circular indicia line there along and said radial circular surface having a plurality of calibrated radial lines thereon whereby an individual looking through said radial circular surface can see the indicia on said float via the beveled surface and the inner circular surface and determine the flow rate of liquid through the device by relating the indicia on the float to the calibrated indicia on the radial circular surface of the circular indicia line on one of said inner circular surface and beveled circular surface.

4,501,159

CONTACT GAUGE AND METHOD OF EMPLOYING SAME

Mircea Arcan, 42/22 Tagore St., Tel-Aviv, Israel

Filed Aug. 20, 1982, Ser. No. 409,836
Int. Cl.³ G01L 1/06
U.S. Cl. 73—862.53 **25 Claims**



19. A contact gauge adaptable for determining pressure conditions, said contact gauge including a thin plastic sheet which is not-completely-elastic, is optically isotropic, exhibits and memorizes an induced birefringence, and an elongate flexible load transmitting member attached to said sheet for indenting and inducing uniaxial deformation in the plane of the sheet in response to a compressive force applied to said member.

4,501,160

FORCE TRANSDUCER

Michael K. Johnson, 2915 Cherokee Ave., Santa Rosa, Calif. 95401

Filed Mar. 31, 1983, Ser. No. 481,076
Int. Cl.³ G01L 1/22
U.S. Cl. 73—862.65 **27 Claims**

1. A transducer comprising

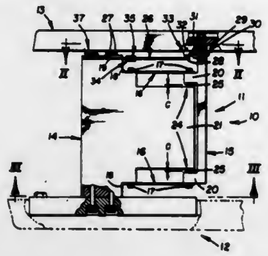
a base,

a load receiving member adapted to have a load imposed thereon,

a sensing tip on said member,

flexure means for mounting said member in substantial isolated and floating relationship on said base to permit independent flexing movements of said member relative to said base, said flexure means comprising a pair of leaf springs connected between said base and said member to

form a parallelogram arrangement therewith and wherein said base has a reduced body portion and said member has a pair of extension overlying said body portion, each of said leaf springs being releasably interconnected between said base and a respective one of said extensions,



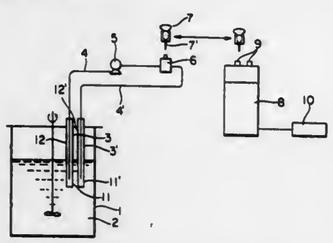
sensing means, including a flat cantilever spring having a first end mounted in cantilevered relationship on said base and having a free second end positioned adjacent to said member for directly engaging said sensing tip in point contact to sense the load imposed on said member, for producing a variable electrical output signal in response to the magnitude of said load.

4,501,161

AUTOSAMPLER

Isao Endo, Kokubunji; Teruyuki Nagamune, Wako, and Ichiro Inoue, Tokyo, all of Japan, assignors to Rikagaku Kenkyusho, Japan

Filed Jan. 20, 1983, Ser. No. 459,598
Int. Cl.³ G01N *1/14*
U.S. Cl. 73—863.24 **3 Claims**



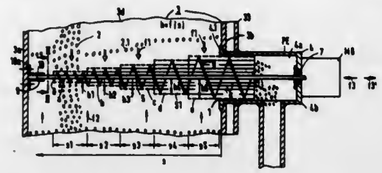
1. An autosampler for sampling a clarified test solution from a suspension to be tested, which comprises two filtering tubes which are adapted to be immersed in the suspension, a circulator connected in series with one filtering tube, a sampling cell for sampling test solution, and the other filtering tube, the sampling cell being connected between the circulator and the other filtering tube, the circulator being operable to draw a test solution from the one filtering tube, whereby the test solution is filtered and clarified, to deliver the filtered and clarified test solution to the sampling cell, whereby the test solution is sampled, and to return the residual test solution from the sampling cell to the suspension through the other filtering tube, and said circulator being operable to periodically reverse the flow direction of the test solution so that the filtering tubes do not become blocked.

4,501,162

SAMPLE-TAKING APPARATUS FOR A CONTAINER, CONTAINING A BULK MATERIAL FEED

Wolfgang Mathewes, Giessen, Fed. Rep. of Germany, assignor to Kraftwerk Union Aktiengesellschaft, Mülheim, Fed. Rep. of Germany

Filed Feb. 22, 1983, Ser. No. 468,567
Claims priority, application Fed. Rep. of Germany, Feb. 22, 1982, 3206323
Int. Cl.³ G01N *1/14*
U.S. Cl. 73—863.83 **20 Claims**



1. Sample-taking apparatus, comprising a container for bulk material feed, said container having an upper cover region, a lower discharge region and a side wall having a discharge opening formed therein, the bulk material feed flowing at least discontinuously from said upper cover region to said lower discharge region of said container, an exposed sample-taking worm being attached to said side wall and projecting through said discharge opening into the feed for conveying bulk material samples from the feed by rotating, a rotary drive connected to said sample-taking worm, and a collecting device integral with said container, said worm having a shaft with an end, at least said end being immersed in the feed, said worm having worm threads formed thereon with surfaces forming an imaginary surface of projection extended normal to said worm shaft, said worm thread surfaces forming worm segments with increasingly smaller conveying surfaces as seen in direction toward increasing depth of immersion of said worm into the feed, during sample-taking in a quasi-stationary condition of the feed, said worm threads accumulating layered hollow cylindrical bulk material segments between said worm threads in subsets corresponding to worm segments from any of said worm threads having a given spiral height to an adjacent one of said worm threads having a larger spiral height as seen in direction from said end of said shaft to said discharge opening, said subsets being representative of the bulk material of said respective segments of said worm, the bulk material feed being a bed of a bulk material filter, through which fluids to be cleaned flow in a given direction, the filter bed having respective feeding and discharge filter sides, said sample-taking worm projecting into the filter bed substantially perpendicularly to the fluid flow direction.

4,501,163

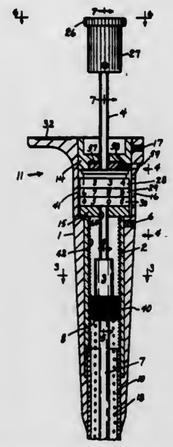
ADJUSTABLE MICRO-DISPENSING LIQUID PIPET

Bruce R. MacDermott, 2835 Prince St., Berkeley, Calif. 94705, and Justin J. Shapiro, 620 Hearst Ave., Berkeley, Calif. 94710

Filed Aug. 30, 1983, Ser. No. 527,783
Int. Cl.³ B01L *3/02*
U.S. Cl. 73—864.13 **8 Claims**

1. A pipet comprising a main barrel provided with an axial operating shaft slidably and rotatably supported in the barrel, said barrel having an internally threaded portion, a dispensing tip yieldably connected to said main barrel, said dispensing tip comprising a yieldable barrel-coupling portion and a conduit portion, a plunger operatively engaged in said conduit portion, means coaxially connecting said plunger to said shaft, whereby the plunger can be reciprocated by reciprocating said shaft, and means to disengage said barrel-coupling portion from said barrel at times responsive to axial force exerted on said shaft, wherein said tip includes annular internal shoulder means, wherein said disengaging means comprises abutment means

moving with said shaft and being engageable with said shoulder means to transmit said axial force, and wherein said abutment means is engageable with said shoulder means to normally limit the discharge movement of said plunger in said conduit portion, and cooperating stop means to limit intake movement of said plunger in said conduit portion, said stop means comprising an abutment stop element secured on said shaft, an externally threaded abutment stop sleeve member slidably and non-rotatably engaged on said shaft and being threadedly engaged with said internally threaded portion inside said barrel above said abutment stop element, and spring means biasing said abutment stop element upwardly into engagement with said stop sleeve member to establish the normal elevated position of the plunger in said conduit portion, whereby said normal elevated position can be varied by rotating the shaft relative to said main barrel, and wherein said shaft has a non-circular cross-sectional upper portion and said stop sleeve member has an axial non-circular bore slidably and nonrotatably fitting on said non-circular shaft portion, the top end of said shaft portion having a hollow bushing member axially secured thereon for at times manually rotating said shaft, a top push-button disc member overlying the top end of said hollow bushing member, and means rotatably and detachably securing said disc member on said bushing member.



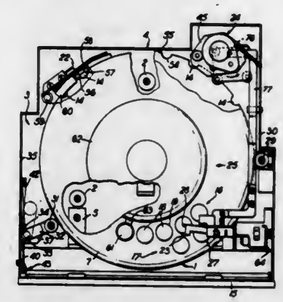
4,501,164

AUTOMATIC SAMPLING ARRANGEMENT

Trevor J. Stockdale, Cambridge, and John E. Churchill, Haslingfeld, both of England, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Aug. 5, 1983, Ser. No. 520,877
Claims priority, application United Kingdom, Aug. 20, 1982, 8223963
Int. Cl.³ G01N *35/04, 35/06*
U.S. Cl. 73—864.25 **11 Claims**

1. An automatic sampling arrangement for supplying liquid samples to an analytical instrument comprising a compartment within which a sample carrier in the form of a turntable may be located, the turntable having a plurality of locations for sample containers arranged on a circle coaxial with the axis of rotation of the turntable, and a sampling mechanism for aspirating a sample from a sample container when the turntable is indexed to bring one of the sample locations in registration therewith, characterized in that the arrangement is constructed so that the turntable is inserted, in operation, into the compartment in a direction perpendicular to its axis of rotation, that the turntable is located by three bearing surfaces which engage the circumference of the turntable, that a driving assembly is provided which engages said circumference to rotate the turntable, and that one of the bearing surfaces is movable from a first position



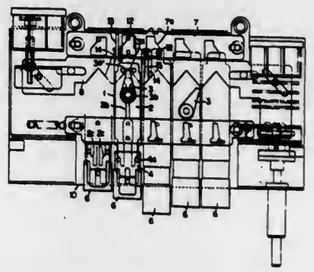
in which it engages said circumference to a second position to allow insertion or withdrawal of the turntable.

4,501,165

CROSS ARM MECHANISM IN A PUSHBUTTON TUNER

Takao Chaki, Tokyo, Japan, assignor to Clarion Co., Ltd., Tokyo, Japan

Filed May 18, 1982, Ser. No. 379,545
Claims priority, application Japan, May 18, 1981, 56-70485[U]; May 18, 1981, 56-70486[U]; May 18, 1981, 56-70487[U]; May 18, 1981, 56-70488[U]; May 27, 1981, 56-75860[U]; May 28, 1981, 56-76581[U]; May 28, 1981, 56-76582[U]; May 28, 1981, 56-76583[U]; May 29, 1981, 56-77397[U]
Int. Cl.³ H03J *5/12*
U.S. Cl. 74—10.33 **9 Claims**



1. A tuner operated by pushbuttons, comprising:
- a plurality of cross arm members supported for movement parallel to a first direction;
- a pushbutton slidably supported on one end of each said cross arm member;
- a cross arm slide member slidably supported on each said cross arm member and operatively coupled to the associated pushbutton;
- a fixing plate supported on each said cross arm member, said fixing plate having therein an engaging hole and a slit which extends into said fixing plate from one end thereof and which communicates with said engaging hole, said fixing plate having pressure receiving surfaces at said one end thereof on opposite sides of said slit;
- a frequency setting member movably supported in said engaging hole of each said fixing plate, said cross arm slide member having pressing portions thereon which are cooperable with said pressure receiving surfaces on said fixing plate as said cross arm slide member is moved relative to said cross arm member so as to pinch said one end of said fixing plate and thereby narrow said slit and said engaging hole in a manner clamping said frequency setting member

against movement relative to said fixing plate and said cross arm member;

a memory slide member supported for movement in a second direction approximately perpendicular to said first direction, each said frequency setting member having means cooperable with said memory slide member for effecting movement thereof when the associated pushbutton is pushed;

a movably supported kick arm member and means for effecting movement thereof to an actuated position in response to pushing of one of said pushbuttons;

a rotatably supported, manually operable tuning shaft; and

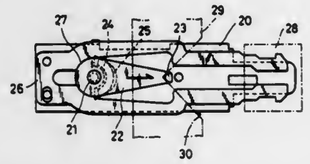
clutch means for normally operatively coupling said tuning shaft and said memory slide member so as to effect movement of said memory slide member in response to rotation of said tuning shaft, and for disengaging said tuning shaft and memory slide member in response to movement of said kick arm member to said actuated position.

4,501,166

CROSS ARM MECHANISM IN A PUSHBUTTON TUNER

Takao Chaki, Tokyo, Japan, assignor to Clarion Co., Ltd., Tokyo, Japan

Filed Jun. 23, 1982, Ser. No. 391,889
Claims priority, application Japan, Jun. 30, 1981, 56-100480
Int. Cl.³ H03J *5/12*
U.S. Cl. 74—10.33 **2 Claims**



1. A cross arm mechanism for use in a pushbutton tuner, comprising:

an elongated cross arm member;

a setting pin on said cross arm member;

a frequency setting plate disposed on top of and extending longitudinally with respect to said cross arm member, said setting plate being pivotally mounted on said setting pin;

a pushbutton mounted on said cross arm and supported for longitudinal movement between inner and outer positions thereon;

a setting spring partially surrounding said setting plate and having end portions engageable by said pushbutton so that said setting spring is movable between clamping engagement with said setting plate when said pushbutton is in said inner position and non-clamping engagement with said setting plate when said pushbutton is in said outer position whereby said setting plate is fixed with respect to said cross arm member when said pushbutton is in said inner position and is freely rotatable with respect to said cross arm member when said pushbutton is in said outer position;

a downwardly extending first protuberance on the bottom surface of said setting plate, said first protuberance having an arcuate wall extending laterally with respect to said cross arm member;

said cross arm member having an elongated guide hole extending laterally thereon and into which said protuberance extends, said guide hole having symmetrical, oppositely inclined lateral wall sections which are engageable with said arcuate wall of said protuberance and which wall sections are joined to each other at a central juncture located on the longitudinal center line of said cross arm;

an upwardly extending second protuberance on said setting plate at a location thereon remote from said setting pin;

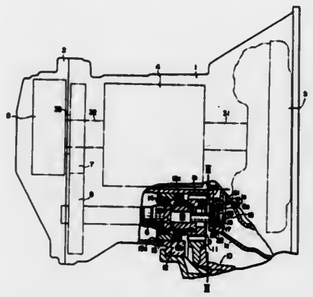
a memory slide disposed above and extending transversely to said cross arm and said setting plate, said memory slide having a notch that opens in a direction toward said pushbutton and narrows to a bottom, said second protuberance being received in said notch so that when said pushbutton is in its inner position and said second protuberance is located at the bottom of said notch, said setting plate is located in a position in which said first protuberance is centered in said guide hole.

4,501,167

TRANSMISSION POWER OUTPUT SHAFT ASSEMBLY WITH BEARING LUBRICANT COLLECTING AND DIRECTING MEMBER

Tadashi Saito, Toyota, Japan, assignor to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Sep. 28, 1982, Ser. No. 425,259
Claims priority, application Japan, May 18, 1982, 57-84624
Int. Cl.³ F16H *57/04, 57/02;* F01M *9/00*
U.S. Cl. 74—467 **3 Claims**



1. A power output shaft assembly for a transmission comprising a transmission casing, a rotational speed changing mechanism, and a differential mechanism comprising a differential power input gear, said transmission casing including a casing portion which forms a partition for separating a space for housing said differential mechanism from a space for housing said rotational speed change mechanism except a cylindrical hole bored therethrough, comprising:

a power output shaft for receiving and outputting rotary power output of said rotational speed changing mechanism, said power output shaft being formed with a first lubricant passage one end of which opens to one end of said power output shaft and the other end of which opens to a point on a side surface of said power output shaft;

a power output gear at said one end of said power output shaft, said one end of said power output shaft and an axial end surface of said power output gear on the side of said one end of said power output shaft being positioned closely to oppose a part of said casing wall portion forming said partition;

a bearing for rotatably mounting said power output shaft to said transmission casing, said bearing being located close to the other axial end surface of said power output gear and supporting part of said power output shaft proximate to said power output gear; and

a lubricant collecting and directing member mounted to said part of said casing portion forming said partition, comprising a cylindrical base portion adapted to be fitted into said cylindrical hole of said casing portion forming said partition and a tubular extension which extends from said cylindrical base portion into said one end of said first lubricant passage formed in said power output shaft, said cylindrical base portion being formed with a partial cutaway communicated with an end of a passage in said tubular extension;

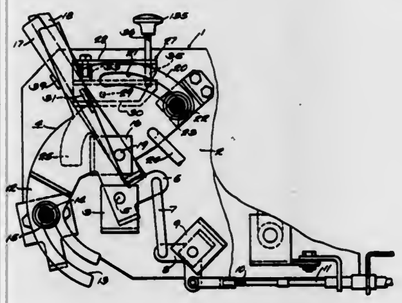
wherein a surface of said casing portion forming said partition which defines said space for housing said differential mechanism is formed with a cutaway portion which at least partially aligns with said cutaway formed in said base portion of said lubricant collecting and directing member and adapted to collect lubricant stirred up by said differential power input gear and to conduct the collected lubricant toward said cutaway portion formed therein.

4,501,168

ADJUSTABLE STOP FOR POSITION CONTROL LEVER FOR DRAFT LOAD SENSING SYSTEM

Donald E. Chaulk, New Berlin, Wis., assignor to Allis-Chalmers Corp., Milwaukee, Wis.

Filed Sep. 13, 1982, Ser. No. 417,700
Int. Cl.³ G05G *5/00*
U.S. Cl. 74—526 **6 Claims**



1. In a tractor, a control means for a hydraulic implement lift system comprising,

a control console including a generally upright sidewall,

a position control lever pivotally mounted on said console for a pivotal movement about a transverse axis, said lever being spaced from said sidewall,

a lever stop pivotally mounted on said sidewall having

a first upright handgrip portion spaced from said sidewall with an abutment part in abutable relation to said control lever to limit the pivotal movement of the latter in one direction, and

a latch engaging portion spaced axially from said handgrip portion and extending upwardly intermediate said handgrip portion and said sidewall, said latch engaging portion including an arcuate upper edge,

a support bracket secured to said sidewall and including a top wall and a downwardly extending flange spaced from said sidewall,

a latch disposed between said flange and said sidewall and including a latch element engageable with said arcuate upper edge of said latch engaging portion of said lever stop,

pivot means pivotally supporting said latch on said bracket in underlying relation to said top wall thereof,

resilient biasing means on said console engaging said latch and urging the latter to rotate on said pivot means whereby said latch element engages said latch engaging portion to releasably restrain said lever stop against pivotal movement and

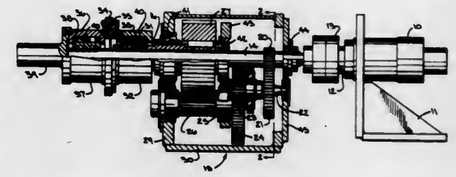
a manual control element connected to said latch and operable to pivot the latter about said pivot means in opposition to said biasing means to release latch from said latch engaging portion.

4,501,169

TWO SPEED GEAR DRIVE WITH REVERSIBLE INPUT AND UNIDIRECTIONAL OUTPUT

John J. Stilin, Milwaukee, Wis., assignor to The Falk Corporation, Milwaukee, Wis.

Filed Jan. 17, 1983, Ser. No. 458,488
Int. Cl.³ F16H *5/52;* F16D *41/04*
U.S. Cl. 74—812 **4 Claims**



1. A gear drive apparatus, comprising:

a pair of coaxial one-way clutches each having an inner race and an outer race, the outer races of the clutches being joined together and the joined outer races being joined to a stub shaft;

a high speed shaft connected to the inner race of one of said clutches;

a reversible prime mover coupled to said high speed shaft;

a quill shaft surrounding said high speed shaft and connected to the inner race of the other of said clutches; and

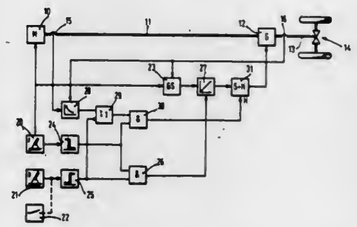
reversing reduction gearing joining the high speed shaft and the quill shaft.

4,501,170

METHOD OF CONTROLLING DOWNSHIFT AFTER BRAKING IN AUTOMATIC TRANSMISSIONS OF MOTOR VEHICLES

Alfred Müller, Gröbenzell; Dieter Schaller, Neubulach, and Manfred Schwab, Gerlingen, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jun. 23, 1982, Ser. No. 391,171
Claims priority, application Fed. Rep. of Germany, Jul. 15, 1981, 3127931; Oct. 8, 1981, 3139985
Int. Cl.³ B60K *41/06*
U.S. Cl. 74—866 **4 Claims**



1. Method of controlling an automatic transmission of a motor vehicle with respect to operation of the vehicle brake control in which the gear ratio of the transmission is raised to improve braking, comprising the steps of:

raising the gear step-down ratio of the transmission (12) from a previously set value to a raised value in response to actuation of the brake control (21) during a first period which terminates either when the brake control has been released or when the speed of the motor of the vehicle exceeds a speed value specified by a predetermined characteristic curve with reference to the transmission output speed, whichever occurs first, the gear ratio being raised during said first period by an amount limited only by the available gear ratio range, reaching of said specified speed

value, and the available time for raising said ratio prior to release of said brake pedal and

after the termination of said first period maintaining the gear ratio which is in use at the end of said first period for the duration of a second period which terminates with the next actuation of the acceleration control (20) of the vehicle, after which the normal control of the transmission of the vehicle is restored.

4,501,171

CONTROL OF THE SHIFT POINTS OF AN AUTOMATIC TRANSMISSION FOR TEMPORARY ACCELERATION INCREASE

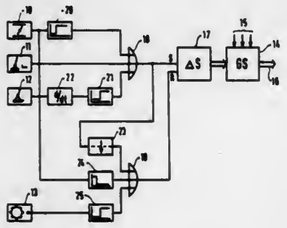
Alfred Müller, Leonberg, and Manfred Schwab, Gerlingen, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Sep. 30, 1982, Ser. No. 429,222

Claims priority, application Fed. Rep. of Germany, Oct. 7, 1981, 3139838

Int. Cl.³ B60K *41/10*

U.S. Cl. 74—866 **2 Claims**



1. Method of controlling the provision of a substantial discrete offset in a normal gearshift pattern of a vehicular automatic transmission interposed between an internal combustion engine and drive wheels of a vehicle, said engine having an accelerator pedal for increasing and reducing the power output of the engine during driving of the vehicle, said offset being constituted to put quickly at lower value the vehicle speed at which a shift to a lower gear for a given engine load is produced in response to operation of a switch when said accelerator pedal is fully depressed, compared to the value of vehicle speed at which said shift to a lower gear would occur at the same engine load in said normal gearshift pattern of said transmission, and to restore fully said normal gearshift pattern automatically thereafter, in which method, in accordance with the invention,

a change of the condition of said switch resulting from reducing the amount of depression of said accelerator pedal has no responsive effect on the persistence of said offset;

said offset is also provided when the engine load oversteps a first predetermined threshold value of said engine load;

said offset is also provided when said accelerator is depressed at a rate that exceeds a predetermined rate;

said offset is terminated when a predetermined time has elapsed since said offset was provided;

said offset is terminated when the load of said engine has fallen below a second predetermined value of engine load;

said offset is terminated when the speed of said engine has increased beyond a first predetermined threshold value of engine speed, and

said offset is terminated when the speed of said engine has decreased beyond a second predetermined threshold value of engine speed.

4,501,172

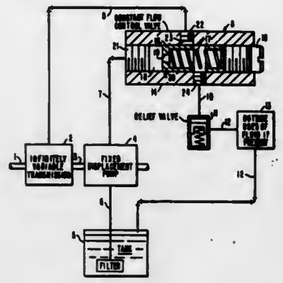
HYDRAULIC SPEED CONTROL ARRANGEMENT FOR AN INFINITELY VARIABLE TRANSMISSION

Charles E. Kraus, Austin, Tex., assignor to Excelermatic Inc., Austin, Tex.

Filed Aug. 16, 1982, Ser. No. 408,422

Int. Cl.³ B60K *41/16*; F16H *15/00*

U.S. Cl. 74—867 **5 Claims**



1. A constant output speed control arrangement for an infinitely variable transmission whose transmission ratio is controllable by controlling the supply of hydraulic control fluid thereto, and which is adapted to be connected to a variable speed power source, said control arrangement comprising a displacement pump associated with the output shaft of said transmission so as to supply a control fluid flow proportional to the speed of the transmission output shaft, a transmission control valve structure including a cylinder having a piston movably disposed therein, said piston being biased in one direction by a spring arranged at one side thereof, means for supplying said control fluid from said displacement pump to said cylinder at the other side of said piston, a passage means providing communication between said one and said other side of said piston and having a flow control orifice disposed therein for permitting passage of a desired amount of control fluid, said cylinder having a control opening arranged at said one side of said portion and in communication with said transmission for controlling its transmission ratio, said control opening being adapted to be closed by the piston when said piston is moved by a larger than desired amount of control fluid against the force of said spring for changing the transmission ratio so as to reduce transmission output shaft speed and said control opening, when being opened by said piston upon supply of less than said desired amount of control fluid, providing for the supply of control fluid to said transmission for a change of the transmission ratio so as to increase transmission output shaft speed, and a relief valve structure associated with said valve for maintaining within said valve a predetermined fluid pressure sufficient to operate the speed change control mechanism of said infinitely variable transmission.

4,501,173

FLUID DELIVERY CONTROL DEVICE FOR AN AUTOMATIC TRANSMISSION

Ernst-August Honig, Wolfsburg, Fed. Rep. of Germany, assignor to Volkswagenwerk Aktiengesellschaft, Wolfsburg, Fed. Rep. of Germany

Filed Dec. 1, 1982, Ser. No. 455,961

Claims priority, application Fed. Rep. of Germany, Dec. 8, 1981, 3148453

Int. Cl.³ B60K *41/06*

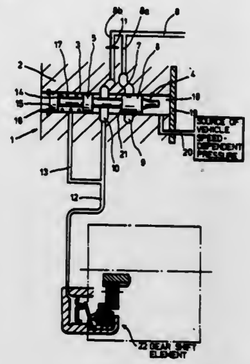
U.S. Cl. 74—868 **8 Claims**

1. A control for effecting variable fluid delivery to a gearshift element of an automatic transmission, for controlling actuation of said gearshift element, comprising:

fluid delivery means for supplying a pressurized fluid to said gearshift element, said delivery means having a throttle means arranged therein;

bypass means, arranged to bypass said throttle means, for delivering said pressurized fluid to said gearshift element;

a valve, arranged in said bypass means, having a piston moveable between an open position, for permitting flow through said bypass means, and closed position for blocking said flow;



means communicating with said delivery means, downstream of said throttle means, for supplying a first pressure signal to said valve for acting on said piston, for urging said piston into said open position; and

means for supplying a second, vehicle speed-dependent pressure signal to said valve for acting on said piston in opposition to said first pressure signal for urging said piston into said closed position.

4,501,174

HYDRAULIC CONTROL SYSTEM FOR AUTOMATIC TRANSMISSION

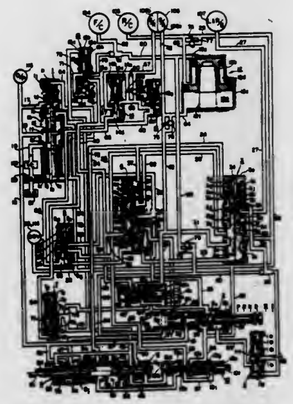
Kazuhiko Sugano, Yokohama, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

Filed Feb. 16, 1982, Ser. No. 348,837

Claims priority, application Japan, Feb. 17, 1981, 56-20827

Int. Cl.³ B60K *41/16*

U.S. Cl. 74—869 **5 Claims**



1. A hydraulic control system for an automatic transmission having a first friction unit to be engaged for all of forward drive ranges, a second friction unit and a third friction unit, the hydraulic control system comprising:

pressure regulator valve means for producing a line pressure;

manual valve means coupled with said pressure regulator valve means to receive the line pressure, said manual valve means having a valve body formed with a bore and a spool slidably disposed within said bore for movement to an automatic forward drive range, at least one manual forward drive range and a reverse drive range,

said manual valve means being formed with a first outlet port which is allowed to receive the line pressure when said spool is set in one of said automatic forward drive range and said at least one manual forward drive range to provide a forward drive range pressure, a second outlet port which is allowed to receive the line pressure when said spool is set in any one of said automatic forward drive range and said reverse drive range to produce an automatic forward drive and reverse drive range pressure, and a third outlet port which is allowed to receive the line pressure when the spool is set in said at least one manual forward drive range to produce a manual range pressure,

said first outlet port of said manual valve means communicating with the first friction unit to supply said forward drive range pressure;

first shift valve means for effecting a shift between a gear ratio and another gear ratio, said first shift valve means having an inlet port communicating with said first outlet port of said manual valve means to receive said forward drive range pressure, an outlet port communicating with the second friction unit and a drain port, said first shift valve means being shiftable between a downshift state wherein said outlet port thereof is isolated from said inlet port thereof and is allowed to communicate with said drain port thereof and an upshift state wherein said outlet port thereof is allowed to communicate with said inlet port thereof and is isolated from said drain port thereof;

means defining a conduit having one end connected to said second outlet port of said manual valve means; and

second shift valve means for effecting a shift between said another gear ratio and still another gear ratio, said second shift valve means having an inlet port connected to the other end of said conduit, an outlet port communicating with the third friction unit and a drain port, said second shift valve means being shiftable between a downshift state wherein said outlet port thereof is isolated from said inlet port thereof and is allowed to communicate with said drain port thereof and an upshift state wherein said outlet port thereof is allowed to communicate with said inlet port thereof and is isolated from said drain port thereof,

said second shift valve means having a second inlet port communicating with said third outlet port of said manual valve means to receive said manual range pressure and being urged in response to said manual range pressure to shift into said downshift state thereof.

4,501,175

SPEED CHANGE CONTROL UNIT OF AUTOMATIC TRANSMISSION FOR AUTOMOBILES

Takumi Tatsumi, Himeji, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 18, 1982, Ser. No. 435,100

Claims priority, application Japan, Oct. 16, 1981, 56-165950

Int. Cl.³ B60K *41/22*

U.S. Cl. 74—869 **3 Claims**

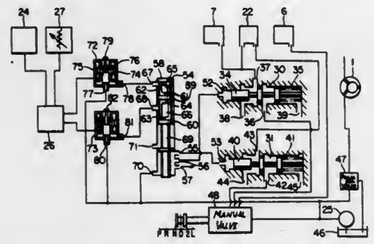
1. In an automatic transmission for automobiles having hydraulic servos for being selectively operated singly or in groups for changing the transmission ratio, an improved speed change control means comprising:

a plurality of hydraulic transfer valves operable for supplying pressurized hydraulic fluid to said servos from a source of pressurized hydraulic fluid;

hydraulic actuating means for each of said transfer valves;

a distributing valve for selectively distributing pressurized hydraulic fluid from said source of fluid to the respective hydraulic actuating means, said distributing valve having a plurality of spool means respectively movable through different maximum length strokes, each being movable through its respective stroke when supplied with pressur-

ized fluid, and said spool means being connected for being moved through a stroke which is the sum of the maximum length strokes of a number of said spool means when the respective spool means of said number of spool means is supplied with pressurized fluid, a valve member connected to said spool means for being moved by said spool means through a stroke corresponding to the stroke through which the spool means is moved, and a plurality of pressure fluid passages and a pressure fluid supply port and a pressure fluid discharge port in said distributing valve, the number of fluid pressure passages being at least one more than the number of spool means, and at least some of said pressure fluid passages being connected to



respective ones of said hydraulic actuating means and any remaining fluid passages being for connection to means for carrying out other transmission functions, the movement of said valve member by said spool means controlling the fluid flow between said supply and discharge ports and one or more of said pressure fluid passages in accordance with the stroke of said valve member according to whether one or more of said spool means is moved; and

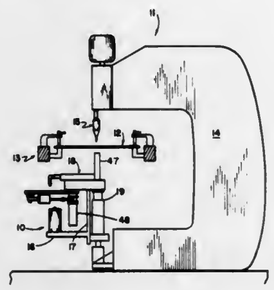
a plurality of control valve equal to number to the number of spool means and each connected to a corresponding spool means for supplying pressurized hydraulic fluid to the respective spool means in response to the speed condition of the automatic transmission.

4,501,176

AUTOMATIC THREADED NUT INSTALLATION AND TORQUING SYSTEM

Richard L. Sanders, Marietta, Ga., assignor to Lockheed Corporation, Burbank, Calif.

Filed Jan. 28, 1983, Ser. No. 508,583
Int. Cl.³ B25B *23/14*
U.S. Cl. 81—470 **6 Claims**



1. An automatic nut installation and torquing system adapted to install a nut on a threaded fastener shank inserted through an opening in a workpiece with the fastener located at a nut installation position, said system comprising:

a first passage means for transferring in a substantially horizontal direction a plurality of nuts in seriatim order and predetermined orientation from a supply source to a first nut location;

a substantially vertical and rigid tube member having an upper and lower end, both of which ends are open, said tube member adapted and sized to contain a seriatim stack of a plurality of nuts in the same individual orientation of said nuts as in said first passage means;

a first means for transferring an individual nut from said first nut location into the tube member as the lowermost nut in said stack thereof, said nuts individually progressing in seriatim order upwardly in said stack to a second nut location as the uppermost nut in said stack;

a nut application and torquing means including a vertically oriented, externally splined shaft extending from a pneumatic controlled actuator piston, said externally splined shaft engagingly extending through an internally splined drive means adapted to be rotationally driven about a fixed plane whereby when said internally splined drive means is rotated, said externally splined shaft is also rotated;

said externally splined shaft further including proximate the end of the shaft opposite the piston a hollowed nut drive socket affixed to the shaft and adapted to rotate with said shaft when said shaft is rotated by said internally splined drive means, and a nut catching pin means telescopically interconnected to said shaft and through said nut drive socket, said nut catching pin means adapted to retain a nut through gravitational forces when placed thereon and free of the nut drive socket until said pin means is moved telescopically into said nut drive socket by the end of the threaded fastener shank the nut is to be engaged with whereby said nut drive socket drivingly engages the nut;

second means for transferring a nut from the second nut location at the top of said stack to a location on said nut catching pin means;

a torque motor means;

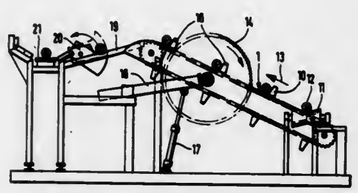
and a torque transfer means interconnecting said torque motor means and said internally splined drive means whereby torque generated by said motor means is delivered to a nut engaging a threaded fastener through rotation of said nut drive socket.

4,501,177

EDGE TRIMMING AND SCRAP DISPOSAL SYSTEM

Russell J. Logan, Pepper Pike, and Arthur J. Glass, Newbury, both of Ohio, assignors to Kennecott Corporation, Cleveland, Ohio

Filed Oct. 26, 1982, Ser. No. 436,857
Int. Cl.³ B23D *19/06*
U.S. Cl. 83—105 **13 Claims**



1. A system for trimming the edges of a metal strip and disposing of the edge trimmings comprising:

a cutting assembly having two parallel rotary cutting knives, one positioned mainly below the strip to be cut and one positioned mainly above the strip to be cut, each rotary knife having an adjacent backup roll mounted on the same central axis, the backup roll, adjacent the knife located mainly below the strip, being positioned on the side of the knife furthest from the center of the strip and the backup roll, adjacent the knife located mainly above the strip, being positioned on the side of the knife closes to the center of the strip;

a one-piece, straight, tubular chute having a constant cornerless cross-section through which trimmings pass from said cutting assembly to a chopping device, the end of said chute adjacent said cutting assembly being configured so that said chute end abuts said cutting assembly and together with said cutting assembly encloses said edge trimmings,

chopping means through which trimmings from said chute means pass and are severed into small lengths;

means for attaching the chutes to the cutting assembly;

means for driving said trimmer; and

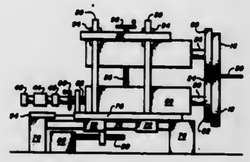
means for driving said chopping means.

4,501,178

DEVICE FOR SEVERING ROUND TIMBER

Siegmar Gönner, Oberkirch, Fed. Rep. of Germany, assignor to Gebrüder Linck Maschinenfabrik und Eisengiesserei "Gatterlinck" , Oberkirxh, Fed. Rep. of Germany

Filed Mar. 3, 1983, Ser. No. 471,639
Claims priority, application Fed. Rep. of Germany, Mar. 3, 1982, 3207547
Int. Cl.³ B27B *25/04*
U.S. Cl. 83—107 **5 Claims**



1. A device for severing round timber, comprising a rotary circular saw having a sectional plane and teeth and cutting round timber into sections, and tranversal feeding means for feeding round timber being processed towards said saw and further from said saw, said feeding means having a feed-in end and a discharge end and including a plurality of rotatable conveying chains arranged side by side, said conveying chains being arranged in at least one group positioned at one side of the sectional plane of the saw and in at least another group positioned at an opposite side of the sectional plane of the saw, the conveying chains of said one group and the conveying chains of said another group being arranged relative to each other so that they extend in a feeding direction from said feed-in end to said discharge end at an acute angle with respect to the sectional plane of the circular saw so that the conveying chains of said one group diverge from the conveying chains of said another group and the sections completely separated from each other by said circular saw and further fed by said one and another group, respectively, are moved away from each other, whereby a contact of cut surfaces of said sections with the saw teeth in a circle area of the saw, after the cutting has been completed, is prevented.

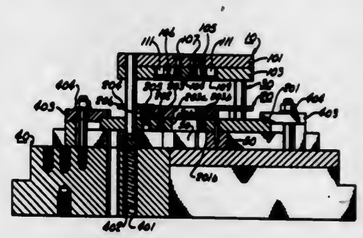
4,501,179

COMPOUND DIE ASSEMBLY

Satoshi Iwata, Tokyo, Japan, assignor to Tetsutaro Iwata, Japan

Filed Sep. 8, 1982, Ser. No. 415,978
Int. Cl.³ B26F *1/14*
U.S. Cl. 83—124 **7 Claims**

1. In a compound die assembly including an upper punch unit having a punch holder, at least one punch element, a blanking die element, and a knockout plate; a lower die unit having a die holder, a blanking punch element corresponding to said blanking die element and having at least one die hole corresponding to said at least one punch element, said die holder having at least one slug clearance hole corresponding to said at least one die hole, and a stripper plate; and a guide post means for maintaining operative vertical alignment of said punch unit and said die unit; the improvement which comprises the top end portion of each guide post means being fixed to said punch holder with the lower end portion thereof extending through a respective hole formed in said die holder, said blanking die and punch elements being respectively outer and inner pieces formed from a single plate by wire-cut electro-discharge machining and being directly fixed to said punch and die holders respectively, said knockout plate and said stripper plate being respectively inner and outer pieces formed



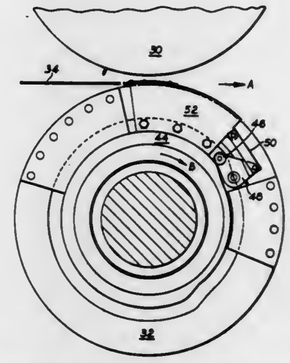
from a single plate by wire-cut electro-discharge machining and being elastically supported with respect to said punch and die holders respectively, a mount means to be removably mounted on a press bolster and having a flat top surface on which said die unit and punch unit are supported, said mount means having a set of holes for receiving the lower ends of said guide post means, a plurality of load-supporting elements being fixed to a bottom surface of said die holder and near the edge of said at least one slug clearance hole of said die holder to form a slug-accumulating space between said die holder and said mount means which communicates with an external space surrounding said die holder, and clamping means fixing said die holder onto said mount means.

4,501,180

ROTARY DIE-CUTTING

Thomas D. Bishop, Knowle, and David John G. Bishop, Balsall Common, both of England, assignors to The Deritend Engineering Company Ltd., West Midlands, England

Filed Jan. 24, 1983, Ser. No. 460,531
Int. Cl.³ B26D *7/18*
U.S. Cl. 83—154 **3 Claims**



1. A rotary die-cutter comprising a cutting roll having cutting tools projecting from the surfaces of the roll for effecting complete separation of edge scrap from each of a succession of

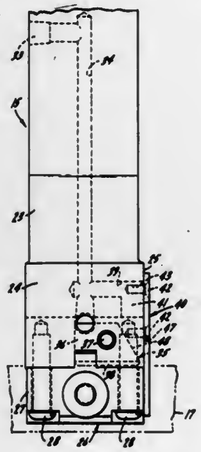
blanks, and a substantially cylindrical impression roll provided with means for clamping said scrap thereto and for taking the scrap arcuately about that roll, said means comprising a spacer plate secured to the surface of the impression roll with a thickness exceeding that of a blank, and a second plate mounted on the spacer plate and circumferentially movable thereon whilst carrying a plurality of spring fingers which can be extended beyond the edge of the first plate to trap said scrap.

4,501,181

METHOD FOR DELIVERING COOLANT TO A BAND SAW, AND STRUCTURE THEREFOR

John L. Yakich, Broadview, Ill., assignor to Armstrong-Blum Manufacturing Co., Chicago, Ill.

Filed Mar. 19, 1982, Ser. No. 360,011
Int. Cl.³ B23D *59/04;* B26D *7/08*
U.S. Cl. 83—169 **5 Claims**



1. In a coolant system for a metal cutting band saw having a guide arm located on the upstream side of the cutting span and in close proximity to the work piece being cut, said guide arm having within it a coolant passageway, the improvement comprising

a structure forming an egress opening at the end of the

an orifice means having an opening therein having sides to either side of the band saw blade, said sides being substantially parallel to each other,

said sides having a lower portion substantially conforming to said band saw blade, and having an upper portion extending substantially upwardly from the plane containing the band saw blade back surface so as to define a space through which the band saw blade does not pass, and

deflector means upstream from and near to said egress opening,

said deflector means having a surface element angularly displaced from both the horizontal and the vertical aligned with a perpendicular coolant flow passageway section,

said coolant flow passageway section directing coolant in a direction perpendicular to the direction of band saw blade movement,

said deflector means being disposed in the path of coolant flow so as to intercept a portion of said coolant as it travels in said perpendicular direction and redirect said coolant portion in a direction having a component of movement parallel to the direction of movement of the band saw blade,

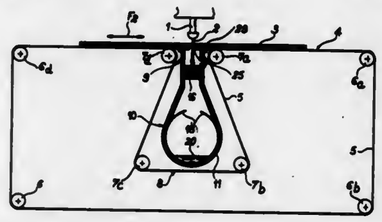
whereby at least some of said coolant portion will be in contact with said band saw blade over a long cutting span from the egress opening.

4,501,182

APPARATUS FOR CUTTING BY MEANS OF A HIGH PRESSURE FLUID JET

Alain Jardat, Courbevoie, and Joël André , Bougival, both of France, assignors to Societe Nationale Industrielle Aerospatiale, Paris, France

Filed Oct. 12, 1983, Ser. No. 541,137
Claims priority, application France, Oct. 19, 1982, 82 17473
Int. Cl.³ B26F *1/26, 1/30;* D06H *7/00*
U.S. Cl. 83—177 **9 Claims**



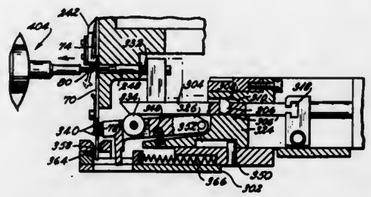
1. An apparatus for cutting by means of a high pressure fluid jet comprising a working nozzle supplying a fluid jet, a worktable able to support a material to be cut, means for displacing the working nozzle in a given cutting direction and a jet recovery system, wherein the worktable has a slot facing the working nozzle in the cutting direction, the jet recovery system being positioned behind said slot and having a chute at the bottom in which circulates a relatively cold liquid, an alveolar material placed at the inlet to the chute and set back relative to the worktable, and means for producing a vacuum at the inlet to the chute, between the worktable and the alveolar material.

4,501,183

LEADLESS CHIP PLACEMENT MACHINE FOR PRINTED CIRCUIT BOARDS

Weibley J. Dean, Binghamton; Charles E. Johnson, Whitney Point, and Phillip A. Ragard, Binghamton, all of N.Y., assignors to Universal Instruments Corporation, Binghamton, N.Y.

Division of Ser. No. 260,990, May 6, 1981, Pat. No. 4,458,412.
This application Apr. 25, 1984, Ser. No. 603,906
Int. Cl.³ B26D *5/26*
U.S. Cl. 83—233 **2 Claims**



1. An apparatus for indexed feeding of a component supply tape having feed holes spaced along the length thereof to position a component of said supply tape for pick-up at a pick-up station, and comprising:

a housing;

a cam bar reciprocatable within said housing, said cam bar having a key displaceable therein, and a cam surface;

a drive means for reciprocating said cam bar in a forward and reverse stroke, upon command;

a support block having a key hole for engagement by said key to provide keying of said block to said cam bar during a portion of said forward and reverse stroke such that said block is reciprocated;

an upwardly biased lever pivotally supported on said support block and having drive pins for engaging said feed holes and indexing said tape during a portion of said forward stroke;

stop means for limiting the forward movement of said block during said forward stroke;

roller means attached to said lever and engageable by said cam surface during said forward stroke to cause downward pivoting of said lever for indexing of said tape;

dog means for holding said lever in the downward pivoted position during disengagement of said drive pins on said reverse stroke; and

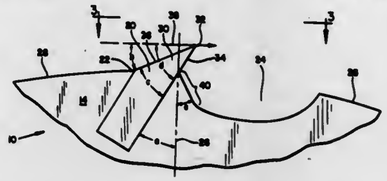
sensor means for sensing said forward and reverse stroke.

4,501,184

CUTTING TOOL WITH IMPROVED DEPTH CONTROL

Lewis A. Scott, Lake Oswego, and Duane M. Gibson, Milwaukie, both of Oreg., assignors to Omark Industries, Inc., Milwaukie, Oreg.

Filed Apr. 29, 1983, Ser. No. 489,860
Int. Cl.³ B27B *33/08, 33/12, 33/14*
U.S. Cl. 83—834 **8 Claims**



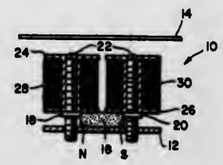
1. A cutting tool utilizing chip flow for controlling depth of cut for use in applications wherein a kerf is formed, comprising; a cutting tooth having a designated cutting direction, a cutting edge on said cutting tooth and outer relief and inner relief surfaces angled relative to the cutting direction rearwardly of the cutting edge which create a force during a cutting operation that urges increasing depth of cut, and a secondary surface intersecting the rearwardly angled inner relief surface at the desired depth of cut and extending forwardly from said intersection a distance at least equal to the length of the inner relief surface, the angles of the inner relief surface and the secondary surface being generally equal but oppositely directed relative to the cutting direction to thereby create a restrictive throat whereby chips cut by the cutting edge are impacted on the secondary suface for countering the force urging increasing depth of cut.

4,501,185

TRANSDUCER FOR STRINGER MUSICAL INSTRUMENT

Steven L. Blucher, New York, N.Y., assignor to Dimarzio Musical Instrument Pickups, Staten Island, N.Y.

Filed Jul. 29, 1983, Ser. No. 518,684
Int. Cl.³ G10H *3/18*
U.S. Cl. 84—1.15 **3 Claims**



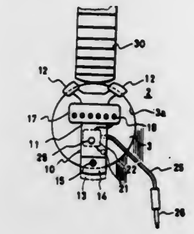
1. In a transducer for a stringed musical instrument whose output is to be electrically amplified, in which said transducer includes a pair of coils mounted adjacent each string of said instrument, the improvement in which said coils have individual axes and substantially the same number of turns of electrically conducting wire wound thereon, and the wires constituting said coils are of different gauges.

4,501,186

PICKUP DEVICE FOR STRINGED MUSICAL INSTRUMENT

Masahiro Ikuma, Hamakita, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan

Filed Jun. 15, 1983, Ser. No. 504,497
Claims priority, application Japan, Jun. 21, 1982, 57-92637[U]; Jun. 21, 1982, 57-92638[U]; Jul. 6, 1982, 57-102190[U]
Int. Cl.³ G10H *3/00*
U.S. Cl. 84—1.16 **7 Claims**



1. A pickup device in a stringed musical instrument having vibratory strings of magnetic material and a sound body carrying said strings and for transducing mechanical vibrations of said strings into electrical signals, said pickup device comprising:

a pickup mount member detachably attached to said sound body;

an electromagnetic pickup unit attached to said pickup mount member, said pickup mount member being attached to said sound body at a position whereby said electromagnetic pickup opposes said strings for electromagnetically transducing the vibrations of said strings into electrical signals;

a piezoelectric pickup unit detachably attached to said sound body at a position to receive the vibrations of said strings for piezoelectrically transducing said received vibrations of the strings into electrical signals; and

mixing amplifier means attached to said pickup mount member and electrically connected to said electromagnetic pickup unit and said piezoelectric pickup unit for mixing at a selectable ratio said electrical signals from both the electromagnetic and piezoelectric pickup units, thereby providing a mixed electrical output corresponding to the mechanical vibrations of said strings, said mixing amplifier means including a single adjustment means for continuously varying the relative amplitudes of the electrical signals from said electromagnetic pickup and said piezoelectric pickup in opposite directions simultaneously.

4,501,187

VERTICAL LAUNCH ALIGNMENT TRANSFER APPARATUS

Harold V. White, Huntsville, Ala., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

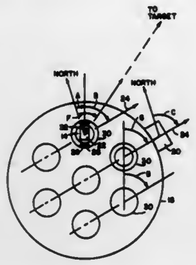
Filed Feb. 28, 1983, Ser. No. 470,749
Int. Cl.³ F41G *3/02*
U.S. Cl. 89—1.8 **3 Claims**

1. A vertical launch alignment transfer apparatus comprising:

a. a vehicle having a launch pod thereon, said launch pod provided with a plurality of launch tubes having missiles therein;

b. a northfinder carried on said pod; and,

c. mechanical interface means including a first means attached to the missile and oriented to the guidance system of said missile and a second means attached to said launch



tube and oriented to said northfinder whereby azimuth alignment is transferred to the guidance system of individual missiles in said pod.

4,501,188

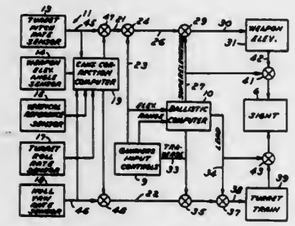
REMOTE CONTROL SYSTEM

Arthur J. Wroble, Grosse Pointe Shores, Mich., assignor to Ex-Cell-O Corporation, Troy, Mich.

Filed Oct. 22, 1982, Ser. No. 436,170

Int. Cl.³ F41G *5/16, 1/00*

U.S. Cl. 89—41 M **2 Claims**



1. A control system for establishing a line of fire for a weapon mounted on a vehicle subject to rotational movements about axes oblique to the line of fire of the weapon and for stabilizing the weapon, the system including sighting means operable to define the direction of the line of sight to a target as signals of train and elevation of the sight relative to the vehicle,

stabilizing means operative to generate signals counteracting the effect of said rotational movements, means for applying the stabilizing signals to the signals established by the sighting means to provide weapon train and elevation signals for control of the line of fire of the weapon, and a transmission system for each of the weapon train and elevation signals each transmission system including a pulse generating means effective to generate pulses at a frequency proportional to the rate of change of the signal and a stepping motor drivingly coupled to the weapon and driver by the said pulses.

4,501,189

SILENCED HAND-HELD FIREARM WITH ROTATING TUBE AND SLEEVE

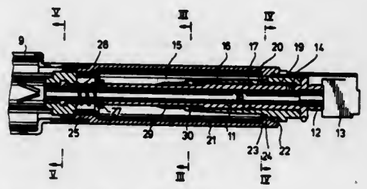
Rudolf Brandl, Dornhan, and Herbert Doll, Oberndorf, both of Fed. Rep. of Germany, assignors to Heckler & Koch GmbH, Oberndorf, Fed. Rep. of Germany

Filed Jul. 27, 1982, Ser. No. 402,267

Claims priority, application Fed. Rep. of Germany, Aug. 7, 1981, 3131265

Int. Cl.³ F41F *17/12*

U.S. Cl. 89—14.4 **6 Claims**



1. A hand-held firearm comprising:

a muzzle silencer;

a barrel having at least one transverse bore;

a tube section mounted for rotation on said barrel and surrounding said barrel being spaced therefrom at least over part of the length of said tube section to define an expansion area, both ends of said tube section being connected to the barrel in a sealed relationship thereto;

a path connecting said transverse bore and said expansion area;

means for selectively blocking said path, including a sleeve surrounding the barrel and mounted for rotation thereon, said sleeve having a first position in which said path is open and a second position in which said path is closed;

a positive coupling connecting said tube section to the sleeve for rotation therewith, said coupling being disengageable upon forward axial displacement of said tube section and sleeve relative to said barrel;

a connecting member closing an end of the tube section adjacent to the muzzle of the barrel;

means connecting said connecting member and tube section with the barrel and having a first rotational position corresponding to the first position of said sleeve in which said tube section is locked to the barrel and a second rotational position corresponding to the second position of said sleeve in which said tube section can be removed from the barrel upon forward axial movement relative thereto,

whereby when the tube section is in rotational position to be disconnected from the barrel by forward axial movement, the sleeve is in position closing the path from the transverse bore to the expansion area, and when the tube section is in rotational position locked to the barrel, the sleeve is in position opening the path from the transverse bore to the expansion area.

4,501,190

RACK AND PINION WEAPON ELEVATION MECHANISM

James C. Hobson, St. Clair Shores, Mich., assignor to Ex-Cell-O Corporation, Troy, Mich.

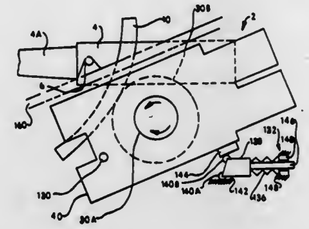
Division of Ser. No. 423,583, Sep. 27, 1982, Pat. No. 4,441,401. This application Jan. 30, 1984, Ser. No. 574,832

Int. Cl.³ F41G *5/04*

U.S. Cl. 89—41 H **7 Claims**

1. A combat vehicle having a turret means, a weapon mounted on the turret means for pivotable motion about a first axis and having driven gear means, a rack and pinion mechanism including an output pinion means in driving engagement with said driven gear for elevating or depressing said weapon and a supporting housing means for said mechanism mounted to said turret means for pivotable motion about a second axis,

and further having biasing means including wedging means disposed between portions of said turret means and said housing means and means for biasing said wedging means in a direction to operatively engage said portions of said housing



means and turret means to pivot said housing means relative to said turret means about said second axis such that said output pinion means is biased against said driven gear to reduce backlash.

4,501,191

POWER ASSISTED STEERING GEAR

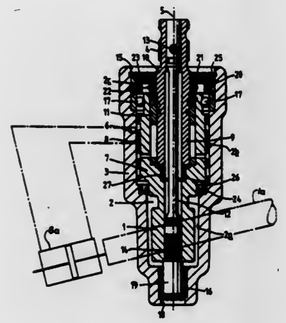
Gordon E. G. Webber, and Alan G. Wilson, both of Bristol, England, assignors to Cam Gears Limited, Hertfordshire, England

Filed May 23, 1983, Ser. No. 496,943

Claims priority, application United Kingdom, Jun. 18, 1982, 8217632

Int. Cl.³ F15B *13/16*

U.S. Cl. 91—375 A **22 Claims**



1. A power assisted steering gear comprising a housing defining a chamber and having an opening therein at one side thereof, an input shaft extending into said chamber through said opening, a toothed part rotatably mounted in said chamber for driving an output member in response to rotation of said input shaft, said input shaft and said toothed part being capable of restricted rotation relative to each other, valve means located in said chamber and responsive to relative rotation of said input shaft and toothed part for controlling fluid flow to a servo motor associated with said output member to provide power assistance to movement thereof, means attaching said valve means and said toothed part and said input shaft to form in a single unitary assembly for insertion into said chamber through said opening as a unitary assembly and for removal from said chamber through said opening as a unitary assembly, a single retaining means for retaining said unitary assembly in said chamber and preventing removal thereof from said chamber through said opening, said single retaining means being located at said one side and comprising a releasable means releasable to allow for removal of said unitary assembly through said opening.

4,501,192

PISTON FOR PRECISION DOSING INSTRUMENT

Erich Knödel, Wertheim, Fed. Rep. of Germany, assignor to Walter Graf u. Co GmbH & Co., Wertheim, Fed. Rep. of Germany

Filed Sep. 15, 1982, Ser. No. 418,132

Claims priority, application Fed. Rep. of Germany, Sep. 28, 1981, 3138536

The portion of the term of this patent subsequent to Feb. 16, 1999, has been disclaimed.

Int. Cl.³ B23P *15/10*; F16J *1/02*

U.S. Cl. 92—248 **9 Claims**



1. A piston for a precision dosing instrument comprising:

a cylindrical core and a sleeve of polytetrafluorethylene disposed on said core,

said core being of glass, ceramic or metal and being formed as a rigid tube open at both longitudinal ends, said longitudinal end adjacent the working end of the piston is defined by a substantial planar surface extending perpendicularly of the longitudinal axis of the core with at least one relatively small opening therein forming a part of the opening of said tube,

said sleeve being one integral piece with a cylindrical first portion extending about the cylindrical walls of said core and having a cylindrical outer surface and a closed end second portion extending over and engaging the longitudinal end of said core adjacent the working end of the piston, said closed end second portion having a greater thickness than said first portion and a planar front working face extending perpendicularly of the longitudinal axis of said core,

said sleeve being thermally shrunk onto said core and precision-ground finished.

4,501,193

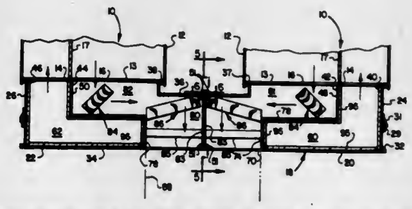
MOUNTING CURB FOR MULTIPLE UNIT AIR CONDITIONING SYSTEM

Spiridon Trigourea, Palatin Township, Cook County, Ill., assignor to Snyder General Corporation, Dallas, Tex.

Filed Nov. 29, 1982, Ser. No. 445,149

Int. Cl.³ F24F *5/00*

U.S. Cl. 98—33.1 **18 Claims**



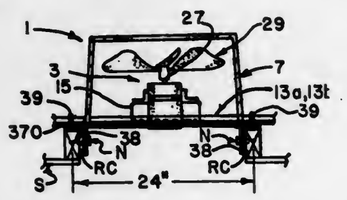
1. A mounting curb for supporting at least two self contained air conditioning units adapted for roof top installation, said air conditioning units each including an enclosure having a bottom wall including a first opening for receiving return air from a building return air duct and a second opening for discharging conditioned air to a building supply air duct, said mounting curb being characterized by:

a rectangular perimeter frame including spaced apart longitudinal sidewalls and opposed end walls;
means on said frame for supporting each of said enclosures spaced apart on said frame;
spaced apart generally horizontal top wall means and bottom wall means of said frame joined to said side walls and said end walls, respectively;
a set of spaced apart first openings in said top wall means adapted to be aligned with respective ones of said first openings in said enclosures;
a set of spaced apart second openings in said top wall means adapted to be aligned with respective ones of said second openings in said enclosures;
first and second openings formed in said bottom wall means adjacent to each other generally centrally disposed between said end walls and in communication with said building air ducts, respectively;
a first set of opposed ducts formed in said curb for conducting air between said first openings in said top wall means and said first opening in said bottom wall means, respectively;
a second set of opposed ducts formed in said curb for conducting air between said second openings in said top wall means and said second opening in said bottom wall means, respectively; and
respective horizontal wall means and vertical wall means in said curb each forming common walls separating each of said first ducts from each of said second ducts for directing air between said enclosures and said building air ducts within said frame.

4,501,194
WHOLE HOUSE ATTIC FAN

William J. Brown, St. Louis County, Mo., assignor to Emerson Electric Co., St. Louis, Mo.

Filed Jun. 23, 1983, Ser. No. 507,041
Int. Cl.[3] F24F *7/06*
U.S. Cl. 98—42.07 12 Claims

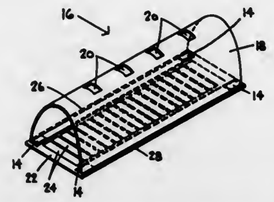


1. In a ventilating fan installable in the ceiling of a building for drawing air from outside the building through the interior of the building, for forcing air into the attic space of the building, and for exhausting air from within the attic space of the building to the out of doors via attic vents or the like, the building having a ceiling comprising a plurality of joists parallel to one another and spaced from one another at substantially uniform intervals, the ceiling further comprising sheathing secured to the bottom faces of said joists, and an opening in said sheathing, said ventilating fan including an electric motor and a rotary fan blade driven by said motor, wherein the improvement comprises: a frame for mounting said motor and said fan blade on top of a pair of said joists with said fan blade being in communication with said opening, said frame comprising a plurality of arms secured to said motor, each of said arms having means engagable with a respective joist for securely mounting said frame to said joists, a generally truncated conical venturi surrounding said fan blade, said venturi being of somewhat larger cross section than the diameter of said fan blade and being of a height similar to or greater than said motor and fan blade, a plenum box having a top cover and sides depending downwardly therefrom for providing at least part of an air flow path between said opening in said ceiling and said venturi, said plenum box having an opening in its top cover for registration with said venturi, and means for securing said venturi to said plenum box from the inside of and from below the plenum box and the venturi.

4,501,195
AIR DEFLECTOR

Peter J. Held, 46 Heather Ave., Kitchener, Ontario N2B 1M1, Canada

Filed Nov. 17, 1983, Ser. No. 552,792
Int. Cl.[3] F24F *13/06*
U.S. Cl. 98—103 6 Claims

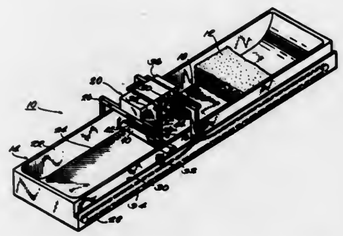


1. An air deflector for use with an air register through which air is passed, said register having two parallel sides, said deflector comprising a rectangular sheet of flexible and resilient material having two opposing edges that are folded in the same direction so that a flange is formed along each of said opposing edges, said sheet having sufficient rigidity so that said flanges remain in position after the sheet is folded, the deflector having an inverted U-shaped cross-section when mounted on said register with one of said flanges placed along each of said parallel sides of said register, with means to hold said flanges on said sides, said sheet having sufficient resiliency so that said deflector will return to said inverted U-shape after an external force that changes the shape of the deflector has been removed, said sheet having sufficient flexibility so that one deflector can be used with registers of different sizes.

4,501,196
PROCESS VAT CUTTING AND STIRRING MECHANISM

Fred A. Loichinger, 807 Westview St., Cleveland, Wis. 53015, and Meredith C. Thomson, 806 Grand Ave., Sheboygan, Wis. 53081

Filed Nov. 15, 1982, Ser. No. 441,759
Int. Cl.[3] A01J *25/00*; A23C *19/00*
U.S. Cl. 99—461 16 Claims

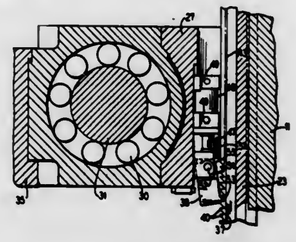


1. An apparatus for processing a mixture to produce a product such as cottage cheese, said apparatus comprising
a holding tank for holding the product and including opposite ends,
a cutting device for cutting the product,
a support structure for supporting said cutting device above said holding tank, so that said cutting device can extend into the product,
moving machinery for moving said cutting device horizontally along said holding tank so that said cutting device can cut the product in one direction, and
means for causing reciprocative movement at regular intervals of said cutting device perpendicular to said one direction as said cutting device moves along said holding tank between said ends, so that said cutting device can cut the product in a direction perpendicular to said one direction.

4,501,197
SUPERCALENDER EDGE NIP RELIEVING

Gerald W. Karr, South Beloit, Ill., and Gernot Müller, Kusterdingen, Fed. Rep. of Germany, assignors to Beloit Corporation, Beloit, Wis.

Filed Oct. 19, 1983, Ser. No. 543,167
Int. Cl.[3] B30B *3/04*
U.S. Cl. 100—35 19 Claims



1. A method of operating a calender having a vertical stack of a plurality of rotary rolls, each of said rolls having a bearing structure at each opposite end, means for guiding said bearing structures for vertical movement, and means for vertically shifting said rolls between a spaced apart independent suspension mode and a nipping mode relation to one another, and comprising:
relieving the weight of said bearing structures of said rolls in said nipping mode relation of said rolls by operating lifting pawls in cooperation with associated racks.

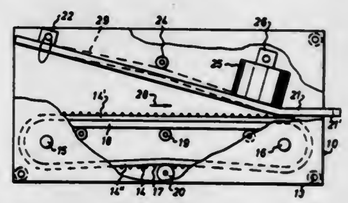
11. A calender having a vertical stack of a plurality of rotary rolls, each of said rolls having a bearing structure at each opposite end, means for guiding said bearing structures for vertical movement, and means for vertically shifting said rolls between a spaced apart independent suspension mode and a nipping mode relation to one another, and comprising:
means including lifting pawls which cooperate with associated racks for relieving the weight of said bearing structures from said rolls in said nipping mode relation;
and means for operating said relieving means.

4,501,198
DEVICE FOR COMPRESSING IN PARTICULAR ALUMINUM CANS

Sune H. Johansson, and John K. C. Gustavsson, both of Sävsjö, Sweden, assignors to Magnus Wilhelm AB, Sävsjö, Sweden

Filed Mar. 16, 1983, Ser. No. 475,866
Claims priority, application Sweden, Mar. 25, 1982, 8201897
Int. Cl.[3] B30B *9/32*
U.S. Cl. 100—98 R 10 Claims

1. A device for compressing in particular aluminum cans, comprising
a frame,
an endless driven belt supported in the frame to provide a belt run, and
a hold-down member extending along and located opposite said belt run to define inlet and discharge ends of the belt run, wherein said belt run and said hold-down member are spaced from each other at said inlet end at a distance which exceeds the maximum diameter of the can to be compressed, and progressively approach each other to a position in which they are located close to each other at said discharge end,
the hold-down member being resiliently yieldable in a direction away from the belt, at least throughout its proximal portion with respect to said discharge end,
the endless belt having friction increasing means on a side facing said hold-down member, and the surface of the

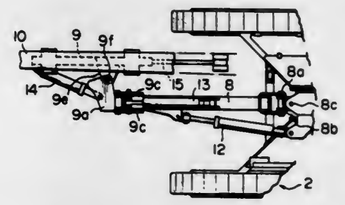


hold-down member which faces the belt being smooth and of low friction,
the hold-down member being fixed at said inlet end, and being supported against the pressure of said compressing of said cans by spring means in the vicinity of said discharge end, and
said hold-down member including a plate of elastic plastic material of low friction facing said belt run.

4,501,199
AUTOMATICALLY CONTROLLED ROCK DRILLING APPARATUS

Tohru Mashimo; Takashi Nishio, and Osamu Satoh, all of Hiroshima, Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan

Filed Feb. 10, 1983, Ser. No. 465,652
Claims priority, application Japan, Feb. 12, 1982, 57-21871
Int. Cl.[3] F42D *3/00*
U.S. Cl. 102—313 8 Claims



1. A rock drilling apparatus comprising boom means, drilling means adapted to be mounted on said boom means, follow-up work performing means adapted to be mounted on said boom means in lieu of said drilling means for performing a follow-up work after drilling operation, first actuator means for moving said boom means so that said means mounted on the boom means is located against a desired position on a rock surface in a desired direction, second actuator means for advancing and retreating said means mounted on the boom means to perform drilling operations and the follow-up works, detecting means for detecting actual position and direction of said drilling means in a drilled bore upon completion of a drilling operation, first memory means memorizing values of rectangular coordinates of positions on the rock surface where bores are to be drilled, transducing means for converting the values in the rectangular coordinates memorized in the first memory means into values corresponding to positions of said boom means, second memory means memorizing values corresponding to the actual positions and directions of said drilling means in respective ones of the drilled bores upon completion of respective drilling operations, servo control means for operating said first actuator means, selecting means for selecting one

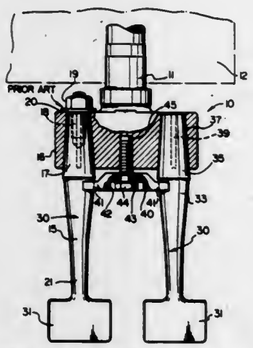
of the signals corresponding to outputs from said first and second memory means so that said servo control means is applied with a signal corresponding to said one signal to operate said first actuator means in accordance with said one signal, feedback means for feeding back values of movements of said boom means to said servo control means, drill control means operable under an output from said servo control means for operating said second actuator means to thereby control movements of said drilling means, processing means for controlling operations of said first and second memory means, said selecting means and said transducing means so that the servo control means is operated under the signal corresponding to the output from said first memory means for the drilling operations and under the signal corresponding to the output from said second memory means for the follow-up works after the drilling operation.

4,501,200

TAMPING TOOL RETAINER

Anthony Delucia, West Columbia, S.C., assignor to Canron Corp., West Columbia, S.C.

Filed Dec. 17, 1982, Ser. No. 450,512
Int. Cl.³ E01B *27/16*; A01B *35/22*, *1/22*; E01C *19/30*
U.S. Cl. 104—10 **7 Claims**



1. A vibrating railway ballast tamping tool head comprising a tool holder; a pair of spaced tamping tool-shank receiving sockets in said tool holder open at least to the underside of said holder; a pair of tamping tools each having a lower working face and an upper shank; and tamping tool retaining yoke means for engaging the shanks of both tamping tools underneath said tool holder and for connection to said holder to lock said located tools in said sockets.

4,501,201

REMOVABLE TRAY FOR MICROPHONE STANDS

Marcel Fitzner, 1672 Cerro Gordo, and Vesta P. Pinnell, Jr., P.O. Box 2894, both of Santa Fe, N. Mex. 87501

Continuation-in-part of Ser. No. 273,395, Jun. 15, 1981, Pat. No. 4,383,487. This application Apr. 21, 1982, Ser. No. 370,180
The portion of the term of this patent subsequent to May 17, 2000, has been disclaimed.
Int. Cl.³ A47B *85/00*
U.S. Cl. 108—27 **8 Claims**

1. A detachably attached tray for stands supporting a microphone and cord depending therefrom, said tray comprising in combination:

(a) a first section for defining a part of said tray and including a first edge;

(b) a second section for defining the remaining part of said tray and including a second edge;

(c) pivot means for pivotally attaching said first section to said second section;

(d) mounting means disposed within said first and second edges for encircling the stand on pivoting of said first and second sections toward one another to mate said first and second edges;

(e) indentation means disposed within said first and second edges for encircling the cord on pivoting of said first and second sections toward one another to mate said first and second edges;

(f) a first and third flange depending from said first section;



(g) a second flange depending from said second section, said second flange being positionable intermediate said first and third flanges on mating of said first and second edges; and

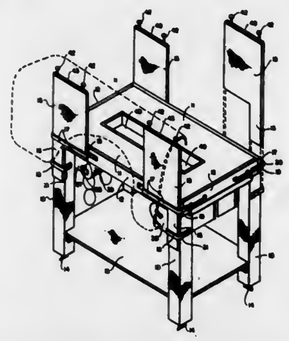
(h) latch means for maintaining said second flange intermediate said first and third flanges to maintain said mounting means in engagement with the stand.

4,501,202

BODY SHOP WORKTABLE

Herman Corazza, 1330 Kimberly Ave., Rock Springs, Wyo. 82901

Filed Oct. 27, 1982, Ser. No. 437,040
Int. Cl.³ B25H *1/10*
U.S. Cl. 108—50 **10 Claims**



1. A worktable for use in repairing automobile bodies, said table comprising:

a substantially rectangular, substantially horizontally disposed, top surface, with four legs extending downwardly from the four corners of the table to support the top surface;

at least a pair of substantially planar sideboard members comprising substantially rectangular, broad, board-like members which are adapted to extend longitudinally upwardly from the top surface of said table, with each sideboard member further having an extension projecting from the bottom of the rectangular sideboard member, said extension being a substantially flat, elongate section whose width is less than the corresponding width of the rectangular sideboard member; and

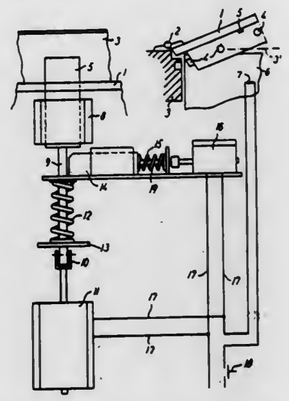
means for releasably securing the planar sideboard members to the table comprising four pair of band-like attachment members, one pair of attachment members being located at each of the respective corners of the worktable, each pair of attachment members including an upper bracket and a lower bracket, with the upper brackets being attached to a mutually respective side of the table adjacent to the top surface and with the lower brackets being attached to a mutually corresponding leg of the table and being spaced from the upper brackets a distance less than the longitudinal length of the flat elongate extensions which project from the bottom sides of the rectangular sideboard members, said upper brackets comprising elongate, rigid bands which are spaced from respective sides of the table, said elongate rigid bands having inwardly projecting leg members at the opposite ends thereof, with means being provided for attaching the inwardly projecting leg members at the opposite ends thereof, with means being provided for attaching the inwardly projecting ends of the respective leg members of said upper brackets to the respective sides of said table to form respective, elongate spaces between the upper brackets and the respective sides of the table, wherein each of said elongate spaces is adapted to receive in snug, sliding engagement therewith the bottom of a respective rectangular sideboard member, said lower brackets comprising elongate, rigid straps which are spaced, respectively, from the sides of the legs of the table, said elongate, rigid strips having inwardly projecting leg members at the opposite ends thereof, with means being provided for attaching the inwardly projecting ends of the respective leg members of said lower brackets to the respective sides of the legs of the table to form respective elongate openings between the lower brackets and the respective sides of the legs of the table, wherein each of said elongate openings is adapted to receive in snug, sliding engagement therewith the free end portion of a flat, elongate extension of a respective planar sideboard member.

4,501,203

SAFETY MECHANISM FOR PREVENTING THE LOCKING UP OF PERSONS IN CABINETS

Arne Lyngstrup, Herlev, Denmark, assignor to A/S Sparevirke, Copenhagen, Denmark

PCT No. PCT/DK82/00059, § 371 Date Feb. 17, 1983, § 102(e) Date Feb. 17, 1983, PCT Pub. No. WO83/00180, PCT Pub. Date Jan. 20, 1983
PCT Filed Jun. 29, 1982, Ser. No. 468,057
Claims priority, application Denmark, Jun. 30, 1981, 2908/81
Int. Cl.³ E05G *1/04*
U.S. Cl. 109—635 **1 Claim**



1. A strong room structure including a frame member providing an entrance opening, a door member mounted in said frame member, and a mechanism for preventing unauthorized closing of said door when at least one person is present on the floor of said room, said mechanism comprising

a primary bolt carried by one of said frame and door members and displaceable between a retracted inoperative position and a protruded operative position whereby in said operative position said primary bolt prevents closing of said door by abutment against the other one of said frame and door members,

first spring means normally urging said primary bolt toward said operative position,

a first electromagnet having sufficient strength when energized to retain said primary bolt in said inoperative position against the action of said first spring means,

an auxiliary bolt carried by said one of said frame and door members and displaceable between a retracted inoperative position and a protruded operative position for preventing retraction of said primary bolt from the operative position of said primary bolt,

second spring means normally urging said auxiliary bolt towards its operative position,

a second electromagnet having sufficient strength when energized to retain said auxiliary bolt in said inoperative position against the action of said second spring means,

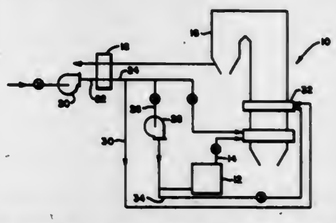
an electric circuit for actuating said first and second electromagnets and including a normally closed first switch adapted to be automatically opened by the weight of a person entering said room and a second independently operable switch for actuating said first and second electromagnets.

4,501,204

OVERFIRE AIR ADMISSION WITH VARYING MOMENTUM AIR STREAMS

Michael S. McCartney, Bloomfield, and William H. Pollock, East Granby, both of Conn., assignors to Combustion Engineering, Inc., Windsor, Conn.

Filed May 21, 1984, Ser. No. 612,114
Int. Cl.³ F23D *1/02*
U.S. Cl. 110—264 **2 Claims**



1. In combination, a vertical furnace of substantially square cross section, in which pulverized coal is burned, a rear pass connected to the upper portion of the furnace through which the combustion gases are exhausted from the furnace, a heat exchanger in which the combustion gases give up heat to combustion air passing therethrough, a first duct through which air is supplied to the heat exchanger, a first fan in the first duct for supplying low pressure air to the heat exchanger, first nozzle means located in each of the four corners of the furnace, for introducing coal into the furnace tangentially of an imaginary circle located in the center of the furnace, so that a fireball is created which flows upwardly therein along a first rotational path, a second duct for conveying low pressure air from the heat exchanger to the first nozzle means, a pulverizer mill in which coal is pulverized, a third duct having an inlet connected to the second duct, and an outlet connected to the pulverizer mill, second fan means positioned in the third duct, for supplying high pressure air to the pulverizer mill, a fourth duct for supplying pulverized coal carried in a high pressure air stream from the pulverizer mill to the first nozzle means, second nozzle means located in each of the four corners of the furnace above the level of the first nozzle means, for introduc-

ing overfire air to the furnace tangentially of an imaginary circle therein, in a direction of rotation opposite to that of the fireball, so that the gases flowing to the rear pass have little or no rotational flow, a fifth duct for conveying low pressure air from the second duct to the second nozzle means, and a sixth duct for conveying high pressure air from the third duct at a point downstream of the second fan to the second nozzle means.

4,501,205

PROCESS FOR BURNING A CARBONACEOUS SLURRY

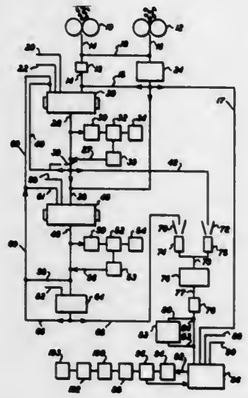
James E. Funk, Alfred Station, N.Y., assignor to Alfred University Research Foundation, Inc., Alfred, N.Y.

Continuation-in-part of Ser. No. 375,183, May 5, 1982, Pat. No. 4,441,887, which is a continuation-in-part of Ser. No. 288,737, Jul. 31, 1981, Pat. No. 4,416,666, which is a continuation-in-part of Ser. No. 088,815, Oct. 26, 1979, Pat. No. 4,282,006, which is a continuation-in-part of Ser. No. 957,166, Nov. 2, 1978, abandoned, which is a continuation-in-part of Ser. No. 790,337, Apr. 25, 1977, abandoned. This application Mar. 10, 1983, Ser. No. 474,125

The portion of the term of this patent subsequent to Apr. 10, 2001, has been disclaimed.

Int. Cl.³ F23D *1/00*

U.S. Cl. 110—347 **50 Claims**



1. A process for burning a carbonaceous slurry, comprising the steps of:

(a) providing a stable, solids-liquid slurry with a pH of from about 5 to about 12 comprising a consist of finely-divided particles of solid carbonaceous material dispersed in said liquid, wherein:

1. said slurry is comprised of at least about 60 volume percent of said solid carbonaceous material (dry basis), less than about 40 volume percent of said liquid, and from about 0.01 to about 4.0 weight percent (based on weight of dry solid carbonaceous material) of dispersing agent;
2. said slurry has a yield stress of from about 3 to about 18 Pascals and a Brookfield viscosity at a solids content of 70 volume percent, ambient temperature, ambient pressure, and a shear rate of 100 revolutions per minute of less than 5,000 centipoise;
3. said consist has a specific surface area of from about 0.8 to about 4.0 square meters per cubic centimeter and an interstitial porosity of less than 20 volume percent;
4. from about 5 to about 70 volume percent of said particles of solid carbonaceous material are of colloidal size, being smaller than about 3 microns;
5. said consist of finely-divided particles of solid carbonaceous material has a particle size distribution substantially in accordance with the following formula:

$$\frac{CPFT}{100} = \sum_{j=1}^{k}\left[X_j\left(\frac{D^{Nj} - D_{sj}^{Nj}}{D_{Lj}^{Nj} - D_{sj}^{Nj}}\right)\right]$$

where $\sum_{j=1}^{k} X_j = 1.0$

and where if $D < D_{sj}$ $\left(\frac{D^{Nj} - D_{sj}^{Nj}}{D_{Lj}^{Nj} - D_{sj}^{Nj}}\right) = 0.0$

and where if $D > D_{Lj}$ $\left(\frac{D^{Nj} - D_{sj}^{Nj}}{D_{Lj}^{Nj} - D_{sj}^{Nj}}\right) = 1.0$

wherein

(a) CPFT is the cumulative percent of said solid carbonaceous material finer than a certain specified particle size D, in volume percent;

(b) k is the number of component distributions in the consist and is at least 1;

(c) X_j is the fractional amount of the component j in the consist, is less than or equal to 1.0, and the sum of all of the X_j's in the consist is 1.0;

(d) N is the distribution modulus of fraction j and is greater than about 0.001;

(e) D is the diameter of any particle in the consist and ranges from about 0.05 to about 1180 microns;

(f) D_s is the diameter of the particle in fraction j, measured at 1% CPFT on a plot of CPFT versus size D, is less than D_L, and is greater than 0.05 microns;

(g) D_L is the diameter of the size modulus in fraction j, measured by sieve size or its equivalent, and is from about 10 to about 1180 microns; and

(h) no more than about 0.05 volume percent of the particles in the slurry consist have a diameter less than about 0.05 microns;

6. the net zeta potential of said colloidal size particles of solid carbonaceous material is from about 15 to about 85 millivolts; and

7. the concentration of solid carbonaceous material in said slurry, the interstitial porosity of said consist, the specific surface area of said consist, and the zeta potential of said colloidal size particles of solid carbonaceous material are interrelated in accordance with the following formula:

$$V_s + P_s + SA + (240/ZP) = H$$

wherein:

(a) V_s is the percent, by volume, of solid carbonaceous material in said slurry;

(b) P_s is the porosity of said consist in the slurry, in percent;

(c) S.A. is the specific surface area of said consist in said slurry, in square meters per cubic centimeter;

(d) Z.P. is the net zeta potential of said colloidal size particles of carbonaceous material in said consist, in millivolts, and

(e) H is from about 75 to about 98.

(b) atomizing said slurry; and

(c) burning said atomized slurry.

4,501,206

METHOD OF IGNITING A PULVERIZED-COAL PILOT-BURNER FLAME

Klaus Leikert, Gummersbach, Fed. Rep. of Germany, assignor to L. & C. Steinmüller GmbH, Gummersbach, Fed. Rep. of Germany

Continuation of Ser. No. 358,540, Mar. 16, 1982, abandoned. This application Mar. 16, 1984, Ser. No. 590,207

Claims priority, application Fed. Rep. of Germany, Mar. 17, 1981, 3110272

Int. Cl.³ F23D *1/00*

U.S. Cl. 110—347 **5 Claims**

1. A method of igniting a pulverized-coal pilot-burner flame for a pulverized-coal annular burner flame having an internal back flow region, with the ignition energy for said annular burner flame being introduced centrally into the interior of the back flow region of the annular burner flame for the purpose of saving highgrade fuel, such as oil or gas, otherwise used for the ignition process taking into account functional interrelationships as to ignition quality of fuels, said method comprising in combination the steps of:

carrying out an initial ignition of said pulverized-coal pilot-burner, said initial ignition being advantageously produced in every operating condition, for instance with cold as well as hot steam generators under conditions which permit a minimizing of the initial ignition energy for the igniter of the pulverized-coal pilot-burner flame;

effecting optimum quality reliable and stable ignition of said pulverized-coal pilot-burner flame during the process of said initial ignition, at constant primary and secondary air flow and a fixed air coefficient λ of 1.1 to 0.4, by a step of supplying to said pilot-burner at least once a coal powder-laden air/coal powder mixture at a powder-laden air/-powder weight ratio of 1.0 to 0.2; and

after said ignition has been effected, continuously adding a specified coal flow to said pilot-burner flame at said fixed air coefficient λ of 1.1 to 0.4 such that different fuel characteristics are equalized and compensated without negatively influencing the ignition process while assuring that functional interrelationships cover the range from the least to the optimum ignition quality of fuels.

4,501,207

HOLE SEWING MACHINE

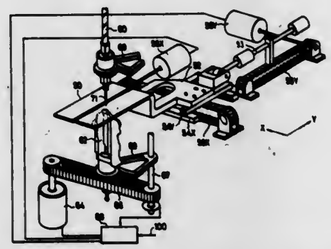
Hiroshi Miyazaki, and Masahisa Kato, both of Aichi, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Japan

Filed Jan. 26, 1983, Ser. No. 461,305

Claims priority, application Japan, Jan. 26, 1982, 57-9003[U]

Int. Cl.³ D05B *3/00*

U.S. Cl. 112—66 **12 Claims**



1. A hole sewing machine comprising a sewing mechanism including a needle bar having a sewing needle coupled thereto, and a looper stand, support means for supporting a fabric workpiece mounted for movement along an X-axis and a Y-axis orthogonal to each other, an X-axis direction feed motor for moving said support means in the direction of said X-axis, a Y-axis direction feed motor for moving said support means in the direction of said Y-axis, rotating means for sychonronously rotating said needle bar and said looper stand and control means for supplying driving signals to said rotating means according to a predetermined hole sewing program.

4,501,208

PROCESS FOR THE BIDIRECTIONAL FEEDING OF FABRICS IN QUILTING MACHINES, AND A MACHINE UTILIZING THIS PROCESS

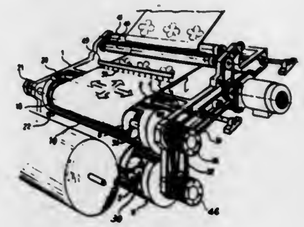
Giannino Landoni, Fagnano Olona, Italy, assignor to Meca S.a.s. di Cagnoni Landoni S.C., Cassano Magnago, Italy

Filed Sep. 8, 1983, Ser. No. 530,314

Claims priority, application Italy, Sep. 16, 1982, 23299 A/82; Sep. 16, 1982, 23300 A/82

Int. Cl.³ D05B *21/00*

U.S. Cl. 112—118 **8 Claims**



1. A process for the bidirectional feeding of fabrics in a quilting machine for the application of stitches to a product comprising at least one web of fabric which is unwound from a roll, which comprises the following phases:

(a) Unwinding a web of fabric (2,3; 102,103) from at least one roll (8,9; 108,109) during the phase of forward movement and applying a first series of stitches to the fabric during this forward movement;

(b) Stopping the movement of the roll (8,9; 108,109) and locking the roll in position;

(c) Moving back at least one time a portion of fabric (2,3;102,103) already stitched on in order to form the product by applying further stitches during this backward movement;

(d) Resuming the normal unwinding of the fabric from the roll after unlocking the latter.

4,501,209

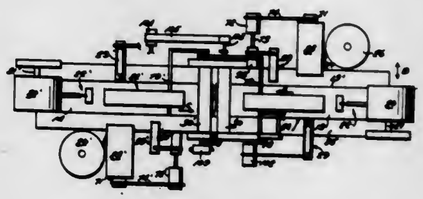
CONSTRUCTION OF FLY PIECES FOR MEN'S BRIEFS

J. Herbert Keeton, 727 Meader Dr., Campbellsville, Ky. 42718

Filed Sep. 28, 1982, Ser. No. 426,144

Int. Cl.³ D05B *21/00*

U.S. Cl. 112—121.12 **30 Claims**



1. Apparatus for constructing fly pieces of men's briefs or the like, comprising:

means for simultaneously and synchronously forming two sheets of fly pieces, each having alternating band-stitched arcuate side portions and non-band-stitched straight portions along a first edge thereof;

means for combining said sheets together in face-to-face

relationship with the first side of one sheet opposite the first side of the other sheet;

means for partially severing the sheets when in face-to-face relationship, into distinct fly pieces; and

means for coiling the partially severed sheet into a roll of a plurality of pairs of fly pieces.

4,501,210

ELECTRODE CONTROL SEWING MACHINE

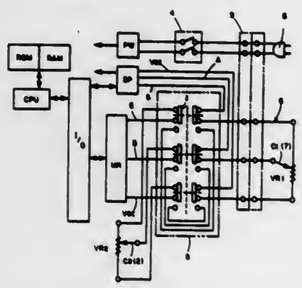
Susumu Hanyu, and Kenji Kato, both of Tokyo, Japan, assignors to Janome Sewing Machine Co. Ltd., Tokyo, Japan

Continuation of Ser. No. 188,599, Sep. 19, 1980, abandoned. This application Oct. 22, 1981, Ser. No. 313,986

Claims priority, application Japan, Sep. 27, 1979, 54-123134

Int. Cl.³ D05B *3/02*

U.S. Cl. 112—158 E **4 Claims**



1. An improvement to a micro-computer controlled sewing machine having a dial manually operated to adjust a needle swinging amplitude and a machine controller adjustably operated to control the rotation speed of the sewing machine, the improvement comprising: a conversion switch connected to the dial and to the machine controller and having a first position and a second position; and means connected to the conversion switch and to the micro-computer and operating in a manner that when the conversion switch is in the first position, the machine controller will control the rotation speed of the sewing machine and when the conversion switch is in the second position, the machine controller will control the needle swinging amplitude.

4,501,211

LOCK STITCH TYPE HAND SEWING MACHINE

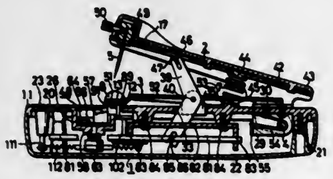
Tuneo Seyama, Yono, Japan, assignor to Kabushiki Kaisha Nilda Seisakusho, Sanjo, Japan

Filed Sep. 30, 1982, Ser. No. 431,571

Claims priority, application Japan, Dec. 8, 1981, 56-196254

Int. Cl.³ D05B *97/02, 57/12, 75/04*

U.S. Cl. 112—169 **8 Claims**



1. A lock stitch hand sewing machine comprising a bed, a needle arm pivoted at one end of said bed and manually movable toward said bed from an open position at an acute angle to said bed to a closed position, spring means biasing said needle arm toward open position, a needle plate on said bed having a needle opening therein, a needle carried by said needle arm and movable through said opening in said needle plate when said needle arm is moved from open to closed position, means for supplying an upper thread to said needle, a bobbin on said bed below said needle plate for supplying a lower thread, a shuttle carrying said bobbin, driving means for moving said shuttle to interlock said lower thread with said upper thread when said needle is moved through said opening in the needle plate, and transmitting means for activating said driving means, including a rocking lever pivoted at an intermediate point to said bed and having one end connected with said needle arm and the other end extending within said bed, a rack reciprocable in said bed and connected with said other end of said lever so as to be reciprocated thereby and a pinion engaged with said rack and fixed on said driving means, whereby rocking motion of said needle arm by manual operation is transmitted to said driving means to move said shuttle to interlock said lower thread with said upper thread.

4,501,212

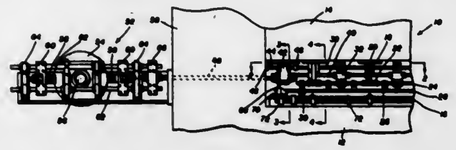
TUFTING MACHINES

Ian Slattery, Hixson, Tenn., assignor to Spencer Wright Industries, Inc., Chattanooga, Tenn.

Filed Nov. 14, 1983, Ser. No. 550,935

Int. Cl.³ D05C *15/00*

U.S. Cl. 112—266.2 **20 Claims**



1. A method of tufting pile fabric comprising, feeding a backing material in one direction, reciprocably penetrating a plurality of needles through said backing material from one side thereof, said needles being spaced apart transversely to said feed direction, supporting said material during needle penetration thereof by a plurality of fingers spaced apart in the same direction as said needles, the spacing between adjacent fingers being substantially the same as the spacing between adjacent needles, shifting said needles and said fingers in synchronism from a first position transversely to said one direction while said needles are on one side of said material, penetrating said material with said needles, and shifting said needles and said fingers in synchronism to said first position while said needles are within the backing material.

4,501,213

FEED CONTROL FOR A SEWING MACHINE

Willi Meier, Karlsruhe-Durlach, Fed. Rep. of Germany, assignor to Dorina Nähmaschinen GmbH, Fed. Rep. of Germany

Filed Sep. 13, 1983, Ser. No. 531,688

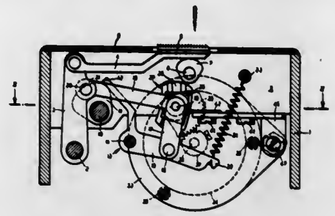
Claims priority, application Fed. Rep. of Germany, Sep. 18, 1982, 3234688

Int. Cl.³ D05B *3/04*

U.S. Cl. 112—316 **7 Claims**

1. A control device for the work feeding mechanism of a sewing machine having a support carrying an oscillating mechanism for shifting a feed dog backwardly and forwardly in an amount controlled by a sliding member which is movable in a guideway and depending on the position of the guideway and the sliding member relative to each other, comprising a stepping motor support having a drive shaft supporting bushing, a rotatable setting shaft rotatably supported in said bushing, a stepping motor mounted on said stepping motor support and having a rotatable drive shaft drivingly connected to said

setting shaft to rotate said setting shaft a selected amount, said setting shaft being connected to one of said sliding member and



said guide to adjust the relative positions thereof and vary the feeding mechanism.

4,501,214

MAST FOR A SAIL

Urs P. Meyer, In der Rehweid 2, CH-8122 Pfaffhausen, Switzerland

Filed May 16, 1983, Ser. No. 494,925

Claims priority, application Switzerland, May 18, 1982, 3079/82

Int. Cl.³ B63H *9/04*

U.S. Cl. 114—39 **16 Claims**



1. A mast for use on a sailcraft, said mast being swivel-mountable at its lower end to the sailcraft so as to be rotatable with respect thereto yet utilizing no bracing attachments anywhere along its length to the sailcraft, said mast having an elongated cross section at every point along its length, thus providing said mast with a narrow front surface, a narrow rear surface and wide opposite side surfaces, the dimensions of the cross sections of said mast changing along its length, each cross section including a longer axis which extends between the narrow front and rear surfaces of said mast and a shorter axis which extends between the wide opposite side surfaces of said mast, the length of the longer axes of the cross sections, when averaged over the lenght of the mast, being at least 2.5 times greater than the length of the shorter axes, such that said mast has a higher flexibility in the direction of said shorter axes than along the direction of its longer axes, said mast being capable of deflecting under the influence of the force applied thereto by an attached sail, itself acted on by a flow of air, said mast being capable of bending to become concave towards the luff side and rotating about its lower end and into the flow of air, based on the sail-applied force.

4,501,215

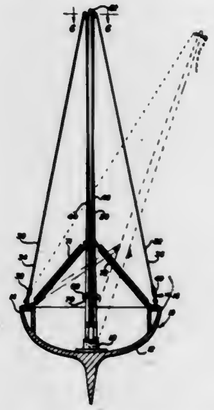
HIGH HEEL ANGLE MAST STAY RELEASE STRUCTURE

Daniel W. Hart, and Helen F. Hart, both of P.O. Box 432, Lanark, Fla. 32323

Filed Aug. 2, 1983, Ser. No. 519,232

Int. Cl.³ B63B *35/00*

U.S. Cl. 114—39 **4 Claims**



1. In combination with a sail boat subject to high heel angles and including a hull having opposite sides between which the lower end portion of an upright mast is pivotally mounted for angular displacement about a fore and aft extending axis, the upper end portion of said mast including mast stay guide means relative to which elongated flexible mast stay may be guidingly engaged for longitudinal displacement relative thereto, at least one pair of elongated flexible stays, anchor means anchoring one pair of corresponding end portions of said stays relative to opposite side portions of said hull, the longitudinal midportions of said stays being guidingly engaged with said guide means and the other pair of corresponding end portions of said stays extending downwardly along said mast away from said guide means, full releasing and manually resettable latch means releasably anchoring the other set of end portions of said stays against upward movement along said mast, said latch means including high heel angle sensing release means operative to fully release the other end portion of said stays for upward movement along said mast responsive to said hull experiencing a high heel angle above a predetermined maximum desired heel angle, and angular displacement resisting means operatively connected between said hull and mast, independent of said stays, operative to yieldingly resist angular displacement of said mast relative to said hull from a predetermined center position of said mast.

4,501,216

SAIL AND RIGGING FOR A SAILING-APPARATUS

Bram J. Voslamber, Duinlustweg 21, 2243 GP Wassenaar, Netherlands

Filed Dec. 20, 1982, Ser. No. 451,365

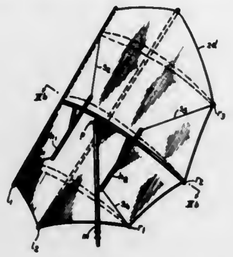
Claims priority, application European Pat. Off., Jan. 6, 1982, 82200007.1

Int. Cl.³ B63H *9/04*

U.S. Cl. 114—102 **7 Claims**

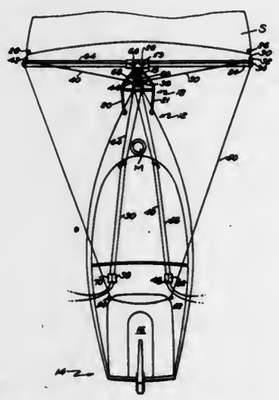
1. A sail for propelling a sailing-apparatus over a surface, said sail having a frame, wherein sailing-cloth is tightened over said frame and whereby the underside comprises the windward side and the upperside comprises the leeside, and wherein the sail is rotatable and pivotable with the aid of steering means in all directions with respect to a supporting body, characterized in that said frame includes stiffening elements comprising girder means interconnected along the length thereof by rib

means extending substantially perpendicular to said girder means, and means are provided for retaining said sailing cloth and said frame in tight proximate relationship for forming substantially stiff wing-type sail means having a design-pressure center of the wind forces acting on the sail when sailing said center lying in a reference axis substantially perpendicular to the longitudinal axis of said sail substantially along which, on the windward side of said sail, is defined a point of support



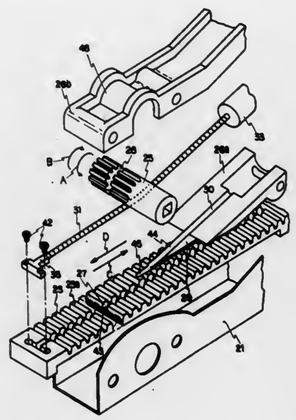
for said frame, and in that said steering means to be controlled by a sailor are formed by a pair of stiff elongated handle means fitted to said frame and situated in a plane on the windward side of said sail substantially spaced from and parallel to the sail and distant from said point of support and said design-pressure center and distant at opposite sides of said point and center for adjusting the position of said point and said center relative to the sailing apparatus.

4,501,217
SPINNAKER POLE CONTROL
John G. Hoyt, #9 Defenders Row, Goat Island, Newport, R.I. 02840
Filed Feb. 24, 1984, Ser. No. 583,372
Int. Cl.³ B63H 9/4
U.S. Cl. 114—102 **4 Claims**



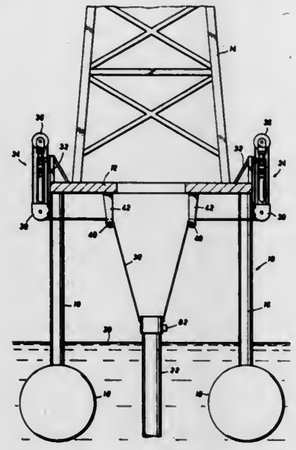
1. In a sailing vessel having a hull with bow and stern sections, a mast supported in a vertical direction from the hull; a rigid support means forward of the mast having means rotatably secured on the upper portion thereof for releasably holding a spinnaker pole, which can slide transversely thereof; that improvement for controlling the pole comprising a pair of control lines, one each attached to an end of said pole and thence led aft through direction changing means at said support means, a pair of clew control lines, each led from the clew of a triangular sail through direction changing means at the bow of the vessel, and thence aft for controlling the sail.

4,501,218
STEERING SYSTEM FOR A BOAT
Makoto Teraura, and Masanao Baba, both of Takarazuka, Japan, assignors to Nippon Cable System, Inc., Takarazuka, Japan
Filed Dec. 30, 1983, Ser. No. 567,290
Claims priority, application Japan, Jul. 20, 1983, 58-132481
Int. Cl.³ B63H 25/02
U.S. Cl. 114—144 R **9 Claims**



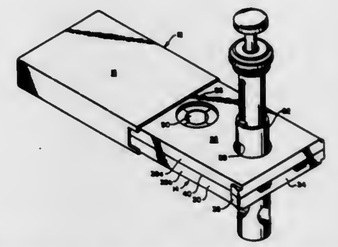
1. A steering system for a boat, comprising:
(a) a rack casing having an opening formed at a center portion or the neighborhood portion thereof; said rack casing being pipe-shaped;
(b) a rack slidably inserted into said rack casing; said rack having a teeth surface side facing said opening; said rack being provided with at least one inner cable path for inserting an inner cable; said inner cable path extending in the longitudinal direction of said rack;
(c) a pinion arranged at said opening; said pinion being meshed with said rack;
(d) at least one inner cable of a push-pull control cable; one end of said inner cable being engaged to an end portion of said rack; the other end of said inner cable being connected to a rudder means or another steering system;
(e) a cable guide having a front end portion inserted into said inner cable path and having at least one guide groove extending from said front end portion to a rear end portion for slidably guiding said inner cable;
(f) an outer casing of said push-pull control cable; one end of said outer casing being connected to said rear end portion of said cable guide; said outer casing slidably guiding said inner cable to said rudder means or said another steering system;
(g) a bracket connecting said cable guide to said rack casing;
(h) a steering shaft having an end portion securely connected with said pinion;
(i) a housing rotatably supporting said steering shaft;
(j) a means for combining said cable guide and said rack casing connected together to said housing;
(k) a small guide groove formed in a bottom surface of said inner cable path; said small guide groove extending along said inner cable path; and
(l) a small projection piece provided at a bottom portion of said front end portion of said cable guide; said small projection being slidably inserted into said small guide groove.

4,501,219
TENSIONER APPARATUS WITH EMERGENCY LIMIT MEANS
Howard J. Bates, Jr., Houston, Tex., assignor to NL Industries, Inc., New York, N.Y.
Filed Apr. 4, 1983, Ser. No. 481,809
Int. Cl.³ E21B 19/08, 19/09
U.S. Cl. 114—264 **18 Claims**



1. Tensioner apparatus for maintaining a load between an offshore support structure and a marine riser pipe structure comprising:
first and second tensioner bodies, one of said tensioner bodies comprising a cylinder and the other of said tensioner bodies comprising a piston dividing said cylinder into two variable volume chambers, said first and second tensioner bodies being functionally interconnected with said offshore support structure and said marine riser pipe structure respectively whereby relative movement of said structures tends to cause corresponding relative reciprocation of said tensioner bodies, one of said variable volume chambers of said cylinder communicating with a source of pressurized fluid at a relatively high pressure for applying a force between said piston and cylinder tending to reciprocate said piston and cylinder in a first directional mode and thereby applying a generally upwardly directed tensile force to said riser pipe structure, and the other of said variable volume chambers being a balancing chamber communicating with a source of pressurized fluid at a relatively low pressure for resisting reciprocation of said piston and cylinder in said first directional mode, said balancing chamber having outlet means communicating therewith for egress of pressurized fluid from said balancing chamber so as to permit reciprocation of said tensioner bodies in said first directional mode;
limit valve means associated with said outlet means of said balancing chamber and movable between at least two positions, said limit valve means in a first such position communicating a first flow area with said outlet means, and in a second such position communicating a second flow area with said outlet means, said second flow area being substantially less than said first flow area, so as to reduce the rate of fluid flow from the balancing chamber;
actuator means operatively associated with said limit valve means for normally maintaining said limit valve means in said first position but selectively shifting said limit valve means to said second position on receipt of a signal;
and control means functionally associated with said riser pipe structure and said actuator means for detecting movement of said riser pipe structure independently of the corresponding relative reciprocation of said tensioner bodies in excess of a predetermined limit and producing such signal in response to such movement.

4,501,220
MUSICAL INSTRUMENT VALVE CLEANING/LUBRICATING DEVICE AND METHOD
Lino Biasini, San Jose, Calif.; Americole R. Biasini, and Elvind Clausen, both of Bellingham, Wash., assignors to Allsop, Inc., Bellingham, Wash.
Filed Jun. 15, 1983, Ser. No. 504,382
Int. Cl.³ B05C 1/06, 17/00; G10G 0/00
U.S. Cl. 118—73 **25 Claims**

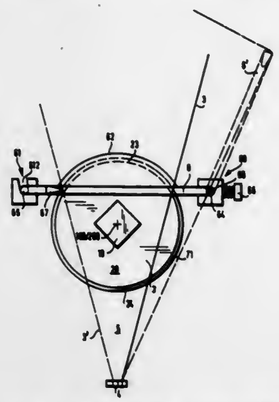


1. A cleaning device particularly adapted to clean a valve element of a musical instrument, where the valve element has a predetermined cross-sectional dimension, said device comprising:
(a) a housing structure defining a first cleaning chamber and a second lubricating chamber;
(b) said housing having a first through recess extending through said first cleaning chamber and a second through recess extending through said second lubricating chamber, said recesses being of a cross-sectional dimension sufficiently large to receive a valve element to be cleaned;
(c) a cleaning pad mounted in said cleaning chamber and having a through recess aligned with the first recess, with a recess defining portion of said cleaning pad being positioned to engage a valve element positioned in the first through recess of the housing;
(d) a lubricating pad mounted in said lubricating chamber, said lubricating pad having a porous structure and being adapted to receive and retain a lubricating medium therein, said lubricating pad being formed with a through recess aligned with said second recess, with a recess defining portion of the lubricating pad being positioned to engage a valve element placed in said second recess in lubricating engagement.

4,501,221
THREAD PARAFFINING DEVICE EMPLOYING A THREAD ELEMENT
Hans Landwehrkamp, Lenting, and Gottfried Schneider, Ingolstadt, both of Fed. Rep. of Germany, assignors to Schubert & Salzer Maschinenfabrik Aktiengesellschaft, Ingolstadt, Fed. Rep. of Germany
Filed Jul. 14, 1983, Ser. No. 513,996
Claims priority, application Fed. Rep. of Germany, Jul. 31, 1982, 3228642
Int. Cl.³ B05C 1/06
U.S. Cl. 118—78 **13 Claims**

1. A thread paraffining device employing a paraffin element, a thread delivery station and a thread take-up device with a thread path extending therebetween, a rotary polyhedral bolt, the axis of which is oriented substantially at right angles to said thread path between said delivery station and said take-up device, a stop, said paraffin element being resiliently biased and slidably mounted towards said thread path and said stop, the improvement comprising:

said stop being a stop rail extending transversely to the thread path direction, said stop rail engaging an area of



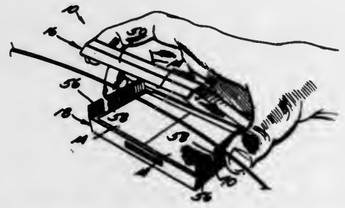
one half of a face of said paraffin element and said thread contacting an area of the other half of said face of said paraffin.

4,501,222

APPLICATOR FOR FISHING LINE DRESSING COMPOSITION

David A. Stone, Glide, Oreg., assignor to Stone Fly Products, Glide, Oreg.

Filed Sep. 21, 1983, Ser. No. 534,388
Int. Cl.³ B05C *1/06*
U.S. Cl. 118—234 **18 Claims**



1. An applicator for applying a dressing composition to a segment of elongated flexible material such as a segment of fly fishing line,

said applicator comprising:

a somewhat flexible plastic container wall means defining a shell enclosing a cavity when in a closed condition, said shell including two openable/closable shell halves each having internally disposed means defining a respective compartment; the two shell halves, when closed, having the two respective compartments arranged in confronting relation to provide said cavity;

the said container wall means of each shell half including an outer face wall and a perimetrically extending skirt wall means;

means hinging one of said shell halves to the other of said shell halves so that said shell may be closed and opened up along an imaginary plane which splits said cavity into said compartments;

each said compartment being constructed and arranged to removably receive an applicator pad constituted by at least one respective applicator pad unit positionable in at least two positions achievable by at least one of:

removing the applicator pad, turning it through part of a circle about an axis that is parallel to its thickness direction and re-inserting it in the respective compartment,

shifting it rectilinearly from one site to another in the compartment, and

removing it, flipping it over and re-inserting it in the respective compartment, with each said applicator pad substantially filling the respective compartment and having a working face disposed in said plane;

means defining two perimetrically widely-spaced openings through the shell on an axis lying in said plane, each said opening being provided in at least one of said skirt wall means, said axis being laterally offset in said plane from one which would divide said compartments into respective identically sized and shaped halves; and

means defining a generally U-shaped guide mounted externally on one of said skirt wall means, each such guide including two sidewall means respectively bracketing a respective said opening, in a flanking sense, and crossing and extending a substantial distance past said plane, so that when said shell is opened, a segment of elongated flexible material which is to have a dressing composition applied thereto may easily be located on said axis in said plane when the compartments contain respective applicator pads, by placing a portion of the segment of elongated flexible material in the two respective U-shaped guides and closing the shell;

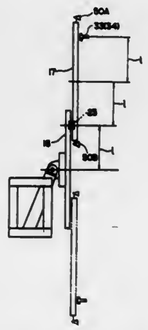
each shell half being molded of such flexible synthetic plastic material that, by modulating the compressive force that he or she applies to said outer face walls in a sense to squeeze the applicator while a line segment to be dressed is being longitudinally moved through the applicator, the user is able to adjust, regulate and modify the amount of dressing being applied to the line segment, the amount of applied dressing being left on the line segment and the extent to which the line segment is longitudinally drawn-out and straightened, even when the line segment being dressed is of graduating transverse cross-sectional area along its length.

4,501,223

COATING APPARATUS

Sadayuki Matsuno, Yokohama; Hiroshi Itoh, Tokyo; Isamu Nishikawa, Yokohama; Tatsuo Awazu, Zushi; Toshio Matsunaga, Tokyo; Yoshitaka Kitaoka; Goro Sugimoto, both of Yokohama, and Hiroki Nishinaka, Amagasaki, all of Japan, assignors to Hitachi Zosen Corporation, Japan

Filed Mar. 21, 1984, Ser. No. 591,400
Claims priority, application Japan, Nov. 30, 1983, 58-227742; Nov. 30, 1983, 58-227743
Int. Cl.³ B05C *7/00*
U.S. Cl. 118—668 **6 Claims**



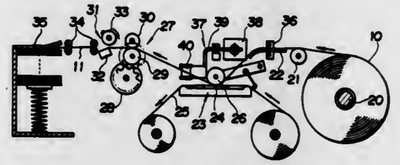
1. A coating apparatus comprising support means, support moving means for pivotally moving the support means about a horizontal axis, an applicator holder supported by the support means upwardly and downwardly movably and supporting applicator means, holder drive means for moving the applicator holder upward and downward, position detecting means for detecting the raised or lowered position of the applicator holder or the applicator means, a pair of distance detecting means attached to the support means and arranged one above the other at a distance for detecting the distance from the work surface to be coated, and control means connected to the position detecting means and to the distance detecting means for causing the support moving means to pivotally move the support means in response to detection signals from one of the distance detecting means closer to the applicator means to maintain a substantially constant distance between the applicator means and the work surface.

4,501,224

CONTINUOUS TAG PRINTING APPARATUS

Tooru Shibayama, Kanagawa; Hiroshi Kajiya, Tokyo, and Mitsuharu Takahashi, Kanagawa, all of Japan, assignors to Kabushiki Kaisha Sato, Japan

Filed Jun. 24, 1983, Ser. No. 507,698
Claims priority, application Japan, Jun. 29, 1982, 57-110763
Int. Cl.³ B05C *1/02, 1/16*
U.S. Cl. 118—697 **10 Claims**



1. A continuous tag printing apparatus, comprising:

a feed mechanism for feeding a strip of tags in a feed direction along a feed path;

a printing mechanism along the feed path for printing desired information on each of the tags; and

a mark applying mechanism along the feed path and disposed in the feed direction from the printing mechanism for applying a mark on a portion of a side surface of the strip at a location which corresponds to a portion of the strip at which information being printed on the tags changes.

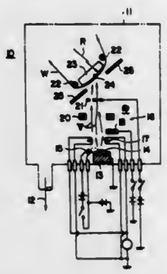
4,501,225

APPARATUS FOR MAKING A MAGNETIC RECORDING MEDIUM

Makoto Nagao; Akira Nahara, and Goro Akashi, all of Odawara, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Division of Ser. No. 368,861, Apr. 15, 1982,. This application Mar. 15, 1984, Ser. No. 589,701
Claims priority, application Japan, Apr. 24, 1981, 56-62055
Int. Cl.³ C23C *13/08*
U.S. Cl. 118—718 **7 Claims**

1. An apparatus for making a magnetic recording medium at least comprising, in a vacuum, a means for heating and evaporating a deposition material, a hearth for containing said deposition material, a pair of guide rollers located at different heights above said hearth, and a fixed curved guiding means having a curved surface which is convex downwardly and capable of slidably guiding a flexible substrate moved in



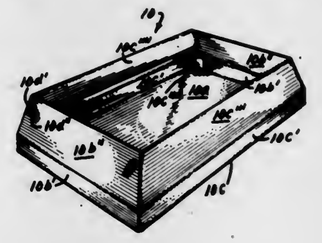
contact therewith between said pair of guide rollers, said fixed curved guiding means being provided with oscillators.

4,501,226

DISPOSABLE PET LITTER CONTAINER

Gerald A. Bienvenu, and E. Gayle Bienvenu, both of 208 State St., Newburgh, Ind. 47630

Filed Mar. 26, 1984, Ser. No. 593,585
Int. Cl.³ A01K *23/00*; B65D *5/22*
U.S. Cl. 119—1 **8 Claims**



1. A container for receiving pet litter material comprising:

in an integral folded relationship, a bottom wall, side walls and end walls, said side and said end walls having lower portions and upper portions, means securing said lower portions of said side and said end walls together, other portions depending from said upper portions of said side walls and angling downwardly and inwardly towards each other, said lower portions of said side and said end walls extending upwardly in a generally vertical plane with respect to said bottom wall, said upper portions of said side walls and said upper portions of said end walls angling inwardly towards each other, and means interconnecting said other portions of said side walls with said upper portions of said end walls in a selectively assembled relationship, said interconnecting means including said upper portions of said end walls including pairs of slots and said other portions of said side walls including tabs extending within and secured to the slots of said upper portions of said end walls.

4,501,227

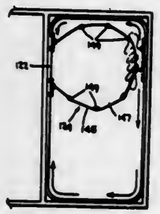
METHOD AND APPARATUS FOR REARING POST-LARVAE SHRIMP

Charles Dugan, Goulds, and Timothy Dugan, Homestead, both of Fla., assignors to Farm Fresh Shrimp Corporation, Fort Lauderdale, Fla.

Continuation of Ser. No. 263,500, May 14, 1981, abandoned, which is a division of Ser. No. 952,664, Oct. 18, 1978, Pat. No. 4,285,298. This application Feb. 21, 1984, Ser. No. 580,769

Int. Cl.³ A01K *61/00*

U.S. Cl. 119—2 **2 Claims**



1. A method of transferring post-larvae shrimp from a tank having a closeable opening in a sidewall comprising:

culling from the total population of shrimp in said tank a shrimp subpopulation comprising shrimp which have undergone a preselected period of growth, said step of culling including surrounding said total population of shrimp with a net having mesh openings of a size approximately equal to the size of shrimp forming said shrimp subpopulation and inducing shrimp smaller than those forming said shrimp subpopulation to move through said mesh openings by constricting said net around said total population of shrimp;

confining said culled shrimp in a localized area of said tank including said closeable opening;

and opening said closeable opening.

4,501,228

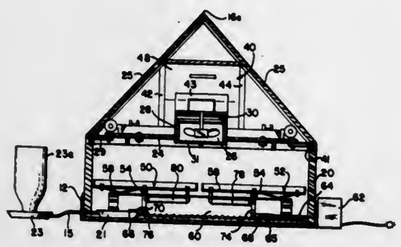
INCUBATOR WITH PYRAMIDAL TOP PORTION

Philbirt F. Hinds, 1804-28th Ave. S., Seattle, Wash. 98144

Filed Dec. 9, 1982, Ser. No. 448,353

Int. Cl.³ A01K *41/00*

U.S. Cl. 119—37 **6 Claims**



1. An incubator, comprising:

a shallow lower compartment containing means for supporting eggs therein, including means for rotating the eggs through a selected angle;

an upper compartment comprising a base plate and a top cover portion extending over and above said base plate, said upper compartment including an opening around the periphery of said base plate adjacent the lower edge of said top cover portion and a central opening in the base plate, so as to permit air communication between said upper and lower compartments through said central opening and said peripheral opening;

a cylindrical wall means extending upwardly from about said central opening and downwardly slightly below the lower surface of said base plate;

a horizontal air baffle plate, separate from said top cover portion, being positioned above, but relatively close to, the upper edge of said cylindrical wall means, said horizontal baffle plate being substantially larger than the cross-sectional area of said cylindrical wall means but substantially smaller than the area of said base plate;

heating means located substantially closer to the upper edge of said cylindrical wall means then to said peripheral opening; and

fan means located in said cylindrical wall means for circulating the air between said upper and lower compartments through said central opening and said peripheral opening, so that warm air circulates about the eggs in the lower compartment.

4,501,229

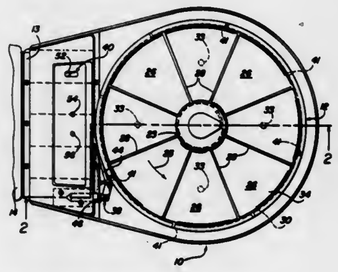
AUTOMATIC ANIMAL-FEEDING DEVICE

Robert L. Williamson, 15155 El Soneto, Whittier, Calif. 90603

Filed Oct. 7, 1983, Ser. No. 540,139

Int. Cl.³ A01K *5/02*

U.S. Cl. 119—51.12 **2 Claims**



1. An animal-feeding apparatus comprising:

a base-support member;

a cover removably mounted on said base-support member and having an aperture formed therein;

a food tray having a central hub member and an outer annular wall, said hub member having an opening therein;

a plurality of circumferentially disposed food compartments interposed between said central hub and said outer wall of said food tray, whereby said compartments are arranged to be sequentially positioned under said aperture in said cover;

a tray-drive means comprising a fixed central hub member secured to said base-support member, a cap member rotatably mounted in said fixed hub member for limited movement thereon and adapted to be coupled to said food tray, whereby said food tray rotates therewith, and means disposed in said fixed hub member to rotate said cap member;

wherein said fixed central hub member includes a central opening adapted to rotatably receive said cap member therein, said cap member being formed having an irregular-shaped boss member adapted to be received in a matching opening formed in said central hub of said food tray, whereby said food tray is rotated with said cap;

means formed between said cap member and said fixed hub member to limit the rotation of said cap member;

wherein said limit means comprises a stop member formed on said fixed hub member, and a depending tongue member formed on said cap member positioned to engage said stop member, whereby said cap member is restricted to one revolution;

releasable latching means arranged to engage said food tray for sequential positioning of said food compartments under said cover aperture;

wherein said latching means comprises a biased latching arm, a plurality of ear members formed on said annular wall of said food tray arranged to be engaged by said latching arm, and a solenoid attached to said latching arm whereby said latching arm is sequentially disengaged from said ear member to allow said tray to selectively rotate for repositioning of said food compartments;

timing means connected to said releasable latching means for sequentially activating said latching means; and

power-supply means adapted to activate said releasable latching means and said timing means.

4,501,230

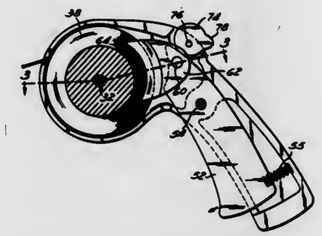
RETRACTING AND LOCKING ANIMAL LEASH

Arnold T. Talo, 16522 Monroe La., Huntington Beach, Calif. 92647

Filed Jan. 10, 1983, Ser. No. 456,829

Int. Cl.³ A01K *27/00*

U.S. Cl. 119—109 **8 Claims**



1. A retracting and locking animal leash device comprising:

a housing having a handle portion adapted to be grasped in the hand of a user and a reservoir portion adapted to store an elongate leash;

a spool rotably mounted within said reservoir portion;

an elongate leash positioned about said spool and extensible from said reservoir portion;

means positioned within said reservoir portion for biasing said spool in a rotational direction to continuously urge said leash in a retracted orientation about said spool;

a pair of conical shaped pad members positioned within said reservoir portion actuable to frictionally engaging said spool and preventing rotation of said spool;

a trigger level pivotally mounted to said handle portion for actuating said brake means into frictional engagement with said spool; and

locking means cooperating with said trigger lever for selectively maintaining said brake means in engagement with said spool; said spool having a pair of perripheral recesses formed in a complimentary configuration to said pair of conical-shaped pad members and said pair of conical-shaped pad members being mounted to said trigger lever.

4,501,231

HEATING SYSTEM WITH LIQUID PRE-HEATING

Eugene W. Perkins, Dawsonville, Ga. 31742

Filed Jun. 2, 1983, Ser. No. 500,346

Int. Cl.³ F22B *3/06*

U.S. Cl. 122—26 **2 Claims**

1. A heating system comprising:

(a) a heater for liquids comprising:

i. a housing having a chamber defined by a cylindrical wall having a horizontal axis, and end walls,

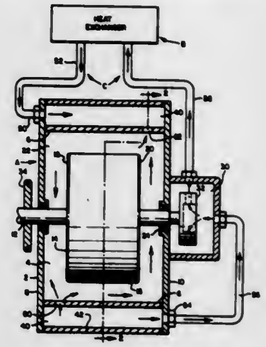
ii. a shaft rotatably mounted co-axially within the housing chamber,

iii. a rotor mounted on the shaft within the housing chamber and having a cylindrical external surface spaced inwardly from the cylindrical inner surface of the housing chamber thereby defining an annular space between the two cylindrical surfaces,

iv. a pump chamber co-axial with the rotor chamber and having within it a pump mounted on the shaft,

v. means for rotating the rotor and the pump,

(b) a cylindrical wall surrounding and spaced from the cylindrical wall of the rotor chamber and defining a cylindrical jacket chamber surrounding the rotor chamber having inlet and outlet ports which are, respectively, at the upper and lower parts and at axially opposite ends of the jacket chamber,



(c) a heat exchanger external to the liquid heater and having inlet and outlet ports,

(d) tubing connecting the outlet port of the heat exchanger tubing to the jacket chamber inlet port,

(e) tubing connecting the outlet port of the jacket chamber to the inlet port of the heat exchanger tubing,

(f) a port connecting the rotor and jacket chambers which is positioned beneath the jacket chamber inlet port, and

(g) a second port connecting the rotor and jacket chambers which is positioned above the jacket chamber outlet port.

4,501,232

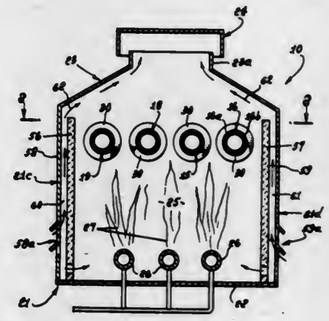
POOL OR SPA WATER HEATER

Manochehr Gordbegli, Santa Ana, and Sangchol An, Rolling Heights, both of Calif., assignors to Parex Pool Products, Inc., Lakewood, Calif.

Filed Oct. 3, 1983, Ser. No. 538,550

Int. Cl.³ F22B *15/00, 25/00*

U.S. Cl. 122—235 C **13 Claims**



1. In a pool or spa water heater, the combination comprising:

(a) a housing containing a combustion chamber,

(b) gas burner means associated with the housing to produce hot products of combustion rising in said chamber,

(c) a heat exchanger associated with said chamber in the

path of said products of combustion to transfer heat to water flowing through said exchanger,

(d) said exchanger including inner and outer metal tubes, said outer tubes extending openly in the direct path of said hot products of combustion for transferring heat from the outer to the inner tubes and then to water flowing in the inner tube or tubes, said tubes having metal to metal contact, the outer tubes located about the inner tubes,

(e) and means including sufficient non-metallic and flowable heat transfer material in gaps formed between the tubes and along their lengths for reducing condensation of moisture from said products of combustion on exposed surfaces carried by the outer tubes substantially below condensation levels that would exist in the absence of said means and inner tubes, the inner tube external surface having random contact with the outer tube bore.

4,501,233

HEAT RECOVERY STEAM GENERATOR

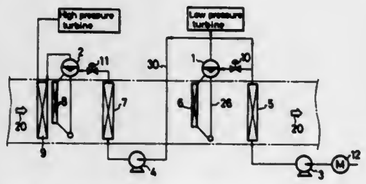
Iwao Kusaka, Kure, Japan, assignor to Babcock-Hitachi Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 22, 1983, Ser. No. 487,820

Claims priority, application Japan, Apr. 24, 1982, 57-69229; Apr. 24, 1982, 57-69230

Int. Cl.³ F22D 7/00

U.S. Cl. 122—406 S **13 Claims**



1. A heat recover boiler equipment, comprising:

a high pressure boiler drum and a high pressure evaporator operatively connected together;

a low pressure boiler drum and a low pressure evaporator operatively connected together;

a low pressure economizer and a high pressure economizer;

a first pipeline operatively extending between the outlet of said low pressure economizer and the inlet of said low pressure drum;

a second pipeline extending between the outlet of said low pressure economizer and the inlet of said high pressure economizer, and bypassing said low pressure boiler drum;

a source of feed water;

pump means for receiving water from said source of feed water and pumping the water through said low pressure economizer and into each of said first and second pipelines;

valve means in said first pipeline for controlling the flow of water into said low pressure boiler drum;

second pump means in said second pipeline for pumping the water in said second pipeline that is downstream from said first pipeline into the inlet of said high pressure economizer;

a third pipeline operatively extending between the outlet of said high pressure economizer and the inlet of said high pressure boiler drum; and

valve means in said third pipelines leading to the inlet of said high pressure boiler drum for providing flow control into said high pressure boiler drum from said third pipeline.

4,501,234

BLOW-BY GAS PASSAGE SYSTEM FOR INTERNAL COMBUSTION ENGINES

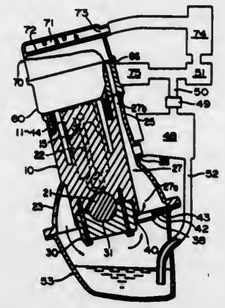
Susumu Toki, and Kenichi Nagahiro, both of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 8, 1983, Ser. No. 549,983

Claims priority, application Japan, Nov. 15, 1982, 57-172480[U]

Int. Cl.³ F02F 9/02

U.S. Cl. 123—41.86 **5 Claims**



1. For use with a multi-cylinder internal combustion engine having a crankshaft, crankcase, a cylinder block and a cylinder head with overhead valves and a breather, the improvement comprising, in combination: blow-by gas passages formed on one side of the cylinder block and cylinder head, said blow-by gas passages communicating with the interior of the crankcase and extending above an upper face of the cylinder head in communication with the breather, one of said blow-by passages being provided with a mounting port, an oil separator carried on said mounting port, means connecting only said one blow-by passage to said separator, and means connecting the separator and breather to the intake system of the engine.

4,501,235

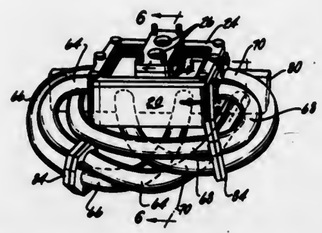
TUNED ENGINE INTAKE MANIFOLD

George H. Muller, Ann Arbor, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Apr. 4, 1983, Ser. No. 482,098

Int. Cl.³ F02M 35/10

U.S. Cl. 123—52 M **11 Claims**



1. A compact tuned intake manifold for a multi-cylinder automotive type internal combustion engine having a cylinder head comprising,

a plenum adapted to receive therein an air/fuel mixture charge for flow distribution to the engine cylinder head through separated manifold runners connected to the plenum, the plenum having diametrically opposite sides therein on opposite sides of the centerline of the plenum,

at least one tubular runner extending directly from each of outlets in the diametrically opposite sides of the plenum to intake ports in the engine cylinder head without interconnection of the flow of the charge between the runner,

the runners each being extended in length a distance sufficient to tune the runner and being coiled unidirectionally in essentially a horizontal plane for approximately 270° from its respective outlet past the plenum centerline and beneath a diametrically opposite side of the plenum to a respective intake manifold port to provide a compact tuned manifold, with the runners extending from the diametrically opposite outlets crossing one another.

4,501,236

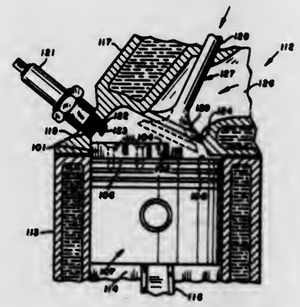
METHOD AND APPARATUS FOR REDUCING DAMAGE ASSOCIATED WITH DETONATION AND/OR DESTRUCTIVE KNOCK

Edward A. Fletcher, Minneapolis, Minn., assignor to Regents of the University of Minnesota, Minneapolis, Minn.

Filed Aug. 9, 1982, Ser. No. 406,484

Int. Cl.³ F02B 75/04

U.S. Cl. 123—193 P **15 Claims**



1. A piston for attenuation of detonation in an internal combustion engine having a combustion chamber accommodating and air/fuel mixture, said mixture when ignited forming a flame front that propagates across the combustion chamber comprising: a cylindrical side wall, a top wall having a center being secured to the side wall, and cap means joined to the top wall, said cap means having a generally semi-circular outer edge curved to conform to the size and shape of the cylindrical side wall, said outer edge being a flush extension of a semi-circular portion of the cylindrical side wall, said cap means having a transverse wall projected generally upwardly from said top wall extended between opposite ends of the semi-circular outer edge, said transverse wall having a convex curve with a radius greater than that of a radius of said top wall being entirely on one side of a plane passing through said center opposite that of a radius center located on said outer edge midway between the ends thereof, in contiguous relation to the ignition point of air/fuel mixture in the combustion chamber, said transverse wall being located generally normal to the direction of movement of the flame front commencing from the ignition point in the combustion chamber.

4,501,237

CONTROL UNIT FOR THE LUBRICATING OIL CIRCULATION PUMP AND FOR THE FUEL INJECTION SYSTEM REGULATOR OF DIESEL ENGINES

Luigi Pitoni, Brescia, Italy, assignor to SAME S.p.A., Treviglio, Italy

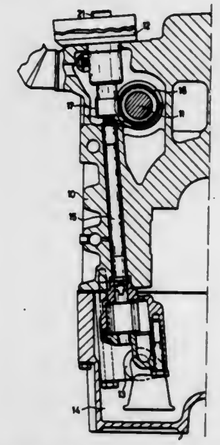
Filed Jul. 18, 1983, Ser. No. 514,708

Claims priority, application Italy, Jul. 16, 1982, 22420/82[U]

Int. Cl.³ F02M 1/00

U.S. Cl. 123—196 W **2 Claims**

1. A control unit for a lubricating oil circulation pump and for a fuel injection system regulator of a diesel engine of the type having a cylinder block in which an engine camshaft is rotatable, wherein said regulator is mounted on said cylinder block externally thereto and the unit comprises a control shaft extending through said cylinder block substantially perpendicularly to said camshaft between a lubricating oil sump and said



regulator, said control shaft being operationally connected at an intermediate point thereof to said camshaft and having opposite ends respectively connected to said pump and said regulator for rotation thereof.

4,501,238

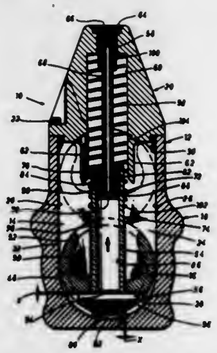
ENGINE AIR INTAKE SHUT-OFF VALVE

Charles E. Odum, 1616 W. Belt N., Houston, Tex. 77043

Filed May 3, 1983, Ser. No. 491,032

Int. Cl.³ F02B 77/08

U.S. Cl. 123—198 D **7 Claims**



1. A shut-off valve for restricting air flow to or from an engine comprising:

a. a housing defining a cavity therein, the cavity comprising an upper portion and a lower portion;

b. an air passage extending through the housing and being alignable with an engine air intake line, the air passage comprising axially aligned first and second ports extending through opposed sides of the housing and also comprising the lower portion of the cavity intermediate the first and second ports;

c. a first seating surface extending around the periphery of the first port and comprising a portion of an interior surface of the housing;

d. a second seating surface extending around the periphery

of the second port and comprising a portion of an interior surface of the housing;

e. a gate member residing in the cavity, the gate member being reciprocable in the cavity in a direction perpendicular to the aligned axes of the first and second ports from an open position in the upper portion of the cavity to a closed position intermediate the first and second ports in the lower portion of the cavity, the gate member having a dimension along the axis of the air passage smaller than the axial distance between the first and second seating surfaces, the gate member being seatable directly against the first or second seating surface;

f. means for reciprocating the gate member into and maintaining the gate member in the open or closed position; and

g. means for connecting the gate member to the reciprocating and maintaining means permitting the gate member freedom of movement relative to the reciprocating and maintaining means and along the axis of the air passage to the extent of the distance between the first and second seating surfaces.

4,501,239

AIR-COMPRESSING, DIRECT-INJECTION INTERNAL COMBUSTION ENGINE

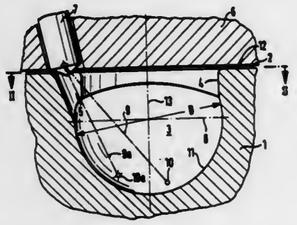
Friedrich Bauer, Schwanstetten, and Kurt Leonhard, Nuremberg, both of Fed. Rep. of Germany, assignors to M.A.N. Maschinenfabrik Augsburg-Nurnberg Aktiengesellschaft, Nuremberg, Fed. Rep. of Germany

Filed May 27, 1982, Ser. No. 382,581

Claims priority, application Fed. Rep. of Germany, May 29, 1981, 3121344

Int. Cl.³ F02B *23/06*

U.S. Cl. 123—261 **10 Claims**



1. An internal combustion engine, each piston of which has a crown and a combustion chamber including a longitudinal axis as well as a wall in a circumferential direction along with a lower quarter of the combustion chamber and being in the shape of a solid of revolution and having a constricted throat opening of oval cross section with a major diameter as well as a minor diameter and a varying wall height in the circumferential direction, said throat opening including an edge and being located in the crown of said piston and opening in the direction toward an associated cylinder head; means are provided for imparting a rotary motion, about the longitudinal axis of said combustion chamber, to in-flowing air for combustion; an injection nozzle is arranged off-center in said cylinder head in the vicinity of the edge of said throat opening and has a fuel jet discharge point communicating with said combustion chamber for injecting fuel therein, said fuel being injected into said combustion chamber in the form of a single jet, in the direction of rotating air for combustion, in such a way as to permit formation of a fuel film on the wall of said combustion chamber, with the point of impingement of said fuel jet on the wall of said combustion chamber being located in the lower quarter of said combustion chamber by appropriate selection of the nozzle angle and nozzle position; viewing said combustion chamber in a top view thereof, the major diameter of said throat opening, across the center of said combustion chamber, extends in the direction toward said fuel jet discharge point of said injection nozzle, with the distance of said fuel jet discharge point from the center of said combustion chamber being 0.35 to 0.70 times the diameter of said combustion chamber, and with the direction of a fuel jet, on the one hand being geometrically projected in a plane intersecting at a right angle to the longitudinal axis of said combustion chamber, forming an angle of 10° to 50° with a straight line extending from said fuel jet discharge point through the longitudinal axis of said combustion chamber (center of said combustion chamber), and on the other hand forming an angle of 20° to 60° with a plane intersecting at a right angle to the longitudinal axis of said combustion chamber; said combustion chamber being spherical; the distance of said fuel jet discharge point from the center of said combustion chamber being 0.50 to 0.55 times the diameter of said combustion chamber; said angle of said direction of a fuel jet with said straight line from said fuel jet discharge point being between 15° and 40°; said angle of said direction of a fuel jet with a plane at a right angle to the longitudinal axis of said combustion chamber being between 40° and 50°; and the ratio of the major diameter of said oval throat opening to the minor diameter thereof being in a range from 1.10 to 1.15.

4,501,240

IDLING SPEED CONTROL SYSTEM FOR INTERNAL COMBUSTION ENGINE

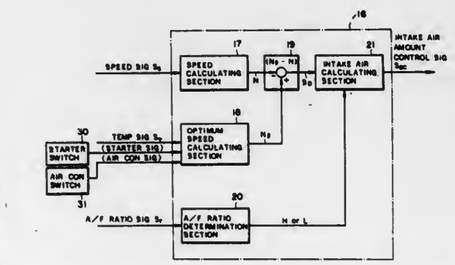
Shigeo Aono, Sekimachi, Japan, assignor to Nissan Motor Company, Limited, Japan

Filed Feb. 24, 1983, Ser. No. 469,513

Claims priority, application Japan, May 11, 1982, 57-77535

Int. Cl.³ F02M *23/06*

U.S. Cl. 123—339 **13 Claims**



1. An idle speed control system for an internal combustion engine having a throttle, a bypass means for providing to said engine intake air bypassing said throttle, an engine speed detector providing an engine speed signal, an optimum engine speed calculating means providing an optimum engine speed signal, and an air-fuel ratio detector providing an air-fuel ratio signal indicating a rich or lean fuel mixture, comprising:

intake air adjusting means including,

calculating means for calculating a basic amount of bypass air to be provided to said engine as a function of a difference between said optimum engine speed signal and said engine speed signal, and

correcting means for correcting the basic amount of bypass air calculated by said calculating means as a function of said air-fuel ratio signal, and further comprising

air flow adjusting means connected to said intake air adjusting means for providing a quantity of air passing through said bypass means corresponding to the corrected basic amount determined by said correcting means.

4,501,241

GOVERNOR FOR A DIESEL ENGINE

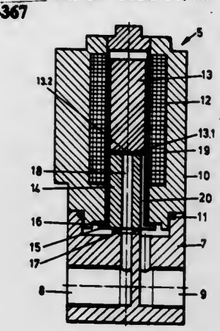
Albert Nolte, and Gerd Wallenfang, both of Cologne, Fed. Rep. of Germany, assignors to Klöckner-Humboldt-Deutz AG, Cologne, Fed. Rep. of Germany

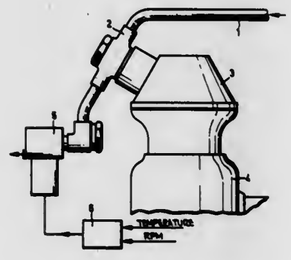
Filed Mar. 23, 1983, Ser. No. 477,893

Claims priority, application Fed. Rep. of Germany, Mar. 25, 1982, 3210903

Int. Cl.³ F02D *31/00*

U.S. Cl. 123—367 **7 Claims**





1. In a governor system for a fuel injection pump of a diesel engine, the governor system including an adjustment means for adjusting the position of an adjustable stop for a movable control rod of the fuel injection pump, the adjustment means being connected to a pipe means through which pressurized fluid flows in one direction, the operation of the adjustment means being based on the pressure of the fluid in the pipe means, and the pressure of the fluid in the pipe means being in turn based on various operating parameters of the engine, the improvement wherein

said adjustment element is connected along the length of the pipe means, such that the pipe means has an upstream portion and a downstream portion with respect to said adjustment element,

a spring-less solenoid valve connected to the downstream portion of said pipe means which is capable of controlling the pressure of the fluid in said pipe means by blow off through a discharge port, said solenoid valve including a flow channel therethrough which connects with said discharge port, a piston armature which has a front end and a rear end movably mounted within the solenoid valve, the front end of the piston being capable of controlling the flow area through said flow channel, and electrical means for creating a magnetic field for determining the positioning of said piston within the solenoid valve, and

a control means electrically connected to said electrical means for determining the magnetic field generated thereby, said control means receiving signals indicative of said various operating parameters.

4,501,242

AIR-FUEL RATIO CONTROL APPARATUS

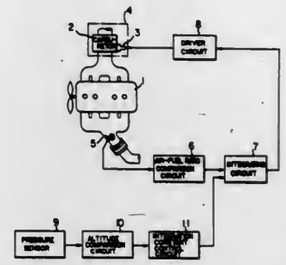
Yukihide Niimi, Kariya; Seietsu Yoshida, Aichi, and Hidemi Ohnaka, Susono, all of Japan, assignors to Nippondenso Co., Ltd., Kariya and Toyota Jidosha Kabushiki Kaisha, Toyota, both of, Japan

Filed Apr. 1, 1983, Ser. No. 481,232

Claims priority, application Japan, Apr. 1, 1982, 57-54223

Int. Cl.³ F02M *7/12*

U.S. Cl. 123—440 **1 Claim**



1. In an air-fuel ratio control apparatus including an oxygen concentration detecting circuit for detecting the concentration of oxygen in an exhaust gas from an engine of a vehicle and comparing a detection signal with a predetermined value preset in correspondence to a predetermined air-fuel ratio to generate a first difference signal, an integrating circuit responsive to said first difference signal to generate an integration signal and an air-fuel ratio control circuit responsive to said integration signal to generate a control signal for energizing air-fuel ratio control means, the improvement comprising:

an altitude detecting circuit for detecting an atmospheric pressure outside said vehicle and comparing a detection signal with a preset value set in correspondence to a predetermined altitude to generate a second difference signal; and

an integration control circuit responsive to said second difference signal to control a circuit constant of said integrating circuit.

4,501,243

AIR-FUEL RATIO CONTROL APPARATUS

Yukihide Niimi; Kenzi Kinoshita, both of Kariya, and Masahiro Urushidani, Toyota, all of Japan, assignors to Nippondenso Co., Ltd., Kariya and Toyota Jidosha Kabushiki Kaisha, Toyota, both of, Japan

Filed Apr. 29, 1983, Ser. No. 489,949

Claims priority, application Japan, Apr. 30, 1982, 57-72860

Int. Cl.³ F02M *7/10*

U.S. Cl. 123—440 **7 Claims**

1. An air-fuel ratio control apparatus for an internal combustion engine comprising:

oxygen concentration detecting means for detecting a concentration of oxygen in an exhaust gas from the engine and comparing a detection signal with a reference value corresponding to a stoichiometric air-fuel ratio to generate a difference signal;

integrating means for integrating the difference signal to generate an integration signal;

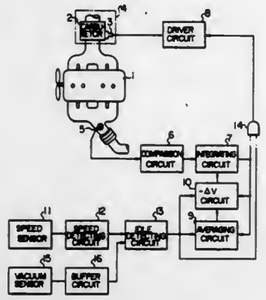
driver means responsive to the integration signal to control a driving current of air-fuel ratio control means;

intake pressure detecting means for detecting an intake pressure in said engine and generating an intake pressure detection signal in accordance with said intake pressure;

speed detecting means for detecting a rotational speed of said engine and comparing the same with a reference value corresponding to a predetermined engine speed to generate a speed detection signal;

idle detecting means responsive to said intake pressure detection signal and said speed detection signal to detect an idling condition of said engine and generate an idle detection signal;

air-fuel ratio control halting means responsive to said idle detection signal to apply an air-fuel ratio control stop signal to said driver means;



average value means responsive to said idle detection signal to average said integration signal and generate an average value signal; and

average value hold means for decreasing said average value signal by a predetermined value and using said decreased value as an integration initial signal when said engine comes into an acceleration operation from said idling condition.

4,501,244

FUEL INJECTION PUMPING APPARATUS

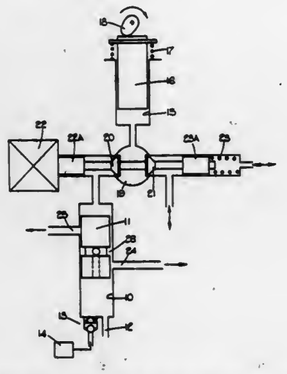
Boaz A. Jarrett, London; Ivor Fenne, Greenford; David F. Lakin, London, and Dorian F. Mowbray, Burnham, all of England, assignors to Lucas Industries Public Limited Company, Birmingham, England

Filed Jun. 29, 1983, Ser. No. 509,038

Claims priority, application United Kingdom, Jul. 15, 1982, 8220492

Int. Cl.³ F02D *1/02*

U.S. Cl. 123—446 **6 Claims**



1. A fuel injection pumping apparatus for supplying fuel to an internal combustion engine of the kind comprising a fluid pressure operable piston located within a cylinder, an outlet from one end of the cylinder, first valve means through which fuel can be admitted to said one end of the cylinder, a plunger reciprocable within a bore, an engine driven cam for actuating said plunger, a passage connecting one end of said bore with the other end of said cylinder, second valve means operable to allow fluid under pressure displaced from said bore during inward movement of said plunger by the cam, to flow to said other end of the cylinder thereby to displace the piston and cause fuel flow through the outlet, and means for sensing the relative angular movement of the cam and plunger during the period fuel is allowed to enter said one end of the cylinder, the angular movement of the cam being representative of the axial movement of the piston.

4,501,245

FUEL INJECTION VALVE WITH VARIABLE LIFTING AMOUNT OF THE NOZZLE NEEDLE

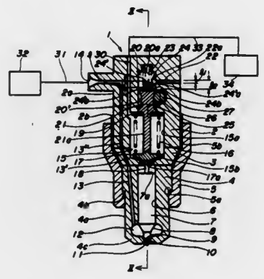
Shigeo Taira, Higashimatsuyama, Japan, assignor to Diesel Kiki Co., Ltd., Tokyo, Japan

Filed Mar. 20, 1984, Ser. No. 591,425

Claims priority, application Japan, Mar. 25, 1983, 58-42788[U]

Int. Cl.³ F02M *39/00*

U.S. Cl. 123—446 **10 Claims**



1. A fuel injection valve for an internal combustion engine, comprising: a nozzle body; a nozzle holder supporting said nozzle body; a nozzle needle disposed in said nozzle body; a nozzle spring disposed in said nozzle holder and urging said nozzle needle toward a seated position thereof; a piston chamber formed within said nozzle holder and having a closed end portion remote from said nozzle needle; a piston received within said piston chamber, said piston being liftable together with said nozzle needle and rotatable about an axis thereof, said piston having an end face remote from said nozzle needle and an outer peripheral surface; a fluid passage opening in said piston chamber for supplying and discharging pressurized fluid to and from said piston chamber, said fluid passage being disposed to be closed by said piston when said piston is lifted, whereby after thus closing said fluid passage during lifting, said piston defines a closed space in said piston chamber in cooperation therewith, whereby lifting of said piston is interrupted; a return spring urging said piston toward said nozzle needle; and rotating means for rotating said piston about said axis thereof; said end face of said piston remote from said nozzle needle being so configurated that said piston lifts through a stroke variable as said piston varies in circumferential position, from the time said nozzle needle starts lifting to the time said piston closes said fluid passage.

4,501,246

FUEL INJECTION PUMP

Jean Leblanc, Lyons, France, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jul. 13, 1982, Ser. No. 397,712

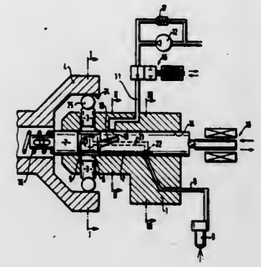
Claims priority, application Fed. Rep. of Germany, Jul. 22, 1981, 3128975

Int. Cl.³ F02M *39/00*

U.S. Cl. 123—449 **5 Claims**

1. A fuel injection pump having at least one pump work chamber enclosed in a cylinder by at least one pump piston, which is actuated by cam means in synchronism and constant relation to drive means of said injection pump, said pump work

chamber being in continuous communication with a distributor opening in an axially displaceable distributor shaft which is rotated by said drive means in synchronism therewith within a cylinder and is capable of being connected thereby with one of a series of supply lines distributed over the circumference of said cylinder which lead from said cylinder to a fuel injection point, said point being effected in sequence during the supply stroke of said pump piston, further wherein said pump work chamber is in continuous communication with a control groove in a jacket face of said distributor shaft, with control groove arranged to cooperate with a fuel inlet opening which discharges into said cylinder and wherein the rotary and axial position of a part of said control groove that coacts with said fuel inlet opening relative to said drive means is variable by an



axial displacement of said distributor shaft characterized in that said fuel inlet opening is arranged to communicate via an electrically actuatable switching valve with a fuel supply source such that the switching valve is opened after the fuel inlet opening has been closed by a trailing limiting edge of said control groove, and said switching valve is closed at variable points of rotation of the distributor after a leading control edge of said control groove has again opened the fuel inlet opening and a desired amount of fuel has been admitted through said control groove, thereby changing in cooperation with the relative rotary position of said control edge of said control groove the instant and quantity of the fuel to be injected and further that said distributor shaft is axially displaceable by means of an electrical adjusting device for changing that relative rotary position of the control groove.

4,501,247

ELECTRONICALLY CONTROLLABLE AND REGULATABLE FUEL METERING SYSTEM OF AN INTERNAL COMBUSTION ENGINE

Hermann Gissler, Vaihingen/Enz; Eugen Joos, Löchgau; Hans Kubach, Korntal-Münchingen; Wolfgang Maisch, Schwieberdingen, and Erich Singer, Besigheim, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

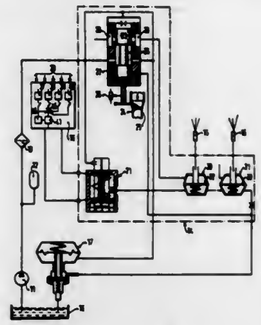
Filed Sep. 7, 1982, Ser. No. 415,047

Claims priority, application Fed. Rep. of Germany, Feb. 10, 1982, 3204548

Int. Cl.³ F02M *39/00*

U.S. Cl. 123—453 **6 Claims**

2. An electronically controllable and regulatable fuel metering system including fuel metering means in an internal combustion engine, in particular, a continuously functioning injection system, having sensors for sensing operating variables, a control unit, a final control means for influencing the fuel metering means, said control unit comprising means for providing a regulated direct current signal combining clock signal components for controlling said final control means, said clock signal components being dependent on said operating variables, and an electrical summing point preceding said final



control means to which said signals relating to post-starting, warm-up and acceleration enrichment are delivered.

4,501,248

APPARATUS FOR ASCERTAINING CONTROL VARIABLES IN AN INTERNAL COMBUSTION ENGINE

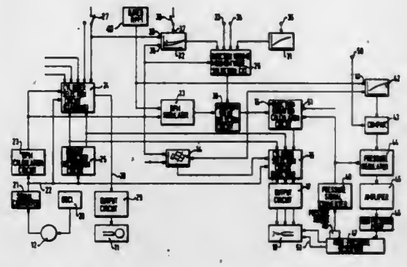
Hermann Eisele, Schwieberdingen, and Bruno Frank, Möglingen both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Continuation of Ser. No. 243,180, Mar. 12, 1981, abandoned. This application Apr. 4, 1983, Ser. No. 482,107

Claims priority, application Fed. Rep. of Germany, Mar. 13, 1980, 3009627

Int. Cl.³ F02M *51/00*

U.S. Cl. 123—478 **12 Claims**



1. An apparatus for computing nominal value signals for fuel metering and for starting procedure, at least one of values for fuel metering onset, fuel metering duration and switching points of starting airvalves, and for individual cylinders in an internal combustion engine, particularly a Diesel engine comprising

means for generating measurement results to individual operating parameters of said engine,

computer means for computing said nominal value signals for each said individual cylinder responsive to said measurement results of said generating means wherein the nominal value signals for the nth combustion process of said internal combustion engine and for one of said individual cylinders are computed in the period of time between the (n−1)th and nth combustion process of said internal combustion engine and,

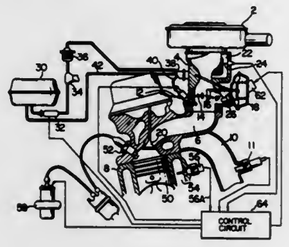
output means responsive to said nominal value signals for controlling the operating parameters of said engine.

4,501,249

FUEL INJECTION CONTROL APPARATUS FOR INTERNAL COMBUSTION ENGINE

Matsuo Amano; Shinichi Sakamoto, both of Hitachi; Takeshi Hirayama, Mito, and Takao Sasayama, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Apr. 25, 1983, Ser. No. 488,453
Claims priority, application Japan, Apr. 26, 1982, 57-68692
Int. Cl.³ F02M *51/00*
U.S. Cl. 123—478 **6 Claims**



1. A fuel control apparatus for an internal combustion engine which includes at least one cylinder and an intake passage for introducing intake air into said cylinder through an intake valve, comprising:

fuel supply means for supplying fuel to said intake passage of the internal combustion engine;

sensor means for detecting flow velocity of the intake air in said intake passage to produce an output signal representative of said flow velocity;

calculating means for responding to the output signal of said sensor means to arithmetically determine the amount of fuel to be supplied through said fuel supply means;

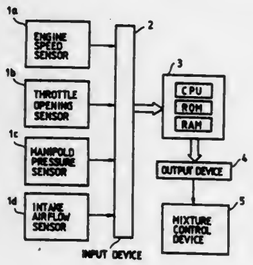
peak detecting means connected to said sensor means for detecting a peak of the output signal of said sensor means; and timing control means connected to said fuel supply means, said calculating means and said peak detecting means for controlling on the basis of the output signal of said peak detecting means the timing at which the fuel supply through said fuel supply means is initiated.

4,501,250

METHOD AND APPARATUS FOR CONTROLLING AN INTERNAL COMBUSTION ENGINE

Norio Omori, Kariya; Tsutomu Tabe, Chita; Katsunori Ito, Aichi, and Shunkichi Hayashi, Kariya, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Mar. 14, 1983, Ser. No. 474,982
Claims priority, application Japan, Mar. 15, 1982, 57-41133
Int. Cl.³ F02M *51/00*
U.S. Cl. 123—486 **17 Claims**



1. An apparatus for controlling an internal combustion engine having a plurality of input operating parameters, comprising:

a plurality of sensors for detecting first, second and third output operating parameters of said engine; and

a microcomputer having at least first and second control maps in which first and second control variables are arranged respectively, said first and second control variables being addressible in response to different combinations of said detected output operating parameters, said microcomputer being programmed to execute the following steps:

(a) deriving first and second weighting factors;

(b) addressing said first control map to derive a said first control variable in response to the detected first and second output operating parameters;

(c) addressing said second control map to derive a said second control variable in response to the detected second and third output operating parameters;

(d) multiplying said first and second control variables by said first and second weighting factors, respectively; and

(e) summing said multiplied first and second control variables to derive a combined control variable for controlling one of said input operating parameters.

9. A method for controlling an internal combustion engine having a plurality of input operating parameters and a plurality of output operating parameters, comprising the steps of:

(a) providing at least first and second control maps in which first and second control variables are arranged respectively, said first and second control variables being addressible in response to different combinations of said output parameters;

(b) detecting first, second and third output operating parameters of said engine;

(c) deriving first and second weighting factors;

(d) addressing said first control map to derive a said first control variable in response to the detected first and second output operating parameters;

(e) addressing said second control map to derive a said second control variable in response to the detected second and third output operating parameters;

(f) multiplying said first and second control variables by said first and second weighting factors, respectively; and

(g) summing said multiplied first and second control variables to derive a combined control variable for controlling one of said input operating parameters.

4,501,251

BOOSTER PUMP ARRANGEMENT FOR FEEDING A SECONDARY CIRCULATION SYSTEM IN THE OPERATIVE SYSTEM OF A DIESEL ENGINE

Heinz Kelch, Königsfeld, Fed. Rep. of Germany, assignor to Kienzle Apparate GmbH, Villingen, Fed. Rep. of Germany

Filed Feb. 8, 1984, Ser. No. 578,279
Claims priority, application Fed. Rep. of Germany, Feb. 11, 1983, 3304723
Int. Cl.³ F02M *41/00*
U.S. Cl. 123—495 **1 Claim**

1. A fuel system for a diesel engine comprising:

a primary fuel circulation system;

an injection pump and a fuel pump for said primary fuel circulation system, said fuel pump consisting of a mechanical piston pump operatively associated with said injection pump and operating to pump fuel for said primary circulation system;

a pump crankshaft and eccentric means in said injection pump for actuating said fuel pump;

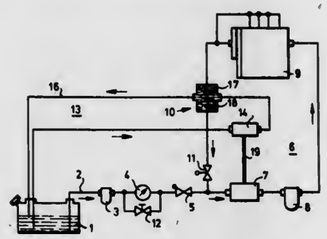
a piston chamber in said fuel pump having an end wall located away from said eccentric means;

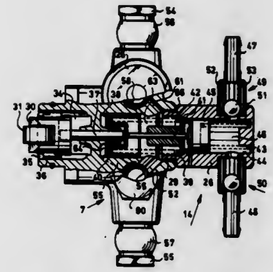
threaded means in said end wall adapted to receive therein a threaded plug in sealing engagement therewith;

a secondary fuel circulation system including a booster pump for feeding said secondary system;

a housing of said booster pump having provided thereon a threaded member adapted to be threadedly engaged with said threaded means in said end wall of said fuel pump for connecting said booster pump onto said fuel pump in operative association therewith;

said booster pump being thereby adapted to be interchangeably attached with a threaded plug adapted to engage said threaded means in sealing engagement;





said booster pump being constructed as a mechanical piston pump including a spring actuated piston which is adapted to be placed in operative connection with said piston of said fuel pump; and

a plunger provided in said booster pump protruding from said housing thereof for placing said piston of said booster pump in operative association with said piston of said fuel pump when said booster pump is connected with said fuel pump.

4,501,252

FUEL INJECTION PUMP

Gerhard Stumpp, Stuttgart; Hans-Jörg Vogtmann, Markgröningen; Paul Flissner, Sindelfingen; Manfred Schwarz, Gerlingen; Gerald Höfer, Weissach-Flacht; Karl Konrath, Ludwigsburg-Hoheneck; Max Straubel, Stuttgart, and Werner Faupel, Gerlingen, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Sep. 19, 1977, Ser. No. 834,638
Claims priority, application Fed. Rep. of Germany, Sep. 30, 1976, 2644042
Int. Cl.³ F02M *59/24*
U.S. Cl. 123—502 **2 Claims**

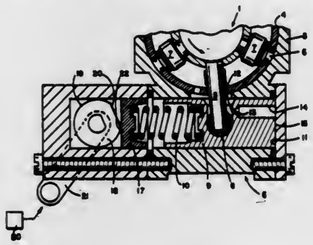
1. In a fuel injection pump for an internal combustion engine including: a housing; at least one pump piston in said housing; a cam drive arranged in the housing to produce the fuel feeding stroke of the at least one pump piston; at least one return spring; and an adjustable piston connected at one end to the at least one return spring and to the cam drive, said cam drive including a rotatable part, with said cam drive being rotatable relative to the direction of rotation of the rotatable part for adjusting the timing of the beginning of the fuel injection by means of the adjustable piston which is acted upon by an rpm dependent pressure produced by a feed pump against the force of the at least one return spring so that the tension of the at least one return spring can be varied after starting as a function of said rpm dependent pressure, the improvement comprising:

(a) a spring seat engaging the other end of the at least one return spring;

(b) adjusting means connected to the spring seat; and;

(c) control means connected to the adjusting means,

whereby the spring seat is shifted by the control means acting through rotation of the adjusting means to change the initial tension of the at least one return spring at the earliest during engine warm-up and said adjusting means comprises a shaft having a longitudinal axis extending transversely to the direction of shifting of the spring seat, with said shaft having at least one roller cam means arranged eccentrically with respect to the longitudinal axis of the shaft and engageable with the spring seat, and wherein the spring seat is shifted by the roller cam means during rotation of said shaft.

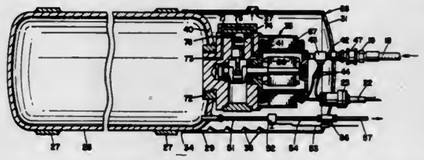


4,501,253

ON-BOARD AUTOMOTIVE METHANE COMPRESSOR

Joseph Gerstmann, Framingham, Mass.; William M. Hauck, Glenshaw, Pa.; Robert Raymond, Watertown, Mass., and Paul F. Swenson, Jr., Shaker Heights, Ohio, assignors to Consolidated Natural Gas Service Company, Inc., Cleveland, Ohio

Filed Dec. 13, 1982, Ser. No. 449,483
Int. Cl.³ F02B *43/00*
U.S. Cl. 123—527 **11 Claims**



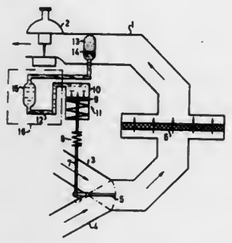
1. A vehicle, a combustion engine mounted on the vehicle, a drive train for directing power from the engine into propulsion of the vehicle, a pressure tank mounted on the vehicle for storing compressed gaseous fuel such as natural gas, means connecting the pressure tank to the combustion engine to enable the contents of the tank to be combusted as fuel by the engine, a compressor mounted on the vehicle in close proximity to the tank and having an inlet and an outlet, drive means for operating the compressor to compress gas supplied at its inlet at a relatively low pressure and to deliver it at its outlet at a relatively high pressure, the mounting and spatial relationship between the compressor and tank being arranged to permit the compressor to discharge at its outlet substantially directly into the tank in a manner such that the entire compressed gas flow path between the outlet of the compressor and the interior of the tank is shrouded by at least one of said compressor and tank components to thereby substantially eliminate the risk of high pressure gas, being delivered by the compressor to the tank, from leaking.

4,501,254

DEVICE FOR CONTROLLING THE TEMPERATURE OF THE INTAKE AIR TO AN INTERNAL COMBUSTION ENGINE

Michael Zellmer, Torslanda, Sweden, assignor to AB Volvo, Goteborg, Sweden

Filed Nov. 18, 1983, Ser. No. 553,351
Claims priority, application Sweden, Dec. 3, 1982, 8206925
Int. Cl.³ F02M *31/00*
U.S. Cl. 123—556 **4 Claims**



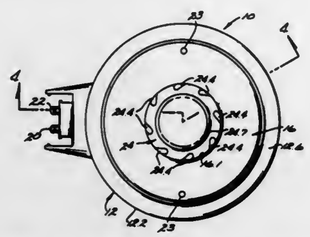
1. In an internal combustion engine with an air heater, a temperature-controlling air intake device comprising a damper, an inlet for cold air, an inlet for heated air, a mixed air duct, and an operating element in said mixed air duct controlling the setting of said damper between said cold and heated air inlets; the improvement in which said element comprises a fluid chamber comprising movable means controlling the damper setting depending on the volume of the chamber; a first expansion medium, a second expansion medium of lower coefficient of thermal expansion than the said first medium, a vessel located in the mixed air duct, said vessel containing said first expansion medium; a fluid conduit extending outside the mixed air duct and establishing communication between said vessel and said fluid chamber, said conduit containing said second expansion medium, said first and second expansion media being so disposed relative to each other that expansion and contraction of said first medium are transmitted by said second medium to said movable means, the relatively low coefficient of thermal expansion of said second medium reducing the influence on the position of the damper of temperature outside the mixed air duct.

4,501,255

DIESEL FUEL FILTER HEATER

Arie Van Der Ploeg, Wierden; Wim Jansen, Almelo, and Philips Gerson, Velp, all of Netherlands, assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Mar. 21, 1984, Ser. No. 592,035
Int. Cl.³ F02M *31/00*
U.S. Cl. 123—557 **8 Claims**



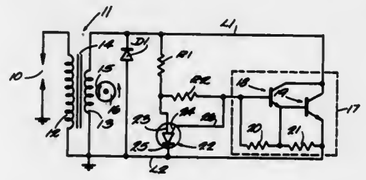
1. A heater for a diesel filter system comprising a housing means having a chamber with an inlet and an outlet for permitting diesel fuel to flow therethrough to a diesel fuel filter, thermally and electrically conducting plate means having self-regulating ceramic electrical resistance heater disc means of a material of positive temperature coefficient of resistivity secured in thermally and electrically conducting heat-transfer relation to the plate means, said plate means being mounted within the housing means at a location intermediate the inlet and outlet thereof so that the flow of diesel fuel through the chamber between the inlet and outlet normally passes the fuel directly over and around the plate means and the ceramic heater disc means in heat-transfer relation thereto, and electrically conducting means extending from the housing means for electrically connecting the electrical resistance heater disc means to a source of electrical power for energizing the heater disc means to heat the fuel, characterized in that the plate means comprises a plate having a flat plate portion and having baffle means upstanding from at least one side of the flat plate portion defining a plurality of side-by-side, spiral, fluid flow paths on the plate means to guide the flow of diesel fuel over substantial lengths of the plate means in heat-transfer relation thereto while permitting relatively free flow of such fuel over the plate means toward the chamber outlet.

4,501,256

SOLID STATE MAGNETO IGNITION SWITCHING DEVICE

Richard A. Dykstra, 169 Ramaker Ave., Cedar Grove, Wis. 53013

Filed Feb. 24, 1984, Ser. No. 583,447
Int. Cl.³ F02P *3/04, 9/00, 1/00, 11/00*
U.S. Cl. 123—651 **19 Claims**



1. An ignition control circuit for an internal combustion engine having a magnet for magnetically coupling with a stator in synchronism with engine rotation to induce current flow between first and second terminals of a primary winding on the stator followed by interruption of the current to thereby induce a high voltage in a secondary winding that is connected to a spark plug; said control circuit comprising:

a solid state switching device having its switching path connected in a circuit between said first and second terminals of the primary winding and having a control terminal to which a control voltage above a predetermined level is applied to switch said device to a conductive state,

a programmable unijunction transistor (PUT) having an anode, a cathode and a gate,

voltage determining means connected between said first primary winding terminal and said control terminal for developing a voltage and means for applying said voltage between the anode and gate of said PUT,

coupling of said magnet and stator causing voltage to be developed in said primary winding to thereby attain said predetermined voltage for switching said switching device to its conductive state whereby to increase current flow in said primary winding, and the concurrent increase in said PUT anode-to-gate voltage causing said PUT to conduct and remove said voltage from said control terminal to thereby switch said switching device to a nonconductive state whereby current flow through said primary winding is interrupted, and

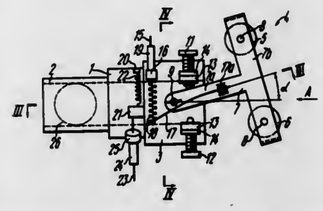
diode means connected between said second and first primary winding terminals for conducting the reverse current in said winding.

4,501,257

ORIENTING ATTACHMENT TO BALL THROWING MACHINE

Boris G. Kholin, Sumy, U.S.S.R., assignor to Sumskoi Filial Kharkovskogo Politekhnicheskogo Instituta, Sumy, U.S.S.R.

Filed Jul. 14, 1982, Ser. No. 398,377
Int. Cl.³ F41D *11/00*
U.S. Cl. 124—81 **5 Claims**



1. An orienting attachment for a ball throwing machine, comprising:

(a) a coupling unit for securing the attachment to said ball throwing machine, including

(i) a stationary sleeve rigidly attached to the barrel of a ball throwing machine;

(ii) a rotatable sleeve coaxially mounted on said stationary sleeve for rotation about the axis of said stationary sleeve;

(b) a ball deflector mounted on said movable sleeve and which may be rotated between two extreme positions, including

(i) two rollers and

(ii) a rotatable frame comprising two parallel T-shaped levers, each having a thrust leg and a head hingedly connected by said legs with said movable sleeve, and

transverse spindles interconnecting said heads of said T-shaped levers and carrying said rollers mounted thereon so that they may be freely rotated,

(c) stops secured to said movable sleeve for abutting against and restricting the rotation of said rotatable frame when said frame is set to one of two extreme positions, and

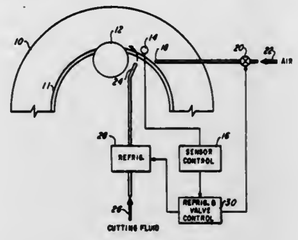
(d) at least one retainer on said movable sleeve for holding said frame in one of the extreme positions, connected with said movable sleeve and with the leg of one of said levers.

4,501,258

KERF LOSS REDUCTION IN INTERNAL DIAMETER SAWING

Lawrence D. Dyer, Richardson, and Anderson D. McGregor, Sherman, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Oct. 4, 1982, Ser. No. 432,508
Int. Cl.³ B28D *1/04;* B24B *49/00*
U.S. Cl. 125—13 R **5 Claims**



1. A method for controlling the tension of an internal diameter saw blade while sawing an object, comprising the steps of:

directing a stream of fluid onto the cutting edge of said saw blade before said blade enters the object being sawed, wherein some of the fluid enters the cutting region;

measuring the tension of said saw blade; and

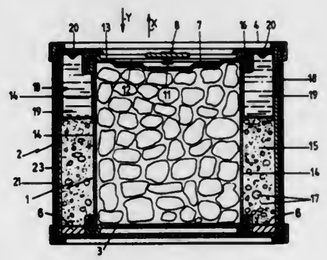
regulating the fluid temperature responsive thereto.

4,501,259

DEVICE FOR HEATING FOOD CONTAINED IN A SEALED CONTAINER

Ramon Apellaniz, Lasne, Belgium, assignor to Tarabelm Limited, London, Great Britain

Filed Dec. 17, 1982, Ser. No. 450,695
Claims priority, application Luxembourg, Dec. 18, 1981, 83844
Int. Cl.³ F24J *1/00*
U.S. Cl. 126—263 **1 Claim**



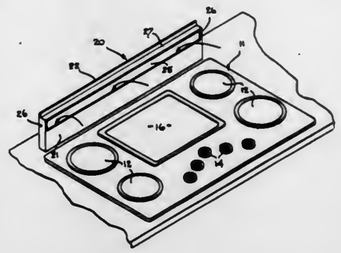
1. In a process for heating food contained in a sealed container surrounded by an envelope forming an outer chamber containing quicklime and water separated by a wall which can be easily pierced or torn, the improvement comprising reacting, after piercing said wall, grains of quicklime, the reactivity of which has been previously reduced by overburning at a termperature of 1100° to 1400° C., with an amount of water which is larger than the amount necessary for the hydration or slaking reaction of the quicklime, said amount of water being comprised between about 0.75 and 3 parts by weight for 1 part by weight of quicklime grains.

4,501,260

COOKTOP VENTILATION SYSTEM

William R. Grace, Alhambra, Calif., assignor to Norris Industries Inc., Los Angeles, Calif.

Filed Jul. 17, 1979, Ser. No. 58,322
Int. Cl.³ F24C *15/20*
U.S. Cl. 126—299 R **5 Claims**



1. In a cooktop having heating unit means, a venting system for venting fumes comprising:

a vent member having an air chamber and a snorkel member slidably mounted in said chamber, said snorkel member being formed from a pair of opposing sheets and side strips joining said sheets together along the edges thereof, a surface of one of said sheets facing towards said heating

unit means and a venting intake slot providing fluid communication to said chamber being formed along the top edge of said last-mentioned sheet, said intake slot being the only venting intake of said vent member, and venting exhaust means including a venting duct having an intake end connected to said chamber and an exhaust end and blower means mounted at said exhaust end of the duct for providing suction in said duct and said chamber,

a control switch, and

motor drive means responsive to actuation of said control switch for driving said snorkel member from a retracted position in the chamber to an extended position substantially normal to the surface of the cooktop with the venting intake slot at a level substantially above that of the heating unit means and responsive to a second actuation of said control switch for driving said snorkel member back to its retracted position within the chamber, said motor drive means including a scissors mechanism, said snorkel member being mounted in said chamber on said scissors mechanism, said mechanism having a pair of arms which are pivotally connected at their centers, one of the ends of each of said arms being supported on a wall of said chamber, the other of the ends of each of said arms being attached to said snorkel member.

4,501,261

INSTANTANEOUS GAS WATER HEATER

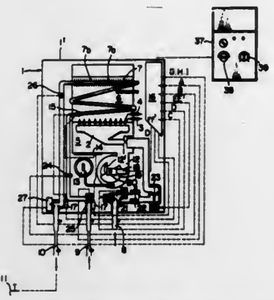
Osamu Tsutsui; Shusaku Murakami; Hidehiko Kuwahara, and Shigefumi Yasunaga, all of Shiga, Japan, assignors to Toto Limited, Fukuoka, Japan

Filed Jun. 27, 1983, Ser. No. 507,917

Claims priority, application Japan, Jun. 28, 1982, 57-112127; Mar. 14, 1983, 58-42617

Int. Cl.³ F24H *1/00*

U.S. Cl. 126—351 **15 Claims**



1. An instantaneous gas water heater for providing a flow of water at a preset temperature, said water heater comprising

an air supply chamber,

a burner within said air supply chamber for burning combustion gas supplied thereto,

a gas supply pipe for supplying combustion gas to said burner,

a proportional valve located within said gas supply pipe,

a combustion chamber located above said air supply chamber,

a fan associated with said air supply chamber for supplying primary and secondary air thereto for combustion,

a heat exchanger positioned in said combustion chamber, said heat exchanger having an input end and an outlet end,

a water input pipe connected to said input end of said heat exchanger for supplying cold water thereto,

a water outlet pipe connected to said outlet end of said heat exchanger for delivering hot water therefrom,

a control unit,

a water flow rate sensor located in said water inlet pipe which is electrically connected to said control unit for sending a water flow rate signal A thereto,

a water temperature sensor located in said water inlet pipe which is electrically connected to said control unit for sending a cold inlet water signal B thereto,

a water temperature sensor located in said water outlet pipe which is electrically connected to said control unit for sending a hot outlet water signal C thereto,

a temperature setting means which is electrically connected to said control unit for sending a temperature setting value signal T_s thereto,

a flow control valve within one of said water input and water outlet pipes to control the flow rate of water therethrough, and

said control unit being electrically connected to said proportional valve and to said flow control valve so as to control their operation, said control unit sending both a primary signal E and a secondary signal E′ to said proportional valve, said primary signal E representing the value obtained by multiplying the signal A by the value achieved by subtracting signal B from signal T_2 and then dividing the result by the predetermined heat efficiency of the heat exchanger, and the secondary signal E′ representing the value obtained by multiplying a predetermined proportional gain value α wherein α is one of a plurality of predetermined values with different temperatures associated with Ts with the value obtained by subtracting signal C from signal T_s; said control unit controlling the opening of said flow control valve so as to assure that the temperature of the water flowing through the water outlet pipe is essentially equal to T_s.

4,501,262

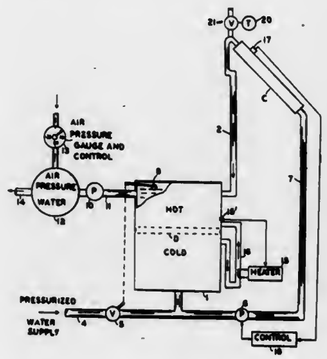
SOLAR HOT WATER SYSTEM WITHOUT HEAT EXCHANGER

Floyd A. Lyon, Brookville, N.Y., assignor to Halm Instrument Co. Inc.

Filed Apr. 14, 1980, Ser. No. 139,832

Int. Cl.³ F24J *3/02*

U.S. Cl. 126—437 **2 Claims**



1. Solar hot water system comprising:

a non-pressurized storage tank,

a solar collector connected to the tank,

a heater means connected to the storage tank, means to withdraw water from the upper portion of the storage tank to provide a pressurized hot water supply,

a vertically moveable insulated divider in the storage tank to separate hot and cold water in the storage tank,

the divider being weighted to float on water of pre-determined temperature and density.

4,501,263

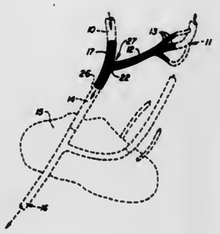
METHOD FOR REDUCING HYPERTENSION OF A LIVER

Stanley C. Harbuck, P.O. Box 1643, Salt Lake City, Utah 84110

Filed Mar. 31, 1982, Ser. No. 364,139

Int. Cl.³ A61B *19/00*; A61F *1/00*

U.S. Cl. 128—1 R **2 Claims**



1. A method for reducing hypertension of a liver having a hepatic artery, comprising:

ligating the hepatic artery into the liver;

diverting the blood from the hepatic artery proximal of the liver by means of an arterial conduit formed of polymer fabric to a portel vein conduit formed of a polymer fabric;

joining flow through the arterial conduit to flow through the portal vein conduit at a junction formed of polymer fabric;

discharging said joined arterial blood flow and portal vein blood flow proximal of the liver, said portal vein conduit being inserted in said portal vein proximal of the liver, thereby to reduce blood pressure in the liver.

4,501,264

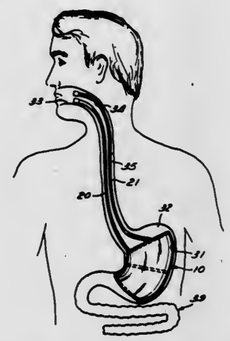
MEDICAL SLEEVE

Arthur G. Rockey, 3438 Sharon Rd., Charlotte, N.C. 28211

Continuation of Ser. No. 912,010, Jun. 2, 1978, abandoned. This application Dec. 16, 1980, Ser. No. 216,989

Int. Cl.³ A61B *17/00*

U.S. Cl. 128—1 R **4 Claims**



1. A method of controlling obesity, comprising the steps of positioning a sleeve impervious to digestive juices and normal foods in the digestive tract, arranging the sleeve in the digestive tract in such a manner that substantially all normally ingested food material passing naturally through the oral cavity and then passing through the digestive tract is caused to pass through the sleeve while being isolated from direct contact with the surrounding area of the interior walls of the digestive tract and body fluids secreted by such surrounding area interior walls such that natural absorption of food material in the digestive tract is impaired and a net caloric intake for a given quantity of ingested food is thereby reduced, said sleeve being disposed substantially entirely in the stomach.

4,501,265

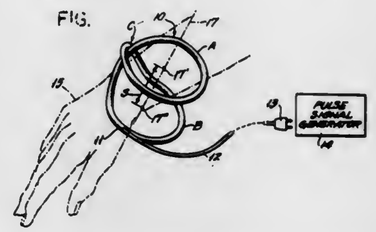
APPLICATOR HEAD FOR ELECTROMAGNETIC TREATMENT OF AN AFFLICTED BODY REGION

Eugene A. Pescatore, Elmwood Park, N.J., assignor to Electro-Biology, Inc., Fairfield, N.J.

Filed Dec. 23, 1982, Ser. No. 452,421

Int. Cl.³ A61N *1/40*

U.S. Cl. 128—1.5 **10 Claims**



1. An electromagnetic body-treatment device for surgically non-invasive modification of the growth, repair and maintenance behavior of living tissues and cells by a specific and selective change in electrical environment, comprising a single multi-turn electrical coil of initially generally circular configuration, said coil having a flexible external lead-cable connection and said coil being deformed into a body-adapting retaining figure-eight configuration to thus define two loops with a generally central crossover integrally connecting said loops, the generally central crossover region being generally arcuately bent to provide a relatively rigid positioner of said two loops in spaced substantially parallel planes wherein the effective local diameter of each of said loops substantially equals or exceeds the effective spacing between said planes, said loops being about a single axis of flux development that is substantially normal to said planes, and means connected to said cable connection for electrically exciting said single coil with a succession of low-voltage unidirectional asymmetrical pulses; whereby, upon insertion of an afflicted body region in the space between said loops, said smaller loops coact in flux-aiding fashion to establish substantially uniform flux distribution in the afflicted body region.

4,501,266

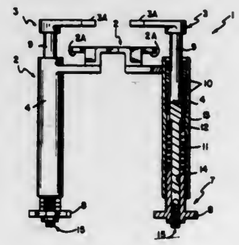
KNEE DISTRACTION DEVICE

John McDaniel, Warsaw, Ind., assignor to Biomet, Inc., Warsaw, Ind.

Filed Mar. 4, 1983, Ser. No. 472,160

Int. Cl.³ A61F *5/00*; A61B *17/00, 17/18*

U.S. Cl. 128—69 **13 Claims**

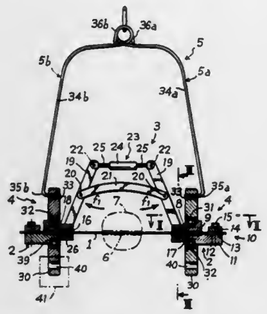


1. A knee distraction device for facilitating knee arthroplasty comprising

a tibia-engaging member engageable with a resected tibial plateau of a patient,

a condyle-engaging member engageable with a distal femoral condyle of the patient,
force-applying means for forcibly moving said tibia- and condyle-engaging members relative to one another to tension the patient's ligaments,
and adjustable force calibration means operatively connected with the force-applying means for calibrating the degree of ligament tension applied by the distraction device.

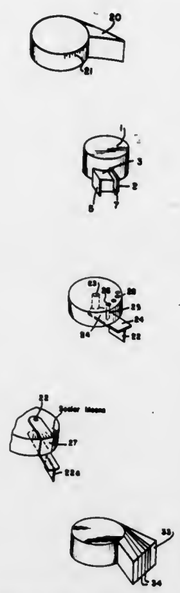
4,501,267
TRACTION-SUSPENSION DEVICE WITH TRANSOSSEOUS PIN
Jean-Claude Pecheux, Charleville-Mezieres, France, assignor to Societe Anonyme: Compagnie Generale de Materiel Orthopedique, Charleville-Mezieres, France
Filed Nov. 3, 1982, Ser. No. 438,929
Claims priority, application France, Nov. 5, 1981, 81 20897
Int. Cl.³ A61F 5/04
U.S. Cl. 128—84 R **8 Claims**



1. Traction-suspension device with transosseous pin, of the type comprising a pin designed to go through a bone and of which the end portions can be subjected to a traction, one with respect to the other, by means of an adjustable tension rod, wherein said device comprises:
a tensioning pin and tension sleeves immobilizable in adjustable axial position on the pin,
two support bearings receiving the said sleeves via ball bearings,
a traction-suspension hoop adaptable on the bearings,
a tensioning stirrup adaptable between the bearings on assembling endpieces formed by the sleeves in facing relation.

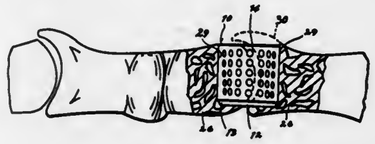
4,501,268
BONE WEDGE GUIDANCE SYSTEM
John E. Comparetto, P.O. Box 433, Nassawadox, Va. 23413
Filed Aug. 20, 1981, Ser. No. 294,653
Int. Cl.³ A61F 5/04
U.S. Cl. 128—92 E **20 Claims**

1. An osteotomy guide apparatus for use in a surgical method for changing the axial alignment of a bone having a longitudinal axis by severing said bone and healingly repositioning the resulting segments thereof with respect to each other, which method includes cutting across a portion of said bone in an arcuate cut extending from and through one side of said bone and terminating between said side and the opposed side of said bone, the arc of said arcuate cut being a portion of a circle which has its center offset from said longitudinal axis; and cutting two non-radially extending, circumferentially spaced cuts from said arcuate cut to and through the opposed side of said bone to form a removable wedge so that the severed bone segments can be rotated about said arcuate cut to effect said repositioning when said wedge is removed; said osteotomy guide apparatus comprising: a crecentric curvilinear body having a curvilinear edge extending therefrom for inserting in a crecentric osteotomy cut in a bone, and having a



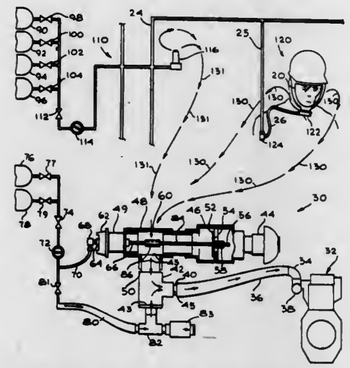
tab planar cut guide means extending outward from the curvilinear body at an angle to the curvilinear body other than normal to a tangent to the body at the intersection of the tab planar cut guide means and the body.

4,501,269
PROCESS FOR FUSING BONE JOINTS
George W. Bagby, Spokane, Wash., assignor to Washington State University Research Foundation, Inc., Pullman, Wash.
Continuation-in-part of Ser. No. 330,169, Dec. 11, 1981, abandoned. This application Feb. 21, 1984, Ser. No. 581,841
Int. Cl.³ A61F 5/04
U.S. Cl. 128—92 G **3 Claims**



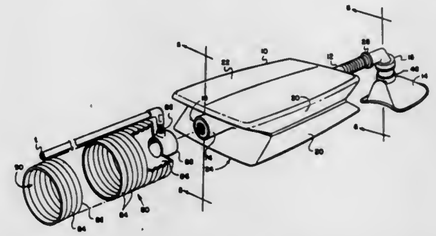
1. A process for stabilizing and promoting bone-to-bone fusion of a human or animal joint such as a spinal joint between adjacent vertebrae or the ankle joint formed by opposed contiguous bony surfaces which are covered and separated by intervening cartilage and are surrounded by ligaments which resist expansion of the joint; comprising the following steps:
surgically accessing the joint;
removing intervening cartilage located between the contiguous bony surfaces;
boring across the contiguous bony surfaces a transverse cylindrical opening having a selected inside diameter about opposed semi-cylindrical surface areas formed across the respective bony surfaces;
retaining the fresh autogenous bone fragments produced by the boring step;
driving into the transverse cylindrical opening a hollow basket having a rigid perforated cylindrical wall whose outside diameter is slightly greater than the inside diameter of the cylindrical opening to immediately stabilize the joint by spreading the bony surfaces apart in opposition to the resistance to expansion of the joint provided by the surrounding ligaments;
filling said hollow basket with fresh autogenous bone fragments produced by the boring step, thereby omitting the need for a second surgical site, to promote bone ingrowth about the basket and through its perforated cylindrical wall while providing immediate stabilization of the joint; and
closing the access to the joint.

4,501,270
BREATHING AIR CONSERVATION SYSTEM
Gary J. Ulinskas, La Jolla, Calif., assignor to Whittaker Corporation, Los Angeles, Calif.
Filed Oct. 27, 1982, Ser. No. 437,187
Int. Cl.³ A62B 7/00
U.S. Cl. 128—202.13 **19 Claims**



15. A combination system for an enclosed survival capsule for supplying air during a restricted air intake mode to the occupants in the cabin of the capsule and air for an engine constituting the propulsion means of the capsule, said system comprising:
(1) an air intake control system having a housing including an air intake passage adapted to be coupled to the engine air intake, said housing having an intake port adapted to be located in communication with the cabin atmosphere to provide air to the engine to enable the engine to operate in a normal air intake mode, said air intake control system further including:
(a) pressure responsive means for closing said air intake port;
(b) a first orifice in said housing adapted to be located in communication with said cabin atmosphere and downstream from the closing means for admitting air into the air intake passage from the cabin and bypassing the air intake port; and
(c) means for supplying air from a compressed air source to the air intake passage and including a restrictor means in series with the air supplying means for limiting the air provided from the compressed air source to said intake air passage, said first orifice and restrictor means being respectively sized to provide about 35% of the air to the engine through the first orifice from the cabin and about 65% of the air to the engine from the compressed air source when the engine is operating in the restricted air intake mode said pressure responsive means closing said air intake port in response to air supplied to said air intake passage from said compressed air source said compressed air source; and
(2) a breathing air supply system adapted to be mounted in said capsule including:
(a) a compressed air supply;
(b) a breathing air manifold connected to said compressed air supply and having a plurality of breathing masks selectively connected thereto; and
(c) a main valve and a regulator connected in series between the compressed air supply and the manifold, the regulator being set to provide a flow rate corresponding to the 35% of engine air drawn in through the first orifice;
whereby air exhaled by users of the breathing air system is exhausted into the cabin and is thereby available to supply air admitted through the first orifice.

4,501,271
RESUSCITATOR
John T. Clifton, Bowmanville, Canada, and John W. Spear, 2686 Thornlodge Dr., Mississauga, Ontario, Canada, assignors to John William Spear, Mississauga, Canada
Filed Oct. 13, 1981, Ser. No. 310,731
Int. Cl.³ A61M 16/00
U.S. Cl. 128—205.13 **9 Claims**



6. A resuscitator for use with a breathing device such as a mask, tube or the like comprising;
an air bag having fresh air inlet means for admitting fresh air to the interior of the bag and having air outlet means and operable to pump air through said outlet means;
a two-way valve chamber having a supply end and a mask end, the mask end being adapted for communication with a breathing device, both said ends having opening means, the supply end opening being connectible with said air outlet means of said bag, and adapted to receive air from said bag;
a first valve plate member of thin lightweight material of predetermined shape and size freely movable within said valve chamber between said supply end and said mask end for closing respective said opening means, the first valve plate member defining a flow axis and a single generally circular opening centered on the flow axis and being otherwise imperforate;
a plurality of support arms formed integrally with the first plate member extending radially inwardly from the perimeter of the circular opening, the support arms defining and being integrally joined together at a solid central hub at the center of said circular opening, whereby the support arms divide said generally circular opening;
a plurality of stub members formed integrally with the first plate member extending radially inwardly from the perimeter of the circular opening and terminating short of said central hub;
said support arms and said stub members of said first valve plate member lying in a common plane whereby to define a flat planar valve surface;
a fastening boss formed integrally with the central hub of said first plate member and extending towards said mask end of said chamber;
retaining flange means formed integrally with said boss and spaced from said valve surface a predetermined distance;

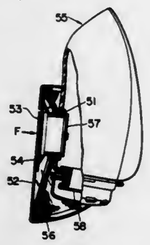
a flat planar flexible valve element membrane attached to said first valve plate member, said member having a single central opening and being otherwise imperforate and fitting elastically over said boss and fitting within said predetermined spacing between such first valve plate member and such flange means engaging such valve element membrane and retaining same in position lying flat on said flat planar valve surface; said valve element membrane normally closing said generally circular opening and being flexibly movable so as to open said generally circular opening when air flows from said supply end opening means of said chamber to said mask end opening means, and,

a second valve plate member integrally formed with support arms, a central hub, stub members, fastening boss, and flange means all being generally identical to the first valve plate member and corresponding support arms, central hub, stub members, fastening boss, and flange means, the second valve plate member having a flat planar flexible valve element membrane attached thereto generally identical to the membrane attached to the first valve plate member, the second valve plate member forming part of the air inlet means whereby to permit air flow through the inlet means into the air bag and to prevent flow out of the bag.

4,501,272
MASK

Kaisaburo Shigematsu; Nobuo Shigematsu, both of Urawa, and Yukio Okubo, Kasukabe, all of Japan, assignors to Shigematsu Works Co., Ltd., Tokyo, Japan

Filed Oct. 28, 1982, Ser. No. 437,474
Claims priority, application Japan, Oct. 30, 1981, 56-172871; Oct. 30, 1981, 56-172870; Nov. 21, 1981, 56-172653[U]
Int. Cl.³ A62B *7/00*
U.S. Cl. 128—206.15 **5 Claims**

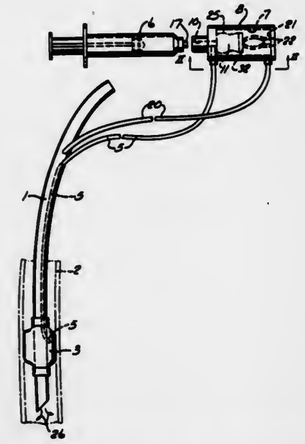


1. An intake chamber assembly for a mask comprising a front wall and a rear wall arranged to form an intake chamber therebetween, said front wall and rear wall each having a peripheral edge portion and said peripheral edge portions are hermetically joined together, said front wall is formed of a non-permeable plate-like material, said rear wall is formed of a filtration medium, said rear wall having a hole extending therethrough opening into said intake chamber, an intake cylinder fitted into the hole in said rear wall and hermetically connected to said rear wall, said intake cylinder forming an opening having one end communicating with said intake chamber and an opposite end adapted to be connected to said mask, said front wall disposed in spaced relation to the opening in said intake cylinder communicating with said intake chamber, connecting pieces extending between and connecting said front wall and said intake cylinder for maintaining the spaced relation between said front wall and said intake cylinder, a closing body located within said intake chamber opposite the opening in said intake cylinder communicating with said intake chamber, means for supporting body on said front wall within said intake chamber such that it has a first position spaced from the opening in said intake chamber and a second position where it closes the opening in said intake chamber and into which said second position it is displaceable from the first position by the depressing force of a finger so that when the depressing force is released said closing body returns automatically to the first position.

4,501,273
ENDOTRACHEAL TUBE WITH PRESSURE CONTROLLED INFLATABLE CUFF

Gerald E. McGinnis, 131 Kelvington Dr., Monroeville, Pa. 15146

Filed Sep. 30, 1982, Ser. No. 432,067
Int. Cl.³ A61M *25/00*
U.S. Cl. 128—207.15 **4 Claims**

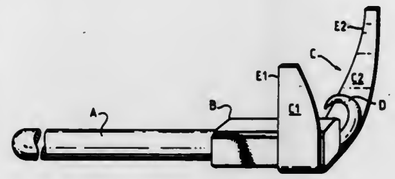


1. In combination, an endotracheal tube having distal and proximal ends, a normally collapsed flexible tubular cuff encircling the tube near its distal end and having opposite ends sealed thereto, a tubule extending from the cuff outwardly along said tube and having a distal end communicating with the inside of the cuff, the proximal end of the tubule having an inlet for air under pressure for inflating the cuff, an inflatable member, the tubule inlet fluidically communicating with the interior of the inflatable member, a valve housing provided with an air inlet bore fluidically communicating with the tubule inlet and interior of the inflatable member, valve means in the bore normally closing the inlet thereof, means for opening the valve means to admit air under pressure through said inlet bore to inflate the cuff and the inflatable member, the improvement comprising, said inflatable member mounted within said valve housing for expansion and contraction therein and including constant pressure means disposed in said valve housing between said inflatable member and said valve housing for exerting a substantially constant bias against said inflatable member throughout a predetermined range of expansion of said inflatable member in said valve housing whereby air inflation pressures within said inflatable member and said cuff are maintained substantially constant even though their respective inflation volumes may vary.

4,501,274
MICROSURGICAL INSTRUMENT

Finn Skjaerpe, Nedreveien 1, Stavanger, Norway (N-4000)

PCT No. PCT/NO82/00014, § 371 Date Oct. 29, 1982, § 102(e) Date Oct. 29, 1982, PCT Pub. No. WO82/03168, PCT Pub. Date Sep. 30, 1982
PCT Filed Mar. 12, 1982, Ser. No. 438,891
Claims priority, application Norway, Mar. 12, 1981, 810849
Int. Cl.³ A61B *17/32*
U.S. Cl. 128—305 **13 Claims**



1. A microsurgical instrument for performing selective trabeculectomy in the surgical treatment of glaucoma, said instrument including an elongated, flexible probe means having a first end and a second end, and a cutting member attached to said probe means at a point spaced apart from said first end, said cutting member including

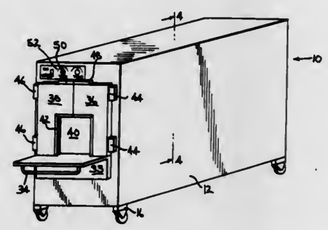
two knife blades which are separated so as to fit into the scleral groove of the eye wall in which trabecular meshwork is embedded and which protrude in different transverse directions from the probe means in order to extend from said groove into the anterior chamber of the eye, thus embracing a strip of said trabecular meshwork, each said knife blade providing a first edge which faces said first end of said probe means and a second edge which faces away from said first end of said cutting means, at least said first edge being sharp for cutting, and

at least one catching device located between said two knife blades at a point spaced farther from said first end of said probe than said cutting edges of said knife blades, each catching device retaining thereon trabecular tissue which has been cut by said knife blades.

4,501,275
MAMMALIAN SUBJECT HEATING UNIT USING RADIANT HEAT

Jerry D. Maahs, 19230 Glen Kerry Dr., Brookfield, Wis. 53005

Filed Jul. 6, 1981, Ser. No. 280,999
Int. Cl.³ A61F *7/00*
U.S. Cl. 128—402 **23 Claims**



1. Whole body hyperthermia apparatus capable of providing hyperthermic core temperature conditions in live mammalian subjects while minimizing risk to the subject comprising:

a wall member and a pair of end walls defining a closed cavity suitable for receiving the body of the subject with the head and neck of the subject extending through an opening in one of said end walls outside the closed cavity, said one end wall having closure means at said opening for providing a substantially air tight seal at said opening about the neck of the subject to prevent air circulation to and from said cavity, said wall member extending completely around the body of the subject when received therein, said wall member being formed of a material capable of radiating heat and having a radiant heat enhancing emissivity;

means for positioning the body of the subject in a generally central position in the cavity;

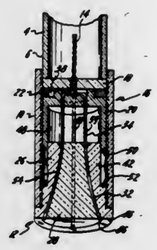
electric heating means mounted on the exterior of said wall member generating a heat input to the wall member for providing a sufficient quantity of radiant heat from the wall member directly to the body of the subject to increase the core temperature of the subject by radiant heating by a physiologically significant amount in a desired period of time, said wall member and heating means providing such radiant heat generally uniformly over the entire area of the wall member to minimize convection air currents in said cavity and at a power density low enough to limit the temperature of the air near said wall member at approximately 65° C. and the skin temperature of the subject at approximately 42.5° C. while achieving a hyperthermic condition of approximately 41.8° C. as measured rectally in the subject; and

circuit means connected to a source of electrical power for energizing said electric heating means.

4,501,276
FETAL ELECTRODE APPARATUS

Edward J. Lombardi, Malden, Mass., assignor to Illinois Tool Works Inc., Chicago, Ill.

Filed Jul. 16, 1982, Ser. No. 399,073
Int. Cl.³ A61B *5/04*
U.S. Cl. 128—642 **52 Claims**



1. An apparatus for use in monitoring fetal vital signs with monitoring equipment, insertable through the vagina and the cervix of a woman in labor into a fetal scalp, comprising:

(a) a form-sustaining guide tube having a forward end portion and adapted to be inserted through the vagina and cervix of the woman in labor;

(b) a sleeve having a forward end portion, the sleeve being disposed about the forward end portion of the guide tube, and the sleeve being configured to allow slideable movement of the forward end portion of the guide tube within the sleeve;

(c) a piston member slideably disposed within the sleeve for releasably engaging the forward end portion of the guide tube;

(d) a body member including:

(i) a rearward portion releasably disposed within the sleeve adjacent the piston member;

(ii) a forward portion having a shoulder releasably engaging the forward end portion of the sleeve and configured to preclude the forward portion of the body member from moving within the sleeve along the longitudinal axis of the sleeve toward the piston member by more than a predetermined distance, said forward portion of

the body member effecting releasable contact with the fetal scalp; and

(iii) at least two channels passing from the rearward portion of the body member and advancing outwardly along the longitudinal axis of the sleeve through the forward portion of the body member, said channels defining continuous open passages through the body member;

(e) at least two resilient active electrode members mounted on the piston member and having a free end slideably disposed within the channels, said active electrode members being of sufficient length for the free ends to pass through the channels and advance into the fetal scalp as the guide tube engages the piston member and causes the active electrodes to advance along the channels and out of the forward portion of the body member; and

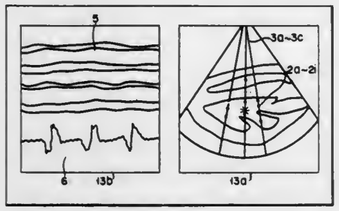
(f) means for electrically connecting the active electrode members to the monitoring equipment.

4,501,277

SELECTED BEAM MARKING SYSTEM FOR RAPID ULTRASOUND MEASUREMENTS

Hironobu Hongo, Ootawara, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Sep. 28, 1982, Ser. No. 426,133
Claims priority, application Japan, Nov. 12, 1981, 56-180382
Int. Cl.³ A61B *10/00*
U.S. Cl. 128—660 **8 Claims**



1. An ultrasonic pulse Doppler apparatus comprising:

an ultrasonic probe for transmitting ultrasonic beam into an object and receiving the echoes from said object;

a first processing means for processing the echoes received by said probe to form data of a B scan tomogram of said object;

a first display means for displaying the B scan tomogram;

beam mark setting means for setting at least one beam mark on the displayed B scan tomogram;

measuring point presetting the positions of means for a plurality of blood flow measuring points on said beam mark;

measuring point selecting means for selecting any one blood flow measuring point from said plurality of blood flow measuring points;

a second processing means for processing the echoes received by said probe to form a signal of a blood flow velocity at a selected measuring point;

a second display means for displaying the blood flow velocity at the selected measuring point; and

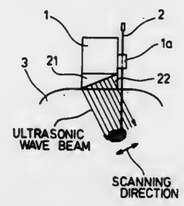
modulating means for distinguishing the selected measuring point on said displayed beam mark from other measuring points on said beam mark.

4,501,278

ULTRASONIC PROBE FOR PUNCTURE TREATMENT

Keiki Yamaguchi, and Shinichi Sano, both of Tokyo, Japan, assignors to Yokogawa Hokushin Electric Corporation, Tokyo, Japan

Continuation of Ser. No. 344,361, Feb. 1, 1982, abandoned. This application Nov. 28, 1983, Ser. No. 555,356
Claims priority, application Japan, Feb. 9, 1981, 56-16942
Int. Cl.³ A61B *5/00*
U.S. Cl. 128—660 **5 Claims**



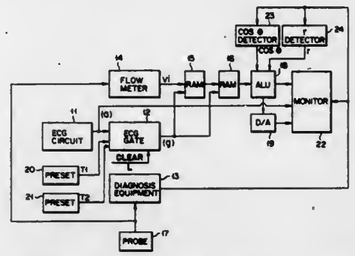
1. An ultrasonic diagnosis and/or treatment device comprising a needle, a guide member means for holding said needle; and a linear scanning probe means for generating ultrasonic waves; wherein said needle, said guide member means and said probe means are cooperatively arranged so that said needle can be driven perpendicularly to and into the surface of and into a patient's body, while concurrently a plurality of parallel ultrasonic waves emitted from said probe means are, in a linear scan, incident upon said needle, all at the same oblique angle within said patient's body and concurrently incident upon a desired part of said patient's body, whereby said needle is guided directly and accurately to said desired part of said patient's body.

4,501,279

ULTRASONIC BLOOD FLOW SENSING APPARATUS

Yasutsugu Seo, Ootawara, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Sep. 14, 1982, Ser. No. 418,001
Claims priority, application Japan, Sep. 18, 1981, 56-146311
Int. Cl.³ A61B *10/00*
U.S. Cl. 128—663 **7 Claims**



1. An ultrasonic Doppler blood flow sensing apparatus:

transducer means for sequentially transmitting a plurality of ultrasonic beams towards a vessel of a subject and receiving echoes of said beams reflected from said vessel;

Doppler flow measuring means for analyzing said echoes to obtain an instantaneous velocity of blood in said vessel with every beam, a radius of said vessel and an angle between the said ultrasonic beam and said vessel;

ECG means for providing an electrocardiographic signal indicating an ECG cycle of said subject; and

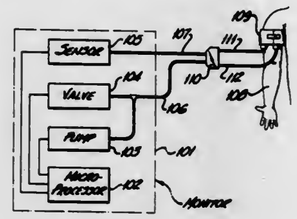
processing means for: (1) integrating said instantaneous velocity over a predetermined portion of a predetermined number of said ECG cycles and providing a blood flow quantity related thereto, (2) averaging said integrated velocity over the most recently occurring said predetermined number of said ECG cycles to produce an average blood flow quantity and (3) updating said integrating and averaging each of said ECG cycles to produce said average blood flow quantity that is constantly current.

4,501,280

AUTOMATIC IDENTIFICATION OF CUFF SIZE IN AUTOMATED BLOOD PRESSURE MONITORS

Rush W. Hood, Jr., Tampa, Fla., assignor to Critikon, Inc., Tampa, Fla.

Filed Apr. 6, 1983, Ser. No. 482,664
Int. Cl.³ A61B *5/02*
U.S. Cl. 128—677 **3 Claims**



1. In an automatic blood pressure monitoring system for monitoring both neonatal and adult patients with a single monitor, a method of automatically detecting use of a neonatal cuff comprising the steps of:

(a) inflating said cuff to a predetermined pressure;

(b) coupling an acoustic pulse from said monitor to said cuff;

(c) detecting return of said acoustic pulse to said monitor from said cuff;

(d) measuring the time duration of propagation of said pulse;

(e) comparing said measured duration with a predetermined reference threshold; and

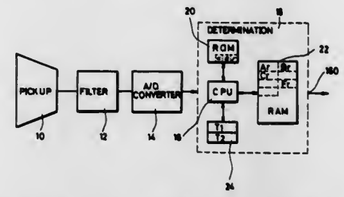
(f) commencing neonatal monitoring if said measured duration has a predetermined relationship with said threshold.

4,501,281

ELECTRONIC SPHYGMOMANOMETER

Toshio Furukawa, Yamatokoriyama, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Dec. 15, 1982, Ser. No. 450,042
Claims priority, application Japan, Dec. 18, 1981, 56-205739
Int. Cl.³ A61B *5/02*
U.S. Cl. 128—680 **4 Claims**



1. An electronic sphygmomanometer comprising:

sensor means for detecting sounds or vibrations generated from an artery and for producing an analog output signal;

analog-to-digital converter means for converting said analog output signal developed from said sensor means into a digital signal; and

Korotkoff sounds recognition means for analyzing the waveform of said analog signal including:

monitoring means for introducing said digital signal developed from said analog-to-digital converter means to said Korotkoff sounds recognition means within a preselected time interval;

detection means for detecting positive and negative peaks in said digital signal introduced by said monitoring means;

first determination means for determining whether adjacent positive and negative peaks detected by said detection means have a level difference greater than a preselected difference; and

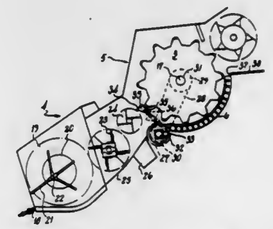
second determination means for determining whether said adjacent positive and negative peaks are detected by said detection means within a predetermined period of time.

4,501,282

COMBINE HARVESTER CROP IN-FEED CONVEYOR

Jean Claude Muller, Verrieres le Buisson, and James B. McNaught, Wasquehal, both of France, assignors to Massey-Ferguson Services N.V., Curacao, Netherlands Antilles

PCT No. PCT/GB81/00258, § 371 Date Aug. 2, 1982, § 102(e) Date Aug. 2, 1982, PCT Pub. No. WO82/01805, PCT Pub. Date Jun. 10, 1982
PCT Filed Nov. 25, 1981, Ser. No. 403,743
Claims priority, application United Kingdom, Dec. 6, 1980, 8039224
Int. Cl.³ A01F *12/10*
U.S. Cl. 130—27 P **10 Claims**



1. A combine harvester of the type having a crop elevator that feeds crop upwards across a crop floor to a rotary threshing cylinder arranged transversely of the direction of advance of the combine in work and adjacent a threshing concave so as to thresh crop fed tangentially between the cylinder and concave characterized in that a driven crop conveyor (**27**) is provided along the front edge of the concave (**6**) between the concave (**6**) and the upper end of the elevator crop floor (**25**) so as to form a substantially continuous crop floor surface with said floor (**25**) and concave (**6**) over which the crop passes, and a changeable speed drive mechanism (**28, 29, 30, 33**) is provided to drive the crop conveyor (**27**) and allow its speed to be changed so as to control the speed of crop flow to the threshing cylinder (**3**).

4,501,283

PLUG LOADER

James W. Webb, 2203 Grant Ave., Redondo Beach, Calif. 90278

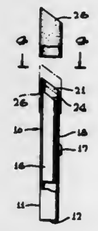
Filed Sep. 28, 1982, Ser. No. 425,225
Int. Cl.³ A24F *23/00*
U.S. Cl. 131—329 **1 Claim**

1. A plug loader for withdrawing a quantity of tobacco from a bulk supply and delivering the tobacco to the mouth of the user comprising the combination of:

an elongated hollow sleeve of oblong transverse cross-section having front and back walls and being open at a forward end and closed at its opposite end;

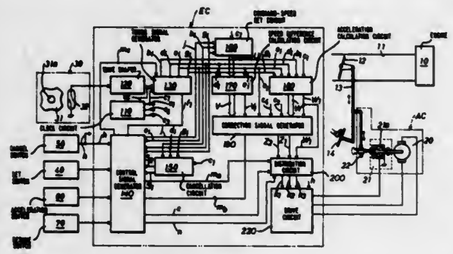
a plunger of oblong transverse cross-section having a closed end facing said sleeve open end slidably disposed in said

sleeve for moving between said open and said closed ends and substantially occupying the hollow of said sleeve;
means cooperatively carried between said sleeve and said plunger for limiting movement of said plunger so as to establish a cavity of predetermined volume defined between said closed end of said plunger and said sleeve open end;
said plunger and said sleeve have concentric semi-circular arcuate cross-sections so that said predetermined volume cavity is of a similar arcuate defined configuration;
said limiting means comprise a slot in the side of said sleeve and a pin carried on said plunger projecting through said



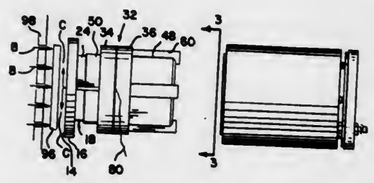
slot adapted to selectively engage with the opposite ends of said sleeve slot to restrict movement of said plunger;
indicia carried on said sleeve adjacent to said slot cooperating with said plunger pin to indicate the size of said cavity;
said plunger closed end and sleeve open end associated at said sleeve open end are slanted in parallel relationship extending from the back of said sleeve to the front provided with said slot, thereby forming a wedge shape;
said slanted open end of said sleeve constituting a cutting means for introducing a tobacco product into said cavity against said slanted end of said plunger; and
a cap detachably connected to said sleeve open end for closing access to said cavity.

4,501,284
SPEED CONTROL METHOD AND SYSTEM FOR AUTOMOTIVE VEHICLES
Akira Kuno, Oobu, and Yoshio Shinoda, Aichi, both of Japan, assignors to Nippon Soken, Inc., Nishio, Japan
Filed Oct. 20, 1982, Ser. No. 435,603
Claims priority, application Japan, Oct. 21, 1981, 56-168314
Int. Cl.³ F02D *29/02*
U.S. Cl. 123—352 **8 Claims**



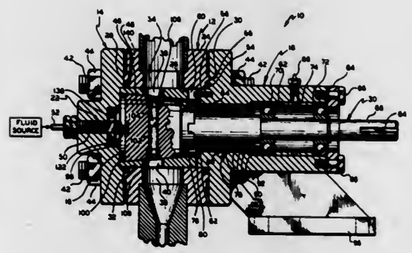
1. A speed control method for an automotive vehicle driven by an internal combustion engine under control of control means for controlling the quantity of fuel supplied into said engine to maintain the actual speed of the vehicle to a desired value, the speed control method comprising the steps of:
producing a speed signal with a frequency responsive to the actual vehicle speed;
producing a series of clock signals at a constant frequency;
producing a command signal indicative of the desired vehicle speed;
determining a divisional frequency ratio inversely proportional to a value corresponding with the desired vehicle speed and dividing the actual frequency of the speed signal by the divisional frequency ratio to produce a timing signal with the divided frequency;
calculating a first difference between values of the command and speed signals in accordance with the clock signals defined by a period of time of the timing signal and producing a first difference signal indicative of the calculated first difference;
calculating a second difference between values of the successive speed signals in accordance with the clock signals defined by each period of time of the successive timing signals and producing a second difference signal indicative of the calculated second difference;
producing, responsive to the first and second difference signals, a correction signal related to the calculated first and second differences; and
actuating said control means in response to the correction signal.

4,501,285
ULTRASONIC CLEANING APPARATUS
Charles Irwin, Santa Ana, Calif.; Janet Devine, Downingtown, Pa., and Richard Kramer, Wilmington, Del., assignors to Sonobond Ultrasonics, Inc., Pa.
Filed Apr. 5, 1982, Ser. No. 365,569
Int. Cl.³ B08B *3/12*
U.S. Cl. 134—58 R **7 Claims**



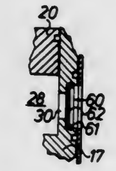
1. An ultrasonic transducer for cleaning applications, comprising:
a. a support plate including a passageway therethrough proximate the central portion thereof;
b. a faceplate including a cleansing surface and a passageway therethrough exiting centrally of said cleansing surface;
wherein said support plate passageway and said faceplate passageway communicate and said support plate facingly contacts said faceplate to support same;
c. means for releaseably retaining said faceplate in integral facing contact with said support plate with said passageways in fluid communication;
d. a conduit in fluid communication with said passageways for supplying cleansing fluid to said cleansing surface of said faceplate via said faceplate and support plate passageways;
e. piezoelectric means for converting an electrical input signal to vibrational mechanical energy;
f. means for mechanically coupling said piezoelectric means to said support plate;
g. means for adjustably mechanically compressing said piezoelectric means within a preselected pressure range;
h. sensor means for measuring amplitude of vibration of said piezoelectric means;
i. means for supplying said electrical input signal to said piezoelectric means; and
j. feedback circuit means, receiving from said sensor means a signal indicative of amplitude of vibration of said transducer, for regulating amplitude of signal input to said piezoelectric means by said signal supplying means.

4,501,286
ROTARY VALVE
Raymond G. Rohlfing, and Laura A. Martin, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.
Filed Jan. 20, 1983, Ser. No. 459,298
Int. Cl.³ F16K *5/22*; B08B *3/04*
U.S. Cl. 137—15 **23 Claims**



1. A valve for controlling the passage of material therethrough, comprising:
valve body means defining a valve chamber having a frustoconically shaped bearing surface and having an inlet port and an outlet port, each of said ports communicating between said valve chamber and the exterior of said valve body means;
valve member means for controlling the passage of material through said valve body means, said valve member means having a frustoconically shaped outer surface and first and second opposite ends, said valve member means being disposed within said valve chamber and being sized and shaped to be closely received within said valve chamber with its frustoconically shaped outer surface in slidable sealing engagement with the frustoconically shaped bearing surface of said valve chamber, said valve member being adapted to rotate about its longitudinal axis within said valve chamber;
drive means drivingly secured to the first end of said valve member means for rotating said valve member means about its longitudinal axis within said valve chamber;
biasing means carried by said valve body means for applying force to the opposite second end of said valve member means to urge the frustoconically shaped outer surface of said valve member means into slidable sealing engagement with the frustoconically shaped bearing surface of said valve chamber;
passage means in said valve body means communicating between said valve chamber and the exterior of said valve body means with said biasing means interposed in said passage means; and
means in fluid flow communication between said passage means and a source of circulating flushing fluid whereby the fluid from said source flows through said passage means via said biasing means into said valve chamber so as to prevent the entrance of foreign matter into and the accumulation of foreign matter in said valve chamber and said biasing means.

4,501,287
BREAKAWAY COUPLING
John G. Thomson, Nottingham, England, assignor to Gall Thomson Maritime Limited, London, England
PCT No. PCT/GB81/00007, § 371 Date Feb. 11, 1982, § 102(e) Date Feb. 11, 1982, PCT Pub. No. WO81/03690, PCT Pub. Date Dec. 24, 1981
PCT Filed Jan. 17, 1981, Ser. No. 348,061
Claims priority, application United Kingdom, Jun. 16, 1980, 8019613
Int. Cl.³ F16K *13/04*; F16L *35/00*
U.S. Cl. 137—68 R **7 Claims**



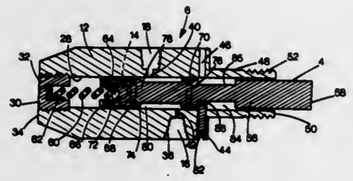
1. A breakaway coupling for joining together two pipes, the coupling having at least two separable parts through which a conduit extends for conveying fluid, one part being adapted for connection to one pipe and the other part being adapted for connection to the other pipe, one of the separable coupling parts having a hollow sleeve which extends about a portion of the other separable coupling part to define an annular space therebetween, the two separable coupling parts being secured together by frangible means, characterized by
(a) a pair of opposed annular pistons located in said annular space, said pistons being spaced axially apart to define therebetween a fluid chamber,
(b) transmission means interposed between the fluid chamber and the conduit to provide fluid pressure communication therebetween,
(c) connection means connecting the pistons with said separable coupling parts, whereby fluid pressure in said fluid chamber urges said coupling parts together,
(d) one or more frangible bolts securing one of said pistons to one of said separable coupling parts and
(e) latch means detachably securing said one piston to the other of said separable coupling parts,
(f) whereby, upon fracture of said frangible bolt or bolts, said one piston is separable from both said separable coupling parts to allow for separation of said parts, said latch means being operative to permit axial separation of said one piston and said other coupling part following fracture of the frangible bolt or bolts.

4,501,288
MARINE SPEEDOMETER ANTI-FOULING DEVICE
William J. Field, 10305 Bowerbank Rd., Sidney, B.C., Canada V8L 3L2
Filed Sep. 16, 1983, Ser. No. 532,694
Int. Cl.³ F16K *11/00*
U.S. Cl. 137—240 **9 Claims**

1. A valve for controlling a purging fluid for marine speedometer lines, the valve comprising:
a valve body with a bore extending in a longitudinal direction therein, a speedometer port, a pressurized fluid supply port and an impact tube port, the ports being spaced apart in the longitudinal direction and communicating with the bore;
a valve spool slidably received within the bore for reciprocation within the bore, the spool having three spaced apart seals between the bore and the spool and a first passageway between first and second said seals and between the spool and the bore; the spool having a first position wherein the speedometer port and the impact

tube port communicate through the passageway, the pressurized fluid supply port is isolated from the speedometer port and the impact tube port, and a third said seal and the first said seal are on opposite sides of the pressurized fluid supply port the spool having a second position wherein the impact port communicates with the pressurized fluid supply port, and the speedometer port is isolated from the impact tube port and the pressurized fluid supply port;

means biasing the spool towards the first position;



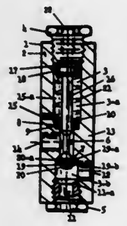
button means for manually moving the spool from the first position to the second position, the button means being connect to the spool and projecting outwardly from the valve body at one end of the bore; and means for venting the speedometer when the spool is in the second position, the means for venting comprising an opening in the valve body and a second passageway in the spool extending from the opening to the speedometer port in the second position of the spool.

4,501,289

FLUID PROPORTIONING DIVERTER VALVE

Richard S. Paulikonis, 6660 Greenbriar Dr., Cleveland, Ohio 44130

Filed Aug. 24, 1982, Ser. No. 410,870
Int. Cl.³ F16K *43/00*
U.S. Cl. 137—315 **10 Claims**



1. A fluid proportioning diverter valve comprising:

a single elongated housing unit with a central bore of different diameters passing therethrough including a first top end portion adaptable of being closed by a first top end closure means, and a second bottom end portion adaptable of being closed by a second bottom end closure means including a third intermediate diameter bore portion adjoining said top and bottom end portions of said bore substantially midway of said housing, said first top end portion defining a piston operating chamber and said second bottom end portion defining a valving chamber,

a set of fluid ports for fluid communication with said bore including a first bottom port means at the center of said bottom end closure means, a first side port means entering said bore via a housing wall adjacent said first bottom port means in said second bottom end portion of said bore and a second side port means on top thereof entering said bore via said housing wall substantially midway along the length of said intermediate diameter bore portion,

an elongated valve stem provided with a first top end and a second bottom end including a first seal inside a groove of said bottom end thereof is slidably received inside said bore and movable therein in an operable relationship with said fluid ports between said first top and second bottom end closure means, a second stem seal placed radially and secured permanently inside a stationary counterbore of said bore adjacent said top and intermediate portions for to prevent fluid leakage therebetween, said valve stem includes a piston means for actuating said valve stem between an open and a closed positions,

when said stem is in a first top position, an upper lid of said first seal is engaged in a first valve seat provided therein between said intermediate diameter bore portion and said second bottom end portion of slightly larger diameter for shutting off said second port entirely while allowing fluid communication between said first side and said first bottom port means until said stem is actuated from said first top position to a second selected position inside said bore allowing fluid communication between said first side port means, said second side port means and said first bottom port means prior to having a lower lip of said first seal engage a second valve seat inside said bottom end closure means thereby allowing fluid proportioning at selected ratios between said first, second and bottom port means,

when said stem is in another second selected position, said lower lip of said first seal is engaged in said second valve seat for allowing fluid communication between said first and second side port means while closing fluid communication to said bottom port means,

including means for top mounting said second seal within said counterbore with a biasing means for retaining said second seal therein,

means for top mounting said valve stem through said second seal into a position in said second bottom end portion of said bore to permit only said first seal to be mounted into said groove prior to said second end closure means being placed inside said second bottom end portion of said bore in a single step without disturbing or removing any other valve components thereby facilitating novel means of assemblying in said valve said piston means, said biasing means with said second seal and said first seal and also novel means of holding said stem therein physically by said first seal.

4,501,290

PRESSURE REGULATING MECHANICALLY AND ELECTRICALLY OPERABLE SHUT OFF VALVES

Oded E. Sturman, 18241 Andrea Cir. N.; Benjamin Grill, 9819 Etiwanda Ave., both of Northridge, Calif. 91329, and Lynn Harrison, 23554 Cherry St., Newhall, Calif. 91321

Filed Sep. 30, 1982, Ser. No. 429,459
Int. Cl.³ G05D *16/08, 16/20*
U.S. Cl. 137—495 **26 Claims**

1. A pressure regulating electrically operable shut off valve comprising

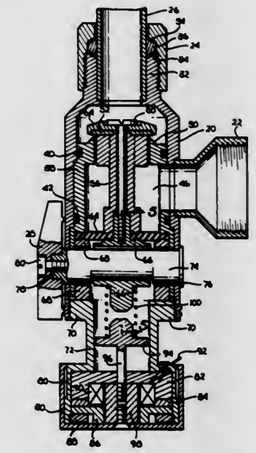
a housing including inlet and outlet chambers and a valve seat therebetween for fluid communication between said chambers,

a valve closure member cooperatively disposed in said housing with respect to said valve seat so as to be encouraged by pressure in said outlet chamber toward a first position resting on said valve seat to block fluid communication between said inlet and said outlet chambers, said valve closure member being movable to a second position allowing fluid communication between said inlet and said outlet chambers,

electrically operable latch means

spring means coaxial with said valve member and operative in compression between said valve member and said latch means, when said latch means is in a first latch position, for yieldably encouraging said valve member toward said second position, whereby said valve may regulate the pressure of fluid in said outlet chamber by at least a partial balance between the outlet chamber pressure force on said valve closure member encouraging said valve closure member toward said first position and the force of said spring means encouraging said valve closure member toward said second position,

said latch means being moveable between said first latch position holding said spring means in compression and a second latch position releasing the compression in said



spring means, said latch means having permanent magnet means for retaining said latch means in said first latch position, said latch means also having a coil responsive to a current pulse to momentarily substantially demagnetize said permanent magnet means to allow said latch means to move to said second latch position, and

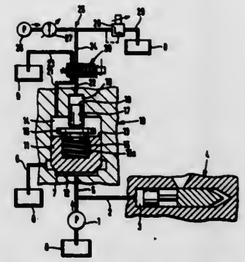
means operative when said spring means is released to encourage said valve closure member to said first position.

4,501,291

RELIEF VALVE ARRANGEMENT

Ronald Siegrist, Oberuzwil, Switzerland, assignor to Vickers, Incorporated, Troy, Mich.

Filed Aug. 19, 1983, Ser. No. 524,682
Claims priority, application European Pat. Off., Aug. 19, 1982, 82107565.2
Int. Cl.³ F16K *17/06*
U.S. Cl. 137—529 **6 Claims**



1. Relief valve arrangement for limiting system pressure within two selectable ranges of pressure settings, the arrangement comprising: means for delivering control pressure, means for delivering low pressure and

a main relief valve having a valve body including an inlet chamber connected to system pressure, an outlet chamber connected to low pressure, a first control chamber and a second control chamber,

a first piston formed as a valve member having a first piston area at said inlet chamber and a second piston area at said first control chamber,

a second piston having a third piston area and a fourth piston area at said second control chamber, said fourth piston area being distinctly different in size from said second piston area, and

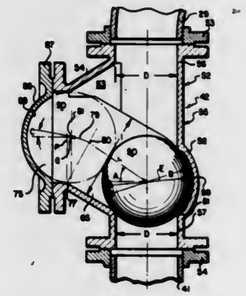
a directional valve for connecting said control pressure to said first control chamber and said low pressure to said second control chamber, or said control pressure to said second control chamber and said low pressure to said first control chamber.

4,501,292

BALL-TYPE CHECK VALVE

Richard Maloblocki, Hinsdale, Ill., assignor to Ametc Development Company, Highland Park, Ill.

Filed Apr. 8, 1982, Ser. No. 366,600
Int. Cl.³ F16K *15/04*
U.S. Cl. 137—533.11 **11 Claims**



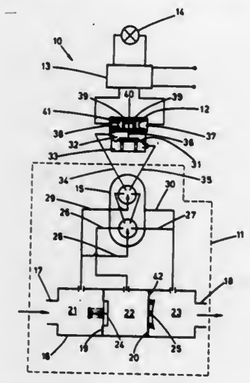
1. A check valve, comprising a spherical element, and a housing adapted to permit undirectional flow of a fluid through the housing and to contain the spherical element, the housing comprising a first vertically disposed cylindrical section including at least one top end element having a diameter which is less than the spherical element diameter, the first section defining a seat for mating with the spherical element in fluid-flow inhibiting contact, the housing further comprising a second cylindrical section having substantially straight sides and a diameter which is greater than the spherical element diameter and communicating with the first section, the second cylindrical section being inclined to the first cylindrical section and adapted such that when a fluid is caused to flow upward through the first cylindrical section, the spherical element is caused to move out of the first cylindrical section and diagonally upward within the second cylindrical section, a third valve housing section communicating with and intersecting the second section for receiving the spherical element, the second and third sections together defining an abrupt pivot line, the pivot line oriented such that after the spherical element has been caused to move out of the first section by the upwardly flowing fluid and to be positioned at the pivot line, a center of gravity of the spherical element is caused to move along a bi-ended arcuate path, a first end of the arcuate path requiring a first force to be supplied by the upwardly moving fluid to the spherical element to counteract the tendency of the spherical element to roll down into the first cylindrical section, a second end of the arcuate path requiring a second force, less than the first force, to counteract the tendency of the spherical element to roll down into the first cylindrical section, the spherical element having a center of gravity, the center of gravity being located forward of said pivot line even when the spherical element is urged to the extremity of its travel, whereby to encourage the spherical element to travel down said second section when fluid pressure on the spherical element is removed.

4,501,293

GAS FLOW RESPONSIVE SIGNAL OUTPUT MEANS

Owen D. Furlong, East Coker, Near Yeovil; Leonard Moore, Somerton, and Jonathan D. Ward, Ilminster, all of England, assignors to Normalair-Garrett (Holdings) Limited, Yeovil, England

Filed Sep. 8, 1982, Ser. No. 416,026
Claims priority, application United Kingdom, Sep. 9, 1981, 8127270
Int. Cl.³ F16K 37/00; F15C 4/00; G01L 9/00
U.S. Cl. 137—557 8 Claims



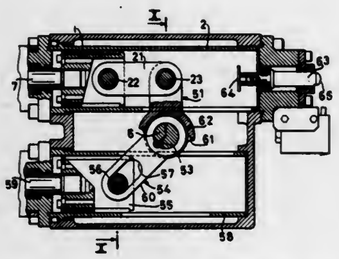
1. Signal output means responsive to gas flow, comprising a gas conduit having first and second pressure-datum valves arranged in downstream order and forming a chamber therebetween, the second pressure-datum valve being arranged to open at a lower pressure difference than is required for opening the first pressure-datum valve; and a flueric amplifier having a power jet port connected with the gas conduit on the upstream side of the first pressure-datum valve, opposed control pressure ports connected respectively with the chamber in the gas conduit between the first and second pressure-datum valves and with the gas conduit downstream of the second pressure-datum valve, and a vent port also connected to the gas conduit downstream of the second pressure-datum valve.

4,501,294

SEQUENTIAL OPERATION DEVICE FOR CONTROLLED MEMBERS

Giorgio Bormioli, Via Galileo Galilei, 11, 35100 Padova, Italy

Filed Nov. 4, 1982, Ser. No. 439,036
Claims priority, application Italy, Jan. 18, 1982, 19153 A/82
Int. Cl.³ G05G 9/08
U.S. Cl. 137—614.11 6 Claims



1. A sequential operation device for controlled members, comprising an operation member which can be driven to advance along a rectilinear path, which is perpendicular and laterally positioned with respect to a rotating control shaft of a first controlled member and directed towards a control element of a second controlled member, and movement transmission means operatively interposed between said operation member and said rotating shaft so that an initial advancement of said operation member along said path is able to cause a rotation of said shaft from a first angular position to a second angular position to effect the operation of said first controlled member, said transmission means having a clearance operative to allow said operation member a further final advancement, while the shaft is stationary in said second angular position, to effect the displacement of said control element from an initial rest position to a final position to effect operation of said second controlled member,

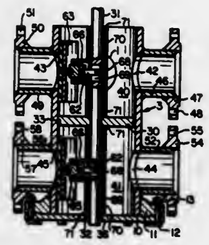
said transmission means including a first lever mounted on said shaft in a freely rotating way, a connecting rod interposed between said operation member and said first lever, a second lever rigidly connected to said shaft and connected to a further independent control operation member, and cooperating abutment means provided on said levers so that the rotation of said first lever during said initial advancement of said operation member causes, if said shaft is in said first angular position, the contemporaneous rotation of said second lever and said shaft to said second angular position.

4,501,295

TRANSFER VALVE

H. Jay Williams, 944 Northgate Dr., Allison Park, Pa. 15101, and Raymond Yauneridge, 605 Cherry St., Windber, Pa. 15963

Filed Apr. 14, 1982, Ser. No. 368,300
Int. Cl.³ F16K 11/02
U.S. Cl. 137—625.19 5 Claims



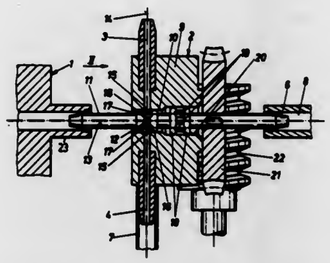
1. A transfer valve including a substantially cylindrical valve casing, a bottom plate closing the bottom of said valve casing, a cover plate closing the top of said valve casing, a separator plate within said valve casing separating the upper portion of said valve casing from the lower portion of said valve casing to form an upper chamber and a lower chamber within said valve casing, a first port formed in said valve casing opening into said upper chamber, a second port formed in said valve casing opening into said lower chamber, two additional ports formed in said valve casing opening into said upper chamber and two additional ports formed in said valve casing opening into said lower chamber, each additional port opening into said upper chamber being vertically aligned with an additional port opening into said lower chamber, shoe valve means in said upper chamber and shoe valve means in said lower chamber, actuator means connected to said shoe valve means in both said upper chamber and said lower chamber to simultaneously rotate said shoe valve means in said upper chamber and said shoe valve means in said lower chamber from one of said two additional ports opening into said upper chamber and into said lower chamber to the other of said two additional ports opening into said upper chamber and into said lower chamber, a non-resilient linkage connecting said actuator means to said shoe valve means in said upper chamber and a non-resilient linkage connecting said actuator means to said shoe valve means in said lower chamber to move said shoe valve means in said upper and lower chambers toward and away from an additional port in said upper chamber and an additional port in said lower chamber to open and close said two additional ports, said actuator means including a vertically and rotationally movable control rod located centrally of said valve casing and having an upper end extending through said cover plate, a lever attached to said upper end of said control rod for rotating said rod to move said shoe valve means in said upper chamber and said shoe valve means in said lower chamber between said two additional ports in said upper chamber and between said two additional ports in said lower chamber and for moving said control rod vertically to operate said non-resilient linkages to move said shoe valve means toward and away from two additional ports to open and close an additional port in said upper chamber and an additional port in said lower chamber, a cylindrical member extending upwardly from the upper surface of said cover plate and surrounding the upper end of said control rod, said cylindrical member having an arcuate slot formed therein extending through approximately 180° of its periphery, and a notch formed in said cylindrical member extending upwardly from each end of said arcuate slot and vertically aligned with the center line of an additional port in said upper chamber and the vertically aligned additional port in said lower chamber, said lever extending out of said cylindrical member through said arcuate slot, whereby movement of said lever from said notch at one end of said arcuate slot to said notch at the other end of said arcuate slot rotates said control rod and said shoe valve means from one of said additional ports in said upper chamber and the vertically aligned additional port in said lower chamber to the other additional port in said upper chamber and the vertically aligned additional port in said lower chamber so that said shoe valve means in said upper and lower chambers can simultaneously close one of said additional ports opening into said upper chamber and the vertically aligned additional port opening into said lower chamber so that fluid entering said upper chamber through said first port may flow out of the open additional port opening into said upper chamber and may enter said lower chamber through the open additional port opening into said lower chamber and exit from said lower chamber through said second port.

4,501,296

DEVICE FOR CHARGING AN ELECTROCHEMICAL MEASURING APPARATUS

Hermann Marsoner; Karl Harnoncourt, and Helmut List, all of Graz, Austria, assignors to AVL AG, Schaffhausen, Switzerland

Filed Nov. 1, 1983, Ser. No. 547,589
Claims priority, application Austria, Nov. 19, 1982, 4229/82
Int. Cl.³ F16K 11/02
U.S. Cl. 137—625.41 3 Claims



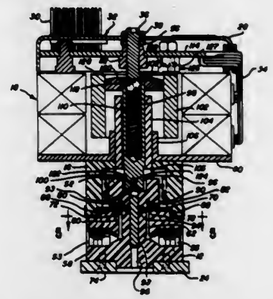
1. A device for charging an electrochemical measuring apparatus alternatively with sample, reference and cleaning media, comprising a fixed feed line for a measuring chamber of said apparatus, a control unit having separate input fittings respectively for the media and for connecting said fittings to said feed line, said control unit comprising a feeder part having a through bore, said input fittings for only the reference media being carried by said feeder part and having openings communicating with said bore, a fixed conduit for the sample and cleaning media, a pipe section extending through said bore and being rotatable about its central axis relative to said bore and relative to said feed line and said conduit, means for sealing said pipe section against the wall of said bore, the wall of said pipe section having at least one radial bore capable of communicating with said reference media openings one at-a-time upon relative rotation between said pipe section and said feeder part bore, one end of said pipe section extending into said feed line and being rotatably sealed thereagainst, an opposite end of said pipe section facing away from the measuring chamber defining one of said input fittings for the sample and cleaning media, said one input fitting extending into said conduit and being rotatably sealed thereagainst, and means cooperating with said pipe section to effect controlled rotation thereof.

4,501,297

ROTARY VALVE

Joseph Baker, Somerville, N.J., assignor to Automatic Switch Company, Florham Park, N.J.

Filed Apr. 8, 1982, Ser. No. 366,728
Int. Cl.³ F16K 11/02, 31/02, 37/00
U.S. Cl. 137—625.46 9 Claims



5. In a rotary valve including a body having a plurality of flow passageways therein, a rotor for providing communication between at least one pair of said flow passageways, said rotor being in sealing engagement with said body and drive means for rotating said rotor into alignment with various pairs of the flow passageways, the improvement wherein said drive means includes

a rotating member for engaging the rotor to impart rotation thereto, said rotating member having a substantially spherical surface and said rotor having a substantially cylindrical surface, the spherical surface of said rotating member contacting the cylindrical surface of said rotor for accommodating rocking of the rotor; and

a stationary member for applying an axial force to said rotor along the axis of rotation for sealing the rotor and the body.

4,501,298

SOLENOID ACTUATED VALVE DEVICE

Masami Inada, Kariya, and Kenji Hashimoto, Toyota, both of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Sep. 1, 1982, Ser. No. 413,604
Claims priority, application Japan, Sep. 11, 1981, 56-144109
Int. Cl.³ F16K 11/07, 31/08
U.S. Cl. 137—625.48 4 Claims

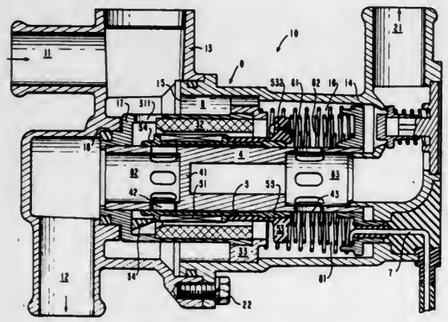
1. A solenoid actuated valve device for controlling the flow of fluid comprising:

a body having an inlet port, at least one outlet port and a bore communicating with said ports at the opposite ends thereof, respectively,

a magnetic hollow tubular core axially mounted within said body for dividing said bore into an annular outer chamber and at least one inner chamber communicating with said outlet and inlet ports, said core having at least one radially extending aperture therethrough for fluid communication between said chambers,

a non-magnetic bobbin, having valve means and at least two radially outwardly extending and circumferentially spaced projections, slidably mounted on an outer periphery of said core to control the effective open area of said aperture, said projections defining a first series of fluid passages therebetween for decreasing the dynamic fluid pressure axially acting thereon,

spring means seated at one end thereof against said projections of said bobbin for biasing said bobbin,



a solenoid coil wound on said bobbin,

permanent magnetic means secured in said body so that the magnetic flux thereof intersects the winding of said solenoid coil at right angles thereto, and

electromagnetic means defining a magnetic circuit with said core and said permanent magnetic means to provide a magnetic force causing said bobbin to move axially against said spring means when electric current passes through said solenoid coil, said electromagnetic means including a magnetic yoke and an annular member for supporting said yoke in said body, said annular member having radially outwardly extending and circumferentially spaced projections defining a second series of fluid passages for guiding the flow of fluid from said inlet port into said first series of passages between said projections of said bobbin.

4,501,299

PLUNGER-TYPE VALVE

Michael A. Klimowicz, Cupertino, Calif.; Vytautas J. Toliusis, Paw Paw Township, Van Buren County, and Stanley M. Loveless, Oshtemo Township, Kalamazoo County, both of Mich., assignors to Humphrey Products Company, Kalamazoo, Mich.

Filed May 21, 1982, Ser. No. 380,574

Int. Cl.³ F16K *11/02, 31/05*

U.S. Cl. 137—625.65 **20 Claims**

1. An electrically-operated plunger-type valve assembly, comprising:

housing means including first and second housing parts which are joined together and define an interior chamber at the interface therebetween;

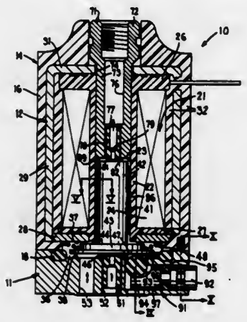
electrical winding means stationarily associated with said first housing part and including a central sleevelike spool having an electrical winding therearound, said sleevelike spool defining therein an elongated central opening which extends along a central longitudinal axis of the winding means and opens into said interior chamber;

said winding means including a magnetically conductive frame disposed in surrounding relationship to said electrical winding, said magnetically conductive frame including an end plate which extends across one axial end of said winding means and has a central opening therethrough aligned with the central opening of said sleeve, said end plate defining an axial boundary for said interior chamber;

plunger means of a generally T-shaped configuration supported for limited reciprocal axial movement along said longitudinal axis, said plunger means including an elongated substantially cylindrical stem movably guidably supported within the central opening of said spool, said plunger means including a radially enlarged platelike head fixed to one end of said stem and positioned within said interior chamber, said platelike head projecting radially outwardly from said stem so as to substantially radially overlap said end plate, said head having a back face which is positioned in axially opposed relationship to said end plate and is separated therefrom by a narrow air gap;

first and second ports formed in said housing means and communicating with said interior chamber, said first port extending through said second housing part from an outer surface thereof for direct communication with said interior chamber, said first port being substantially coaxially aligned with said longitudinal axis;

a cylindrical orifice member of a stiff elastomeric material stationarily seated on said second housing part within said first port and defining a small-diameter orifice therethrough for communication with said interior chamber, said orifice member having an inner end defining thereon an end surface which is disposed axially opposite said head



of said plunger means, said end surface defining thereon an annular valve seat in surrounding relationship to said orifice;

said orifice member being insertable into said first port from the axially outer end thereof so as to control the desired axial spacing between said valve seat and said head, said second housing part having a surrounding wall defining said first port which is free of shoulders and the like which would prevent the cylindrical orifice member from being axially slidably inserted into said first port from the outer end thereof, said orifice member being stationarily held in position within said first port by means of a compressive interference fit between the periphery of the orifice member and the surrounding wall of the first port, said surrounding wall over at least a portion of the axial extend thereof including a plurality of ribs which project radially inwardly for compressively deforming the peripheral portion of the orifice member for stationarily seating the orifice member on the second housing part, said plurality of ribs being circumferentially spaced around the first port and extending axially thereof to permit the orifice member to be axially slidably inserted into said first port; and

said head of said plunger means defining thereon a nondeformable front face which is disposed axially opposite said annular valve seat and is positioned closely adjacent same, said front face sealingly engaging said valve seat when said plunger means moves into engagement with said orifice member to define a valve closing position.

4,501,300

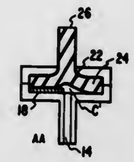
CONTINUOUS CATHETER FLUSHING APPARATUS

John B. Murphy, West Roxbury, Mass., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Nov. 1, 1982, Ser. No. 437,979

Int. Cl.³ F16K *7/12*

U.S. Cl. 138—46 **2 Claims**



1. A valve assembly, comprising

walls defining a cavity having first and second opposed inner surfaces,

means defining two passageways communicating with said cavity at spaced areas of said first inner surface,

means forming a ridge on said first inner surface and extending above it that is parallel to a line between said areas,

a valve actuating member of elastic material having a base section and a tab extending therefrom, said base section being compressed between said first and second inner surfaces so as to form a seal with said first surface, said base section draping over said ridge so as to form a channel communicating between said passageways, and

means defining an opening in the wall having the second inner surface, said tab extending through said opening to the outside of the valve assembly.

4,501,301

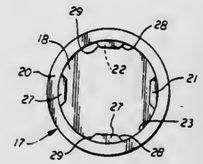
PIPE THREAD PROTECTOR

Roger L. Snow, Sr., 17307 Edenbridge Ct., Spring, Tex. 77379, and Thomas J. Atkinson, 14711 Oak Bluff Ct., Houston, Tex. 77070

Division of Ser. No. 284,690, Jul. 20, 1981, Pat. No. 4,399,092. This application Jul. 11, 1983, Ser. No. 512,689

Int. Cl.³ F16L *57/00*

U.S. Cl. 138—96 T **9 Claims**



1. A thread protector for threaded pipe or the like, formed in a mold, comprising

a cup shaped or hollow cylindrical member of soft, elastic thermoplastic material having a rear end or closed end wall, a cylindrical side wall with a smooth cylindrical exterior surface free from longitudinal mold part lines and an open forward end,

a plurality of circumferentially oriented lugs spaced circumferentially from each other on and extending from the inner surface of said side wall and integral therewith and of a size and shape permitting the same to be forced over the threaded end of a pipe and to fit into and engage the threads thereof to prevent easy and accidental removal therefrom,

each of said lugs having a rear face toward the rear end of said hollow member extending substantially normal to the axis thereof and a forward face in the form of an inclined surface forming an acute dihedral angle therewith sloping toward said open end,

each of said lugs having side walls on each side thereof tapering outward from said rear face and said forward face, and

each of said lugs being sufficiently thin to permit the same to be compressed completely into the wall of said hollow member during formation and removal from said mold and having tapered edges on each side of the lug facilitating the removal of said hollow member from said mold without shearing the same from the wall.

4,501,302

AIR GAP PIPE

Jon W. Harwood, Toledo, Ohio, assignor to APX Group, Inc., Toledo, Ohio

Filed Oct. 14, 1983, Ser. No. 541,709

Int. Cl.³ F16L *11/00*

U.S. Cl. 138—113 **5 Claims**



1. A non-linear air gap pipe for carrying heated vehicular exhausts, said air gap pipe comprising:

an inner pipe bent into a selected non-linear configuration for carrying the vehicular exhaust gases; and

an outer pipe concentrically disposed around the inner pipe with an air gap therebetween, said outer pipe including a plurality of resilient supports extending inwardly and contacting the inner pipe, said outer pipe being formed by first and second longitudinal halves with said first and second halves being joined together at selected locations along opposed longitudinal sides such that vents are defined between said selected locations, whereby said outer pipe and said vents control the flow of heat from said inner pipe.

4,501,303

FORMING FABRIC

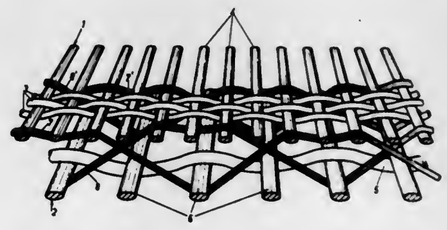
Lars B. Österberg, Halmstad, Sweden, assignor to Nordiskafilt AB, Halmstad, Sweden

Filed Jun. 14, 1982, Ser. No. 388,345

Claims priority, application Sweden, Jun. 23, 1981, 8103920

Int. Cl.³ D03D *15/02*

U.S. Cl. 139—425 A **4 Claims**



1. An improved double-layer type of forming fabric for use in papermaking, cellulose and similar machines, said forming fabric consisting of two integral weaves, each one of said

weaves comprising its separate sets of respective warp threads and weft threads, the first one of said weaves, the top cloth, arranged in the position of use of said fabric to face the material being formed, said top cloth being made up by thinner threads than the second one of said weaves, the bottom cloth, the improvement comprising sequestial positions in the pattern of said top cloth where a thread in the weave thereof does not appear, pairs of adjacent additional threads running in the same direction and interconnecting said first and second weaves, said pairs of threads repeating in sequence and alternately passing downwards from said top cloth to interweave with said bottom cloth, each of said respective pairs interweaving with said top cloth in one of said sequential positions whereby to complete the pattern of said top cloth.

4,501,304

APPARATUS FOR LOOPING THE OUTERMOST CONVOLUTIONS OF SPIRAL BINDERS FOR NOTE BOOKS OR THE LIKE

Hartmut Lehmann, Nürtingen, Fed. Rep. of Germany, assignor to Womako Maschinenkonstruktionen GmbH, Nürtingen, Fed. Rep. of Germany

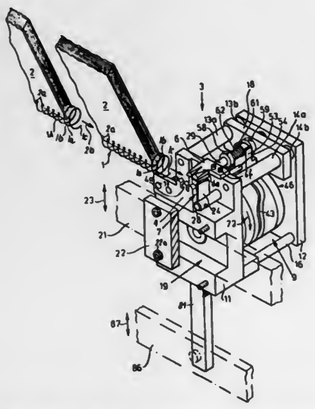
Division of Ser. No. 341,194, Jan. 20, 1982, , which is a division of Ser. No. 156,262, Jun. 3, 1980, Pat. No. 4,327,780. This application Aug. 16, 1983, Ser. No. 523,746

Claims priority, application Fed. Rep. of Germany, Dec. 13, 1979, 2950120

The portion of the term of this patent subsequent to May 4, 1999, has been disclaimed.

Int. Cl.³ B21F *3/00*

U.S. Cl. 140—103 **2 Claims**



1. In an apparatus for looping the end portion of the outermost convolution around the neighboring convolution of a spiral wire binder whose convolutions extend through the marginal perforations of a stack of paper sheets or the like, the combination of means for locating the binder in a predetermined position, said locating means having a guide surface; mobile means for clipping the outpermost convolution of the binder in said position; mobile means for bending the end portion of the outermost convolution of the binder in said position over the neighboring convolution and along said surface; mobile means for looping the clipped and bent end portion of the outermost convolution around the neighboring convolution of the binder in said position, said looping means including a rotary device having an eccentric wire engaging portion; and means for moving said clipping, bending and looping means, including a plurality of rotary cams.

4,501,305

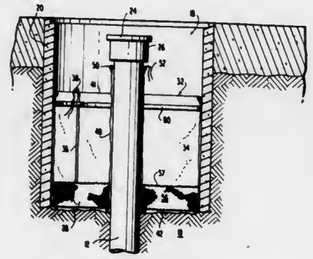
RECEPTACLE FOR COLLECTION OF FUEL SPILLS

J. Richard Zola, 35 Lora Stirling Dr., Morristown, N.J. 07960, and Stanley W. Prenosil, 920 Lyndale, Rochester, Mich. 48063

Filed Jun. 16, 1983, Ser. No. 504,993

Int. Cl.³ B65B *1/04*

U.S. Cl. 141—86 **11 Claims**



1. A receptacle for collecting fluids spilled during discharge of said fluids into a fill pipe or other opening through which filling of a container or liquid passage is to be effected comprising:

a substantially vertical, continuous, outer side wall of flexible material impervious to said fluid, the upper periphery of said wall forming an open neck when said receptacle is disposed to collect said fluids;

a water permeable substantially horizontal bottom wall having a central aperture, the periphery of said bottom wall being joined throughout its periphery to the lower periphery of said side wall;

an inner substantially vertical wall joined at its lower end to said aperture and a neck at the opposite upper end, said neck being adapted to surround the neck of a fill pipe or other aperture through which fluids are discharged into a container for said fluids; and

a layer of absorbent material on said bottom wall adapted to absorb said fluid.

4,501,306

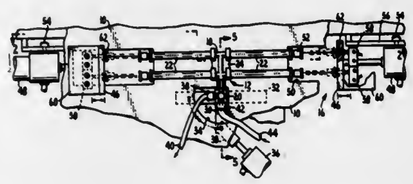
AUTOMATIC SYRINGE FILLING SYSTEM

George Chu, Sunnyvale, and Sharon Casella, San Jose, both of Calif., assignors to Collagen Corporation, Palo Alto, Calif.

Filed Nov. 9, 1982, Ser. No. 440,324

Int. Cl.³ B65B *3/04*

U.S. Cl. 141—94 **24 Claims**



1. Apparatus for automatically filling each of a plurality of syringes substantially simultaneously with a predetermined amount of fluid, comprising:

a manifold having an input port for receiving the fluid and a plurality of output ports each adapted to be connected to one of said plurality of syringes;

a single pump for supplying the fluid to the input port of said manifold;

a plurality of detectors respectively located at predetermined spaced positions from the output ports of said manifold so as to detect when the plunger of each syringe connected to said manifold has been extended a predetermined amount; and

means responsive to said detectors for interrupting the supply of fluid to said manifold when all of the plungers of syringes connected to said manifold have been extended by said predetermined amount.

4,501,307

MACHINE FOR FILLING AND CLOSING TWO-PIECE HARD GELATINE CAPSULES

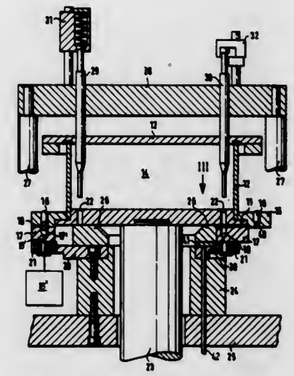
Theo Moser, Steinenberg, and Götz Mader, Korb-Kleinheppach, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Mar. 18, 1982, Ser. No. 359,330

Claims priority, application Fed. Rep. of Germany, Mar. 18, 1981, 3110483

Int. Cl.³ B65B *1/24*

U.S. Cl. 141—258 **5 Claims**



1. A machine for filling and closing hard gelatine capsules, wherein a container having powder therein includes means for pressing said powder into openings for forming preformed charges of powder in a revolving dispensing disc positioned beneath said container, means for pushing the preformed charges of powder as blanks through said disc into portions of capsules, means positioned beneath said disc having at least one recess for holding a lower capsule portion, said container comprising a jacket which surrounds said dispensing disc, a lid for said container, said lid having apertures for said pressing and pushing means, characterized in that said dispensing disc comprises a ring for revolving with said disc and provided with means for receiving an upper capsule portion, and wherein said means positioned beneath said disc comprises at least one curve-controlled element for displacing said recess for holding said lower capsule portion.

4,501,308

HINGE TEMPLATE GUIDE WITH HOLDING PINS

Frank E. Sherman, 2050 Federal, Costa Mesa, Calif. 92627

Filed May 16, 1983, Ser. No. 494,945

Int. Cl.³ B27F *5/12*

U.S. Cl. 144—144.5 **18 Claims**

1. A template for providing a routing tool with a pre-established pattern wherein the improvement comprises:

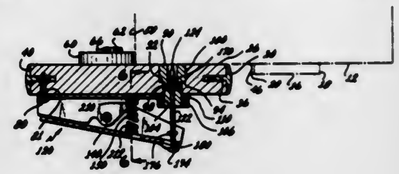
means for forming a pre-established pattern that is to be routed;

means for securing said forming means into proximate connected relationship with an area that is to be routed in the form of at least a pin that is driven into said proximate area to be routed;

a pivoting lever;

a support upon which said lever is pivotally connected;

means for attachment of said support to said forming means; and,



means for connecting said lever to said pin so that after said pin is driven into a surface that is to be routed said lever can be pivoted to remove said pin from the surface into which it has been driven.

4,501,309

PORTABLE WOOD SPLITTER

Leon Sinden, 412 Sperry, Bakersfield, Calif. 93307

Filed Aug. 8, 1983, Ser. No. 521,523

Int. Cl.³ B27L *7/00*

U.S. Cl. 144—193 A **10 Claims**



1. A wood splitter including a pair of upstanding vertically elongated components having upper and lower ends, means pivotally interconnecting the upper ends of said components for relative swinging movement of the lower ends thereof toward and away from each other, the lower end of one of said components including abutment surface means facing toward the lower end of the other of said components, the lower end of said other component including wedge means facing toward said abutment surface means, motor means operatively connected between said components for relatively angularly displacing said components to forcibly swing the lower ends of said components toward each other, a first of said components including depending foot structure supported therefrom for stationary support of said first component from an upwardly facing support surface such as a ground surface and the second of said components including support wheel means journalled from the lower end thereof for rolling support from said support surface.

4,501,310

OSCILLATING CUTTING APPARATUS

Guillermo A. Valdes, 4350 NW. 8 Ter., Room 300, Miami, Fla. 33126; Fernando F. Figueredo, 524 Ridgewood Rd., Key Biscayne, Fla. 33149; Benjamin G. Pacheco, 1090 W. 69 Pl., Hialeah, Fla. 33014, and Armando Framil, 45 SW. 28 Rd., Miami, Fla. 33129

Filed Sep. 29, 1982, Ser. No. 427,836

Int. Cl.³ A01G *23/08*

U.S. Cl. 144—34 R **3 Claims**

1. A cutting apparatus comprising:

(a) a flexible cutting element having first and second ends and cutting teeth disposed at intervals in a complete circle

around the outer periphery of the cutting element, said cutting teeth being disposed alternately in opposite directions to enable said cutting element to cut a selected material when an oscillating motion is imparted,

(b) a frame coupled to said cutting element for receiving and guiding said cutting element,

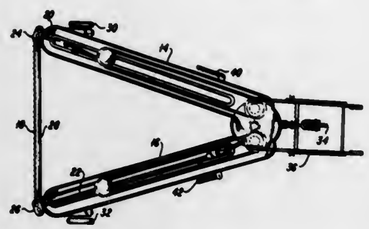
(c) means coupled to said cutting element and to said frame for imparting an oscillatory motion to said element thereby performing a cutting operation, said oscillating means including:

i. a shaft having first and second ends, said first end being coupled to rotating means to cause the shaft to rotate,

ii. said second end of said shaft having a rotating sprocket attached,

iii. said rotating sprocket having a first side-sprocket coupled on one side and a second side-sprocket coupled on the opposite parallel side,

iv. said first side-sprocket being connected to the first end of a first shaft and the second side-sprocket being connected to the first end of a second shaft,



v. said first shaft having a first drive-sprocket connected on the second end and said second shaft having a second drive-sprocket connected on the second end,

vi. a first chain, similar in structure to a bicycle chain, placed around said first drive-sprocket, and extended to and placed around a first free-rotating-sprocket,

vii. a second chain, similar to the first chain, placed around said second drive-sprocket and extended to and placed around a first free-rotating sprocket,

viii. a first drive-arm connected on its first end to said first chain by a free rotating pin connection and connected to a first drive block at its second end,

ix. a second drive arm connected on its first end to said second chain by a free rotating pin connection and connected to a second drive block at its second end,

x. guide means connected to said first and second drive blocks and to the cutting element so that when the two chains are caused to rotate, the two chains in turn cause the two drive arms to push the two drive blocks back and forth along a straight line thus converting the chains' rotating motions to oscillating motions.

4,501,311

SYSTEM FOR PRODUCTION OF ROMAN TYPE SHADES

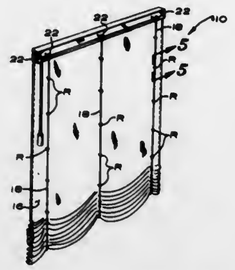
Glenn A. Folland, 405 Cedar Ave., Minneapolis, Minn. 55454

Filed Oct. 21, 1983, Ser. No. 544,365

Int. Cl.³ E06B *9/00*

U.S. Cl. 160—127 **5 Claims**

1. In connection with Roman type shades formed of multilayers of material and including pulling cords strung through rings attached to the shade such that the shade is generally flat when down and the shade falls into pleats when the pulling cords are pulled, the improved ring attachment system comprising: ring attachment devices comprising, in combination: an array of linearly connected, automatically distributing, ring connectors formed integrally with an array of rings, with the ring connectors including a T-shaped member having a shank portion including a first end and a second end and having a crossbar including a first end and a second end, with the first end of the shank portion being integrally attached to the ring, with the second end of the shank portion being integrally attached to the crossbar substantially midway between the first and second ends of the crossbar; with the ring connectors being connected in the array by a carrier bar having a multiplicity of integrally formed tongues, each tongue having a free end, with the free ends of the tongues being integrally attached to the crossbars of the ring connectors generally opposite of the connection of the shank with the crossbar and with the crossbars of the array of connectors being generally parallel to each other and perpendicular to the carrier bar; and an attachment tool comprising, in combination: a hollow needle having a slot, means for automatically feeding the array of connectors



serially to the hollow needle for aligning the crossbar of the connector generally parallel to, aligned with, and for introduction into the needle and for aligning the shank portion with and for introduction into the slot of the hollow needle; and means for forcing the crossbar of the ring connector into and through the needle and moving the shank portion of the ring connector into and through the slot of the hollow needle for inserting the shank portion of the ring connector through the multilayers of Roman shade material and for positioning the crossbar to be parallel and abut with the multilayers of material on the opposite side of the shade from the ring for preventing the shank portion of the ring connector from being pulled from the shade by the abutment of the crossbar with shade material and thus firmly attaching the ring to the shade in a one step operation.

4,501,312

METHOD FOR FORMING A HOLE OF EYELESS SUTURE NEEDLE

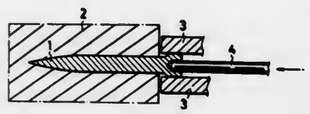
Kanji Matsutani, Takanezawa, Japan, assignor to Matsutani Seisakusho, Takanezawa, Japan

Filed Sep. 21, 1981, Ser. No. 304,196

Claims priority, application Japan, Jun. 29, 1981, 56-99604

Int. Cl.³ B21G *3/18*

U.S. Cl. 163—5 **10 Claims**



1. A method of forming an eyeless suture needle having a tapered end, an intermediate portion, and a base end, the base end having a hole, said method comprising: providing a needle material having oxidation resistance; providing a heat resistant pressing tool having a melting point higher than that of the needle; positioning the needle in a holder with the base end of the needle extending beyond the holder; providing a tubular restraining tool having an inner diameter larger than the outer diameter of the needle to surround the base end of the needle; heating the base end of the needle to a temperature near its melting point; pressing the heat resisting perforating tool into the base end of the needle material while the base end of the needle material is near its melting point to form a hole and an enlarged circumferential outer surface defined by the interior of said tubular restraining tool; and cutting off part of the enlarged circumferential surface to provide a needle of uniform outer diameter at its base end and intermediate portion.

4,501,313

TRANSPORT UNIT FOR CASTINGS

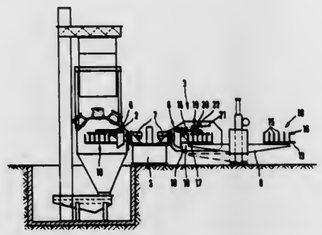
Martin Weis, Ettlingen, and Adolf Scholz, Karlsruhe, both of Fed. Rep. of Germany, assignors to BMD Badische Maschinenfabrik Durlach GmbH, Fed. Rep. of Germany

Filed Nov. 12, 1982, Ser. No. 441,179

Claims priority, application Fed. Rep. of Germany, Nov. 14, 1981, 3145316

Int. Cl.³ B22D *29/00*

U.S. Cl. 164—404 **8 Claims**



1. In a foundry apparatus for cleaning castings with mold sand adhering thereto, comprising conveyor means for moving a casting to a supporter means for moving said casting from said conveyor means into and through an abrasive blasting apparatus for cleaning mold sand from said casting while rotating said casting about a generally horizontal axis as it is being cleaned in said abrasive blasting apparatus, wherein the improvement comprises a transport means for receiving and supporting said casting as it is moved by said conveyor means to said supporter means, said transport means including a grid-like lower support for said casting and connection means for connecting said transport means to said supporter means, said transport means being held in a generally horizontal position when connected to said supporter means by said connection means, and wherein said supporter means includes a keeper element which is mounted on said supporter means and which forms a basket with said transport means for retaining said casting when said transport means is connected to said supporter means for movement through said abrasive blasting apparatus while being rotated about a generally horizontal axis, said keeper element being mounted on said supporter means for movement relative to said transport means so that said basket can be opened and shut.

4,501,314

CASTING SUPPORT APPARATUS FOR CONTINUOUS CASTING EQUIPMENT

Masaru Wakabayashi, Osaka, and Kuniaki Ono, Nara, both of Japan, assignors to Hitachi Shipbuilding & Engineering Ltd., Osaka, Japan

Continuation of Ser. No. 372,946, Apr. 29, 1982, abandoned. This application Feb. 3, 1984, Ser. No. 576,779

Int. Cl.³ B22D *11/124, 11/12*

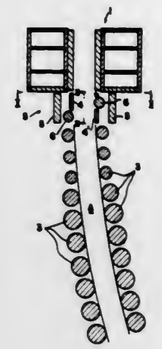
U.S. Cl. 164—441 **6 Claims**

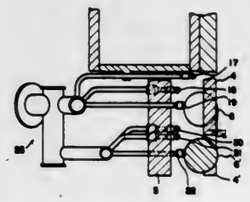
1. A casting support apparatus for continuous casting equipment comprising pairs of cooling plate means arranged in opposed relation to each other immediately below a mold and in successive vertically divided stages for guiding and supporting the casting as held between the pairs of plate means, said stages including an upper stage and at least one successive lower stage, each pair of plate means in each stage being composed of pairs of separate cooling plates spaced horizontally and individually detachably mounted to one of a pair of back plates, each cooling plate being provided with groove means;

a plurality of cooling rolls each rotatably mounted in a space formed between each two adjacent cooling plates in each stage, each cooling roll being formed with annular groove means on its outer periphery;

cooling plate jet nozzles arranged for introducing a cooling fluid into a space between the casting and the cooling plates in each stage from above the cooling plates;

cooling roll jet nozzles arranged for introducing a cooling





fluid into a space between the casting and the cooling rolls in each stage from above the cooling rools; and

auxiliary jet nozzles arranged for applying a cooling fluid to the rear surfaces of the cooling plates in each stage; each cooling plate in said upper stage being provided with extension means positioned immediately above and adjacent cooling roll in said upper stage, the upper portions of the cooling plates in each said successive lower stage being positioned immediately below the respective cooling rolls in the adjacent stage above said successive lower stage and in vertically overlapping relation with the lower portions of the cooling plates in said adjacent stage.

4,501,315

METHOD OF CONTROLLING AND REGULATING OPERATIONAL PARAMETERS OF A MACHINE FOR CONTINUOUSLY CASTING BANDS BETWEEN CYLINDERS, ALLOWING ADHESION TO BE AVOIDED

Serge Bercovici, Grenoble, France, assignor to Cegedur Societe de Transformation de l'Aluminium Pechiney, Paris, France

Filed Jan. 18, 1982, Ser. No. 339,846

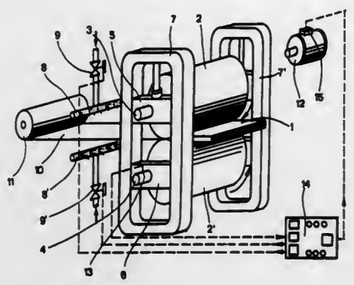
Claims priority, application France, Jan. 19, 1981, 81 01185

Int. Cl.³ B22D *11/16*

U.S. Cl. 164—454 **15 Claims**

1. A method of controlling and regulating operational parameters of a machine for continuous casting bands between cylinders to avoid adhesion by the detection of microadhesion, said method comprising measuring the frequency of variation

of the torque exerted by a band on one of the cylinders, comparing the frequency of the torque variations corresponding to each cylinder measured with a reference frequency, and, when the measured frequency is greater than the reference frequency, doing at least one of (a) reducing the casting speed of the machine, and (b) increasing the lubricant flow rate, until the measured frequency is lower than the reference frequency followed by increasing the casting speed.

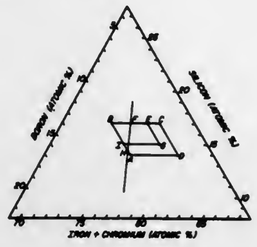


4,501,316

METHOD OF CASTING AMORPHOUS METALS

S. Leslie Ames, Sarver; Thomas H. Gray, Pittsburgh, and Lewis L. Kish, Sarver, all of Pa., assignors to Allegheny Ludlum Steel Corporation, Pittsburgh, Pa.

Division of Ser. No. 382,823, May 27, 1982, Pat. No. 4,450,206. This application Aug. 31, 1983, Ser. No. 528,289
Int. Cl.³ B22D *11/06*
U.S. Cl. 164—463 **2 Claims**



1. A method of casting an amorphous strip material having a width of at least one inch, a thickness of at least 0.001 inch, a 60 Hertz core loss of less than 0.163 watts per pound at 12.6 kilogauss, saturation magnetization (B_{75H}) of at least 14 kilogauss, a coercive force of less than 0.045 oersteds and is at least singularly ductile, comprising the steps of:

melting an alloy consisting essentially of 6–10% boron and 14–17% silicon, 0.5–3.0% chromium, by atomic percentages, with no more than incidental impurities, and the balance iron;

while maintaining the alloy molten, continuously delivering a stream of molten alloy through a slotted nozzle and onto a casting surface disposed within 0.025 inch of the nozzle;

continuously moving the casting surface past the nozzle at a speed of 200 to 10,000 linear surface feet per minute;

at least partially solidifying the strip on the casting surface; and

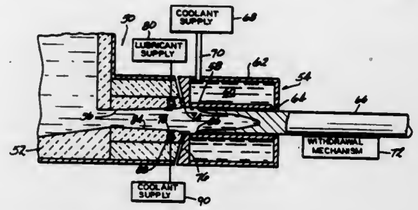
separating the at least partially solidified strip from the casting surface.

4,501,317

CASTING SYSTEM HAVING LUBRICATED CASTING NOZZLES

Robert S. Sokolowski, Madison, Conn., assignor to Olin Corporation, New Haven, Conn.

Filed Nov. 3, 1982, Ser. No. 438,674
Int. Cl.³ B22D *11/00*
U.S. Cl. 164—472 **11 Claims**



1. An apparatus for casting molten metal, said apparatus comprising:

a mold for effecting solidification of said molten metal into an ingot;

means adjacent to an inlet portion of said mold for feeding said molten metal into said mold, said feeding means being separate from said mold and being formed from a porous material; and

means for delivering a cooled lubricant to a surface of said feeding means contacting said molten metal to substantially prevent adhesion of any solidified metal on said surface, said lubricant delivering means comprising a first passageway through which said lubricant flows embedded within said porous material of said feeding means, a second concentric passageway containing a coolant located within said first passageway, and at least one opening in said first passageway for permitting lubricant from said first passageway to flow through said porous material to said molten metal contacting surface.

7. A process for casting molten metal, said process comprising:

providing means for supplying molten metal to a mold adjacent an inlet portion of said mold, said supplying means being separate from said mold;

feeding said molten metal into said mold; and

at least partially solidifying said molten metal within said mold, wherein the improvement comprises:

forming at least one wall of said molten metal supply means from a porous material; flowing a lubricant through a first passageway embedded in said porous material; flowing a coolant through a second concentric passageway located within said first passageway; and expelling said lubricant from said first passageway so that cooled lubricant flows through said porous material to a surface of said at least one wall contacting said molten metal to substantially prevent adhesion of any solidified metal on said surface and to reduce the likelihood of tearing any solidified metal within said molten metal supply means.

4,501,318

HEAT RECOVERY AND AIR PREHEATING APPARATUS

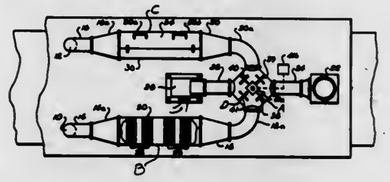
William H. Hebrank, 14 Hermitage Rd., Greenville, S.C. 29615

Filed Sep. 29, 1982, Ser. No. 428,189
Int. Cl.³ F28D *17/00*
U.S. Cl. 165—1 **17 Claims**

12. In a method of recovering heat and heating replacement air in industrial heat treating ovens of the type which includes alternately cycling a flow of exhaust gases and replacement air through a set of thermal storage units carried exteriorly of the oven which are connected to the oven by means of spaced ports, storing the heat from the exhaust in one of the thermal storage units while purging the heat previously stored in the other of the thermal storage units to heat the replacement air, wherein the method comprises:

providing a plurality of hot end heat storage filter elements in said thermal storage unit in series flow relation having a high thermal storage capacity for storing heat;

providing a plurality of cold end heat exchange condensor elements in series flow arrangement with said hot end heat storage filter elements in said thermal storage unit having a thermal storage capacity lower than said hot end heat storage filter elements for condensing volatile contaminants in said exhaust gases;



passing said exhaust gases through said hot end heat storage filter elements transferring the heat from said exhaust flow into said hot end heat storage elements and filtering solid contaminants from said exhaust gas flow;

passing said exhaust flow through said cold end condensor elements after removing said solid contaminants and condensating volatile gases in said exhaust flow and collecting said condensate in said cold end condensor element; and

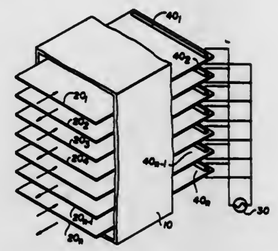
removing said condensated contaminants.

4,501,319

PIEZOELECTRIC POLYMER HEAT EXCHANGER

Seymour Edelman, Silver Spring, Md., and Lowell D. Ballard, Sterling Park, Va., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Continuation of Ser. No. 30,966, Apr. 17, 1979, abandoned. This application Jan. 24, 1983, Ser. No. 460,221
Int. Cl.³ F28D *11/06*; F28G *7/00*
U.S. Cl. 165—84 **2 Claims**



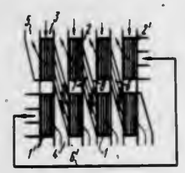
1. A heat exchanger having a plurality of fluid conductive channels for relatively warm and cold fluids respectively separated by a plurality of heat conductive partitions, each of said channel partitions consisting of flexible piezoelectric polymer material; and means connected to each of said partitions applying an alternating current of a predetermined frequency thereto to cause said piezoelectric polymer material to achieve a flexual resonance condition and thereby generate a wave pattern in said partitions to cause a substantial portion of the surface of said partitions to periodically undulate, said last-named means including a signal source and electrode means formed on each partition coupled to said signal source, said electrode means consisting of at least first and second electrodes, first circuit means commonly coupling one side of said signal source to a predetermined number of said first electrodes, and second circuit means commonly coupling the opposite side of said signal source to a predetermined number of said second electrodes.

4,501,320

MULTIFLOW TUBULAR AIR HEATER

Adolf U. Lipets, prospekt Lenina 150a, kv. 38; Boris I. Alexandrov, ulitsa Udarnikov, 8, kv. 19; Svetlana M. Kuznetsova, Revprospekt 16, kv. 21; Jury I. Okerblom, ulitsa Mira 13, kv. 25, all of Podolsk Moskovskoi oblasti; Jury A. Ershov, ulitsa Vorovskogo 8/1, kv. 1, Moscow; Nadezhda A. Frolova, ulitsa Zheleznodorozhnaya, 8/2, kv. 4, Podolsk Moskovskoi oblasti; Valery A. Malkis, ulitsa Ordzhonikidze, 5, kv. 4, Podolsk Moskovskoi oblasti; Ivan A. Sotnikov, ulitsa Mashinostroitelei, 32, kv. 114, Podolsk Moskovskoi oblasti; Alexei Z. Fedosov, ulitsa Burakova, 7, korpus 2, kv. 18, and Robert A. Petrosyan, ulitsa Planernaya, 16, korpus 3, kv. 67, both of Moscow, all of U.S.S.R.

Filed Jul. 30, 1979, Ser. No. 62,178
Int. Cl.³ F28F *9/22*
U.S. Cl. 165—144 **8 Claims**



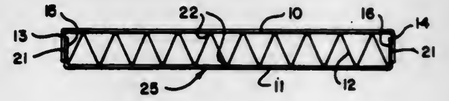
1. A multiflow two-pass tubular air heater with tube bundles located in first and second tiers in gas ducts, comprising: inlet air conduits supplying air to the tube bundles of the first tier in a same overall direction with respect to gas flow; outlet air conduits exhausting air from each tube bundle of the second tier; bypass air conduits supplying air from said tube bundles of said first tier to the tube bundles throughout the height of the second tier, said bypass air conduits connecting each tube bundle of said first tier to a respective tube bundle of said second tier of an adjacent gas duct, the tube bundles of the first tier of a last gas duct being connected to the tube bundles of the second tier of a first gas duct in a manner that all the tube bundles of all the gas ducts are united by the bypass air conduits into a single circuit and in the same overall direction.

4,501,321

AFTER COOLER, CHARGE AIR COOLER AND TURBULATOR ASSEMBLIES AND METHODS OF MAKING THE SAME

John D. Real, Jamestown; David J. Twichell, North Harmony, and Lauren R. Weed, Jamestown, all of N.Y., assignors to Blackstone Corporation, Jamestown, N.Y.

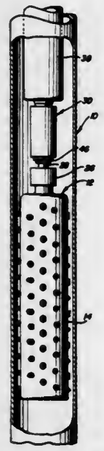
Filed Nov. 10, 1982, Ser. No. 440,518
Int. Cl.³ F28F *3/12*
U.S. Cl. 165—153 **6 Claims**



1. A turbulator assembly comprising an outer channel member having a bottom wall and two transverse side edges, an inner channel member having a bottom wall and two transverse side edges, the side edges of the inner channel interfitting closely within the side edges of the outer channel member to form a generally rectangular enclosure with adjustable separa-

tion, and an accordian shaped fin assembly between said channels having side edges of a plurality of accordian folds which extend above the channel side edges in contact with the bottom wall of both the inner and outer channel members.

4,501,322
HYPER CLEANING CASING BRUSH
Edwin L. Martin, P.O. Box 303, Bakersfield, Calif. 93302
Filed Dec. 8, 1983, Ser. No. 559,466
Int. Cl.³ E21B *37/08*
U.S. Cl. 166—173 **3 Claims**



1. A casing brush including a cylindrical, hollow thick-walled body having upper and lower ends, tubular swivel means carried by the upper end of said body for removal attachment to a supporting tubing section, said body including means closing the lower end of the interior thereof, said body including a plurality of circumferentially and axially spaced blind bores formed therein, a plurality of wire brushes, means removably mounting a wire brush from each of said blind bores and with said wire brushes projecting radially outwardly from said body, said body also including circumferentially and axially spaced radial bores, each of said radial bores having a tubular nozzle removably mounted therein, each of said nozzles including an outer discharge end and an inner inlet end, each of said inlet ends being operative to receive fluid under pressure introduced into said tubular body through said tubular swivel means at the upper end thereof, means supporting each of said spray nozzles from said thick-walled body for shifting between a first extended position projecting outwardly of said thick-walled body and a second retracted position at least substantially fully retracted within the outer confines of said thick-walled body, spring means operatively connected between said nozzles and thick-walled body yieldingly biasing said nozzles toward said extended positions, the outer ends of said brushes being spaced greater radial distances from the center axis of said body than the outer extremities of said nozzles, when the latter are in their first extended positions.

4,501,323
METHOD AND APPARATUS FOR MONITORING THE CORROSIVE EFFECTS OF WELL FLUIDS
F. Glenn Lively, Spring, and Kenneth O. Robison, Humble, both of Tex., assignors to Hughes Tool Company, Houston, Tex.
Filed Dec. 27, 1982, Ser. No. 453,064
Int. Cl.³ E21B *23/03, 49/08*
U.S. Cl. 166—250 **3 Claims**

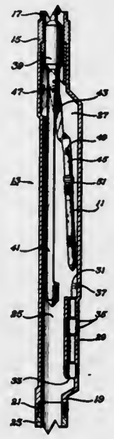
1. A method of monitoring corrosive effects of fluids in a well, comprising the steps of:

installing a well tubing mandrel downhole in well tubing, said well tubing mandrel having a main bore, a side pocket offset from the main bore, a passage between the main bore and the side pocket, and a port between the side pocket and an annulus between the well tubing and well casing;

mounting a pair of coupons in a carrier having two chambers sealed from each other, one coupon being mounted in each chamber;

placing the carrier into the side pocket, said carrier having port means for allowing fluids to communicate with the interior of each chamber, and sealing means between the carrier and the side pocket for sealing between casing fluid from the annulus and tubing fluid from the main bore;

allowing tubing fluid from within the well tubing to communicate with one coupon and casing fluid from the annulus to simultaneously communicate with the other coupon;



removing the carrier from the side pocket; and

inspecting the coupon.

2. An apparatus for monitoring corrosive effects of fluids in a well, for use with a well tubing mandrel having a main bore, a side pocket offset from the main bore, a passage between the main bore and the side pocket, and a port between the side pocket and an annulus between well tubing and well casing, the apparatus comprising:

a cylindrical carrier, having two chambers sealed from each other and port means for allowing fluids to communicate with the interior of each chamber;

a pair of coupons, one coupon being secured in the interior of each chamber; and

sealing means between the carrier and the side pocket for sealing between casing fluid from the annulus and tubing fluid from the main bore.

4,501,324
METHOD FOR IDENTIFYING THE SOURCE OF AN OIL
Burton B. Sandiford, Placentia; E. Reinold Fett, Fullerton, and Harold J. Bickford, Placentia, all of Calif., assignors to Union Oil Company of California, Los Angeles, Calif.
Filed Dec. 27, 1982, Ser. No. 453,506
Int. Cl.³ E21B *47/10, 43/22*
U.S. Cl. 166—250 **15 Claims**

1. A method for tracing a first oil comprising:

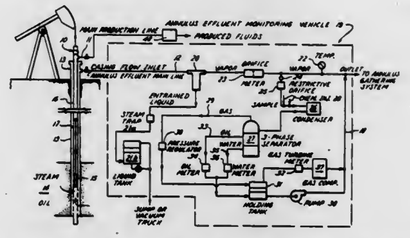
(a) incorporating into said first oil a halogenated hydrocarbon tracer material component comprising at least one halohydrocarbon or halocarbon containing at least 3 halogen atoms and at least 2 carbon atoms per molecule, and having a halogen/carbon atomic ratio of at least one third;

(b) injecting said first oil into a subterranean reservoir;

(c) obtaining from said reservoir a second oil suspected to be or to contain a portion of the first; and

(d) analyzing the second oil for the presence of the halohydrocarbon or halocarbon component by gas chromatography, using a pulsed electron capture detector.

4,501,325
METHOD FOR PREDICTING WORKOVERS AND SHUT-INS FROM ANALYZING THE ANNULUS EFFLUENT OF A WELL
Terry L. Frazier, Paso Robles, Calif.; Henry J. Grimm, Allentown, Pa.; John F. Rooney, Houston, Tex.; Richard S. Allen, Houston, Tex.; Alfred Brown, Houston, Tex., and Donald S. Mims, Houston, Tex., assignors to Texaco Inc., White Plains, N.Y.
Continuation-in-part of Ser. No. 305,439, Sep. 25, 1981,. This application Oct. 6, 1983, Ser. No. 539,602
Int. Cl.³ E21B *43/16*
U.S. Cl. 166—250 **14 Claims**



1. A method of evaluating the annulus effluent of a producing well used in a steam injection process to determine the best disposition for the well, which comprises:

(a) measuring the flow rate of the annulus effluent;

(b) condensing the annulus effluent;

(c) separating the annulus effluent into three phases of light hydrocarbon condensate, water and noncondensable gases;

(d) measuring the quantities of each of the three phases of the annulus effluent;

(e) calculating a ratio of the quantity of light hydrocarbon condensate to the quantity of water in the annulus effluent;

(f) calculating minimum economic oil production from well costs and estimated production revenues;

(g) calculating estimated volume of oil contacted by steam in the formation from previous correlations, said correlations previously drawn between steam and light hydrocarbon condensate produced as vapor after contacting predetermined volumes of oil having the same characteristics as oil from said producing well; and

(h) determining the best disposition of the well using the following guidelines:

(1) if said ratio of light hydrocarbon condensate to water is greater than about 0.08 and actual tubing and annulus production is greater than minimum economic oil production, the well should be left to produce "as is";

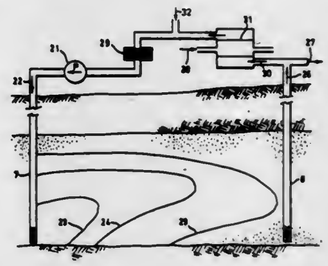
(2) if said ratio is greater than about 0.08 and actual tubing and annulus production is less than minimum economic oil production, a workover should be performed on the well;

(3) if said ratio is less than about 0.08 and actual tubing and annulus production is greater than the minimum economic oil production, the well should be left to produce "as is";

(4) if said ratio is less than about 0.08 and estimated volume of oil contacted by steam is less than the minimum economic oil production and actual tubing and annulus production is less than the minimum economic oil production, the well's tubing and annulus production should be shut-in; and

(5) if said ratio is less than about 0.08 and estimated volume of oil contacted by steam is greater than the minimum economic oil production and actual tubing and annulus production is less than the minimum economic oil production, a workover should be performed on the well.

4,501,326
IN-SITU RECOVERY OF VISCOUS HYDROCARBONACEOUS CRUDE OIL
Neil R. Edmunds, Calgary, Canada, assignor to Gulf Canada Limited, Toronto, Canada
Filed Jan. 17, 1983, Ser. No. 458,517
Int. Cl.³ E21B *43/24*
U.S. Cl. 166—272 **21 Claims**



1. A method for improving the recovery of viscous hydrocarbonaceous oil from a subterranean formation penetrated by at least one injection well and at least one production well, said wells being in fluid communication with said formation, comprising:

(a) establishing a heated communication path between said injection and production wells, in a communication development step,

(b) injecting heated fluid having a viscosity of at least one centipoise at 200° C. into said injection well, in a recirculation step, until a suitable portion of said subterranean formation is heated, said heated fluid being heated to a temperature from substantially 100° C. to 300° C. before being injected, and

(c) recovering produced hydrocarbonaceous oil from said formation, in a recovery step, at least substantially 20% by mass of said heated fluid being viscous hydrocarbonaceous oil produced from said production well.

4,501,327

SPLIT CASING BLOCK-OFF FOR GAS OR WATER IN OIL DRILLING

Philip Retz, 1783 Lanier Pl., NW., Washington, D.C. 20009

Continuation-in-part of Ser. No. 399,259, Jul. 19, 1982, abandoned. This application Apr. 27, 1983, Ser. No. 487,238

Int. Cl.³ E21B *43/10*

U.S. Cl. 166—285 **39 Claims**

1. A method for sealing the wall of a bore hole, the bore hole having a predetermined diameter, the method comprising the steps of:

forming a liner of resilient sheet material into a scroll having a smaller diameter than the predetermined diameter;

locating said scroll around a shaft having a squeegee at one end;

inserting said liner into the bore hole preceded by said squeegee;

allowing said scroll to expand whereby its diameter is increased to substantially the predetermined diameter; and

pressing said liner against the wall of the bore hole.

4,501,328

METHOD OF CONSOLIDATION OF OIL BEARING SANDS

Dean P. Nichols, Dallas, Tex., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Mar. 14, 1983, Ser. No. 474,952

Int. Cl.³ E21B *43/02*

U.S. Cl. 166—288 **6 Claims**

1. A method of forming a semi-solid but permeable coating on unconsolidated sand formations surrounding an oil well, comprising the steps of:

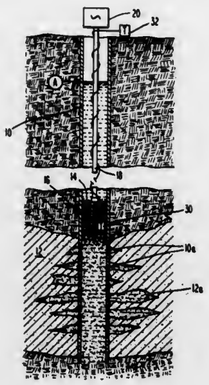
allowing said well to fill with oil;

heating a portion of the oil in said well, said heat being applied at a rate and for a period of time such that the oil juxtaposed to the source of the heat is separated into a lighter fraction and a heavier fraction, said heat being applied to said well at a point above the region of oil production in said well, whereby the fluid in the well in the vicinity of any voids caused by production in said well is not substantially heated;

permitting said lighter fraction to migrate generally upwardly in said well;

applying pressure to the upper end of said well, forcing the heavier fraction downwardly and out into said formation, through any such voids; and

permitting said heavier fraction to be cooled by contact with said formation, whereby said sand is generally consolidated by said heavier fraction having cooled into a semi-solid but permeable coating on said formation.



4,501,329

NON-ABRASIVE PARTICULATE MATERIAL FOR PERMEABILITY ALTERATION IN SUBSURFACE FORMATIONS

Coral L. DePriester, Moraga, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Apr. 18, 1983, Ser. No. 485,921

Int. Cl.³ E21B *33/138*

U.S. Cl. 166—292 **3 Claims**

1. In a method of treating a permeable earth formation containing a petroleum crude from within a well bore penetrating said earth formation wherein a fluid is injected down said well bore and into said formation to mobilize said petroleum crude, and wherein said fluid is prepared at the earth surface and pumped down said well bore and into said formation from a position along said well bore, said fluid including finely divided amorphous particulate material adapted to be pumped with said fluid and positioned in said permeable formation as said mobilized crude moves in response to said injected fluid; the improvement comprising the steps of:

(a) a selecting said particulate material from the group consisting of graphite, carbon black, clay suspensions, quartz and other minerals reduced in size to behave as non-abrasive amorphous materials when flowing with said mobilized crude and having grain sizes in the range of 100 to 600 mesh; and

(b) grading the size range of the particulate material such that the 10% size of the particulate material is between 6 and 100 times smaller than the 90% grain size of the formation materials.

4,501,330

WELL COMPLETION APPARATUS AND METHOD

Juan A. Garcia, Kingwood, Tex., assignor to Exxon Production Research Co., Houston, Tex.

Filed Feb. 3, 1984, Ser. No. 576,827

Int. Cl.³ E21B *43/11*

U.S. Cl. 166—297 **11 Claims**

1. Apparatus for completing a well in which a well bore is drilled from the earth's surface and is provided with a protective casing string extending from the earth's surface to a selected depth in said well bore, comprising:

a production casing string extending from said earth's surface through said protective casing string;

an outer tubing string positioned in said production casing string and having a reduced-diameter stinger section extending from the lower end of said outer tubing string;

an inner tubing string provided with upper and lower spaced-apart fluted hangers and extending from said earth's surface through said outer string into said production casing string;

said production casing string having upper and lower sections, said lower section being of smaller diameter than said upper section;

the lower portion of said upper section being stepped to provide upper and lower polished bore receptacles;



said stinger section of said outer tubing string being provided with an annular external seal unit which sealingly engages said polished bore wall of said lower receptacle; and

means on said inner tubing string and shoulder means formed on said outer tubing string and on said production tubing string for controlling vertical movement of said outer tubing string and said stinger seal unit during high-pressure temperature and density changes in said well.

4,501,331

METHOD OF COMPLETING A WELL

Emmet F. Brieger, Albuquerque, N. Mex., assignor to GEO Vann, Inc., Houston, Tex.

Continuation of Ser. No. 512,233, Jul. 11, 1983, abandoned. This application Feb. 29, 1984, Ser. No. 584,654

Int. Cl.³ E21B *34/12, 43/11*

U.S. Cl. 166—297 **7 Claims**

1. Method of completing a well comprising the steps of:

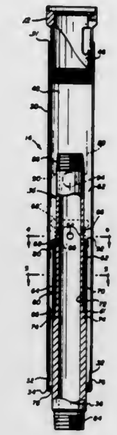
dividing the borehole into an upper and a lower annular area by running a packer actuated vent assembly downhole to a tubing string with the vent thereof being in the open position; connecting a bar actuated vent assembly in underlying relationship respective to the packer actuated vent assembly; connecting a jet perforating gun below the bar actuated vent assembly;

setting the packer and using the setting action for closing the open vent of the packer actuated vent assembly;

communicating the tubing interior with the lower annular area by dropping a bar downhole through the tubing string until the bar arrives at the bar actuated vent assembly, whereupon the downward motion of the bar is arrested and the dissipated energy used for opening the bar actuated vent assembly;

detonating the jet gun by allowing the bar to continue to fall down through the tool string, arresting the downward motion of the bar and using the dissipated energy for detonating the shaped charges of the jet gun;

whereupon, the casing is perforated and production flows through the perforations, up the lower annulus into the port of the bar actuated vent assembly into the tool string, and up the tubing to the surface of the ground.



4,501,332

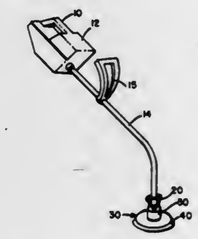
HAND CARRIED PORTABLE WEEDER CONVERTIBLE TO A CULTIVATOR APPARATUS

Robert O. Straayer, Houston, Tex., assignor to Evolution Enterprises, Inc., Houston, Tex.

Filed Sep. 29, 1982, Ser. No. 427,874

Int. Cl.³ A01D *35/26*

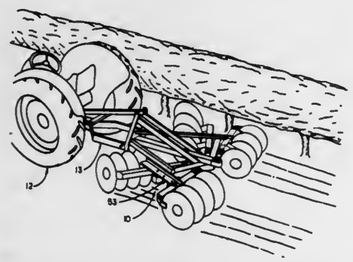
U.S. Cl. 172—41 **5 Claims**



1. A hand carried and operated portable cultivator comprising an elongated support means having a handle at one end and a power head with a rotatable driver means at the other end; motive power means for rotatably driving said driver means about an axis adapted by an operator to be arranged from a position inclined to the earth to be cultivated to a perpendicular position thereto; said motive power means including said power head at said other end; a shaft means operatively connected to said power head on said axis; a cultivator member; attachment means including a spacer member for attaching said cultivator member to said shaft means, said cultivator member including a disc with a central circular top wall portion and with a depending flange around the circumference thereof, the outer wall portion of said flange inclined radially outwardly and downwardly from the top wall portion, the distance from the top of said top wall portion to the bottom of said depending flange being more than twice as large as the thickness of said top wall; said spacer member being more than twice as long as the distance from said top of said top wall portion to the bottom of said depending flange whereby said spacer member spaces the top wall portion of said cultivator

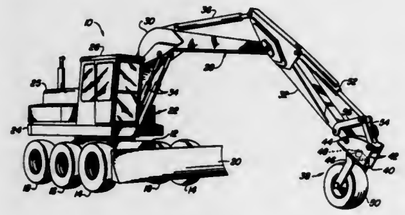
member a distance from said power head to permit said cultivator member to be positioned a substantial distance under the earth while said power head remains above said earth; said elongated support means and handle being adapted to permit an operator to manipulate said elongated support means whereby said cultivator member can be arranged at an angle to the earth and moved into the earth for causing the depending flange of said cultivator member to cut through and penetrate said soil to a buried position under said soil without interference of said power head and then said cultivator member can be manipulated to a position wherein said flat top wall portion is parallel to the surface of said earth to maintain the buried position of said cultivator and cultivate the earth.

4,501,333
DISC TYPE AGRICULTURAL IMPLEMENT
Bernard O. Domries, 12281 Road 29, Madera, Calif. 93637
Filed Nov. 2, 1981, Ser. No. 317,154
Int. Cl.³ A01B *21/08*
U.S. Cl. 172—441 **14 Claims**



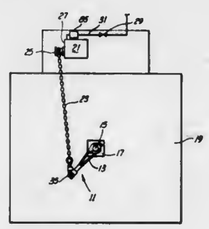
8. An improved disc type agricultural implement comprising a rigid main frame adapted for earth traversing movement, an arm pivotally mounted on the rigid main frame for movement about a substantially vertical axis through a range of pivotal positions, a mounting frame borne by the arm for movement relative thereto substantially toward and from said substantially vertical axis through a range of longitudinal positions, a disc gang mounted on the mounting frame for earth engagement during said earth traversing movement, and an assembly borne by the main frame for releasably fixing the main frame, the arm and the mounting frame relative to each other and the mounting frame in one of said pivotal and longitudinal positions.

4,501,334
WHEELED EXCAVATOR HAVING A DOZER BLADE AND A BOOM-MOUNTED STABILIZER WHEEL
Michael V. Ptacek, Potosi, Wis., assignor to Deere & Company, Moline, Ill.
Filed Jul. 7, 1983, Ser. No. 511,600
Int. Cl.³ B62D *11/02*; E02F *3/96, 9/02*
U.S. Cl. 172—832 **1 Claim**



1. In combination with a excavator including an undercarriage supported on front, intermediate, and rear pairs of driven ground wheels with one of the wheels of each pair being driven separately from the other of each pair and with the intermediate pair of wheels being mounted slightly lower than the front and rear pairs of wheels, a superstructure rotatably mounted on the undercarriage and carrying an articulated boom structure and control means therefor, a dozer blade and control means therefor being mounted on the undercarriage, the improvement comprising: wheel means mounted on the boom structure and said control means for the boom structure including means for positioning said wheel means ahead of the blade and exerting down pressure thereon for causing the undercarriage to rock rearwardly about said intermediate pair of wheels so as to bring said rear pair of wheels into firm engagement with the ground and in this way stabilize the excavator for fine grading operation.

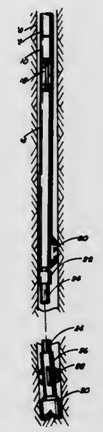
4,501,335
METHOD AND APPARATUS FOR USE IN DRILL STRING MAKE UP
Steven N. Gann, 12004 Royal Coach Dr., Yukon, Okla. 73099
Filed Oct. 28, 1983, Ser. No. 546,620
Int. Cl.³ B25B *23/14*
U.S. Cl. 173—12 **5 Claims**



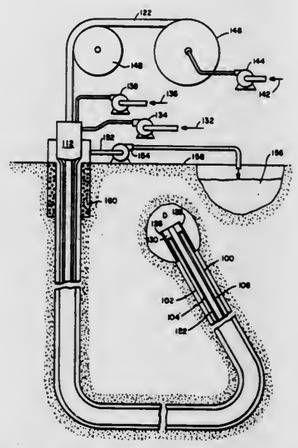
1. A device for use with a drill string make up tong having a tong arm, a tong winch having a tong winch clutch, and a tong winch line extending between said tong winch and said tong arm, comprising:
- angle sensing means for sensing an angle between said tong arm and said tong winch cable and producing a signal indicative of said angle;
- tension sensing means for sensing tension applied to said tong winch line and producing a signal indicative of said tension; and
- clutch deactivation means connected to said angle sensing means and said tension sensing means for receiving signals therefrom and for deactivating said torque winch clutch responsive to signals from said angle sensing means and said tension sensing means corresponding to a predetermined torque applied to a drill string during make up such that torque greater than this predetermined torque is not applied by said tong winch.

4,501,336
METHOD AND APPARATUS OF A SELF-ALIGNING SLEEVE FOR THE CORRECTION OF THE DIRECTION OF DEVIATED BOREHOLES
Billy W. Kemp, P.O. Box 2102, New Iberia, La. 70560, and William S. Brashear, P.O. Box 156, Moody, Tex. 76957
Filed Jun. 3, 1982, Ser. No. 384,778
Int. Cl.³ E21B *44/00*
U.S. Cl. 175—61 **9 Claims**

1. A self-aligning sleeve apparatus slidable over a section of flexible drill string assembly having a rotatable drill bit for correcting the direction of a deviated borehole, comprising:
- a. a non-rotating tubular sleeve slidable over that member of the flexible drill string assembly adjacent the drill bit;
- b. first elliptically-shaped protrusion means attached to said sleeve for centering and stabilizing said sleeve while in the borehole;
- c. second eliptically-shaped protrusion means, having a greater exterior circumference than said first protrusion means, attached to said sleeve for guiding the direction of said drill string assembly; and
- d. retaining means attached to the lower end of said flexible drill string member, preventing said sleeve from sliding off of said flexible drill string member.

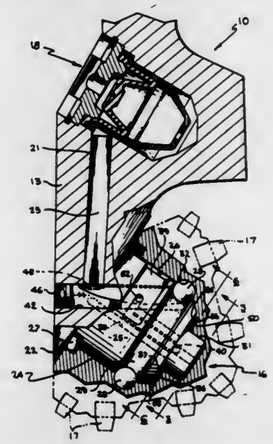


4,501,337
APPARATUS FOR FORMING AND USING A BORE HOLE
Ben W. O. Dickinson, III, San Francisco, and Robert W. Dickinson, San Rafael, both of Calif., assignors to Bechtel National Corp., San Francisco, Calif.
Division of Ser. No. 169,759, Jul. 17, 1980, Pat. No. 4,431,069.
This application Nov. 14, 1983, Ser. No. 525,219
Int. Cl.³ E21B *7/08, 7/20*
U.S. Cl. 175—171 **77 Claims**



1. In apparatus for forming a bore hole:
(a) eversible elongate tube means including outer and inner spaced, flexible, tubular walls interconnected at their forward ends by a rollover area capable of being moved forwardly by fluid pressure to thereby move the inner wall relative to the outer wall when the outer wall is in a fixed position relative to the rollover area, whereby said inner wall undergoes a transformation in shape to become said outer wall at said rollover area, said outer and inner walls defining an annular space therebetween for receiving a pressurized driving fluid to cause said rollover area to be moved forwardly, the inner wall defining within its interior a central passageway,
(b) means for securing said outer wall in a fixed position relative to said rollover area, and
(c) a hollow central pipe at least partially disposed in said central passageway and having a port near the rollover area, said central pipe being movable with respect to said inner wall and adapted to be coupled with a source of pressurized drilling fluid to permit drilling fluid to flow through the central pipe and out of the port thereof to progressively drill a formation in advance of the rollover area as the rollover area moves fowardly under the influence of said driving fluid.

4,501,338
GREASE PUMP FOR SEALED BEARING ROTARY CONE ROCK BITS
Lance D. Underwood, Lafayette, La., assignor to Smith International, Inc., Newport Beach, Calif.
Filed Aug. 8, 1983, Ser. No. 520,964
Int. Cl.³ E21B *10/24*
U.S. Cl. 175—229 **8 Claims**



1. A rotary cone rock bit including a bit body, a rotatable cutter, bearing means including a journal extending from said bit body for promoting rotation of said cutter mounted on said journal, said journal further comprises a first portion with a first diameter, a second portion with a second diameter, said second diameter being smaller than said first diameter, a radially disposed journal bearing thrust surface being formed between said first portion and said second portion, and a seal between said rotatable cutter and said body, a positive displacement lubricant circulation system comprising:
- a lubricant reservoir formed by said bit body,
- passage means formed by said bit body for channelling lubricant from said lubricant reservoir to said bearing means and from said bearing means to said lubricant reservoir,
- a vane guide port formed in said second portion of said journal, said vane guide port is oriented substantially transverse to an axis of said journal, said vane guide port supports a vane means within said port, said vane means forms first and second ends, said first end of said vane is biased by resilient means to ensure said second end of said vane contacts a vane reciprocating means operable by said cutter to move said vane within said port, said vane reciprocating means is an eccentric track formed in said cone,

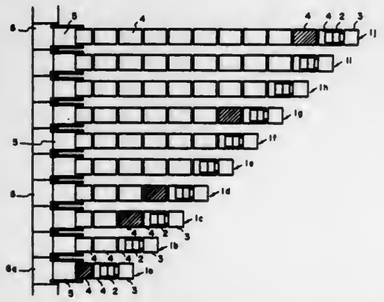
rotation of said cutter circulates lubricant through said passage means from said reservoir to said bearing means and back to said reservoir during operation of said bit within a borehole.

4,501,339

AUTOMATIC WEIGHING APPARATUS

Masao Fukuda, Shiga, Japan, assignor to Kabushiki Kaisha Ishida Koki Seisakusho, Kyoto, Japan

Filed Sep. 20, 1982, Ser. No. 420,113
Claims priority, application Japan, Sep. 24, 1981, 56-151751
Int. Cl.³ G01G *19/22, 13/02*; B65B *1/30, 3/04*
U.S. Cl. 177—25 **6 Claims**



1. A combinatorial weighing apparatus for automatically weighing articles, comprising:
- a plurality of collecting buckets for collecting the articles, adapted to be advanced along a path having an advancing direction;
- a plurality of weighing heads, arranged on a diagonal row with respect to the advancing direction of the path, for receiving batches of the articles, obtaining weight values of the batches of articles received, computing weight combinations on the basis of the weight values of the batches of articles, selecting a combination of batches of articles having a total weight equal or closest to a set weight, and discharging the selected batches of articles; and
- a plurality of groups of discharge buckets, each group of discharge buckets corresponding to one of the weighing heads, being arranged in a row, and extending from the corresponding one of the weighing heads to the path in a direction substantially perpendicular to the advancing direction of the path, the number of discharge buckets in each row increasing by one in the advancing direction of the path so as to determine the angle of the diagonal row of weighing heads with respect to the advancing direction of the path, the discharge buckets being adapted to move along the rows from the weighing heads to the path in synchronization with the advance of the collecting buckets so that the discharge buckets receive batches of articles from the weighing heads and discharge the batches of articles into the collecting buckets and so that each collecting bucket receives a selected combination of batches of articles.

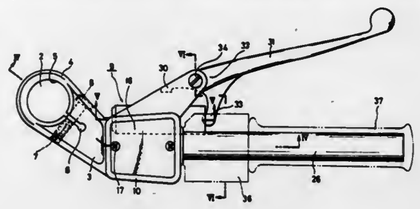
4,501,340

HYDRAULIC MASTER CYLINDER FOR A MOTORCYCLE, OR THE LIKE

Takao Yoshida, Saitama, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 17, 1982, Ser. No. 419,296
Claims priority, application Japan, Sep. 19, 1981, 56-148031
Int. Cl.³ B62K *23/02*
U.S. Cl. 180—219 **9 Claims**

1. In a hydraulic master cylinder for a motorcycle having a handlebar and a handle grip mounted at an axially outside end portion of said handlebar, the improvement comprising a body defining an oil reservoir therein, said body being mounted at an axially inside end portion of said handlebar and in an axially



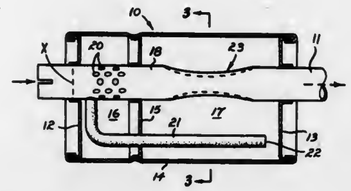
aligned relationship with said handle grip, said body having a portion bulging radially outwardly with respect to said handlebar.

4,501,341

LOW FREQUENCY MUFFLER

Adrian D. Jones, 944-956 South Rd., Edwardstown, Australia

Continuation-in-part of Ser. No. 242,936, Mar. 12, 1981, abandoned. This application Aug. 9, 1982, Ser. No. 406,557
Int. Cl.³ F01N *1/02*
U.S. Cl. 181—250 **6 Claims**



1. A muffler comprising
- a first and a second Helmholtz resonator, the first having a relative volume compliance and relatively high resonance frequency and the second having a relatively low resonance frequency;
- a main exhaust pipe and a tail pipe having a relative acoustical instance, the mean exhaust pipe being in gas flow communication with each said resonator, and in gas flow communication with said tail pipe,
- and wherein the acoustical inertance of the tail pipe and the compliance of the high resonance frequency resonator being such that said low resonance frequency substantially matches the resonance of the combination of said high resonance frequency resonator volume's compliance and said tail pipe acoustical inertance.

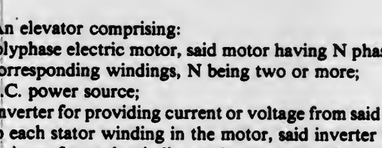
4,501,342

SLIP PLATES FOR LIFT RACK

John W. Murphy, Waukegan, Ill., assignor to Ammco Tools, Inc., North Chicago, Ill.

Filed Jun. 1, 1983, Ser. No. 499,845
Int. Cl.³ G01L *5/00*
U.S. Cl. 187—8.41 **6 Claims**

1. A slide plate assembly for use with an automotive rack, comprising in combination
- a base plate,
- a plurality of guide rails mounted on the top face of said plate in substantial mutually parallel relationship,
- a top plate having an upper face on which a wheel of an automotive vehicle is adapted to rest,
- a plurality of sets of wheels mounted to the bottom of said top plate with the wheels in each set resting on a respective one of said rails,
- each of said sets of wheels including at least two wheels,
- removable locking means interconnected between said top plate and at least one of said rails for holding said top plate in assembled relationship with said base plate,
- a plurality of pairs of spaced apart, elongated brackets depending from the bottom of said top plate, and



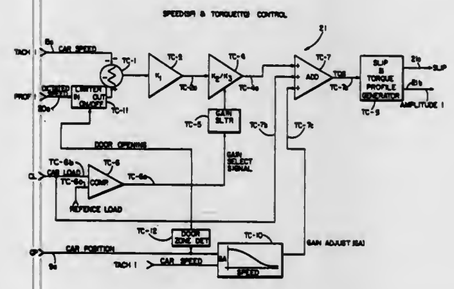
- a plurality of axles mounted in parallel relationship between each of said pairs of brackets,
- said wheels in each of said sets being rotatably mounted on said axles between a respective pair of said brackets,
- at least one of said rails includes an elongated, upwardly offset portion, and
- said removable locking means includes a locking pin removably mounted to one of said brackets and extending beneath said offset portion of said one of said rails.

4,501,343

ELEVATOR CAR LOAD AND POSITION DYNAMIC GAIN COMPENSATION

Jalal T. Salihi, Manchester, Conn., assignor to Otis Elevator Company, Farmington, Conn.

Filed Oct. 12, 1982, Ser. No. 434,013
Int. Cl.³ B66B *1/30*
U.S. Cl. 187—29 R **8 Claims**



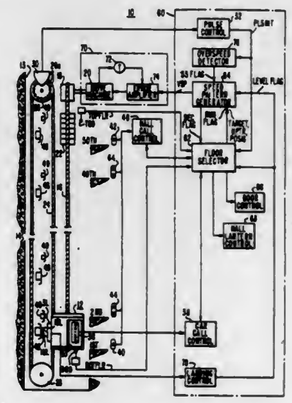
1. An elevator comprising:
- a polyphase electric motor, said motor having N phases and corresponding windings, N being two or more;
- a D.C. power source;
- an inverter for providing current or voltage from said source to each stator winding in the motor, said inverter having an input for each winding and a corresponding output;
- a position encoder for providing a signal (TACH) that identifies the motor shaft position;
- an elevator car that is propelled by the motor;
- an elevator control for controlling the operation of the inverter to produce alternating N phase current or voltage for said stator windings to control motor speed (r.p.m.), slip and direction;
- the elevator being characterized in that said control comprises:
- means for providing a signal (AMPLITUDE) in response to the TACH signal to control motor speed (r.p.m.);
- means for providing a signal (SLIP) in response to the TACH signal to control the difference between the motor r.p.m. and the frequency (F SYNCH) of the alternating current or voltage that is supplied to the motor by the inverter;
- means responsive to the SLIP signal and TACH signal for providing a signal that repeats at F SYNCH, said signal identifying an angular position on a sine curve, and for providing N second signals, each representing the Y-coordinate on said sine curve at different angular positions thereon, said positions being equally spaced apart by 360°/N, said N second signals being provided in a successive sequence during each motor rotation, the sequence in one motor direction being the reverse of the sequence in the opposite direction;
- means for varying the magnitude of each second signal as a function of the AMPLITUDE signal;
- means for applying each second signal to a different one of the inverter inputs according to said successive sequence;
- means for providing a dictated motor speed signal in response to the TACH signal, said dictated motor speed signal representing a desired motor speed;
- means for providing a cab load signal that represents the load in the car; and
- means for providing a first error signal in response to said dictated motor speed signal and said TACH signal, said error signal representing the difference between the actual motor speed and the desired motor speed, and for providing a second error signal by amplifying said first error signal in relation to said cab load signal so that the magnitude of said first error signal is increased when the motor is about to be started if the cab load is greater than a certain load;
- said means for providing said AMPLITUDE signal and means for providing said SLIP signal being responsive to said second error signal.

4,501,344

SPEED PATTERN GENERATOR FOR AN ELEVATOR CAR

Vladimir Uherek, Troy Hills Township, Morris County, and Matthew F. Kersen, Union, both of N.J., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

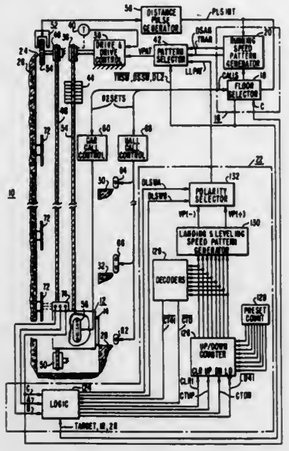
Filed Aug. 17, 1983, Ser. No. 523,994
Int. Cl.³ B66B *1/30*
U.S. Cl. 187—29 R **10 Claims**



1. A method of generating a landing speed pattern for use in stopping an elevator car at a target floor, comprising the steps of:
- deriving a first speed pattern equation from the closed loop transfer function of the elevator system the elevator car is associated with,
- deriving a velocity equation which defines the desired actual car landing velocity,

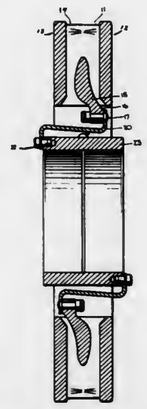
combining the first speed pattern equation and the velocity equation to provide a second speed pattern equation,
and implementing said second speed pattern equation to provide a landing speed pattern.

4,501,345
ELEVATOR SYSTEM
James Lowry, Hicksville, N.Y., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.
Filed Dec. 5, 1983, Ser. No. 557,791
Int. Cl.³ B66B *1/40*
U.S. Cl. 187—29 R **13 Claims**



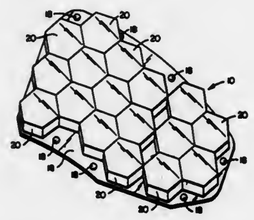
1. An elevator system, comprising:
a building having a plurality of floors,
an elevator car mounted for movement in said building to serve the floors,
motive means for moving said elevator car and for stopping said elevator car at a target floor,
zone means establishing a landing zone having a predetermined dimension on each side of each floor,
zone detector means on said elevator car for detecting the zone means of a target floor and for providing predetermined signals in response thereto,
logic means responsive to the predetermined signals provided by said zone detector means, said logic means providing distance pulses related to both a predetermined standard increment of car movement and car travel direction,
an up/down counter,
counter preset means for presetting said counter, before the elevator car enters the landing zone of a target floor, to a count value related to said predetermined landing zone dimension in terms of said standard increment,
count direction means for providing count direction signals indicative of car movement and whether the elevator car, when in the landing zone of a target floor, is moving towards or away from the target floor,
said counter being responsive to said count direction signals, with said counter being decremented by said count direction signals when the elevator car is moving towards the target floor, and incremented by said count direction signals when the elevator car is moving away from the target floor,
and speed pattern means providing a speed pattern for said motive means in response to the count on said counter.

4,501,346
DISC BRAKE ASSEMBLY
Thomas M. Bogenschutz, Clayton, N.Y., assignor to General Signal Corporation, Stamford, Conn.
Filed Mar. 5, 1982, Ser. No. 354,994
Int. Cl.³ F16D *65/12*
U.S. Cl. 188—218 XL **10 Claims**



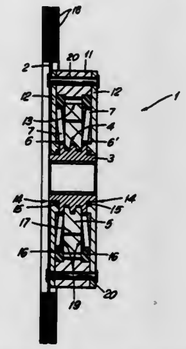
1. A disc brake assembly comprising in combination:
(a) a brake ring;
(b) hub disposed within and concentric with said brake ring;
(c) pairs of resilient cantilever arms, the arms of each pair extending axially and radially from their connections to opposite ends of the hub respectively to the brake ring, each arm resiliently supporting the brake ring for thermally elongating and contracting in radial and axial amounts matched to the thermal elongations and contractions of the brake ring so that stresses in the arms are minimized and the brake ring is transversely stabilized during thermal and inertial loads;
(d) the arms being prestressed to have their principal longitudinal axis substantially parallel to the axis of the hub, but canted slightly inwardly relative to their connection to the hub under no load conditions; and,
(e) the arms being operable under braking load conditions to have their principal axis parallel to the axis of the hub or canted slightly outwardly relative to their connection to the hub as the braking load and temperature rises.

4,501,347
SEGMENTED DISC BRAKE PAD
Frank T. Cerny, Ramsey, N.J., and Irving Lapsker, Monroe, N.Y., assignors to Abex Corporation, Stamford, Conn.
Continuation-in-part of Ser. No. 418,506, Sep. 15, 1982, abandoned. This application Jul. 6, 1983, Ser. No. 511,353
Int. Cl.³ F16D *69/00*
U.S. Cl. 188—250 G **6 Claims**



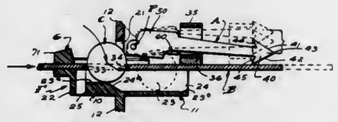
1. A disc brake pad for railroad use comprising a rigid back plate having a top side and a bottom side; a mounting bracket secured to the bottom side of the back plate; a flexible metallic carrier plate attached to the top side of the back plate; a plurality of individual friction elements each having a braking surface area of less than two square inches, and a height to braking surface area ratio not exceeding 0.6 and each of the friction elements is mechanically attached to the flexible metallic carrier plate to allow the individual elements to flex when they engage a disk to enable them to more fully engage the braking surface.

4,501,348
TORSIONAL OSCILLATION DAMPER WITH LATERALLY DISPLACEABLE DAMPER MEMBER
Dieter Lutz, Schweinfurt, and Wolfgang Thieler, Hassfurt-Uchenhofen, both of Fed. Rep. of Germany, assignors to Sachs-Systemtechnik GmbH, Schweinfurt, Fed. Rep. of Germany
Filed Jul. 23, 1982, Ser. No. 401,377
Claims priority, application Fed. Rep. of Germany, Jul. 31, 1981, 3130227
Int. Cl.³ F16D *3/64, 3/80*
U.S. Cl. 192—106.1 **15 Claims**



1. A torsional oscillation damper comprising
a first damping member and a second damping member mounted for rotation about a common rotational axis;
a coupling member operatively arranged in torque transmitting engagement between said first and second damping members;
said coupling member being connected in fixed rotative engagement with said first damping member and being axially displaceable relative to at least one of said damping members in the direction of said rotational axis; and
spring means applying a spring force to said coupling member against axial displacement thereof, said spring force acting in the direction of said rotational axis between said coupling member and said first damping member;
said coupling member including axial slip surface means between said coupling member and said second damping member acting during relative rotation between said coupling member and said second damping member;
said coupling member is annular in configuration and is arranged to be axially displaceable between a pair of surfaces which are axially directed opposite to one another and which are firmly axially connected with said first damper member, said axially acting spring means being arranged axially on both sides of said coupling member between said coupling member and said surfaces;
said coupling member is arranged in an annulus which encloses said rotational axis and is sealed outwardly with said coupling member dividing said annulus into two chambers which are axially juxtaposed and wherein said annulus is filled at least partially with damping fluid with said two chambers being connected with each other through at least one throttling channel.

4,501,349
MANUALLY OPERABLE MULTI-COIN MECHANISM
Hubert M. Giepen, 1404 E. Business 83, Mission, Tex. 78572
Filed Feb. 14, 1983, Ser. No. 466,149
Int. Cl.³ G07F *5/08*
U.S. Cl. 194—1 G **18 Claims**

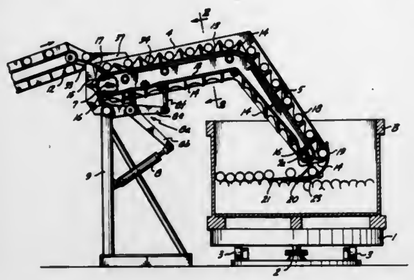


1. A coin mechanism comprising an elongate, horizontal frame with front, central and rear end portions, said frame has a mounting flange intermediate its ends and defines an elongate, upwardly and axially opening longitudinally extending channel and at least one elongate, longitudinally, rearwardly and upwardly opening coin edge receiving trough in its central portion below and between the sides of said channel; a flat, horizontal, elongate coin transport bar with front, central and rear end portions slidably engaged in the channel and manually shiftable longitudinally therein from a forward normal position to a rear actuated position, said bar has a vertical through opening in its central portion defining longitudinally spaced forwardly and rearwardly disposed coin edge engaging surfaces, said opening overlies the forward portion of the trough when the bar is in its normal position and is spaced rearward of the trough when the bar is in its actuated position; an elongate, horizontal latch arm with front and rear ends in vertical spaced substantially parallel relationship above the bar with its front end pivotally mounted to the frame on a transverse axis above the trough and the bar, said arm has upper and lower forwardly disposed latch shoulders at its rear end; said bar has vertically spaced stop shoulders normally spaced above and below the arm forward of the latch shoulders when the bar is in its normal position and spaced rearward of the latch shoulders when the bar is in its actuated position and on a substantially common transverse vertical plane with the latch shoulders when the bar is in an intermediate position; a part at the forward end portion of the arm defining an elongate, axially and downwardly opening coin edge receiving groove spaced above and opposite the rear end portion of the trough; means normally yieldingly holding the front end of the arm down relative to its pivotal axis with its lower latch shoulder positioned to establish stopped latched engagement with the lower stop shoulder when the bar is moved rearwardly to said intermediate position, said trough and groove are shaped and positioned so that upon engagement and rearward movement of a coin of predetermined thickness and diameter therein and therethrough, the coin pivots the arm upwardly so that its stop shoulders occur between vertically spaced horizontal planes between the upper and lower stop shoulders and such that if a coin which is too large in diameter and/or thickness is engaged therebetween, the coin pivots the arm upwardly so that its upper latch shoulder engages the upper stop shoulder when the bar is moved rearwardly to said intermediate position, the rear end of the bar contacts and operates a related product dispensing device when it is moved rearwardly from its intermediate position to its actuated position.

4,501,350
FRUIT-DEPOSITING MECHANISM

John E. Muller, and John E. Muller, Jr., both of Yakima, Wash., assignors to Pomona Service & Supply Co., Inc., Yakima, Wash.

Filed Mar. 18, 1982, Ser. No. 359,329
Int. Cl.³ B65G 29/00
U.S. Cl. 198—478 4 Claims

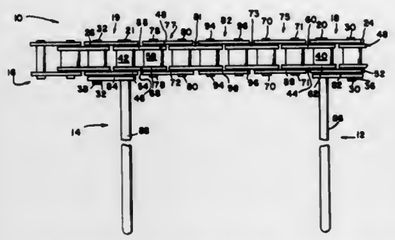


1. In a depositing mechanism, a depositing conveyor having a depending portion with a lower discharge end and including endless conveyor means extending around the depending portion of the conveyor, dividers carried by the endless conveyor means and having outer edges remote from the conveyor means and flexible sheet means bridging between the outer edges of adjacent dividers and defining between them conveying pockets, the improvement comprising divider pivot means mounting the dividers for swinging relative to the endless conveyor means about axes extending transversely of the direction of movement of the endless conveyor means, and control means for maintaining the dividers generally perpendicular to the endless conveyor means at locations remote from the lower discharge end for enabling swinging of the dividers on said divider pivot means as the dividers round the discharge end of the depending portion of the depositing conveyor for relative movement of the outer edges of adjacent dividers to reduce the distance between such outer edges below the spacing between such outer edges which would exist if both of such adjacent dividers were perpendicular to the conveyor means at the locations of their respective pivot means during travel of such dividers around such discharge end.

4,501,351
CHAIN ASSEMBLY WITH PLUG-IN MODULE

Wayne R. Tracy, Chicopee, Mass., assignor to Incom International, Inc., Pittsburg, Pa.

Filed Jan. 21, 1982, Ser. No. 341,364
Int. Cl.³ B65G 25/00
U.S. Cl. 198—648 19 Claims

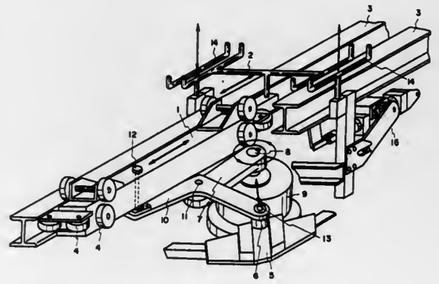


1. A chain assembly having a plurality of adjacent roller links joined together by a plurality of pin links, each pin link having a first pin plate rigidly attached to first and second pins for insertion through separate adjacent roller links and each pin link having a second pin plate for securing adjacent roller links onto said pins while allowing movement of said roller links in the plane perpindicular to the pins, wherein at least one pin link has a hollow first pin, wherein said hollow first pin has larger diameter than said second pin, and a support means inserted in said hollow first pin for supporting objects and for carrying objects along a path parallel to chain assembly movement, the support means comprising a pintle for insertion into said hollow first pin, carrying means connected to said pintle for carrying objects and the support means further comprising a module pin plate rigidly attached to the pintle for securing said pintle to the at least one pin link having the hollow first pin.

4,501,352
WORK-CONVEYING APPARATUS

Taminori Yanagisawa; Takaharu Yamaguchi, and Hiroshi Fukatsu, all of Toyota, Japan, assignors to Toyota Jidosha Kabushiki Kaisha and Taiho Seiki Kabushiki Kaisha, both of Toyota, Japan

Filed Mar. 29, 1983, Ser. No. 480,035
Claims priority, application Japan, Mar. 29, 1982, 57-44233[U]
Int. Cl.³ B65G 25/00
U.S. Cl. 198—775 7 Claims



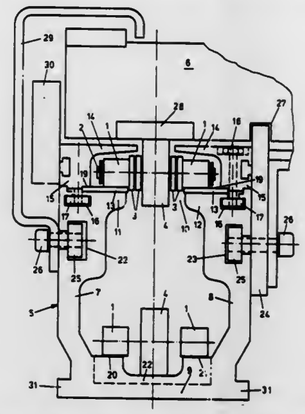
1. A work-conveying apparatus comprising:
a carriage,
a carriage guide on which the carriage slides,
a direction-regulating guide on which a slider slides, provided along the direction at a certain angle with respect to the carriage guide,
a crank provided so as to rotate centering around the intersecting point of the providing direction of the carriage and the direction-regulating guide,
a connecting link rotatably connected to the tip portion of the crank at the first pivot point, to the carriage at the second pivot point and to the slider at the third pivot point, wherein a straight line connecting the first pivot point and the second pivot point crosses, at right angle, a straight line connecting the first pivot point and the third pivot point, and the distance between the first pivot point and the second pivot point and the distance between the first pivot point and the third pivot point are both equal to the distance between the rotating center of the crank and the first pivot point.

4,501,353
CHAIN CONVEYOR

Volker Burkhardt, Lerchenstrasse 29, 7085 Bopfigen, Fed. Rep. of Germany

Filed Dec. 2, 1982, Ser. No. 446,269
Claims priority, application Fed. Rep. of Germany, Dec. 5, 1981, 3148177
Int. Cl.³ B65G 17/00
U.S. Cl. 198—779 3 Claims

1. A chain conveyor system adapted for continuous circulation and the movement of material comprising a plurality of chain roller pairs connected together by side bars to form a continuous chain; a shaft rotatably supporting each chain roller pair, said shaft further rotatably supporting between said chain rollers a carrier roller of greater diameter than said chain rollers; a unitary support member having a generally trough-shaped cross-sectional configuration comprising two upwardly extending side members connected by a transverse base member, the upper ends of said side members being sufficiently separated so as to permit movement of said carrier rollers and said chain roller side bars therebetween; a runner track provided on the upper surface of each side member independent

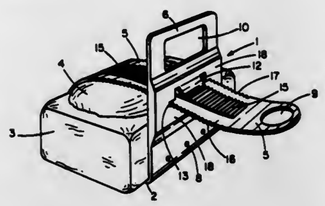


from its respective side member for supportin said chain rollers in the advancing stage of said chain circulation; a runner track provided on said transverse base member for supporting said chain rollers in the returning stage of said chain circulation; a recess in said upper surface of each side member adjacent said runner track for mounting, by means cooperating with said upper surface recess, a claw member, said claw member extending over and providing a protective cover for said chain rollers and securing, by means of a shoulder member in the base of said claw member, the side member runner track to its respective side member; and longitudinal recesses in the outer side of each side member for mounting therein components associated with said chain conveyor system.

4,501,354
SOAP SAVING DEVICE

Edward C. Hoffman, 4 Kane Ct., Clarendon Hills, Ill. 60514

Filed May 24, 1984, Ser. No. 613,580
Int. Cl.³ A47K 5/08; B65D 85/62; B29C 3/00, 27/00
U.S. Cl. 206—77.1 11 Claims

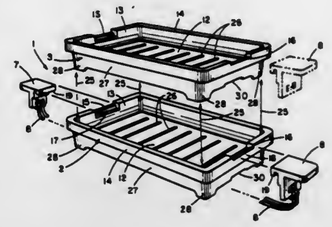


1. A soap saving device for pressure bonding two or more pieces of soap, comprising a base having an irregular surface serving as a support for a first piece of soap placed thereon, a flexible strap handle including first locking means integrally joined to a first side of the base, and second locking means integrally joined to a second side of the base opposite the first side with both locking means being engageable to cause the flexible strap handle to envelop together two or more pieces of soap stacked on the base to exert a pressure bonding force causing the two pieces of soap to bond to one another.

4,501,355
SOAP SAVING DEVICE HAVING NESTING DISHES

Edward C. Hoffman, 4 Kane Ct., Clarendon Hills, Ill. 60514

Filed May 24, 1984, Ser. No. 613,581
Int. Cl.³ A47K 5/08; B65D 85/62; B29C 3/00, 27/00
U.S. Cl. 206—77.1 10 Claims

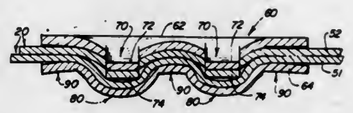


1. A soap saving device for pressure bonding two or more pieces of soap, comprising two separate soap dishes each having a bottom defining a soap supporting surface and each being sized and contoured so as to nest one within the other when stacked with the two bottoms being in face to face relationship, and with one dish serving as base dish and the other serving as a top dish, and means engageable between the two soap dishes exerting a force which tends to move the two soap dishes together and thus exerts a pressure bonding force on any two or more pieces of soap disposed between the two soap dish bottoms.

4,501,356
SLIP SEAL JOINT FOR STRAP

Clement A. Urban, Willow Springs, and Gale W. Huson, Glenview, both of Ill., assignors to Signode Corporation, Glenview, Ill.

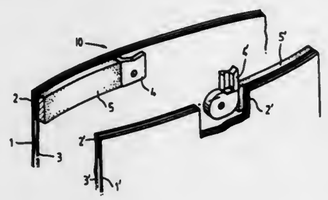
Filed Dec. 29, 1982, Ser. No. 454,256
Int. Cl.³ B65D 71/00, 63/08, 63/16
U.S. Cl. 206—83.5 1 Claim



1. In combination, the elements comprising: a bale of compressed resilient material; at least one strap with two oppositely facing major side surfaces having predetermined frictional characteristics disposed in a loop around the bale to overlap an inner end portion of the strap adjacent the bale with an outer end portion of the strap; and a seal deformed closed about both of said overlapping strap end portions with one part of said seal adjacent one of said overlapping strap end portions and with another part of said seal adjacent the other of said overlapping strap end portions, two spaced-apart regions of said one strap end portion being severed from the edge of the strap for a part of the strap width to define therebetween a deformable wall and said wall being offset from said one strap end portion to define a notch in said one strap end portion, said deformed closed seal including: (1) a seal wall offset from and relative to said one part of said seal adjacent said one strap end portion, said offset seal wall projecting into said notch in said one strap end portion to effect an interlocking engagement between said one part of said seal and said one strap end portion preventing

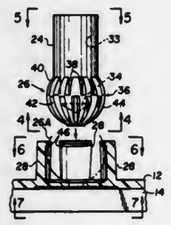
withdrawal of said one strap end portion from said closed seal, and (2) a crimp of said other part of said seal against said other strap end portion with a predetermined degree of frictional force engagement which, in combination with other frictional forces acting on the strap, is sufficiently great to restrain said other strap end portion relative to said seal when the tension force on said strap is equal to or less than a predetermined tension force but which is sufficiently low to permit relative movement between said overlapping strap end portions when the tension force on said strap exceeds said predetermined tension force.

4,501,357
DISK JACKET
Jong S. Park, Jung-Ku, Seoul, Rep. of Korea
Filed Mar. 15, 1983, Ser. No. 475,657
Claims priority, application Rep. of Korea, Mar. 18, 1982, 2068
Int. Cl.³ B65D *85/30*
U.S. Cl. 206—312 **10 Claims**



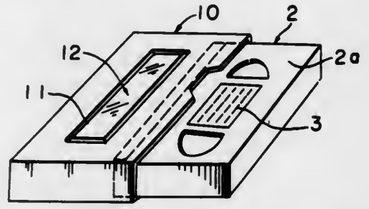
1. A disk jacket comprising an envelope for receiving an disk, said envelope having first and second opposed walls closed along three corresponding edges and having corresponding first and second upper edges defining an opening:
first and second normally outwardly curved elastic plates secured along the length of said first and second upper edges, respectively, of said first and second opposed walls to seaparate said walls and to hold the jacket normally open at said opening,
first and second interlocking means secured to said first and second upper edges, respectively, for holding said curved elastic plates together and thereby holding said opening closed; and
covering means secured along said first and second upper edges to seal said opening upon closure thereof.

4,501,358
DESK SET WITH INTEGRALLY FORMED SWIVEL CLAMPING MEANS
Benson Zinbarg, 111 Chestnut Hill La., Stamford, Conn. 06903
Filed Oct. 28, 1983, Ser. No. 546,482
Int. Cl.³ B43M *17/00*; A47F *7/00*
U.S. Cl. 206—371 **6 Claims**



1. A desk set for holding desk accessories comprising:
a base member (12);
socket forming means (28) integrally molded with said base member (12) for forming a socket with resilient clamping action, said socket forming means comprising a plurality of spaced apart part-cylindrical clamping members (28) integrally projecting out of said base member (12) and inclined at their outer ends toward a central axis perpendicular to said base member;
a generally ball-shaped member (26) adapted for insertion into said socket for swivel engagement with said socket and for removal therefrom, the surface of said ball-shaped member (26) being formed with alternating substantially radially directed slots (38,42) and ridges (40,44), and a substantially equatorial mold line (36) which divides the ball surface into upper and lower portions, the slots (38) on one of said upper and lower portions being staggered with respect to the slots (42) on the other of said upper and lower portions, so that each ridge on said one portion is at least partially continuous with at least one ridge on said other hemisphere, said equatorial mold line being arranged to at least partially engage with said clamping members of said socket to increase the frictional engagement therebetween; and
an accessory means coupled to said ball-shaped member so as to be swivel supported on said base member.

4,501,359
CASING FOR A VIDEO TAPE CASSETTE
Keiichi Yoshizawa, Tokyo, Japan, assignor to TDK Corporation, Tokyo, Japan
Filed Jun. 6, 1983, Ser. No. 501,116
Claims priority, application Japan, Jun. 7, 1982, 57-84470[U]
Int. Cl.³ B65D *85/67, 27/04*
U.S. Cl. 206—387 **4 Claims**

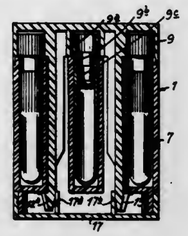


1. A videotape cassette and casing combination comprising:
a videotape cassette having a label on one surface thereof;
a casing for said videotape cassette, said casing having a face including inner and outer surfaces and a window in said face at a position corresponding to said label when said cassette is introduced into said casing; and
a transparent film cover for said window, said transparent cover being attached to said inner surface of said casing face and covering said window, said cover being formed so as to extend toward said outer surface such that said cover extends between said inner and outer surfaces.

4,501,360
PACKING, IN PARTICULAR FOR TRANSPORTING AND DISPATCHING PRODUCTS, FOR EXAMPLE BIOLOGICAL PRODUCTS
Claude Levy, 14 rue des Bernardins, 75005 Paris, and Jean-Philippe Duchesne, 10 rue Manin, 75019 Paris, both of France
Filed Apr. 19, 1984, Ser. No. 602,075
Claims priority, application France, Apr. 27, 1983, 83 06902
Int. Cl.³ B65D *85/42, 1/24*
U.S. Cl. 206—443 **8 Claims**

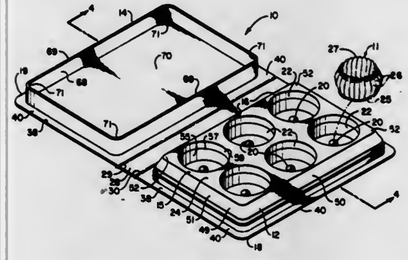
1. A packing, in particular for transporting and dispatching products, for example biological products, said packing comprising a case body subdivided into suitably calibrated receiving cavities, containers for the products to be transported

disposed in said cavities, at least a cover having an internal profile capable of fitting on said case body and so shaped as to cooperate with said case body, said internal profile being capable of individually immobilizing said containers in said cavities under axial compression of said containers and rendering said



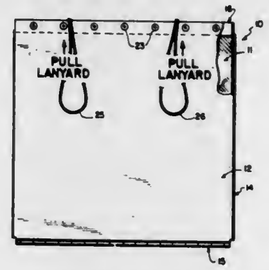
cavities fluidtight, even in the event that said containers become broken inside said cavities, and detachable locking means for temporarily locking said cover to said case body, said locking means being inaccessible in the course of transportation of said packing.

4,501,361
PRINTER THIMBLE ELEMENT HOLDER
Robert D. Rose, Jr., Englewood, Colo., assignor to Communications Packaging Corporation, Denver, Colo.
Filed Feb. 1, 1984, Ser. No. 575,899
Int. Cl.³ B65D *1/36, 25/10, 85/30*
U.S. Cl. 206—493 **3 Claims**



1. A storage case for thimble elements used in printing devices comprising in combination:
a front cover hingeably connected through a spine to a back cover, said back cover having a flat inner surface on which said inner surface is connected a thimble element tray including a plurality of upwardly directed spindles formed in rows and columns thereon for releasably retaining and protecting therein at least one of said thimbles, each of said spindles formed about a longitudinal axis, an open element well associated with each of the spindles having a circular bottom surface formed in a generally flat planar top surface of said tray concentric with said spindle axis, each of said wells including a slightly diverging surface extending upwardly away therefrom and a cylindrical surface, said well adapted to matingly conform to the thimble elements, said cylindrical surface terminating at said top surface, an outer periphery of said top surface terminating in a continuous sloping guide surface extending outwardly and downwardly from said top surface around the periphery of the top surface, the guide surface defining an angle of approximately fifty-five degrees with said flat inner surface and terminating in a mating surface and a stop ledge extending completely around the periphery of said tray, said front cover having an inner surface on which is connected a tray cover defined by an outside and inside wall extending upwardly therefrom and interconnected by an engagement ledge, said tray cover defining a recess for receipt of said element tray, said edge of said tray cover adapted to engage said element tray guide surface upon closure of said tray cover over said tray, thereby automatically aligning the front cover relative to the back cover on closure of the case.

4,501,362
APPARATUS AND METHOD FOR COMPRESSING A SLEEPING BAG INTO A CONTAINER AND THE CONTAINER THEREFOR
James W. Duncan, Arden, N.C., assignor to Stencel Aero Engineering Corporation, Arden, N.C.
Filed Apr. 29, 1982, Ser. No. 373,149
Int. Cl.³ B65D *85/16*
U.S. Cl. 206—525 **10 Claims**

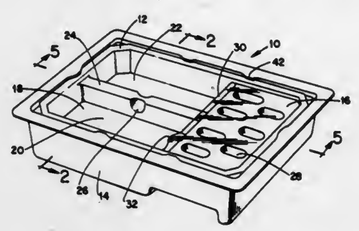


1. A container for a compressed sleeping bag, the combination comprising:
a first planar, rectangular member having depending flanges on two sides and an end;
a second planar, rectangular member having depending flanges on two sides and an end;
hinge means, coupled to said end flanges of said first and second members, for hingedly coupling said first and second members; and
closure means, coupled to said first and second members, for releasably coupling said first and second members in a closed position against the force of the compressed sleeping bag contained therein,
said closure means including
a first bar rigidly coupled to said first member at the other end thereof,
a second bar rigidly coupled to said second member at the other end thereof,
frangible means, coupled to said first and second bars, for preventing separation thereof, and
a lever rigidly coupled to said frangible means for breaking said frangible means upon pivotal movement thereof relative to said first and second members to allow separation thereof.

4,501,363
SURGICAL KIT
Edward K. Isbey, Jr., 407 Vanderbilt Rd., Asheville, N.C. 28803
Filed Oct. 25, 1983, Ser. No. 545,211
Int. Cl.³ B65D *85/62, 81/36*
U.S. Cl. 206—570 **15 Claims**

1. An improved surgical kit comprising:
first and second trays, each having side walls and a bottom, at least a portion of the bottom of each tray having a raised portion including a plurality of embossments forming recesses therein receiving various medical supplies, the bottoms of said first and second trays each having a deep pan portion separate from said raised portion for receiving various articles, said deep pan portion in each

tray displacing a larger volume than said embossments in the bottom of said respective first and second trays; said first tray having a lip extending away from its side walls about the outer periphery of said first tray; said second

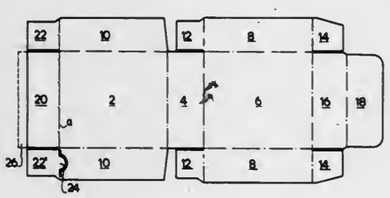


tray having a shoulder on its side walls about the inner periphery of said second tray, said shoulder receiving said lip whereby said first tray is adapted to be mounted on said second tray.

4,501,364
FOLDING BOX

Heinrich W. Lambach, Horsens, Denmark, assignor to Brdr. Schur International A/S, Horsens, Denmark

PCT No. PCT/DK79/00007, § 371 Date Nov. 13, 1979, § 102(e) Date Nov. 13, 1979, PCT Pub. No. WO79/00740, PCT Pub. Date Oct. 4, 1979
PCT Filed Mar. 12, 1979, Ser. No. 297,694
Claims priority, application United Kingdom, Mar. 10, 1978, 9601/78
Int. Cl.³ B65D *5/70*
U.S. Cl. 206—626 **4 Claims**

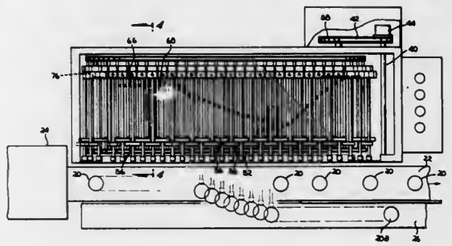


1. A blank for erecting a reclosable box of the type having an openable end flap hinged at one edge to a rear panel of the box and provided at an opposite edge with a free holding flap which, when the end flap is closed, is tucked inside a front panel of the box and in which opposed side panels of the box are provided with flap extensions folded inwardly as inner corner flaps disposed inside the end flap, the box further comprising a pair of outer side panels, each of which overlies and is secured to a respective one of said opposed side panels and has a respective flap extension which is folded in along a fold line over end flap to form an additional corner flap, and a cover flap forming an extension of the front panel and folded over along a fold line to overlie the additional corner flaps and the end flap, and wherein the cover flap is secured to the additional corner flaps, and the cover flap and the additional corner flaps are removable together by rupturing the said fold lines to expose the end flap and permit its being opened, and in which the side panels are narrower than the front and rear panels, and wherein the front and rear panels are folded up from opposite edges of a bottom panel opposite the end flap and are each provided along opposite edges with extension which in the erected box constitute the said opposed side panels and the said outer side panels, said blank comprising panel portions defining the bottom panel, front panel, rear panel, opposed side panels, corner flaps on the side panels and end flap on the rear panel, as well as the cover flap on the front panel, for said box, and wherein the front and rear panels are connected with opposed edges of the bottom panel, and side panels are provided at both sides of the rear panel and front panel, respectively, these side panels each having a corner flap projecting from adjacent ends thereof, the corner flaps of the side panels belonging to the front panel being connected with those side panels through lines of weakness constituting prolongations of a line of weakness between the front panel and the cover flap.

4,501,365
TRANSFER SYSTEM

John J. Peyton, and Bryan K. Watt, both of Santa Barbara, Calif., assignors to Industrial Automation Corp., Goleta, Calif.

Filed Oct. 26, 1981, Ser. No. 314,780
Int. Cl.³ B07C *5/36*; B65G *47/46*
U.S. Cl. 209—548 **38 Claims**



1. A selective transfer system comprising

a continuous chain means for disposition adjacent a stream of articles moving in a particular direction, whereby a portion of said chain means is movable in a direction substantially parallel to said stream of articles, said chain means including a plurality of transfer means selectively projectable in a direction substantially transverse to said chain means so as to extend into said stream of articles to engage any particular article and displace it from the stream of articles

second means for driving said continuous chain means at substantially the same linear speed as the stream of articles,

and

third means responsive to the location of a transfer means at the time an article decision signal is generated to control the transfer means, when the specific article reaches the transfer means, to extend one or two transfer means to engage the particular article and displace it from the stream of articles, said third means being a means for extending one transfer means if said transfer means will engage the approximate center of the particular article to be displaced, and for extending two transfer means to engage the particular article on opposite sides of the center thereof if one transfer means is not extendable to engage the approximate center of the particular article.

4,501,366
PHOTOMULTIPLIER TUBE ASSEMBLY

Roger A. Thompson, Littleton, Colo., assignor to Adolph Coors Company, Golden, Colo.

Filed Dec. 14, 1982, Ser. No. 449,764
Int. Cl.³ B07C *5/342*
U.S. Cl. 209—556 **16 Claims**

10. A high speed light testing apparatus for continuous testing of one piece can body members having a sidewall portion, and a bottom wall portion at one end defining a container cavity, and an opening at the other end, and a formed flange portion at the other end surrounding the opening for subsequent association with a can closure member; the machine being adapted for testing the can body member for defects

including pin holes in the sidewall portion and the bottom wall portion, and unwanted deformation and cracks in the flange portion, the apparatus comprising:

frame and housing means for supporting and housing the machine components;

horizontally extending rotatable shaft means rotatably supported by said frame and housing means and providing a central axis of rotation;

motor means for causing continuous rotation of said rotatable shaft means;

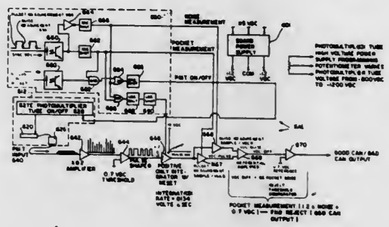
can body member transfer wheel means mounted on said shaft means for rotation therewith and for carrying can body members in a circular path thereabout;

a plurality of pocket means circumferentially spaced about the outer periphery of said transfer wheel means for receiving a can body member in each pocket means and for transferring each can body member along said circular path during a portion of each revolution of said transfer wheel means;

in-feed means mounted on said frame and housing means for loading one can body member in each of said pocket means during each revolution of said transfer wheel means;

light applying means for applying light to the exterior surfaces of each can body member in each of said pocket means, the light applying means being non-rotatably mounted relative to said transfer wheel means and located to provide a continuous light zone during each revolution of said transfer wheel means;

discharge chute means for receiving defective can body



members from said transfer wheel means during each revolution of said transfer wheel means;

unloading chute means for receiving non-defective can body members from said transfer wheel means during each revolution of said transfer wheel means;

extendable and retractable means mounted on said shaft means for rotation therewith and being associated with each of said pocket means for axially moving a can body member in each of said pocket means between a first retracted position and a second extended position during a portion of each revolution of said transfer wheel means;

releasable holding means associated with each of said extendable and retractable means for abutting and releasable holding engagement with the bottom wall portion of a can body member in each of said pocket means during a portion of each revolution of said transfer wheel means;

sealing means mounted on said shaft means for rotation therewith and being associated with each of said pocket means and each of said extendable and retractable means for engagement with the flange portion of non-defective can body members carried in each of said pocket means and releasably held by said holding means, the holding means, being operative to effect holding engagement with the bottom wall of said can body member and the extendable and retractable means being operative from the first retracted position to the second extended position to effect sealable engagement of the flange portion of each can body member with the associated sealing means prior to movement of each can body member to said light zone;

light detection means non-rotatably mounted relative to said transfer wheel means and being located for successive axial alignment with each of said pocket means and the opening in the can body member carried thereby opposite said sealing means in the light zone for receiving light only from said light applying means through the can body member and between the flange portion and the sealing means and for generating a control signal upon receipt of light therefrom;

said extendable and retractable means being operative from the second extended position to the first retracted position to retract each can body member from sealable association with said sealing means after movement beyond said light detection means prior to reaching said discharge chute means during each revolution of said transfer wheel means;

defective can body member release control means effective in response to said control signal from said light detection means for releasing each defective can body member before reaching said discharge chute means during each revolution of said transfer wheel means;

non-defective can member release control means effective as each non-defective can body member approaches said unloading chute means for releasing each non-defective can body member and for enabling discharge of non-defective can body members into said unloading chute means during each revolution of said transfer wheel means;

pressurization means associated with each of said sealing means for applying pressurized air to said sealing means for obtaining minimal sealing area engagement between said sealing means and the flange portion of said can body members and for applying pressurized air through the opening to the interior of said can body member to outwardly flex the side wall portion and the bottom wall portion to enhance the passage of light through openings therein;

rotational speed monitoring means for monitoring the speed of said rotatable shaft means and providing a speed monitor signal; and wherein said light detection means comprises:

a photomultiplier tube assembly for use in high speed light testing apparatus for making a series of light measurements in rapid succession during light-test periods wherein each light-test period is followed by a noise-test period, said light-test periods and noise-test periods being spaced apart in time by interval periods, the beginning of said light-test periods and said noise-test periods being determined by the physical orientation of certain moving parts of said high speed light testing apparatus with respect to certain fixed parts of said apparatus, said photomultiplier tube assembly comprising:

(a) photomultiplier tube means operably mounted to receive light during light-test periods and to be shielded from light during noise-test periods for generating a photomultiplier tube electrical signal having a value proportionate to the light received by the said photomultiplier tube means;

(b) photomultiplier tube switching means for switching said photomultiplier tube means on and off operably synchronized with said testing apparatus whereby said photomultiplier tube means is switched on during said light-test periods and said noise-test periods and switched off during said interval periods;

(c) measuring circuit means for measuring said photomultiplier tube signal and generating a measuring signal responsive thereto;

(d) timing means for dividing said measuring signal into a light-test measurement signal and a noise-test measurement signal, said light-test measurement signal corresponding to the portion of said measuring signal associated with said light-test period and said noise-test measurement signal corresponding to the portion of said measuring signal associated with said noise-test period; and

(e) comparator circuit means for comparing said light-test measurement signal with said noise-test measurement signal and generating a control signal in response to said comparison;

said timing means comprising:

monitor means for sensing the occurrence of said light test periods and said noise-test periods as a function of the alignment of predetermined physical parts of said high speed testing apparatus with said photomultiplier tube means and generating a monitoring signal in response to said machine light-test alignment position and said machine noise-test alignment position;

said monitor means comprises:

encoder means operably mounted on said high speed light testing apparatus for generating an encoder signal;

clock signal generating means for receiving said encoder signal and generating a square wave clock signal in response thereto; said clock signal having a light-test portion associated with the machine light-test alignment position and a noise-test portion associated with the machine noise-test alignment position; said light-test portion and said noise-test portion of said clock signal being of opposite polarity;

said timing means further comprising:

first time pulse generating means for generating a first time pulse signal of predetermined duration in response to said light test portion of said clock signal;

second time pulse generating means for generating a second time pulse signal of predetermined duration in response to said noise test portion of said clock signal;

the length of said first and second time pulse signals defining the length of said light-test period and said noise-test period, respectively;

first measuring signal sample and hold means for sampling said measuring signal during a period of enablement and holding said measured sample and generating a first sample signal proportionate thereto until the next period of enablement, wherein said first measuring signal sample and hold means is enabled by said first time pulse signal for the duration of said first time pulse signal; and

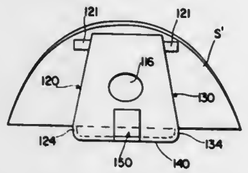
second measuring signal sample and hold means for sampling said measuring signal during a period of enablement and holding said measured sample and generating a second sample signal proportionate thereto until the next period of enablement, wherein said second measuring signal sample and hold means is enabled by said second time pulse signal for the duration of said second time pulse signal.

4,501,367

STANDS FOR SUPPORTING FOOD SHELLS DURING PREPARATION AND CONSUMPTION

C. P. Potts, 3201 McEvoy Dr., Macon, Ga. 31206

Filed Aug. 29, 1980, Ser. No. 182,488
Int. Cl.³ A47F 7/00
U.S. Cl. 211—13 8 Claims



1. A taco holder for supporting a fillable taco shell, comprising:

bowl means having a generally flat and smooth base, a smooth and generally cylindrical flexible side wall and an axis of concentricity normal to said bottom,

said bowl means including means for supporting the taco shell in an upright position and normal to the axis of concentricity, and comprising at least one generally smooth U-shaped cut in the side wall of said bowl means, the legs of the U extending upwardly and in a diverging outward direction from the bottom of the U, and the cylindrical side wall below the height of the bottom of the U extending upwardly from said base; and

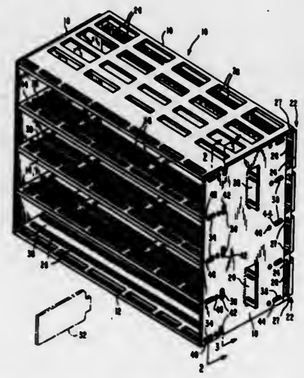
stabilizing lip means for stabilizing said bowl on a supporting surface, said stabilizing lip means being at the base of said bowl means and extending outwardly therefrom.

4,501,368

SUBSTRATE SUPPORT MODULE

Daniel G. Gill, Greensboro, N.C., assignor to AT&T Technologies, Inc., New York, N.Y.

Filed Sep. 29, 1982, Ser. No. 426,500
Int. Cl.³ A47G 19/08
U.S. Cl. 211—41 11 Claims



1. A substrate support module, which comprises:

at least one essentially planar guide shelf having guide means for guiding an edge of a substrate when the substrate is inserted into the substrate support module;

a pair of side support members located adjacent respective opposite ends of the guide shelf for supporting the shelf;

a series of at least three locating projections extending from at least one end of the guide shelf for mounting the shelf on the side support member which is adjacent the one end of the shelf; and

the side support member adjacent the one end of the guide shelf having a set of at least three spaced elongated locating slots formed therein, the projections on the guide shelf being received in respective ones of the elongated slots in closely spaced relationship by opposed walls of the slots and in spaced relationship to opposite ends of the slots, with two of elongated slots extending parallel to the guide shelf and the remaining slot extending perpendicular to the guide shelf.

4,501,369

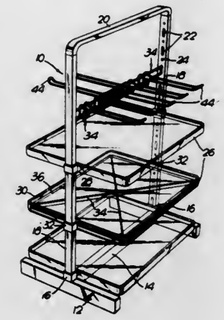
MERCHANDISE DISPLAY MEANS

Clifford R. Fox, Chelmsford, England, assignor to CBM Display Group Limited, Woodford Green, England

Filed Dec. 15, 1981, Ser. No. 331,215
Claims priority, application United Kingdom, Dec. 23, 1980, 8041115
Int. Cl.³ A47F 5/00
U.S. Cl. 211—133 4 Claims

1. A merchandise display assembly comprising at least one elongate support member which is upright when in use, merchandise retaining means supported by said at least one elongate support member, tubular engagement means of said merchandise retaining means at an edge thereof through which

tubular engagement means extends said elongate support member to allow the merchandise retaining means to be slid up and down said elongate support member, locating means which is generally U-shaped and also wedge shaped, engagement means of said locating means to allow the latter to engage said elongate support member selectively at any one of a number of different heights, said tubular engagement means of said merchandise retaining means resting on said locating means when



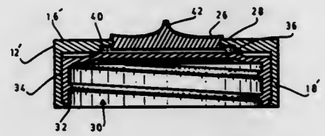
the assembly is in use, and two arms of said locating means, being the two arms of the "U", which extend in substantially the same direction as one another and which embrace said elongate support member when said locating means engages said elongate member, and positively grip the latter owing to a wedging action brought about by said engagement means of said merchandise retaining means resting on said locating means when the assembly is in use.

4,501,370

MEDICINE BOTTLE CLOSURE HAVING AN INDICATOR

John A. Kelley, Rte. 2, Box 21C, Lexington, Tenn. 38351

Filed Aug. 5, 1982, Ser. No. 307,864
Int. Cl.³ B65D 55/02
U.S. Cl. 215—219 5 Claims



5. A top for a pill or other medicine bottle, said bottle having an externally threaded upper portion which receives the top, said top comprising:

cover means including a first member having a first section which is substantially circular in cross-sectional outline and defining an upper surface, and a further section having a depending portion which flexes when squeezed, and a further member which is rotatably mounted within said first member and includes an internal surface which is externally threaded for purposes of receiving the externally threaded upper portion of said bottle, said further member being rotated for purposes of opening said bottle by squeezing said flexible depending portion of said first member such that said first member and further member frictionally engage, said first section of said first member defining an opening including a mouth which circumscribes said opening;

a plurality of indicia provided on said upper surface of said first member serving to indicate the time at which the next dosage of medicine contained within said bottle is to be taken; and

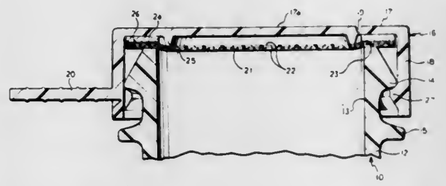
A dial member including an annular perimeter which defines a recess that receives said mouth of said first member whereby said dial member is rotatably mounted in said opening in said first member, said dial member having an indicator which is moved by the user to be aligned with one of said indicia to indicate the time when the next dosage of medicine contained in said bottle is to be taken.

4,501,371

TAMPER INDICATING, NON-RESEALABLE CLOSURE

Ned J. Smalley, Perrysburg, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Dec. 5, 1983, Ser. No. 558,141
Int. Cl.³ B65D 41/48
U.S. Cl. 215—232 16 Claims



1. A non-reusable tamper indicating package comprising

a container having a body portion and a neck portion defining an opening,

said neck portion having an annular bead spaced from the end of the neck,

a closure having a top wall and a peripheral skirt,

said closing having a retention and lacking bead on the skirt thereof adapted to engage the annular bead on the container,

said closure including spaced score lines on the skirt and a portion of the top wall such that when the portion of the skirt between the score lines is pulled outwardly and upwardly, the closure is severed along the score lines,

a foil sheet having a layer of thermoplastic material on each surface thereof thermally bonded to the upper end of the container,

said top wall having a depending portion thermally bonded to the thermoplastic material on the foil sheet such that when the portion of the skirt and top wall are severed along the score lines the depending portion tears the foil sheet to provide access to the contents and the foil sheet can not be reused and the closure can not be reused to reseal a container.

4,501,372

TEAR-OPEN CLOSURE FOR A CONTAINER

Gerhard Hansen, Heerstrasse 20, 7166 Sulzbach-Laufen 2, Fed. Rep. of Germany

Filed Mar. 8, 1984, Ser. No. 587,815
Claims priority, application Fed. Rep. of Germany, Mar. 22, 1983, 3310265
Int. Cl.³ B65D 51/00
U.S. Cl. 215—247 15 Claims

1. A tear-open closure for a container, comprising:

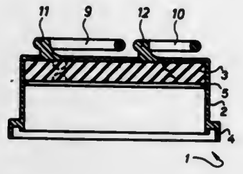
a cap of thermoplastic material having a top wall with upper and lower surfaces and a side wall depending from said top wall;

first and second mutually exclusive top parts defined in said top wall by scored parts of reduced thickness, said scored parts formed by grooves arranged as curves;

first and second grips coupled to said first and second top parts, respectively; and

a gasket extending within and against said side wall and

against said lower surface of said top wall such that said gasket completely underlies all of said top parts and keeps



the container closed upon removal of said top parts, said gasket having at least first and second puncture points within said first and second top parts, respectively.

4,501,373

CLOSURE CAP, IN PARTICULAR FOR BOTTLE-LIKE CONTAINERS, HAVING AN ELEMENT ASSURING INTACTNESS

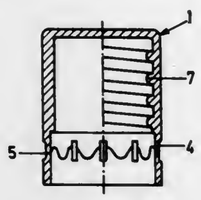
Hans Heinlein, Dombühlstrasse 33, D-8801 Schillingsfürst, Fed. Rep. of Germany

Filed Dec. 14, 1982, Ser. No. 449,752

Claims priority, application Fed. Rep. of Germany, Sep. 11, 1982, 3233805

Int. Cl.³ B65D *41/34*

U.S. Cl. 215—252 **11 Claims**



1. A closure cap, in particular for bottle-like containers, having an element assuring intactness which is connected by tear strips with a cap portion and remains on the container after the closure has been opened for the first time by tearing the tear strips, characterized in that a separation seam separates said element assuring intactness from said cap portion, said seam comprising a repeating waveform-shaped weakening in a wall of the cap disposed between the cap portion and the element assuring intactness, the edge of said cap portion adjacent said weakening including a first set of oppositely directed segments, the edge of said element assuring intactness adjacent said weakening including a second set of oppositely directed segments, and said tear strips being carried by said cap between, and releasably interconnecting, said element assuring intactness and said cap portion, said first and second sets of segments meshing with one another, when said cap is rotated in a first container capping direction, for coupling said cap portion unitarily with said element assuring intactness during capping of said container, said first and second sets of segments meshing with one another, when said cap is rotated in a second direction opposite to said first direction, for uncoupling, by separating, said cap portion from said element assuring intactness by stretching and then tearing said tear strips.

4,501,374

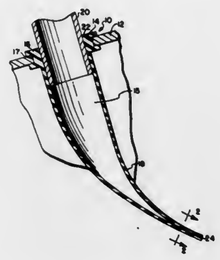
HAZARDOUS FLUID TANK WITH CHECK VALVE

S. Harry Robertson, 1024 E. Vista Del Cerro, Tempe, Ariz. 85281

Filed Feb. 10, 1983, Ser. No. 465,634

Int. Cl.³ B60K *15/04, 15/08;* B65B *39/02;* B65D *25/20*

U.S. Cl. 220—86 R **12 Claims**



1. A safety tank for hazardous fluids comprising:
a tank for holding hazardous fluids on a vehicle;
an opening formed in the wall of said tank to provide access to the interior of said tank;
inlet filling means separably mounted on said tank at said opening to direct fluid into said tank interior, said filling means being vulnerable to separation from said tank upon occurrance of an accident involving the vehicle;
a tubular resilient check valve allowing fuel to pass into said tank from said filling means while blocking the path of fuel from said tank, said check valve comprising an elongated resilient tube normally collapsed at a distal end of said valve so that fluid passing through said filling means expands said tube for fluid passage into said tank and said tube collapses when fluid ceases to flow therethrough thereby preventing fluid from escaping from said tank; and
mounting means separable from the separable mounting of said inlet filling means and interconnecting said inlet filling means with said check valve, said mounting means fixedly mounting said check valve to said wall at said opening of said tank whereby upon said separation of said inlet filling means, said mounting means remains fixedly mounted to said tank to prevent fluid escaping from said tank.

8. A safety tank for hazardous fluids comprising:
a tank for holding hazardous fluids on a vehicle;
an opening formed in the wall of said tank to provide access to the interior of said tank;
an annular grommet sealingly engaging and fixedly secured to the perimeter of said opening in said wall, said grommet being adapted to sealingly receive an annular filler pipe to direct fluid to said tank interior;
an annular filler pipe sealingly and separably seated in said grommet to act as a conduit to direct fuel into the interior of said tank, said pipe being vulnerable to separation from said grommet upon occurrance of an accident involving the vehicle; and
a resilient check valve sealingly attached to said grommet to allow fluid to pass from said filler pipe into said tank, said check valve comprising an elongated resilient tube in fluid communication with said grommet, said tube normally being collapsed at a distal end of said valve so that fluid passing through said filler pipe expands said tube for fluid passage into said tank and said tube collapses when fluid ceases to flow therethrough thereby preventing fluid from escaping from said tank upon said separation of said pipe from said fluid grommet.

4,501,375

EASILY-OPENABLE HEAT-SEAL LID

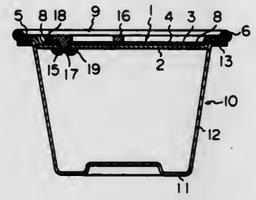
Tadahiko Katsura, Yokohama; Kazumi Hirota, Tokyo, and Hiroshi Ueno, Yokosuka, all of Japan, assignors to Toyo Seikan Kaisha, Ltd., Tokyo, Japan

Filed Feb. 13, 1984, Ser. No. 579,542

Claims priority, application Japan, Feb. 15, 1983, 58-21990

Int. Cl.³ B65D *17/34*

U.S. Cl. 220—270 **9 Claims**



1. An easily-openable heat-seal lid for forming a heat-sealed portion with a vessel proper for sealing the vessel proper, which is composed of a laminate comprising at least an inner surface member of a heat-sealable resin, a metal foil and an outer protecting layer, wherein a score defining a portion to be opened is formed at a part of the lid more central than the peripheral portion to be heat-sealed so that the score extends to the midway of the metal foil in the thickness direction from the outer side, a through hole piercing through the lid is formed on the inner side of the score in the vicinity of the opening-initiating portion of the score, a rivet of an opening tab, which is composed of the inner surface member material and a heat-sealable resin, is inserted through the hole to project to the inner surface side of the lid, the top end portion of said projection of the rivet is expanded in the plane direction to secure the opening tab, the top end portion of the rivet projected on the inner surface side is sealed and engaged with the inner surface member by heat fusion bonding, and one end portion of the opening tab or the peripheral portion of the inner surface side of the rivet is substantially superimposed on the opening-initiating portion of the score.

4,501,376

CONTAINER AND CLOSURE HAVING LUG FASTENING MEANS

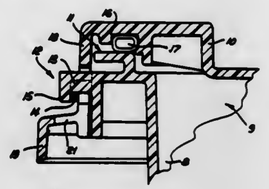
Maxwell J. Bushby, Marrickville, Australia, assignor to Commonwealth Moulding Pty. Limited, New South Wales, Australia

Filed Nov. 22, 1983, Ser. No. 554,243

Claims priority, application Australia, Dec. 15, 1982, PF7277

Int. Cl.³ B65D *41/06, 41/36*

U.S. Cl. 220—298 **5 Claims**



1. A pail of the kind consisting of an open-top body and a lid applicable to the open-top; comprising:
(a) an annular seating which defines said open-top;
(b) a circumferential array of evenly-spaced cantilever clamping lugs on said body, disposed adjacent but below said seating and extending radially from said body to a greater extent that does said seating;
(c) a socket groove formed in the underside of said lid so to open directly above said seating when the lid is applied to the body;
(d) a skirt which depends from the periphery of said lid thereby to encircle and extend below said seating and below said lugs when the lid is applied to the body;
(e) a bottom portion of said skirt of greater diameter than the remainder of said skirt;
(f) locking apertures formed in said skirt to extend circumferentially thereof in correspondence with the number and spacing of said lugs, each having one end partly formed in said bottom portion thereby freely to admit one of said lugs into said aperture, and its other end formed as a restriction able to take hold of a lug admitted into said aperture; and
(g) a resilient sealing ring housed in said groove and brought to bear against said seating when said lugs are held within said apertures.

4,501,377

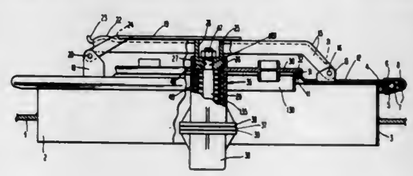
MANHOLE COVER AND ASSEMBLY FOR TANK FOR TRANSPORTING FLAMMABLE LIQUIDS

Donald F. Palmer, III, 443 Irvington Rd., Drexel Hill, Pa. 19026

Filed Dec. 1, 1983, Ser. No. 557,118

Int. Cl.³ B65D *45/28*

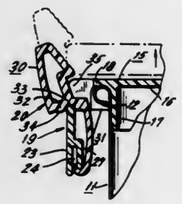
U.S. Cl. 220—314 **12 Claims**



1. A manhole cover and assembly for a mobile tank for transporting flammable liquids, said cover adapted to provide protection against explosion during emergency conditions, said cover and assembly comprising:
A. means for permitting limited controlled movement of said manhole cover in the opening direction in response to low-rate build-up of fluid pressure in said tank to allow pressure-reducing venting and for returning said cover to fully closed position following venting; and
B. means for preventing opening movement of said cover in response to sudden and large pressure surge against said cover resulting from tank rollover or other emergency conditions;
C. said means for permitting limited controlled movement of said cover is the opening direction in response to low-rate build-up of fluid pressure in said tank indluding:
a. A cylinder connected to said cover and extending downwardly therefrom, said cover having an opening, said cylinder having a closed bottom and an open top and being coaxially aligned with said cover opening;
b. A piston in a lower portion of said cylinder;
c. A first chamber below said piston, said chamber containing non-compressible liquid;
d. An interior cover within and secured to said cylinder above said piston, said interior cover forming a second chamber above said piston;
e. A passageway through said piston providing communication for said liquid between said first and second chambers;
f. A fixed member extending across and above said manhole cover; and
g. A main compression spring in said cylinder positioned between said interior cover and said fixed member whereby in response to build-up of fluid pressure in said tank said manhole cover starts to lift thereby pulling up said cylinder and interior cover and compressing said

main compression spring, said upward movement of said cylinder causing said liquid to flow through said passageway from said first to said second chamber, said main compression spring returning said cylinder and manhole cover to closed position following reduction in said fluid pressure.

4,501,378
RESILIENT DETENTED LID LATCH
Robert C. Berfield, Jersey Shore, Pa., assignor to Shop-Vac Corporation, Williamsport, Pa.
Continuation-in-part of Ser. No. 449,777, Dec. 14, 1982, abandoned. This application Nov. 14, 1983, Ser. No. 551,094
Int. Cl.³ B65D *45/16*
U.S. Cl. 220—324 **25 Claims**

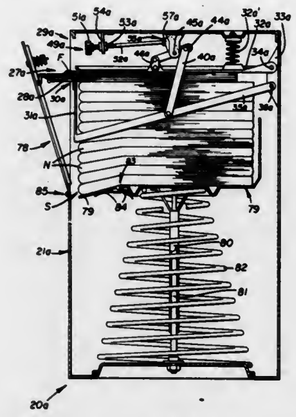


1. A container having an opening and flange means projecting outwardly from said opening, a lid for covering said opening, and a plurality of latch units cooperating with said flange means to operatively secure said lid to said container; said plurality of latch units mounted to said lid and spaced along the edge thereof; each of said latch units including cage means fixedly mounted on said lid, and latch means pivotally mounted to said cage means; said cage means including a wall section spaced outward of a sidewall of said container and having an upper edge; said latch means including a pivot forming lower section, a manually engageable upper section, and an intermediate section between said upper and lower sections; said upper section projecting above said upper edge and said intermediate section disposed between said wall section and said sidewall; means defining a horizontal axis at said lower section about which said upper section is movable between an inner container holding position and an outer container releasing position; said upper section defining a recess in which said flange means is entered when said upper section is in said holding position; said upper section also including a formation that cooperates with said upper edge to define detent means for releasably maintaining said upper section in said releasing position.

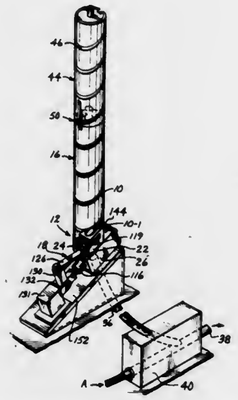
4,501,379
NEWSPAPER DISPENSING APPARATUS
William Halone, 25545 Rice Rd., and James R. Davis, 25575 Rice Rd.,, both of Sweethome, Oreg. 97386
Filed Jun. 20, 1983, Ser. No. 505,748
Int. Cl.³ B65H *3/26*; G07F *11/14*
U.S. Cl. 221—221 **31 Claims**

31. In a dispensing apparatus having first and second members defining a dispensing opening therebetween for individually dispensing a newspaper, magazine, or like article from a stack of articles, the improvement comprising

adjustment means for simultaneously moving said first and second members towards or away from each other to selectively narrow or widen said dispensing opening to accommodate articles having varied thicknesses, said first member comprising a table having a stack of folded articles thereon and said second member comprising a gate disposed transversely relative to said table at a forward end thereof, said dispensing opening being defined between a lower edge of said gate and an upper side of the forward end of said table.



4,501,380
SPIRAL FEEDER FOR HEADED FASTENERS
Alfred F. Welch, Renton, Wash., assignor to The Boeing Company, Seattle, Wash.
Filed Sep. 30, 1982, Ser. No. 431,251
Int. Cl.³ B65G *11/06*
U.S. Cl. 221—298 **14 Claims**

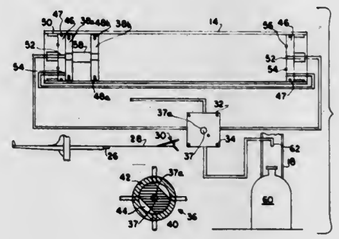


1. A spiral feeder assembly for storing and delivering headed fasteners to a fastening machine, comprising:

gate means for releasing one headed fastener at a time from said assembly; and:

a cylindrical feed column attached to and extending upwardly from said gate means, said cylindrical feed column having a helical delivery channel for holding a series of said headed fasteners with all fasteners being oriented in substantially the same manner for delivery to said gate means, said helical delivery channel extending along and within the surface of said cylindrical feed column to provide a downwardly extending spiral passage for delivery of said headed fasteners to said gate means with said headed fasteners being movable along said spiral passage solely by the force of gravity.

4,501,381
PURIFIED WATER DISPENSING MACHINE
John E. Hart, 1614 N. Missouri Ave., Largo, Fla. 33540
Filed Apr. 27, 1983, Ser. No. 489,120
Int. Cl.³ B67D *5/10*
U.S. Cl. 222—2 **10 Claims**



1. A water dispensing machine, comprising,

a first elongate fill tube member,

a second elongate fill tube member,

a first piston member slideably mounted interiorly of said first fill tube member and reciprocable therein between a first and second position,

a second piston member slideably mounted interiorly of said second fill tube member and reciprocable therein between a first and second position,

first inlet means for admitting water into a first end of said first fill tube member to displace said first piston member from its first position to its second position,

second inlet means for admitting water into a first end of said second fill tube member to displace said second piston member from its first position to its second position,

first outlet means for discharging previously admitted water from a second end of said first fill tube member responsive to the displacement of said first piston member,

second outlet means for discharging previously admitted water from a second end of said second fill tube member responsive to the displacement of said second piston member,

a unidirectional indexing means for sequentially and alternatingly activating said first and second inlet and outlet means,

said indexing means comprising a four-way valve member for sequentially directing water to the first inlet means of said first fill tube member, to the second inlet means of said second fill tube member, to the outlet means of first fill tube member and to the outlet means of said second fill tube member,

a coin accepting means for mechanically activating said indexing means attendant each acceptance by said machine of a preselected value of coins,

a rotatably mounted plate member,

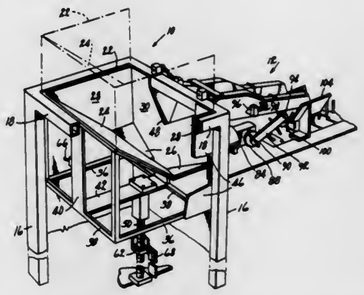
said plate member having a plurality of four equidistantly spaced pin members projecting therefrom,

an elongate flexible rod member adapted to abuttingly engage said pin members in sequence responsive to sequential acceptance by said machine of coins, and to rotate said plate member an equal angular amount each rotation,

and said four-way valve member conjointly rotatable with said plate member,

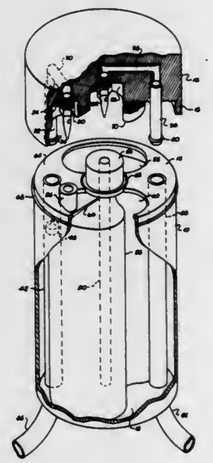
whereby a predetermined volume of water is dispensed from said first and second fill tube members responsive to each acceptance of coins by said machine.

4,501,382
APPARATUS FOR DISPENSING MOLLUSKS
Robert van Twuyver, 258 High St., Ipswich, Mass. 01938
Filed Nov. 23, 1982, Ser. No. 443,905
Int. Cl.³ B65G *65/38*
U.S. Cl. 222—63 **9 Claims**



1. An apparatus for dispensing mollusks in a single file, comprising a hopper assembly including a hopper having a rigid stationary front wall formed with an outlet and movable rigid side and rigid rear walls and adapted to contain a quantity of mollusks, means including an inclined chute for dispensing mollusks in a single file, the chute having an upper end to which mollusks are supplied from the outlet of the hopper and a lower discharge end adapted to dispense the mollusks to a processing device, a prime mover, a crank having a variable throw and driven by the prime mover, and a connecting rod linking the crank to the underside of the chute.

4,501,383
HOUSING FOR A PRESSURIZED SYRUP PACKAGE
Frank M. Iannelli, 5215 Pogue St., Spartanburg, S.C. 29301
Filed Sep. 2, 1982, Ser. No. 414,386
Int. Cl.³ B67D *5/54*
U.S. Cl. 222—82 **7 Claims**



6. A housing for a pressurized syrup package used in a beverage dispensing machine comprising:

a main body portion constructed of material impervious to carbon dioxide, having a sealed bottom and open top;

said main body portion being of sufficient size for receiving a syrup package inserted therein through said top;

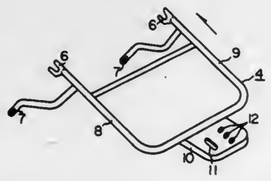
a cap provided for extending over said open top of said main body portion;
seal means carried between said cap and said main body portion providing a sealed chamber for said syrup package when said cap is inserted on said main body portion;
piercing pins carried by said cap for piercing said syrup package when said cap is positioned on said main body portion;
conduit means connected to said piercing pins through which carbon dioxide can be fed to said syrup package for pressurizing said package and for removing syrup from said package;
a cover extending over the top of said main body portion;
predetermined shaped openings provided in said cover corresponding to the cross sectional shape of said syrup package whereby said syrup package is rotated into proper orientation after being inserted into said housing for ensuring proper positioning of said piercing pins relative to said syrup package; and
said shaped openings of said cover having a curved abutment edge for receiving a package projection extending upwardly from said syrup projection, said abutment edge abutting said projection to properly position said syrup package in said housing.

4,501,384

DEVICE FOR MOUNTING CONTAINER BOX ON MOTORCYCLE

Masaki Itoh, Akashi, Japan, assignor to Kawasaki Jukogyo Kabushiki Kaisha, Kobe, Japan

Filed Mar. 25, 1983, Ser. No. 478,872
Claims priority, application Japan, Mar. 26, 1982, 57-43946[U]
Int. Cl.³ B62J 7/04
U.S. Cl. 224—32 A **5 Claims**



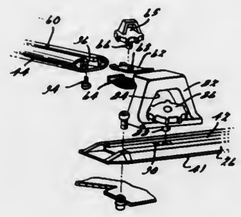
1. In a motorcycle having a container box mounted on the motorcycle above the rear wheel, a device for mounting said container box comprising:
supports mounted on said motorcycle;
means on said container box in sliding engagement with said supports and cooperating therewith to hold said box on said supports and to permit said box to slide in a back and forth direction along said supports; and
locking means for releasably fixing said container box selectively at one of at least two predetermined positions including a locking member fixed to said supports, said locking member having an elongated slot parallel to said direction of back and forth movement and a row of holes arranged parallel to said slot, a pair of locking bars engageable in said locking member, one of said bars being engageable in said slot and the other of said bars being engageable in said holes, key means connected to disengage and unlock both of said bars simultaneously from said locking member to permit said box to slide back and forth along and to be removed endwise from said supports.

4,501,385

CROSS RAIL FOR VEHICLE LUGGAGE CARRIER

John A. Bott, 931 Lakeshore Dr., Grosse Pointe Shores, Mich. 48236

Continuation of Ser. No. 355,022, Mar. 5, 1982, abandoned, which is a continuation of Ser. No. 171,398, Jul. 23, 1980, abandoned. This application Apr. 11, 1983, Ser. No. 483,929
Int. Cl.³ B60R 9/04
U.S. Cl. 224—319 **5 Claims**



1. In a luggage carrier disposed on a horizontal surface of an automobile vehicle,
an elongated cross rail member elevated from said surface of said vehicle and a supporting end portion disposed at each end of said member clampingly adjustably engageable with said luggage carrier, said cross rail member having a cross section with a generally oval external surface configuration, having a leading edge, a trailing edge, a continuous bottom surface extending from said leading edge to said trailing edge and disposed on a continuous bottom wall portion, a pair of continuous upper surfaces disposed on a pair of continuous upper wall portions, a channel formed between said upper surfaces, including a first pair of interior surfaces parallel to at least a portion of said upper surfaces and a second pair of interior surfaces disposed on a pair of interior walls extending substantially perpendicularly downwardly one from each of said first pair of interior surfaces, each of said interior walls extending from substantially the interior of one of said upper wall portions into contact with the interior of said continuous bottom wall, forming an interior bottom surface of said channel along said bottom wall, each said supporting end portion having means adapted to be telescopically engageable with the other surfaces of said cross rail member and with said channel for engagement of said cross rail member and each said end portion together.

4,501,386

LUGGAGE RACK WITH PRE-ATTACHED END PIECE

William Rasor, Marysville, and Leon E. Redman, Bloomfield Hills, both of Mich., assignors to Masco Corporation, Taylor, Mich.

Filed Sep. 29, 1983, Ser. No. 537,105
Int. Cl.³ B60R 9/00
U.S. Cl. 224—326 **11 Claims**



1. An article carrier for an automotive vehicle, said article carrier comprising:

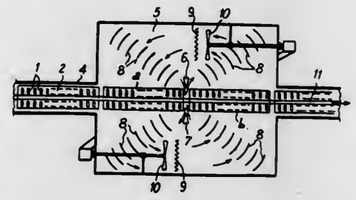
an article supporting slat constructed to be mounted on a vehicle surface;
said slat includes a base and two side walls extending upwardly from said base and terminating above said base and being spaced apart to form a channel between said side walls and above said base;
said base having at a proximate one end thereof an opening;
an end cap member extending into said one end of said slat and having first and second receiving portions;
a first fastener passing through said opening of said base and engaging said first receiving portion to fasten said unitary end cap member to said slat; and
a second fastener positioned between said side walls and engaging said second receiving portion for securing said end cap member to said vehicle surface.

4,501,387

METHOD FOR BRAZING HEAT EXCHANGER CORES BY BLOWING HOT GASES

Francis L. E. Hoyer, Montlignon, France, assignor to Societe Anonyme des Usines Chausson, Asnieres, France

Filed Sep. 13, 1982, Ser. No. 417,089
Claims priority, application France, Sep. 17, 1981, 81 17585
Int. Cl.³ B23K 31/02
U.S. Cl. 228—183 **1 Claim**



1. A method for brazing heat exchanger cores, each comprising at least one tube and one heat dissipator with a hole for passing the at least one tube, the tube being brazed to the heat dissipator by a brazing alloy, comprising the steps of using part of the heat exchanger cores as a blading for guiding a hot pulsed gas provided to melt the brazing alloy; channeling the pulsed gas on an arcuate closed path in a cell provided for two heat exchanger cores while passing two heat exchanger cores longitudinally into the cell whereby one of the two heat exchanger cores is traversed in one direction by a first one of two flows of gas while another of the two heat exchanger cores is traversed by a second one of two flows of gas in another direction; and reversing direction of the gas with respect to the heat exchanger cores at least once during a period of time in which the heat exchanger core is subjected to a gas flux for carrying out the brazing.

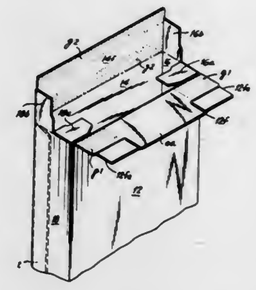
4,501,388

ANTI-SIFT CARTON

Benjamin J. Cassidy, Waldwick, N.J., assignor to International Paper Company, New York, N.Y.

Filed May 4, 1984, Ser. No. 606,953
Int. Cl.³ B65D 5/02
U.S. Cl. 229—37 R **5 Claims**

1. An end structure for an anti-sift carton having opposed front and back panel and opposed side panels, in which the front and back panels have opposite major flaps each filling substantially the entire carton end opening, the side panels have opposite flaps divided into first and second minor parts, said first minor parts being first closed, one of said major flaps being next closed over said first minor parts, said second minor parts being next closed over said one major flap, and the other



of said major flaps being finally closed over said second minor parts.

4,501,389

AUTOMATIC DAMPER ASSEMBLY

Stanley Kolt, Mamaroneck, N.Y., assignor to Leonard W. Suroff, Jericho, N.Y., a part interest

Continuation of Ser. No. 313,345, Oct. 20, 1981, Pat. No. 4,416,415. This application Jun. 14, 1983, Ser. No. 504,179
Int. Cl.³ F24F 13/16
U.S. Cl. 236—49 **2 Claims**

1. An automatic temperature and pressure responsive damper assembly for use within the conduit of a ventilating system designed to exhaust air from a defined space into the atmosphere comprising:
(a) mounting means for mounting said damper assembly within said conduit;
(b) at least one vane pivotally mounted on said mounting means, said vane being movable between an open position wherein said vane permits the passage of air through said conduit and a closed position wherein said vane precludes the passage of air through said conduit;
(c) means for opening said vane when the temperature of the air in said defined space reaches a predetermined level, said opening means including;
(i) camming means secured to said vane and being carried by said mounting means and having a camming surface thereon,
(ii) a temperature responsive drive assembly mounted to detect temperature changes of the air in said conduit, said drive assembly adapted to actuate in response to

the temperature change within a predetermined range, and

(iii) transmission means operably extending between said drive assembly and said camming surface of said camming means for communicating movement of said drive assembly to said camming means such that said vane is moved to varying positions in response to temperature changes of the air in said conduit;

(d) spring means biasing said vane to said closed position and opening said vane when there is a pressure differential of a predetermined magnitude between the end of said conduit in communication with said defined space and the end of said conduit in communication with said atmosphere, the pressure being greater at the end of said conduit in communication with said defined space; and

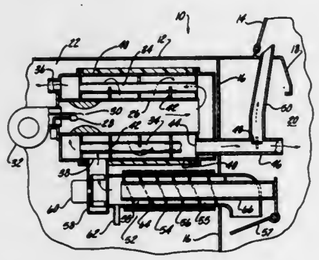
(e) means for varying the degree which said vane opens when subjected to a pressure differential, said varying means including a weight movable in relation to the pivotal axis of said vane, said weight being movably affixed upon a surface of said vane to partially counteract the force applied by said spring means.

4,501,390

VEHICLE INTERIOR DEICING/DEFOGGING SYSTEM

Charles J. Modzinski, Macomb, Mich., and Michael J. Devaney, Boone County, Mo., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Dec. 15, 1982, Ser. No. 449,947
Int. Cl.³ B60H *1/02*
U.S. Cl. 237—12.3 C **3 Claims**



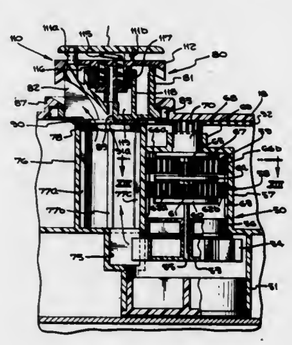
1. In an arctic vehicle that includes an engine compartment, a personnel compartment having terrain viewing windows, a fuel-fired heater equipped with an air inlet and air outlet, and duct means for conveying heated air from the heater outlet into the personnel compartment: the improvement comprising a heat exchanger located on the vehicle entirely outside the personnel compartment, said heat exchanger having external heat transfer surfaces exposed to the arctic atmosphere; said heat exchanger having internal air passage means of substantial length operatively connected between the personnel compartment and the heater air inlet; second duct means extending from the personnel compartment into communication with the heater air inlet, said second duct means constituting a bypass duct means around the heat exchanger passage means; selector valve means for alternately opening the second duct means and heat exchanger passage means; blower means for pumping air from the personnel compartment through the heat exchanger internal air passage means, or through the bypass duct means, and thence through the fuel-fired heater back to the personnel compartment; the heat exchanger having sufficient external heat transfer surface area exposed to the arctic atmosphere to condense water out of the air being pumped through the heat exchanger passage means; and condensate removal means at the downstream end of the heat exchanger passage means for preventing re-entainment of condensate into the air supplied to the heater; the size of the heat exchanger being such that heated air returned to the personnel compartment is sufficiently dry as to avoid significant fogging or icing on the interior surfaces of the windows.

4,501,391

HOSE END PATTERN SPRINKLER

Edwin J. Hunter, Rancho Santa Fe, Calif., assignor to The Toro Company, Minneapolis, Minn.

Continuation of Ser. No. 345,946, Feb. 4, 1982, abandoned. This application Feb. 3, 1984, Ser. No. 576,775
Int. Cl.³ B05B *1/02, 3/04*
U.S. Cl. 239—97 **24 Claims**



1. A pattern sprinkler having a housing, a water inlet to said housing, nozzle means for spraying water from said housing and a water passage within said housing communicating between said inlet and said nozzle means, said sprinkler further comprising:

an annular pattern plate means having a plurality of different configured spray pattern orifices provided threin in a circular array;

means for mounting said annular pattern plate means in the path of water flow through said water passage between said inlet and said nozzle means to control the pattern of water spray from said nozzle means in response to the particular spray pattern orifice positioned in the path of said water flow; and

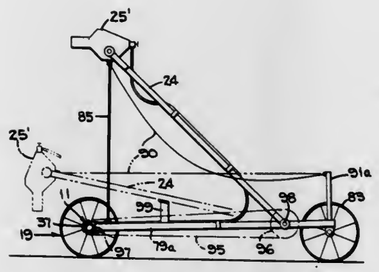
water spray deflector means associated with said nozzle means for breaking up the nozzle water sprays emitted by said nozzle means, said deflector means including a plurality of deflection vanes biased toward a maximum spray deflecting position and water pressure operated means for urging said deflector vanes toward a minimum deflecting position in response to water pressure within said nozzle means.

4,501,392

TORQUE DRIVEN IRRIGATION SYSTEM

James M. Hait, 8047 Chardonay Ct., San Jose, Calif. 95135

Division of Ser. No. 374,566, May 3, 1982,. This application Nov. 23, 1983, Ser. No. 554,659
Int. Cl.³ B05B *3/00*
U.S. Cl. 239—177.1 **3 Claims**



1. A self-propelled rotary irrigation system for connection at one end to a source of water located at the center of an area to be irrigated, said system comprising:

a length of pipe for carrying water, said pipe having a longitudinal axis;

a plurality of irrigation outlets arranged in spaced relationship along said length of pipe for discharging water therefrom;

means for mounting said pipe with said longitudinal axis of said pipe in a generally horizontal plane;

means for connecting a first end of said pipe to said water source in a manner such that the length of pipe is free to travel about said source and such that said first end is unable to rotate about said longitudinal axis of said pipe;

a first sprocket rotatably mounted adjacent to a second end of said pipe;

drive means powered by water from said pipe for alternately rotating said first sprocket in a first direction and in a second direction;

a second sprocket connected to said second end of said pipe;

a drive chain connected between said first and said second sprockets for alternately inducing and releasing a rotational torque about said longitudinal axis as said first sprocket rotates in alternate directions with the torque applied to a portion of said pipe adjacent a second end of said pipe, said rotational torque causing said pipe to rotate about said longitudinal axis with the amount of rotation of said pipe being proportional to the distance from said first end, the relative sizes of said first and said second sprockets causing said second end of said pipe to rotate through a much larger angle than the rotation of said first sprocket;

wheel means located at spaced intervals along the length of said pipe for supporting and advancing the pipe;

ratchet means connected between said wheel means and said pipe for allowing said pipe to rotate relative to said wheel means in a first direction and for securing said pipe to said wheel means as said pipe rotates in a second direction causing said wheel means to advance said pipe about said water source; and

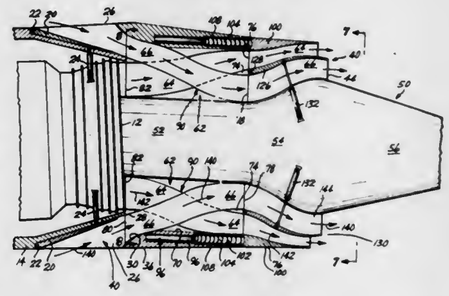
means for limiting the rotational movement of said pipe to insure that said wheel means advances said pipe in substantially equal increments each time said pipe rotates in said second direction.

4,501,393

INTERNALLY VENTILATED NOISE SUPPRESSOR WITH LARGE PLUG NOZZLE

Garry W. Klees, Mercer Island, and Charles P. Wright, Seattle, both of Wash., assignors to The Boeing Company, Seattle, Wash.

PCT No. PCT/US82/00327, § 371 Date Mar. 17, 1982, § 102(e) Date Mar. 17, 1982, PCT Pub. No. WO83/03281, PCT Pub. Date Sep. 29, 1983
PCT Filed Mar. 17, 1982, Ser. No. 405,962
Int. Cl.³ B64D *33/04*; F01N *1/14*; F02K *1/08*
U.S. Cl. 239—265.13 **25 Claims**



1. In a jet engine nozzle adapted to exhaust a propulsive gas jet,

said nozzle having wall means longitudinally bounding a generally centrally positioned body, and an annular area extending between said wall means and said body,

an improved jet engine noise suppressor in said nozzle comprising:

separate first and second ducts having adjacent annular cross secions at entrance ends and exit ends, said ducts extending longitudinally through a portion of said annular area;

said first and second ducts being shaped and arranged to invert flow patterns through the respective ducts for discharging two separate flow patterns at the exit ends in a relationship inverted from that existing at the entrance ends;

said first ducts having entrance ends annularly around said body to receive gas exhaust from the engine and said second ducts having entrance ends radially outwardly of said first ducts and annularly along said wall means;

openings in said wall means to supply ambient air to the entrance ends of said second ducts;

doors operable to open and close said openings; and

means in said nozzle downstream of said portion to vary the flow path size and direction outwardly of said ducts according to the various flight mode requirements of the engine.

4,501,394

SPRAY GUN AIR CAP AND METHOD OF MAKING

Kul C. Kwok, Arden Hills, Minn., assignor to Graco Inc., Minneapolis, Minn.

Filed May 9, 1983, Ser. No. 492,840
Int. Cl.³ B05B *1/28*
U.S. Cl. 239—296 **7 Claims**

1. In an air spray gun of the type having air passages arranged in a nozzle around an axially positioned fluid passage

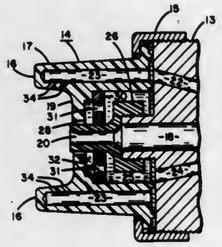
for atomizing the fluid emitted therefrom, the improvement in coaxially aligned fluid and air passages comprising

(a) an opening axially aligned in said nozzle;

(b) an insert in said nozzle in coaxial alignment with said opening and spaced from said opening, said insert having an axial opening therethrough;

(c) a spray tip having an orifice opening projecting through said axial nozzle opening, said spray tip being sized smaller than said axial nozzle opening, said spray tip also projecting through said insert axial opening in tight fitting relationship; and

(d) an axially concentric annular opening formed between said spray tip and said axial nozzle opening, said annular opening and said insert axial opening being precisely and exactly formed by a simultaneous drilling operation through said nozzle and said insert whereby said spray tip is precisely axially contained within said insert opening.



4,501,396

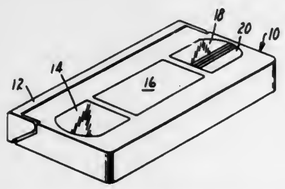
VIDEO CASSETTE TIME LEFT GAUGE

John P. Tomsyck, St. Paul, and Thomas J. Zohn, Woodbury, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Jun. 2, 1983, Ser. No. 500,544

Int. Cl.³ G03B 1/04; G11B 15/32

U.S. Cl. 242—199 3 Claims



1. A time-remaining gauge adapted to be affixed to a window covering a spool within a video cassette on which a magnetic recording tape may be wound, comprising

a sheet-like substrate having on one side thereof a layer of pressure sensitive adhesive for securing said gauge to said window and having indicia including a plurality of marks positioned to correspond to different radii on said spool and legends associated therewith identifying predetermined running speeds and the time remaining at a given speed at said diameters on said spool, whereby a user may affix the gauge to the cassette window and visually align the outer radius of the tape on the spool with said marks to accurately determine the amount of running time remaining until the end of the tape is reached.

4,501,397

METHOD OF STABILIZING FLIGHT OF A FLYING BODY AND FLIGHT-STABILIZED FLYING BODY

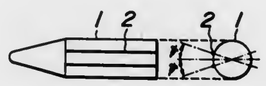
Hirotoshi Kubota; Akira Takano, both of Tokyo; Isao Arai, Soka, and Masayoshi Matsuzaka, Tokyo, all of Japan, assignors to University of Tokyo, Tokyo, Japan

Filed Oct. 12, 1982, Ser. No. 434,072

Claims priority, application Japan, Jan. 9, 1982, 57-1353

Int. Cl.³ B64C 17/00

U.S. Cl. 244—75 R 7 Claims



1. A method of stabilizing flight of a flying body having a circular cross-section, comprising a step of suppressing undesirable motion of the flying body for stable flight of the flying body by reducing an asymmetric side force occurring when said flying body flies at a high angle of attack with respect to an air current by means of at least two tripping wires provided on the outer periphery of said flying body, wherein a number of said tripping wires is at least two and an initial stagnation point of the air current lies on a midpoint between said tripping wires on said outer periphery of said flying body, an optimal azimuthal angle for tripping wire position resides in a region from 15° to 60° for non-dimensional tripping wire height normalized by the diameter of said flying body residing in a region from 0.007 to 0.014.

4,501,398

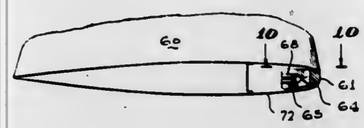
BEAM BALANCER ELECTRO-IMPULSE DEICING SYSTEMS

Paul E. Sandorff, Granada Hills, Calif., assignor to Lockheed Corporation, Burbank, Calif.

Division of Ser. No. 214,541, Dec. 9, 1980, Pat. No. 4,399,967. This application Dec. 10, 1982, Ser. No. 448,573

Int. Cl.³ B64D 15/18

U.S. Cl. 244—134 R 6 Claims



1. An electromagnetic pulse deicing system for deicing the surface skin of a blade, said blade including a nose portion formed by upper and lower surfaces terminating at a leading edge, said blade also including a mass balance element extending spanwise of said leading edge, comprising a nose-torquer mechanism secured to said mass balance element for imparting torsion to said mass balance element and twisting both said upper and lower surfaces to produce a torsional travelling deformation wave in said skin.

4,501,399

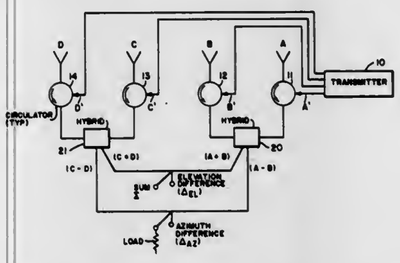
HYBRID MONOPULSE/SEQUENTIAL LOBING BEAMRIDER GUIDANCE

Jester M. Loomis, III, Huntsville, Ala., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jul. 20, 1981, Ser. No. 284,895

Int. Cl.³ F41G 7/24; G01S 13/66

U.S. Cl. 244—3.13 1 Claim



1. A beamrider guidance system for guiding a guided device toward a target; said system having multiple transmitting and receiving antenna means which are spatially offset from each other; the improvement comprising a method having the steps of transmitting a plurality of different coded radar signals sequentially by said antenna means towards said target and said guided device; selecting the number of coded radar signals to be equal to the number of antenna means such that each antenna means will always transmit the same coded radar signal; receiving and processing said signals by the guided device so as to provide guidance about a center position of all of the coded radar signals; utilizing reflected signals off said target from each of the coded radar signals to position said antenna means toward said target; utilizing a four-horn antenna feed for the multiple antenna means; and supplying the different coded radar signal to the horn feeds for transmission.

4,501,400

CABLE-CLAMP

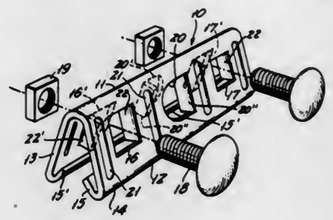
Ignazio Leonardo, Mountainside, N.J., assignor to Diamond Communication Products, Inc., Garwood, N.J.

Filed Dec. 10, 1981, Ser. No. 329,410

The portion of the term of this patent subsequent to Aug. 21, 2001, has been disclaimed.

Int. Cl.³ F16L 3/08

U.S. Cl. 248—74.1 16 Claims



1. A cable-suspension fitting for clamped suspension of a given-diameter cable from a telephone pole or the like, comprising a unitary elongate stiff metal clamp having two elongate side panels integrally connected via a single longitudinal bend and divergent at an acute angle to their outer longitudinal edges, each side panel having at its outer longitudinal edge an inwardly bent flange of width less than side-panel width and oriented at an acute angle to its associated side panel, the inner limiting edges of said flanges being spaced from each other to an extent slightly less than said given diameter, whereby said clamp may be applied to the cable with snap action via the space between said flanges, said side panels having plural longitudinally spaced bolt apertures at corresponding locations between the longitudinal bend and the flanges, there being a clear unimpeded alignment of single geometric elongate cylindrical shape through both of the corresponding apertures of each pair, whereby a bolt through each pair of corresponding apertures may be set with a coacting nut to draw said panels to each other in clamped engagement with the cable and with said flanges establishing a permanent barrier against loss of the cable from the fitting.

4,501,401

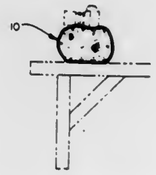
CAMERA SUPPORT CUSHION

Paul T. Conee, 99 N. Beacon St., Hartford, Conn. 06105

Filed Sep. 24, 1982, Ser. No. 422,858

Int. Cl.³ A47G 29/00

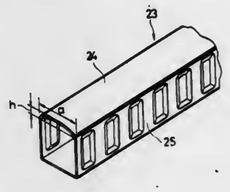
U.S. Cl. 248—346 12 Claims



1. A cushion for supporting a camera or the like, comprising: a substantially matched pair of panels joined to one another in spaced relationship by a peripheral wall extending thereabout, the configuration of said panels being that of a "super ellipse", the peripheral curvature of which is based upon the equation $X^n/A^n+Y^n/B^n=1$, wherein "n" has the value 2½, "X" and "Y" represent Cartesian coordinates, and "A" and "B" are constants of appropriate value, and said panels and said peripheral wall cooperatively defining a space within said cushion; and a free-flowing filler material contained within said cushion

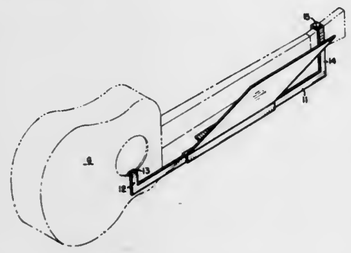
and substantially completely filling said space therewithin, said panels and said peripheral wall being made of a relatively supple material to permit deformation of said cushion and conformation to the camera.

4,501,402
METAL SKID FOR BUNDLING
Ken Saito, Tokyo; Tsuneo Ochi, Yokosuka; Kaoru Furunishi, Ichikawa, and Takeshi Yuki, Yokohama, all of Japan, assignors to Nippon Steel Metal Products Co., Ltd., Tokyo, Japan
Filed Feb. 3, 1983, Ser. No. 463,502
Int. Cl.³ B65D *19/28*
U.S. Cl. 248—346 **7 Claims**



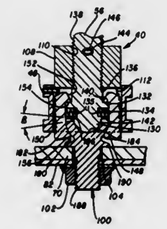
1. A metal skid for bundling adapted to be laid parallel to at least one other like skid to support a bundle of articles and to be fastened to the bundle by a strap or the like, characterized in that:
said skid is of a substantially square-pipe-like shape having a hollow interior through which a bundling strap or the like may be passed;
is made of light-weight sheet metal;
has a top wall adapted to be contacted by a bundle placed thereon;
has side walls depending from each side of said top wall; and
has a bottom wall;
said top wall being smoothly-curved upwardly-arched with a center of curvature below the upper ends of said side walls;
said side walls each having a longitudinally arranged row of reinforcing embosses each extending a major portion of the height of said side walls and said row extending substantially the full length of said skid.

4,501,403
SHEET MUSIC TRAY FOR A GUITAR
Calvin O. Goodrich, P.O. Box 4879, Stockton, Calif. 95204
Filed Jun. 13, 1983, Ser. No. 460,276
Int. Cl.³ G10G *7/00*
U.S. Cl. 248—443 **4 Claims**



1. A sheet music retention device adapted to be removably attached to a guitar, wherein the guitar has a body provided with a sound hole therein, and wherein the guitar further has a neck provided with a forward portion, comprising in combination:
a first hook arm adapted to removably engage the sound hole in the guitar body,
a second hook arm adapted to removably engage the forward portion of the guitar neck,
a bar member connected between and supporting said first and second hook arms,
said bar member having an upper central portion thereof,
an elongate channel adapted to be removably received on the upper central portion of the bar member,
a music tray extending upwardly and outwardly from the channel, and
a horizontally disposed retention lip on the music tray, whereby sheet music or instructional materials may be placed on the tray, and
whereby a guitar player may move about freely while retaining the sheet music or instruction materials on the tray.

4,501,404
QUICK DISCONNECT ASSEMBLY
Alfred W. Nelson, Arlington, Tex., assignor to Textron Inc., Providence, R.I.
Filed Jul. 24, 1981, Ser. No. 286,634
Int. Cl.³ F16M *13/00*
U.S. Cl. 248—503.1 **10 Claims**

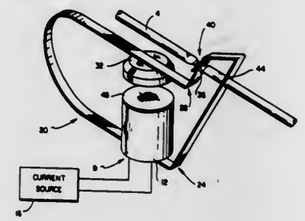


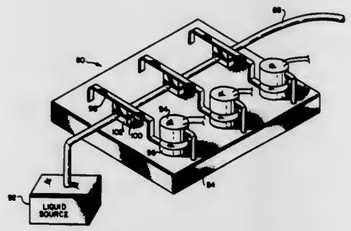
1. A quick disconnect assembly for releasably attaching a fixture to a support structure comprising:
a tie down stud having a substantially spherical outer surface and means for attachment of said stud to the support structure, and
an attachment fitting having a main body fixed to the fixture and a plurality of grip arms pivotally associated therewith, said arms having inwardly curved ends for cooperating with the spherical outer surface of said stud upon engagement of said arms inwardly, said grip arms and said stud permitting the angular movement of the main body relative to the stud by a predetermined angle, said main body comprising a spherical head extending from one end thereof, and
said tie down stud comprising a spherical indention formed therein for receiving said spherical head.

4,501,405
FRICTIONLESS VALVE/PUMP
Joe D. Usry, Midvale, Utah, assignor to Bunnell Life Systems, Inc., Salt Lake City, Utah
Filed Jun. 21, 1983, Ser. No. 506,215
Int. Cl.³ F16L *55/14*; F04B *43/12*
U.S. Cl. 251—7 **5 Claims**

1. A valve comprising
a flexible and resilient tube for carrying a fluid,
an electrically energizable coil for producing an electromagnetic force when energized,
a magnetically attractable element,
resilient holding means for normally holding the element in a first position above the coil so that when the coil is energized the element and holding means are attracted toward the coil, and when the coil is de-energized the holding means moves the element away from the coil back

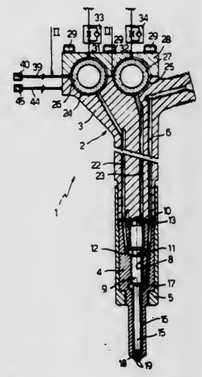
to the first position, wherein said holding means comprises an elongate leaf spring attached near one end to the coil and looped outwardly, upwardly and back toward the coil, with the magnetically attractable element attached to the leaf spring near the other end, and





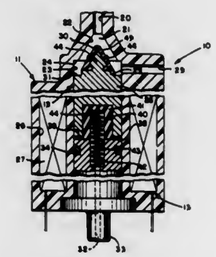
anvil means disposed adjacent to the holding means with the two being positioned to extend between the holding means and the anvil means so that the tube is alternately pinched closed against the anvil and released to open by the holding means as the coil is alternately energized and de-energized.

4,501,406
SHUT-OFF DEVICE FOR A FLUID
Helmut Walther, and Mario Palazzetti, both of Turin, Italy, assignors to Centro Ricerche Fiat S.p.a., Turin, Italy
Filed Jul. 14, 1983, Ser. No. 513,918
Claims priority, application Italy, Jul. 15, 1982, 67899 A/82
Int. Cl.³ F16K *31/12*
U.S. Cl. 251—30 **18 Claims**



1. A fluid shut off device (1) including a body, (2) said body having a conduit (6) in which a fluid is adapted to flow, a cylindrical plunger (9) slideably received in a seat (8) formed in said body (2) said plunger having an end portion (15) adapted to close said conduit (6), and control means for controlling the movement of said plunger (9) in said seat (8) between first and second working positions in which said end portion (15) respectively closes and opens said conduit (6); said control means comprising: a chamber formed in said body; said plunger having a radial portion of reduced diameter; a conduit in said body; at least one hollow piezoelectric member having an internal and external surface (26) said member operably disposed inside said chamber (24) to communicate with said radial portion of said plunger (9) by means of said conduit, said fluid cooperating with said radial portion of said plunger (9) to displace said plunger axially within said body; said internal and external surfaces of said piezoelectric member (26) respectively having coatings (35) of electrically conducting material thereon and said coatings connected to corresponding power supply terminals (40,55) arranged outside said body (2).

4,501,407
SOLENOID ACTUATED FLUID CONTROL VALVE
Myles N. Murray, Chagrin Falls, Ohio, assignor to Industrial Electronic Rubber Company, Twinsburg, Ohio
Filed Aug. 11, 1982, Ser. No. 407,074
Int. Cl. F16K *31/02*
U.S. Cl. 251—141 **21 Claims**

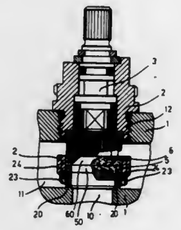


1. In a fluid control valve comprising a porting member including a port and a conical valve seat circumscribing said port, and port closing means including a valve element having an elongated rigid body and a resilient conical tip secured at one end of said rigid body, said valve seat and tip being correspondingly tapered and said porting member and valve element being relatively movable to open and close said port at said valve seat and tip, the improvement comprising a relatively small, annular sealing bead on, concentric with, and projecting from the correspondingly tapered surface of said tip for effecting sealing engagement between said tip and seat; in combination with stop means provided to limit the amount of compression of said annular bead and tip when engaged with said valve seat.

4,501,408
VOLUME CONTROL VALVE
Manfred Pawelzik, Soest, and Max Derr, Iserlohn, both of Fed. Rep. of Germany, assignors to Friedrich Grohe Armaturenfabrik GmbH & Co., Fed. Rep. of Germany
Filed Jul. 2, 1982, Ser. No. 394,699
Claims priority, application Fed. Rep. of Germany, Jul. 14, 1981, 3127714
Int. Cl.³ F16K *3/08*
U.S. Cl. 251—314 **6 Claims**

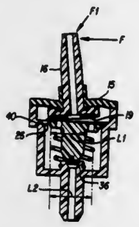
1. A volume control valve for use in a sanitary fitting, having a first inlet orifice and a first outlet orifice said valve comprising:
a valve body adapted for insertion into said fitting, said valve body having a axial inlet orifice and radial outlet orifices;
a valve spindle rotatably mounted on said body;
a valve seat insert disposed in said body and held in said body so as to be non-rotatable, said valve seat insert hav-

ing at least one through opening transverse to the longitudinal axis of said body;
a valve control disk rotatable on said valve seat insert by said spindle, said valve control disk having at least one through opening;
a circular seal supporting piece having at least one lug engaging said body and one lug engaging said valve seat insert to prevent said valve seat insert from turning;
a sealing element carried on said support piece, said sealing



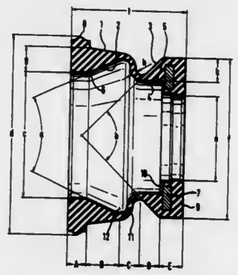
element having a first portion on one side of said support piece and a second portion on the other side of said support piece;
said valve body including a shoulder;
said supporting piece being adapted to engage said shoulder such that said first portion prestresses said valve seat disk by a predetermined amount;
said second portion extending from said supporting piece toward said first inlet orifice and being deformable to sealing engage said fitting around said first inlet orifice.

4,501,409
TILT VALVE
James J. Hill, Plantation, and Al Marven, Hollywood, both of Fla., assignors to Cook International, Inc., Palm Beach, Fla.
Filed Nov. 18, 1982, Ser. No. 442,674
Int. Cl.³ F16K *31/00*; B65D *83/00*
U.S. Cl. 251—354 **15 Claims**



1. A release valve for a pressurized vessel, said valve comprising:
a hollow valve body defining a chamber therein, said valve body mounted in an opening of said vessel and forming a sealing closure for said opening of said vessel;
inlet means for communicating said chamber with the interior of said vessel;
outlet means for communicating said chamber with a region exterior to said vessel;
means for pressure sealing said chamber;
first means in said valve body for selectively opening and closing said outlet means; and
means in said valve body for biasing said first means for opening and closing in a closing position, said means for biasing comprising a barrel-shaped spring extending between said valve body and said first means for opening and closing, said barrel shaped spring comprising a coil spring having a first end engaging said first means and a second end engaging a portion of said valve body, a diameter of a mid-portion of said spring is larger than a diameter of said first end and larger than a diameter of said second end.

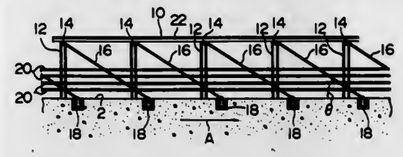
4,501,410
VALVE BODY
Rolf Weiler, Frankfurt am Main, and Reiner Müller, Hattersheim, both of Fed. Rep. of Germany, assignors to ITT Industries, Inc., New York, N.Y.
Filed Nov. 10, 1983, Ser. No. 550,547
Claims priority, application Fed. Rep. of Germany, Nov. 15, 1982, 3242188
Int. Cl.³ F15B *9/10*
U.S. Cl. 251—366 **6 Claims**



1. An integral valve body of elastic material adapted for use in the multiple function valve of a vacuum-operated brake power booster, the pedal-controlled operating rod of which makes a valve piston which controls the pressure in the booster chamber slide and cooperates with the valve body, said valve body comprising two roughly circular cylindrical parts with different inner and outer diameters which are arranged one behind the other in the axial direction and are formed in one piece with a bellows portion that interconnects both parts, the invention in which a first of said parts of larger diameter is succeeded in the direction of the second part of smaller diameter by an annular portion whose radially internally and externally extending peripheral surfaces are constituted by the generated surfaces of circular truncated cones, with the internally extending generated surface forming an angle of opening of between 44° to 56°, and the externally extending generated surface being slightly conically tapered in the direction of the second part and the external peripheral surface of the portion succeeding the second part being the generated surface of a circular truncated cone which forms an angle of opening of between 80° to 100°, while the radially internal peripheral surface of this portion is the surface of a cylinder and in which the thin-walled bellows portion which interconnects both said portions has an S-shaped longitudinal sectional profile in the longitudinal direction of the valve body.

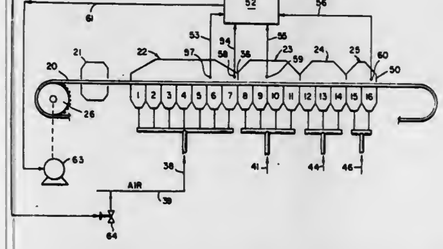
4,501,411
GUARDRAIL FOR ROADWAY
Yoshio Otaki, 35, Hayakitachooomachi, Yufutsu-gun, Hokkaido, Japan
Filed Sep. 1, 1983, Ser. No. 528,586
Int. Cl.³ A01K *3/00*
U.S. Cl. 256—13.1 **9 Claims**

1. A guardrail for a roadway, including a row of plurality of posts disclosed outside and extending along one side edge of a roadway, said posts being arranged at a predetermined pitch, each of said posts having a lower end section rigidly secured to the ground, an intermediate section extending upwardly from said lower end section rigidly secured to the ground, an intermediate section extending upwardly from said lower end section and at least one arm extending from the upper end of said intermediate section towards an adjacent lane of the roadway and termintating in an outer end positioned substantially above said side edge of said roadway, the vertical distance between said outer end of said arm and said side edge of said roadway being greater than the heights of vehicles moving on said roadway; anchors rigidly secured to the ground in said side edge of said roadway substantially at said predetermined pitch;



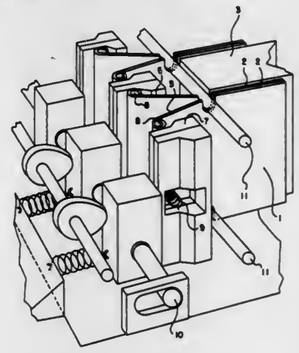
and a network formed by supporting cables each extending between the outer end of the arm of one of said posts and one of said anchors and lateral cables extending substantially parallel to the surface of said roadway and rigidly secured to said supporting cables, each of said supporting cables being inclined downwardly and forwardly from the outer end of the arm of one of sand posts in the direction of traffic on said roadway.

4,501,412
NON-POLLUTING HEAT RECUPERATIVE SINTERING METHOD AND APPARATUS
William T. Sweat, Salt Lake City, Utah, assignor to ASARCO Incorporated, New York, N.Y.
Continuation of Ser. No. 323,632, Nov. 23, 1981, abandoned, which is a division of Ser. No. 086,880, Oct. 22, 1979, Pat. No. 4,337,083. This application Jan. 13, 1984, Ser. No. 570,424
Int. Cl.³ C22B *1/08*
U.S. Cl. 266—178 **6 Claims**



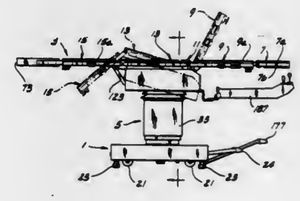
1. In a sintering machine having a continuous horizontally disposed travelling grate, drive means for moving said grate, a sintering zone and at least first and second cooling zones, first windbox means for supplying a gas to the lower portion of said first cooling zone, second windbox means for supplying a gas to the lower portion of said second cooling zone, first hood means for removing gas from the upper portion of said first cooling zone, and second hood means for removing gas from the upper portion of said second cooling zone, the improvement comprising first recirculating means including a first conduit means communicating with said first hood means and said second windbox means for circulating the cooling gases from the first cooling zone directly to the second cooling zone, second recirculating means including second conduit means communicating with said second hood means and said first windbox means for circulating the cooling gases from the second cooling zone directly to the first cooling zone, said first recirculating means including gas cooling means disposed in said first conduit means and said hoods being partitioned from each other.

4,501,413
CLAMPING ELEMENT FOR STORAGE BATTERY PLATE STACKS
Joachim Illmann, Garbsen, and Heribert Füllgraf, Suthfeld, both of Fed. Rep. of Germany, assignors to Varta Batterie Aktiengesellschaft, Hanover, Fed. Rep. of Germany
Division of Ser. No. 42,577, May 25, 1979, Pat. No. 4,342,449. This application Jan. 28, 1982, Ser. No. 343,500
Claims priority, application Fed. Rep. of Germany, Jun. 8, 1978, 2825126
The portion of the term of this patent subsequent to Aug. 3, 1999, has been disclaimed.
Int. Cl.³ B25B *1/20*
U.S. Cl. 269—43 **11 Claims**



1. A clamping system for holding a plurality of plate stacks of lead storage batteries constituting separating partitions within a cassette conforming to the plan dimension of the storage battery's block casing, wherein the clamping system includes a plurality of clamping elements each having two closely adjacent preformed leaf springs, and wedge-shaped elements which are slideable between the spring portions of adjacent clamping elements to provide means for alternative clamping of the two leaf springs so that said springs are moved toward each other, and unclamping of the two leaf springs so that said springs are moved apart from each other, so as to permit insertion into the block casing and closing of the assembly.

4,501,414
OPERATING TABLE
Edward M. Mason, St. Louis; Murray Q. Tanner, III, Florissant, both of Mo., and Michael J. Finley, Park City, Ill., assignors to Affiliated Hospital Products, Inc., St. Louis, Mo.
Filed Feb. 8, 1983, Ser. No. 464,873
Int. Cl.³ A61F *5/00*
U.S. Cl. 269—325 **9 Claims**



1. An operating table comprising:
a base;
a table top comprising, in order from one end thereof constituting its head end to its other end constituting its foot

end, a back section, a kidney elevator section, a seat section and a leg section;

means mounting the table top on the base for raising and lowering it relative to the base, sliding it endwise relative to the base, and tilting it endwise and laterally relative to the base, said mounting means comprising:

elevator means on the base,

a tilt frame mounted at the upper end of the elevator means for endwise and lateral tilting, and

a slide frame mounted on the tilt frame for endwise sliding movement relative to the tilt frame and for endwise and lateral tilting relative to the base with the tilt frame;

the seat section being secured to the slide frame;

hydraulic cylinder means for tilting the tilt frame endwise;

hydraulic cylinder means for tilting the tilt frame laterally;

hydraulic cylinder means for sliding the slide frame endwise relative to the tilt frame;

means pivotally connecting the back section at its foot end to the head end of the seat section for swinging movement of the back section between a fully lowered position angled downward from the seat section and a raised position extending up from the seat section at the head end of the seat section generally perpendicular to the seat section;

hydraulic cylinder means carried by the slide frame for swinging the back section between its said fully raised and lowered positions and maintaining it in either of these positions or in various intermediate positions of adjustment therebetween;

means pivotally connecting the leg section at its head end to the foot end of the seat section for swinging movement of the leg section between a fully lowered position extending down from the seat section at the foot end of the seat section generally perpendicular to the seat section and a fully raised position extending up from the seat section at the foot end of the seat section generally perpendicular to the seat section;

hydraulic cylinder means carried by the slide frame for swinging the leg section between its said fully raised and lowered positions and maintaining it in either of these positions or in various intermediate positions of adjustment therebetween; and

means mounting the kidney elevator section on the slide frame between the head end of the seat section and the foot end of the back section for sliding movement with the slide frame and for up and down movement relative to the slide frame between a fully lowered position generally flush with the seat section and a fully raised position elevated above the seat section, and comprising hydraulic cylinder means carried by the slide frame for moving the kidney elevator section up and down and between its said fully lowered and raised positions and for maintaining it in either of said positions or in various intermediate positions of adjustment therebetween.

4,501,415

BALANCED DEFLECTION GRIPPER FOR SHEET HANDLING EQUIPMENT

Michael H. Loebach, Fort Plain, N.Y., assignor to Motter Printing Press Co., York, Pa.

Continuation-in-part of Ser. No. 299,650, Sep. 4, 1981, abandoned. This application Jul. 28, 1983, Ser. No. 517,945

Int. Cl.³ B65H *39/08*; B41F *1/28*

U.S. Cl. 270—60 **17 Claims**

1. A balanced deflection gripper mechanism for sheet handling equipment comprising:

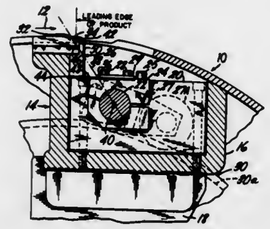
a clamping surface on which sheets of paper and the like may be positioned;

gripper means comprising a holder supported relative to said surface and a resilient gripper finger having one end fixed to said holder, wherein said gripper finger terminates in a tip;

means for rotating said holder about an axis for rotating said tip in an arc into engagement with said surface;

wherein said tip lies along a radius extending through said axis;

wherein upon engagement of said tip and surface further rotation causes said surface to impart a counterforce to said tip having a first component perpendicular to said radius and a second component along said radius and said further rotation causes displacement of said one end relative to said countersurface; and



wherein said gripper finger is formed such that said further rotation causes said gripper finger to deflect, imparting a force to said tip with a radial component which is substantially equal and opposite to said second component of counterforce, thereby producing non-sliding engagement between said gripper tip and said surface.

4,501,416

SHEET HANDLING APPARATUS

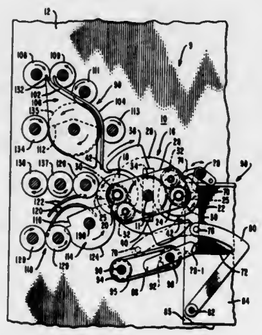
David A. Hain, Dundee, Scotland, assignor to NCR Corporation, Dayton, Ohio

Filed Apr. 19, 1982, Ser. No. 369,781

Claims priority, application United Kingdom, Nov. 10, 1981, 8133823

Int. Cl.³ B65H *3/12*

U.S. Cl. 271—3.1 **14 Claims**



1. A sheet handling apparatus comprising:

holding means for holding a stack of sheets;

a release station;

a loading station;

pick-up means being moveable into engagement with a first sheet in said stack at one end of said holding means for the purpose of removing a said sheet from said stack; said pick-up means also being moveable into engagement with a sheet located at said loading station for the purpose of loading sheets one by one into said holding means at said one end;

mode selection means for selecting whether said sheet handling apparatus is to operate in a sheet pick-up mode or a sheet-loading mode; and

control means responsive to said mode selection means for controlling the operation of said pick-up means to pick up a first said sheet in said stack and release it at said release station when said sheet handling apparatus is operated in said sheet pick-up mode, and also for controlling the operation of said pick-up means to pick up a sheet at said loading station and release it at said one end of said holding means when said sheet handling apparatus is operated in said sheet-loading mode;

said pick-up means being vacuum operated, and said control means being effective to control the application of vacuum to said pick-up means;

said pick up means including a rotatable assembly of vacuum operated pick-up members arranged to move in a planetary manner; each said pick-up member being arranged to rotate in a direction which is opposite to the direction of rotation of said assembly and being arranged to make rolling contact with a sheet when picking up a said sheet from said holding means.

4,501,417

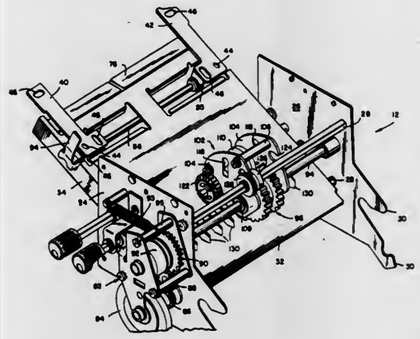
INSERTER FEEDER ASSEMBLIES

Dean H. Foster, Stratford, and Harold Silverman, Norwalk, both of Conn., assignors to Pitney Bowes Inc., Stamford, Conn.

Division of Ser. No. 185,857, Sep. 11, 1980, Pat. No. 4,373,711. This application Oct. 7, 1982, Ser. No. 433,200

Int. Cl.³ B65H *3/52*

U.S. Cl. 271—124 **9 Claims**



1. In a feeder assembly comprising a tray, a front frame and a rear frame, the tray being positioned between the frames and adapted to carry a stack of sheet materials, feed wheel means for removing individual sheet material from the stack and advancing the individual sheet material along a path, a separator stone adapted to engage the undersurface of the individual sheet material to prevent multiple feeding, and bracket means for carrying the separator stone beneath the tray, the improvement providing for simplified feeder set-up comprising stone adjustment means for controlling the position of the stone and means for adjustably shielding the stone, the stone adjustment means including operator engageable means accessible adjacent the front frame, means pivotally mounting the bracket means about an axis extending transverse to the path, the adjustment means further including a stone adjustment shaft extending transversely of the path and beneath the tray for pivoting the bracket means about said axis extending transverse to the path, the stone adjustment shaft including cam means, the cam means being in engagement with the bracket means, and the cam means being rotatable for substantially vertically displacing the bracket means upon rotating the stone adjustment shaft to thereby pivot the stone carried by the bracket means when the operator engageable means is actuated, the shielding means including a stone shield slidably attached to the bracket means for adjustably shielding the stone, the stone shield being pivotable with the bracket means, and the shielding means including further operator engageable means adjacent the front panel for slidably moving the stone shield, whereby the bracket means and thus the separator stone and stone shield are substantially vertically displaced in response to operator actuation at the front of the feeder assembly.

4,501,418

STACKING DEVICE FOR PAPER SHEETS

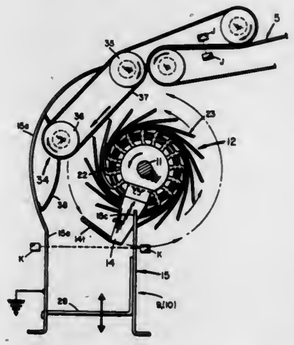
Yoshio Ariga; Toshiyuki Miyano, and Yukinori Wakisaka, all of Yokohama, Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Jan. 20, 1982, Ser. No. 340,850

Claims priority, application Japan, Feb. 24, 1981, 56-24915[U]; Feb. 27, 1981, 56-28219

Int. Cl.³ B65H *29/40, 31/32*

U.S. Cl. 271—187 **6 Claims**



1. A stacking device for evenly stacking paper notes successively along and discharged from a transport passage, each of said notes having a leading edge and a trailing edge, said stacking device comprising:

note transporting means for engaging the discharged notes at their leading edges and pulling the notes along a transporting path to a stacking box;

cradle means positioned along said transporting path and having a first operative position for temporarily receiving and stacking the notes from said transporting means and depositing said temporarily stacked notes in said stacking box;

note edge contacting means for contacting the trailing edge of each of said notes for securing said notes in engagement with said note transporting means as said notes are being pulled along the transporting path to said stacking box, said note contacting means further contacting the trailing edge of each of said notes as said notes are received and stacked on said cradle means to maintain an evenly stacked pile, said note edge contacting means being convex toward the transporting path; and

note removing means for removing each of said notes from said transporting means and depositing said notes into said stacking box when said cradle means is away from said first operative position.

4,501,419

COLLATOR HAVING A TRANSFER CAPABILITY

Yuji Takahashi, Tokyo; Hisaji Masaki, Kawasaki; Muneo Adachi, and Masaru Igarashi, both of Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 20, 1981, Ser. No. 294,573

Claims priority, application Japan, Aug. 28, 1980, 55-118614; Aug. 28, 1980, 55-118615; Aug. 28, 1980, 55-118616

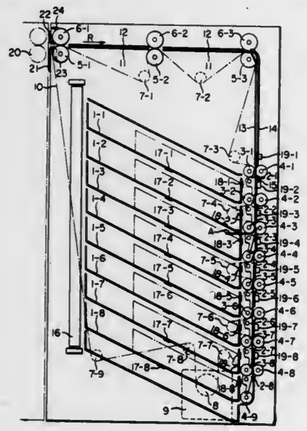
Int. Cl.³ B65H *31/24, 39/11*

U.S. Cl. 271—288 **20 Claims**

1. A collator comprising:

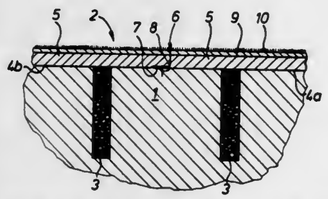
a plurality of record medium storage bins,

transport means for transporting record media to said storage bins,
deflection means for guiding said record media to said storage bins,
detection means for detecting an empty condition of said record media in said storage bins, and
control means for performing storage control for the record media with separation of said plurality of record medium storage bins into groups in accordance with a desired set



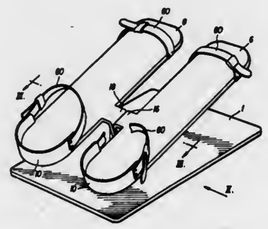
number, wherein said control means controls the operation of said deflection means such that when a predetermined amount of record media have been stored in a given storage bin in a group during the record medium storage operation, the recording media are transported to another storage bin in the same group, and when said detection means detects that the record media have been removed from the storage bin having the predetermined amount of record media stored therein, the transport of the record media to said emptied storage bin is permitted.

4,501,420
PLAYING SURFACES SPORTS
Peter L. K. Dury, West Bridgford, England, assignor to Nottingham County Council, England
Filed Apr. 25, 1983, Ser. No. 488,626
Claims priority, application United Kingdom, Apr. 27, 1982, 8212124
Int. Cl.³ A63C *19/00*
U.S. Cl. 272—3 **14 Claims**



1. A method of constructing a playing surface for sports and the like, characterised by the steps of:
(A) laying on a drained or water-permeable surface at least one envelope formed of a flexible water-permeable material and containing an unbonded base material comprising sand; and
(B) placing on to said envelope or envelopes a sheet of a resilient material.

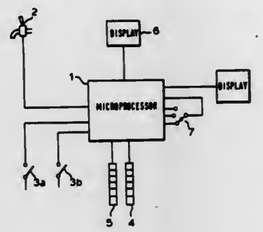
4,501,421
FOOT AND LEG EXERCISING DEVICE
James G. Kane, 6157 30th St., N.W., Washington, D.C. 20015; Ernest A. Pedicano, 99 Prospect St., Apt. 2C, Stamford, Conn. 06901, and James Pedicano, 120 Glenwood Rd., Ridgewood, N.J. 07450
Filed Aug. 18, 1982, Ser. No. 409,142
Int. Cl.³ A01B *23/04*
U.S. Cl. 272—96 **10 Claims**



1. A portable foot and/or leg exercising apparatus for an operator, comprising:
a base having a support member mounted thereon;
pivot means mounted on said support member;
a first and second foot plate positioned on opposite sides of said support member;
means centrally positioned between said first and second plates and extending vertically from each of said first and second plates pivotally mounting said first and second plates on opposite sides of said support member wherein said pivot means comprises a first hub extending from said first plate and a second hub extending from said second plate; and
means disposed surrounding said pivot means and coaxial therewith for resisting respective pivoting of said first and second foot plates wherein said means for resisting respective pivoting comprises a force resistant friction disk mounted on said pivot member and disposed between said first and second hub for frictional engagement therewith; the first plate is pivoted in a clockwise direction by the toe of one foot of the operator; and wherein the second plate is pivoted in a counterclockwise direction by pressure from the anterior aspect of the other foot of the operator so as to cause muscular action of the foot and/or leg of said operator.

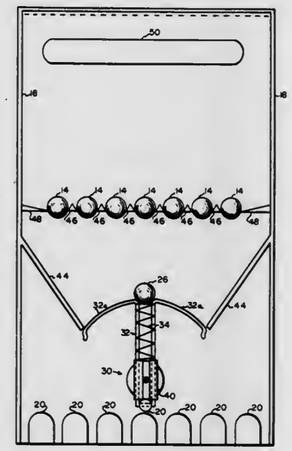
4,501,422
APPARATUS FOR PLAYING A GAME OF SKILL
Edward A. Leshik, 122, Princess Ct., Queensway, London, England
Filed Dec. 2, 1982, Ser. No. 446,147
Claims priority, application United Kingdom, Dec. 2, 1981, 8136329
Int. Cl.³ A63B *71/06*
U.S. Cl. 273—1 GC **5 Claims**

1. An apparatus for playing a game and dispensing a liquid comprising:
liquid dispensing means;
two columns of a plurality of lights;
means for sequentially illuminating each of said lights of each column so that only one of said lights is illuminated at one time in response to a dispensing of a liquid, said means for sequentially illuminating including:
a microprocessor which alters the rate of sequential illumination of said lights;
means for setting the rate of sequential illumination whereby said game degree of difficulty is controlled; and
means for providing a visual indication of said degree of difficulty;
manually operable means for terminating said sequential illuminations and maintaining illumination of a light illuminated at the time selected by a game participant, whereby said game is played by attempting to inhibit sequential illumination on a preselected light, and said



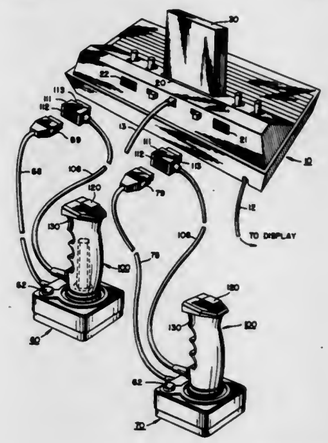
microprocessor records each time said sequential illumination stops on a selected light; and
said microprocessor programmed to adjust said degree of difficulty of said game in response to the ratio of game wins to game plays in a direction to stabilize said ratio.

4,501,423
POOL GAME APPARATUS
Louie J. Stewart, 1056 Conway St., Billings, Mont. 59105
Filed Aug. 11, 1983, Ser. No. 522,102
Int. Cl.³ A63F *7/00, 7/24, 7/34*
U.S. Cl. 273—122 R **4 Claims**



1. A game board apparatus, which comprises:
an elongated inclined top deck having a plurality of sides;
first and second balls;
means for holding said first ball on said elongated inclined top deck, said means for holding allowing physical movement of said first ball up said elongated inclined top deck and exposing said first ball to impact from said second ball when said second ball is driven up said elongated inclined top deck;
means for driving said second ball up said elongated inclined top deck toward said first ball;
elongated first and second guide means disposed on said elongated inclined top deck, said elongated first and second guide means converging downwardly toward said means for driving; and
said means for driving comprising an assembly mounted for pivotal movement about an axis which is substantially perpendicular to said elongated inclined top deck, said assembly including means for holding said second ball utilizing only gravity, an elongated spring bias means and arms extending laterally of and independently of said means for holding said second ball to allow an operator to direct the direction of travel of said second ball and control the position of said arms, said arms being pivotable between a first position where they block an opening between the lower extremity of said first and second elongated guide means and a second position where they do not.

4,501,424
MANUAL CONTROLLER FOR VIDEO SYSTEM
George C. Stone, and Stuart E. Ross, both of Stamford, Conn., assignors to CBS Inc., New York, N.Y.
Filed Jun. 17, 1983, Ser. No. 505,515
Int. Cl.³ A63F *9/22*; H01H *13/08, 21/10, 3/02*
U.S. Cl. 273—148 B **22 Claims**



1. For use in conjunction with a video game controller system which includes a pair of input ports, each being adapted for coupling to a manual controller unit which includes a base enclosure, a joystick member pivotally mounted at one end thereof in the base enclosure, means for producing indications representative of the pivot position of said joystick member, and means including a cable and connector for communicating joystick member pivot position indications to said controller system when said connector is coupled to an input port; an adapter for increasing the manual inputs that can be communicated from a manual controller unit to said video game controller system, comprising:
a shell open at one end and adapted to fit over and envelop said joystick member, such that said joystick member can be moved by manually moving said shell;
a switch mounted in said shell;
an auxiliary connector adapted for coupling to an input port of said video game controller system; and
conductive means for coupling the contacts of said switch to elements of said auxiliary connector;
whereby said manual controller unit with said adapter can be used to convey adapter switch information, as well as joystick member pivot position indications, from a player to the video game controller system.

17. For use in conjunction with a video game controller system which includes a pair of input ports each adapted for coupling to a manual controller unit which includes a base enclosure, a joystick member pivotally mounted at one end thereof in the base enclosure, means for producing indications representative of the pivot position of said joystick member, and means including a cable and connector for communicating joystick member pivot position indications to said controller system when said connector is coupled to an input port; a pair

of adapters for increasing the manual inputs that can be communicated from each of said manual controller units to said video game controller system, each adapter comprising:

a shell open at one end and adapted to fit over and envelop the joystick member of the respective manual controller unit such that said joystick member can be moved by manually moving said shell;

a switch mounted in said shell;

an auxiliary connector adapted for coupling to one of said input ports;

conductive means for coupling the contacts of said switch to elements of said auxiliary connector;

said auxiliary connector including an auxiliary input port for receiving the connector of the respective manual controller unit to couple elements thereof the respective input port;

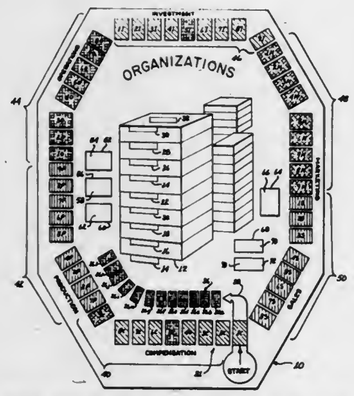
whereby each of said manual controller units, with its respective adapter can be used to convey adapter switch information, as well as joystick member pivot position indications, from a player to the video game controller system.

4,501,425

BUSINESS ORGANIZATION GAME

Daniel D. Alvarado, Phoenix, Ariz., assignor to Robert J. Alvarado, San Jose, Calif.

Filed Jul. 21, 1982, Ser. No. 400,460
Int. Cl.³ H63F 3/00
U.S. Cl. 273—256 **7 Claims**



1. A game simulative of the vagaries of success within a corporation, said game comprising in combination:

(a) a game board having a first path and a second path;

(b) a plurality of playing pieces for each player, one of said playing pieces being used in conjunction with said first path and another of said playing pieces being used in conjunction with said second path;

(c) means for arbitrarily determining the number of squares each player in turn moves his playing piece along said second path;

(d) said first path including a number of levels having an ascending order of signficance relative to positions within the corporation;

(e) said second path being a continuous path segmented into a plurality of squares, said second path including a plurality of discrete sections, each said section embracing a number of squares and being representative of a work function within a corporation;

(f) a third path distinct from said second path with entry into said third path being determined by a designated one of the squares of said second path and having a terminal end remote from said second path, said third path having a plurality of further squares equal in number to the highest number available from said determining means, each further square being reflective of a quantity of said medium of exchange or said certificates of stock to be delivered to a player;

(g) each square of each said section including a certain directive pertinent to movement of the respective one of a player's playing piece along one of said first and said second path;

(h) a plurality of stacks of cards, each said stack of cards being related to employee evaluation criteria;

(i) one of the squares in at least some of said sections including a directive referencing one of said stacks of cards and subjecting a player to the directive of a card in the referenced one of said stack cards;

(j) a medium of exchange for reflecting each player's financial status which status may be altered in response to directives of the squares and said cards; and

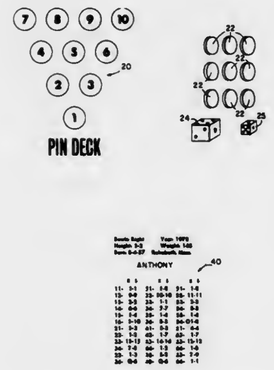
(k) a plurality of certificates of stock for determining each player's degree of ownership in the corporation which degree of ownership may be altered in response to directives of the squares and said cards.

4,501,426

BOWLING GAME

John R. Seitz, P.O. Box 1447, Lancaster, Pa. 17604

Continuation of Ser. No. 163,016, Jun. 25, 1980, abandoned.
This application Jun. 7, 1982, Ser. No. 385,977
Int. Cl.³ A63F 3/00
U.S. Cl. 273—277 **14 Claims**



1. A bowling game for realistically simulating the scoring obtained in each frame of a conventional bowling game, the scoring results being separately obtained for the first ball of a frame and for the second ball of the frame when the first ball does not result in a strike, including:

bowler card means having a series of identifier indicia and corresponding strike indicators and spare indicators;

chance means for providing identifier number corresponding to said identifier number indicia on said bowler card means, said chance means identifying, by means of said identifier numbers and corresponding identifier number indicia, a corresponding strike indicator for a first ball in a frame and a corresponding spare indicator for a second ball in a frame, and providing row selector totals for specifying scoring results;

a plurality of first ball result boards incorporating strike and spare leave indicia representing the number of pins scored on the first ball of a frame, at least one of said first ball result boards having columns of indicia corresponding to the particular frame being bowled and adapted to produce different results for different frames, and having rows corresponding to the strike indicators on said bowler card, at least another of said first ball result boards having columns of indicia corresponding to selected results obtained from said at least one first ball result board and having rows of indicia corresponding to row selector totals provided by said chance means; and

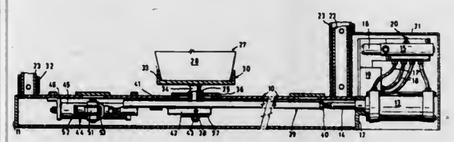
a plurality of second ball result boards incorporating spare scoring indicia representing the number of pins scored on the secoond ball of a frame, the indicia of said second ball result boards being arranged in columns corresponding to said spare leave indicia from said first ball result boards and in rows corresponding to said spare indicators from said bowler card, said second ball result indicia representing the number of pins scored on the second ball of a frame.

4,501,427

TARGET APPARATUS

Vay B. Payne, 1 Boundary St., Beaudesert, Queensland, 4285, Australia

PCT No. PCT/AU83/00079, § 371 Date Feb. 7, 1984, § 102(e) Date Feb. 7, 1984, PCT Pub. No. WO83/04433, PCT Pub. Date Dec. 22, 1983
PCT Filed Jun. 9, 1983, Ser. No. 582,571
Claims priority, application Australia, Jun. 9, 1982, PF4370
Int. Cl.³ F41J 7/00, 1/02
U.S. Cl. 273—406 **7 Claims**



1. A target apparatus including:

a framework having upright side members and substantially horizontal upper and lower frame members between the side members, the lower frame member being hollow;

means rotatably mounted on the upper and lower frame members for supporting at least one target therebetween;

a gear wheel in the lower frame member connected to the target support means;

an operating rod slidably mounted in the lower frame member in operating engagement with the gear wheel;

means to reciprocate the operating rod to rotate the target support means; and

damping means connected to the operating rod to damp the movement of the operating rod, the lower frame member being filled with oil, and

the damping means including a cylinder in communication with the interior of the lower frame member so that the oil acts as a damping medium.

4,501,428

ROLL SEAL BOXES FOR CONTINUOUS VACUUM TREATING APPARATUS

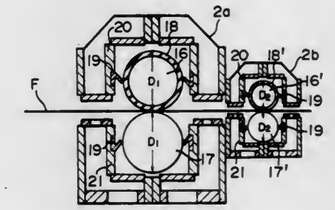
Susumu Ueno; Kouiti Kuroda, both of Ibaraki; Hajime Kitamura, Ichihara; Masaie Tohkai, Ibaraki; Ken-ichi Kato, Tokyo, and Nobuyuki Hiraishi, Katsuta, all of Japan, assignors to Hitachi, Ltd. and Shin-Etsu Chemical Co., Ltd., both of Tokyo, Japan

Filed Jun. 18, 1984, Ser. No. 621,373
Claims priority, application Japan, Jun. 17, 1983, 58-107871; Jun. 17, 1983, 58-107874
Int. Cl.³ F16J 15/40, 15/46
U.S. Cl. 277—12 **5 Claims**

1. A continuous vacuum treating apparatus comprising:

a vacuum treating chamber for continuously treating a workpiece of soft material in a vacuum; and

a plurality of auxiliary vacuum chambers located anterior and posterior to said vacuum treating chamber, each of said auxiliary vacuum chambers comprising an upper seal roll and a lower seal roll forming a pair maintained in contact with each other and arranged to extend perpendicular to a direction in which said workpiece of soft material is conveyed, a plurality of pairs of ripple members having the ripple members of each pair being located in spaced juxtaposed relation and extending axially of one



of the seal rolls along its outer periphery, and a pair of side pieces each positioned against one of opposite end faces of the pair of upper and lower seal rolls; wherein the improvement resides in that:

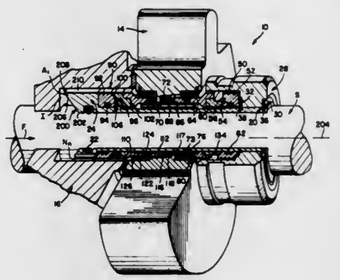
the diameter of each of the upper and lower seal rolls of the auxiliary vacuum chambers disposed on the vacuum treating chamber side is made smaller than that of each of the upper and lower seal members of the auxiliary vacuum chamber located closest to the atmosphere.

4,501,429

MECHANICAL SEAL FLUSH AGITATOR AND WEAR MONITOR FOR MECHANICAL SEALS

Richard E. White, Newark, N.Y., assignor to Garlock Inc., Palmyra, N.Y.

Filed Mar. 30, 1983, Ser. No. 480,387
Int. Cl.³ F16J 15/16, 15/34; G02B 5/17
U.S. Cl. 277—24 **10 Claims**



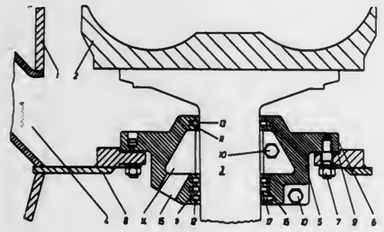
1. A contaminant flush agitator for a mechanical shaft seal comprising:

a sleeve having a body with a shaft receiving bore therethrough and a radial extension on one end thereof; and contaminant impeller means formed on said radial extension for moving contaminants in a fluid surrounding said seal away from said impeller means, said contaminant impeller means being formed on and end surface of said radial extension and including at least one projection extending from a base on said end surface axially of said body to an apex spaced from said base, said projection having a contaminant engaging surface sloping radially outwardly from said base toward said apex.

4,501,430
MEANS OF SEALING OFF THE INSIDE OF A PULVERIZER

Wilhelm Kuhl, Essen; Dieter Kiefer, Wesel-Bislich, and Max Josefowitz, Oberhausen, all of Fed. Rep. of Germany, assignors to Deutsche Babcock Werke Aktiengesellschaft, Oberhausen, Fed. Rep. of Germany

Filed Nov. 18, 1983, Ser. No. 553,486
Claims priority, application Fed. Rep. of Germany, Dec. 1, 1982, 3244362
Int. Cl.³ F16J 15/40
U.S. Cl. 277—59 6 Claims

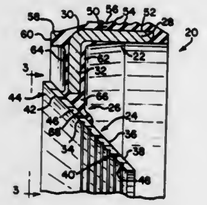


1. An arrangement for sealing off the inside of a pulverizer from the outside atmosphere, particularly a bowl-mill pulverizer comprising: a horizontal rotating bowl-type grinding ring rigidly connected to a shaft; a barrier chamber and ring seals in a ring-seal holder and bordering said barrier-air chamber, said ring seals comprising slide rings that demarcate the barrier-air chamber, a ring seal on a side of the chamber facing the inside of the pulverizer being arranged in a wider clearance with respect to the rotating part of the pulverizer than those ring seals on the other side.

4,501,431
COMPOSITE TEFLON HELIX SEAL

Glenn Pelsker, Barrington; Keith Christiansen, Fox River Grove, and Gil Jaime, West Dundee, all of Ill., assignors to Chicago Rawhide Manufacturing Company, Elgin, Ill.

Filed Dec. 19, 1983, Ser. No. 563,149
Int. Cl.³ F16J 15/32
U.S. Cl. 277—134 16 Claims



1. A fluid seal assembly for retaining fluid within and excluding foreign materials from, a sealed region defined by said seal and first and second, relatively movable machine elements, said seal assembly comprising, in combination, a casing element of generally annular form, having a mounting portion adapted to be received in fixed relation with said first machine element and a bonding portion adapted to receive an elastomeric element bonded thereto in fluid tight relation, said seal assembly also including a resinous fluorocarbon primary seal ring unit, said seal ring unit being, in its unstressed condition, of tapering-annular form and thin cross-section and being defined by reduced and enlarged diameter end surfaces and by closely spaced apart, generally parallel, radially inner and outer seal ring surfaces, with one of said inner and outer surfaces being an active surface having a primary seal band portion formed thereon adjacent one of such end portions, said seal band being adapted to engage a part of said second machine element in substantially fluid tight dynamic relation and the other of said inner and outer surfaces being a reverse surface having one portion thereof disposed in use in generally facing relation to said sealed region, said reverse surface further including a circumferential band portion acting as a bonding surface, and an elastomeric flexible positioning collar unit having one portion bonded to said casing and another bonding portion bonded to said bonding band on said primary ring, and a principal body portion extending between said bonded portions so as to positively but resiliently locate said primary seal ring within said casing.

4,501,432
CYLINDER-HEAD COVER GASKET

Toru Kuniyoshi, Ichinomiya, and Ryoji Okumoto, Nakashima, both of Japan, assignors to Toyoda Gosei Co., Ltd., Nishikasugai, Japan

Filed Mar. 15, 1984, Ser. No. 590,052
Claims priority, application Japan, Mar. 17, 1983, 58-39424[U]
Int. Cl.³ F16J 15/06
U.S. Cl. 277—168 2 Claims



1. In a cylinder head cover provided with a peripheral gasket-receiving groove, generally square-shaped in section except for the bottom thereof, defined by two plates, one of which is straight, in section, in its groove-defining part and the other of which converges toward the one to form a wedge-shaped space adjacent the one plate at the bottom of the groove, the combination of a resilient gasket having a portion generally conforming to the square-shaped portion of the groove and having a portion somewhat triangular in section projecting into said space, whereby on compression of said gasket against a cylinder head the entire groove is filled by said gasket so that strong compression thereof is maintained and the seal between said gasket and the cylinder head is strong and effective.

4,501,433
APPARATUS FOR PRACTICING GOLF STROKE

Monroe Pulley, Jr., 5131 N. 17th Ave., No. 2, Phoenix, Ariz. 85015

Filed May 20, 1983, Ser. No. 496,608
Int. Cl.³ A63B 69/36
U.S. Cl. 280—47.26 5 Claims

1. A golf cart comprising
(a) a frame adapted to receive and transport a golf bag;
(b) a plurality of ground engaging wheels rotatably mounted on said frame;
(c) means for practicing a golf stroke, said means including
(i) a base member attached to one of said ground engaging wheels; and

(ii) means for suspending a golf ball from said base member at a predetermined distance laterally thereof so that

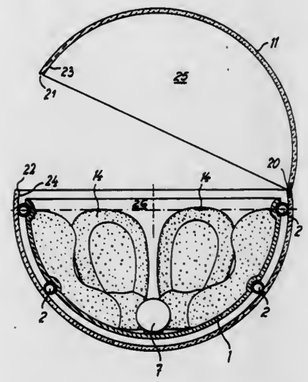


a suspended golf ball may be struck by the head of a golf club during a practice stroke by a golfer.

4,501,434
VEHICLE FOR A FUN-FAIR OR THE LIKE

Jean L. Dupuis, Braine-L'Alleud, Belgium, assignor to D. M. International Ltd., London, England

Filed Sep. 17, 1982, Ser. No. 419,140
Int. Cl.³ A63G 23/00, 29/00
U.S. Cl. 280—206 3 Claims

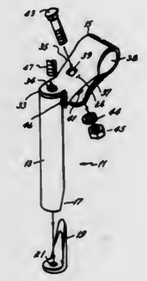


1. A vehicle comprising a sphere adapted to freely rotate upon its outer surface having separate upper and lower segments pivotally connected at a point on the periphery of the sphere thereby permitting opening and closing of the sphere; a car comprising a spherical segment provided with at least one means on its outer surface adapted to rotatingly bear against the inner surface of said sphere thereby separating said car from said inner surface while permitting free rotational movement of said car apart from the rotational movement of said sphere; at least one seat within said car adapted to receive and secure a passenger therein; and means associated with at least one of said bearing means for braking the rotational movement of said car with respect to said sphere thereby permitting said passenger to control the rotation of said car with respect to the rotation of said sphere, said braking means comprising a braking surface adapted to contact the inner surface of said bearing means thereby securing said bearing means against rotation.

4,501,435
WELDED STEM ASSEMBLY

David K. McMurtrey, Rte. 2, Box 154G, Maysville, Ky. 41506

Filed Sep. 27, 1982, Ser. No. 424,004
Int. Cl.³ B62K 21/18
U.S. Cl. 280—279 16 Claims

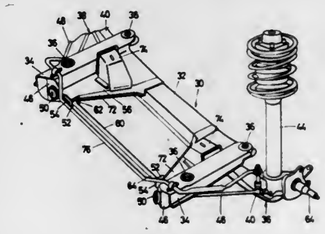


1. A stem assembly for securing the handlebars of a bicycle to the frame comprising:
a tubular barrel having a longitudinal axis, a top end, and a side portion; and
a sheet metal head section having a lip section and a pair of spaced side sections extending downwardly from and generally perpendicular to said lip section, said head section being adapted to engage said tubular barrel such that said lip section extends over said top end of said tubular barrel and said side sections of said head section abut said side portion of said tubular barrel, each of said side sections having a longitudinal edge extending generally parallel to said longitudinal axis of said barrel, said longitudinal edges of said sections being spaced from each other, said head section and tubular barrel being connected by welds between each of said longitudinal edges of said side sections of said head section and said side portion of said tubular barrel.

4,501,436
SUPPORTING ASSEMBLY FOR A SUSPENSION

Takashi Ishida, Yokohama, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

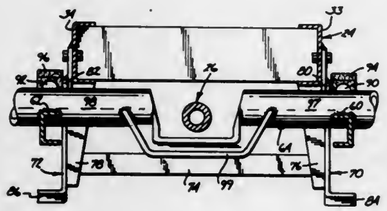
Filed Mar. 28, 1983, Ser. No. 479,516
Claims priority, application Japan, Mar. 31, 1982, 57-51188
Int. Cl.³ B62D 21/02; B60G 7/02
U.S. Cl. 280—666 7 Claims



1. A suspension supporting assembly for a vehicle body, comprising:
a transverse member extending in a transverse direction of said vehicle body;
a pair of tension rod brackets extending in a longitudinal direction of said vehicle body and affixed at one end thereof to opposite ends of said transverse member;
said supporting assembly being elastically mounted under said vehicle body only through insulators mounted in said

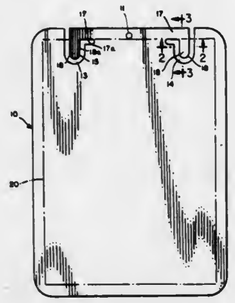
pair of tension rod brackets so as to reduce vibrations which are transmitted from said assembly to said vehicle body;
a pair of tension rods affixed at one end thereof to other ends of said tension rod brackets;
a pair of transverse links attached outward of said transverse member;
said tension rods being attached at the other end thereof to said transverse links; and
a reinforcing member provided with end portions thereof connected to said pair of tension rod brackets and spaced from and disposed parallel to said transverse member.

4,501,437
LOAD TRANSFER AXLE ASSEMBLY
David A. Becker, White Bear Lake, Minn., assignor to Dorso Trailer Sales, Inc., Minneapolis, Minn.
Filed Apr. 21, 1983, Ser. No. 487,293
Int. Cl.³ B60G *9/02*
U.S. Cl. 280—704 **13 Claims**



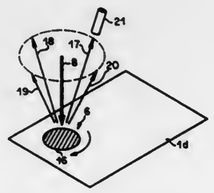
1. In combination with a vehicle of the type wherein forward steerable and rearward drive wheels support the vehicle, the vehicle having a main frame including a pair of spaced longitudinal side rails and a drive shaft extends longitudinally beneath the vehicle between the side rails from a forwardly placed engine to the rearward drive wheels, the improvement being a variable load transfer assembly mounted forwardly of the drive wheels which comprises:
a pivot mounting bracket secured laterally across the vehicle main frame beneath the drive shaft;
an auxiliary frame having a first end and a second end, the auxiliary frame being pivotally mounted at its first end to the mounting bracket to permit the auxiliary frame to pivot on a lateral axis relative to the vehicle main frame between a raised position and a lowered load support position, a portion of the auxiliary frame being constituted as a laterally extending unitary axle member adjacent the second end of the auxiliary frame and the axle member having a first side portion, a second side portion and a drop center portion with the first and second side portions defining an axle axis and being connected together by the drop center portion which is offset from the axle axis to accommodate the drive shaft of the vehicle when the auxiliary frame is in the raised position relative to the main frame;
alignment maintaining means for maintaining the auxiliary frame in longitudinal alignment with the vehicle main frame, the alignment maintaining means including a plurality of pivot guides, each pivot guide having a guide plate secured to one of the side rails to extend downwardly therefrom and a guide block extending rearwardly from the auxiliary frame in close slidable longitudinal alignment with its respective guide plate, and each guide plate having a raised shim plate adjacent its upper end to provide a snug surface for its respective guide block when the auxiliary frame is in the raised position;
a pair of wheels rotatably mounted coaxially along the axle axis of the axle member for engaging a ground surface when the auxiliary frame is in the lowered load support position with a lowermost portion of each wheel being at least about eleven inches above the ground when the auxiliary frame is in the raised position and the ground is substantially planar; and
variable force application means for controlling the pivoting of the auxiliary frame between the raised position and the lowered load support position.

4,501,438
CLIPBOARD
Robert G. McKee, 30 W. Chicago Ave., Chicago, Ill. 60610
Filed Jul. 16, 1981, Ser. No. 283,982
Int. Cl.³ B32B *3/06*
U.S. Cl. 281—45 **7 Claims**



1. A clipboard comprising a flat and generally rectangular board of substantially rigid but flexible, spring-like material; said board having cutouts along one edge thereof defining a pair of integral L-shaped spring members normally flush with the remainder of said board; each of said L-shaped members having a first leg portion extending along said one edge and an elongated second leg portion projecting into said board away from said one edge; said elongated second leg portion having a length within the range of about 1.5 to 2.5 inches; said second leg portion providing an undersurface engagable with sheet materials supported upon said board for holding said sheet materials in place.

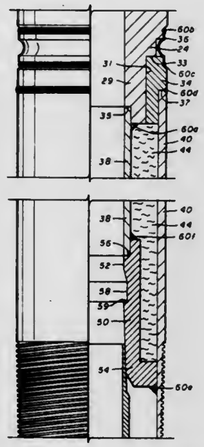
4,501,439
DOCUMENT HAVING A SECURITY FEATURE AND METHOD OF DETERMINING THE AUTHENTICITY OF THE DOCUMENT
Gregor Antes, Zurich, Switzerland, assignor to LGZ Landis & Gyr Zug AG, Zug, Switzerland
Filed Sep. 28, 1982, Ser. No. 425,466
Claims priority, application Switzerland, Oct. 27, 1981, 6835/81
Int. Cl.³ B42D *15/00*; G02B *27/38*
U.S. Cl. 283—91 **6 Claims**



1. A security blank including a substrate having two major surfaces,
comprising, in combination,
a transparent thermoplastic layer having a predetermined refraction index as defined by light incident thereon, and

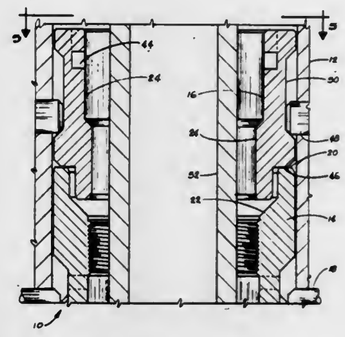
being suitable for embossing thereon a machine-readable authenticity feature in the form of an optical microstructure,
and
a transparent protective layer having a prearranged refraction index for covering and protecting said microstructure,
said prearranged refraction index of said transparent protective layer having a value different from said predetermined refraction index of said transparent thermoplastic layer, and
wherein said microstructure includes means for generating a characteristic diffraction effect from the light incident thereonto, said characteristic diffraction effect being normally detectable by the unaided eye of an observer,
a surface of the substrate facing said transparent thermoplastic layer including within a region of said microstructure means for producing diffuse reflection characteristics of a predetermined magnitude,
the difference between said refraction indexes of said transparent layers being sufficiently small, and the magnitude of said diffuse reflection characteristics of the surface of the substrate facing said transparent thermoplastic layer being sufficiently large so that said characteristic diffraction effect of said microstructure is substantially not detectable by the unaided eye of an observer.

4,501,440
INSULATED TUBING JOINT
David M. Anderson, Whittier, and Yung J. Kim, Hacienda Heights, both of Calif., assignors to Baker Oil Tools, Inc., Orange, Calif.
Filed Jan. 17, 1983, Ser. No. 458,417
Int. Cl.³ F16L *59/14, 9/22*
U.S. Cl. 285—47 **10 Claims**



1. A concentric wall insulating tubular joint incorporable in a tubular conduit string for use in transporting a heated fluid in a subterranean well, comprising:
a first tubular member;
a second concentric tubular member, the second tubular member being prestressed in tension and the first tubular member being prestressed in compression;
first and second interior coupling members between, on opposite ends of and affixed to the first and second tubular members;
an annular insulating cavity defined between the spaced apart first and second tubular members and extending between the first and second coupling members; and
at least one membrane seal extending between one of the tubular members and one of the interior coupling members, the annular insulating cavity being sealed at the juncture of each tubular member and each interior coupling member.

4,501,441
TENSION HANGER LANDING BOWL
Mark E. Crews, Houston, Tex., assignor to Cameron Iron Works, Inc., Houston, Tex.
Filed Mar. 31, 1982, Ser. No. 363,850
Int. Cl.³ F16L *21/00*
U.S. Cl. 285—143 **4 Claims**

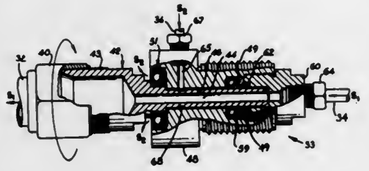


1. A wellhead assembly comprising:
a wellhead member;
means providing an upper outer shoulder and an inner lower shoulder within said wellhead member;
a landing bowl assembly supported by said upper outer shoulder and having at least two segments, means connecting the segments and means biasing the segments outward;
said landing bowl assembly having an inner landing shoulder adapted to receive and support a tubing string landing shoulder when said segments are moved inward;
a plurality of pins threaded through said wellhead member above said shoulders;
means on said pins providing a removable first stop position and a second stop position, said pins when in said first stop position engaging the exterior of said segments and when in said second stop position moving said segments inward; and
said pins when moved to said second stop position moving said segments radially inward past said upper outer shoulder to their tubing string supporting position above said inner lower shoulder whereby said segments are loaded by the tubing string and moved onto said inner lower shoulder to support said tubing string within said wellhead member.

4,501,442
APPARATUS FOR SUPPLYING FLUID TO A ROTATING TUBE
Fred P. Partus, Marietta, Ga., assignor to AT&T Technologies, Inc., New York, N.Y.
Division of Ser. No. 268,611, Jun. 1, 1981, Pat. No. 4,389,231. This application Feb. 22, 1983, Ser. No. 468,812
Int. Cl.³ F16L *27/00*
U.S. Cl. 285—190 **3 Claims**

1. Apparatus for supplying through a rotating joint fluid to a rotary element substantially uncontaminated with ambient air, and with the apparatus comprising a support member having an open ended bore; a rotary element having a portion thereof rotatably positioned; in the bore an outer bearing mounted to said support means about said bore adjacent to said open end and mounter to said rotary element; first conduit

means extending into said support means and communicating with said bore through which supplying fluid may be fed to the rotary element journaled within the bore and the outer bearing; seam means between said bore and said rotary element adjacent said first conduit means; second conduit means communicating with the bore of said support means through which a purging fluid may be fed into and at least partially through the bore and through said outer bearing to ambient atmosphere and also into the portion of the bore of the support means



communicating directly with said seal means adjacent said first conduit means, and means for supplying a purging fluid to the second conduit means at a pressure greater than the pressure of the supply fluid as it flows from the first conduit means through the rotating joint so that ambient air is prevented from entering the supplying fluid and any portion of the supplying fluid is prevented from contaminating the bearing in the rotary joint and escaping into ambient air should a leak occur in the seal means of the rotary joint.

4,501,443

FLUIDTIGHT PIPE JOINT

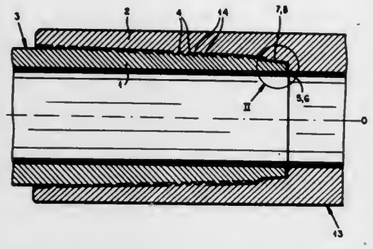
Manfred Häring, Düsseldorf, Fed. Rep. of Germany, assignor to Mannesmann Aktiengesellschaft, Düsseldorf, Fed. Rep. of Germany

Filed Feb. 24, 1983, Ser. No. 469,384

Claims priority, application Fed. Rep. of Germany, Feb. 27, 1982, 3207182

Int. Cl.³ F16L *35/00*

U.S. Cl. 285—328 **8 Claims**



1. In combination, a first and a second metallic tubular member adapted to be coaxially interfitted in a fluidtight manner,

said first member having a plug-shaped extremity with an outer peripheral surface converging generally frustoconically toward a transverse annular end face thereof, said outer surface being provided with male helicoidal threads separated from said end face by a first unthreaded zone, said end face being formed with a first spiral track,

said second member having a socket-shaped extremity with an inner peripheral surface diverging generally frustoconically from a transverse inner annular shoulder toward an entrance end thereof, said inner surface being provided with female helicoidal threads separated from said shoulder by a second unthreaded zone and matingly engageable by said male helicoidal threads upon insertion of said plug-shaped extremity into said entrance end, said annular shoulder having an inner diameter substantially equaling that of said end face and being provided with a second spiral track generally complementary to said first spiral track for mating engagement therewith upon said end face approaching said shoulder,

said first and second spiral tracks being of a pitch tending to expand said first unthreaded zone radially into close contact with said second unthreaded zone upon relative rotation of said extremities into a terminal relative position of interengagement.

4,501,444

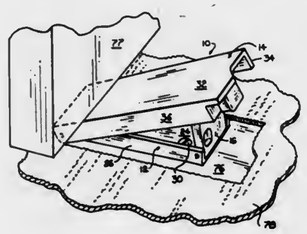
COLLAPSIBLE DOOR WEDGE WITH QUICK RELEASE MECHANISM

Edward J. Domínguez, 503 Park Ave., San Jose, Calif. 95110

Filed Mar. 8, 1982, Ser. No. 355,969

Int. Cl.³ E05C *17/54*

U.S. Cl. 292—342 **11 Claims**



1. A collapsible door wedge with quick release mechanism comprising: an elongated base member; an elongated incline member having a lower surface provided with a pair of downwardly extending stops defining a latching space therebetween; means pivotally coupling a first end of said base member to a first end of said incline member whereby said incline member may pivot between a wedging and a non-wedging position; a prop member having a first end pivotally coupled to said base member and a second end configured to fit within said latching space; and a latch mechanism coupled to said incline member including a striker biased towards said latching space and adapted to engage said prop member when said second end of said prop member is within said latching space.

4,501,445

METHOD OF IN-SITU HYDROGENATION OF CARBONACEOUS MATERIAL

Armand A. Gregoli, Tulsa, Okla., assignor to Cities Service Company, Tulsa, Okla.

Filed Aug. 1, 1983, Ser. No. 518,987

Int. Cl.³ E21B *43/24, 43/26, 43/40;* E21C *41/10*

U.S. Cl. 299—2 **41 Claims**

40. A process for the recovery of carbonaceous materials from an underground formation, comprising:

(a) fracturing a portion of an underground formation, comprising carbonaceous material selected from the group consisting of coal, oil shale, tar sands, and heavy crudes,

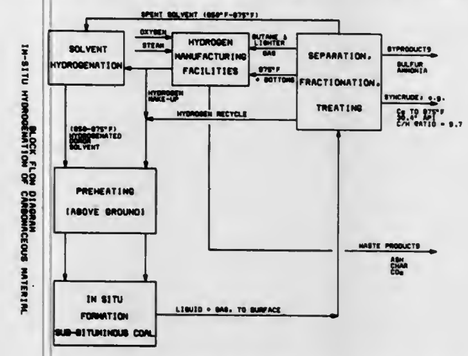
(b) contacting the carbonaceous material in-situ in the fractured formation with

(1) a preheated liquid solvent, wherein at least a portion of the liquid is a hydrocarbon-containing liquid having a boiling range of from about 300° F. to about 1200° F., and further wherein at least a portion of the liquid is a hydrocarbonaceous liquid having the property of donating and accepting hydrogen, and having a boiling range of from about 650° F. to about 975° F., and

(2) a preheated gas comprising at least 50 volume percent hydrogen, and

wherein the pressure in the fractured formation is maintained

at from about 200 psi to about 2000 psi, and the temperature is maintained at from about 500° F. to about 900° F., to produce



a product mixture of at least a partially hydrogenated carbonaceous material and dissolved carbonaceous material, and

(c) removing said product mixture from said formation.

4,501,446

REMOVAL OF FINE-GRAINED SEDIMENTS FROM WATER BODIES

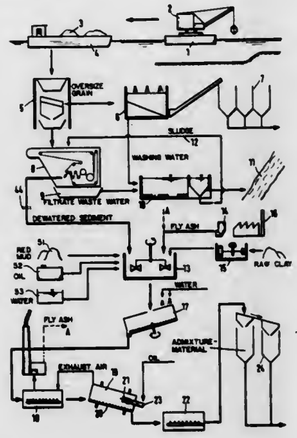
Eberhard Gläser, Aichwald-Krummhard, and Eberhard Beitinger, Stuttgart, both of Fed. Rep. of Germany, assignors to Ed. Züblin Aktiengesellschaft, Stuttgart, Fed. Rep. of Germany

Filed Sep. 24, 1982, Ser. No. 422,624

Claims priority, application Fed. Rep. of Germany, Dec. 23, 1981, 3150993

Int. Cl.³ E02F *7/00*

U.S. Cl. 299—9 **30 Claims**



1. A method for removing fine-grained sediments from flowing or standing bodies of water comprising

dredging the segment from the bottom of the body of water;

classifying and dewatering the dredged sediment including the fine-grained material;

admixing to the dewatered sediment including the fine-grained material at least a fine-grained admixture material;

granulting the mixture;

drying the granulate;

firing the granulate under swelling; and

cooling the swelled, fired granulate.

4,501,447

HAULAGE DRIVE

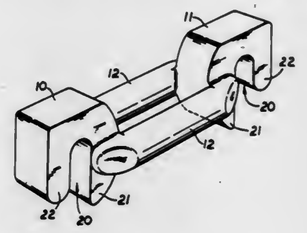
James P. Tatton, Carluke, and James Brownlie, Overtown, both of Scotland, assignors to Anderson Strathclyde PLC, Glasgow, Scotland

Filed Feb. 18, 1982, Ser. No. 349,965

Claims priority, application United Kingdom, Feb. 19, 1981, 8105188

Int. Cl.³ E21C *35/20;* F16G *13/07*

U.S. Cl. 299—43 **5 Claims**



1. A flexible chain free of hinger pins comprised of a plurality of link components adapted for interfitment with each other, each of said link components having complementary-shaped end parts of which each is the image of the other, each end part comprising a transverse recess which is open at one end, closed at the other end by a curved face and bounded by two parallel straight sides between an inner wall and an outer wall longitudinally disposed of each other, said outer wall is shorter than the inner wall, said outer wall having a straight end face parallel with the sides of the recess and an opposed end of a rounded configuration complementary so that when said end part of a first link component interengages with said end part of a second link component, said respective outer walls locate in said corresponding recesses, and parallel side braces extending between the inner walls of the end parts and spacing said end parts apart through integration therewith and having external surfaces spaced laterally beyond the width of said end parts.

4,501,448

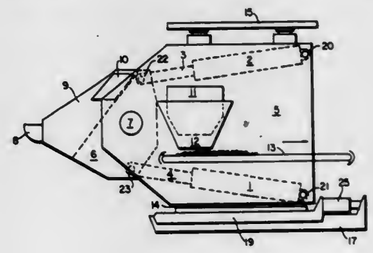
UNIVERSAL RIPPER MINER

Roger J. Morrell, Bloomington, and David A. Larson, Minneapolis, both of Minn., assignors to The United States of America as represented by the Secretary of the Interior, Washington, D.C.

Filed Jan. 3, 1983, Ser. No. 455,187

Int. Cl.³ E21C *29/30*

U.S. Cl. 299—67 **9 Claims**



1. A ripper miner comprising:

a movable cutter head having a cyclical cutting cycle transversing an arcuate angle of about 185° to less than 270° in a generally vertical plane;

a single material drag cutter having a bit holder and a single

removable material engaging bit insert therein, said drag cutter being mounted on said cutter head and extending therefrom; said drag cutter being movable with the head to engage the material to be cut with its removable bit during the cutting cycle;

frame means to mount the cutter head;

first means for moving the cutter head and drag cutter with respect to said frame means from its initial position in the aforesaid cyclical arcuate motion and then returning the bit to its original position to provide for the removable bit entrance and exit into the material to be cut at minimum depth of cut with the greatest depth of penetration being approximately at the midway portion of the cutting cycle; and

material collection and transfer means mounted on the cutter head and frame means for temporarily collecting and storing collected cuttings before they reach the mine floor.

4,501,449

FLUID SUPPLY FOR ROTARY CUTTER HEADS FOR MINING MACHINES

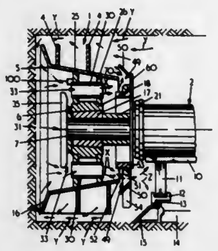
Brian A. Eagles, Johannesburg, South Africa, assignor to Coal Industry (Patents) Limited, London, England

Filed Sep. 14, 1982, Ser. No. 418,084

Claims priority, application United Kingdom, Oct. 13, 1981, 8130807

Int. Cl.³ E21C *35/22*

U.S. Cl. 299—81 **16 Claims**



1. A fluid supply system for a rotary cutter head mounted on a rotary drive shaft of a mining machine, comprising an adaptor unit mounted on the mining machine, the adaptor unit defining inlet means for a relatively low pressure feed arrangement and further inlet means for a relatively high pressure feed arrangement, means defining separate passage means for feeding the relatively low pressure feed and the relatively high pressure feed from the inlet means and the further inlet means along the rotary drive shaft, distributor means mounted within the rotary cutter head for rotation therewith and defining first distributing passage means for feeding the relatively low pressure fluid from said separate passage means to first discharge nozzles positioned to direct fluid sprays towards the cutting zone of the cutter head, the distributor means further defining second distributing passage means for feeding relatively high pressure fluid from said separate passage means to second discharge nozzles positioned to emit air flow inducing sprays.

4,501,450

CONNECTING DEVICE BETWEEN TWO WHEEL RIMS

Pieter K. Mol, Noordzakweg 21, 4458 RA 's-Heer Arendskerke, Netherlands

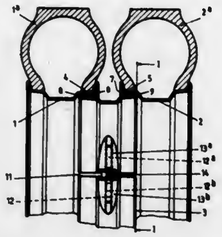
Filed Dec. 17, 1982, Ser. No. 450,599

Claims priority, application Netherlands, Jan. 19, 1982, 8200185

Int. Cl.³ B60B *11/02*

U.S. Cl. 301—13 SM **9 Claims**

1. A connecting device between two wheel rims, said rims comprising inner circumferential sides having facing edge portions each provided with a plurality of cams, and an intermediate ring which is provided coaxially between the rims and which has outwardly offset end edges in the shape of flanges extending beyond said cams, said intermediate ring having a



split and being provided with tensioning means adjacent to the split which operates to expand the split and thereby radially to expand the ring so as to cause the end edges of the ring to engage behind said cams, thus clamping the ring to the facing edge portions of the rims.

4,501,451

VEHICLE BRAKING SYSTEM

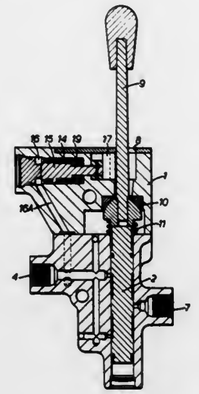
Desmond H. Reynolds, and Philip A. Taft, both of West Midlands, England, assignors to Lucas Industries Limited, Birmingham, England

Filed Oct. 22, 1982, Ser. No. 435,932

Claims priority, application United Kingdom, Nov. 5, 1981, 8133451

Int. Cl.³ B60T *13/10*

U.S. Cl. 303—6 A **8 Claims**



1. A selector valve comprising a body with inlet means for connection to a fluid source and a pair of outlets for connection to respective brakes, a valve member movable in the body to control communication between the inlet means and said outlets, an operating lever pivoted to the body and coupled to the valve member for displacing the valve member, the operating lever having a central position in which both outlets are operatively connected to the inlet means and the operating lever being movable from said central position to opposed end postions in which a respective outlet is connected operatively to the inlet means, a linear guide slot in the body for guiding the lever to move in a plane between said end positions, and latching notches in a side edge of the slot adjacent the opposite ends of the slot, the lever being engageable in the notches to retain the lever releasably in a selected end position, and the lever being coupled to said valve member by an element extending laterally from the lever in said plane of movement and connected to the valve member by a universal joint, whereby movement of the lever laterally of the slot to engage and disengage the notches does not cause displacement of the valve member.

4,501,452

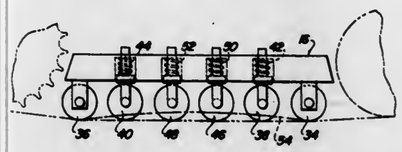
BULLDOZER TRACK SUPPORT ROLLER MOUNTING

Ray C. Huang, Bettendorf, Iowa, assignor to Deere & Company, Moline, Ill.

Filed Nov. 29, 1982, Ser. No. 445,346

Int. Cl.³ B62D *55/16*

U.S. Cl. 305—27 **5 Claims**



1. In a bulldozer track support system including a plurality of track rollers mounted along a longitudinally extending track frame, the impovement comprising: means resiliently mounting at least a central contiguous group of the rollers to the track frame such that the resistance of individual rollers of the group of rollers to vertical deflection increases as one proceeds oppositely from the center of the group towards front and rear ends of the track frame such that a given vertical force applied to the track rollers of said group will cause the latter to deflect to positions whereat a line drawn through their lowermost points is upwardly arched.

4,501,453

SLIDE ASSEMBLY FOR DRAWER

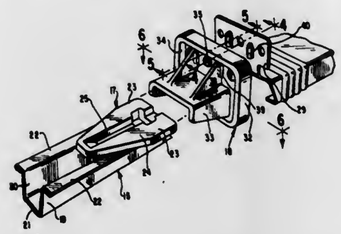
Kenneth H. Gutner, 3285 Dato, Highland Park, Ill. 60035, and Jay S. Waxman, Skokie, Ill., assignors to Kenneth H. Gutner, Highland Park, Ill.

Filed Feb. 3, 1982, Ser. No. 345,332

The portion of the term of this patent subsequent to Dec. 15, 1998, has been disclaimed.

Int. Cl.³ A47B *88/04*

U.S. Cl. 308—3.6 **10 Claims**



1. A slide assembly for a drawer adapted to cooperate with a generally T-shaped guide on a dresser or the like comprising a metal slide member having a generally C-shape in transverse section extending over a major portion of its length to cooperate with said guide, said member at one end thereof being equipped with an integral upstanding tab adapted to be secured to the back panel of a drawer, said tab having an opening therethrough positioned centrally thereof, said opening being flanked by a pair of detent means,

said slide assembly also including a plastic adapter element adjacent said one end and shaped also to cooperate with said guide, said adapter element having an integral bearing portion adapted to be received within said slide member C-shape and having an integral upstanding flange adapted to abut said tab, said flange being equipped with a central opening alignable with said tab central opening when said bearing portion is received within said C-shape for the joint receipt of a back panel securing screw, said flange also being equipped with a pair of slots alignable with said detent means.

4,501,454

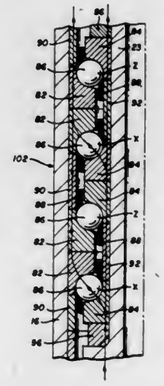
METHOD OF DISTRIBUTING LOAD AMONG STACKED BEARINGS

James G. Dennis, Pottsboro; Kenneth W. Bramlett, Arlington, and G. C. Jackson, Jr., Dallas, all of Tex., assignors to Dresser Industries, Inc., Dallas, Tex.

Filed Oct. 28, 1983, Ser. No. 546,683

Int. Cl.³ F16C *19/10*

U.S. Cl. 384—619 **15 Claims**



1. In a drilling tool having an outer cylindrical member, an inner cylindrical member in radial spaced relation therewith, and bearing means for supporting said members for relative rotation and transmitting thrust load therebetween, said bearing means comprising:

a plurality of axially stacked rolling bearing assemblies, each assembly comprising an inner race attached to said inner member and an outer race attached to said outer member and rolling means disposed for rolling engagement with said races; and

means for distributing the thrust load on said rolling means of certain of said rolling bearing assemblies generally equally, said means comprising:

at least one of the races of each certain assembly being formed of a bearing material significantly softer than said rolling means whereby, whichever of said certain bearing assemblies that is subjected to the initial thrust load is readily worn to a condition that distributes the load to the certain assembly next subjected to the greatest thrust load which in turn is worn in accordance with the load received so that the wear of the races of each said assembly promotes equal distribution of the load therebetween.

4,501,455

LOCKING AND EXTRACTION MECHANISM FOR RACK MOUNTED COMPONENTS

John B. Groseck, Philadelphia, Pa., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Jan. 15, 1982, Ser. No. 339,270

Int. Cl.³ E05B *1/00*

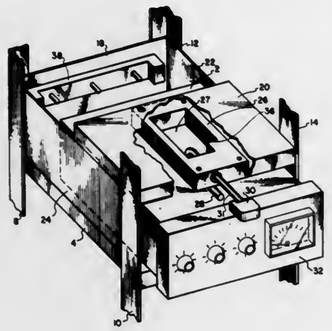
U.S. Cl. 312—215 **5 Claims**

1. A combined lock and extractor comprising

a handle selectively positionable between a first position and a second position,

a U-shaped hook having one end connected to said handle,

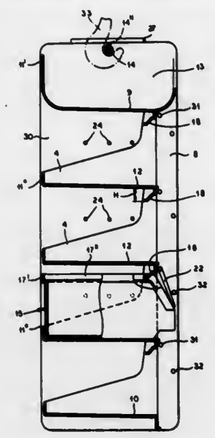
a lock block having an aperture extending therethrough,
support means for slidably supporting said hook in said lock block to enable a second end of said hook to contact a surface of said lock block within said aperture in said first position of said handle and to pass along an outside surface of said lock block in said second position of said handle and
mounting means for mounting said lock block in a support rack adjacent to a rack mounted apparatus located in said support rack whereby said first position of said handle is



effective to prevent removal of said rack mounted apparatus from said support rack and said second position of said handle is effective to allow a removal of said rack mounted apparatus from said support rack, said second end of said hook being arranged to contact said rack mounted apparatus in said second position of said handle to transmit a force applied to said handle to said rack mounted apparatus to assist in removing said apparatus from said support rack and said handle being arranged to contact a front face of said apparatus in said first position of said handle.

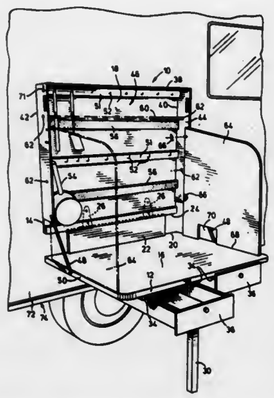
4,501,456
STORAGE RACK WITH MULTIPLE DRAWER COMPARTMENTS AND MOLD FOR MAKING SAME
Gerhard Schäfer, Neunkirchen, Fed. Rep. of Germany, assignor to Fritz Schäfer Gesellschaft Mit Beschränkterhaftung, Neunkirchen, Fed. Rep. of Germany
Filed Mar. 26, 1982, Ser. No. 362,083
Claims priority, application Fed. Rep. of Germany, Mar. 31, 1981, 8105516[U]
Int. Cl.³ A47B *88/06*
U.S. Cl. 312—273 **17 Claims**

15. A storage rack comprising:
a frame having a base, a pair of sidewalls and a roof defining a space of rectangular vertical outline;
partition means in said frame dividing said space into a plurality of compartments;
a plurality of drawers each slidably received in one of said compartments, said drawers having a height less than that of the respective compartments; and
a stop member depending from the overlying roof into a front end of each compartment for engagement with a back wall of the respective drawer in a forward position of the latter while enabling an extraction thereof through said front end by a tilting motion about a free edge of said stop member, the rear end of each compartment being provided with a sill defining stop means for establishing an insertion position for the respective drawer while enabling the respective drawer to be extracted through said rear end upon being lifted above said sill, each compartment having a floor provided near the rear end thereof but forwardly of its sill with a boss of a lesser height than said sill engageable with a downward projection of an inserted drawer for preventing a forward sliding thereof from said



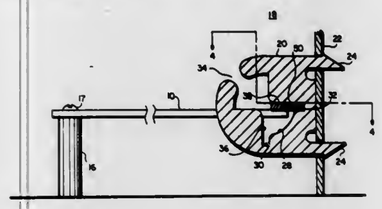
insertion position, said projection being receivable in a gap between said boss and said sill.

4,501,457
KITCHEN TABLE FOR CAMPER
Murray C. Pond, 294 Scottsdale Dr., Guelph, Ontario, Canada N1G 2K8
Filed Dec. 17, 1982, Ser. No. 450,671
Int. Cl.³ A47B *77/10, 37/04*
U.S. Cl. 312—314 **9 Claims**



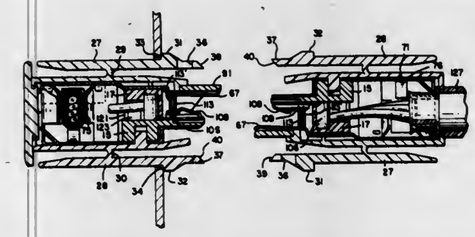
1. A kitchen table collapsible as a storage unit, for use with a motor vehicle camper having an upright wall, comprising:
a unit having a pair of spaced panels with opposed inside surfaces when the unit is closed, outside surfaces, side edges and end edges, the panels being interconnected by hinge means at one side edge thereof for opening and closing the unit;
readily detachable means on a first of said panels adjacent said hinged side edge thereof for detachable engagement with support means on said wall;
at least one leg hingedly connected to the outside surface of said first of said panels remote from said hinged side edge and pivotably movable to a position normal thereto to support said first panel in a horizontal position as a table when also supported on said wall;
bracing means interconnecting said first panel and the second of said panels to support said second panel in a vertical position as a backboard when the unit is open; and
means on the inside surface of said second panel for attaching cooking utensils thereto.

4,501,458
LOCKING HINGE FOR A PRINTED CIRCUIT BOARD
William R. Cubbage, Coloma, Mich., assignor to Heath Company, St. Joseph, Mich.
Filed Sep. 29, 1983, Ser. No. 537,779
Int. Cl.³ H01R *23/68*
U.S. Cl. 339—17 L **7 Claims**



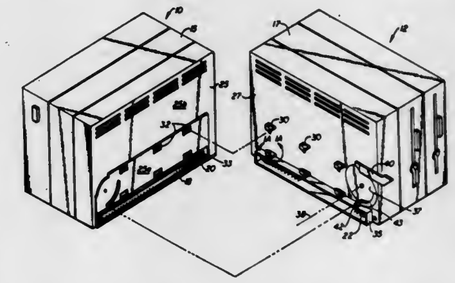
1. In combination:
a printed circuit board;
a pair of generally circular end pieces, each defining a concave guide track;
a pair of tabs affixed to one edge of said printed circuit board and engaging said guide tracks;
said end pieces and said tabs cooperating to permit confined pivotal movement of said printed circuit board between at least two distinct positions; and
said guide tracks each including two slots selectively engageable with said tabs by lateral movement of said printed circuit board for restricting further pivotal movement of said tabs and thereby defining two stable positions for said printed circuit board.

4,501,459
ELECTRICAL CONNECTOR
Curtis S. Chandler, Walkertown; Larry G. Novotny, Clemmons, and Elvert S. Watts, Walkertown, all of N.C., assignors to AMP Incorporated, Harrisburg, Pa.
Continuation of Ser. No. 452,170, Dec. 22, 1982, abandoned. This application Sep. 20, 1984, Ser. No. 652,430
Int. Cl.³ H01R *25/00, 13/54*
U.S. Cl. 339—48 **20 Claims**



1. A hermaphroditic electrical connector comprising an insulating terminal housing having a front, mating face and a rear, wire connecting face, a plurality of terminals mounted in the housing with wire connecting portions at the wire connecting face and resilient contact tongues at the mating face, electrical shunt means mounted in the housing aligned with preselected contact tongues, the shunt means comprising two one-piece shunt bars located in tandem relation, each having a bridge portion extending transversely of all the contact tongues and a pair of spaced contact lugs extending from each bridge portion toward respective preselected contact tongues, the contact tongues being resiliently deformable from positions engaging the shunt means in an unmated condition of the connector to positions spaced from the shunt means in a mated condition of the connector by mating engagement with a complementary hermaphroditic connector.

4,501,460
MODULAR HOUSING FOR COMPUTER SYSTEM
John R. Sisler, Sunnyvale, Calif., assignor to Convergent Technologies, Inc., Santa Clara, Calif.
Filed May 9, 1983, Ser. No. 493,089
Int. Cl.³ H01R *13/62*
U.S. Cl. 339—49 R **26 Claims**



1. In a system having first and second modules having cooperating pin and socket connector portions disposed along respective first and second walls, an improved latching mechanism for effecting engagement of said pin and socket connector portions while bringing respective external surfaces of said first and second walls into contact with one another comprising:
a plurality of hooking members carried on said second wall and having respective camming surfaces in spaced facing relationship to said second external surface;
portions of said first wall being formed with apertures corresponding to said hooking members and sized to accommodate said hooking members when said first and second external surfaces approach one another;
a latch bar having camming portions corresponding to said hooking members;
carriage means for mounting said latch bar to said first wall to allow movement of said latch bar between a first accommodating position wherein said latch bar does not obstruct said apertures in said first wall and a second capturing position wherein said camming portions cover at least portions of said apertures;
said camming portions of said latch bar cooperating with said camming surfaces on said hooking members so that movement of said latch bar from said first position to said second position causes said first and second external surfaces to be drawn into contact with one another; and
manually actuable means for effecting said movement of said latch bar, said means for effecting being operable at least when said hooking members enter said apertures.

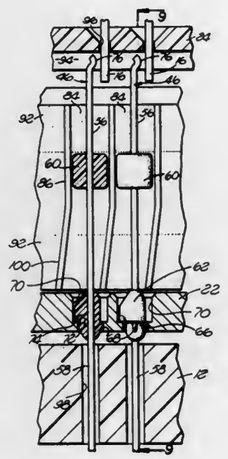
4,501,461
ZERO INSERTION FORCE SOCKET
John W. Anhalt, Orange, Calif., assignor to International Telephone and Telegraph Corporation, New York, N.Y.
Filed Dec. 27, 1983, Ser. No. 565,560
Int. Cl.³ H01R *13/629*
U.S. Cl. 339—75 M **18 Claims**

1. A socket for an integrated circuit carrier having a plurality of rows of conductive leads depending therefrom comprising:

a base plate and a top plate having a separate conductive partitioning structure therebetween slidable along a predetermined path relative to said base and top plates from a first position adjacent to one side of said plates to a second position adjacent to the opposite side of said plates;

said partitioning structure comprising a first set of parallel spaced metallic strips and a second set of parallel spaced metallic strips, said strips of said first set extending perpendicular to said strips of said second set thereby forming a plurality of rows of rectangular holes, said strips of said first and second sets being interleaved with each other and being securely mounted in a surrounding rectangular conductive frame to thereby provide a self-supporting assembly;

said strips of said first set being perpendicular to said predetermined path;



said base plate and said top plate containing apertures aligned with said holes;

contacts mounted in said apertures in said base plate extending upwardly through said holes;

said apertures in said top plate being adapted to receive therein said conductive leads of said circuit carrier with the leads spaced from said contacts on the side thereof opposite to said one side of said plates when said partitioning structure is in said first position whereby said leads may be inserted into the socket with essentially zero force;

a nonconductive element carried by each said contact within said partitioning structure; and

means for shifting said partitioning structure laterally along said predetermined path to said second position to cause the strips of said first set to push against said nonconductive elements to thereby bring said contacts into engagement with said leads.

4,501,462

COUPLING MEMBER FOR A CAPACITIVE MICROPHONE

Werner Fidi, Baden, Austria, assignor to AKG Akustische u.-Kino-Gerate Gesellschaft m.b.H, Austria

Filed Sep. 29, 1982, Ser. No. 427,561

Claims priority, application Austria, Oct. 15, 1981, 4433/81

Int. Cl.³ H01R *33/12*

U.S. Cl. 339—93 R **16 Claims**

1. A combination microphone capsule, preamplifier and coupling member for coupling the microphone capsule to the preamplifier, comprising:

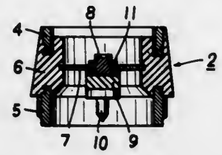
a microphone capsule;

a preamplifier;

a shaped body of vibration-absorbing elastic electrically conducting material connected between said capsule and preamplifier for forming a first conductive connection between said capsule and said preamplifier;

a contact pin connected between said capsule and preamplifier and including at least a portion made of vibration-absorbing elastic electrically conducting material, said contact pin extending axially in said shaped body for forming a second conductive connection between said capsule and said preamplifier; and

connection means connected to said shaped body for connecting one end of said shaped body to said capsule and an opposite end of said shaped body to said preamplifier;



wherein said shaped body has an axially extending opening therethrough, said coupling member including a diaphragm made of electrically insulating material and having an aperture therethrough said diaphragm mounted in said shaped body opening and connected to said shaped body, and abutting said contact pin for supporting said contact pin in said shaped body, said contact pin engaged in said aperture and spaced radially inwardly of said shaped body.

4,501,463

CABLE TERMINAL ELEMENT

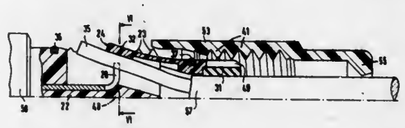
Josef Stebegg, and Gerhart Becke, both of Erlangen, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Dec. 14, 1982, Ser. No. 449,583

Claims priority, application Fed. Rep. of Germany, Dec. 21, 1981, 3150568; May 27, 1982, 3220006

Int. Cl.³ H01R *13/38*

U.S. Cl. 339—99 R **13 Claims**



1. A cable terminal element for operatively connecting an electrical cable having a plurality of conductors to an electrical device having a like plurality of terminal electrodes in the form of knife terminals for forming detachable connections to respective conductors of said cable, each of said knife terminals having at an end a substantially plate shaped flange provided with a notch for receiving and clamping a respective conductor of said cable during a connecting operation, said element comprising:

a substantially cylindrical support body having an axis of symmetry and provided with an external thread winding and a plurality of axially extending, circumferentially spaced slots equal in number to said knife terminals, each of said flanges being disposed, in a fully connected state of the terminal element, in a respective one of said slots and in a plane extending substantially perpendicularly to said axis;

an outer jacket in the form of a sleeve provided with an internal thread winding having the same thread pitch as said external thread winding for coacting therewith to screw said sleeve onto said body; and

camming means actuatable by said sleeve for shifting said conductors radially inwardly in said slots during a screwing of said sleeve onto said body, whereby each of said conductors is forced into the notch of a respective flange of said knife terminals.

4,501,464

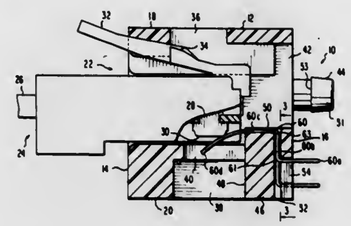
MODULAR CONNECTOR WITH IMPROVED HOUSING AND CONTACT STRUCTURE

Stephen B. Bogese, II, Salem, Va., assignor to Virginia Patent Development Corporation, Roanoke, Va.

Continuation-in-part of Ser. No. 215,054, Dec. 10, 1980, Pat. No. 4,457,570, which is a continuation-in-part of Ser. No. 120,846, Feb. 12, 1980, , which is a continuation of Ser. No. 915,457, Jun. 14, 1978, abandoned. This application Nov. 30, 1981, Ser. No. 326,133

Int. Cl.³ H01R *13/50*

U.S. Cl. 339;176 M **12 Claims**



1. A modular jack for directly coupling to a printed circuit board a modular plug of the type which includes a dielectric housing having a free end for insertion into the modular jack, a cord input end having a cavity for receiving a multi-conductor cord, a resilient locking tab integrally connected by a flexible hinge to the free end of the dielectric housing and extending obliquely rearwardly therefrom, a terminal-receiving side having partitions which define side-by-side slots in communication with the cavity, electrically conductive contact terminals positioned within the slots and extending into the cavity, the contact terminals including insulation-piercing tangs for making electrical engagement with associated conductors of the cord and upper edge portions for making electrical contact external to the plug, the modular jack comprising:

(a) an insulating housing having a front end, a rear end, a plurality of external walls, and means extending integrally from one of said external walls for mounting said insulating housing to the printed circuit board;

(b) plug-receiving opening means for receiving the modular plug extending into said front end of said insulating housing and having a plurality of internal walls;

(c) solder post means extending from said rear end of said insulating housing for insertion through alternating, staggered holes formed in the printed circuit board;

(d) a partition wall extending adjacent the rear portion of said plug-receiving opening means and having conductor-receiving means formed therein;

(e) a plurality of electrical conductors in side-by-side spaced-apart relationship, each of said conductors comprising:

(i) an intermediate portion positioned in said conductor-receiving means in said partition wall;

(ii) a spring contact portion extending from said intermediate portion into said plug-receiving opening means from said rear portion of said plug-receiving opening means towards said front end of said insulating housing; and

(iii) an end portion extending perpendicularly beyond said one external wall to form said solder post means;

(f) said spring contact portions of said conductors engaging the upper edge portions of the contact terminals of the modular plug upon insertion of the plug into said plug-receiving opening means; and

(g) said plug receiving opening means further having recess means formed therein for receiving and releasably retaining the locking tab of the modular plug.

4,501,465

THREE-PIECE MULTICONNECTOR

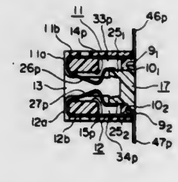
Mitsuo Hoshino, Atsugi; Osamu Fukushima, Kawasaki, and Toshio Kakuta, Higashiosaka, all of Japan, assignors to Sony Corporation, Tokyo and Hosiden Electronics Co., Ltd., Osaka, both of, Japan

Filed Nov. 19, 1982, Ser. No. 443,089

Claims priority, application Japan, Nov. 30, 1981, 56-178549[U]

Int. Cl.³ H01R *13/50*

U.S. Cl. 339—176 MP **8 Claims**



1. A multiconnector comprising:

a first block of electrically insulating material substantially in the form of a rectangular parallelepiped;

a second block of electrically insulating material parallel to and in engagement with said first block to define therebetween an elongated insertion slot adapted to receive a removable companion connector at a front opening of said insertion slot;

an elongated third block of electrically insulating material fitted into said insertion slot to close the portion of said insertion slot opposite to said front opening;

joint means formed at both ends of said elongated third block integrally therewith for fixedly holding said first and second blocks therebetween;

said first block having an array of guide grooves formed in an inner wall surface thereof and extending parallel to one another in a direction transverse to the direction of elongation of said insertion slot;

a plurality of resilient conductors disposed parallel to one another adjacent respective ones of said guide grooves, a center portion of each of said conductors being buried by molding in at least a portion of said first block near the front opening of said insertion slot, one end portion of each of said conductors projecting outwardly from said first block and being folded to confront a corresponding one of said guide grooves thereby to form a contact portion, and the other end portion of each of said conductors projecting outwardly from said first block to form a terminal portion; and

locking means formed on said third block integrally therewith and extending parallel to said first block, said locking means being positioned to engage the free end of said one end portion of each of said conductors so as to cause the resilient force exerted by said conductors to urge said contact portions away from said first body.

4,501,466

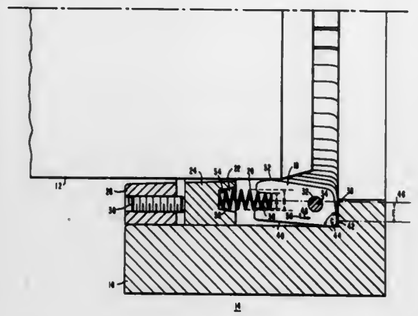
HIGH CURRENT CONTACT

Jeffry R. Meyer, Penn Hills Township, Allegheny County, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Continuation of Ser. No. 288,609, Jul. 30, 1981, abandoned, which is a continuation of Ser. No. 801,122, May 27, 1977, abandoned. This application Dec. 6, 1982, Ser. No. 447,058

Int. Cl.³ H01R *13/12*

U.S. Cl. 339—255 P **9 Claims**



1. A resilient sliding contact comprising:
a cylindrical housing;
a plurality of independently movable contact fingers circumferentially arranged in said housing and adapted for sliding electrical contact with an associated conductor, each of said fingers comprising an end surface and a bottom surface both physically contacting said housing with said end surface and said bottom surface intersecting an an angle less than ninety degrees;
a like number of springs each fixedly attached at one end to one of said contact fingers; and
means connected to said housing for loading said springs to produce a bias force against each of said contact fingers, said bias forces each having a line of action generally parallel to the direction of relative motion between said contact fingers and an associated conductor and urging both of said contact finger end and bottom surfaces against corresponding surfaces of said housing to produce electrical contact therebetween, the point of contact between said finger end surface and said housing being offset from the line of action of said bias forces to produce contact pressure forces perpendicular to said lines of action.

4,501,467

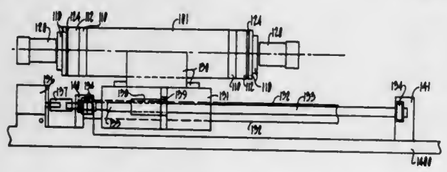
SCANNING SYSTEM EMPLOYING A LASER BEAM

Joseph J. Crane, Woodbridge, and Daniel T. Beasley, Springfield, both of Va., assignors to Crosfield Data Systems, Inc., Springfield, Va.

Filed Jun. 2, 1982, Ser. No. 383,930

Int. Cl.³ G02B *27/17*

U.S. Cl. 350—6.1 **13 Claims**



1. In a scanning system of the type have (a) a hollow housing; (b) a shaft in and supported by said housing; (c) scanning means carried by said shaft; and (d) means for rotating said shaft, said shaft having a first and a second end;
the improvement comprising:
means for improving the lateral stability of said shaft, comprising all of the following:
said housing defining a first and second spaced cavities, said cavities being spaced apart from each other
air pressure supply means for supplying air under pressure to said cavities,
said shaft including as part thereof and affixed thereto a first member located between the first cavity and said first end of said shaft, and a second member located between the second cavity and said second end of said shaft,
first element means located between said first cavity and said first member, said first element means for allowing a restricted air flow from said first cavity to pass to and apply pressure upon said first member, and
a second element means located between the second cavity and said second member, said second element means for allowing a restricted airflow from said second cavity to pass to and apply pressure upon said second member.

4,501,468

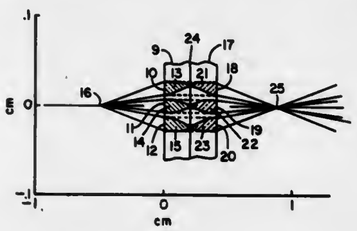
INTEGRAL OPTICAL IMAGING DEVICES USING GRIN LENS SYSTEMS

Nicholas F. Borrelli, Elmira; Donald B. Keck, Big Flats; David L. Morse, and Paul A. Sachenik, both of Corning, all of N.Y., assignors to Corning Glass Works, Corning, N.Y.

Filed Aug. 4, 1983, Ser. No. 520,458

Int. Cl.³ G02B *5/17*

U.S. Cl. 350—96.25 **4 Claims**



1. An integral optical imaging device composed of at least two porous glass bodies each having an array of lens systems having the configuration of cylinders extending through the body, the lens systems having a prescribed gradient radial refractive index and being formed by photolysis of an organometallic compound in the glass pores, each cylinder terminating on opposite faces of the glass body in planar surfaces that function as lens-like elements, the glass bodies being rigidly maintained in a stacked relationship such that each lens system in one body is in registry with a corresponding lens system in the adjacent body, whereby the device has the effective thickness for imaging purposes of the two or more bodies.

4,501,469

MIRROR STRUCTURE FOR REFLECTING AND CONCENTRATING RADIATION ENERGY

Veit Merges, Putzbrunn, and Kurt Hummel, Munich, all of Fed. Rep. of Germany, assignors to Messerschmitt-Boelkow-Blohm Gesellschaft mit beschraenkter Haftung, Munich, Fed. Rep. of Germany

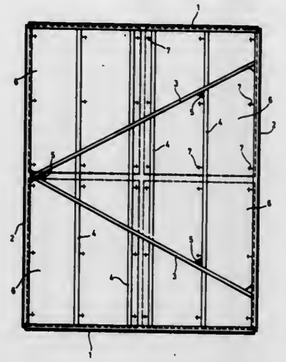
Filed Jul. 14, 1982, Ser. No. 398,108

Claims priority, application Fed. Rep. of Germany, Jul. 23, 1981, 3130471

Int. Cl.³ G02B *7/18*

U.S. Cl. 350—611 **8 Claims**

1. In a mirror structure for reflecting and concentrating radiation energy, having a supporting framework including flexurally stiff supporting members and mirror means adjustably attached to said frame work, the improvement wherein said mirror means comprise at least one flexible mirror, said mirror structure further comprising means for connecting said flexible mirror to said framework, said connecting means comprising at least one substantially planar carrying frame, first securing means operatively securing said carrying frame to said supporting framework at least at three points (5), and second securing means for adjustably and removably securing said flexible mirror to its planar carrying frame, said second



securing means comprising a pin (15), mounting means (19, 20, 21, 22, 23) for mounting one end of said pin in an axially adjustable manner to said planar carrying frame, and a fixture (16) including a defined stop surface (17) attached to a backside of said flexible mirror, said fixture (16) including friction fit means (18) in which the other end of said pin is inserted and held with a force determined by said friction fit means, whereby any vaulting of said flexible mirror is determined by inserting the other end of said pin into said fixture to an extent permitted by said defined stop surface (17).

4,501,470

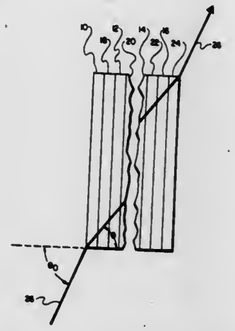
CHRISTIANSEN-BRAGG OPTICAL FILTER

Pochi A. Yeh, Thousand Oaks, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Sep. 28, 1981, Ser. No. 306,115

Int. Cl.³ G02B *27/00, 5/20, 5/22*

U.S. Cl. 350—313 **6 Claims**



1. An optical bandpass filter for transmitting light in a narrow band around the wavelength λ_c, comprising:
a first series of layers having a refractive index n_1; and
a second series of layers having a refractive index n_2 and and alternating with said first series,
where n_1 and n_2 have a common value n_c at the wavelength λ_c but are different at other wavelengths and
wherein each succeeding layer in said first series and in said second series is thicker than the preceding layer in said series such that said first and second series further comprise a series of layers of gradually increasing thickness.

4,501,471

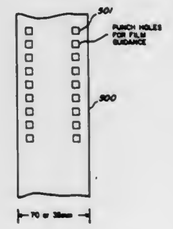
AUTOMATED LIQUID CRYSTAL DISPLAY AND PROCESS

Bobby G. Culley, Wylie, and Kishin Surtani, Plano, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 167,909, Jul. 14, 1980, abandoned, which is a division of Ser. No. 43,068, May 29, 1979, Pat. No. 4,228,574. This application Jan. 29, 1982, Ser. No. 344,094

Int. Cl.³ G02F *1/13*

U.S. Cl. 350—334 **4 Claims**



1. A liquid crystal display unit comprising:
(a) conductive electrode patterns on surfaces of first and second elongated strips of flexible transparent insulating film;
(b) an alignment layer on each of the patterned surfaces of said first and second film strips;
(c) said film strips oriented adjacent to each other with said electrode patterns on said two strips facing each other so that the electrode pattern on one strip is positioned opposite the corresponding electrode pattern on the other strip, to define pairs of corresponding electrode patterns;
(d) liquid crystal material and spacers between said two filmstrips and forming seals between said filmstrips so that said liquid crystal material is enclosed in volumes between said corresponding pairs of electrode patterns on said two filmstrips, in each enclosed volume said two filmstrips being separated by a predetermined distance defined by said spacers; and
(e) guidance means to facilitate automated handling on said first and second filmstrips.

4,501,472

TUNABLE ELECTROCHROMIC FILTER

Margie M. Nicholson, San Marino, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Continuation-in-part of Ser. No. 327,856, Dec. 7, 1981, Pat. No. 4,456,337. This application Dec. 20, 1982, Ser. No. 451,294

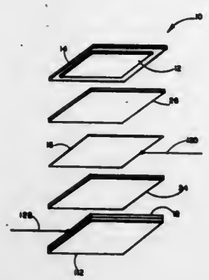
The portion of the term of this patent subsequent to Jun. 26, 2001, has been disclaimed.

Int. Cl.³ G02F *1/23*

U.S. Cl. 350—357 **10 Claims**

1. A device, comprising:
an electronically isolated element of a solid, insoluble mate-

rial capable of reversibly changing optical state by reaction with soluble reactants; and



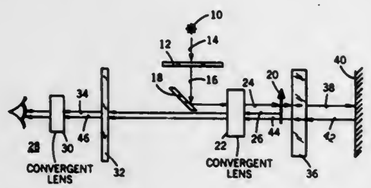
drive means for electrochemically generating said soluble reactants.

4,501,473

FRONT LIGHTED SHADOWGRAPHIC METHOD AND APPARATUS

William J. Stone, Kansas City, Mo., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Feb. 11, 1982, Ser. No. 347,758
Int. Cl.³ G02B 5/30
U.S. Cl. 350—407 **13 Claims**



1. Viewing apparatus for providing high contrast silhouette imaging of a substantially opaque object, comprising:

first polarizing means for polarizing a beam of light illuminating the object, the beam of light incident onto the front of the object,

said first polarizing means thereby providing a first polarization to light reflected by the object towards an observation station located in front of the object;

second polarizing means, located behind the object, for effecting a change in the polarization of any illuminating light bypassing the object and passing through said second polarizing means;

a reflective surface located behind the object and separated therefrom by said second polarizing means for reflecting light passing through said second polarizing means toward said observation station,

said second polarizing means and said reflective surface thereby providing at the observation station light which bypassed the object and which has a second polarization;

third polarizing means located in front of the object for reducing the intensity of observed light of one of said first and said second polarizations more than that of the other of said first and said second polarization,

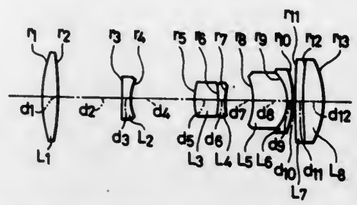
whereby frontally illuminated images of the object are observed in silhouette, with either the object or its background silhouetted against the other.

4,501,474

MICROSCOPE OBJECTIVE

Tadashi Kimura, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed May 2, 1983, Ser. No. 490,509
Claims priority, application Japan, May 4, 1982, 57-73374
Int. Cl.³ G02B 9/60, 21/02
U.S. Cl. 350—414 **17 Claims**



1. A microscope objective comprising a first, second, third, fourth and fifth lens components in the order from the object side wherein said first lens component is a positive lens, said second lens component is a negative lens, said third lens component is a cemented doublet consisting of positive lens and a negative lens, said fourth lens component is a cemented doublet consisting of a positive lens and a negative lens, and said fifth lens component is a positive cemented doublet consisting of a negative lens and a positive lens, said microscope objective being arranged to fulfill the conditions (1) through (4) shown below:

$$0.25f < D < 0.35f \quad (1)$$

$$1.56 < \frac{n_1 + n_2}{2} \quad (2)$$

$$40 < \frac{\nu_1 + \nu_2}{2} \quad (3)$$

$$40 < \nu_5 - \nu_6 \quad (4)$$

where, reference symbol f represents the focal length of the lens system as a whole, reference symbol D represents the distance from the surface on the image side of the first lens component to the surface on the object side of the third lens component, reference symbols n_1 and n_2 respectively represent refractive indices of the first lens component the second lens component, reference symbols ν_1 and ν_2 respectively represent Abbe's numbers of the first lens component and the second lens component, and reference symbols ν_5 and ν_6 respectively represent Abbe's numbers of the positive lens and the negative lens which constitute the fourth lens component.

4,501,475

ZOOM LENS

Hisao Fujita, Hachioji, and Shozo Ishiyama, Hino, both of Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed May 24, 1982, Ser. No. 381,311
Claims priority, application Japan, May 25, 1981, 56-77935; May 25, 1981, 56-78658
Int. Cl.³ G02B 7/04
U.S. Cl. 350—427 **9 Claims**

1. A compact zoom lens system comprising a first lens group having a positive focal length, a second lens group having a negative focal length, a third lens group having a positive focal length and a fourth lens group similarly having a positive focal length in the order from the object side, wherein a partial system consisting of the first lens group and the second lens group has a negative resultant focal length over the entire range of zooming, and when zooming is carried out from the wide position to the tele position, the first lens group and the fourth lens group are moved towards the object, the second lens group is moved towards the image, and the third lens group is arranged so that an airspace formed between the third lens group and the second lens group is decreased and an airspace formed between the third lens group and the fourth lens group is also decreased, and further wherein a fifth positive lens group is arranged on the image side of the fourth lens group, said lens system satisfying the following conditions:

$$0.4fw < t_{1.2T} < 1.5fw$$

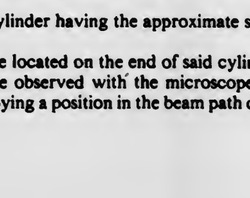
$$0.4fw < t_{2.3w} < 1.5fw$$

$$0.4fw < |f_2| < 1.5fw,\ f_2 < 0$$

$$0.3 < K_{4(f)} < 3$$

$$0.5f_T < f_5 < 5.0f_T$$

$$-0.5f_T < X_{5(f)} < 0.5f_T$$



where:

f: focal length as a whole at a suitable zooming position.

fw: f at the wide position

fT: f at the tele position

fi: focal length of the i lens group

Xi(f): amount of movement of the i lens group where focal length is f with the wide position as a reference; movement towards the object being positive, movement towards the image being negative

Ki(f): coefficient indicative of the ratio of amount of movement of the i lens group at the focal length f to the amount of movement XI(f) of the first lens group, $Ki(f)=Xi(f)/XI(f)$

$t_{1.2T}$: Airspace between the first and second lens groups at the tele position

$t_{2.3w}$: Air space between the second and third lens groups at the wide position, and

$t_{3.4w}$: Airspace between the third and fourth lens groups at the wide position.

4,501,476

DEVICE FOR CHECKING THE LIGHT SOURCE ADJUSTMENT IN AN INCIDENT LIGHT MICROSCOPE

Guenter Reinheimer, Biebertal, and Winfried Kraft, Asslar-Werdorf, both of Fed. Rep. of Germany, assignors to Ernst Leitz Wetzlar GmbH, Wetzlar, Fed. Rep. of Germany

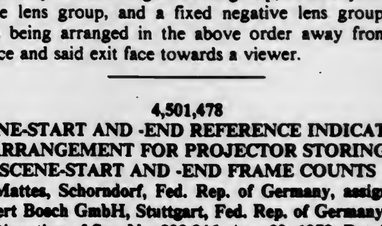
Filed Jun. 30, 1982, Ser. No. 393,798
Claims priority, application Fed. Rep. of Germany, Jul. 4, 1981, 8119559[U]
Int. Cl.³ G02B 21/00
U.S. Cl. 350—520 **10 Claims**

1. A device for checking the adjustment of a light source in an incident light microscope having a revolving lens turret comprising:

a centering cylinder having the approximate shape of a lens cylinder;

a bottom plate located on the end of said cylinder facing an object to be observed with the microscope, said bottom plate occupying a position in the beam path corresponding approximately to the rear focal plane of a selected lens in the lens turret, and having at least one set of markings;

orifice means, provided on said centering cylinder, for permitting observation of said markings; and



means attached to said centering cylinder for mounting said centering cylinder in said revolving lens turret rotatably about an optical axis of said centering cylinder.

4,501,477

LENS ADAPTER FOR ENDOSCOPES

Yasumasa Sunaga, Iwatsuki, Japan, assignor to Fuji Photo Optical Co., Ltd., Ohmiya, Japan

Continuation of Ser. No. 217,470, Dec. 17, 1980, abandoned. This application Apr. 21, 1983, Ser. No. 487,149
Claims priority, application Japan, Dec. 26, 1979, 54-169586
Int. Cl.³ G02B 7/04
U.S. Cl. 350—560 **3 Claims**

1. In combination: an endoscope having an optical fiber bundle with an entrance face at one end thereof and an exit face at the other end thereof, an eyepiece having a fixed focal length located adjacent said exit face for viewing an image appearing on said exit face, a wide angle objective lens adjacent said entrance face for focussing an image to be observed on said entrance face, and an adapter for varying the magnification of the image viewed through said eyepiece, said adapter comprising an adapter body, means for demountably attaching said adapter body to said eyepiece, said adapter also comprising an axially movable negative lens group, an axially movable positive lens group, and a fixed negative lens group, said groups being arranged in the above order away from said eyepiece and said exit face towards a viewer.

4,501,478

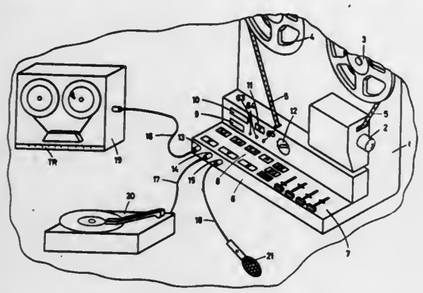
SCENE-START AND -END REFERENCE INDICATOR ARRANGEMENT FOR PROJECTOR STORING SCENE-START AND -END FRAME COUNTS

Gerd Mattes, Schorndorf, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Continuation of Ser. No. 898,846, Apr. 20, 1978, Pat. No. 4,368,961. This application Feb. 13, 1980, Ser. No. 121,252
Claims priority, application Fed. Rep. of Germany, Apr. 22, 1977, 2717912
The portion of the term of this patent subsequent to Jan. 18, 2000, has been disclaimed.
Int. Cl.³ G03B 31/00
U.S. Cl. 352—5 **3 Claims**

1. A sound film editor for projecting motion picture film forwardly and rearwardly and informing a user of a position of a projected film frame relative to scene starts and scene ends, comprising: an optical projection system projecting images on the film; a drive motor driving the film forwardly and rear-

wardly; a frame counter counting each frame on the film as an image thereon is projected by the optical projection system; a memory in which a predetermined frame count may be stored by a user, the predetermined frame count indicating a one of a scene start and a scene end; and a display including indicator



lamps arranged to cooperate with the frame counter and the memory and indicating when a count registered by the frame counter is lower than the predetermined frame count and further indicating when a count registered by the frame counter is higher than the predetermined frame count.

4,501,479

DEVICE FOR SAFETY-LOCKING A COVER OF A HOUSING OF A MAGAZINE OF A CAMERA AND CAMERA IN WHICH SUCH A DEVICE IS UTILIZED

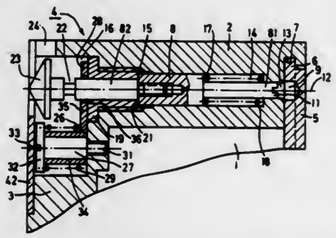
Pierre R. Lamoine, Ermont, France, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 20, 1983, Ser. No. 486,753

Claims priority, application France, Apr. 23, 1982, 82 07011

Int. Cl.³ G03B *17/26*

U.S. Cl. 354—275 **5 Claims**



1. A safety-locking device for a cover and a housing, said cover including means for positioning the cover on the housing, said means for positioning including first edges on the cover and second edges on the housing, one of said first and second edges including grooves provided for cooperation with the other of said first and second edges, said device comprising a safety-lock for the cover constituted by a shouldered shaft, said shouldered shaft mounted to slide between two extreme positions inside the housing against the biasing force of a first release spring in a direction substantially perpendicular to a portion of the cover from a first extreme unlocking position, a first end of said shouldered shaft being dimensioned and configured to penetrate into a recess provided in the cover under the influence of a force exerted on said shaft, blocking means being provided for automatically blocking said shouldered shaft in a second extreme locking position, in which a first end is received by said recess when the travel of said shouldered shaft between said two extreme positions in the housing reaches a predetermined distance, a second end of said shouldered shaft having a substantially conical form, said second end being flush with a portion of the wall of the housing opposite the cover in the first extreme unlocking position, a first groove being provided in the edge of the housing opposite the cover in order that a limited access to the second end is obtained.

4,501,480

SYSTEM FOR DEVELOPING A PHOTO-RESIST MATERIAL USED AS A RECORDING MEDIUM

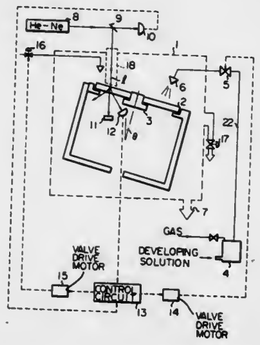
Fumio Matsui, and Mitsuaki Sashida, both of Tokorozawa, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed Oct. 15, 1982, Ser. No. 434,478

Claims priority, application Japan, Oct. 16, 1981, 56-153669[U]

Int. Cl.³ G03D *5/04*

U.S. Cl. 354—298 **4 Claims**



1. A system for developing a photo-resist material of a sensitive layer formed on a substantially transparent base, the sensitive layer having been exposed to a recording energy beam modulated in accordance with information to be recorded, the system comprising:

means for supplying a developing solution on the sensitive layer in atomized form so as to remove the exposed portions of the photo-resist material to form a series of pits which represents the information to be recorded;

means for supplying a monitoring energy beam of a predetermined wavelength on the sensitive layer of the base being developed, at an angle of incidence greater or smaller than 90°;

detection means for detecting the intensity of a diffraction beam of said monitoring energy beam passing through the pits, and producing a diffraction intensity signal proportional thereto;

control means for controlling the supply of the developing solution in accordance with said diffraction intensity signal;

a drive means for rotating said base during the developing process; and

a cylindrical member for isolating a path of said monitoring energy beam from said developing solution disposed around said path of said monitoring energy beam for the entire length of said path, an end of said cylindrical member being open and facing said sensitive layer whereby preventing the atomized developing solution from adhering to said end.

4,501,481

FLASH PHOTOGRAPHING SYSTEM

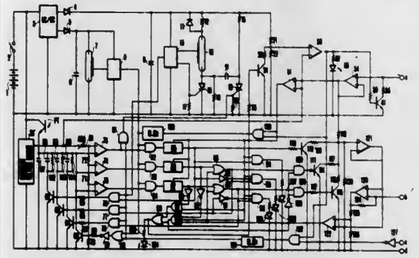
Hiroyuki Katsoka, Saitama; Masanori Yamada, and Nobuyuki Suzuki, both of Kanagawa, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 24, 1982, Ser. No. 444,214

Claims priority, application Japan, Dec. 4, 1981, 56-196031; Dec. 21, 1981, 56-207685; Jan. 9, 1982, 57-1904

Int. Cl.³ G03B *7/16, 15/02, 15/03*

U.S. Cl. 354—413 **22 Claims**



1. A flash device, comprising:

(a) a distance detection circuit for detecting a distance to an object to be photographed;

(b) an aperture determining circuit arranged to determine an aperture value for flash photographing according to the distance detected by said distance detection circuit;

(c) an output signal forming circuit arranged to produce an output when the distance detected by said distance detection circuit is farther than a predetermined distance; and

(d) a flashing circuit including a flash discharge tube and arranged to cause said flash discharge tube to flash at the time of flash photographing, said circuit being arranged to become inoperative in response to the output of said output signal forming circuit.

4,501,482

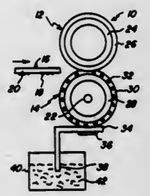
MEMBER OF COMPLIANT MATERIAL

Walter A. Stryjewski, Hilton, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jul. 9, 1982, Ser. No. 396,979

Int. Cl.³ G03G *15/20*

U.S. Cl. 355—3 FU **22 Claims**



5. A member for fusing toner particles to a receiver by means of heat and pressure, said member comprising:

a compliant layer incorporating enclosed particles of material which are solid at non-fusing temperatures, which are fluid when heated to fusing temperatures, the fluid being contained within voids in said compliant layer formed by said particles to increase the compliancy of said compliant material at such fusing temperatures and which are resolidified within said voids when the material is cooled below said fusing temperatures such that said material is not consumed during fusing.

4,501,483

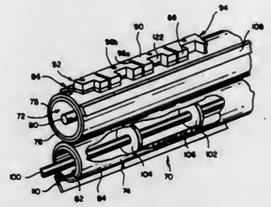
FUSER APPARATUS

John A. Romansky, Rochester, and Gary R. Matson, Scottsville, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Sep. 2, 1983, Ser. No. 528,824

Int. Cl.³ G03G *15/20*

U.S. Cl. 355—3 FU **9 Claims**



1. In reproduction apparatus in which a support carrying an unfused toner image is moved along a path which is inclined to the horizontal transversely to the direction of movement of said support, fuser apparatus comprising:

a fuser member located adjacent to said path and having a fusing surface which contacts a support moved along the path; and

wick means at least partially overlying said fusing surface for applying release material which is fluid at fusing temperatures to said fusing surface, said wick means being inclined to the horizontal and including means for retarding release material from migrating along said wick means due to gravity.

4,501,484

PHOTOCONDUCTIVE ELEMENT CLEANING APPARATUS AND RESIDUAL TONER COLLECTING APPARATUS

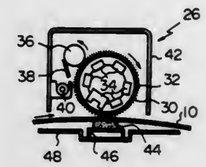
Akira Shimura, Tokyo, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Aug. 10, 1982, Ser. No. 406,831

Claims priority, application Japan, Aug. 19, 1981, 56-123285[U]; Aug. 19, 1981, 56-130663; Aug. 19, 1981, 56-130662; Dec. 19, 1981, 56-189589[U]

Int. Cl.³ G03G *15/08*

U.S. Cl. 355—15 **16 Claims**



1. A cleaning apparatus for cleaning a moving photoconductive belt to remove residual toner therefrom, comprising:

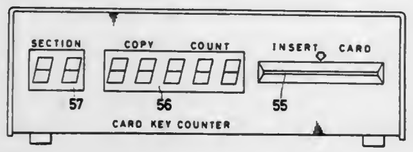
a rotatable cleaning member for removing the residual toner from the imaging surface of the belt;

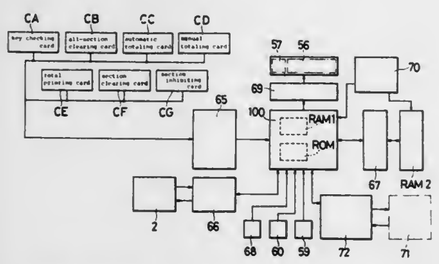
a counter member located at the side of the belt opposite to the imaging surface to face the cleaning member through the belt; and

a support member for supporting the counter member and urging the counter member against the back surface of the belt while the apparatus is operated;

the cleaning member comprising a non-magnetic cylindrical sleeve having relatively short bristles set on the outer periphery thereof, and a plurality of magnets fixed in place within the cylindrical sleeve.

4,501,485
CARD-OPERATED COPYING MACHINE
Hideaki Tsudaka, Osaka, Japan, assignor to Mita Industrial Company Limited, Osaka, Japan
Filed Apr. 19, 1983, Ser. No. 486,541
Claims priority, application Japan, Apr. 19, 1982, 57-65624; Apr. 30, 1982, 57-74263
Int. Cl.³ G03G *15/00*
U.S. Cl. 355—6 **7 Claims**

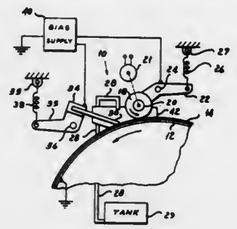


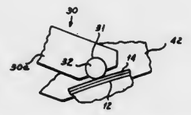


1. A card-operated copying machine comprising a processor responsive to information recorded on key checking cards assigned respectively to a plurality of sections for issuing signals capable of copying operation, memory means for storing total copy counts for the respective sections, display means for displaying the total copy count for each of said sections, said memory means having a flag indicative of permission and inhibition of copying operation for each of said sections, and an inhibition card recording thereon flag inhibition information for setting said flag to an inhibition state, said processor being capable of issuing a signal indicative of inhibition of copying operation in response to the key checking card for a section corresponding to a flag in the inhibition state.

4,501,486
WIPER BLADE FOR ELECTROPHOTOCOPIER
Benzion Landa, Edmonton, Canada, assignor to Savin Corporation, Stamford, Conn.
Filed Jul. 14, 1983, Ser. No. 513,725
Int. Cl.³ G03G *21/00*
U.S. Cl. 355—15 **9 Claims**

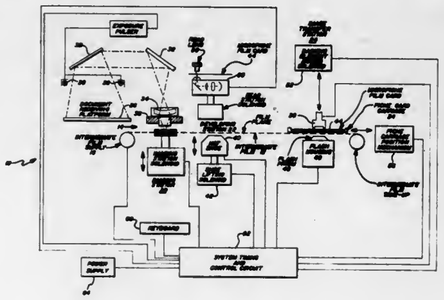
1. A blade for cleaning toner from an imaging surface, said blade having a body and having a tip which contacts said surface, said body being formed of a compliant material having





a relatively low bulk resistivity, and said tip being formed of a compliant material having a relatively high bulk resistivity.

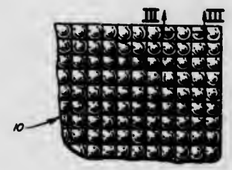
4,501,487
MICROFICHE RECORDING APPARATUS AND METHOD WITH STATIONARY FILM HEAD
Mark H. McCormick-Goodhart, Grosse Point, Mich., assignor to Energy Conversion Devices, Inc., Troy, Mich.
Filed Aug. 15, 1983, Ser. No. 523,341
Int. Cl.³ G03B *27/32, 27/52*
U.S. Cl. 355—27 **14 Claims**



1. A dry-process microfiche recording apparatus comprising an imaging station that reduces a light image to a microsize image and records the microsize image on a frame of predetermined size of a heat developable dry process intermediate film strip, a developing station that individually heat develops the microsize image into a microsize transparency image, an image transferring station that transfers the microsize transparency image to a dry-process microfiche film, said imaging, developing and transferring stations in fixed relation to each other, an intermediate film head in stationary relation to said imaging, developing and transferring stations, said intermediate film head for guiding said intermediate film strip to said imaging, developing and transferring stations, said intermediate film head including means for single frame advancement of said intermediate film strip after a microimage is recorded at said imaging station for allowing the next adjacent frame of said intermediate film strip to be microimaged and for moving the recorded frames of said intermediate film strip in single frame increments towards said developing and transferring stations, said intermediate film head including means for retracting the intermediate film at the end of a recording cycle to make

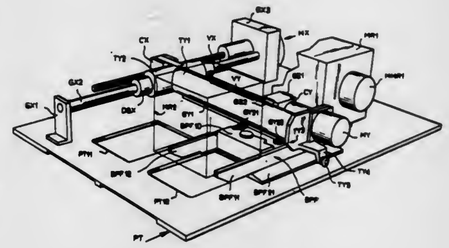
available to the imaging station for recording an image the next available area of the intermediate film strip, said imaging and developing stations spaced apart from the center-to-center of each other along said film track a distance of an integer multiple of the center-to-center distance of adjacent intermediate film frames, said developing station located between said imaging and transferring stations along said film head, said developing and said transferring stations spaced apart from the center-to-center of each other along said film track a distance of an integer multiple of the center-to-center distance of adjacent intermediate film frames.

4,501,488
IMAGE PROCESSOR AND METHOD FOR USE IN MAKING PHOTOGRAPHIC PRINTS
Morton Goldsholl, Goldsholl Associates, 420 Frontage Rd., Northfield, Ill. 60093
Filed Dec. 16, 1981, Ser. No. 331,296
The portion of the term of this patent subsequent to Dec. 16, 1997, has been disclaimed.
Int. Cl.³ G03B *27/44*
U.S. Cl. 355—46 **10 Claims**



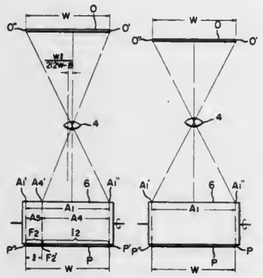
1. An image processor for use by photographers to produce special visual effects, said processor being adapted to be disposed in a stationary position against unexposed photographic enlarging paper while operating an enlarger, said processor comprising: a unit having a contact surface for direct engagement with the unexposed photographic enlarging paper while a primary image to be processed is projected by the enlarger to an opposite surface of said unit in closely spaced parallel relation to said contact surface thereof, said unit including an array of optical elements in side-by-side relation to each other and arranged to develop from portions of the primary image at said opposite surface a resultant image at said contact surface divided into contiguous modular portions with sharp lines of demarcation at the boundaries between contiguous modular portions, each modular portion being produced by one of said optical elements from a portion of the primary image which is aligned therewith and which is substantially separate from the portions aligned with adjacent optical elements, each of said optical elements being in the form of a lens element and said lens elements all having substantially the same focal length and being spaced a distance from said contact surface of on the order of said focal length but differing from said focal length to an extent such that each of said lens elements is effective to produce from an aligned portion of said primary image which is of non-uniform hue and intensity a modular portion of said resultant image which is of generally uniform hue and intensity, the transverse dimension of each of said optical elements being of a size large enough to permit said modular portions of said resultant image and said sharp lines of demarcation therebetween to be readily discerned when viewing the developed enlarging paper.

4,501,489
MULTI-PARTITION MODULAR CAMERA FOR OBTAINING MICROFICHES
Claude Goulard, Meudon; Serge Accettella, Bourg-la-Reine; Gerard Cathaly-Prétou, Fontenay-sur-Bois; Bernard Fages; Daniel Jeannin, both of Paris; Philippe Laloux, Neuilly-sur-Marne, and Jean Le Fur, Pantin, all of France, assignors to Centre National de la Recherche Scientifique (CNRS), Paris, France
Filed Mar. 3, 1983, Ser. No. 471,724
Claims priority, application France, Mar. 4, 1982, 82 03570
Int. Cl.³ G03B *27/44*
U.S. Cl. 355—54 **9 Claims**



1. A microfiche camera arrangement comprising:
a frame;
a horizontal plate having a flat upper surface provided on the frame;
a light proof cover covering said horizontal plate;
a shooting station arranged in said horizontal plate;
a film holder unit provided under said cover and above said horizontal plate and adapted to support a photosensitive film in the vicinity of the upper surface of said plate;
first and second drive means for displacing said film holder unit in an indexed fashion above said shooting station along two horizontal perpendicular axes parallel to said upper surface of said horizontal plate, so as to allow the impression on the photosensitive film of a succession of elementary images arranged according to a partition selected from various elementary image partitions,
said first drive means including:
a longitudinal guide connected to said horizontal plate,
a transverse carriage comprising a first runner supported by said longitudinal guide, and
a first driving assembly coming into engagement with said first runner so as to displace said transverse carriage along said longitudinal guide,
said second drive means including:
a second runner provided on said transverse carriage and capable of displacement along said transverse carriage perpendicularly to said longitudinal guide, and
a second driving assembly engaging said second runner so as to displace said second runner along said transverse carriage, perpendicularly to the longitudinal guide;
means for mounting said film holder unit on said second runner vertically free relative thereto; and
support riders provided on said film holder unit and capable of sliding with a dry fit on the upper surface of the plate.

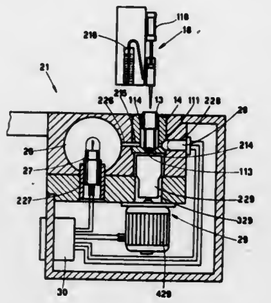
4,501,490
COPYING APPARATUS
Koichi Miyamoto, Tokyo, and Yoshinobu Tonomura, Hachiohji, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 378,742, May 17, 1982, abandoned. This application Jul. 3, 1984, Ser. No. 627,520
Claims priority, application Japan, May 21, 1981, 56-77070
Int. Cl.³ G03B *27/52*
U.S. Cl. 355—55 **7 Claims**



1. A copying apparatus capable of forming a binding margin at an edge portion of a transfer medium, the width of said binding margin being variable, said apparatus comprising:
a movable photosensitive medium;
a variable magnification projection optical system having a lens for projecting the optical image of an original to be copied onto said photsensitive medium;
transfer means for transferring the image of the original to the transfer medium at a transfer station;
instructing means for instructing the formation of a binding margin on a side edge portion of the transfer medium and the width of the binding margin to be formed;
a first motor responsive to the instruction of said instructing means for displacing said lens in a magnification direction so as to change the magnification of the image of the original in accordance with the selected width of the binding margin; and
a second motor responsive to the instruction of said instructing means for displacing said lens in a direction perpendicular to direction of movement of the photosensitive medium by a distance corresponding to the selected width of the binding margin.

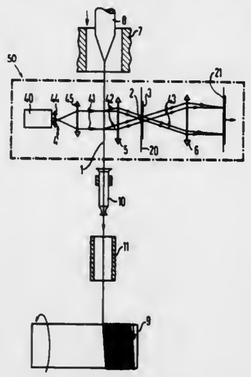
4,501,491
DEVICE FOR OPTICAL INDICATION OF THE PHENOMENA OF COAGULATION OF BLOOD, CONCENTRATION AND AGGREGATION OF BLOOD PLATELETS, OR THE LIKE
Enzo Breda, and Alfredo Ciotti, both of Udine, Italy, assignors to SALUS Ricerca e Sviluppo di CROCE' Dr. Francesco & C. Snc, Udine, Italy
Filed Mar. 10, 1982, Ser. No. 356,299
Claims priority, application Italy, Mar. 23, 1981, 83349 A/81
Int. Cl.³ G01N *33/48, 21/13*
U.S. Cl. 356—39 **5 Claims**

1. Indicator device for studying the phenomena of blood coagulation, concentration and aggregation of blood platelets including:
an indicator station defining a lengthwise groove, a plurality of spaced coaxial holes extending crosswise of said groove, a light positioned on a line coaxially extending from each end of a hole on one side of said groove, a photosensor means positioned in an end of each hole on the other side of said groove, a support means defining a plurality of parallel upright hollows for bearing test tubes slidable within said groove and defining coaxial crosswise holes communicating with said hollows and coaxially corresponding to said holes extending crosswise of said groove, said support means also defining holes in the bottoms of said hollows, a conveyor to move said support means to and from said indicator station, loading and



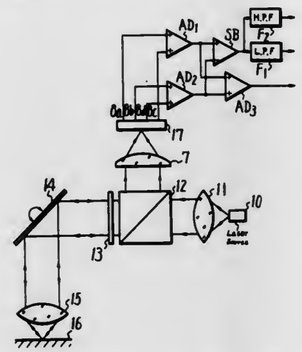
discharge means to insert into and remove said support means from said groove, stirring means positioned below each hole in the bottom of each hollow and an injector positioned above said support for loading said test tubes.

4,501,492
METHOD FOR TESTING SPECIMENS
Nikolaos Douklias, Kirchheim, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany
Filed Jun. 28, 1982, Ser. No. 392,587
Claims priority, application Fed. Rep. of Germany, Jul. 3, 1981, 3126356
Int. Cl.³ G01N *21/84, 21/89*
U.S. Cl. 356—73.1 **14 Claims**



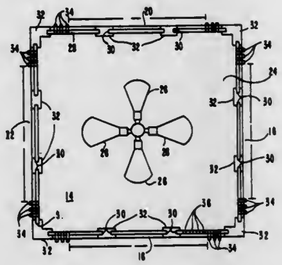
1. A method for non-destructive testing of fiber optical waveguides as to their tensile properties, said method comprising the steps of providing a specimen selected from a fiber optical waveguide and a preform from which a fiber optical waveguide is drawn; creating a spatial frequency spectrum of the specimen; filtering the spectrum to remove selected relatively stronger-appearing diffraction maximums of the spatial frequency spectrum by projecting the spectrum of the specimens onto a spatial frequency filter; and evaluating the component of the spectrum passing through the filter.

4,501,493
APPARATUS FOR DETECTING A POSITION OF AN OPTICAL PICKUP
Shigeo Kubota, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan
Filed Oct. 28, 1982, Ser. No. 437,214
Int. Cl.³ G01J *1/36*
U.S. Cl. 356—123 **10 Claims**



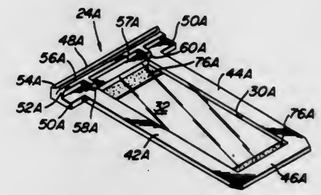
1. An apparatus for detecting a position of an optical pickup, comprising:
a lens having lens areas of four quadrants divided at two planes which are perpendicular to each other and intersect at an optical axis of the lens, focal lengths of said lens areas of first and third quadrants being equal to each other, focal lengths of said lens areas of second and fourth quadrants being equal to each other, the focal length of the lens areas in the first and third quadrants being different from that of the lens areas in the second and fourth quadrants, and said lens areas of equal focal lengths having axial symmetry about said optical axis, said lens being located within an optical path of a reflected beam from an optical disk; and
a photo detector having four divided detecting portions in correspondence with respective lens areas of said lens for detecting the reflected beam passed through said lens.

4,501,494
APPARATUS FOR DETECTING DEFECTS IN CAPSULE SHELLS
Thomas G. Wood, East Brunswick, N.J., assignor to E. R. Squibb & Sons, Inc., Princeton, N.J.
Filed May 3, 1982, Ser. No. 374,567
Int. Cl.³ G01N *21/16, 21/32*
U.S. Cl. 356—240 **9 Claims**



1. Apparatus for detecting defects in hard gelatin capsule shells comprising, in combination, an enclosed area which is defined by a plurality of external surfaces, a light source which is disposed within the enclosed area, and a plurality of transparent pegs mounted on at least one of said external surfaces and extending outwardly away from the enclosed area and light source, each of said pegs being dimensioned to snugly carry a capsule body or cap, whereby said light source is adapted to emit light which shines through said transparent pegs and capsule shells mounted on said pegs to show up defects in said capsule shells.

4,501,495
SLIDE CARRIER
Albert A. Faulkner, Conshohocken, and John C. Bouton, Doylestown, both of Pa., assignors to SmithKline Beckman Corporation, Philadelphia, Pa.
Division of Ser. No. 274,690, Jun. 17, 1981, Pat. No. 4,453,807. This application Dec. 12, 1983, Ser. No. 560,471
Int. Cl.³ G01N *21/01*
U.S. Cl. 356—244 **13 Claims**

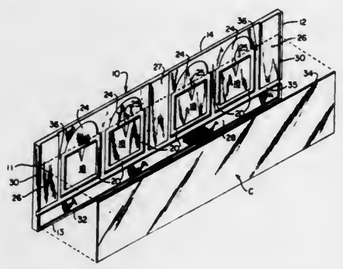


12. A device for holding a specimen-bearing slide for location on an automatic microscope stage at at least one predetermined index position defined by a longitudinal position and a transverse position, said device including a tray having outer side margins provided by outer surfaces of peripheral top, peripheral bottom, peripheral leading and peripheral trailing sidewalls, a slide receiving window located within the periphery of the sidewalls of the tray, fastening means for securing a slide within the window, engagement means adjacent a side margin of the tray adapted to be engaged by cooperating drive means to move the tray longitudinally relative to the microscope stage to the predetermined longitudinally position, and an engagement surface on the tray adapted to be engaged by a cooperating alignment means for locating the tray in the predetermined transverse position, said top sidewall of the tray extending longitudinally beyond the leading and trailing sidewalls for providing opposed, laterally projecting ears adapted to be used to support the tray when said tray is stored in a generally vertical plane.

4,501,496
SPECIMEN SLIDE FOR ANALYSIS OF LIQUID SPECIMENS
Gladys B. Griffin, 848 S. Johnson Ct., Lakewood, Colo. 80226
Filed May 7, 1982, Ser. No. 376,252
Int. Cl.³ G01N *21/01*
U.S. Cl. 356—246 **18 Claims**

18. A specimen slide assembly adapted for examination of liquid specimens comprising in combination:
a slide plate having an upper, substantially flat examination surface, said examination surface including at least one viewing surface portion, a continuous channel disposed in surrounding relation to said viewing surface portion to isolate said viewing surface portion from the rest of said examination surface, said channel provided with a broadened recessed area in contact with a side edge of said viewing surface portion, said broadened recessed area defining a well to receive a liquid specimen and including a notched portion intruding into one side of said viewing surface portion;
a transparent cover plate; and
locating means on said examination surface of said slide plate

operative to support said transparent cover plate in predetermined spaced relation to said viewing surface portion



with a side edge of said cover plate aligned to partially expose a portion of said broadened recessed area.

4,501,497

CELL FOR MEASUREMENT

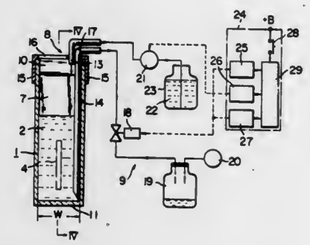
Yuzaburo Nanba, Saitama, Japan, assignor to Eisai Co., Ltd., Tokyo, Japan

Filed Aug. 9, 1982, Ser. No. 406,626

Claims priority, application Japan, Aug. 28, 1981, 56-135245; Aug. 28, 1981, 56-135246

Int. Cl.³ G01N *1/10*

U.S. Cl. 356—246 **6 Claims**



1. A cell for optical measurement, comprising a cell for receiving a sample, said cell being wholly composed of rigid transparent rigid material, said cell having an opening at its upper end, said cell having a sample receiving chamber communicating with said opening and with a narrow thickness in the range of 2–0.5 mm as an optical pass length, said sample receiving chamber having a width of over several times said thickness, an attachment portion attached to the cell and comprising a holder plate freely settably and removably attached at the opening of said cell, said holder plate having an injection tube whose lower end faces said cell opening for injecting thereinto a cleaning liquid, said holder plate having an elongate suction tube extending through said cell opening and with its lower end reaching to the bottom of the sample receiving chamber, said holder plate having an injection opening communicating with the cell opening for placing therein the sample, a cleaning device connected to said attachment portion and having a timer circuit, said cleaning device having a cleaning liquid input line including a constant volume pump connected from a cleaning liquid source to said injection tube for injecting therethrough cleaning liquid into said sample receiving chamber, said cleaning device having a suction line comprising a suction pump connected through an electromagnetic valve to said suction tube for removing sample and cleaning liquids from said sample receiving chamber, said timer circuit having a first timer and a third timer operatively associated with said suction line for timing withdrawal from said sample receiving chamber of a measured sample and cleaning liquid respectively, said timer circuit having a second timer operatively associated with said cleaning liquid input line for timing injection of cleaning liquid into said sample receiving chamber, and a control circuit for controlling said three timers.

4,501,498

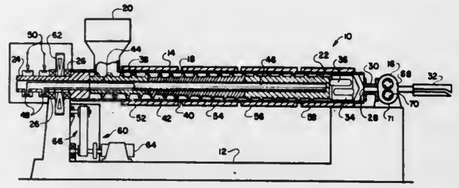
METHOD AND APPARATUS FOR EXTRUDING THERMOPLASTIC MATERIAL

James M. McKelvey, St. Louis, Mo., assignor to Luwa Corporation, Charlotte, N.C.

Filed Dec. 5, 1983, Ser. No. 558,042

Int. Cl.³ B29B *1/04*

U.S. Cl. 366—69 **24 Claims**



1. In a method of extruding thermoplastic material comprising passing said material successively through an extruder having rotating conveying screw means and a rotary gear pump, the improvement comprising operating said extruder and said pump at selected compatible speeds respectively to convey said thermoplastic material through said extruder with relatively little material pressurization in said extruder at said gear pump for relatively little heat generating mechanical working thereof while heating said material by conduction from said screw means to melt said material in said extruder primarily by heat transfer and to convey said melted material by said gear pump under pressure to a subsequent working station, whereby said material is extruded at a substantially greater rate and with substantially increased power economy and energy efficiency than without said selected operating or said heating from said screw means.

4,501,499

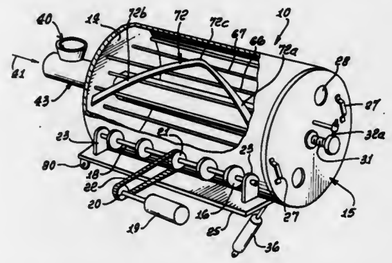
AGGLOMERATOR

William J. Boan, and Robert D. Coomes, both of Westminster, Calif., assignors to Purex Corporation, Lakewood, Calif.

Filed Sep. 15, 1983, Ser. No. 532,307

Int. Cl.³ B01F *9/06, 15/02*

U.S. Cl. 366—156 **10 Claims**



1. In an agglomerator, the combination comprising
(a) a drum having a longitudinal axis, and means for supporting and rotating the drum about that axis,
(b) feed means extending axially within the drum for feeding flowable material into the drum for longitudinal distribution and tumbling therein,
(c) rods carried by the drum to extend generally longitudinally therein, certain rods located closer to said axis than other rods, the rods distributed about said axis, and said certain rods alternated with said other rods, about said axis,
(d) liquid spray means within the drum for spraying liquid into the flowable material tumbling within the drum interior,
(e) and including baffles carried by the drum in close proximity to the rods to extend along substantially the entire length of the drum interior and with helical angularity relative to the drum axis to deflect the tumbling material in directions toward the middle of the drum and,
(f) said feed means including a tubular duct extending in an axial direction within the drum, a rotary feedscrew in the duct and individually adjustable size openings in the lower side of the duct, and spaced therealong, said adjustable size openings being defined by windows in the duct lower side, and gates moveable relative to said openings to control the sizes thereof.

4,501,500

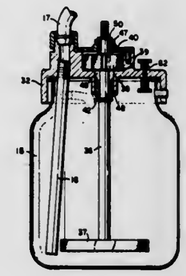
PAINT CUP FOR SPRAYER

Joseph L. Terrels, 111 S. Bolmar St., West Chester, Pa. 19380

Filed Jan. 20, 1984, Ser. No. 572,650

Int. Cl.³ B01F *7/16, 7/22*

U.S. Cl. 366—250 **9 Claims**



1. In combination with a hand-held spray gun for spraying paint and other coating materials, a reservoir for said material, aspirator tube means connected to said spray gun and extending to the bottom of said reservoir,
a cover assembly mounting said reservoir on said spray gun, said cover assembly including an impeller chamber, an agitator shaft mounting said impeller for rotation in said impeller chamber, and a bushing for said shaft in the bottom of said chamber having a bore open into said reservoir, said shaft extending through said bore into said chamber with sufficient clearance to permit limited air flow therethrough,
an air line for feeding compressed air to said gun having a branch conduit for admitting compressed air from said line into said impeller chamber,
valve means to regulate the air admitted to said chamber, said impeller chamber having discharge ports in an upper wall to afford primary discharge of said compressed air to atmosphere after driving said impeller,
said agitator shaft terminating at its lower end in agitator blades adapted to sweep the bottom of said reservoir, said cover assembly including vent means extending through said cover, communicating said reservoir with the atmosphere, and pressure regulating means in said vent means to maintain the pressure within said reservoir to substantially equal the pressure of the atmosphere.

4,501,501

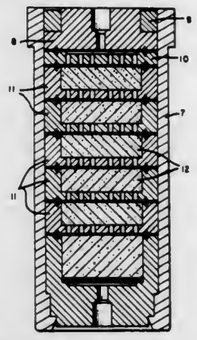
PROCESS FOR DISPERSING SOLIDS IN LIQUID MEDIA

Harold W. Edwards, Springfield, Pa., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 472,102, Mar. 4, 1983, abandoned. This application Apr. 9, 1984, Ser. No. 598,185

Int. Cl.³ B01F *5/06*

U.S. Cl. 366—336 **2 Claims**



1. A process for the dispersion of particulate solids in liquid media comprising pumping a liquid premix containing an admixture of said solids and said liquid media through a plurality of orifices at a laminar flow velocity, there being sufficient pressure drop across said plurality of orifices to provide shear energy to cause said dispersion, the orifices being the network of tortuous paths formed from substantially nondeformable spherical particles arranged in a series of beds, each bed consisting of substantially spherical particles of a substantially uniform size in comprising at least one coarse bed of particles having a diameter of at least about 0.5 mm, at least one intermediate bed of particles having a diameter of about from 0.5 to 0.15 mm, and at least one fine bed of particles having a diameter of about from 0.15 to 0.05 mm, and wherein the flow rate of the liquid medium is adjusted to provide a shear rate, as measured assuming random packing of the spherical particles, of about from 1500 to 6300 sec^{-1} in each coarse bed, a shear rate of about from 3300 to 15,000 sec^{-1} in each intermediate bed, and a shear rate of about from 10,000 to 30,000 sec^{-} in each fine bed.

4,501,502

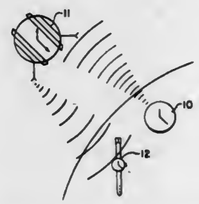
APPARATUS AND METHOD FOR TIMEKEEPING AND TIME CORRECTION FOR ANALOG TIMEPIECE

James Van Orsdel, 1917 Commonwealth Ave., Charlotte, N.C. 28205

Filed Jul. 21, 1983, Ser. No. 515,806

Int. Cl.³ G04C *11/02;* G04B *19/04*

U.S. Cl. 368—47 **10 Claims**



1. A time synchronizer for an analog timepiece, comprising:
(a) a time source;
(b) means for transmitting a wireless electromagnetic signal from the time source at a pre-determined periodic time interval;

(c) an analog timepiece;
(d) means carried by said analog timepiece for receiving said electromagnetic signal and processing said electromagnetic signal into signal pulse;
(e) motive means cooperating with the hands of the analog timepiece and with the means for receiving and processing said electromagnetic signal to move the hands of the timepiece to the position to display the time indicated by the time source; and
(f) means for transmitting correction signal at a periodic interval, and wherein said means for receiving and processing said electromagnetic signal includes means for reviewing and processing said correction signal at given intervals in order to compensate for an accumulated time error between the time source and the analog timepiece.

4,501,503
THERMOGRAPHIC CHOLESTERIC COATING COMPOSITIONS AND PLATES

William L. Buirley, Dayton; Donald E. Koopman, Miami Township; David B. McQuain, Dayton, and William H. Reeves, Englewood, all of Ohio, assignors to Vectra International Corporation, Columbia, Md.

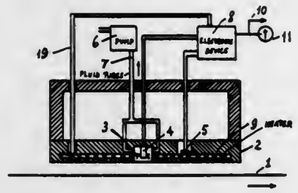
Continuation of Ser. No. 294,313, Aug. 19, 1981, abandoned, which is a division of Ser. No. 45,276, Jun. 4, 1979, Pat. No. 4,301,054. This application Jul. 27, 1983, Ser. No. 517,700
Int. Cl.³ C09K *3/34,* **G01N** *31/00, 33/00;* **C08L** *61/24;* **B01J** *13/02*
U.S. Cl. 374—162 **18 Claims**

1. A thermographic plate comprising a polymer film substrate sheet applied as a wet coat of about 6 to 12 mils thickness comprising a polymer film binding material, single-droplet microcapsules having transparent wall material and having core material consisting essentially of about 55 to about 75% of cholesteryl pelargonate, about 14 to about 35% of oleyl cholesteryl carbonate, about 2.0 to about 6.0% of cholesteryl propionate and about 4.5 to about 7.2% of cholesteryl chloride.

4,501,504
NON-CONTACTING MEASUREMENT OF SURFACE TEMPERATURE

Laszlo Urmenyi, 40 Thackeray Ct., Hanger Vale La., London W5 3AT, and William R. Urmenyi, 45 Lloyd Rd., Worcester Park, Surrey, both of England

Filed Aug. 25, 1982, Ser. No. 411,242
Int. Cl.³ G01K *1/16, 13/04, 17/08*
U.S. Cl. 374—164 **11 Claims**

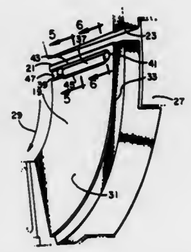


1. Method of non-contacting sensing of the surface temperature of an object consisting in bringing at least a part of the surface of a member, said part conforming generally in shape to the surface of the object, in close proximity to the surface of the object thereby forming a gap between the two surfaces, sucking up fluid, preferably air, from the gap into tube means and through a protective enclosure in the member, the fluid thus sucked up having acquired a temperature which is the arithmetic mean of the surface temperature of the object and the member, sensing the temperature of the sucked up fluid and the surface temperature of the member by using temperature sensing elements, utilising one of the temperature sensing elements to obtain an electrical signal which is a function of twice the temperature of the fluid and utilising the other temperature sensing element to obtain an electrical signal which is a function of the surface temperature of the member and combining the two signals so as to obtain a third signal which is a function of the difference between twice the temperature of the sucked up fluid and the temperature of the member, the said third signal being a measure of the surface temperature of the object.

4,501,505
THRUST BEARING

William S. Chambers, c/o Kingsbury, Inc., 10385 Drummond Rd., Philadelphia, Pa. 19154

Filed Jun. 6, 1984, Ser. No. 617,721
Int. Cl.³ F16C *17/06*
U.S. Cl. 384—152 **4 Claims**

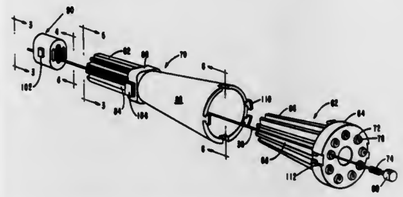


1. A thrust bearing for use with a shaft having a collar mounted thereon, comprising
a base ring,
a thrust bearing shoe having a leading edge connected to a trailing edge by an inner diameter edge and an outer diameter edge,
said shoe having a working face with a bearing liner on its surface,
a series of shoes positioned on the base ring,
shoe pivot means on each shoe allowing the shoe to pivot in any direction,
an oil distribution groove formed in the working face near the leading edge of the shoe and extending radially for substantially the entire distance between the inner and outer diameter edges of the shoe,
said oil distribution groove having an inner end and an outer end connected by a leading edge and a trailing edge,
a bleed groove extending radially from the inner end of the oil distribution groove to the inner diameter edge of the shoe for supplying oil to the inner diameter area of the shoe downstream of the bleed groove which downstream inner diameter area would otherwise be starved of oil by the centrifugal inertial effects of rotating the collar,
an oil supply hole extending axially through the base ring near the outer diameter edge of the base ring,
an oil feed tube connected between the oil supply hole and the outer end of the oil distribution groove near the outer diameter edge of the shoe,
said oil feed tube having a near end with a ball shape and an annular recess with an O-ring seated in the recess, and a far end with a ball shape and an annular recess with an O-ring seated in the recess,
a socket formed in the shoe and connected to the oil distribution groove at its outer end for receiving the near end of the oil feed tube and its O-ring to seal the tube against oil leaks,
a socket formed in the base ring for receiving the far end of the oil feed tube and its O-ring to seal the tube against oil leaks,
shoulders formed at the openings to said sockets for retaining the ends of the tube in the sockets, and
a retainer pin extending radially from the shoe into an annular groove in the base ring to assist in retaining the shoe on the base ring.

4,501,506
DOT MATRIX PRINT HEAD

David E. Weeks, Newfield; John W. Reece, and Robert L. Wirth, both of Ithaca, all of N.Y., assignors to NCR Corporation, Dayton, Ohio

Filed Feb. 25, 1983, Ser. No. 470,012
Int. Cl.³ B41J *3/12*
U.S. Cl. 400—124 **3 Claims**



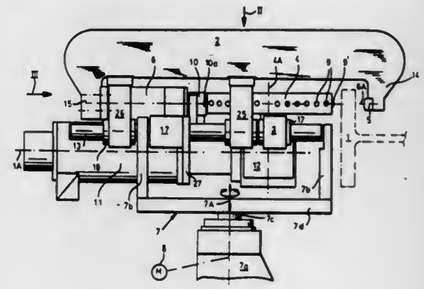
1. A wire matrix print head comprising a
mounting plate having a plurality of electromagnets supported therefrom in a circular arrangement, an annular housing portion and a nose portion integral therewith, a
plurality of print wires each having one end thereof originating in the housing portion and supported within the nose portion and each having the other end thereof terminating at the end of said nose portion, a
plurality of armatures operably associated with the electromagnets and with said one ends of the print wires for driving the other ends of the print wires from a non-printing to a printing position, and
print wire guide means of generally conical shape and extending from the annular housing portion to a point approximately midway of the nose portion and including a first guide member having an annular portion formed for bearing said one ends of the print wires and having a grooved forward portion integral therewith and formed for directing the wires from a circular to an elliptical pattern and insertable into a second guide member of the guide means, said second guide member including a rearward hollow portion for receiving the grooved forward portion of the first guide member and having a grooved forward portion formed for directing the wires from the elliptical pattern to an aligned configuration, said first and second guide members forming a wire guide subassembly having the print wires contained therein and arranged for fitting into the nose portion of the print head, said guide means further including a tip portion for receiving the other ends of the print wires in aligned manner in the assembly of the print head and for supporting the other ends in printing operation.

4,501,507
HEAVY-DUTY SELECTIVE EMBOSSING APPARATUS

Rolf Peddinghaus, Deterbergerstr. 25, 5828 Ennepetal, Fed. Rep. of Germany

Filed Nov. 4, 1983, Ser. No. 549,206
Claims priority, application Fed. Rep. of Germany, Nov. 5, 1982, 3240858
Int. Cl.³ B41J *1/32, 3/38*
U.S. Cl. 400—134 **9 Claims**

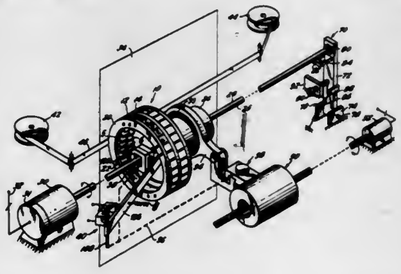
1. An apparatus for embossing an imprint in a workpiece, the apparatus comprising:
a rigid frame having a front end to one side of the workpiece to be embossed and a rear end to the other side thereof;
means supporting at least the front end of the frame for movement relative to the workpiece in a longitudinal direction which extends across the workpiece and between the front and rear frame ends;
an anvil on the front frame end and engageable with the one side of the workpiece;
a tool support;
means supporting the tool support on the frame for longitudinal movement relative to same and to the workpiece;
a tool wheel rotatable on the tool support about a transverse tool axis generally perpendicular to the longitudinal direction and having a periphery carrying a plurality of tools spaced angularly about the tool axis, the wheel being angularly displaceable through a plurality of respective positions in each of which a respective one of the tools longitudinally forwardly confronts the other side of the workpiece in line longitudinally with the anvil;
drive means on the tool support for rotating the tool wheel about the tool axis through the respective positions; and
actuator means engaged backward against the rear end of the frame and engageable forwardly with the tool wheel at a location thereon diametrally relative to the tool axis opposite the tool confronting the workpiece, whereby the actuator means can expand longitudinally and pull the anvil back into engagement with the one side of the workpiece while pushing the wheel into engagement with the other side of the workpiece.



4,501,508
APPARATUS FOR USE IN AUTOMATIC TYPING MACHINE

John T. Potter, Locust Valley, N.Y., assignor to Iquad Company Incorporated, Locust Valley, N.Y.

Continuation-in-part of Ser. No. 310,189, Oct. 9, 1981, Pat. No. 4,440,038, and a continuation-in-part of Ser. No. 407,481, Aug. 13, 1982, Pat. No. 4,423,970, and a continuation of Ser. No. 190,680, Sep. 24, 1980, abandoned. This application Mar. 28, 1983, Ser. No. 479,633
Int. Cl.³ B41J *1/32*
U.S. Cl. 400—141.1 **7 Claims**



1. In a typewriter printing assembly comprising means for mounting type characters, shaft means along which said

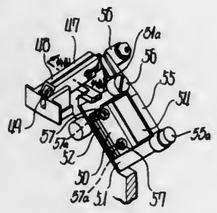
mounting means is moved, actuator means for moving said type characters from an at rest mode to a typing mode and follower assembly means for moving said mounting means and said actuator means along said shaft, said actuator means being mounted around said shaft in striking relation with said type characters, means connecting said actuator means to said follower assembly for movement therewith and means connecting said mounting means to said follower assembly for movement therewith, said last mentioned means providing interfitting parts between said mounting means and said follower assembly for securing the same together and for releasing the same from one another, means adjacent an end of said shaft for releasably securing said shaft in operative position, said means connecting said mounting means and said follower assembly means comprising a mortise and tenon joint and means are provided for securing said tenon in said mortise.

4,501,509

PRINTER CARRIAGE AND HAMMER ASSEMBLY

Masayuki Suzaki, Fujisawa, and Tetuo Kanno, Atsugi, both of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Continuation of Ser. No. 201,375, Oct. 27, 1980, abandoned.
This application Feb. 16, 1984, Ser. No. 579,299
Claims priority, application Japan, Oct. 30, 1979, 54-150421
Int. Cl.³ B41J 9/02
U.S. Cl. 400—157.2 **26 Claims**



1. A printer carrier and hammer apparatus for facilitating assembly thereof, comprising:

a frame wherein said carrier is mounted on said frame;

a platen for supporting a printing paper mounted on said frame such that said carrier is movable along said platen;

a carriage movably mounted on said carrier;

means for driving said carrier secured to said carriage;

a daisy-wheel type-head having a plurality of radially extending fingers including a plurality of characters formed on said fingers, said type-head being supported by said carriage such that said carriage facilitates replacement of said type-head;

a motor attached to said carriage and having a drive shaft for rotating said type-head so as to select one of said plurality of characters of printing;

means for mounting said type-head on said drive shaft;

a hammer assembly including a hammer for individually depressing said plurality of characters against said printing paper, said hammer assembly being mounted on said carriage;

a magnet assembly secured to said hammer assembly and mounted on said carriage for operating said hammer wherein said magnet assembly further comprises a substrate and an arm extending from said substrate;

a ribbon cartridge having an ink ribbon disposed therein, said ribbon cartridge being disposed on said carriage;

an armature pivotally mounted on said magnet assembly for effecting a pivoting movement; and

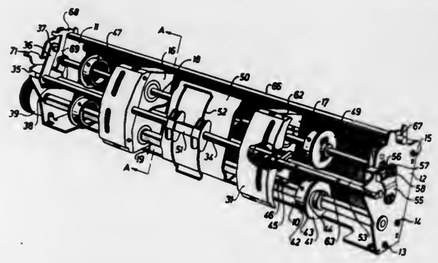
plural stopper means disposed at the limits of pivoting travel of said armature for contacting said armature to restrict said pivoting movement of said armature within a predetermined range, at least a first of said plural stopper means being mounted at an end of said arm of said substrate.

4,501,510

APPARATUS FOR FEEDING SHEETS OF MATERIAL AND CONTINUOUS WEBS IN PRINTERS AND TYPEWRITERS

Leif H. Andersson, Åtvidaberg, Sweden, assignor to Facit Aktiebolag, Åtvidaberg, Sweden

PCT No. PCT/SE82/00298, § 371 Date May 31, 1983, § 102(e) Date May 31, 1983, PCT Pub. No. WO83/01227, PCT Pub. Date Apr. 14, 1983
PCT Filed Sep. 27, 1982, Ser. No. 503,368
Claims priority, application Sweden, Oct. 9, 1981, 8106001
Int. Cl.³ B41J 11/32
U.S. Cl. 400—616.3 **10 Claims**



1. A feed mechanism for feeding a printer or typewriter with sheets of paper or with a continuous web having feed holes, said mechanism comprising friction drive means for frictionally engaging and driving the sheets of paper or the continuous web, means for driving the friction drive means including a first rotatable drive shaft, web feed means including a pair of pin wheels having projections engageable in holes in the web for driving the web together with the drive thereof by the friction drive means, said friction drive means including two separate feed units which are displaceable towards and away from one another in a direction perpendicular to the direction of feed of the sheets or web, each said unit including a friction drive wheel, said pin wheels also being relatively displaceable in a direction perpendicular to the direction of feed of the sheets or web, said web feed means and said friction drive means including means for selectively coupling said pin wheels with respective friction drive means in driving relation for the drive of the web, said rotatable drive shaft supporting said pin wheels and the friction drive wheels for common rotation therewith, each unit including a housing in which the respective friction drive wheel is arranged, and a second shaft having a square cross-section, said second shaft being turnable, said housing having a non-circular hole in which said second shaft is received for locking of the housing on said second shaft when the second shaft is turned towards one angular position in the non-circular hole and for releasing the housing when the shaft is turned towards a second angular position in the non-circular hole whereby to selectively lock the units.

4,501,511

BALL TYPE UNIVERSAL JOINT AND METHOD OF MANUFACTURE

Frank Albert, Jr., Parma, Ohio, assignor to Preformed Marine, Inc., Cleveland, Ohio

Filed May 26, 1981, Ser. No. 267,078
Int. Cl.³ F16D 1/12, 3/24; F16C 11/06
U.S. Cl. 403—24 **2 Claims**

1. A cable termination joint construction for preventing relative axial rotation and permitting articulating movement between a cable and an associated structure, the construction comprising:

(a) a housing to be mounted to the associated structure, the housing including:

(i) an interior surface portion which lies substantially on the surface of a sphere, the spherical interior surface portion defining a generally spherical cavity therein;

(ii) a first access opening defining portion for defining a first access opening in communication with the spherical cavity;

(iii) a second access opening defining portion for defining a second access opening in communication with the spherical cavity, the first and second access openings being disposed on opposite sides of the spherical cavity;

(iv) the second access opening defining portion further defining an enlarged, ball receiving passage extending through the second access opening into the spherical cavity, the ball receiving passage having a first transverse dimension which is at least as great as the diameter of the spherical cavity and a second transverse dimension of different size generally orthogonal to the first transverse dimension;

(b) a toroidal ball member baving an exterior surface portion which has a diameter that is less than the housing second access opening first transverse dimension and which is rotatably receivable in the housing spherical cavity, the ball member having generally parallel front and rear faces and defining an internal passage extending between the faces, the front and

rear ball faces being separated by less than the housing second access opening second transverse dimension;

(c) one of the housing and ball member defining a first bearing receiving recess in communication with the housing spherical cavity and the other of the housing and ball member defining an axially extending first bearing receiving slot in communication with the housing spherical cavity and with the first bearing receiving recess;

(d) a first bearing disposed partially in said first recess and partially in said first slot, such that the slot, recess, and bearing restrict relative rotational movement between the ball member and the housing while allowing articulating movement therebetween;

(e) a hollow shaft operatively connected with the ball member and extending through the first access opening, the hollow shaft defining an interior passage in communication with the ball member internal passage;

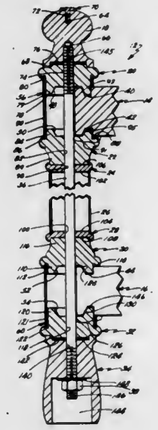
(f) a cable termination device for receiving and anchoring a cable, the cable termination device being operatively connected with the hollow shaft, at least a portion of the cable passing from the cable termination device, through the shaft interior passage through the ball member internal passage, through the housing second access opening, and into the associated structure.

4,501,512

FURNITURE ARTICLE WITH COMPRESSION HUB FOR JOINING RADIAL MEMBERS

Dale V. Hiltz, Comstock Park, Mich., assignor to Keeler Brass Company, Grand Rapids, Mich.

Filed Dec. 7, 1981, Ser. No. 328,450
Int. Cl.³ F16B 7/00
U.S. Cl. 403—170 **37 Claims**



1. An article of furniture comprising:

a tie-rod;

a first collar member and a second collar member, said collar members being adjustably mounted on said tie-rod and generally axially aligned so as to have a common axis with said tie-rod;

an elongated member having an end positioned between said first and second collar members and having an elongated terminal edge at its extreme end abutting said tie-rod, said elongated member extending radially from said tie-rod;

means for drawing said first and second collar members toward one another to secure said elongated member end therebetween;

means for urging said end of said elongated member radially inwardly toward a position immediately adjacent said tie-rod as said drawing means draws said first and second collar members toward one another for causing said elongated terminal edge to be forced and held tightly against said tie-rod; and

a sleeve member extending between said first and second collar members, said sleeve member including first and second sleeve ends and a wall defining an opening through which said elongated member end extends and is radially shiftable therein, said opening being dimensioned to support said elongated member against significant twisting with respect to said sleeve member.

4,501,513

METHOD AND APPARATUS FOR FORMING A HEAT EXCHANGE SYSTEM IN THE EARTH

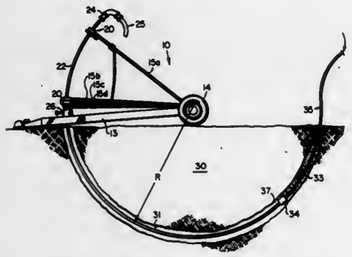
Bert J. Warner, and Joe F. Warner, both of 504 Towncreek Dr., Dallas, Tex. 75232

Filed Oct. 5, 1981, Ser. No. 308,862
Int. Cl.³ F16L 1/02
U.S. Cl. 405—184 **18 Claims**

1. A method for forming a heat exchange system in the earth comprising:

(a) drilling a curved hole in the earth, the longitudinal axis of said hole lying along and defining an arc which, in turn, has a substantially constant radius of curvature whereby

both ends of said curved hole open through the surface at spaced points from each other;



(b) casing the entire length of said curved hole with a conduit to provide a cased flowpath completely through said hole.

4,501,514

SECURING OF STRUCTURES TO THE SEA-BED

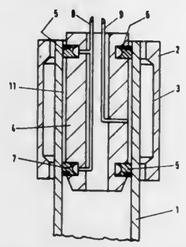
John M. Lowes, Dalton-in-Furness, England, assignor to British Underwater Pipeline Engineering, England

Filed Aug. 21, 1981, Ser. No. 295,075

Claims priority, application United Kingdom, Sep. 8, 1980, 8028940

Int. Cl.³ E02D *5/54*; B21D *39/04*

U.S. Cl. 405—227 **10 Claims**



1. A method of securing a structure to the sea bed which comprises placing the structure on the sea bed, inserting a tubular pile into the sea bed so that the tubular pile and a part of the structure form a pair of nested members comprising an innermost member and an outermost member, introducing into the innermost of the members a mandrel carrying, on its outer surface, inflatable means provided with reinforcement to prevent axial distortion of the same, and introducing a fluid into the interior of the innermost member so as to inflate said inflatable means and thereby define a sealed annular chamber between the outer surfaces of the mandrel and the inner surface of said innermost of the members while providing positioning of said reinforcement in the space between the outer surface of the mandrel and the inner surface of the innermost of the two members so as to prevent axial distortion of said inflatable means and to radially expand the chamber and thereby plastically deform said innermost member radially and cause it to engage with the outermost of the members so as to form a mechanical connection between the members.

4,501,515

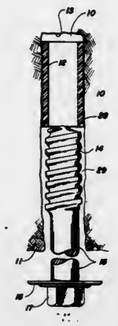
DYNAMIC ROCK STABILIZING FIXTURE

James J. Scott, Rolla, Mo., assignor to Scott Investment Partners, Rolla, Mo.

Filed Jun. 25, 1982, Ser. No. 392,234

Int. Cl.³ E21D *21/00*

U.S. Cl. 405—259 **5 Claims**



1. An anchor fixture for stabilizing geologic structure exposed in forming a mine passage in a geologic structure for recovery of material in such geologic structure, the exposed geologic structure having a bore hole of predetermined diameter to receive the anchor fixture, said anchor fixture comprising:

(a) an elongated body of formable plastic material in the shape of a tube having opposite edges that overlap to present a continuous circumferential wall to the circumferential surface in the bore hole opening, the tube wall having a thickness of the order of substantially 0.0625 to 0.125 inches;

(b) an elongated rod received in said body of formable plastic material, said rod having a raised surface along its length in the form of a buttress thread having a flattened crest and with the buttress face directed toward the mine passage to place said formable plastic material in full circumferential contact with the bore hole under load to exert a continuing supporting thrust by the formable plastic material between the bore hole circumferential surface and the buttress thread for establishing a dynamic system of vector forces radiating into the geologic structure;

(c) said elongated rod having a diameter as measured from the flattened crest of the buttress thread less than the diameter of the bore hole, and said body of formable plastic material having a wall thickness greater than the annular space between the bore hole surface and the flattened crest of said buttress thread, and said body of formable material being forced by insertion friction of said rod to flow into the buttress thread to assume the shape of the buttress thread on the inner surface of the formable plastic material and to react following rod insertion in compression between the flattened crest and root of the buttress thread and the surface of the bore hole for creating loading forces radiating into the geologic structure beyond the boundary immediately adjacent the bore hole;

(d) a rigid structure support plate engaged on said rod and held thereby directly against the exposed geologic structure surrounding the bore hole, the engagement of the structural support plate against the exposed geologic structure reacting on said rod to exert axial tension in said rod and compression of the formable plastic material through the buttress face of the buttress thread such that a substantially continuous dynamic spiral wedge is created along the bore hole surface for supporting the geologic structure with a dynamic support pattern surrounding the bore hole adjacent the exposed structure and locking said rod in the bore hole with said rigid structural support plate

in position to oppose the tendency of the geologic structure to move.

4,501,516

ANCHORING OF TENSION MEMBERS

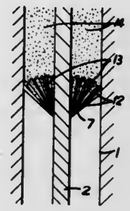
Bernhard Kotulla; Martin Weiser, both of Cologne; Jürgen Faltin, Roesrath; Lothar Preis, Cologne; Rudolf Schmidt, Burscheid, and Eberhard Born, Cologne, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Division of Ser. No. 340,417, Jan. 18, 1982, Pat. No. 4,443,132, which is a continuation of Ser. No. 048,298, Jun. 13, 1979, abandoned. This application Nov. 4, 1983, Ser. No. 548,741

Claims priority, application Fed. Rep. of Germany, Jun. 22, 1978, 2827327

Int. Cl.³ E21D *20/02*

U.S. Cl. 405—260 **2 Claims**



1. In a process for securing an anchor which can be prestressed and retightened in a borehole in rock, wherein a tension member is glued in the borehole by a reactive resin, the improvement wherein: the tension member is pushed with a packer comprising a pleated sheath into the borehole which is spaced from the end of the tension member in the borehole by a length corresponding to the length of the portion of the tension member to be glued; the packer is covered during the pushing of the tension member into the borehole to press it on the tension member; the cover is removed after the pushing step; and thereafter a reactive resin is injected into the borehole behind the packer.

4,501,517

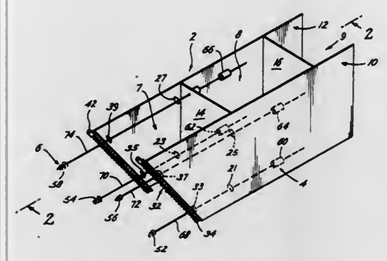
SELF PROPELLED TRENCH SHIELD

Robert A. Seyle, 20230 F.M. 1488, Magnolia, Tex. 77355

Filed Sep. 16, 1982, Ser. No. 418,660

Int. Cl.³ B66F *1/04*; E02D *5/00*; E02F *3/24*; E21D *21/00*

U.S. Cl. 405—283 **10 Claims**



1. A trench shield for use in excavating an open trench in the earth, comprising:

an excavation box having sides;

anchor means for digging into the earth, said anchor means including resistant means for resisting the extraction of said anchor means from the earth by pulling;

at least one kelly, said kelly being connected to said anchor means; and

propulsion means connected to said kelly behind said anchor means and connected to said box for alternately forcing said anchor means into the earth and forcing said box to travel along said kelly toward said anchor means, said propulsion means including -

rotating means for engaging said kelly and rotating said kelly while forcing said kelly toward the earth in front of said helix,

drive means slidably mounted on said kelly for engaging said box and forcing said box along said kelly toward said anchor means.

4,501,518

AUTOMATIC PNEUMATIC FEEDER

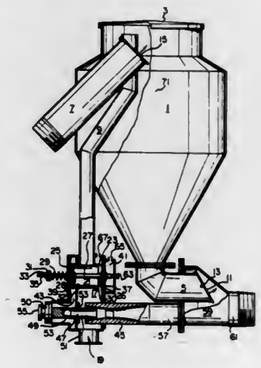
Thomas G. Smith, Woodstock, Canada, assignor to Pneuveyor Systems Limited, Woodstock, Canada

Filed Dec. 10, 1982, Ser. No. 448,667

Claims priority, application Canada, Aug. 17, 1982, 409548

Int. Cl.³ B65G *53/28*

U.S. Cl. 406—25 **6 Claims**



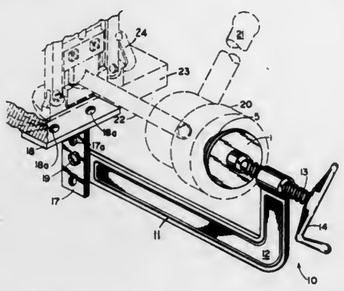
1. A pneumatic material transfer apparatus comprising a sealed pod having an upwardly inclined material inlet pipe having an open upper end terminating inside said pod adjacent the upper end thereof and a resilient flap valve closing said upper end, a horizontal material outlet pipe having a resilient second flap valve and discharging into a discharge chamber below said pod, and a pneumatic operating system comprising a valve chamber, a control pipe communicating between the interior of said pod and said valve chamber, the upper end of said control pipe opening into said pod adjacent the top thereof, said valve chamber having first and second valve seats, first and second discs associated with said valve seats, said discs being mounted on a valve stem such that when said first disc is closed on its seat, said second disc is open from its seat, said first disc being fixed to said valve stem, and said second disc being slidable thereon, spring bias means urging said second disc toward said first disc, stop means on said valve stem limiting the motion of said second disc toward said first disc, a pressurized air supply chamber connected to said valve chamber by said first disc and a vacuum chamber connected to said valve chamber by said second disc, an induction throat between the pressurized air supply chamber and the discharge chamber, and an open ended nozzle positioned within and spaced from said throat, said nozzle having an opening within said vacuum chamber, a pilot valve connected between said pressurized air supply chamber and a valve control chamber adjacent said first disc, a first diaphragm forming a flexible wall between said valve chamber and said valve control chamber, permitting motion of said first disc between open and closed positions under control of pressure in said valve control chamber, a second diaphragm adjacent said second disc and slidable on said valve stem therewith and forming a flexible wall between said vacuum chamber and the atmosphere, said pilot valve having two positions, a first position connecting said

valve control chamber to said pressurized air chamber, and a second position venting said valve control chamber to atmosphere.

4,501,519
THREADING DIE COUPLE

Harry I. Leon, 924 Bowen St., N.W., Atlanta, Ga. 30318

Continuation-in-part of Ser. No. 153,083, May 27, 1980, Pat. No. 4,349,931. This application Aug. 12, 1982, Ser. No. 407,459
Int. Cl.³ B23G 5/04
U.S. Cl. 408—101 **10 Claims**



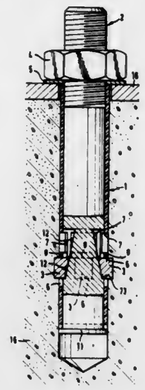
1. A tool couple for a threading die, which comprises:
(a) a frame;
(b) a tailpiece to which the frame is connected;
(c) means for anchoring the tailpiece in a fixed position relative to a cylindrical workpiece;
(d) a shaft supported by the frame;
(e) means connected to the frame for moving the shaft along the longitudinal axis thereof in a direction toward the workpiece; and
(f) a rotatable member which is supported by the shaft; a portion of the member being slidable about the shaft; the member having a protrusion generally in the shape of a frustrum of a right circular cone generated by rotating a right triangle having a shorter leg about said shorter leg, a portion of the protrusion being tapered from wide to narrow in a direction toward the leading edge of the rotatable member and being adapted for physical contact with the frame of the threading die, so that a force can be transmitted from the tool couple through the frame of the threading die to points on the cutting edges thereof which are in contact with the workpiece, the axial component of said force at each point on the surface of the protrusion being pressed against the frame of the die exceeding the transverse component of the force at the same point, the transverse component being nevertheless sufficient to cause the rotatable member to center itself generally with the axis of rotation of the die even when there is considerable misalignment between said axis of rotation and the axis of rotation of the rotatable member.

4,501,520
EXPANSION DOWEL ASSEMBLY

Arndt Bergner, Munich, Fed. Rep. of Germany, assignor to Hilti Aktiengesellschaft, Schaan, Liechtenstein

Filed Jul. 16, 1982, Ser. No. 398,827
Claims priority, application Fed. Rep. of Germany, Jul. 20, 1981, 3128610
Int. Cl.³ F16B 13/04
U.S. Cl. 411—21 **18 Claims**

1. An expansion dowel assembly comprising an axially elongated support tube having a leading end arranged to be inserted first into a borehole into which the assembly is to be anchored and a trailing end, an axially elongated anchor rod having a leading end and a trailing end with said anchor rod located within said support tube with the trailing end thereof extending axially out of the trailing end of said support tube, means engageable with the trailing end of said anchor rod for effecting axially displacement of said anchor rod relative to said support tube when the assembly is to be anchored within a borehole, said support tube having a support surface thereon extending transversely of the axial direction thereof and located between the leading and trailing ends thereof, expansion elements mounted within said support tube and in bearing contact with said support surface thereon, said anchor rod is

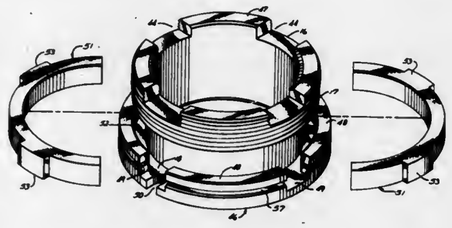


engageable with said expansion elements for radially displacing said expansion elements outwardly from the outside surface of said support tube when said anchor rod is displaced toward the trailing end of said support tube relative to said support tube, wherein said support surface comprises a transverse web yieldable in the axial direction of said support tube when a predetermined force acting axially on said anchor rod is exceeded.

4,501,521
LOCKING FASTENER ASSEMBLY

Bela A. Geczy, Orange, Calif., assignor to Smith International, Inc., Newport Beach, Calif.

Filed Apr. 5, 1982, Ser. No. 365,633
Int. Cl.³ F16B 39/06
U.S. Cl. 411—217 **15 Claims**

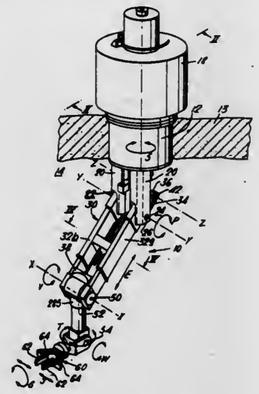


1. A locking fastener assembly comprising:
a locking fastener having threads for assembly with an outer member and means at one end for engaging an inner member and preventing rotation of such an inner member relative to the fastener;
a ring on the fastener having projections engaging the fastener for preventing relative rotation between the ring and fastener, the ring having locking means and being axially slidable on the fastener between an unlocked position spaced away from such an outer member and a locked position having the locking means in engagement with such an outer member for preventing relative rotation between such an outer member and the ring; and
means for temporarily retaining the ring in the locked position.

4,501,522
MANIPULATOR

Roy Causer, Wantage, and Donald Orr, Didcot, both of England, assignors to United Kingdom Atomic Energy Authority, London, England

Filed Oct. 4, 1982, Ser. No. 432,759
Claims priority, application United Kingdom, Oct. 26, 1981, 8132260
Int. Cl.³ B25J 3/04
U.S. Cl. 414—4 **17 Claims**



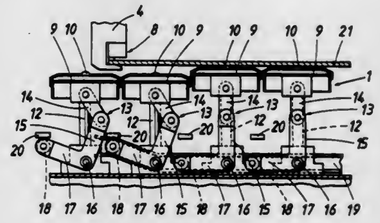
1. A manipulator including a slave arm comprising, a support means defining a first pivotal connection; an upper arm portion of the slave arm arranged to be supported by the first pivotal connection at an intermediate position along the length of the upper arm portion, and defining a second pivotal connection at one end of the upper arm portion and defining a movable connection at or near the other end of the upper arm portion, the axes of the first and of the second pivotal connection being substantially parallel; a forearm portion of the slave arm connected at one end to the second pivotal connection; pivoting means connected to the movable connection for pivoting the upper arm portion about the first pivotal connection, and drive means for moving the pivoting means; the distances of the second pivotal connection and of the movable connection from the first pivotal connection being variable but such that the ratio of the distances between the first and the second pivotal connections and between the first pivotal connection and the movable connection, is maintained substantially constant, and the slave arm being arranged so that pivotal movement of the upper arm portion about the first pivotal connection produces pivotal movement of the forearm portion about the second pivotal connection through the same angle as the pivotal movement of the upper arm portion but in the reverse direction.

4,501,523
APPARATUS FOR FEEDING PLATELIKE WORKPIECES TO A MACHINE TOOL

Ludwig Haider, Ennsdorf, Austria, assignor to Voest-Alpine Aktiengesellschaft, Linz, Austria

Filed Apr. 8, 1983, Ser. No. 483,104
Claims priority, application Austria, May 19, 1982, 1987/82
Int. Cl.³ B65H 5/08
U.S. Cl. 414—19 **9 Claims**

1. In apparatus for feeding platelike workpieces, comprising
a horizontal feed deck,
a carriage track extending in a first horizontal direction and carried by said feed deck and movable thereon in a second horizontal direction, which is transverse to said first direction,
a carriage, which is carried by and movable in unison with and along said carriage track,
gripping tongs carried by said carriage and adapted to connect a workpiece to said carriage so that said workpiece is movable with said carriage in said first and second directions,
a plurality of workpiece-supporting elements carried by said feed deck and vertically adjustable relative thereto and arranged in a plurality of rows, which extend in said first direction and are spaced in said second direction,
a plurality of horizontal actuating shafts, each of which extends in said first direction and is operatively connected to said workpiece-supporting elements of one of said rows and rotatable to vertically adjust said workpiece-supporting elements of said row,



a plurality of crank arms, each of which is non-rotatably connected to one of said actuating shafts, and
a cam bar, which extends generally in said second direction and is rigid with said carriage track and adapted to cooperate with said crank arms and to rotate successive ones of said actuating shafts as said carriage track is moved in said second direction,
the improvement residing in that
said feed deck comprises a plurality of crossbeams, which are individually vertically adjustable and extend in said first direction and are spaced in said second direction,
said workpiece-supporting elements of each of said rows are carried by one of said crossbeams, and
each of said actuating shafts is operatively connected to one of said crossbeams by a toggle joint comprising a first lever, which is non-rotatably connected to said actuating shaft, and a second lever, which is pivoted near one end to said first lever and near its other end to said crossbeam.

4,501,524
DRILL STRING ELEMENT HANDLING APPARATUS

Toyohiko Yoan, Osaka, and Norishige Muto, Hirakata, both of Japan, assignors to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

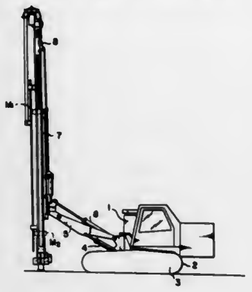
Filed Sep. 28, 1982, Ser. No. 425,944
Claims priority, application Japan, Jun. 14, 1982, 57-100690
Int. Cl.³ E21B 19/14
U.S. Cl. 414—22 **4 Claims**

1. An apparatus in a drill rig for moving drill string elements between a drill string element magazine and a drill string and for connecting and disconnecting said drill string elements to and from said drill string, comprising:
an elongated guide member;
a drifter movably mounted on said guide member for reciprocable movement therealong;
a plurality of drill string elements for making up a drill string;
a ring member rotatably mounted on said guide member;
a magazine for storing said drill string elements, said magazine being fixedly secured to said ring member and having

formed therein a plurality of support holes for said drill string elements;

a plurality of stoppers each mounted to said ring member at a position diametrically opposite to said respective support holes relative to a rotary center of said ring member;

means for rotating said ring member around said guide member wherein the centers of each of said support holes and a projection of a center of said drill string are on a common circle having its center coinciding with the rotary center of said ring member; and



a plurality of first cylinder means each mounted on said magazine opposite to said respective support holes for supporting said drill string elements within said support holes, and locking means including a second cylinder for engaging said stoppers and locking said magazine at a predetermined position.

4,501,525

SINGLE POINT MOORING SYSTEM PROVIDED WITH PRESSURE RELIEF MEANS

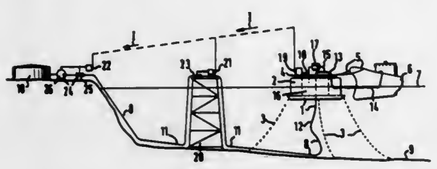
Andrew K. Grundy, and Jan Versluis, both of The Hague, Netherlands, assignors to Shell Oil Company, Houston, Tex.

Filed Mar. 8, 1983, Ser. No. 473,388

Claims priority, application United Kingdom, Mar. 17, 1982, 8207830

Int. Cl.³ B65G 67/60

U.S. Cl. 414—139 **10 Claims**



1. A single point mooring system for loading and unloading ships comprising a rotatable mooring element, a flow line for establishing liquid communication between liquid supply facilities and a ship moored to the rotatable mooring element, a passage for establishing liquid communication between the flow line and a liquid collecting reservoir on the rotatable mooring element, pressure relief means adapted to open the passage when the liquid pressure in the flow line reaches a predetermined critical value, a detector in the passage adapted to detect the occurrence of liquid in the passage, a signal transmitter connected to the detector and adapted to transmit a signal to a signal receiver in response to detection by the detector of said occurrence, and flow control means connected to the signal receiver and operative to control liquid flow through the flow line in response to the signal received by the signal receiver.

4,501,526

APPARATUS FOR CONVEYING A SOLID OR LIQUID MATERIAL, ESPECIALLY FOR CHARGING A SHAFT FURNACE

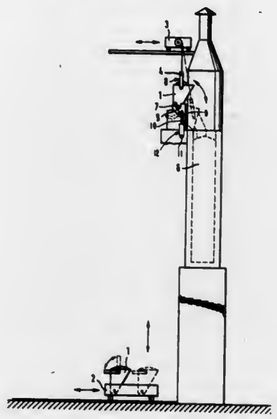
Matti J. Kuusikko, Ulvila, and Olavi K. Rantala, Pori, both of Finland, assignors to Outokumpu Oy, Outokumpu, Finland

Filed Feb. 22, 1984, Ser. No. 581,217

Claims priority, application Finland, Aug. 21, 1979, 792605

Int. Cl.³ C21B 7/16

U.S. Cl. 414—173 **4 Claims**



1. In a furnace installation comprising a furnace with a base and a charge inlet above the base, the combination therewith of apparatus for supplying material for charging said furance to said charge inlet, said apparatus comprising:

at least one skip for receiving said material, each said skip comprising a locking bar disposed with respect to the center of gravity of said skip so that when the skip is held by only said locking bar, the skip will tilt and discharge its contents;

a carriage movable between a material receiving position spaced from the base of said furnace and a position at the base of said furnace for carrying the skip between the material receiving position and the position at the base of the furnace;

lifting means for lifting each said skip from its position at the base of said furnace to adjacent said charge inlet, said lifting means comprising a handle engaging the skip and preventing tilting of the skip, as it is lifted, by an amount sufficient to discharge material therefrom, but permitting tilting of the skip, when the skip is held by the locking bar, without requiring movement of the handle with respect to the skip in the direction of lifting; and

locking means at said charge inlet for engaging said locking bar and holding the skip thereby, whereby the skip may be lifted by said handle from said carriage when it is at the base of the furnace and raised to adjacent the charge inlet with the locking bar in engagement with the locking means and thereafter, tilted to discharge said material into the charge inlet by removing the lifting force from said handle, said locking means comprising a movable member which is movable into a first position in which it is engageable with said locking bar and which is movable into a second position in which the member is out of the path of movement of said locking bar, and further comprising pneumatic means connected to said member for moving the latter between its first and second positions, said locking means comprising a surface which slopes downwardly away from the charge inlet and which is engageable with said locking bar, said member, in its first position, preventing movement of said locking bar along said surface.

4,501,527

DEVICE FOR AUTOMATICALLY TRANSPORTING DISK SHAPED OBJECTS

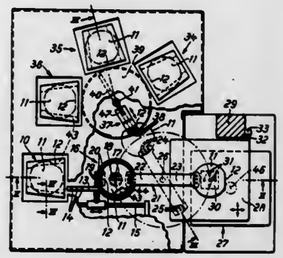
Hans-Dieter Jacoby, Werdorf, and Peter Schmidt, Huettenberg, both of Fed. Rep. of Germany, assignors to Ernst Leitz Wetzlar GmbH, Wetzlar, Fed. Rep. of Germany

Filed May 16, 1983, Ser. No. 494,706

Claims priority, application Fed. Rep. of Germany, May 25, 1982, 3219502

Int. Cl.³ B65H 5/08

U.S. Cl. 414—225 **14 Claims**



1. In a system for operating on disk shaped objects comprising a discharge cassette, means for adjusting the height of said discharge cassette, a position adjusting station, an inspection table, depository cassettes, and means for adjusting the height of said depository cassettes, a device for automatically transporting said disk shaped objects from said discharge cassette through said position adjusting station to said inspection station and further into one of said depository cassettes, said device comprising:

a linearly displaceable transport arm disposed between said discharge cassette and said position adjusting station;

means on said linearly displaceable transport arm for eccentrically gripping one of said disk shaped objects;

a pivotal lever having a working range between said adjusting station and said inspection station;

means on said pivotal lever for eccentrically gripping one of said disk shaped objects;

a rotating plate;

a slide mounted on said rotating plate for radial movement into said working range of said pivotal lever; and

means on said slide for eccentrically gripping one of said disk shaped objects;

wherein said depository cassettes have openings positioned adjacent the periphery of said rotating plate for receiving disk shaped objects from said slide.

4,501,528

SYSTEM FOR AUTOMATIC STACKING, STORAGE AND WITHDRAWAL OF PACKAGED MERCHANDISE IN LARGE WAREHOUSES

Gunter Knapp, Hart-St. Peter, Fed. Rep. of Germany, assignor to Ing. Gunter Knapp Ges. mbH & Co. KG, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 482,528, Apr. 6, 1983,. This application Apr. 2, 1984, Ser. No. 595,714

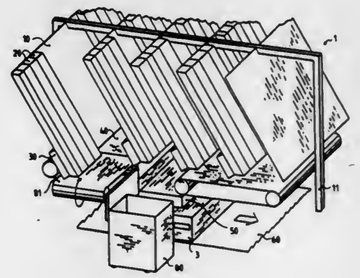
Claims priority, application Fed. Rep. of Germany, Apr. 7, 1982, 3213119

Int. Cl.³ B65G 1/00

U.S. Cl. 414—273 **10 Claims**

1. System for carrying out a computer-controlled handling process for automatically stacking, storing and removing various types of packaged merchandise items from large warehouse installations, wherein the merchandise items are withdrawn in sequence from respective magazines associated with several shelves and loaded into passing transport containers, comprising the steps of: in a warehouse installation including a plurality of shelves which are subdivided into successively arranged blocks, the shelves of each block being associated with the respective product magazines, loading the various types of merchandise items into the product magazines while simultaneously removing the merchandise items from the shelves of a certain block by ejecting the merchandise items from the magazines associated with that certain block by remote-controlled ejection means when a transport container has-arrived at a block preceding that certain block, collecting and then simultaneously loading the merchandise items into the transport container when the latter arrives at the certain block and causing the transport container to continue its movement immediately after having been loaded, and wherein the speed of the transport container is adjusted to substantially correspond to the sum of the ejection, collection and loading times so that removal of the merchandise items takes place in a minimal time,

said system including at least one computer, remote-controlled actuating elements, shelves, shelf floors associated with product magazines, transport containers for stacking and emptying the magazines and conveyor means, said shelves in said blocks each being subdivided into several shelf floors and said product magazines being attached to said shelf floors, said shelf floors being obliquely oriented and arranged with the normals to the planes in which said floors are situated substantially in the longitudinal direction of the shelf blocks, said product magazines having



ejector means mounted at their lower ends for transferring the merchandise items to said conveyor means, wherein the conveyor means collect the ejected merchandise items of a block in a release mechanism from which the merchandise items are loaded into the transport containers mounted on said conveyor means, wherein the operation of the system is controlled by a computer and that replacement merchandise items to be stacked are located in said transport containers for stacking, the containers in which replacement pieces are located being directed along different routes than those of the transport containers in which ejected items are located for withdrawal of the merchandise items, and

wherein said ejector means comprises

a bracket plate with a surface substantially normal to a longitudinal axis of a respective product magazine, with said product magazine disposed at a sufficient distance away from the respective bracket plate to allow a single item to be ejected in a downwardly diagonal direction between a lower end of said product magazine and said bracket plate,

an engaging piece mounted to pass along said surface of said bracket plate to eject said single item and to return to a starting position by passing underneath said bracket plate, and

means for actuating movement of said engaging piece along said surface of said bracket plate.

4,501,529

APPARATUS FOR FEEDING LAUNDRY ARTICLES TO AN IRONING MACHINE

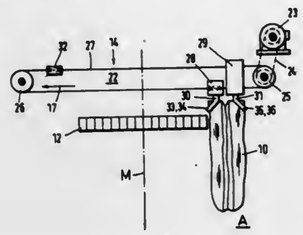
Wilhelm Wiebesiek, Vlotho, Fed. Rep. of Germany, assignor to Herbert Kannegiesser GmbH & Co., Fed. Rep. of Germany

Filed May 4, 1982, Ser. No. 374,817

Claims priority, application Fed. Rep. of Germany, May 19, 1981, 3119880

Int. Cl.³ D06F *67/04*

U.S. Cl. 414—751 **8 Claims**



1. Apparatus for feeding laundry articles to a mangle or the like, with a horizontal spreading-out and conveying device for spreading out the laundry articles when hanging down vertically and freely and for feeding the laundry articles centrally to a belt-shaped feed conveyor conveying towards the mangle, and with a transfer device for transferring to the feed conveyor the spread-out laundry article hanging on the spreading-out and conveying device, wherein two corners of each laundry article are gripped in clamps which are arranged in pairs at a short distance from one another on the spreading-out and conveying device and which can be moved away from one another, characterised in that each clamp (30, 31) has clamping jaws (33, 34 and 35, 36 respectively) lying at an angle to the vertical, and in that the clamping jaws of a pair of clamps are divergent downwardly and extend across an upper corner of the article, the clamping jaws of each clamp being self-clamping in both the horizontal and vertical directions.

4,501,530

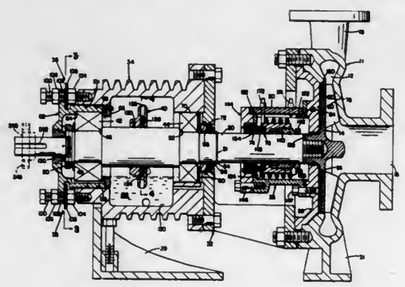
CENTRIFUGAL PUMP

Robert E. Rockwood, Windham, and Richard P. Antkowiak, Hampstead, both of N.H., assignors to A. W. Chesterton Company, Stoneham, Mass.

Continuation of Ser. No. 408,043, Aug. 13, 1982,. This application Aug. 3, 1984, Ser. No. 637,340

Int. Cl.³ F04D *5/00*

U.S. Cl. 415—170 A **4 Claims**



1. A centrifugal pump comprising a pump housing, a bladed impeller in said pump housing, a rotatable shaft extending into said pump housing and on which said impeller is mounted, said pump housing having a radially extending wall adjacent said impeller and through which said shaft extends, seal means on the other side of said wall from said impeller for sealing said wall through which said shaft extends, a seal housing for supporting said seal means and enclosing the portion of said shaft adjacent said pump housing on the other side of said wall from said impeller, said seal housing being demountably connected to said radially extending wall, said seal housing comprising

a removable wall portion on the other side of said wall from said impeller for permitting access to said sealing means and said portion of said shaft within said seal housing, without demounting said seal housing, and

a tube for carrying cooling fluid, said tube having entrance and exit ends passing through said removable wall of said seal housing and a portion of said tube intermediate said tube ends being arranged within said seal housing and coiled about said seal means and said shaft.

4,501,531

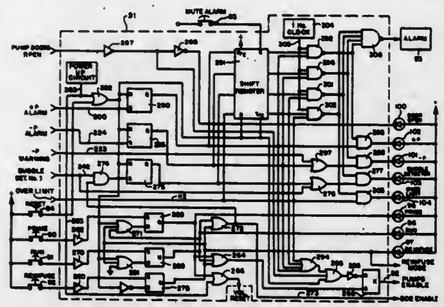
CONTROL CIRCUIT FOR A BLOOD FRACTIONATION APPARATUS

Arnold C. Bilstad, Deerfield, and John T. Foley, Wheeling, both of Ill., assignors to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Division of Ser. No. 330,898, Dec. 15, 1981, Pat. No. 4,447,191. This application Dec. 5, 1983, Ser. No. 557,818

Int. Cl.³ F04B *49/00*

U.S. Cl. 417—63 **9 Claims**



1. In a blood fractionation apparatus operable in conjunction with a disposable flow system for separating and collecting a blood fraction from whole blood, and including at least one motor-driven pump for conveying blood through the flow system, and a monitoring device providing an alarm output response to an abnormal condition in the system, a control circuit comprising, in combination:

a flip-flop responsive to a momentary alarm output from said monitoring device for producing a first alarm control signal;

a latch register responsive to the occurrence of said control signal for producing a second alarm control signal upon application of a latch signal;

aural alarm means;

visual alarm means;

alarm control circuit means responsive to said first alarm control signal for activating said aural and visual alarm means, and responsive to said second alarm control signal for inhibiting only said aural alarm means; and

user-actuated switch means for applying a latch control signal to said latch register to cancel said aural alarm without cancelling said visual alarm.

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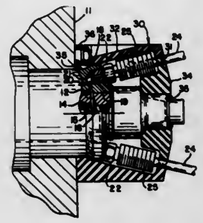
THERMAL SHOCK BARRIER FOR INJECTION PUMP

Collis E. Boyd, Glen Ellyn, Ill., assignor to International Harvester Co., Chicago, Ill.

Continuation of Ser. No. 457,996, Jan. 14, 1983, abandoned. This application Oct. 1, 1984, Ser. No. 657,038

Int. Cl.³ F04B *21/00, 17/02*

U.S. Cl. 417—313 **4 Claims**



1. In combination with a rotary diesel fuel injection pump having a rotor, a distributor head having a cylindrical periphery, a central bore receiving the rotor, and a plurality of output ports adapted to receive fuel from said rotor and supply it to a diesel engine through injection pipe means attached to said distributor head ports, a thermal shock barrier comprising an elastomeric member of low thermal conductivity disposed about and engaging said cylindrical periphery of said distributor head and preventing water from coming in contact with said peripheral portion, said thermal barrier having apertures through which said injection pipe means pass.

4,501,533

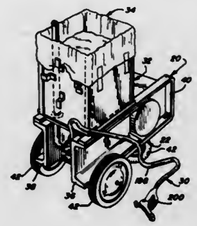
APPARATUS FOR DELIVERING LIQUID UNDER PRESSURE

Frank A. Bower, Jr., 3903 W. Dakin, Chicago, Ill. 60618

Filed Nov. 15, 1979, Ser. No. 94,486

Int. Cl.³ F04B *35/02;* B67D *5/06;* B65D *6/18;* F16K *51/00*

U.S. Cl. 417—388 **28 Claims**



1. An apparatus for delivering a liquid matieral under pressure comprising: a base; a source of mechanical energy mounted on said base; a diaphragm pump mounted on the said base and being drivingly connected to said source of mechanical energy, said diaphragm pump including, an annular reservoir tank for holding a pump liquid, said annular reservoir tank having a central open portion, a pump cylinder positioned in the central open portion of the annular reservoir tank, and a pump piston movably mounted in the pump cylinder for pumping the pump liquid; a circulatory system connected to the pump cylinder and to the reservoir tank for carrying circulating pump liquid between said cylinder and said tank; an air check valve connected to the circulatory system to allow air to be pulled into the circulatory system; a foldable container support mounted on the base; and a liquid material container removably mounted in the container support, said container being releasably connected to the diaphragm pump, said container including a valve seat mounted at the bottom of the container, a valve body removably engageable with the valve seat for control of flow of liquid material from the container, and a valve stem connected to the body and extending exteriorly of the container to operate the valve body.

4,501,534

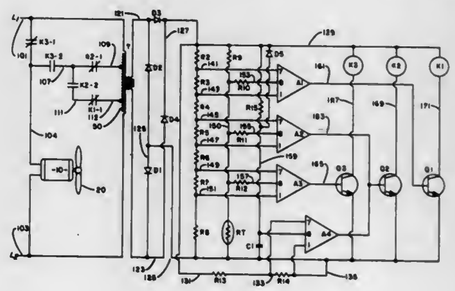
METHOD AND APPARATUS FOR PROLONGING SLEEVE BEARING LIFE IN A MULTIPLE SPEED ROTATIONAL DEVICE

Larry N. Hargis, N. Syracuse, N.Y., assignor to Carrier Corporation, Syracuse, N.Y.

Filed Jun. 21, 1982, Ser. No. 390,016

Int. Cl.³ F04B *21/00*

U.S. Cl. 417—572 **6 Claims**



1. A method of prolonging sleeve bearing life in a machine having a plurality of operating speeds and at least one lubricated sleeve bearing securing a rotating shaft which comprises the steps of:

selecting the appropriate rotational operating speed for the machine;

energizing the machine to operate at the appropriate rotational speed;

overriding the steps of selecting and energizing to operate the machine at a rotational velocity generally between 500 and 800 RPM for between two and four seconds to establish a lubricant film between the sleeve bearing and the rotating shaft; and

discontinuing the step of overriding after the elapse of at least the time period to establish the lubricant film, to permit the machine to operate at a rotational velocity less than that necessary to establish a lubricant film between the sleeve bearing and the rotating shaft.

3. A control arrangement for an electric motor having a lubricated sleeve bearing supporting the rotor shaft, said motor having a plurality of operating speeds, which comprises:

motor speed control means electrically connected to the motor wherein the motor is powering a fan for circulating air in heat exchange relationship with a refrigeration circuit;

sensor means for generating a response indicative of the motor speed desired wherein the sensor means comprises a thermistor mounted to the refrigeration circuit and connected to vary in resistance in response to a measured temperature;

circuit means connected to the sensor means and the motor speed control means for energizing the motor at the speed indicated by the sensor means wherein the circuit means comprises integrated circuits connected to detect voltage drops outside a predetermined range and to appropriately de-energize relays in response thereto; and

startup speed control means for energizing the motor at generally between 500 and 800 RPM, a predetermined minimum rotational speed for a time interval generally between two and four seconds to establish a lubricant film

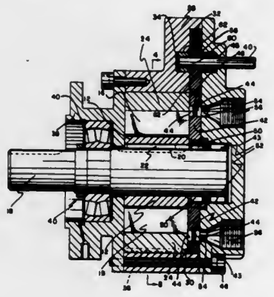
within the sleeve bearing prior to operating the motor at a reduced rotational speed less than generally 500 RPM.

4,501,535

VARIABLE FLOW REVERSIBLE VANE PUMP

Gary L. Golobay, 1215 Helen, Augusta, Kans. 67010

Filed Sep. 13, 1982, Ser. No. 417,680
Int. Cl.³ F04C *2/00, 15/02;* F04B *23/00*
U.S. Cl. 417—440 **1 Claim**



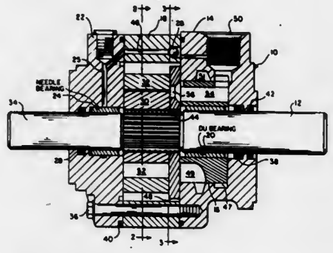
1. A variable fluid flow and reversible directions fluid flow vane pump used to pump a fluid, comprising;
(a) a rotor means including a plurality of spaced rotor slots circumscribing the periphery of said rotor means;
(b) a vane means radially slidably mounted within each said rotor slots and radially variably extending beyond said periphery of said rotor means when biased by a force;
(c) a power take off means connected to said rotor means to rotate same;
(d) a cam ring means having an inside surface of an elongated curved shape;
(e) said rotor means rotatably mounted within said cam ring means and said vane means engaging said inside surface of said cam ring menas.
(f) a rotary valve plate means mounted against said cam ring means and said rotor;
(g) said rotary valve plate means including (1) a pair of arcuate grooves; (2) at least one port in each of said grooves; and (3) valve movement means;
(h) a case means encasing said cam ring means;
(i) a front bearing plate means connected to said case means to enclose one end thereof;
(j) a rear bearing plate means connected to said case means to enclose another end thereof;
(k) said rear bearing plate having apertures in fluid flow communication with respective ones of said grooves and said ports of said rotary valve plate means;
(l) a control means operably connected to said valve movement means to selectively rotate said rotary valve plate means relative to said cam ring means and said rotor means;
(m) said rotary valve plate means selectively rotatable to
(1) a first position to direct all of the fluid in said arcuate grooves within said arcuate grooves with no fluid directed to or received from said apertures;
(2) a second position to direct a variable fluid flow output through one of said apertures; and
(3) a third position to direct a variable fluid flow output through the other one of said apertures being a reversed fluid flow relative to said second position;
(n) said rotary valve plate means having four of said grooves on opposite sides thereof; and
(o) pairs of said grooves directly opposed to each other and each of said pairs of said grooves connected to a respective one of said apertures.

4,501,536

COMPACT HIGH TORQUE GEROTOR-TYPE HYDRAULIC MOTOR

Carle A. Middlekauff, Cumberland, Me., assignor to W. H. Nichols Company, Lexington, Mass.

Filed Mar. 8, 1983, Ser. No. 473,367
Int. Cl.³ F01C *1/113, 21/02, 21/04;* F03C *2/08*
U.S. Cl. 418—61 B **12 Claims**



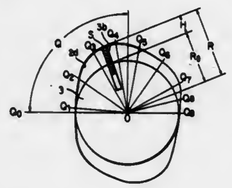
1. An apparatus comprising:
a. a housing having an inlet and an outlet port for the entry and exit of fluid;
b. a shaft rotatable about a fixed axis having an output end extending from said housing;
c. bearings for supporting said shaft, one of said bearings located adjacent to said shaft's output end being a sleeve bearing adapted to be pressurized during operation of said motor;
d. an inner member mounted upon said shaft for central rotation about the longitudinal fixed axis of said shaft, said inner member being disposed between said bearings;
e. an outer member mounted within said housing for eccentric nonrotational oribital movement with respect to said fixed axis, said outer member defining with said inner member a plurality of circumferentially spaced chambers, the volume of individual chambers varying with rotation of the inner member;
f. commutator means positioned coaxially and co-planar to said sleeve bearing, to direct fluid from said inlet and outlet ports to the chambers formed by the inner and outer members; and
g. rotatable valve means affixed to said shaft and rotatable therewith the control flow from the commutator to the chambers and thereby cause rotation of the inner member.

4,501,537

VANE COMPRESSOR HAVING AN ENDLESS CAMMING SURFACE MINIMIZING TORQUE FLUCTUATIONS

Yutaka Ishizuka, Saitama, Japan, assignor to Diesel Kiki Co., Ltd., Tokyo, Japan

Filed Oct. 19, 1982, Ser. No. 435,233
Claims priority, application Japan, Oct. 23, 1981, 56-169586
Int. Cl.³ F04C *18/00*
U.S. Cl. 418—150 **28 Claims**



1. In a vane compressor including: a pump housing having inner surfaces thereof formed with an endless camming inner

peripheral surface; a cylindrical rotor rotatably received within said pump housing, said rotor having an outer peripheral surface thereof formed therein with a plurality of axial slits; a plurality of vanes radially movably fitted in said slits of said rotor; and a drive shaft coupled to said rotor for causing rotation of said rotor in unison therewith; whereby rotation of said rotor causes said vanes to slidingly move along said endless camming inner peripheral surface of said pump housing n a predetermined circumferential direction to define at least one pumping chamber between the inner surfaces of said pump housing, the outer peripheral surface of said rotor and said vanes, for performing suction, compression and discharge of fluid, the improvement wherein said endless camming inner peripheral surface of said pump housing has at least one portion for performing one cycle comprising a suction stroke, a compression stroke and a discharge stroke of fluid in cooperation with said vanes and said rotor, which consists essentially of: an increasing radius portion having a cam profile such that each of said vanes has an amount of protrusion from said rotor gradually increasing with movement thereof along said increasing radius portion, said increasing radius portion consisting of a first portion having a cam profile such that said each vane has a protruding velocity thereof gradually increasing as it moves along said first portion, and a second portion having a cam profile such that said each vane has a protruding velocity thereof gradually decreasing as it moves along said second portion; a first decreasing radius portion having a cam profile such that said each vane has an amount of protrusion thereof from said rotor gradually decreasing and a receding velocity thereof gradually increasing, as it moves along said first decreasing radius portion; a second decreasing radius portion having a cam profile such that said each vane has an amount of protrusion from said rotor gradually decreasing and a receding velocity thereof gradually decreasing, as it moves along said second decreasing radius portion; a third decreasing radius portion having a cam profile such that said each vane has an amount of protrusion from said rotor gradually decreasing and a receding velocity thereof gradually increasing as it moves along said third decreasing radius portion; and a fourth decreasing radius portion having a cam profile such that said each vane has an amount of protrusion from said rotor gradually decreasing and a receding velocity thereof gradually decreasing as it moves along said fourth decreasing radius portion; said first and second portions of said increasing radius portion and said first, second, third and fourth decreasing radius portions each having a starting end and a terminating end, and being successively arranged in the order mentioned in said predetermined moving direction of said vanes, said first and second portions of said increasing radius portions having their combined circumferential angle set at a value smaller than 90°, said first and second decreasing radius portions being at least in part located in a rotational angle region of said rotor where fluid pressure acting upon a portion of said each vane protruded from said rotor rapidly increases with movement of said each vane along the same region, whereby fluctuations in torque acting upon said rotor are restrained in said rotational angle region of said rotor.

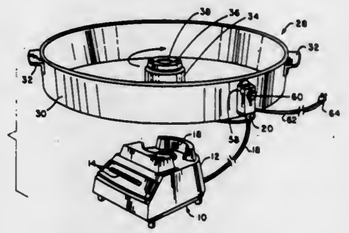
4,501,538

COTTON CANDY ACCESSORY FOR BLENDER

Carl R. Bray, 503 S. Green St., and Lee Cueni, 500 E. 3rd, Apt. 5, both of Lees Summit, Mo. 64063

Filed Jun. 17, 1982, Ser. No. 389,443
Int. Cl.³ B28B *17/00*
U.S. Cl. 425—9 **4 Claims**

1. An attachment for use with a household blender, said blender being characterized by a motor, a motor drive shaft and a drive coupling on the end of said shaft, said attachment comprising:
an open top container having an opening in the center of the container bottom;
rotatable hopper means mounted in the center of said container and adapted to receive the ingredients, including sugar, for making cotton candy, said hopper means being characterized by a plurality of orifices for distributing said ingredients around said container under influence of centrifugal forces;
drive means coupled with said hopper means having a shaft projecting through said opening in the bottom of said container, said shaft having an end coupling which is complemental to the drive coupling on the end of said motor drive shaft,



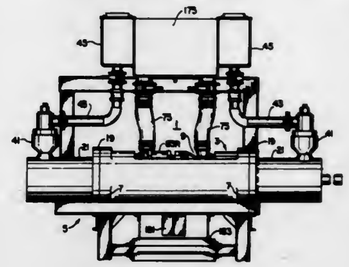
said end coupling and said motor drive shaft coupling being in driving engagement when the container is seated on the blender and disengaged when said container is lifted off of said blender; and
a heating element disposed in close association with said hopper means for melting said sugar.

4,501,539

APPARATUS FOR REMOVING THE LIQUID PHASE FROM A SLURRY OF FINE GRANULAR MATERIAL

Edward A. Fenton, Jr., Pittsburgh; Ira W. Lakin, Volant; Joseph H. Stein, Coraopolis; John R. Lohr, Pittsburgh, and David A. Schreiber, Bethel Park, all of Pa., assignors to Dravo Corporation, Pittsburgh, Pa.

Filed Dec. 2, 1983, Ser. No. 557,466
Int. Cl.³ B30B *9/02;* B29C *3/00;* B28B *1/26*
U.S. Cl. 425—84 **28 Claims**



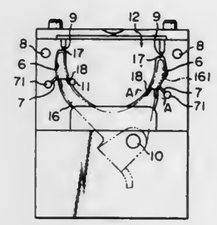
1. A platen for use in a press in which the liquid phase is removed from a slurry of fine granular material by compressing the slurry against the platen, said platen comprising a planar member defining arcuate slots forming a pattern of segmented concentric annular openings through which the liquid phase is expressed.

4,501,540

INSERT MOLDING DEVICE

Hiroyoshi Kako, Aichi; Nobuo Kobayashi, and Toshiaki Kaneyuki, both of Toyota, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Nov. 19, 1982, Ser. No. 443,159
Claims priority, application Japan, Dec. 24, 1981, 56-191774[U]
Int. Cl.³ B29C *6/04*
U.S. Cl. 425—116 6 Claims



6. An insert molding device for covering a portion of a workpiece with a plastic material, the device including an upper mold and a lower mold having surfaces that mate together to form a cavity for receiving, with a small clearance to accommodate variations within manufacturing tolerances, an inserted workpiece of preselected size and shape, a portion of the cavity being enlarged to provide a molding chamber of increased clearance surrounding a predetermined region of an inserted workpiece, an injection gate having an outlet opening into the molding chamber for delivering molten plastic material under pressure to said chamber for molding a plastic covering on said predetermined region of an inserted workpiece, and a clamping pin having an end extending through the wall of the cavity outside of but adjacent to the molding chamber, said end conforming to the surface of an inserted workpiece for pressing the workpiece against the opposite wall of the cavity for eliminating any extrusion of a thin flash of excess plastic material from the molding chamber in the region where the clamping pin contacts the workpiece and where the workpiece contacts the opposite wall of the cavity, wherein the improvement comprises:

a lead groove formed in the mating surface of one of the molds, the lead groove communicating with the molding cavity and extending away from the cavity, whereby excess molten plastic material injected into the molding chamber can flow into said lead groove to form a casting fin that extends outwardly from the plastic covering and from the workpiece;

an enlarged reservoir spaced from the cavity and communicating with said lead groove; and

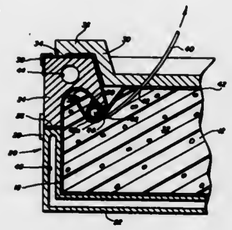
at least one groove formed in the surface of the cavity outside the molding chamber between the clamping pin and the portion of the opposite wall of the cavity adapted to be contacted by an inserted workpiece, the groove communicating with the molding chamber, such that excess plastic material injected into the molding cavity will flow into said at least one groove in preference to said small clearance to form a thick extension, defined by said groove, of said plastic covering molded on the predetermined surface portion of an inserted workpiece instead of a thin flash in the region of the small clearance.

4,501,541

MOLD ASSEMBLY FOR MOLDING CUSHION ARTICLES

George L. Bethell, Rock Island, Ill.; Donald F. Burch, Coralville, and Lysle R. Hinkhouse, Wilton, both of Iowa, assignors to Sears Manufacturing Co., Davenport, Iowa

Continuation-in-part of Ser. No. 418,395, Sep. 15, 1982,. This application Jul. 7, 1983, Ser. No. 511,497
Int. Cl.³ B29D *27/04*
U.S. Cl. 425—117 11 Claims



1. A mold assembly for molding a cushion article with an integral support member, comprising:

a mold having the shape of the desired cushion article and being adapted to position a support member in said mold, the support member having means for venting air entrapped within the mold, the support member intended to be an integral part of the molded cushion article; and

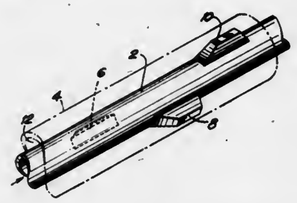
conduit means establishing communication between said support member and vent means and the exterior of said mold for evacuating the entrapped air during a molding operation.

4,501,542

INTERNAL TUBE SUPPORT FOR CO-EXTRUSION STUFFING TUBE ASSEMBLY

Joseph A. Nausedas, Oak Forest, Ill., assignor to Union Carbide Corporation, Danbury, Conn.

Filed Dec. 30, 1983, Ser. No. 567,245
Int. Cl.³ B29F *3/04*; A22C *7/00, 11/00*
U.S. Cl. 425—133.1 18 Claims



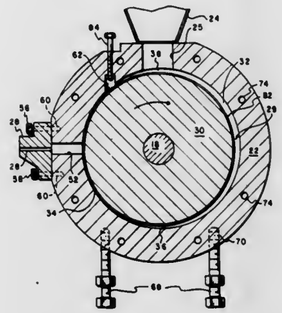
1. In an apparatus for co-extruding an elongated food product having a central core formed of one food product and a second food product circumscribing said core, said apparatus including a first supply source to feed one food product to a first extrusion tube, and a second supply source to feed said second food product to a second extrusion tube coaxially mounted around the first tube; the improvement comprising at least two ramped spacing means spaced from each other radially or both radially and longitudinally on a surface of said extrusion tubes, and being positioned in an annulus formed by said extrusion tubes, each of said spacing means being in contact with only one of said first and second extrusion tubes, one of said tubes having a mounting such as to allow centering of the inner tube within the outer tube while allowing for a controlled eccentric movement of the inner tube within the outer tube in order to minimize clogging of said second food product at said spacing means.

4,501,543

ROTARY EXTRUDER

Raleigh N. Rutledge, and Granville J. Hahn, both of Big Spring, Tex., assignors to Cosden Technology, Inc., Dallas, Tex.

Filed Jan. 13, 1983, Ser. No. 457,614
Int. Cl.³ B29F *3/012*
U.S. Cl. 425—191 12 Claims



1. Apparatus for plasticizing thermoplastic material and the like, comprising:

a housing having an inner recess, an inlet, and a die aperture communicating with said recess;

an extrusion member rotatably mounted in said recess in said housing, said extrusion member comprising a cylindrical rotor eccentrically disposed within said recess to define a first clearance zone and an opposing second smaller clearance zone, both said clearance zones extending along the axial length of said rotor between the inner surface of said housing and the outer surface of said rotor, said rotor including a plurality of directing grooves on the inside surface at each end thereof, said directing grooves angularly positioned with respect to the direction of said rotation of said rotor to propel thermoplastic material therein circumferentially about the inner surface of said housing and axially toward the center of said housing;

ring members positioned within said recess at opposite ends thereof, each said ring member including a plurality of helical channelling grooves on the inside surface thereof, said channelling grooves encircling said extrusion member and directed axially toward the center of said housing to spirally channel thermoplastic material propelled by said directing grooves towards the center of said housing, a central collecting groove encircling the inside surface of said ring in communication with channeling grooves to collect thermoplastic material spirally propelled from said channelling grooves, and at least one outlet groove on the inside surface of said ring members in communication with said central collecting groove and with said first clearance zone to channel thermoplastic material spirally propelled from said central collecting groove into said first clearance zone; and,

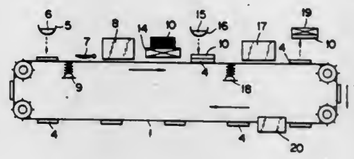
means for axially rotating said rotor to plasticize the thermoplastic material within said clearance zones and to deliver the plasticized material from said clear zones through said die aperture.

4,501,544

APPARATUS FOR CONTINUOUSLY AND AUTOMATICALLY MOLDING CHOCOLATE BLOCK HAVING ORNAMENTAL RELIEF PATTERN

Tokuji Akutagawa, Tokyo, Japan, assignor to Akutagawa Confectionery Co., Ltd., Tokyo, Japan

Filed Dec. 7, 1983, Ser. No. 559,179
Claims priority, application Japan, May 31, 1983, 58-94909
Int. Cl.³ B29D *31/00*; B29C *1/00*; A23G *7/00, 1/26*
U.S. Cl. 425—218 12 Claims



1. An apparatus for continuously and automatically molding a chocolate block including an ornamental relief pattern made of a first chocolate material of one color and a body portion carrying said ornamental relief pattern and made of a second chocolate material of different color, comprising:

(a) conveyer means for carrying thereon a plurality of first molds successively placed at intervals, each first mold having a top face provided with at least one engraved mold cavity;

(b) means for casting a fluidized first chocolate material for forming said ornamental relief pattern into each of the engraved mold cavities of said first molds one by one;

(c) a scraper for scraping the top face of each first mold to press said first chocolate material into said engraved mold cavity and to scrape off the excess first chocolate material;

(d) a first cooler for cooling said first chocolate material contained in said engraved mold cavity of said first mold;

(e) means for placing a second mold in situ on each of said first molds, said second mold having at least one through-opening defining said body portion and being free from permanent connection with said first mold;

(f) means for casting a fluidized second chocolate material into said second mold combined with said first mold through said through-opening;

(g) a second cooler for successively cooling said first and second chocolate materials contained in the combined first and second molds to solidify the same;

(h) means for removing the solidifed first and second chocolate materials from the molds to obtain an integral product chocolate block; and

(i) cleaner means for cleaning said first molds to remove the chocolate materials adhering thereon, said cleaner means being disposed between said means (b) and said means (h).

4,501,545

MANUFACTURE OF INFLATABLE ARTICLES

Ralph A. Divoky, Maple Heights, Ohio, assignor to California Ceramic Supply Co., Cleveland, Ohio

Division of Ser. No. 294,288, Aug. 19, 1981, abandoned, which is a continuation of Ser. No. 99,542, Dec. 3, 1979, abandoned. This application Mar. 1, 1983, Ser. No. 471,050
Int. Cl.³ B29H *3/04*
U.S. Cl. 425—275 13 Claims

1. A balloon-making form, comprising:

(a) an elongate, cylindrical stem configured at one end for attachment to a carrier;

(b) a generally spoon-shaped end portion formed at the end of the stem removed from the configured end portion, the spoon-shaped end portion including:

(i) a convex surface;

(ii) a concave surface;

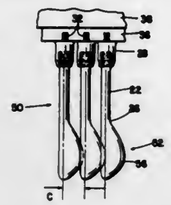
(iii) smoothly contoured transition surfaces connecting the concave and convex surfaces;

(iv) a rounded tip; and

(v) a smoothly contoured portion connecting the spoon-shaped end portion to the stem;

(c) a longitudinal axis extending centrally of the stem;

(d) the transition surfaces and at least one edge of the stem lying in a first plane spaced from the longitudinal axis; and



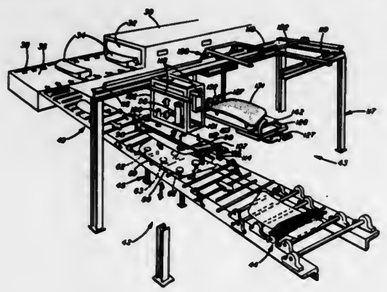
(e) a second plane, parallel to the first plane, being coincident with the longitudinal axis and defining a line of intersection with the convex surface, the smoothly contoured portion, and the stem, the second plane dividing the form into two sections having equal surface areas.

4,501,546

VACUUM MOLD FOR MAKING A WINDSHIELD SUBASSEMBLY

James L. Valimont, Cheswick, and Hershel L. Phares, Apollo, both of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Division of Ser. No. 287,607, Jul. 28, 1981, Pat. No. 4,366,013.
This application Sep. 20, 1982, Ser. No. 420,148
Int. Cl.³ B29C *1/00, 3/00*
U.S. Cl. 425—388 **9 Claims**



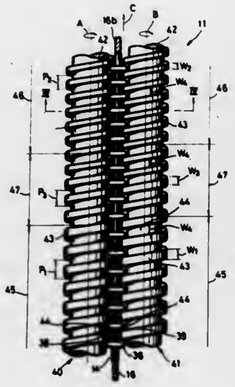
1. A mold for supporting a flexible sheet of interlayer material for assembly against a bent glass sheet of concave elevational configuration comprising a first wall having a curved configuration conforming to the elevational configuration of said bent glass sheet, a second wall of similar curved configuration having an aperture adapted for coupling to a vacuum source, a plurality of spacer elements of uniform thickness distributed throughout the extent of said walls and separating said walls, a substantially vacuum tight peripheral spacer wall of rigid, curved, frame-like configuration enclosing the space between said walls of curved configuration, said first wall having a plurality of apertures distributed throughout its extent, whereby when said aperture in said second wall is coupled to said vacuum source, said flexible sheet of interlayer material is held against said first wall and assumes its curved configuration, and when said aperture is disconnected from said vacuum source, said flexible sheet of interlayer material is free to separate from said first wall.

4,501,547

APPARATUS FOR SHAPING COILED SLIDE FASTENER COUPLING ELEMENTS

Hisayoshi Mizuhara, Kurobe; Shigenori Omori, Uozu, and Akira Tanaka, Kurobe, all of Japan, assignors to Yoshida Kogyo K. K., Tokyo, Japan

Filed Apr. 6, 1983, Ser. No. 482,492
Claims priority, application Japan, Apr. 13, 1982, 57-61358
Int. Cl.³ B28B *11/08*
U.S. Cl. 425—391 **12 Claims**



1. An apparatus for shaping a row of helically coiled continuous coupling elements defining therein a longitudinal space receiving therein a continuous core thread, each coupling element having a pair of spaced legs, said apparatus comprising:

(a) a mandrel for having wound thereon the coiled coupling elements and having a longitudinal groove for the passage therethrough of the core thread; and

(b) a pair of parallel externally threaded cylindrical screw members disposed on opposite sides of said mandrel in lateral alignment with the same and drivably corotatable in a common direction to feed the coupling elements and the core thread on said mandrel longitudinally from one end to the opposite end of said screw members, each said screw member having a cylindrical shank and a continuous helical thread on said shank defining a helical groove between turns thereof for receiving therein one leg of each pair of spaced legs of the coupling elements, each said screw member including at said one end a first portion having a first pitch larger than a predetermined pitch of the coupling elements as ultimately shaped, at said opposite end a second portion having a second pitch substantially equal to said predetermined pitch, and a third portion between said first and second portions, gradually reducing in pitch in a direction from said one end toward said opposite end.

4,501,548

LABEL TRANSFERRING DEVICE FOR BLOW MOLDING MACHINES

Werner F. F. Jahnel, Haslett, Mich., assignor to Bekum Plastics Machinery Inc., Williamston, Mich.

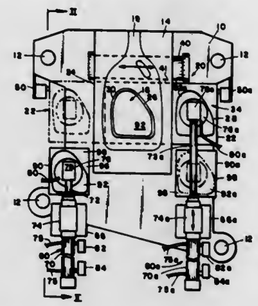
Filed Jul. 18, 1983, Ser. No. 514,869
Int. Cl.³ B29C *17/07*
U.S. Cl. 425—503 **19 Claims**

1. A label transferring device for container blow molding machines having separable mold sections which define a mold cavity mounted on a pair of spaced, movable platens, said device comprising:

a mold insert having at least a first and a second label carrying segments, each of said segments being slidable into said cavity to a molding position whereat it closes said cavity and forms a portion of the interior surface of said cavity and slidable out of said cavity to a label loading position whereat a label may be loaded thereon;

means on each of said segments for receiving and retaining a label and exposing the same to the interior of said cavity when said segment is in the molding postion;

a label supply and first means for transferring a label to said first segment from said label supply when said first segment is at said loading position, and second means for



transferring a label to said second segment from said label supply when said second segment is at said loading position, said second transferring means being separate from said first transferring means; and

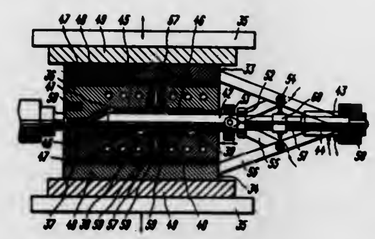
means for alternately shifting said segments between said molding position and said loading position, whereby one of said segments is positioned in said cavity while the other of said segments is simultaneously positioned at said label loading position and said transfer means transfers a label thereto.

4,501,549

INJECTION MOLD WITH REPLACABLE INSERT IN MOLD CAVITY OUTLET OPENING

Vsevolod V. Abramov, Poklonnaya ulitsa, 6, kv. 4; Vsevolod V. Kuznetsov, Komsomolsky prospekt, 38/16, kv. 92; Alexandr V. Veselov, ulitsa K. Marxa, 21/4, kv. 20; Vitaly S. Tkhai, ulitsa Veshnyakovskaya, 25/2, kv. 227, all of Moscow; Nikolai I. Rysin, Moskovskaya oblast, ulitsa Kirova, 22, korpus 1, kv. 27, gorod Solntsevo, and Vasily I. Gerasimov, Derbenevskayanaberezhnaya, 1/2, kv. 81, Moscow, all of U.S.S.R.

Division of Ser. No. 370,739, Oct. 2, 1981, Pat. No. 4,439,390.
This application Mar. 26, 1984, Ser. No. 593,630
Int. Cl.³ B29F *1/022*; B29C *1/00*
U.S. Cl. 425—542 **4 Claims**



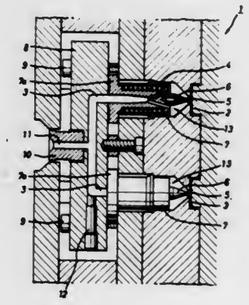
1. A split mold of an injection-molding machine, comprising two half-molds mounted on plates of the injection-molding machine; coolant supply channels formed in said half-molds; a first die incorporated in one of the half-molds and having forming surfaces; a second die incorporated in the other half-mold and having forming surfaces; a gating system for feeding the polymer melt; cavities defined by the forming surfaces when the half-molds are brought together, said cavities communicating with each other and with the gating system; openings of said cavities, adapted to communicate the cavities with each other and with the gating system, the openings disposed at the entrance of the melt into the cavity serving as inlets and those disposed at the exit of the melt from the cavity as outlets; conventional heaters mounted in said first and second die at the inlet and outlet openings; replaceable inserts positioned at the outlet openings of the cavity to alter the flow area of these openings.

4,501,550

CAP MEANS FOR PREVENTING RESIN FROM REMAINING IN A MOLD OF A RUNNERLESS INJECTION MOLDING APPARATUS

Hiroharu Nikkuni, Yonezawa, Japan, assignor to Shigeru Tsutsumi, Yonezawa, Japan

Filed Nov. 30, 1982, Ser. No. 445,841
Claims priority, application Japan, Dec. 2, 1981, 56-192736
Int. Cl.³ B29F *1/03*
U.S. Cl. 425—549 **4 Claims**



1. In a runnerless injection molding apparatus having a pointed heating tip member for heating a gate, permanently open passage surrounded by a mold wall for supplying a fused resin into a cavity through said gate along the surface of said pointed heating tip member, and a heating cylinder having heater means to be heated externally of the passage, the improvement comprising:

cap means for preventing resin from collecting and remaining in a space formed adjacent to a front end of said heating cylinder, said cap means being of a frusto-conical profile incorporated in said space and being provided in its center with an opening to maintain said permanently open passage and through which an end of said pointed heating tip member can pass in an axial direction of said cap means, and

a remainder space formed adjacent to a front end of said cap means for collecting a small portion of resin to provide a thermally insulating interface between said mold wall and fused resin passing along the surface of said heating tip, said cap means thermally insulating said remainder space from the front end of said heating cylinder,

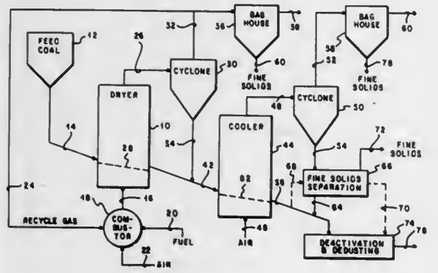
whereby resin supplied into said cavity is maintained in proper molding condition and scorching and thermal decomposition of resin collected in said remainder space is prevented.

4,501,551

METHOD FOR PRODUCING A DRIED PARTICULATE COAL FUEL FROM A PARTICULATE LOW RANK COAL

Louis P. Riess, Evergreen, and Bernard F. Bonnecaze, Littleton, both of Colo., assignors to Atlantic Richfield Company, Los Angeles, Calif.

Filed Nov. 10, 1983, Ser. No. 550,424
Int. Cl.³ F27B 15/00; F26B 3/08
U.S. Cl. 432—15 11 Claims



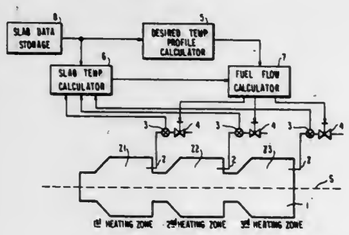
1. A method for producing a dried particulate coal fuel having a reduced tendency to spontaneously ignite from a particulate low rank coal, said method consisting essentially of:
(a) charging said coal to a coal drying zone;
(b) supporting a bed of said coal above a support means in said coal drying zone, said support means being adapted to the flow of hot fluidizing gas upwardly through said support means and said coal;
(c) flowing hot fluidizing gas upwardly through said support means and said coal at a rate sufficient to fluidize said coal to dry said coal to a water content of less than about 14 weight percent water;
(d) recovering dried coal from said coal drying zone;
(e) cooling said dried coal to a temperature below about 100° F. in a coal cooling zone;
(f) separating at least a major portion of the finely divided coal particles of a size less than about 80 Tyler Mesh from said dried coal; and
(g) treating said dried coal with a deactivating fluid to reduce the tendency of said dried coal to spontaneously ignite.

4,501,552

METHOD FOR CONTROLLING FURNACE TEMPERATURE

Yoshinori Wakamiya, Kobe, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 8, 1983, Ser. No. 530,439
Claims priority, application Japan, Sep. 8, 1982, 57-157727
Int. Cl.³ B21B 37/10
U.S. Cl. 432—49 2 Claims



1. A method of controlling furnace temperature for use with a slab heating furnace having a zone with controllable heating means, including the steps of:
(a) calculating a desired temperature profile of a slab as it progresses through a furnace divided into sub-zones along its length, said calculation minimizing total fuel flow and based on shape information of said slab, slab temperature at a prior position within said furnace, and the predetermined slab temperature at a discharge position of the furnace;
(b) predicting the distribution of the gas temperature at each said subzone along the length of the furnace;
(c) calculating the present slab temperature distribution by using said distribution of said gas temperature predicted in step (b);
(d) comparing said slab temperature calculated in step (c) at the present time with said desired slab temperature calculated in step (a) to produce a difference between them; and
(e) adjusting the output of said heating means according to said temperature deviation produced in step (d);
wherein said desired temperature curve is predicted based on the T_{si} which minimizes W_T and said T_{si} is calculated according to the equation

$$W_T = \frac{1}{(H_g - T_{gi} \cdot C_{pg} \cdot C)} \left[\sum_{i=1}^{n} \{A_i \cdot [(T_{si} + 273)^4 + E_i(T_{si+1} - T_{si-1})]^{\frac{1}{4}} - 273 + B_i\} + \sum_{i=1}^{\Sigma} \frac{C_p \cdot \gamma \cdot H \cdot v}{2 \cdot l_i} (T_{si+1} - T_{si}) \right]$$

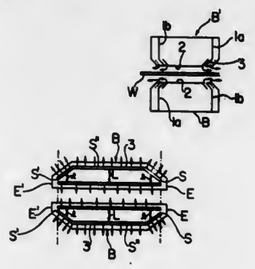
where W_T is the total injected fuel flow, H_g is the heat produced per unit of fuel flow, T_{si} is the slab temperature in the ith subzone, T_{gi} is the temperature at the center of the ith subzone, C_{pg} is the specific heat of the exhausted gas, C is a constant relating the volume of exhausted gas to the fuel flow, A_i and B_i are constants depending on the structure of the furnace, T_{si} is the slab temperature in the ith subzone, C_p is the specific heat of the slab, E_i is equal to $(C_p \cdot \gamma \cdot H \cdot v)/(D_i \cdot l_i \cdot 2)$ where γ is the specific gravity of the slab; H is the thickness of the slab, D_i is the radiative heat conversion coefficient, l_i is the length of the ith subzone, and v is the velocity of the moving slab.

4,501,553

FLOATING EQUIPMENT AND FLOATING-TYPE HEAT TREATING FURNACE FOR STRIPLIKE WORKS

Masayuki Imose, Kawanishi; Takao Seno, Mino, and Yoshihito Sakaguchi, Kyoto, all of Japan, assignors to Chugai Ro Co., Ltd., Osaka, Japan

Division of Ser. No. 391,704, Jun. 24, 1983, Pat. No. 4,455,136.
This application Mar. 2, 1984, Ser. No. 570,032
Int. Cl.³ F27B 9/28; F26B 13/20
U.S. Cl. 432—59 4 Claims



1. A pressure pad for directing jet or streams of fluid against an adjacent, continuous strip of material adapted to travel

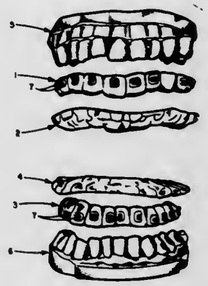
along a flow path which is generally parallel to a first axis of the pad, the pressure pad comprising:
a first line of jet nozzles including first jet nozzle opposite end portions with one of the opposite end portions disposed at each end of a first jet nozzle central portion, at least one of the first jet nozzle end portions being disposed at an angle relative to the pad first axis and diverging outwardly thereof from the first central portion toward the one first jet nozzle outer terminal end such that the outer terminal end is spaced further from the pad first axis than an inner terminal and thereof disposed at the first central portion; and a second line of jet nozzles including second jet nozzle opposite end portions with one of the opposite end portions disposed at each end of a second jet nozzle central portion, at least one of the second jet nozzle end portions being disposed at an angle relative to the pad first axis and diverging outwardly thereof such that an outer terminal end of the one second jet nozzle end portions is spaced further from the pad first axis than an inner terminal end thereof disposed at the second central portion; wherein the jet nozzles of at least the first and second jet nozzle one end portions and the first and second jet nozzle other end portions are angularly disposed in such manner that jets of fluid emitting therefrom and striking a material strip passing adjacent thereto exert an outward force on the strip along the pad first axis which tends to stretch the strip.

4,501,554

TWO TRAY INDIRECT BONDING SYSTEM FOR LABIAL AND LINGUAL BRACKETS

John H. Hickham, 325 23rd St., Kenner, La. 70062

Filed Jul. 25, 1983, Ser. No. 516,906
Int. Cl.³ A61C 3/00
U.S. Cl. 433—24 5 Claims



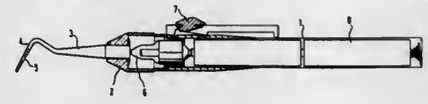
1. An orthodontic method for use in applying brackets to a patient's teeth, comprising the following steps:
(a) molding a first, relatively soft, flexible tray of the patient's teeth and incorporating into said first tray the brackets properly positioned to be applied to the teeth; and
(b) molding a second, complementary configured but relatively hard and rigid second tray of the patient's teeth for placement over the exterior of said first tray, providing in supplemental fashion rigidity to the back of said first tray; producing a two tray system which in face-to-face combination has an inner teeth contacting flexibility from said first tray and an outer rigidity from said second tray.

4,501,555

PERIODONTAL PROBES

Frederick Ditchburn, Weybridge, England, assignor to Dentsply Research & Development Corp., Milford, Del.

Filed Feb. 2, 1984, Ser. No. 576,287
Claims priority, application United Kingdom, Mar. 21, 1983, 8307716
Int. Cl.³ A61C 1/00, 3/00
U.S. Cl. 433—29 3 Claims



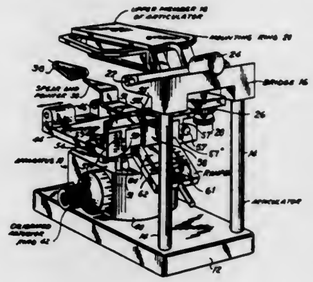
1. A self-contained periodontal probe and light source comprising, in combination, an elongated handle body containing a source of light, a light-transmitting probe shaft supported by one end of said handle body and terminating in a tapered light-transmitting measuring tine extending laterally from said shaft and provided with a series of spaced transverse devices thereon, said light source being adapted to illuminate said light probe and devices thereon to permit ready visual observation of said devices on said tine as rings of light when said probe is in use.

4,501,556

APPARATUS AND METHOD FOR FABRICATION OF DENTAL PROSTHESES

Joseph Zelnigher, 310 W. 47th St., New York, N.Y. 10036

Filed Mar. 23, 1983, Ser. No. 477,924
Int. Cl.³ A61C 11/00
U.S. Cl. 433—56 14 Claims



1. A device for use in the construction of dental prostheses embodying impression trays and poured casts, comprising:
a base adapted to be placed on an articulator, a tabletop on said base, the height of which is adapted to be adjustable; a removable template adapted to be pivotably mounted to a cradle provided on said tabletop; a knife edge unit having spaced apart knife edges, and a spear box and pointer adapted to be raised or lowered, a ramp, including a track having a sliding plate for carrying and for guiding the movement of said spear and box pointer, carried on said knife edge unit and a cooperatively associated adjustment screw for raising and lowering said spear box and pointer; said knife edge unit being removably attached to said base; and said spear box being guided for movement along said ramp by threaded means in an inclined sloped direction.

4,501,557

BALANCING DEVICE FOR DENTAL ARM

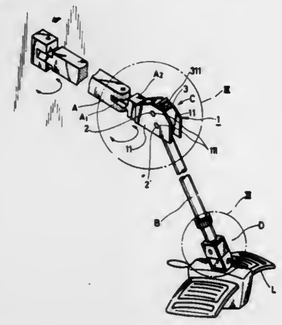
Jun Tamura; Takahiro Matsui, both of Kyoto, and Kazuo Hozumi, Shiga, all of Japan, assignors to Kabushiki Kaisha Morita Seisakusho, Kyoto, Japan

Filed Jul. 25, 1983, Ser. No. 516,802

Claims priority, application Japan, Jul. 26, 1982, 57-113638[U]

Int. Cl.³ A61C *1/14*

U.S. Cl. 433—79 **13 Claims**



1. A balancing device for a vertically movable dental arm assembly, which includes first and second arms and a head load, either of said arms being vertically movable, characterized in that said balancing device comprises:

a frame body which includes a pair of parallel vertical support plates and is connected to the end of said first arm;

upper and lower fixed shafts which are horizontal and parallel with each other at different levels and are inserted into holes in said support plates;

a sliding rod support member which is coaxially connected to the connection end of said second arm and has a crosswise groove and a lengthwise groove whose longitudinal axes intersect into which said fixed shafts are slidably inserted respectively;

a spring member inserted in the connection section of said sliding rod support member and said second arm; and

a sliding rod which is supported by either of said upper and lower fixed shafts and inserted coaxially and slidably into said second arm in the lengthwise direction of the lengthwise groove within said sliding rod support member to continuously apply a force to said spring member;

whereby said load head moves freely up and down when said first or second arms is moved, while the movements of said crosswise groove and lengthwise groove are interrelated with each other and restricted by said fixed shafts, and said load head is positioned at any desired position by the restoration force of said spring member.

4,501,558

ULTRASONIC DENTAL CLEANING TIP STABILIZER

Joachim H. Maliga, 4014 8th Ave., Brooklyn, N.Y. 11232

Filed Mar. 15, 1984, Ser. No. 589,674

Int. Cl.³ A61C *1/07*

U.S. Cl. 433—86 **4 Claims**

1. A stabilizer improvement for use with an ultrasonic dental device of the type having a water nozzle and a scaling tip positioned adjacent to one another and having a shield around the tip, the shield having a longitudinal groove within which the water tube extends, the stabilizer improvement comprising:

a wafer-like body portion having a major first opening adapted to receive the shield and a minor second opening adapted to receive the shield and a minor second opening adapted to receive the water nozzle,

said body portion including a tab extending into said first opening, said tab being dimensioned and positioned to extend into the groove of the shield when said stabilizer is mounted on the shield,

whereby, when said stabilizer is mounted with said shield extending through said first opening, said water tube extending through said second opening and said tab extending into the groove of said shield, the water tube is positioned at a predetermined location to avoid contact with both the edges of the shield and the scaling tip as well as to be positioned adjacent to and directly over the scaling tip.



4,501,559

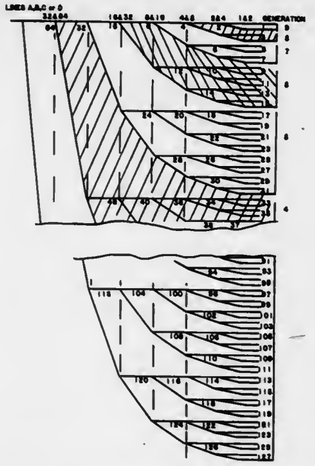
BASIC COMPREHENSIVE GENEALOGICAL AND FAMILY HISTORY SYSTEM OF STRAIGHTLINE GENEALOGY

Beth H. Griswold; Gail E. Griswold, and Alexandra F. Griswold, all of 767 Acacia Ave., Melbourne Village, Fla. 32901

Filed Apr. 2, 1982, Ser. No. 364,683

Int. Cl.³ G09B *29/00*

U.S. Cl. 434—154 **8 Claims**



1. A process of recording, numbering, indexing storing and rapid retrieval of genealogical records to produce a rich and lasting family history resource using minimum numbers of pieces of paper, with indefinite extension into the past and into the future without re-structuring, re-numbering, or re-copying, and which provides equal and adequate space for recording the information for each generation, including the provision for multi-parent and adoptive families as well as for the ancestors of these and for ancestors of spouses of future generations by providing:

A. a Basic Surname Chart (BSC) for recording a span of successive generations of a male surname line in equal-sized columns across the top of the chart, each one of which is for recording the male of that generation of that line, his birth and death dates and places, and the names of his spouse and her mother and father;

B. Individual Family Charts (IFC) to record each union in the span for which data is known and successive generations of the wives' surname lines in equal-sized columns across the top of the chart corresponding to those on the BSC, and providing space for information about the individual family units resulting from the above-mentioned union; and

C. Personal Information Charts (PIC) used to record precise personal information about individual family members.

4,501,560

INBOARD OUTBOARD DRIVE

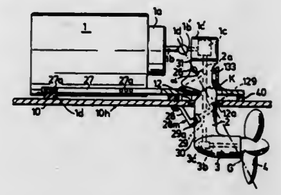
Lennart Brandt, Fjäras, and Heinz Pichl, Upsala, both of Sweden, assignors to AB Volvo Penta, Goteborg, Sweden

Filed Jan. 28, 1983, Ser. No. 461,877

Claims priority, application Sweden, Feb. 3, 1982, 8200600; Feb. 3, 1982, 8200601; Feb. 3, 1982, 8200602

Int. Cl.³ B63H *5/12*

U.S. Cl. 440—53 **28 Claims**



1. An inboard outboard drive for use in a boat having an inboard located engine part and an opening in the bottom shell of the boat hull comprising a propeller leg assembly having an upper inboard housing portion and a lower outboard housing portion and extending essentially vertically through the opening, upper angular gear means mounted in said upper housing portion, output shaft means of said engine part having an inboard mounted universal joint and extending essentially horizontally for drive connecting the engine part to said upper angular gear means, lower angular gear means mounted in said lower outboard housing portion, propelling means mounted on said lower outboard housing portion for propelling the boat, power transmission means including a power transmission shaft extending essentially vertically in said propeller leg assembly for drive connecting said upper angular gear means to said lower angular gear means, and propeller shaft means extending from said lower angular gear means and projecting horizontally out of one end of said lower outboard housing portion and carrying said propeller means, and bearing means mounted inboard the hull over said opening for pivotally mounting said propeller leg assembly in the opening for steering pivotal movement about the axis of said bearing means defining side steering axis which is inclined at an acute angle to said power transmission shaft, forwardly at its upper end and passes through said universal joint.

4,501,561

BRACE DEVICE FOR MOTOR BOAT DRIVE UNIT

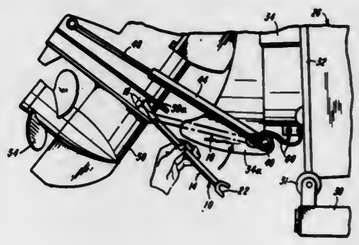
Paul G. Speelman, 319 Old St. Rd., Clarksville, Ohio 45133

Filed Jul. 14, 1983, Ser. No. 513,717

Int. Cl.³ B63H *5/12*

U.S. Cl. 440—61 **4 Claims**

1. In an inboard/outboard motor boat power assembly including a power drive shaft housing adapted to be mounted on the transom of a boat, a propeller drive unit supported by the housing for pivotal movement between an operative lower position and an inoperative elevated position, a pair of parallel spaced fluid actuated cylinders pivotally connected to the propeller drive unit, a horizontal support shaft extending through a lower portion of the drive shaft housing and pivotally supporting the fluid cylinders, the cylinders being effective to tilt the propeller drive unit between the lower and elevated positions, an improved brace device for supporting the drive unit in the elevated position, comprising an elongate rod, an elongate U-shaped engagement member secured to one end of the rod and disposed perpendicular to the rod, a V-shaped engagement member secured to the opposite end of the rod, the elongate U-shaped member being positioned within the drive shaft housing and releasably seated on the support shaft between the fluid cylinders, and the V-shaped member being releasably engageable with the propeller drive unit when the brace device is positioned between the propeller drive unit and the support shaft to secure the propeller drive unit in the elevated position.



4,501,562

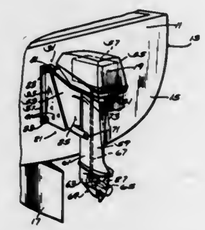
MARINE PROPULSION DEVICE FOR SAILBOATS

Clarence E. Blanchard, Kenosha, Wis., assignor to Outboard Marine Corporation, Waukegan, Ill.

Division of Ser. No. 211,530, Dec. 1, 1980, abandoned. This application Aug. 29, 1983, Ser. No. 527,012

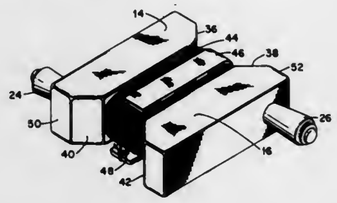
Int. Cl.³ B63H *5/12*

U.S. Cl. 440—61 **5 Claims**



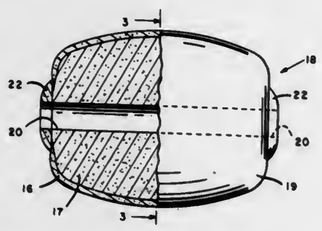
1. A marine propulsion device comprising a transom bracket adapted to be mounted on the transom of a boat, a propulsion unit assembly including a rotatably mounted propelling element, and means connected to said propulsion unit assembly and said transom bracket for selectively rectilinearly displacing said propulsion unit assembly relative to said transom bracket between a running position and a second elevated position spaced from the running position and against other material movement of said propulsion unit assembly relative to said transom bracket, said means for selectively rectilinearly displacing said propulsion unit assembly comprising a link which is extensible and contractable and which is connected between said transom bracket and said propulsion unit assembly, and means engaged between said propulsion unit assembly and said link for non-releasably preventing pivotal movement in a vertical plane of said propulsion unit assembly with respect to said link.

4,501,563
MARKER BUOY
Robert W. Johnson, 25 Muirfield Dr., Arden, N.C. 28704, and Richard S. Hobbs, R.D. #5, Box 394, Seneca, S.C. 29678
Filed Mar. 17, 1983, Ser. No. 476,191
Int. Cl.³ B63B *21/52*
U.S. Cl. 441—6 6 Claims



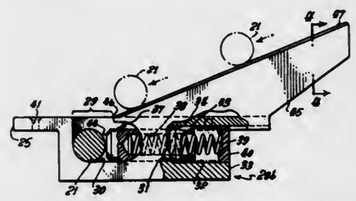
1. A marker buoy comprising:
a body made from a material enabling said body to float on the surface of a liquid; said body having first and second side members, and central portion therebetween; the length of said central portion being shorter than the length of either of said side members; said central portion being generally of a solid rectangular shape; each of said side members being in the shape of an elongated pontoon for stabilizing said marker buoy; the length of each of said side members being greater than its width; each of said members having first and second surfaces which taper inwardly toward said central portion; a first stud extending from said first side member and a second stud extending from said second side member; said first stud being near one end of said body and said second stud being near the opposite end of said body; said central portion receiving an elongated twine having a weight attached to its far end; said body automatically rotating to dispense said twine when said body is placed on the surface of a liquid; said body adapted to be manually rotated by manipulation of said studs to retrieve said twine; said first and second tapered surfaces of each of said side members adapted to guide said twine onto said central portion.

4,501,564
LUMINESCENT FOAM FLOATS AND METHOD
David C. Cairone, Sr., 18 Buckingham Rd., Seymour, Conn. 06483
Filed Mar. 29, 1982, Ser. No. 362,915
Int. Cl.³ B63B *21/52*
U.S. Cl. 441—20 18 Claims



1. Luminescent marine seine float comprising a heat expanded microporous molded body of foamed synthetic thermoplastic resinous composition having an exposed outer surface portion which is susceptible to erosion, wearing away, chipping and scratching of some of the foam composition therefrom and having an integral transverse axial passage capable of receiving a rope therethrough characterized by the exposed outer surface area of said float comprising at least one surface portion of said foamed synthetic thermoplastic resinous composition containing an effective amount of a luminescent pigment uniformly dispersed throughout at least a substantial thickness thereof to cause said surface portion to emit light during several hours of darkness, the erosion, wearing away, chipping or scratching of the exposed areas of the surface portion merely exposing underlying areas of the surface portion which also contain said luminescent pigment so that the light-emitting properties of said surface portion are not reduced, at least one adjacent surface portion of said float comprising a surface portion which does not contain luminescent pigment.

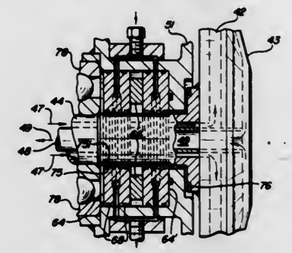
4,501,565
CENTRIFUGE BUCKET HANGER WITH LOADING RAMP
Alireza Piramoon, Santa Clara, Calif., assignor to Beckman Instruments, Inc., Fullerton, Calif.
Filed May 31, 1983, Ser. No. 499,563
Int. Cl.³ B04B *5/02*
U.S. Cl. 494—85 10 Claims



1. A self-loading hanger for supporting one side of a swinging bucket in a centrifuge rotor, said hanger adapted for mounting, one on either side, of a space in said rotor for containing said bucket, said bucket having a pivot axis defined by a pair of pivot pins disposed one on each side thereof, said hanger having an opening for receiving one of said pivot pins, said hanger having spring means enabling translation of said pivot axis in said hanger when centrifugal force acting on said bucket overcomes the resistance of said spring means, comprising:
ramp means disposed on the upper side of said hanger for guiding a pivot pin of said bucket into said opening of said hanger, thereby enabling said pivot pins to be self-seating in said hanger by the influence of gravity when said bucket is deposited in said rotor.

4,501,566
METHOD FOR ASSEMBLING A HIGH VACUUM ROTATING ANODE X-RAY TUBE
Roland W. Carlson, Lyndhurst, and Edward A. Blaskis, Hudson, both of Ohio, assignors to Technicare Corporation, Solon, Ohio
Filed Sep. 19, 1983, Ser. No. 533,704
Int. Cl.³ H01J *9/00*
U.S. Cl. 445—28 7 Claims

1. A method of assembling a rotating anode x-ray tube of the type having an anode mounted for rotation about an axis thereof, the anode having a rotor and a shaft extending therefrom, a temporary static seal disposed on said rotor, a housing enclosing portions of said rotor and defining therewithin an evacuable region of high vacuum, a magnetic seal assembly disposed about the shaft of said anode for fluidically vacuum sealing said region while permitting rotation of said shaft, and bearing means disposed about said shaft outside of said region for transmitting rotary motion of said shaft through said fluidic vacuum seal, the steps comprising:
(a) compressing said temporary seal so as to immobilize said rotor and seal said region;
(b) lowering the pressure within said region to a sufficiently low level that permits maintenance therein of a stable high vacuum requiring only a small mobile vacuum pump;
(c) installing the magnetic seal assembly about said shaft while maintaining said high vacuum;



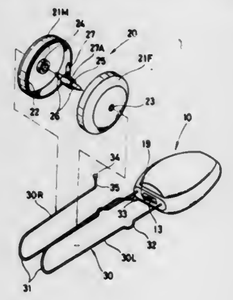
(d) installing the bearing means about said shaft adjacent said magnetic sealing assembly and outside of said region of high vacuum; and
(e) releasing said rotor to permit rotation of said anode.

4,501,567
ELONGATED WAND-TYPE WIND-UP AND TRIGGER-RELEASED SEPARABLE ACTUATOR FOR MOTORIZED TOY
Philip W. Cathell, 9340 Cardiff Loop Rd., Richmond, Va. 23235
Filed May 3, 1983, Ser. No. 491,299
Int. Cl.³ A63H *29/00*
U.S. Cl. 446—430 8 Claims



7. In combination:
a toy of the kind which includes a body having a mechanically wound-up motor for mechanically powering the toy, including a wind-up means constructed and arranged to be rotated in one direction for storing mechanical energy in the motor, and a releasable catch for preventing the motor from beginning to wind-down until the catch is triggered for release; and
an elongated wand-type wind-up and trigger-released separable actuator, comprising:
an elongated housing having a forward end portion and a rear end portion which are substantially separated by an intermediate elongated portion;
an elongated rack pull rod longitudinally slidably mounted to said elongated housing and having a forward end portion projecting forwardly from said forward end portion of said elongated housing;
lever means mounted on said rear end portion of said elongated housing and including means operatively connecting with said lever means with said elongated rack pull rod, so that as the lever means is manipulated the elongated rack pull rod is longitudinally reciprocated in a sense to partially retract the projecting forward end portion of said elongated rack pull rod into said elongated housing;
return means for returning said lever means and elongated rack pull rod following such manipulation;
said projecting forward end portion of said elongated rack pull rod having a series of rack teeth provided thereon which constitute a rack constructed and arranged to operatively, meshingly engage with said wind-up means of said mechanically wound-up motor of said toy;
an elongated drive activator rod longitudinally slidably mounted to said elongated housing and having a forward end portion projecting forwardly from said forward end portion of said elongated housing;
button means mounted on said rear end portion of said elongated housing and including means operatively connecting said button means with said elongated drive activator rod, so that as the button means is manipulated the elongated drive activator rod is longitudinally reciprocated in a sense to longitudinally move the projecting forward end portion of said elongated drive activator rod;
return means for returning said button means and said elongated drive activator rod following such manipulation;
said projecting forward end portion of said elongated drive activator rod including catch releasing end surface means provided thereon and being constructed and arranged to engage and releasingly trigger said releasable catch; and
means on said forward end portion of said elongated housing for releasably locking said elongated wand-type actuator to said toy body.

4,501,568
SHUTTLE WHEEL TOY
Muneo Nagaoka, Tokyo, Japan, assignor to I & K Trading Company, Washington, D.C.
Filed Sep. 2, 1983, Ser. No. 528,800
Claims priority, application Japan, Jul. 28, 1983, 58-136700
Int. Cl.³ A63H *33/02*
U.S. Cl. 446—450 5 Claims



1. A shuttle wheel amusement device comprising:
a pair of metal shuttle wheel support rails, said rails being substantially parallel and of equal length, and each of said rails having a basal end and a distal end;
a shuttle wheel disposed between and magnetically secured to said pair of metal shuttle wheel support rails, said shuttle wheel having
a light permeable synthetic casing with substantially circular side walls projecting on either side of an imaginary surface extending from one of said support rails to the other of said support rails at corresponding points on said support rails, each of said side walls having an opening located in substantially the center of said side walls,
a rotary shaft of sufficient length to contact and be magnetically supported by both of said shuttle wheel support rails, said rotary shaft being operable to move along said support rails when said support rails are tilted with respect to said rotary shaft, and said rotary shaft extending through each of said openings in said side walls, and
a light emission element comprising a pair of light emis-

sion diodes of different colors positioned within said synthetic casing and anchored to said rotary shaft to turn about said rotary shaft and move with said shaft along said support rails; and

a gripping means operable to be held and oscillated by hand motion, said gripping means comprising

a pair of support rail openings operable to receive each of said basal ends of said shuttle wheel support rails, and

a power supply and control assembly having

a pair of metal terminals, each of said terminals contacted to an end of one of said shuttle wheel support rails,

an on/off power switch,

a pair of power cells positioned within said gripping means and operable to selectively impart a positive charge to one of said support rails and a negative charge to the other of said support rails, and

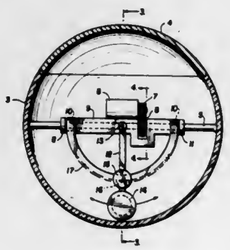
a polarity changeover switch having a first position and a second position such that when said power switch is in an on position and said polarity changeover switch is in said first position only one of said light emission diodes is illuminated, and when said polarity changeover switch is in said second position only the other of said light emission diodes is illuminated.

4,501,569

SPHERICAL VEHICLE CONTROL SYSTEM

Leonard R. Clark, Jr., 128 Weldy Ave., Oreland, Pa. 19075, and Howard P. Greene, Jr., 31 S. Main St., Schwenksville, Pa. 19473

Filed Jan. 25, 1983, Ser. No. 460,930
Int. Cl.³ A63H 29/22, 30/04, 17/36
U.S. Cl. 446—458 **9 Claims**



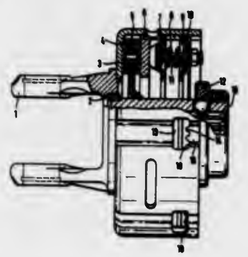
1. A spherical vehicle control system comprising, a spherical shell adapted to roll on a supporting surface, an axle extending diametrically across the interior of said shell, the ends of said axle being rigidly connected to the inner surface of said shell, frame means mounted on said axle, motor drive means mounted on said frame means and operatively connected to said axle for rotating said axle and associated spherical shell to thereby cause said shell to roll on a supporting surface, said frame means being journaled on said axle whereby said frame means remains in a vertical plane during rotation of said shell, mass means, means suspending said mass means from said frame means so that it is movable in a plane containing said axle, and control means operatively connected to said mass means for changing the position of said mass means by moving it toward one end of said axle or toward the other end thereof during the rolling motion of said shell, to thereby shift the center of gravity of said shell, whereby continuous steering of the vehicle is accomplished during the rolling thereof.

4,501,570

ADJUSTABLE FRICTION CLUTCH

Mathias Konrad, Troisdorf, Fed. Rep. of Germany, assignor to Jean Walterscheid GmbH, Lohmer, Fed. Rep. of Germany

Filed Dec. 17, 1982, Ser. No. 450,743
Claims priority, application Fed. Rep. of Germany, Dec. 24, 1981, 3151486
Int. Cl.³ F16D 7/02
U.S. Cl. 464—48 **5 Claims**



1. An adjustable friction clutch particularly for protecting a drive line for an agricultural implement driven from the power takeoff shaft of a tractor comprising: a clutch hub adapted to be connected to said power takeoff shaft; at least one driving plate connected in rotative driving engagement with said clutch hub; a dished housing in operative torque transmitting engagement with said clutch hub having a surface provided with channels uniformly distributed on the circumference thereof pointing radially inwardly and extending axially; an adjustable supporting ring arranged on the surface of said clutch housing; pressure plate means interposed for frictional engagement between said housing and said hub; spring means acting on said clutch through said pressure plate means with the reaction force of said spring means being supported through said supporting ring; tongue means on said supporting ring having a toothed configuration corresponding to said channels in said dished housing, said tongue means pointing radially outwardly and extending obliquely at an angle relative to a radial plane perpendicular to the axis of said clutch; said supporting ring being rotatable relative to said housing so as to adjust the tension of said spring means thereby to effect adjustment of the torque transmission characteristics of said clutch; and stop means on the surface of said dished housing in the region of said channels arranged at the same distance from the edge of said housing for limiting the range of movement of said adjustable supporting ring.

4,501,571

LARGE OPERATING ANGLE CONSTANT-SPEED JOINT

Michel A. Orain, Conflans Sainte Honorine, France, assignor to Glaenzer Spicer, Poissy, France

Filed Mar. 9, 1983, Ser. No. 473,435
Claims priority, application France, Mar. 15, 1982, 82 04323
Int. Cl.³ F16D 3/16, 3/26
U.S. Cl. 464—111 **12 Claims**

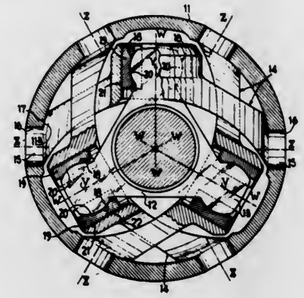
1. A constant-speed joint for interconnecting two shafts and comprising:

two elements, each said element being rigid and coaxial with a respective one of said shafts;

a plurality of yokes interconnecting said two elements;

means for mounting each said yoke on one of said elements to pivot about an axis perpendicular to the axis of said one element; and

means for mounting each said yoke on the other of said element and comprising a double pivotal mounting and a



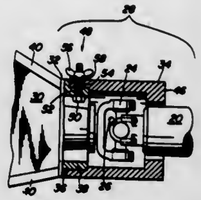
slidable connection allowing a sliding motion along an axis perpendicular to the axis of said other element.

4,501,572

PROTECTIVE COVER ASSEMBLY FOR A GREASE FITTING

Wolfgang Hook, Viernheim, Fed. Rep. of Germany, assignor to Deere & Company, Moline, Ill.

Filed Jun. 23, 1982, Ser. No. 391,321
Claims priority, application European Pat. Off., Aug. 26, 1981, 81303906.2
Int. Cl.³ F16D 3/84
U.S. Cl. 464—170 **3 Claims**



1. A protective cover assembly for a grease fitting formed on a universal joint, said universal joint being part of a Cardan shaft which is capable of transmitting torque between a transmission and a gear case, said protective cover assembly comprising:

(a) a cover plate projecting outward from said gear case and encircling a portion of said Cardan shaft;

(b) a support member including a flange having a stepped outer surface with a radially aligned aperture formed in a smaller diameter surface and having three equally spaced apart legs which extend outward from said flange toward said gear case, said legs straddling said cover plate and being attached to said gear case such that when said support member is attached to said gear case, said smaller diameter surface encircles a portion of said Cardan shaft and is located adjacent to said universal joint;

(c) a one-piece tubular sleeve having a first end slidably positioned onto said smaller diameter surface of said support member in a direction axially of said Cardan shaft to completely cover said universal joint, and having a second end with a smaller diameter aperture formed therein through which said Cardan shaft passes, said sleeve further having an L-shaped slot extending inward from said first end whereby the base leg of said L-shaped slot is aligned with said aperture formed in said support member when said sleeve is fully positioned on said flange; and

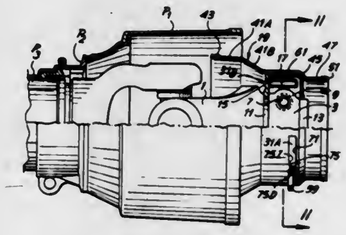
(d) a single attachment device extending upward through said aperture formed in said support member and through said L-shaped slot formed in said sleeve for releasably securing said sleeve to said support member whereby said grease fitting is protected from contamination when said sleeve is secured to said support member and whereby access is provided to said grease fitting when said sleeve is released and slid back away from said support member irrespective of the radial direction along which said grease fitting happens to lie.

4,501,573

PROTECTION DEVICE FOR A UNIVERSAL JOINT

Edi Bondioli, Via Gina Bianchi 18, Suzzara, Italy

Filed Jul. 6, 1982, Ser. No. 395,719
Claims priority, application Italy, Jul. 14, 1981, 9474 A/81
Int. Cl.³ F16D 3/84
U.S. Cl. 464—172 **4 Claims**



1. In a protection device for a universal joint, comprising a bifurcated part, said bifurcated part having two axially spaced annular seatings,

a splined coupling sleeve portion,

retaining means co-operating with said sleeve portion to retain said sleeve portion on an associated shaft,

a first ring part,

a second ring part,

said ring parts, when assembled together, being mounted on said seatings of said bifurcated part to form assembled ring parts,

protection sleeve means mounted on the assembled ring parts,

means serving to maintain the protection sleeve on said assembled ring parts, said means serving to maintain the protection sleeve on said assembled ring parts comprising means defining a slot in said protection sleeve and a resilient snap-action tongue formed in said assembled ring parts and capable of penetrating the slot,

said slot in the protection sleeve being of arcuate form and allowing the tongue of the ring to make relative angular movements between extreme positions, wherein said assembled sleeve and ring parts each define a peripheral surface of revolution which mate with each other, the two surfaces having respective apertures which are aligned in one relative location of the tongue in the slot and are offset in another relative location of the tongue in the slot.

4,501,574

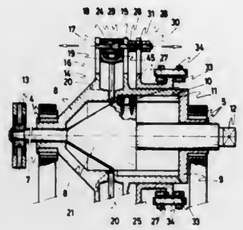
TRANSMISSION RATIO VARIATORS

Pedro Ybern Miro, C/Guipúzcoa, 159-4°, Barcelona - 20, Spain

Filed Aug. 24, 1983, Ser. No. 526,130
Claims priority, application Spain, Jul. 19, 1983, 524.266
Int. Cl.³ F16H 9/02
U.S. Cl. 474—49 **4 Claims**

1. Improvements in transmission ratio variators wherein there is established the transmission between a drive shaft and a driven shaft between two orbital systems comprising gear wheels which move concentrically to their respective shafts and where the radii of each orbit are simultaneously variable, the gear wheels being mounted on shafts which are radially displaced in notches made in peripheric wings of sleeves joined to the control elements of the orbits, characterised in that each

of the shafts of the gear wheels has a truncated thickening contained in a housing provided in each gear wheel, and said shafts are axially displaced being blocked in and unblocked from the wheels depending on the direction of the displace-



ment thereof which is controlled by a disc emerging from a ring which is displaced along the sleeve controlled by a double fork whose movement is controlled at will and is produced by conventional means.

4,501,575

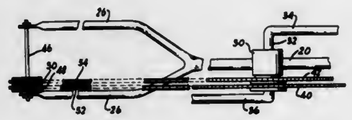
MULTI-SPEED TRANSMISSION FOR BMX BICYCLES AND THE LIKE

Fernand S. Lapeyre, 1224 Octavia St., New Orleans, La. 70115

Continuation-in-part of Ser. No. 525,319, Aug. 22, 1983, abandoned. This application Feb. 6, 1984, Ser. No. 577,138

Int. Cl.³ F16H *9/00*

U.S. Cl. 474—74 **13 Claims**



1. A multispeed transmission system for BMX bicycles and the like having a frame, a pedal drive shaft and a rear wheel having a transverse hub, comprising

a high and a low speed pedal drive sprocket fixedly mounted in parallel closely spaced adjacent relation on the pedal drive shaft on one side of said frame,

an exposed portion of said hub extending transversely from said rear wheel on said one side of said frame providing a transmission system support surface,

a high and a low speed wheel drive sprocket mounted in parallel closely spaced adjacent relation on said transmission system support surface portion of said rear wheel hub.

a first drive chain connecting said high speed pedal and wheel sprockets,

a second drive chain connecting said low speed pedal and wheel sprockets,

a first overrunning roller element clutch disposed intermediate said high speed wheel drive sprocket and said transmission system support surface portion of said rear wheel hub,

a second overrunning roller element clutch disposed intermediate said low speed wheel drive sprocket and said transmission system support surface portion of said rear wheel hub,

said high speed wheel drive sprocket being normally biased in response to rotation of said pedal drive shaft into controlling driving relation with said rear wheel hub through said transmission system support surface to drive said rear wheel and in overriding relation with said low speed wheel drive sprocket, and

means responsive tomanual manipulation by a rider of said bicycle for selectively and temporarily disengaging said high speed wheel drive sprocket from driving relation with said rear wheel hub to permit said low speed wheel drive sprocket to drive said rear wheel without effective interruption of drive in response to continued rotation of said pedal drive shaft,

wherein said first and second overrunning clutches each comprise a cage member and roller means displaceable into wedged driving engagement intermediate said wheel sprockets and said transmission system support surface on said rear wheel hub.

4,501,576

POWER TRANSMISSION MECHANISM

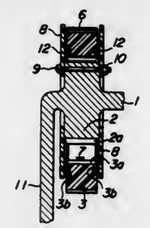
Mitsuo Tanaka, Kuki, and Kunitoshi Kozakae, Ageo, both of Japan, assignors to Bridgestone Cycle Co., Ltd., Tokyo, Japan

Filed Nov. 2, 1982, Ser. No. 438,499

Claims priority, application Japan, Nov. 12, 1981, 56-180320; Nov. 19, 1981, 56-184372; Nov. 19, 1981, 56-184373

Int. Cl.³ F16H *7/08*

U.S. Cl. 474—141 **4 Claims**



1. A power transmission mechanism comprising a gear member formed with external gear teeth and fixedly secured to a first axle, an annular floating member formed with internal gear teeth meshed with the external gear teeth of the gear member, a transmission wheel member spaced from the floating member and the gear member and fixedly secured to a second axle, an endless and flexible transmission member engaging the outer peripheries of the floating member and the transmission wheel member, a pair of annular guide plates connected to the outer sides of one of the group of the floating member and the gear member for rotation therewith and for preventing disengagement of the floating member laterally from the gear member, the guide plates each having an inner periphery whose diameter is determined such that at any angular position of the floating member with respect to the gear member the entire inner periphery extends inwards beyond the root circle of the gear member while being spaced from the first axle, and a pair of seal rings arranged between the opposite inner sides of the guide plates and both outer sides of the other of the floating member and the gear member for preventing entry of foreign material into a space formed between the gear member and the floating member.

4,501,577

SPROCKET WHEEL

Franz Roling, and Gunther D. Schoop, both of Lunen, Fed. Rep. of Germany, assignors to Gewerkschaft Eisenhutte Westfalia, Fed. Rep. of Germany

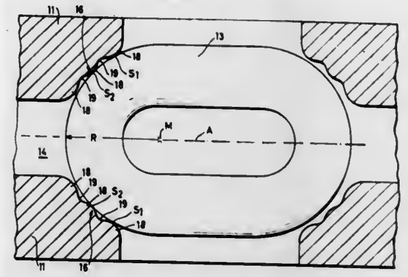
Filed Apr. 21, 1982, Ser. No. 370,632

Claims priority, application Fed. Rep. of Germany, Apr. 22, 1981, 3115927

Int. Cl.³ F16H *55/30, 7/00*; B65G *25/06*

U.S. Cl. 474—155 **11 Claims**

1. A sprocket wheel having a plurality of equi-spaced circumferential teeth, each pair of adjacent teeth defining therebetween a pocket, the pockets being shaped to engage links of a drive chain, said teeth having flanks constituting chain link bearing faces, each of the pockets being formed partially by the flanks of a pair of adjacent teeth defining that pocket, the improvement wherein each of the flanks has at least three distinct bearing surfaces which define multiple contact points between the chain links engaged the flanks of said pair of



adjacent teeth, such that said at least three distinct bearing surfaces ensure multiple point contact between said chain links and each flank irrespective of minor size variation in said chain links, thereby eliminating high loading peaks and preventing dangerous notching and heavy wear of the chain links.

4,501,578

RIDERS FOR TRAPEZOIDAL DRIVE BELT

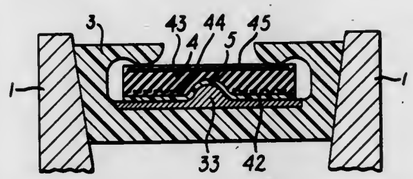
Andre Schneider, Wallisellen, Switzerland, assignor to Compagnie Generale des Etablissements Michelin, Clermont-Ferrand, France

Filed Nov. 4, 1983, Ser. No. 549,541

Claims priority, application France, Nov. 18, 1982, 82 19480

Int. Cl.³ F16G *1/00*

U.S. Cl. 474—201 **13 Claims**



1. A drive belt, the cross-section of which has a substantially trapezoidal outer contour, formed essentially of at least one flexible possibly hysteretic core having a body and inner and outer faces, which is closed on itself and is substantially nonextendible in the longitudinal direction of the belt, optionally having a longitudinal and/or transverse reinforcement, and of an assembly of independent riders which are substantially noncompressible in the longitudinal direction of the belt and are mounted on the core, characterized by the fact that

at least one of the inner or outer faces of the core, seen in cross-section, has at least one continuous cutout in the longitudinal direction of the belt; and

at least one portion of the riders has a protuberance of corresponding shape housed permanently within the cutout so that the cutout and protuberance cooperate to assure transverse guidance of the riders on the core.

4,501,579

CIGARETTE FILTER UNITS

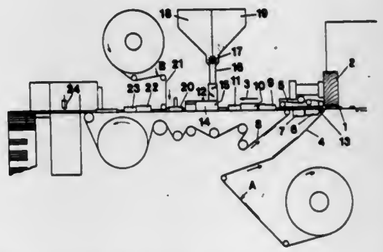
Serge Boegli, Zürich, and Jean-Pierre Lebet, Montreux, both of Switzerland, assignors to F. J. Burrus & Cie., Boncourt and Baumgartner Papier S.A., Crissier, both of, Switzerland

Division of Ser. No. 892,086, Mar. 31, 1978, Pat. No. 4,281,591, and a continuation of Ser. No. 197,505, Oct. 16, 1980, abandoned. This application Nov. 14, 1983, Ser. No. 552,005

Claims priority, application Switzerland, Apr. 4, 1977, 4178/77

Int. Cl.³ A24C *5/50*

U.S. Cl. 493—45 **2 Claims**



1. A cigarette chamber filter unit produced in an apparatus from a plurality of filter elements with the aid of a porous and continuously supplied covering strip transported in a moving direction, so as to produce a continuous filter strand having a plurality of chamber openings, and with the aid of a filling device and a closing strip, by means of steps comprising:

applying an adhesive substance in the form of spots or short lines to said covering strip along a plurality of approximately equispaced coating tracks,

orienting said coating tracks so that each coating track forms a predetermined angle with said moving direction, and so that said adhesive substance will be applied on at least three locations separated from one another, along a line at right angles to the moving direction of said covering strip, the lateral spacing between said coating tracks being at least three times as large as the width of the coating tracks of said adhesive substance,

at least partially wrapping said covering strip around said filter strand,

introducing granular filter material into said openings to form filter chambers,

applying an adhesive substance in the form of spots or short lines to said closing strip along a plurality of approximately equispaced closing strip coating tracks,

orienting said closing strip coating tracks so that each closing strip coating track forms a predetermined angle with said moving direction,

adhesively covering said chamber openings with said closing strip, and

thereafter subdividing said filter strand into a multiplicity of units, each of said units constituting said cigarette chamber filter unit.

4,501,580

INDWELLING CATHETERS

Jacob A. Glassman, 1680 Michigan Ave., Miami Beach, Fla. 33139

Continuation of Ser. No. 215,568, Dec. 12, 1980,. This application Jan. 21, 1983, Ser. No. 459,837

Int. Cl.³ A61M *25/00*

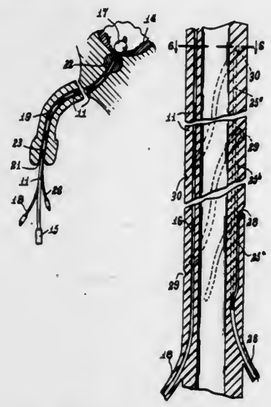
U.S. Cl. 604—43 **3 Claims**

1. A catheter for use in the irrigation of a bladder and flushing of urethral and prostatic canal, comprising;

a. a flexible tubular member having an annular wall of uniform diameter;

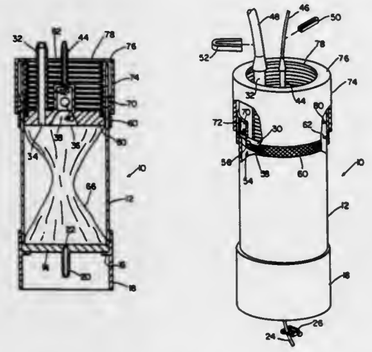
b. said wall having exterior and interior surfaces;

c. said tubular member having a closed end for insertion into the bladder and an open outer end;
d. an annular inflation balloon adjacent the insertable end of said tubular member;
e. the interior surface of said tubular member forming an axial flow duct of uniform diameter having at least one drain hole near said closed end to receive fluid drainage from the bladder;
f. a passage in the wall of said tubular member extending from said tubular outer end and opening at it's other end into the interior of said balloon;



g. a relative deep channel in said exterior surface of said tubular member extending from adjacent the open outer end of said member into close proximity with the balloon;
h. a fluid passageway in the annular wall of said member: and
i. at least one radial vent in said tubular member flow-connecting said fluid passageway with said channel whereby fluid delivered through the vent enters the channel for distribution on the walls of the prostatic and urethral canals to eliminate ascending infection in said channel.

4,501,581
METHOD FOR AUTOTRANSFUSION OF BLOOD
Leonard D. Kurtz, Woodmere, and Joseph LiCausi, Port Jefferson Station, both of N.Y., assignors to BioResearch Inc., Farmingdale, N.Y.
Division of Ser. No. 290,666, Aug. 5, 1981, Pat. No. 4,424,053. This application Sep. 23, 1983, Ser. No. 535,033
Int. Cl.³ A61M *31/00*
U.S. Cl. 604—52 **3 Claims**

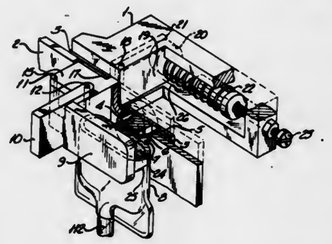


1. A method of autotransfusing a patient comprising the steps of connecting a single collection chamber with a source of suction, aspirating blood from a pool of blood within the patient by an aspirating tube connected to the collection chamber, depositing the aspirated blood in said collection chamber while applying suction to the chamber to withdraw air therefrom, discontinuing the suction applied to said chamber and discontinuing the aspiration step when the collection chamber is filled with blood to the desired extent, applying a squeezing external pressure to said collection chamber, forcing the remaining air out of an outlet in the collection chamber and subsequently forcing the blood within the collection chamber into the patient's circulatory system.

4,501,582
PERFUSION KIT
Volker Schulz, Laudahnstrasse 37, Koln 41, Fed. Rep. of Germany
Continuation of Ser. No. 328,208, Dec. 7, 1981, abandoned. This application Dec. 5, 1983, Ser. No. 558,566
Claims priority, application Fed. Rep. of Germany, Dec. 20, 1980, 3048211
Int. Cl.³ A61M *5/00*
U.S. Cl. 604—52 **4 Claims**

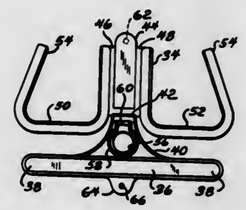
1. Sodium nitroprusside-sodium thiosulfate perfusion kit comprising the following components:
1. a sealed container of sodium thiosulfate aqueous solution, said container having a penetrable closure,
2. a syringe of light-opaque material with attached cannula adapted to penetrate said closure, to obtain a prescribed volume of said solution,
3. perfusion tubing of light-opaque plastic material adapted to be attached to said syringe, and
4. a sealed container of dry solid sodium nitroprusside adapted to be dissolved by said aqueous solution to form a mixed stable aqueous solution in said syringe, the amount of said sodium nitroprusside being from ⅛ to 1/20 of the weight of said sodium thiosulfate present in said solution in said syringe,
wherein said mixed stable aqueous solution may be safely injected into a patient.

4,501,583
HEMODIALYSIS ACCESS MONITORS
Vernon H. Troutner, St. Petersburg, Fla., assignor to Extracorporeal, Inc., King of Prussia, Pa.
Filed Jun. 15, 1983, Ser. No. 504,659
Int. Cl.³ A61B *5/02*; A61M *5/00, 1/03*; G01L *7/08*
U.S. Cl. 604—118 **19 Claims**



1. A fluid pressure monitor for detecting the presence of first and second opposite pressure levels relative to an intermediate pressure level in a flexible fluid tubing segment comprising:
first detection means located on one side of said tubing segment, and responsive to the attainment of said first pressure level in said tubing segment for detecting said first pressure level;
lever means having a proximal end located on the other side of said tubing segment from said first detection means for retaining said tubing segment between said first detection means and said lever means, a distal end, and a pivot point intermediate said proximal and distal ends for pivoting said lever means in the presence of pressure changes in said tubing segment; and
second detection means, activated by said distal end of said lever means upon the attainment of said second pressure level in said tubing segment, for detecting said second pressure level.

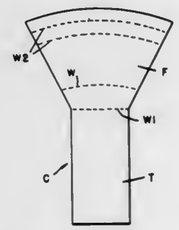
4,501,584
LIQUID DRAINAGE SYSTEM WITH FORMED HINGED SUPPORT SHEET
James P. Cianci, Cary, and William J. Dunn, Libertyville, both of Ill., assignors to The Kendall Company, Boston, Mass.
Filed Mar. 4, 1983, Ser. No. 472,402
Int. Cl.³ A61M *1/00*
U.S. Cl. 604—322 **4 Claims**



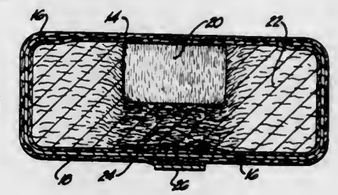
1. A liquid drainage system, comprising:
a receptacle having a chamber to receive the liquid;
a drainage tube communicating with the chamber;
a formed sheet of flexible material, with said sheet being of one-piece construction, said sheet having an elongated bar received in an upper portion of the receptacle, a first connecting portion extending from one side of the bar at a generally central location thereof, a first hinge extending across the sheet at an outer end of the first connecting portion, a second elongated connecting portion extending from the first hinge on a side of the first hinge opposite the first connecting portion, said second connecting portion being flexed about the first hinge to align the first and second connecting portions in a facing relationship, second and third hinges extending along opposed sides of the second connecting portion, and first and second hook members connected to said second and third hinges, with the hook members having downwardly extending outer ends, said hook members being movable between a first position generally perpendicular to the receptacle to support the receptacle from an object, and a second position generally aligned with the receptacle with the outer ends of the hook members being located in front of said bar to form a handle to carry the receptacle including means for securing the first and second connecting portions in the facing relationship.

4,501,585
MOTHER'S MILK HARVESTING AND COLLECTION DEVICE
Laura L. Friedman, 6348 Trotwood, Portage, Mich. 49008
Filed Aug. 23, 1982, Ser. No. 410,381
Int. Cl.³ A61F *5/44*
U.S. Cl. 604—346 **13 Claims**

1. A collapsible mother's-milk harvesting device, suitable for the collection of mother's milk from a human milk-providing breast, adapted, in the collapsed mode to lie flat and, in the opened-up mode to form an essentially single integral liquid-tight receptacle comprising an upper breast-receiving portion means and a lower milk-receiving portion, said upper portion means, in the opened-up mode, being adapted for the reception of a breast therein, and said lower portion means, in the same mode, being in internal communication with said upper portion means and having a size and shape to permit its disposition in a plastic-film-baby-bottle holding device as the milk-containing container-liner thereof, and said lower portion means having an upper section adapted to be rolled down over the open end of a plastic-film-baby-bottle holding device having an outer wall and to be held in place thereon between the outer wall thereof and a wall of a nipple.



4,501,586
ABSORBENT STRUCTURE WITH RESERVOIR
Dennis C. Holtman, Flemington, N.J., assignor to Personal Products Company, Milltown, N.J.
Continuation-in-part of Ser. No. 207,524, Nov. 17, 1980,. This application Mar. 11, 1983, Ser. No. 474,396
Int. Cl.³ A41B *13/02*
U.S. Cl. 604—380 **6 Claims**



1. An absorbent structure suitable for absorption of body fluids comprising a moisture-impermeable backing sheet; an absorbent, loosely-compacted, cellulosic fibrous batt, superimposed on said backing sheet; and a moisture-permeable fabric cover, covering at least the side of said absorbent batt opposite said backing sheet, said absorbent batt being provided with a reservoir having a capacity of at least 10 cc, covers at least one square inch but does not cover more than 25% of the surface of said absorbent batt said reservoir being situated between the center and one transverse end and being formed by compression of the cellulosic fibrous batt such that the depth of said reservoir is more than one-half the thickness of said absorbent batt.

4,501,587

DISPOSABLE DIAPER HAVING IMPROVED ABSORBENT PAD ARRANGEMENT

Kenneth M. Enloe, Winnebago County, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.

Filed Sep. 30, 1982, Ser. No. 430,621

Int. Cl.³ A61F *13/16*

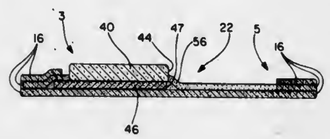
U.S. Cl. 604—385 **13 Claims**

1. A disposable diaper comprising, in combination:

a crotch area;

a main pad assembly having a transverse fold line in the crotch area dividing the diaper into front and rear sections, a liquid impervious cover sheet, a liquid pervious liner sheet opposite the cover sheet, and a main absorbent pad disposed between the liner and cover sheets;

the main pad assembly, when the diaper is in at least a partially folded condition, having a pair of longitudinal fold portions extending toward the longitudinal centerline of the diaper, said fold portions including a portion of the main absorbent pad and having spaced apart opposed



edges defining a space between the fold portions; and

an auxiliary absorbent pad positioned between the opposed edges of the fold portions in said space only in said front section and said diaper.

4,501,588

INSTANT THREAD DYEING METHOD FOR SEWING MACHINE

Ryoichi Suzuki, and Yoshio Yamaguchi, both of Tokyo, Japan, assignors to Janome Sewing Machine Industry Co., Ltd., Japan

Filed Oct. 13, 1982, Ser. No. 434,147

Claims priority, application Japan, Oct. 13, 1981, 56-162026

Int. Cl.³ D06P *5/20*

U.S. Cl. 8—444 **6 Claims**

1. A method for dyeing a sewing machine thread which is continuously supplied for a stitching operation, comprising the steps of:

(a) adding a coloring material to a photo-setting resin solution to prepare a dyeing liquid,

(b) continuously supplying a thread for a stitching operation

(c) applying said dyeing liquid to said continuously supplied thread, and

(d) irradiating said thread with ultraviolet rays for setting said dyeing liquid on said thread.

4,501,589

PROCESS FOR DYEING OR PRINTING SIZED TEXTILES

Christian Oschatz, Schallbach, Fed. Rep. of Germany, assignor to Sandoz Ltd., Basle, Switzerland

Filed Jun. 10, 1983, Ser. No. 503,271

Claims priority, application Fed. Rep. of Germany, Jun. 11, 1982, 3222080

Int. Cl.³ D06P *1/44, 3/42*

U.S. Cl. 8—495 **26 Claims**

1. A process for dyeing or printing a warp sized woven textile substrate which comprises applying to said sized substrate a dyeing liquor or printing paste comprising, in addition to one or more dyestuffs,

(i) a non-ionic anionic or cationic surfactant and

(ii) a textile size or mixture of textile sizes.

4,501,590

INSTANT THREAD DYEING METHOD FOR SEWING MACHINES

Ryoichi Suzuki, and Yoshio Yamaguchi, both of Tokyo, Japan, assignors to Janome Sewing Machine Industry Co., Ltd., Japan

Filed Jun. 24, 1983, Ser. No. 507,411

Claims priority, application Japan, Jun. 25, 1982, 57-108497

Int. Cl.³ D06P *5/02*

U.S. Cl. 8—495 **6 Claims**

1. A method for dyeing a continuously supplied sewing machine thread comprising the steps of:

(a) preparing a coloring liquid consisting of 2–15 wt.% of a coloring paste containing 20–40 wt.% of a pigment formed of particles having a diameter not more than 5 microns, 15–30 wt.% of an emulsion containing 30–40 wt.% of an acrylic resin, and the remainder water;

(b) providing a continuously supplied sewing machine thread,

(c) uniformly applying said coloring liquid to said thread;

(d) bringing said thread into contact with a hot plate heated to a temperature of 180°–240° C. for 1–3 seconds, thereby drying and setting said coloring liquid on said thread; and

(e) successively supplying the colored thread for a stitching operation with a sewing machine.

4,501,591

PROCESS FOR CONVENIENTLY PROVIDING STAIN-RESISTANT POLYAMIDE CARPETS

Pompello A. Ucci, Pensacola, and Randolph C. Blyth, Gulf Breeze, both of Fla., assignors to Monsanto Company, St. Louis, Mo.

Continuation-in-part of Ser. No. 565,439, Dec. 27, 1983, abandoned. This application Jun. 29, 1984, Ser. No. 626,259

Int. Cl.³ D06P *1/56, 3/24, 1/673*

U.S. Cl. 8—495 **10 Claims**

1. In a process for continuously dyeing a carpet having a pile consisting essentially of polyamide fibers wherein an endless length of the carpet is passed through a treating zone in which the carpet is first prewetted, then treated with an aqueous dye liquor wherein the liquor ratio is in the range of 1.5:1.0 to 4.5:1.0, then, subjected to an atmosphere of steam to fix the dye on the carpet, then washed with water to remove residual liquor from the carpet and, finally, dried, the improvement of imparting stain resistance to the carpet comprising adding a silicate of the formula $M_2O.mSiO_2$ and either a sulfonated phenol-formaldehyde condensation product or a sulfonated naphthol-formaldehyde condensation product or mixtures thereof to the liquor each in an amount sufficient in combination to impart stain resistance to the carpet, where M is an alkali metal and m is a number ranging from about 0.5 to 2.0.

4,501,592

ANTHRAQUINONE DYES, PROCESS FOR THEIR PREPARATION, AND USE THEREOF

Jean-Marie Adam, Rosenau, France, and Peter Bloch, Muttenz, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Aug. 10, 1983, Ser. No. 521,904

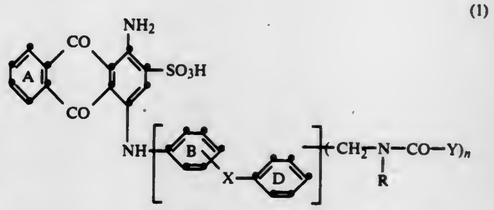
Claims priority, application Switzerland, Aug. 23, 1982, 5000/82

Int. Cl.³ C09B *1/34;* **D06P** *1/40*

U.S. Cl. 8—676 **15 Claims**

1. A dye of the formula

(1)



wherein X is oxygen or sulfur, R is hydrogen or C_1–C_4alkyl, Y is an unsubstituted or substituted aryl radical, n is 1, 2 or 3, the benzene ring A may be substituted by halogen and the benzene rings B and D may each independently be substituted by halogen, C_1–C_4alkyl, C_1–C_4alkoxy or a radical of the formula $—O—CH_2CH_2—O—R_1$, wherein R_1 is hydrogen, methyl or ethyl.

4,501,593

PROCESS FOR THE PRODUCTION OF AGGLOMERATED FUELS

Michael Paersch, Aachen; Herbert Mrotzek; Helmut Haukelt, both of Hamburg, and Heinz-Wilhelm Schreckenberg, Brilon, all of Fed. Rep. of Germany, assignors to The British Petroleum Company p.l.c., London, England

Filed Jun. 9, 1983, Ser. No. 502,747

Claims priority, application Fed. Rep. of Germany, Jun. 22, 1982, 3223194

Int. Cl.³ C10L *5/16, 5/22*

U.S. Cl. 44—23 **10 Claims**

1. A process for the pelletization of finely divided solid carbonaceous material using a first binder which is a water-sol-

uble or swellable thermo-hardening material and a second binder which is an aqueous emulsion of a heavy hydrocarbon and comprising the steps of drying and then thermally hardening the pellets is characterised by the fact that by adding the first and second binder separately during the pelletization process, the concentration of the first binder in the green pellet decreasing from the interior of the exterior and that of the second binder from the exterior to the interior.

4. Process according to claim 1 characterised by the fact that the concentration gradient in the pellets is set by applying the first binder preferentially to the non-agglomerated feed to the pelletizing process or to the smaller agglomerates, and the second binder preferentially to the larger agglomerates.

6. Process according to claim 4 characterised by the fact that in the case of non-continuous production, the concentration gradient in the pellets is produced by alternating spraying with the first and second binders, the spray times for the first binder being set successively shorter and for the second binder successively longer.

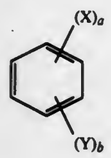
4,501,594

ANIONIC POLYHYDROXY POLYPHENYL COMPOUNDS AS DISPERSANTS FOR AQUEOUS SLURRIES OF CARBONACEOUS MATERIALS

Alphonso W. Marcellis, Boonton; Grannis S. Johnson, Plainfield, and Reuben H. Grinstein, Denville, all of N.J., assignors to Diamond Shamrock Chemicals Company, Dallas, Tex.

Filed Oct. 21, 1983, Ser. No. 544,076
Int. Cl.³ C10L *1/18*
U.S. Cl. 44—51 **12 Claims**

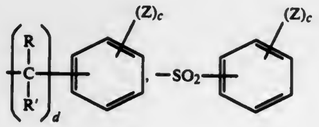
1. An aqueous carbonaceous slurry containing at least one dispersant selected from the group consisting of (a) water soluble hydroxy aromatic product having the following formula:



where

X is —OH or —O Cation

Y is



or R″

a is 1, 2 or 3; b is 0, 1 or 2

c is 0, 1 or 2; d is 0 or 1

Z is —OH or —O Cation

R and R′ are H or lower alkyl and may be the same or different

R″ is an alkyl group of 1 to 20 carbon atoms with the proviso that where a is 1, b is 0, 1 or 2 where a is 2, b is 0 or 1 and where a is 3, b is 0

which has been sulfomethylated, and (b) condensates of (a) with from about 0.25 to about 3.0 moles of formaldehyde per mole of (a), said dispersant present in an amount of from about 0.05% by weight to about 2.0% by weight of the carbonaceous material present in the slurry.

4,501,595

MIDDLE DISTILLATE FUEL OIL OF IMPROVED STORAGE STABILITY CONTAINING CONDENSATE OF MANNICH BASE AND ALKENYL SUCCINIC ACID ANHYDRIDE

Rodney L. Sung, Fishkill, and Thomas J. Karol, Wappingers Falls, both of N.Y., assignors to Texaco Inc., White Plains, N.Y.

Filed May 25, 1984, Ser. No. 613,925
Int. Cl.³ C10L *1/18*
U.S. Cl. 44—57 **14 Claims**

1. A middle distillate fuel oil composition characterized by improved storage stability which comprises

a major portion of a middle distillate fuel oil; and

a minor stability-improving amount of an additive prepared by reacting (i) a primary or secondary polyamine, (ii) an aldehyde, and (iii) a phenol containing an active hydrogen thereby forming a phenol-aldehyde-amine condensate;

reacting said phenol-aldehyde-amine condensate with (iv) a succinic acid anhydride bearing a polyolefin-derived substituent containing residual unsaturation thereby forming product phenol-aldehyde-amine Mannich condensate polyamine succinimide; and

recovering said product phenol-aldehyde-amine Mannich condensate polyamine succinimide.

4,501,596

MOTOR FUEL

Lyle D. Burns, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Dec. 28, 1983, Ser. No. 566,463
Int. Cl.³ C10L *1/22*
U.S. Cl. 44—63 **9 Claims**

1. A gasoline composition containing an antiknock quantity of an additive selected from 1-oxa-3-azacyclopent-2-ene; 1-oxa-3-azacyclopent-3-ene; 1-oxa-3-azacyclopent-4-ene; 1-oxa-3-azacyclopent-2,4-diene and hydrocarbyl substituted derivatives of these compounds.

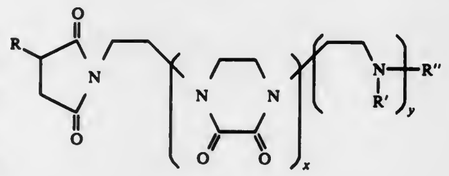
4,501,597

DETERGENT FUEL COMPOSITION CONTAINING ALKENYLSUCCINIMIDE OXAMIDES

Thomas J. Karol, Wappingers Falls, and Rodney L. Sung, Fishkill, both of N.Y., assignors to Texaco Inc., White Plains, N.Y.

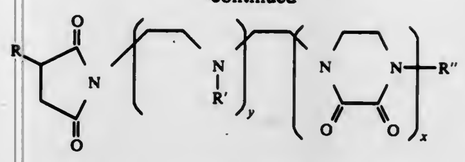
Filed Jul. 2, 1984, Ser. No. 627,134
The portion of the term of this patent subsequent to Jul. 17, 2001, has been disclaimed.
Int. Cl.³ C10L *1/22*
U.S. Cl. 44—63 **7 Claims**

1. A fuel composition comprising a mixture of hydrocarbons boiling in the gasoline boiling range and containing an effective detergent amount of detergent compound of the formula selected from the group consisting of I, II, and mixtures thereof,



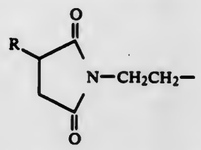
I

-continued



II

in which R is a hydrocarbyl radical having from 8 to 400 carbon atoms, x and y are numbers which range from 0 to 6 whose additive total is from 1 to 6 and which can be the same or different, R′ is a hydrogen radical or a mono- or bi-acyl radical of oxalic acid, and R″ is a hydrogen or hydrocarbyl substituted succinic-N-ethylene radical of the formula:



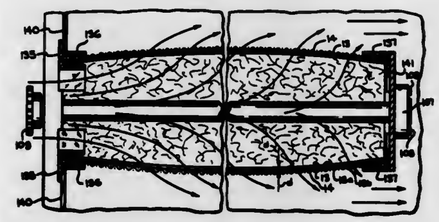
Wherein from about 40 to 100 wt% of said detergent compound is the oxalic acid derivative of mono-succinimide and the remainder comprises the oxalic acid derivative of bis-succinimide.

4,501,598

GAS BORNE PARTICLE FILTERING METHOD

James Long, Bloomfield Hills, Mich., assignor to James M. Hammond, East Lansing, Mich., a part interest

Continuation-in-part of Ser. No. 319,264, Nov. 9, 1981, Pat. No. 4,378,980. This application Nov. 8, 1982, Ser. No. 440,171
Int. Cl.³ B03C *3/64*
U.S. Cl. 55—2 **12 Claims**



1. In a method of filtering gas borne particles in a filtering apparatus wherein inlet and outlet openings (11 and 12) in the apparatus are separated by a filter medium (13) mounted on a porous support (14) for filtration, the improvement which comprises:

(a) providing a small mesh screen as the porous support (14) composed of polymeric strands, the screen having a mesh size of about 6 or greater, in contact with the filter medium (13) which is non-metallic and has a density of about 3.2×10^{-3} to 6.28×10^{-1} grams per cubic centimeter wherein upon interaction of the screen in contact with the filter medium during gas flow across an exposed surface of the filter medium opposite the contact with the screen by a fluttering movement of the filter medium on the screen an electrostatic charge is created which attracts 0.1 micron and larger sized particles to the filter medium for removal from the gas; and

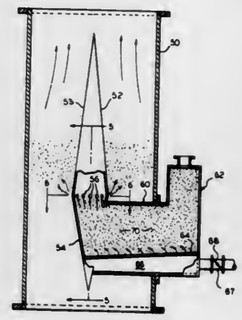
(b) flowing a gas along the surface of the filter medium, through the filter medium and then the screen at a gas velocity of between about 25 and 1000 feet per minute at a pressure drop across the filter medium of less than about 2 inches of water, wherein an increasing percentage of the particles of a particular size are removed as a result of particle loading of the filter medium during filtration.

4,501,599

METHOD AND APPARATUS FOR CLEANING WASTE GASES FROM ALUMINUM PRODUCTION FACILITIES

Isaias Loukos, Knoxville, Md., assignor to Pennsylvania Engineering Corporation, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 327,360, Dec. 4, 1981, abandoned. This application Mar. 1, 1983, Ser. No. 470,787
Int. Cl.³ B01D *53/06*
U.S. Cl. 55—71 **14 Claims**



11. A method of removing hydrogen fluoride, finely divided solids and hydrocarbons from gases evolved from aluminum reduction potlines and anode fabrication baking plants comprising the steps of:

conducting the gases through a vertical scrubbing chamber having a constant cross-sectional area from its lower to its upper end,

fluidizing alumina particles, flowing said fluidized alumina particles to the interior of an injector disposed axially within said chamber and having a plurality of spaced apart openings disposed therein,

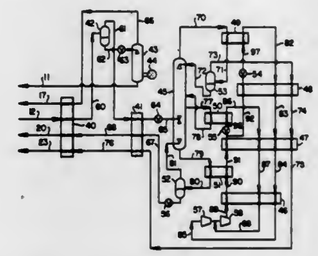
flowing said alumina particles by gravity radially from said injector into said gas stream for adsorption of hydrogen fluoride by the alumina and the deposit of hydrocarbons in finely divided alumina particles.

4,501,600

PROCESS TO SEPARATE NITROGEN FROM NATURAL GAS

Ravindra F. Pahade, North Tonawanda, N.Y., assignor to Union Carbide Corporation, Danbury, Conn.

Filed Jul. 15, 1983, Ser. No. 514,338
Int. Cl.³ F25J *3/02*
U.S. Cl. 62—28 **13 Claims**



1. In a process for removing nitrogen from natural gases

wherein a nitrogen-containing hydrocarbon stream is first separated into a liquid, containing primarily hydrocarbons having two or more carbon atoms, and into a vapor containing primarily nitrogen and methane, and wherein the vapor stream is further separated in one or more rectification columns into nitrogen and methane, the improvement comprising recovering substantially all of the hydrocarbons containing two or more carbon atoms which were present in the nitrogen-containing hydrocarbon stream by the steps of:

(a) cooling the vapor after the first separation by at least 10° K. to partially condense it;

(b) introducing the condensed portion into a stripping column where it is separated into a liquid, containing primarily hydrocarbons having two or more carbon atoms, and into a vapor containing primarily methane;

(c) recovering the hydrocarbon liquid and the methane vapor of step (B); and

(d) introducing the uncondensed portion into the rectification column(s) to be separated into nitrogen and methane.

6. The process of claim 1 comprising maintaining said rectification column(s) at lower than conventional pressures, but precluding vacuum conditions in a heat pump circuit by the steps of:

(a) introducing said uncondensed portion as a nitrogen-containing natural gas feed into a rectification column operating at a pressure in the range of from 200 to 450 psia;

(b) separating the feed in said column into a nitrogen-rich top vapor and a methane-rich bottom liquid;

(c) cooling the top vapor by indirect heat exchange with vaporizing heat pump fluid comprising from 0.5 to 60 mole percent nitrogen and 99.5 to 40 mole percent methane, to partially condense said top vapor;

(d) returning the condensed portion of the top vapor to the column as liquid reflux and removing from the process the uncondensed portion of the top vapor as nitrogen;

(e) warming the bottom liquid by indirect heat exchange with condensing said heat pump fluid to partially vaporize said bottom liquid; and

(f) returning the vaporized portion of the bottom liquid to the column as vapor reflux and recovering the unvaporized portion as product natural gas;

wherein said heat pump fluid is at all times at or greater than ambient pressure.

4,501,601

PROCESS FOR MANUFACTURING GLASS FIBER OPTICAL WAVEGUIDES

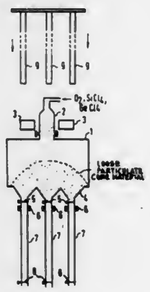
Herbert Haupt, Moglingen, Fed. Rep. of Germany, assignor to International Standard Electric Corporation, New York, N.Y.

Filed May 5, 1983, Ser. No. 492,460

Claims priority, application Fed. Rep. of Germany, May 13, 1982, 3217965

Int. Cl.³ C03B *37/01*

U.S. Cl. 65—2 **17 Claims**



1. A process for manufacturing glass preforms for use in drawing glass fiber optical waveguides therefrom, each having a core of a core material surrounded by a cladding of a cladding material with a refractive index lower than the maximum refractive index of the core material, comprising the steps of

reacting a first plurality of initial reactants in their vapor state with one another to produce particles of the core material,

producing a complete cohesive core body, including forming a cohesive porous core body from said particles of the core material;

reacting a second plurality of initial reactants in their vapor state with one another to produce particles of the cladding material;

providing a cohesive porous cladding body from said particles of the cladding material around said complete cohesive core body to thereby form a composite body, including accumulating the particles of the cladding material remotely from said complete cohesive core body, and forming the cohesive porous cladding body from the accumulated particles; and

sintering the cohesive core body and the cohesive porous cladding body into the glass preform.

4,501,602

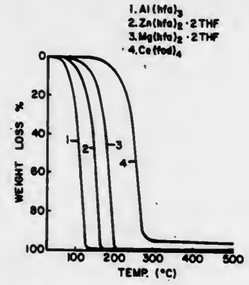
PROCESS FOR MAKING SINTERED GLASSES AND CERAMICS

Stephen B. Miller, Corning; Ronald L. Stewart, Big Flats, and David A. Thompson, Horseheads, all of N.Y., assignors to Corning Glass Works, Corning, N.Y.

Filed Sep. 15, 1982, Ser. No. 418,215

Int. Cl.³ C03B *19/06*

U.S. Cl. 65—18.2 **5 Claims**



1. In a method for making a glass or ceramic article by a vapor phase oxidation process wherein vaporized glass or ceramic source compounds are oxidized while in the vapor phase to form particulate oxide soot, the oxide soot is captured as deposited soot in a collection container or on a deposition substrate, and the deposited soot is sintered by heating to form a void-free, monolithic self-supporting glass or ceramic article, the article having a composition which includes at least one modifying oxide of a metal selected from Groups IA, IB, IIA, IIB, IIIA, IIIB, IVA, IVB and the rare earth series of the Periodic Table, the improvement wherein:

(a) the vaporized source compound for at least one of the constituent metal oxides of the article is a β-diketonate complex of the selected metal;

(b) the β-diketonate complex of the selected metal exhibits a vapor pressure of at least 10 mm (Hg) at a temperature below 250° C.;

(c) the β-diketonate complex can be vaporized at a temperature below 250° C. without significant thermal decomposition, as evidenced by thermogravimetric analysis; and

(d) the vaporized β-diketonate complex can be and is oxidized in the vapor phase to produce oxide particles of the selected metal wherein the oxide particles do not exceed about 0.1 microns in diameter.

4,501,603

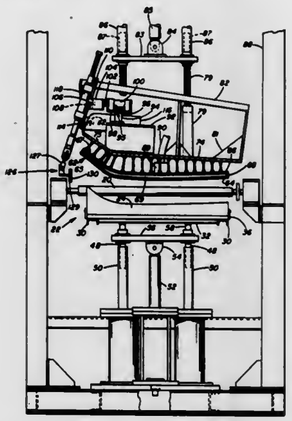
METHOD AND APPARATUS FOR SHAPING GLASS SHEETS TO COMPLICATED SHAPES

Robert G. Frank, Murrysville; Michael T. Fecik, Pittsburgh, and John J. Ewing, Tarentum, all of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Mar. 30, 1983, Ser. No. 480,535

Int. Cl.³ C03B *23/035*

U.S. Cl. 65—106 **23 Claims**



1. A method of bending a glass sheet to a shape having an end portion bent relative to a main portion of said glass sheet comprising:

heating said glass sheet to a deformation temperature;

drawing a vacuum through an apertured shaping surface of a vacuum holder, said apertured shaping surface having an apertured end area bent relative to a main area and substantially conforming to a shape desired for said glass sheet;

engaging said main portion of said glass sheet against said main area of said apertured shaping surface of said vacuum holder while said end portion of said glass sheet is unsupported and spaced from said end area of said shaping surface of said vacuum holder;

engaging said end portion of said glass sheet with a movable shaping rail to move said end portion of said glass sheet against said end area of said apertured shaping surface of said vacuum holder;

retaining said end portion and main portion of said glass sheet in vacuum engagement with said end area and main area of said shaped surface while said movable shaping rail biases said end portion of said glass sheet against said end area of said vacuum holder until said glass sheet conforms throughout its entire extent including said end area to the apertured shaping surface; and

disengaging said end portion of said glass sheet and said shaping rail from one another while said end portion and main portion of said glass sheet are retained in vacuum engagement with said apertured shaping surface of said vacuum holder.

11. Apparatus for bending hot glass sheets comprising:

a shaping station having a vacuum holder with an apertured shaping surface having an apertured end area bent with respect to a main portion of said apertured shaping surface conforming to a shape desired for said glass sheet;

a shaping rail associated with said vacuum holder having a glass sheet engaging surface;

means to move said shaping rail away from said end area into a clear position to allow said glass sheet to be shaped to move into alignment with said vacuum holder;

means to provide relative motion between said glass sheet to be shaped and said vacuum holder to engage the main portion of said glass sheet against the corresponding main area of said vacuum holder; and

means to move said shaping rail toward said apertured end area into an engaging position to move said end portion of said glass sheet to be shaped against said apertured end area of said vacuum holder and maintain it thereagainst.

4,501,604

METHOD OF PREPARING ARTIFICIAL FERTILE SOIL

Keikichi Ōdaira, Tokyo, Japan, assignor to Yojigen Agricultural Corporation, Tokyo, Japan

Filed Feb. 15, 1983, Ser. No. 466,552

Claims priority, application Japan, Feb. 26, 1982, 57-28947

Int. Cl.³ C05F *1/00, 3/00, 11/08*

U.S. Cl. 71—15 **29 Claims**

1. A method of preparing artificial fertile soil, comprising the steps of:

(a) raising four-footed livestock under densely populated conditions on a first litter comprising pulverized wood, allowing excrement produced by said livestock to mix with said first litter until the moisture content of said mixture of said first litter and livestock excrement is 60 to 90% by weight based on the weight of said mixture to thereby obtain a first intermediate material;

(b) mixing the first intermediate material with a crushed animal carcass material in an amount of from 5 to 20% by weight based on the weight of said first intermediate material and allowing the resulting product to undergo natural fermentation until said crushed animal carcass material is substantially decomposed to thereby form a second intermediate material;

(c) adding earthworms to the second intermediate material and maintaining the earthworms in said second intermediate material under breeding conditions for more than 9 months to thereby form a third intermediate material; and

(d) raising poultry under densely populated conditions on a second litter containing said third intermediate material and allowing excrement produced by said poultry to mix with said second litter until the moisture content of said mixture of said second litter and said poultry excrement is 40 to 60% by weight based on the weight of said mixture.

4,501,605

HERBICIDAL HETEROCYCLIC COMPOUNDS AND COMPOSITIONS

Thomas L. Hough, Linton, and Graham P. Jones, Babraham, both of England, assignors to FBC Limited, England

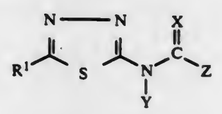
Filed Feb. 2, 1983, Ser. No. 463,071

Claims priority, application United Kingdom, Feb. 4, 1982, 8203223

Int. Cl.³ C07D *285/12;* A01N *43/82*

U.S. Cl. 71—90 **9 Claims**

1. The thiadiazoles of the formula:



(I)

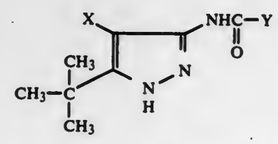
(wherein:

R^1 represents a group R^a, $-S(O)nR^a$ or $-SO_2NR^aR^b$, where R^a and R^b, which may be the same or different, each represent hydrogen, cycloalkyl of 3 to 7 carbon atoms, alkenyl or alkynyl of 2 to 6 carbon atoms, phenyl, phenylalkyl of 7 to 10 carbon atoms, or alkyl of 1 to 10 carbon atoms, any phenyl or alkyl group present being optionally substituted by one or more halogen atoms, cyano groups, alkoxy or alkylthio groups of 1 to 4 carbon atoms, or phenoxy groups, or R^a and R^b together form an alkylene chain of 2 to 6 carbon atoms, and n represents 0, 1 or 2;

X represents oxygen or sulphur;
Z represents a group —NR^cR^d; and
Y represents a group —NR^cR^f or a group —$N{=}CR^cR^f$; where R^c, R^d, R^e and R^f, which may be the same or different, each represent a group as defined for R^a, or a carboxy, alkoxy, alkoxycarbonyl, carboxylic aryl, carboxylic acyloxy alkylsulphonyl, cyano, formyl or amido, any alkyl moiety of which is of 1 to 4 carbon atoms);
and the acid addition salts thereof.

4,501,606
HERBICIDAL 5-T-BUTYL-3-PYRAZALYLCARBAMATES AND UREAS
Nansho Seki; Yuki Yamaguchi; Yukihiro Nakamura; Hiroshi Kubo, and Tetsuo Tsuruya, all of Tokyo, Japan, assignors to Showa Denko Kabushiki Kaisha, Tokyo, Japan
Filed Feb. 18, 1983, Ser. No. 467,630
Claims priority, application Japan, Feb. 18, 1982, 57-23668; Feb. 18, 1982, 57-23669; Nov. 8, 1982, 57-194592
Int. Cl.³ A01N *43/56*; C07D *231/38*
U.S. Cl. 71—92 **9 Claims**

1. A pyrazole derivative represented by the formula [I]:



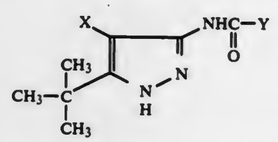
[I]

wherein X is a hydrogen atom, a chlorine atom or a bromine atom; and Y is (1) an —OR group wherein R is a lower alkyl group, a lower alkenyl group, or a lower alkynyl group, or (2) an



group wherein R' and R", which may be the same or different, are each a lower alkyl group.

9. A method for inhibiting the growth of weeds comprising applying to a plant or locus, a herbicidally effective amount of a pyrazole derivative represented by the formula [I]:



[I]

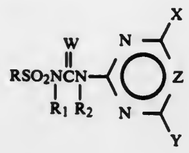
wherein X is a hydrogen atom, a chlorine atom or a bromine atom; and Y is (1) an —OR group wherein R is a lower alkyl group, a lower alkenyl group, or a lower alkynyl group, or (2) an



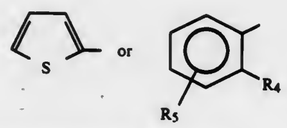
group wherein R' and R", which may be the same or different, are each a lower alkyl group.

4,501,607
HERBICIDAL TRIAZINE SULFONAMIDES
George Levitt, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.
Continuation-in-part of Ser. No. 63,208, Aug. 7, 1979, abandoned, which is a continuation-in-part of Ser. No. 946,176, Sep. 27, 1978, Pat. No. 4,214,890. This application Jan. 30, 1980, Ser. No. 116,920
Int. Cl.³ C07D *251/46, 251/18, 251/52*; A01N *43/70*
U.S. Cl. 71—93 **27 Claims**

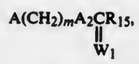
1. A compound or an agriculturally acceptable salt thereof, which has the formula:



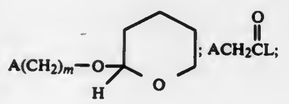
wherein
R is

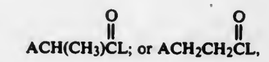


R_1 and R_2 are independently H or CH_3;
R_4 is Cl, Br, F, NO_2, CH_3, OCH_3, CF_3 or $R_3S(O)_n$, where R_3 is C_1–C_6 alkyl or C_3–C_4 alkenyl;
R_5 is H, Cl, Br, F, CH_3 or —OCH_3;
n is 0, 1 or 2;
W is O or S;
X is CH_3 or —OCH_3;
Y is C_3–C_4 alkyl; C_2–C_4 alkyl substituted with CH_3O; C_2–C_4 alkyl substituted with 1–3 atoms of Cl, Br or F; C_1–C_4 alkyl substituted with C_2H_5O, CN, CO_2H, CO_2CH_3 or $CO_2C_2H_5$; CH_2F; CH_2Cl; CH_2Br; C_2–C_4 alkenyl; C_2–C_4 alkynyl; SCN; N_3; $A(CH_2)_mA_1R_7$, where m is 2 or 3; R_7 is C_1–C_3 alkyl; A is O or S; and A_1 is O or $S(O)_n$;

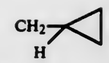


where A_2 and W_1 are independently O or S, and R_{15} is C_1–C_3 alkyl, optionally substituted with 1–3 F, Cl or Br, or R_{15} is $N(CH_3)OCH_3$ or NR_8R_9;

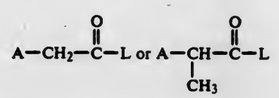




where L is $N(CH_3)OCH_3$ or NR_8R_9, where R_8 and R_9 are independently H, CH_3 or C_2H_5, or L is OR_{10} where R_{10} is H or C_1–C_4 alkyl; $NR_{11}R_{12}$ where R_{11} is H or CH_3 and R_{12} is C_3–C_4 alkenyl, C_2–C_3 alkyl substituted with OCH_3 or OC_2H_5, cyclopropyl or C_1–C_2 alkyl substituted with CN, CO_2CH_3 or $CO_2C_2H_5$; OR_{13} where R_{13} is C_4–C_6 alkyl, C_1–C_4 cyanoalkyl, C_3–C_4 alkenyl, C_3–C_4 alkynyl,



or C_2–C_4 alkyl substituted with 1–3 atoms of F, Cl or Br; SR_{14} where R_{14} is C_1–C_2 cyanoalkyl, allyl or propargyl; and
Z is N;
with the proviso that:
(1) (a) when Y is OCH_2CF_3;
(b) when Y is $A{-}(CH_2)_mOR_7$ and R_7 is CH_3 or CH_3CH_2;
(c) when Y is



and L is CH_3O or CH_3CH_2O; or
(d) when Y is

and R_{15} is CH_3 or CH_3CH_2,
then in a, b, c or d, R_4 must be $R_3S(O)_n$, where R_3 is other than CH_3; and
(2) when either or both of R_1 and R_2 is CH_3, Y cannot be $OCH_2CH_2OCH_3$.

19. A method for controlling the growth of undesired vegetation which comprises applying to the locus to be protected an effective amount of a compound of claim 1.

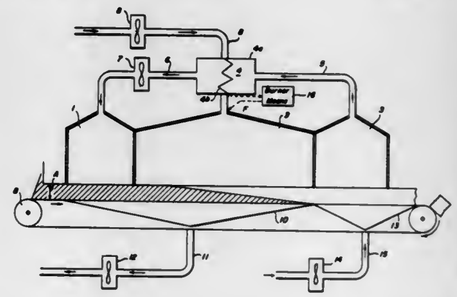
4,501,608
NITROSAMINE INHIBITION
William N. Cannon, Cumberland, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.
Filed May 16, 1983, Ser. No. 495,273
Int. Cl.³ A01N *25/22*
U.S. Cl. 71—121 **16 Claims**

1. A process for stabilizing a dinitroaniline herbicide against formation of nitrosamines, said dinitroaniline herbicide being selected from the group consisting of
trifluralin,
isopropalin,
benefin,
ethalfluralin,
butralin,
pendimethalin,
fluchloralin,
profluralin,
dinitramine,
chlornidine,
oryzalin,
nitralin,
prosulfalin, and
prodiamine
which process comprises adding to the dinitroaniline herbicide, while in a molten state, an effective amount of an addition compound of an alkali metal or ammonium bisulfite and an aldehyde or ketone of the formula



wherein R^1 and R^2
(1) are taken separately and
(a) R^1 represents hydrogen or methyl, and R^2 represents hydrogen or lower alkyl of C_1–C_3, or
(b) R^1 represents hydrogen and R^2 represents phenyl, 2-phenylvinyl, or benzyl; or
(2) are taken together and constitute, with the carbonyl function, a cycloalkanone containing from 5 to 8 carbon atoms.

4,501,609
METHOD AND APPARATUS FOR THE SINTERING OF A MINERAL USING GASEOUS FUEL
Jean-Pierre Druet, Thionville, France, assignor to Société Lorraine de Laminage Continu SOLLAC, Florence, France
Filed Jan. 24, 1984, Ser. No. 573,474
Claims priority, application France, Jan. 27, 1983, 83 01251
Int. Cl.³ C22B *1/16*
U.S. Cl. 75—5 **3 Claims**



1. Method for the sintering of a noncombustible ore, comprising the steps of
(a) arranging a layer of said ore and other noncombustible consituent elements for sintering on a supporting grate; and
(b) passing hot fumes produced from the combustion of gaseous fuel downwardly through said layer, the temperature of said hot fumes being sufficient to initiate fusion of said ore thereby to form a sinter.

4,501,610
FINE PARTICLES OF FERROMAGNETIC METAL AND PROCESS FOR PRODUCING THE SAME
Kazumasa Yazu; Yasuto Adachi, and Takayoshi Yoshizaki, all of Minamata, Japan, assignors to Chisso Corporation, Ohsaka, Japan
Filed Feb. 23, 1984, Ser. No. 582,709
Claims priority, application Japan, Feb. 23, 1983, 58-28987
Int. Cl.³ H01F *1/06, 1/33*
U.S. Cl. 75—0.5 AA **17 Claims**

1. A process for producing fine acicular particles of ferromagnetic metal comprising:
providing an aqueous suspension of at least one of acicular iron oxide and acicular iron oxyhydroxide;
adding a solution of a salt of an organic acid and a non-alkali, non-ferrous metal hereinafter called different metal, to the aqueous suspension to adhere the different metal to the acicular iron; and
subjecting the adhered acicular iron to a reduction process.

4,501,611

POWDER FORGING OF ALUMINUM AND ITS ALLOYS

Alan R. Begg, Ascot, England, assignor to British Petroleum Company, London, England

Filed Feb. 24, 1984, Ser. No. 583,107

Claims priority, application United Kingdom, Mar. 15, 1983, 8307158

Int. Cl.³ B22F *9/00*

U.S. Cl. 75—0.5 R **10 Claims**

1. A powder of aluminium or an alloy thereof capable of being powder forged and having at least 0.04% w/w of gallium concentrated on the grain boundaries of the particles in the powder.

4,501,612

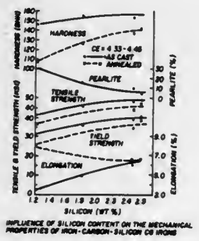
COMPACTED GRAPHITE CAST IRONS IN THE IRON-CARBON-ALUMINUM SYSTEM

Doru M. Stefanescu, Tuscaloosa, and Freddy Martinez, University, both of Ala., assignors to The University of Alabama, University, Ala.

Filed Oct. 27, 1983, Ser. No. 545,858

Int. Cl.³ C22C *33/08*

U.S. Cl. 75—124 **9 Claims**



INFLUENCE OF SILICON CONTENT ON THE MECHANICAL PROPERTIES OF IRON-CARBON-SILICON CG IRONS

1. A process for producing a compacted graphite cast iron which is substantially free of carbides in castings as thin as about 0.15 inches, and with nodularities of less than 20% by volume without postinoculation, which comprises adding aluminium to a compacted graphite cast iron melt, such that the compacted graphite cast iron consists essentially of about 0.5 to 7% by weight aluminum, about 2.5 to 4% carbon, 0 to about 1.5% silicon, with the remainder iron and inevitable impurities.

4,501,613

WEAR RESISTANT SINTERED BODY

Shuji Matsumoto, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Jul. 14, 1983, Ser. No. 513,797

Claims priority, application Japan, Jul. 22, 1982, 57-127873; Jul. 22, 1982, 57-127874

Int. Cl.³ C22C *39/02*

U.S. Cl. 75—240 **2 Claims**

1. A wear resistant sintered body consisting essentially of 10 to 30% by weight of chromium, 0.2 to 2% by weight of carbon, 1 to 10% by weight of nickel, and a balance consisting of unavoidable impurities and iron, and wherein a metal carbide and a metal oxide are dispersed in a matrix obtained by tempering martensite, and nitrogen is included in at least the matrix in a form of a solid solution.

4,501,614

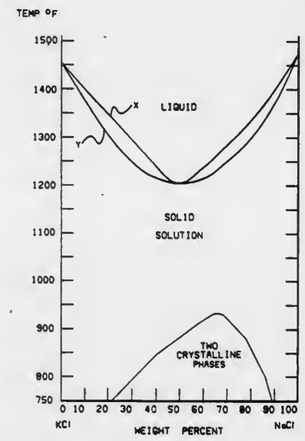
FLUX IN RECOVERY OF ALUMINUM IN REVERBERATORY FURNACE AND METHOD OF MAKING

Carl F. Bauer, Chicago, Ill.; James H. Hussey, Hammond, Ind.; Benny Langston, Barrington, and Niranjan M. Parikh, Winnetka, both of Ill., assignors to American Can Company, Greenwich, Conn.

Continuation of Ser. No. 328,604, Dec. 8, 1981, Pat. No. 4,451,287. This application Aug. 26, 1983, Ser. No. 527,192

Int. Cl.³ C22B *21/00*

U.S. Cl. 75—257 **5 Claims**



1. A flux composition for use in the recovery of metal from dross in a reverberatory furnace, the improvement wherein the flux consists essentially of a solid mixture which is 40% to 60% sodium chloride and 60% to 40% potassium chloride, said flux composition being produced by mechanically mixing sodium chloride and potassium chloride, heating the mixture to produce a liquid to effect complete alloying and chemical mixing thereof, cooling the mixture to solidify it, then milling the mixture to produce particles of a size no larger than 0.75 inches, said flux being functional to yield optimum metal recovery from dross type materials when used in a reverberatory furnace in a concentration ratio of 0.3 to 0.4 flux to inert ingredients.

4,501,615

ANTI-CORROSIVE PAINT

Frank Reeder, Whitburn; Michael J. Nunn; Michael J. Mitchell, both of Newcastle-upon-Tyne, and Kenneth F. Baxter, Sunderland, all of England, assignors to International Paint Public Limited Company, London, England

Filed May 31, 1983, Ser. No. 499,456

Claims priority, application United Kingdom, Jun. 1, 1982, 8216000

Int. Cl.³ C23F *11/00*; C04B *31/02*

U.S. Cl. 106—14.39 **13 Claims**

1. An anti-corrosive coating composition comprising a pigment component dispersed in a film-forming binder, in which the pigment component comprises a salt of an organic polyphosphonic acid containing at least two phosphonic acid groups and a polyvalent metal cation selected from the group consisting of zinc, manganese, magnesium, calcium, barium, aluminum, cobalt, iron, strontium, tin, zirconium, nickel, cadmium and titanium, the molar ratio of polyvalent metal cations to phosphonate groups in the salt being at least 0.8/n:l, where n is the valency of the metal cation, and the aqueous solubility of the polyphosphonate salt being 0.1–2 grams per liter, and the film-forming binder is selected from a group consisting of alkyd resin, epoxy resin, oleoresin, chlorinated rubber, polyvinyl butyral, polyurethane, polyester, organic silicate, inorganic silicate, polyamide and acrylic polymer.

4,501,616

LUBRICANT AND MOLD-RELEASE AGENT FOR THE MANUFACTURE OF TIES

Hans-Ferdi Fink; Götz Koerner, both of Essen, and Rolf Freiberger, Schermbeck-Damm, all of Fed. Rep. of Germany, assignors to Th. Goldschmidt AG, Essen, Fed. Rep. of Germany

Filed Jun. 23, 1980, Ser. No. 162,209

Claims priority, application Fed. Rep. of Germany, Jun. 26, 1979, 2925662

Int. Cl.³ B28B *7/36*

U.S. Cl. 106—38.22 **9 Claims**

1. A lubricant and release agent composition for use in the manufacture of tires consisting essentially of a lubricating and release effective amount of a water insoluble liquid selected from the group consisting of polyoxypropylenediols, and ethers of said diols, said liquid having a viscosity of at least about 8,000 mPa×sec., wherein the amount of liquid is from about 1 to 20 weight percent based on the weight of the composition.

4,501,617

TILE MORTARS

Armand J. Desmarais, Wilmington, Del., assignor to Hercules Incorporated, Wilmington, Del.

Continuation-in-part of Ser. No. 462,507, Jan. 31, 1983, abandoned. This application Jan. 26, 1984, Ser. No. 574,228

Int. Cl.³ C04B *7/353*

U.S. Cl. 106—93 **12 Claims**

1. In a dry mortar-forming composition having, by weight, from about 24% to about 99.4% of hyraulic cement; from about 0% to about 75% sand; and from 0.3% to about 4% of a water-retaining thickener, said dry composition being capable, when mixed with from about 25% to about 40% of its own weight of water, of producing a mortar which can be applied in thin layers for setting tile on walls and ceilings, wherein the improvement consists essentially of using as the water-retaining thickener at least one modified hydroxyethyl cellulose having a hydroxyethyl M.S. from about 0.3 to about 4.0 and a hydroxypropyl M.S. greater than 0.35.

4,501,618

METHOD OF MAKING A BUILDING MATERIAL

Georg R. U. Gebhard, Reichshof, and Klaus R. G. Hein, Bergheim-Ahe, both of Fed. Rep. of Germany, assignors to Rheinisch-Westfälisches Elektrizitätswerk Aktiengesellschaft, Essen, Fed. Rep. of Germany

Filed Aug. 26, 1983, Ser. No. 526,910

Claims priority, application Fed. Rep. of Germany, Aug. 28, 1982, 3232078

Int. Cl.³ C04B *11/00*

U.S. Cl. 106—109 **8 Claims**

1. A method of desulfurizing a fly ash containing flue gas from a fossil fuel power plant boiler which comprises the steps of:

introducing a solid finely divided absorbent consisting at least in major part of calcium oxide, calcium hydroxide or calcium carbonate, into said flue gas and maintaining it in contact with said flue gas in a dry absorption stage for a period sufficient to enable the formation of calcium sulfate in a particulate form from said absorbent and as the predominant compound formed from said absorbent;

dry-separating particulates from said flue gas to recover a solid residue consisting essentially of said absorbent, reaction products thereof, and fly ash;

slurrying said solid residue in water to form a building material;

directly using the resulting slurry to form a structure having a determined shape; and

hardening the structure formed by said slurry.

4,501,619

AQUEOUS EMULSIONS OF CARBOXYL-CONTAINING SILICONE FLUIDS AND A METHOD FOR THEIR PREPARATION

Ronald P. Gee, Midland, Mich., assignor to Dow Corning Corporation, Midland, Mich.

Filed Nov. 14, 1983, Ser. No. 551,625

Int. Cl.³ C09K *3/00*

U.S. Cl. 106—287.12 **43 Claims**

1. An aqueous emulsion comprising a combination of

(A) from 1% to 80%, by weight, based on the total weight of the emulsion, of a carboxyl-containing silicone having the formula

$$Q'Me_2SiO(Me_2SiO)_x(MeQSiO)_ySiMe_2Q'$$

wherein

Me represents the methyl radical

Q is selected from the group consisting of carboxyalkyl radicals, and carboxy ester radicals,

Q' is selected from the group consisting of Q radicals, Me radicals, and hydroxyl radicals,

x has an average value of from 20 to 290,

y has an average value of from 1 to 30,

(B) from 0.002% to 15%, by weight, based on the total weight of the emulsion, of a primary surfactant having the formula

$$RO(C_mH_{2m}O)_nH$$

wherein

m has an average value of 1, 2, or 3,

n has an average value greater than 15,

R is a hydrocarbon lipophile,

(C) from 0.002% to 15%, by weight, based on the total weight of the emulsion, of a cosurfactant selected from the group consisting of

(i) fatty acid esters of sorbitol chosen so as to be just insoluble in said carboxyl-containing silicone, and

(ii) surfactants having the formula

$$R'O(C_pH_{2p}O)_qH,$$

wherein

p has an average value of 1, 2, or 3

q has an average value large enough to render said cosurfactant just insoluble in said carboxyl-containing silicone,

R' is a hydrocarbon lipophile, and

(D) from 10% to 98.996%, by weight, based on the total weight of the emulsion, of water; with the proviso that said primary surfactant is more hydrophilic than said cosurfactant.

4,501,620

METHOD OF CLEANING A PHOTO-SENSITIVE BODY

Goro Oda, Tokyo, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Division of Ser. No. 152,313, May 22, 1980, Pat. No. 4,364,660. This application Apr. 15, 1982, Ser. No. 368,816

Claims priority, application Japan, May 29, 1979, 54-65546; May 29, 1979, 54-65547; May 29, 1979, 54-65548

The portion of the term of this patent subsequent to Dec. 21, 1999, has been disclaimed.

Int. Cl.³ B08B *1/02*

U.S. Cl. 134—6 **5 Claims**

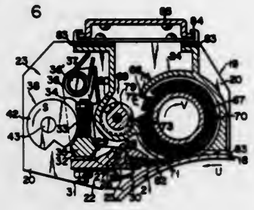
1. A method of cleaning toner from a surface of a photo-sensitive body after transfer of an image from said body comprising the steps of:

(a) bringing a cleaning blade into contact with said surface at a first contact pressure when said body is stationary;

(b) rotating said body and monotonically increasing the speed of rotation thereof to a predetermined speed;

(c) monotonically increasing the contact pressure while the

speed of said body is being increased, so that the contact pressure reaches a maximum contact pressure when the speed of rotation of said body reaches said predetermined speed; and



(d) maintaining said maximum contact pressure while said body continues rotating at said predetermined speed, so that said blade moves toner from said surface.

4,501,621

METHOD FOR REMOVING A SELENIUM LAYER FROM A SUBSTRATE

Naoto Abe; Hidetoshi Akimoto, and Hiroyuki Nomori, all of Hachioji, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 274,315, Jun. 16, 1981, abandoned. This application Jul. 13, 1983, Ser. No. 513,257

Claims priority, application Japan, Jun. 23, 1980, 55-83946; Jun. 30, 1980, 55-86084

Int. Cl.³ B08B *3/10, 7/04*

U.S. Cl. 134—17 **9 Claims**

1. A method of treating a substrate having a nonpermeable coating layer thereon, said method consisting essentially of

(1) exposing said substrate to a first high temperature of from about 50° C. to about 150° C. to produce cracks in said layer, then

(2) immersing said coated substrate in a volume expansive liquid so that said liquid is introduced into the cracks, and then

(3) exposing said substrate to a second high temperature which is above the boiling point of said expansive liquid to cause volume expansion of said liquid introduced into the cracks,

whereby said coating layer is removed from said substrate.

4,501,622

APPARATUS AND METHOD FOR CLEANING FLOWABLE MATERIAL FILLING DEVICES

Jean-Charles Marchadour, "La Feuilleraie" Kerbascol, St. Jean Trolimon, France

Filed Nov. 8, 1983, Ser. No. 549,788

Int. Cl.³ B08B *3/02*

U.S. Cl. 134—18 **9 Claims**

9. A process for cleaning a rotary flowable material filling device which has a hopper for holding the material, a plurality of spaced-apart filling assemblies mounted about the side exterior of the hopper, and a drive mechanism responsive to a signal for causing the hopper and filling assemblies to rotate, wherein each filling assembly includes a cylinder into which material flows from the hopper and a piston movable in the cylinder to force material from the cylinder into containers, said process including the steps of

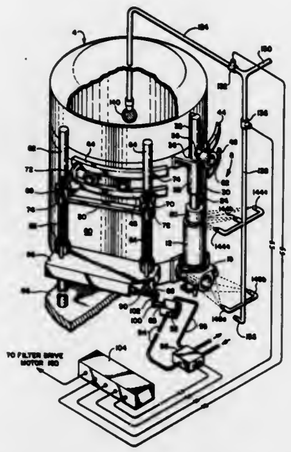
automatically operating a lifting mechanism coupled to the pistons to raise the pistons out of their respective cylinders,

activating a spraying mechanism to spray cleaning liquid against the pistons, into the cylinders, and into the hopper,

automatically operating a drive motor to cause the hopper and filling assemblies to rotate past the spraying mechanism,

deactivating the spraying mechanism to terminate spraying of the pistons, cylinders and hopper,

automatically terminating the operation of the drive motor, and



automatically operating the lifting mechanism to lower the pistons back into their respective cylinders.

4,501,623

PROCESS FOR CLEANING A BARREL

Heinz Till, Fischbacher Weg 28, and Volker Till, Eichendorffstrasse 17, both of D-6238 Hofheim, Fed. Rep. of Germany

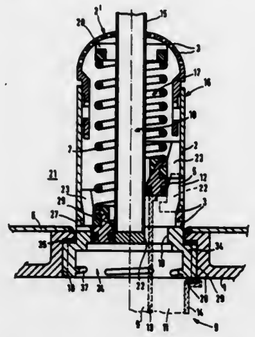
PCT No. PCT/DE82/00030, § 371 Date Sep. 27, 1982, § 102(e) Date Sep. 27, 1982, PCT Pub. No. WO82/02705, PCT Pub. Date Aug. 19, 1982

PCT Filed Feb. 15, 1982, Ser. No. 432,921

Claims priority, application Fed. Rep. of Germany, Feb. 14, 1981, 3105411; Mar. 30, 1981, 3112510; Apr. 9, 1981, 3114284

Int. Cl.³ B65B *3/04*

U.S. Cl. 134—22.18 **5 Claims**



1. In a process for cleaning a barrel provided with a bung opening in a mantle of the barrel by using an appliance for cleaning, filling and/or tapping, wherein cleaning fluid is fed into an interior of the barrel at least through a riser tube of the appliance, and where the cleaning fluid can flow off from the interior of the barrel through filling openings which are provided in the appliance in the vicinity of the barrel mantle, an improvement comprising:

also feeding cleaning fluid into the interior of the barrel through spray openings provided in a casing of the appliance when a valve body of the appliance is in a selected first opening position; and

directing the cleaning fluid from the spray openings towards inner surfaces of the barrel walls, whereby the spray openings are pointed in the direction of the inner surfaces of the barrel walls.

4,501,624

FLAME-CUTTER EMPLOYING A DISCONTINUOUS OXYGEN SUPPLY FOR BILLETS PRODUCED IN A CONTINUOUS CASTER

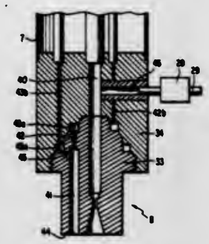
Horst K. Lotz, Wiesbaden-Delkenheim, Fed. Rep. of Germany, assignor to Aute Gesellschaft für autogene Technik mbH, Zurich, Switzerland

Filed Sep. 21, 1983, Ser. No. 534,328

Claims priority, application Fed. Rep. of Germany, Mar. 29, 1983, 8309304[U]

Int. Cl.³ B23K *7/02*

U.S. Cl. 148—9 R **18 Claims**



1. A flame-cutter for separating a moving billet produced by a continuous caster wherein said billet is supported by at least one billet supporting roller, comprising

a burner supported for synchronous movement with said billet, said burner having a nozzle and moving along with said billet during the separation process in the direction of said billet advance;

means for supplying cutting oxygen to said burner;

means for interrupting said supply of cutting oxygen to said burner when said burner passes over each of said billet supporting rollers; and

fast-venting means coupled to said burner for reducing the amount of cutting oxygen escaping from said nozzle after interruption of said supply of cutting oxygen, whereby damage to said supporting rollers is minimized and a narrow optimized groove is cut in said billet during said separation.

4,501,625

METHOD OF PRODUCING HOMOGENEOUSLY DOPED HGCDTE WHICH CONTAINS A FAST DIFFUSING DOPANT IMPURITY

John H. Tregilgas, Richardson; Jeffrey D. Beck, Plano; Michael A. Kinch, Dallas, and Herbert F. Schaake, Denton, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Dec. 23, 1983, Ser. No. 564,953

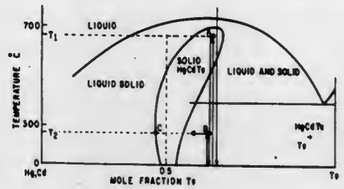
Int. Cl.³ H01L *21/324*

U.S. Cl. 148—20.3 **16 Claims**

1. A method of producing homogeneously doped HgCdTe which contains a fast diffusing dopant impurity, comprising the steps of:

(a) providing a mass of HgCdTe containing said dopant impurity substantially homogeneously distributed therethrough;

(b) annealing said mass in an Hg atmosphere to fully stoichiometrically compensate all excess Te in said mass; and



(c) further annealing said mass to homogeneously distribute said dopant impurity in said mass.

4,501,626

HIGH STRENGTH STEEL PLATE AND METHOD FOR MANUFACTURING SAME

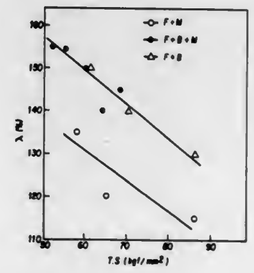
Masatoshi Sudo, Kobe; Hiromi Hori, Akashi; Takafusa Iwai, Akashi; Akinori Ohtomo, Akashi, and Denei Takai, Kakogawa, all of Japan, assignors to Kabushiki Kaisha Kobe Seiko Sho, Kobe, Japan

Filed Oct. 15, 1981, Ser. No. 311,598

Claims priority, application Japan, Oct. 17, 1980, 55-146020; Dec. 26, 1980, 55-187196; Jan. 20, 1981, 56-7598; Mar. 3, 1981, 56-30872

Int. Cl.³ C21D *9/48, 8/04*

U.S. Cl. 148—36 **22 Claims**



1. A high strength steel plate having a low yield ratio below 0.7 and improved strength-elongation balance and stretch flangeability, said steel plate containing 0.01–0.2% of C, 0.3–2.5% of Mn and 0.01–1.8% of Si and having a tripple phase of polygonal ferrite, bainite and martensite, the area ratios of said bainite and martensite phases being 4–45% and 1–15%, respectively, and the area ratio of said bainite phase being greater than that of martensite phase said martensite having an average particle size smaller than 6 microns.

9. A high strength steel plate having a low yield ratio below 0.7 and improved strength-elongation balance and stretch flangeability, said steel plate containing 0.01–0.2% of C, 0.3–2.5% of Mn and 0.01–1.8% of Si and having a triple phase of polygonal ferrite, bainite and martensite, the area ratio of said bainite and martensite phases being 4–45% and 1–15%, respectively, and the area ratio of said bainite phase being greater than that of said martensite phase said martensite having an average particle size smaller than 6 microns, said steel plate produced by a method comprising

(1) subjecting a steel material containing 0.01–0.2% of C, 0.3–2.5% of Mn and 0.01–1.8% of Si to a hot rolling-cooling treatment comprising

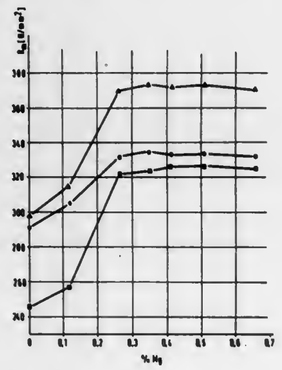
(i) hot rolling with a finish temperature above point Ar_3, followed by cooling from said rolling finish temperature to a temperature range of from Ar_3 to Ar_1 at an average cooling speed of 3°–70° C./sec,

(2) further cooling the hot-rolled steel plate to a temperature below 550° C. at an average cooling speed higher than 20° C./sec; and
(3) taking up the steel plate.

4,501,627
ALLOY AND PROCESS FOR MANUFACTURING ROLLED STRIP FROM AN ALUMINUM ALLOY ESPECIALLY FOR USE IN THE MANUFACTURE OF TWO-PIECE CANS

Heinz J. Althoff, Oberursel, Fed. Rep. of Germany, assignor to Vereinigte Deutsche Metallwerke AG, Frankfurt am Main, Fed. Rep. of Germany

Division of Ser. No. 341,944, Jan. 22, 1982, Pat. No. 4,431,463. This application Dec. 1, 1983, Ser. No. 557,087
Claims priority, application Fed. Rep. of Germany, Feb. 6, 1981, 3104079; Mar. 17, 1981, 3110277
Int. Cl.³ C22C *21/00*
U.S. Cl. 148—437 **23 Claims**



1. A can comprising a can body, can top and can bottom wherein at least one of said can body, said can top and said can bottom are made of an alloy consisting essentially of 1.15 to 2.0 percent manganese, more than 1.0 and up to 2.0 percent silicon, 0.25 to 0.65 percent magnesium, 0.2 to 1.0 percent iron, not in excess of 0.3 percent copper, not in excess of 0.2 percent zinc, not in excess of 0.1 percent zirconium, not in excess of 0.1 percent titanium, balance aluminum and other impurities not in excess of a total of 0.2 percent.

4,501,628
METHOD FOR REDUCTION OF FORMALDEHYDE EMISSIONS IN WOOD COMPOSITE PANELS

Michael L. McGuire; David M. Seluga, both of Klamath Falls, and Michael R. Blum, Medford, all of Oreg., assignors to Weyerhaeuser Company, Tacoma, Wash.

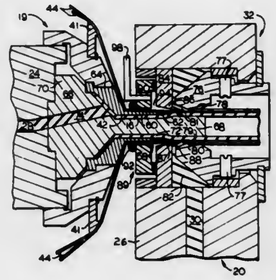
Filed Feb. 10, 1984, Ser. No. 578,894
Int. Cl.³ B32B *27/42*
U.S. Cl. 156—62.8 **13 Claims**

1. A method of making an aminoplast bonded, wood-based composite board having low formaldehyde emission which comprises:
a. comminuting the wood into a particulate form;
b. preparing a dry salt mixture comprising 12 to 20 parts by weight of an ammonium salt of a weak acid, said salt being decomposible by heat to yield ammonia at temperatures not exceeding about 120° C., 65 to 88 parts of a powdered amino compound selected from urea, melamine, guanidine and mixtures thereof, and 0 to 15 parts of an ammonium salt of a strong acid;
c. blending from 6 to 22% by weight, based on adhesive resin solids, of the dry salt mixture with the comminuted wood particles;
d. further blending from 4.5 to 12% by weight of wood particles on a solids basis of a liquid, aqueous aminoplast adhesive binder resin into the salt-particle mixture; and
e. forming the particles into mats and hot pressing the mats for a time and at a temperature sufficient to cure the resin binder.

4,501,629
METHOD AND APPARATUS FOR EXTRUDING REINFORCED HOSE

Ronald L. Satzler, Princeville, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Jun. 29, 1983, Ser. No. 509,107
Int. Cl.³ B29D *23/05*; B65H *81/00*
U.S. Cl. 156—149 **8 Claims**



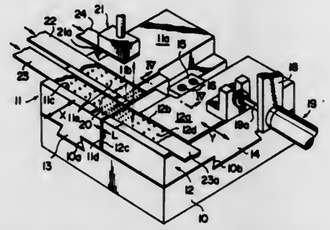
1. A method for forming a flexible reinforced hose (10), comprising the steps of:
braiding a tubular reinforcement member (16) only directly on a mandrel (42), said member (16) having inner and outer surfaces (17,18);
progressively pushing the member (16) from the mandrel (42) in response to the braiding action;
extruding an elastomeric liner (21) from a first extruder (24) onto the inner surface (17) of the braided reinforcement member (16) as the member (16) is being pushed from the mandrel (42);
extruding an elastomeric cover (22) from a second extruder (26) onto the outer surface (18) of the braided reinforcement (16), said extruding of the elastomeric liner (21) and cover (22) occurring at approximately the same axial location and adjacent the mandrel (42);
pulling the reinforced hose (10) after it exits the second extruder (50) at a linear rate faster than the rate of reinforcement member (16) is changed to a predetermined braid angle; and
holding the hose (10) to maintain the braid angle of the hose (10) at the predetermined braid angle for subsequent curing.

4. An apparatus (12) for forming a flexible reinforced hose (10), comprising:
a mandrel (42) having a first end portion (62);
a braiding machine (14) adapted to progressively braid a tubular reinforcement member (16) only directly on the mandrel (42), the reinforcement member (16) having inner and outer surfaces (17,18);
first means (19) for extruding a liner (22) onto the inner surface (17) of the reinforcement member (16) as the member (16) is being pushed from the mandrel (42) by the braiding action;
second means (20) for extruding a cover (22) onto the outer surface (18) of the reinforcement member (116), said liner (21) and cover (22) being extruded at approximately the same axial location and adjacent the first end portion (62) of the mandrel (42); and
means (23) for pulling the hose (10) after it exits the second extruder means (26) at a linear rate faster than the rate of extruding the hose (10) so that a predetermined braid angle is established in the reinforcement member (16) and for holding the hose (10) to maintain the predetermined braid angle for subsequent curing.

4,501,630
METHOD OF SPLICING A MAGNETIC RECORDING TAPE AND A LEADER TAPE

Seiji Kiuchi, Odawara, Japan, assignor to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed Dec. 19, 1983, Ser. No. 562,718
Claims priority, application Japan, Dec. 24, 1982, 57-229178
Int. Cl.³ B31F *5/06*; B65H *69/06*
U.S. Cl. 156—159 **4 Claims**



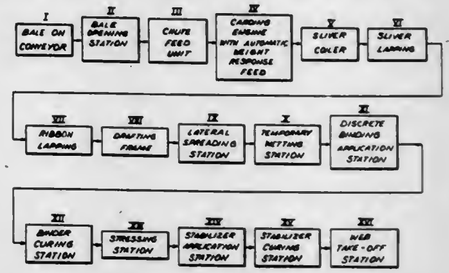
1. A method of splicing a magnetic recording tape and a leader tape comprising the steps of positioning first and second tables to be spaced from each other by a very small distance with their top surfaces being flush with each other, feeding the magnetic recording tape to extend over the top surfaces of the first and second tables across the spaces therebetween, fixing the magnetic recording tape to the top surfaces, inserting a cutter into the space between the tables to cut the recording tape, feeding the leader tape to extend over the top surfaces of the first and second tables across the space therebetween, fixing the leader tape to the top surfaces of the first and second tables, inserting the cutter into the space between the tables, aligning the part of the magnetic recording tape held on one of the tables with the part of the leader tape held on the other table, and applying a splicing tape to the opposed end portions of the part of the magnetic recording tape and the part of the leader tape, wherein the improvement comprises the steps of moving at least one of the tables toward or away from the other table in the longitudinal direction of the tapes along a straight line by a predetermined distance after the tapes are cut and before application of the splicing tape, to adjust the space between the opposed ends of said part of the recording tape and said part of the leader tape to an optimal value.

4,501,631
METHOD FOR PRODUCING UNWOVEN NOVEL ORIENTED PRE-STRESSED WEB

Clarence L. Bostian, Jr., Salisbury, N.C., and Jerome D. Gelula, 535 E. 86 St., New York, N.Y. 10028, assignors to Jerome D. Gelula, New York, N.Y.

Continuation of Ser. No. 317,042, Nov. 2, 1981, Pat. No. 4,406,724. This application Sep. 13, 1983, Ser. No. 531,874
The portion of the term of this patent subsequent to Sep. 27, 2000, has been disclaimed.
Int. Cl.³ B32B *5/08*
U.S. Cl. 156—161 **1 Claim**

1. A method of forming a web of at least a plurality of fibers oriented in at least one predetermined direction, comprising steps which include: conveying a bale of fibers to a bale opening station, opening the bale, feeding the opened fibers to a carding engine, carding said fibers, coiling sliver of said fibers, lapping slivers, causing a plurality of fibers to be oriented in substantially parallel configuration with respect to one another, causing at least some of said oriented fibers to be interconnected with one another at a plurality of portions spaced longitudinally along their respective lengths, causing at least some of said interconnecting portions initially spaced a first distance from one another to be moved such that they are a second and greater distance from one another, and applying stabilizing resin to said interconnecting fiber portions and

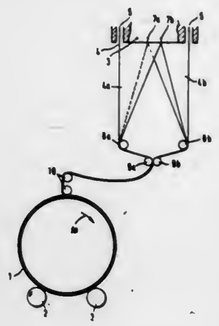


facilitating curing of said stabilizing resin prior to release of stress caused by said movement to the greater distance, thereby enhancing the ability of said web to withstand stresses applied thereto.

4,501,632
WRAPPING STEEL PIPES IN A THERMOPLASTIC RIBBON

Helmut Landgraf, Duisburg, Fed. Rep. of Germany, assignor to Mannesmann Aktiengesellschaft, Duesseldorf, Fed. Rep. of Germany

Filed Feb. 19, 1982, Ser. No. 350,371
Claims priority, application Fed. Rep. of Germany, Mar. 5, 1981, 3109216
Int. Cl.³ B29D *23/04*; B32B *31/18, 31/30*
U.S. Cl. 156—187 **9 Claims**



1. A method of enveloping steel pipes in a thermoplastic jacket while such a pipe rotates and advances axially, comprising the steps of:
extruding a thermoplastic hose by means of an extruder having an annular nozzle;
cutting the hose as extruded in two locations to obtain two sheets of semicircular cross section;
flattening each of the sheets;
combining the two sheets with partial overlap to obtain in part a two-ply ribbon with an offset of but one layer along a two-ply portion; and
running the ribbon toward the pipe to obtain a helical wrapping of the ribbon around the pipe on account of its axial and rotational movement.

4,501,633

PROCESS FOR FORMING A DAMPING CONNECTION BETWEEN TWO STRUCTURAL ELEMENTS

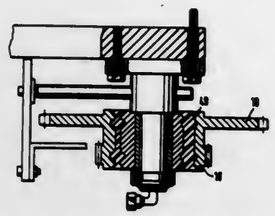
Rudolf Zodrow, and Rainer Buchholz, both of Düsseldorf, Fed. Rep. of Germany, assignors to Jagenberg AG, Düsseldorf, Fed. Rep. of Germany

Division of Ser. No. 349,931, Feb. 18, 1982, Pat. No. 4,450,048. This application Apr. 13, 1983, Ser. No. 484,409

Claims priority, application Fed. Rep. of Germany, Mar. 27, 1981, 3112067

Int. Cl.³ B29C *5/00*

U.S. Cl. 156—242 **3 Claims**



1. A process for forming a damping connection between two structural elements to be operatively connected, comprising positioning the two elements in the desired relative positions, forming beveled regions on the elements to bound the space between them, temporarily surrounding the space with a collar to form a closed space, casting into said space a material which sets to a resilient solid and undergoes shrinkage when setting, allowing the material to set so that in shrinking the resilient solid in at least one point is drawn against the beveled regions so as to center itself in the manner of a chucking cone, thereby constituting the damping connection, and removing the temporary collar.

4,501,634

COLD DRAWN HIGH-ORIENTATION MULTILAYERED FILM AND PROCESS FOR MANUFACTURE OF SAID FILM

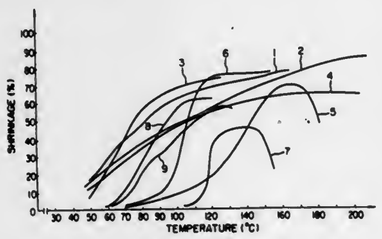
Isao Yoshimura; Osamu Mizukami; Hideo Hata; Junichi Kageyama, and Takashi Kaneko, all of Kanagawa, Japan, assignors to Asahi-Dow Limited, Tokyo, Japan

Continuation of Ser. No. 316,101, Oct. 28, 1981, abandoned, which is a division of Ser. No. 103,944, Dec. 14, 1979, abandoned. This application Nov. 1, 1983, Ser. No. 548,018

Claims priority, application Japan, Dec. 18, 1978, 53-154966; Mar. 7, 1979, 54-25642

Int. Cl.³ B32B *27/08*

U.S. Cl. 156—244.24 **32 Claims**



1. A process for manufacturing a multilayered film including at least one layer preponderantly containing a cold-drawable resin selected from the group consisting of blended and unblended specific polymers [1] (B)+(A)+(C), [2] (B)+(A), [3] (B)+(C), [4] (D), and [5] (E),

wherein

(A) is at least one ethylene type polymer selected from the group consisting of copolymers of ethylene with other monomers such as vinyl esters, aliphatic unsaturated carboxylic acids and alkyl esters of said carboxylic acids, ionically crosslinked resins derived from said copolymers and low-density polymers of ethylene

(B) is a soft copolymer elastomer having a Vicat softening point of not more than 60° C.,

(C) is at least one polymer selected from the group consisting of crystalline polypropylene, high-density polyethylene, crystalline polybutene-1 and polymethyl pentene-1,

(D) is a crystalline polybutene-1 having a concentration of 50 to 100% by weight, and

(E) is an ionically crosslinked resin,

said PVDC layer-excluded multilayered film consisting of

at least two cold drawable resin layers, (CDR) each of which is preponderantly at least one cold drawable resin selected from the group consisting of the above mentioned polymers [1], [2], [3], [4], and [5], provided that when the CDR layers are disposed adjacent to each other said cold drawable resins forming said layers are of different compositions; or

at least one cold drawable resin layer (CDR) and at least one layer (S) formed of at least one polymer selected from the group consisting of crystalline polypropylene, polyethylene, ethylene-vinyl acetate copolymer, ethylene-aliphatic unsaturated carboxylic acid copolymers and ethylene-aliphatic unsaturated carboxylic copolymers; or

at least one cold drawable resin layer (CDR), at least one layer selected from the above layer (S), and at least one adhesive layer (AD) formed of at least one member selected from the group consisting of ethylene-vinyl acetate copolymer, ethylene-α-olefin copolymer elastomers, ethylene-aliphatic unsaturated carboxylic acid copolymers and derivatives thereof, and block-copolymerized elastomers of styrene-conjugated diene type monomers;

comprising:

extruding the cold drawable resin into a molten sheet and then quenching said sheet to solidify;

preparing a multilayered raw film having, as at least one of said layers therein, said solidified cold drawable resin sheet; and

cold drawing said multilayered raw film at a temperature between 20° C. and 80° C., provided that the drawing temperature is not exceeding the Vicat softening points of the specific polymers [1], [2], [3], [4] and [5], to yield a drawn film having an area between 3 and 30 times greater than said raw film.

4,501,635

MULTI-LAYER BOARD POSSESSING A VARNISH SURFACE, PROCESS FOR ITS PRODUCTION AND ITS USE

Manfred Siry, Gladbach, and Hans-Dieter Diesel, Seligenstadt, both of Fed. Rep. of Germany, assignors to Letron GmbH, Aschaffenburg, Fed. Rep. of Germany

Continuation of Ser. No. 242,653, Mar. 11, 1981, abandoned. This application Jul. 1, 1983, Ser. No. 510,158

Claims priority, application Fed. Rep. of Germany, Mar. 15, 1980, 3010060

Int. Cl.³ B05D *3/06*; C09J *5/02*

U.S. Cl. 156—273.3 **24 Claims**

1. Process for the continuous production of a multi-layer board of from 0.3 to 5.0 mm, comprising:

(a) varnishing a finishing layer with a varnish which is hard-enable by electron radiation,

(b) hardening in one step said varnish by electron radiation prior to lamination of said finishing layer,

(c) continuously laminating at speeds of from 5 to 35 m/min. by pressing with application of elevated temperatures,



said hardened finishing layer with a carrier layer and a backing layer.

4,501,636

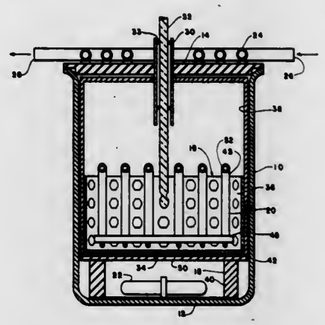
APPARATUS FOR ETCHING VERTICAL JUNCTION SOLAR CELL WAFERS

Charles R. Valley, Xenia, Ohio, assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Dec. 28, 1983, Ser. No. 566,444

Int. Cl.³ H01L *21/306*; C23F *1/02*; B44C *1/22*; C03C *15/00*

U.S. Cl. 156—345 **1 Claim**



1. An apparatus for etching semiconductor wafers which consists essentially of, in operable association,

a. a cylindrical vessel having a closed bottom and an open tap;

b. a lid for said vessel, said lid having cooling means in association therewith and having means for holding a temperature sensor;

c. a basket assembly adapted for positioning within said cylindrical vessel, said basket assembly having a porous bottom and a porous side and an open top and having handle means in association therewith for lowering said assembly into said vessel and for removing said assembly from said vessel;

d. support means for supporting said basket assembly above the inside bottom of said vessel to provide a free space between the bottom of said vessel and the bottom of said assembly;

e. rack means in association with said basket assembly for holding a plurality of semiconductor wafers for etching; and

f. stirring means.

4,501,637

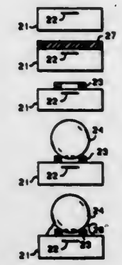
LED HAVING SELF-ALIGNED LENS

Curtis W. Mitchell, Phoenix, and Howard M. Berg, Scottsdale, both of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Division of Ser. No. 272,822, Jun. 12, 1981,. This application Jan. 26, 1984, Ser. No. 573,999

Int. Cl.³ B44C *1/22*; C03C *15/00, 25/06*; B29C *17/08*

U.S. Cl. 156—630 **3 Claims**



1. A method for assembling a lens and a semiconductor device having a light emitting area comprising the steps of:

applying a layer of polymeric material to said semiconductor device;

patterning said layer to form an aperture at least as large as said area and in approximate registration with said area;

depositing adhesive on said layer;

contacting said adhesive with said lens whereby surface tension forces cause a self-centering of the lens over said area; and

causing said adhesive to gel, thereby locking said lens in position over said area.

4,501,638

LIQUID CHEMICAL PROCESS FOR FORMING CONDUCTIVE THROUGH-HOLES THROUGH A DIELECTRIC LAYER

Daniel D. Johnson, Yorklyn, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Dec. 5, 1983, Ser. No. 558,308

Int. Cl.³ C23F *1/02*; B44C *1/22*; C03C *15/00*; B29C *17/08*

U.S. Cl. 156—644 **13 Claims**



1. A process for making an electrically conducting path in a dielectric layer sandwiched between two conductive layers comprising

(a) forming a hole completely through one of the conductive layers without substantially removing material from the dielectric layer;

(b) through said hole etching the dielectric layer using a liquid capable of etching said dielectric layer whereby a pathway is formed completely through the dielectric layer between the conductive layers and whereby the conductive layer is undercut of dielectric material adjacent to the hole in said conductive layer;

(c) deforming the conductive layer which has been undercut toward the other conductive layer, and

(d) forming an electrical conducting path between the two conductive layers through the pathway.

4,501,639

PROCESS AND DEVICE FOR MAKING ALKALI METAL PHOSPHATES BY SPRAYING ALKALI METAL PHOSPHATE SOLUTIONS OR SUSPENSIONS

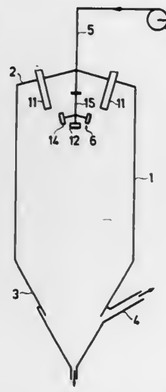
Ben Damman, Middelburg; Jan Drijver, Vlissingen; Hans Kinneging, Middelburg; Hans Scheffer; Jaap Stam, both of Vlissingen, and Paul de Witte, Westkapelle, all of Netherlands, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed Jul. 19, 1982, Ser. No. 399,769

Claims priority, application Fed. Rep. of Germany, Jul. 24, 1981, 3129180

Int. Cl.³ B01D *1/18*; C01B *25/30*

U.S. Cl. 159—48.1 **1 Claim**



1. In a process for making alkali metal phosphates or alkali metal polyphosphates from feed materials selected from solutions and suspensions of alkali metal phosphates by introducing the feed materials in the upper portion of a spray tower, spraying them inside said spray tower through a flame zone produced by a plurality of burners arranged in annular fashion and collecting the dried alkali metal phosphates or metal polyphosphates, the improvement which comprises putting the feed materials under a pressure of 10 to 66 bars by means of at least one pressure-increasing pump; and spraying the feed materials by forcing them under said pressure in the absence of highly pressurized gases through a plurality of single opening nozzles, said single opening nozzles having bores 0.5 up to 5 mm wide disposed in their terminal surface areas.

4,501,640

CREPING ADHESIVES CONTAINING POLYVINYL ALCOHOL AND CATIONIC POLYAMIDE RESINS

Dave A. Soerens, Winnebago County, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.

Filed Oct. 18, 1983, Ser. No. 542,918

Int. Cl.³ D21H *5/24*

U.S. Cl. 162—111 **7 Claims**

1. A method for creping cellulosic webs comprising:

(a) applying to a rotating creping cylinder an aqueous admixture containing from about 96 to about 99.9 weight percent water and from about 4 to about 0.1 weight percent solids, wherein from about 30 to about 90 weight percent of said solids is water-soluble polyvinyl alcohol having a weight average molecular weight of from about 90,000 to about 140,000 and a degree of hydrolysis of from about 80 to about 90 percent and wherein from about 10 to about 70 weight percent of said solids is a water-soluble, thermosetting, cationic polyamide resin which is phase-compatible with the polyvinyl alcohol, said cationic polyamide resin comprising the water-soluble reaction product of an epihalohydrin and a polyamide containing secondary amine groups, the ratio of epihalohydrin to secondary amine groups of said polyamide being from about 0.5 to 1 to about 1.8 to 1, said polyamide being obtained by heating together at a temperature of from about 110° C. to about 250° C. a C_3–C_{10} saturated aliphatic dibasic carboxylic acid and a polyalkylene polyamine in a mole ratio of polyalkylene polyamine to dibasic acid of from about 0.8 to 1 to about 1.4 to 1;

(b) pressing a cellulosic web against the creping cylinder to effect adhesion of the web to the surface of the cylinder; and

(c) dislodging the web from the creping cylinder by contact with a doctor blade.

4,501,641

PROCESS FOR PRODUCING PAPER OR NON-WOVEN FABRIC

Tadashi Hirakawa, Kusatsu, and Makoto Yoshida, Ibaraki, both of Japan, assignors to Teijin Limited, Osaka, Japan

Filed Jul. 30, 1982, Ser. No. 403,544

Claims priority, application Japan, Feb. 18, 1981, 56-21378; Apr. 2, 1981, 56-48381

Int. Cl.³ D21H *3/60*

U.S. Cl. 162—164.3 **4 Claims**

1. A process for producing paper or wet non-woven fabric comprising mixing an aqueous anionic polymer solution with an aqueous cationic polymer solution to form a mixture containing solid aggregate of the two polymers, and wherein the anionic polymer is a copolyester containing polyethylene glycol as the diol component and isosphthalic acid and an aromatic dicarboxylic acid having a sodiosulfo group bound to the aromatic nucleus as the dicarboxylic acid component, adding the mixture to a slurry of fiber or pulp, converting the slurry into paper or non-woven fabric by a wet papermaking technique, and drying the paper or non-woven fabric.

4. The product produced by the process of claim 1.

4,501,642

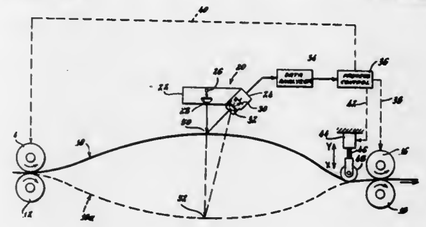
METHOD OF PAPER TENSION CONTROL TO MAINTAIN FLUTTER WITHIN A PREDETERMINED RANGE

Henry A. Wells, Oxford, Ohio, assignor to Champion International Corporation, Stamford, Conn.

Division of Ser. No. 422,001, Sep. 23, 1982,. This application Oct. 31, 1983, Ser. No. 546,993

Int. Cl.³ D21F *7/00*; G01N *21/86*; G01V *9/04*

U.S. Cl. 162—198 **3 Claims**



1. A method for controlling paper tension in a paper manufacturing apparatus comprising the steps of:

driving a paper web across a paper path in said paper manufacturing apparatus;

projecting an energy beam onto a surface of the web along a line which is substantially perpendicular to the web which energy beam is reflected by the web;

detecting the energy beam reflected by the web with a noncontacting sensor to provide an indication of the spatial position of the web and enable measurement of the frequency and amplitude of flutter in said driven paper web; and

adjusting the tension in said paper web in response to variations in the spatial position of the web, to maintain said flutter within a predetermined range of frequency and amplitude.

4,501,643

APPARATUS FOR CUTTING AND GUIDING THE MARGINAL LEAD-IN STRIP OF PAPER WEB

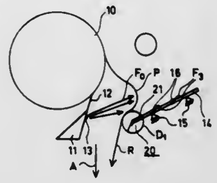
Rainer Kiuru, Jyväskylä , Finland, assignor to Valmet Oy, Finland

Filed May 13, 1982, Ser. No. 378,018

Claims priority, application Finland, May 15, 1981, 811513

Int. Cl.³ D21F *1/36, 2/00*

U.S. Cl. 162—286 **15 Claims**



1. Apparatus for cutting and guiding a marginal lead-in strip which has been separated from a paper web in connection with a paper web lead-in operation on a paper machine, comprising:

first guide plate means with which a first nozzle tube is associated adapted to be connected to a source of pressurized gas, said first nozzle tube having nozzle means formed therein for directing gas jets substantially parallel to said first guide plate means;

second guide plate means with which a second nozzle tube is associated adapted to be connected to a source of pressurized gas, said second nozzle tube having nozzle means for directing gas jets substantially parallel to said second guide plate means;

said first and second guide plate means being attached to each other at an angle with respect to each other, the orientation of said first guide plate means corresponding to the direction in which the severed end of the lead-in strip is conducted after the lead-in strip has been separated from the web, and the orientation of said second guide plate means corresponding to the direction in which the lead-in strip is further conducted to a section of the paper machine;

wherein said guide plate means and respective nozzle tubes and nozzle means are arranged to operate as guiding and transporting surfaces so that gas jets directed from respective ones of said nozzle means of said first and second guide plate means pull the lead-in strip in respective opposed directions in the region of said guide plate means, whereupon the lead-in strip is severed by rupture in a region between said guide plate means or in a region between said nozzle means;

wherein said first guide plate means is arranged so that the new end of the lead-in strip obtained by the severing of the marginal strip is conducted therealong;

wherein said respective nozzle tubes associated with said first and second guide plate means are formed with respective outer sides and respective sides adjacent to said outer sides which are in mutually substantially opposed relationship to each other;

wherein each of said first and second guide plate means is affixed to an opposed side of a respective nozzle tube at a location which is spaced from the respective outer side thereof; and

wherein said nozzle means are formed in each of said respective nozzle tubes in said opposed side thereof in the space between said guide plate means and said outer side thereof.

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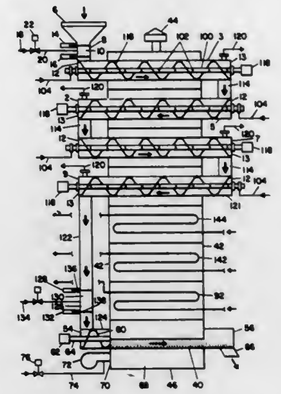
APPARATUS FOR THE SELECTIVE RETORTING OF CARBONACEOUS MATERIALS

Delbert D. Thomas, 1522 Cameo Dr., Redlands, Calif. 92373

Filed Sep. 28, 1982, Ser. No. 425,424

Int. Cl.³ C10B *7/10, 27/00, 49/06, 51/00*

U.S. Cl. 202—99 **7 Claims**



1. A staged retort for removing liquid and/or gaseous products from carbonaceous solids and/or semisolids such as oil shale comprising:

a plurality of retort chambers in which the carbonaceous solids and/or semisolids are heated, each said chamber including enclosing walls separating the interior of each said retort chamber from the exterior thereof;

means for heating each retort chamber to a different temperature;

said plurality of retort chambers including a first retort chamber into which the carbonaceous solids and/or semisolids are first introduced into the staged retort;

means for introducing the carbonaceous solids and/or semisolids into the first retort chamber;

means for limiting escape of the liquid and/or gaseous products from the first retort chamber as carbonaceous solids and/or semisolids are introduced therein;

means for transporting the carbonaceous solids and/or semisolids from a retort chamber of a given temperature to a retort chamber of a higher temperature;

means for separately withdrawing the liquid and/or gaseous products formed by pyrolysis in each retort chamber;

the plurality of retort chambers including a last retort chamber in which the carbonaceous solids and/or semisolids are pyrolyzed for the last time;

second means for limiting escape of the liquid and/or gaseous products from the last retort chamber as spent carbonaceous materials are removed therefrom;

means for burning the carbonaceous materials from the last retort chamber to produce heat for heating the retort chambers;

means for raising the temperature of a gas;

means for recycling a predetermined portion of the gaseous products of pyrolysis from one or more retort chambers into the means for raising gas temperature to obtain a heated gas;

means for controlling the temperature of the recycled gas;

means for monitoring the temperatures of each of the retort chamber interiors so that the required temperature of the controlled temperature gas can be determined to correctly influence each chamber interior to a predetermined temperature;

means for injecting the controlled temperature gas into one or more retort chamber interiors to influence the tempera-

ture therein, so that each retort chamber interior is maintained at its individual predetermined temperature;
said retort chambers disposed in a modular arrangement one above the other;
a combustion compartment enclosing the means for burning located below the lowest retort chamber in which heated flue gases are produced;
means for circulating the heated flue gases upward in close proximity to the retort chamber walls whereby the retort chamber closest to the combustion compartment is raised to the highest temperature, and the ascending retort chambers are raised to progressively lower temperatures as their distance from the combustion compartment increases; and
means for disposing of spent material from the staged retort.

4,501,645

SEPARATION OF METHANOL FROM ACETONE BY EXTRACTIVE DISTILLATION

Lloyd Berg, 1314 S. Third Ave., and An-I Yeh, 709 S. 12th Ave., both of Bozeman, Mont. 59715

Filed Nov. 1, 1983, Ser. No. 547,654
Int. Cl.³ B01D *3/40*; C07C *29/84, 31/04, 49/08*
U.S. Cl. 203—51 **9 Claims**

1. A method for recovering essentially pure methanol from a mixture of methanol and acetone which comprises distilling a mixture of methanol and acetone in a rectification column in the presence of an effective amount of an extractive agent, recovering essentially pure methanol as overhead and obtaining the extractive agent plus acetone from the stillpot or reboiler, the extractive agent is one or more aliphatic ketones containing from four to eleven carbon atoms.

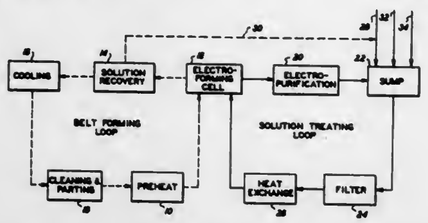
3. A method for recovering essentially pure methanol from a mixture of methanol and acetone which comprises distilling a mixture of methanol and acetone in a rectification column in the presence of an effective amount of an extractive agent, recovering essentially pure methanol as overhead and obtaining the extractive agent plus acetone from the stillpot or reboiler, the extractive agent is one or more aromatic ketones containing from eight to fourteen carbon atoms.

4,501,646

ELECTROFORMING PROCESS

William G. Herbert, Williamson, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Jun. 25, 1984, Ser. No. 624,164
Int. Cl.³ C25D *1/00, 1/02*
U.S. Cl. 204—4 **15 Claims**



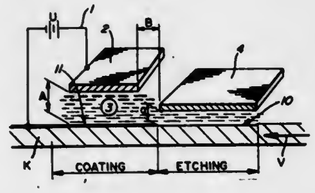
1. An electroforming process comprising providing a core mandrel having an electrically conductive, abhesive outer surface, a coefficient of expansion of at least about 8×10^{-5} in./in./°F., a segmental cross-sectional area of less than about 1.8 square inches and an overall length to segmental cross-sectional area ratio greater than about 0.6, establishing an electroforming zone between an anode selected from a metal and alloys thereof having a coeficient of expansion of between about 6×10^{-6} in./in./°F. and about 10×10^{-6} in./in./°F. and a cathode comprising said core mandrel, said cathode and said anode being separated by a bath comprising a salt solution of said metal, heating said bath and said cathode to a temperature sufficient to expand the cross-sectional area of said mandrel, applying a ramp current across said cathode and said anode to electroform a coating of said metal on said core mandrel, said coating having a thickness at least about 30 Angstroms and stress-strain hysteresis of at least about 0.00015 in./in., rapidly applying a cooling fluid to the exposed surface of said coating to cool said coating prior to any significant cooling and contracting of said core mandrel whereby a stress of between about 40,000 p.s.i. and about 80,000 p.s.i. are imparted to the cooled coating to permanently deform said coating and to render the length of the inner perimeter of said coating incapable of contracting to less than 0.04 percent greater than the length of the outer perimeter of said core mandrel after said core mandrel is cooled and contracted, cooling and contracting said core mandrel, and removing said coating from said core mandrel.

4,501,647

METHOD OF ELECTROPLATING

Jouko K. Korpi, Jannelundsvägen 6 A, 693 00 Degerfors, Sweden, and Teuvo T. Korpi, Kaavelantie 97 A, Helsingfors, Finland

PCT No. PCT/SE83/00016, § 371 Date Oct. 7, 1983, § 102(e) Date Oct. 7, 1983, PCT Pub. No. WO83/02786, PCT Pub. Date Aug. 18, 1983
PCT Filed Jan. 21, 1983, Ser. No. 551,978
Claims priority, application Sweden, Feb. 9, 1982, 8200728
Int. Cl.³ C25D *5/34*
U.S. Cl. 204—23 **11 Claims**



1. In a method for electroplating metal onto a workpiece which is connected as a cathode in a current circuit, wherein said workpiece is moved through an electrolyte bath past at least one anode which is arranged generally parallel to the direction of movement of the workpiece, the improvement comprising:
prior to moving said workpiece past at least one anode, moving the workpiece past a member in said bath arranged generally parallel to the direction of movement of the workpiece and which member is generally closer to said workpiece than said anode, whereby said member controls the current density between said member and said workpiece, causing said workpiece to be etched as it passes said member.

4,501,648

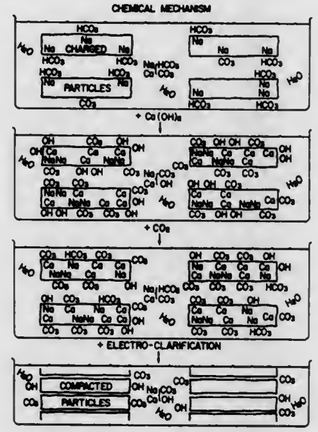
ELECTROPHORETIC PROCESS FOR SEPARATING AQUEOUS MINERAL SUSPENSIONS

Robert A. Ritter, Calgary, Canada, assignor to Alberta Oil Sands Technology and Research Authority, Edmonton, Canada

Continuation of Ser. No. 330,162, Dec. 14, 1981, abandoned. This application Mar. 24, 1983, Ser. No. 476,820
Claims priority, application Canada, May 26, 1981, 378386
Int. Cl.³ C02F *1/46*
U.S. Cl. 204—149 **7 Claims**

1. A process for separating an aqueous suspension of fine mineral solids into a solids product and a clarified liquid product, comprising:
chemically treating the suspension by adding lime in an amount between 0.5 and 3.5 g/l of suspension;

adding to the suspension a reagent, selected from the group consisting of carbon dioxide, ammonium carbonate, ammonium bicarbonate and mixtures thereof, in an amount sufficient to maintain the pH of the suspension during electrical treatment in the range of about 8.4 to 11 units;
moving an anode electrode into, through and out of the suspension in spaced, generally parallel relation to a cathode electrode submerged in the suspension;
applying sufficient electrical potential between the electrodes and retaining the anode electrode for at least sufficient time in the suspension to cause the solids to migrate to and deposit on the anode electrode and to dry thereon to a solids content greater than about 40% by weight;
removing from the suspension that portion of the anode electrode which has been in the suspension at least the required minimum time, together with the solids associated therewith, and recovering the solids therefrom;
and recovering clarified liquid product, containing less than about 4% by wt. solids.

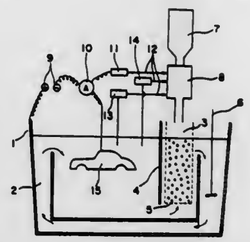


4,501,649

METHOD OF CONTROLLING ELECTROCOATING BATH AND APPARATUS THEREFOR

Nobuo Furuno, Amagasaki; Yoshio Ota, Tsuzuki; Masahiro Itai, Osaka; Akio Tokuyama, and Eiichi Nakano, both of Hirakata, all of Japan, assignors to Nippon Paint Co., Ltd., Osaka, Japan

Filed Nov. 2, 1983, Ser. No. 548,139
Claims priority, application Japan, Nov. 6, 1982, 57-195151
Int. Cl.³ C25D *13/24*
U.S. Cl. 204—181 R **9 Claims**



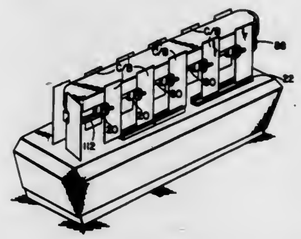
1. A method of controlling the composition of an electrocoating bath which comprises removing excess counter-ion in the electrocoating bath by means of an ion exchange resin, wherein the ion exchange resin, contained in a porous container equipped in an electrocoating system, is suspended in the electrocoating bath at an ion exchange capacity of not more than the chemical equivalent of the excess counter-ion to be removed, said porous container permitting passage of the electrocoating bath therethrough to provide direct contact between the electrocoating bath and the ion exchange resin.

4,501,650

WORKPIECE CLAMP ASSEMBLY FOR ELECTROLYTIC PLATING MACHINE

Leonard C. Maron, Bristol, Conn., assignor to Napco, Inc., Terryville, Conn.

Filed Aug. 26, 1983, Ser. No. 526,981
Int. Cl.³ C25D *17/06, 17/04*
U.S. Cl. 204—198 **12 Claims**



1. A plating machine having an electrolytic solution and electrode means for plating marginal lower edge portions of flat planar workpieces comprising:
a machine frame including a base having various rinsing and plating stations, including an elongated superstructure spaced above said base,
a workpiece transport conveyor having a chain and at least two sprockets supported in opposite ends of said superstructure for rotation on vertical axes so that said chain moves in a closed path defined by generally parallel straight runs and generally semi-circular end turns,
elongated tracks supported in said superstructure adjacent and parallel said straight chain runs,
a plurality of workpiece clamp assemblies slidably received on said tracks, and each assembly having a clamping portion and a base portion,
said chain having individual roller links connected to one another by conventional means, and having rollers supported on vertically extending pins, at least some of said pins having projecting portions which are received in pin openings provided in said clamp assembly base portions to connect said clamp assembly base portions to said chain at spaced locations thereon, and
clamp assembly support means located at the ends of said superstructure, at least one such support means being movable from an active position to support said clamp assemblies as they move around a sprocket to an inactive position such that said clamp assemblies can be removed or replaced to vary the spacing of said clamp assemblies on said chain.

4,501,651

PROCESS FOR TREATING OIL SHALE WITH A MILD OXIDANT

Costandi A. Audeh, 694 Prospect Ave., Princeton, N.J. 08540, and Joseph J. Dickert, Jr., 17 S. Homestead Dr., Yardley, Pa. 19067

Filed May 2, 1983, Ser. No. 490,904
Int. Cl.³ C10G *1/00*; C10B *53/06*
U.S. Cl. 208—11 R **12 Claims**

1. A process for substantially reducing hydrogen sulfide formation during retorting of oil shale which additionally contains pyrites, comprising the steps of:
(a) treating the oil shale under mild oxidative conditions

with sufficient oxidant in an aqueous medium to reduce hydrogen sulfide formation; and

(b) retorting the treated shale to recover therefrom hydrocarbon fluids, gases, or mixtures thereof.

4,501,652

PROCESS FOR SELECTIVE REMOVAL OF CCR, ARSENIC AND CONJUGATED DIOLEFINS FROM SHALE OIL

Quang N. Le, Westville, and Daniel J. Neuman, Cherry Hill, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Oct. 20, 1983, Ser. No. 544,021
Int. Cl.³ C10G 65/06, 67/06
U.S. Cl. 208—57 **7 Claims**

1. A process for upgrading hydrocarbonaceous fluids said fluids containing arsenic, conjugated diolefins and Conradson Carbon Residue, comprising in sequence:

(a) contacting said fluids with a hydrocarbon upgrading catalyst and hydrogen at a temperature between 300° and 800° F.;

(b) passing the resulting fluids of step (a) through a demetallation guard chamber, said guard chamber comprising a bed of fresh demetallaton guard chamber catalyst, said fresh demetallation guard chamber catalyst being selected from the group comprising Ni/Al_2O_3, $NiMo/Al_2O_3$, and NiW/Al_2O_3; and

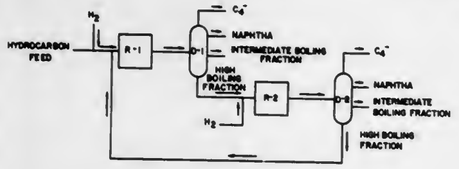
(c) passing the resulting fluids of step (b) through a hydroprocessing chamber under conditions which deposit said arsenic on a bed of fresh hydroprocessing catalyst, said fresh hydroprocessing catalyst being selected from the group comprising $NiMo/Al_2O_3$ and NiW/Al_2O_3, wherein said hydrocarbon upgrading catalyst is the deactivated catalyst of either of said demetallation guard chamber or said hydroprocessing chamber.

4,501,653

PRODUCTION OF JET AND DIESEL FUELS

Glen P. Hamner, Baton Rouge, La., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Jul. 22, 1983, Ser. No. 516,446
Int. Cl.³ C10G 65/12
U.S. Cl. 208—89 **15 Claims**



1. A process for the production in a multi-reactor unit of jet fuels, diesel fuels, multi-purpose fuels meeting the critical property requirements of jet fuels and diesel fuels, and high quality blending components useful for the production of such fuels, which comprises

feeding, with hydrogen, into the initial reactor of the multi-reactor unit, a sulfur and nitrogen-containing hydrocarbon feed having an initial boiling point ranging from about 100° F. to about 250° F., and a high end point boiling within the range of from about 600° F. to about 750° F., passing said feed over a catalyst having a Group VI-B or Group VIII-B metal, or admixture of such metals, dispersed upon an inorganic oxide support at conditions sufficient to hydrodesulfurize and hydrodenitrogenate said feed,

distilling said hydrodesulfurized, hydrodenitrogenated fraction to obtain C_4-, naphtha, a high boiling liquid fraction having an initial boiling point of from about 420° F. to about 470° F., and a fraction of boiling range intermediate that of said naphtha and said high boiling liquid fraction.

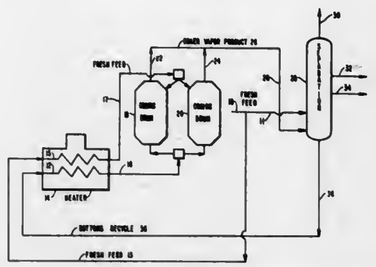
feeding said high boiling product liquid fraction, with hydrogen, into a second reactor of the multi-reactor unit and hydroselectively cracking said fraction over a cracking catalyst constituted of a Group VI-B or Group VIII metal, or admixture thereof, dispersed on a zeolite support of pore size ranging up to about 6 Å at conditions sufficient to eliminate normal paraffins and convert said normal paraffins to lighter boiling liquid and gaseous products, and distilling the product of said second reactor in a fractionating column to obtain C_4-, naphtha, a high boiling liquid fraction having an initial boiling point ranging from about 600° F. to about 700° F. which is recycled to extinction in said initial reactor, and a liquid fraction having an initial boiling point between the high end boiling point of said naphtha and the initial boiling point of said recycled high boiling liquid fraction which meets the critical property requirements of a jet fuel, diesel fuel, multi-purpose fuel meeting the specifications for both a jet fuel and diesel fuel, or high quality blending component useful for the production of such fuels.

4,501,654

DELAYED COKING PROCESS WITH SPLIT FRESH FEED AND TOP FEEDING

David E. Allan, Baton Rouge, La., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Continuation-in-part of Ser. No. 552,625, Nov. 17, 1983,. This application Mar. 29, 1984, Ser. No. 594,851
Int. Cl.³ C10G 9/14
U.S. Cl. 208—92 **10 Claims**



1. In a delayed coking process which comprises the steps of:

(a) preheating a hydrocarbonaceous oil chargestock to a coking temperature in a preheating zone;

(b) introducing the resulting preheated oil chargestock into a coking zone at delayed coking condition to form coke and a vapor phase product, including heavy and light hydrocarbon products;

(c) introducing said vapor phase product and a fresh hydrocarbonaceous oil into a separation zone;

(d) withdrawing a heavy bottoms fraction, including at least a portion of said heavy hydrocarbon products, from said separation zone, and

(e) recycling at least a portion of said withdrawn bottoms fraction to said preheating zone of step (a),

the improvement which comprises:

(f) introducing a first portion of a fresh hydrocarbonaceous oil directly as a separate stream from said recycled bottoms fraction of step (e) into said preheating zone of step (a) to preheat said first portion of fresh oil;

(g) introducing a second portion of said fresh hydrocarbonaceous oil into said separation zone of step (c);

(h) introducing said preheated first portion of fresh feed into an upper portion of said coking zone, and

(i) introducing at least a portion of the preheated recycled bottoms fraction resulting from step (e) into a bottom portion of said coking zone.

4,501,655

HYDROCRACKING PROCESS

Lee Hilfman, and Mark J. O'Hara, both of Mount Prospect, Ill., assignors to UOP Inc., Des Plaines, Ill.

Division of Ser. No. 526,235, Aug. 25, 1983, Pat. No. 4,464,481. This application Mar. 30, 1984, Ser. No. 595,113
Int. Cl.³ C10G 47/04, 47/20
U.S. Cl. 208—110 **4 Claims**

1. A process for the hydrocracking of a hydrocarbon charge stock which comprises reacting the charge stock with hydrogen at hydrocarbon hydrocracking conversion conditions wherein said hydrocarbon hydrocracking conversion conditions include a temperature from about 500° F. to about 1000° F., a pressure from about 500 to about 3000 psig, a liquid hourly space velocity from about 0.2 to about 15 and a hydrogen circulation rate from about 500 to about 20,000 standard cubic feet per barrel of hydrocarbon charge and in contact with a catalytic composite comprising a silica-thoria carrier material wherein said carrier is cogelled silica-thoria containing from about 25% to about 99% by weight silica and from about 1% to about 75% by weight thoria and on an elemental basis about 0.5 to 14 wt. % Group VIB metal component, about 0.5 to 2 wt. % Group VIII metal component, and 1.0 to 3.0 wt. % of a fluorine component.

4,501,656

DEWAXING PROCESS EMPLOYING A CATALYST WITH A HIGHLY DEALUMINATED MORDENITE BASE

Pierre Dufresne; Edouard Freund, both of Rueil Malmaison; Christian Marcilly, Houilles, and Francis Raatz, Rueil Malmaison, all of France, assignors to Institut Francais du Petrole, Rueil-Malmaison, France

Filed Jun. 23, 1983, Ser. No. 507,415
Claims priority, application France, Jun. 23, 1982, 82 11132
Int. Cl.³ C10G 45/12, 45/64, 47/20
U.S. Cl. 208—111 **7 Claims**

1. A method for improving the low temperature properties and desulfurizing an oil cut having an initial boiling point of 180°–320° C. and a final boiling point of 320°–420° C., a sulfur content of 0.5–3.5% by weight and a pour point and cloud point higher than 0° C., said method comprising the step of contacting said cut with hydrogen, in the presence of a catalyst comprising:

(1) an acidic carrier comprising:

(a) at least 50% by weight, calculated as dry carrier, of highly dealuminated zeolitic mordenite having a molar SiO_2/Al_2O_3 ratio greater than or equal to 110 and a sodium content of not more than 0.5% by weight; and

(b) an amorphous matrix; and

(2) at least one Group VIII metal oxide, and at least one Group VI metal oxide;

at a pressure of 1.0–10.0 megapascals, a temperature of 300°–460° C., a space velocity of 0.2–3 VVH, and a volumic ratio H_2/oil of 200–1500; whereby the pour point and cloud point of the resultant oil are lowered by at least 10° C., and at least 90% desulfurization is achieved.

4,501,657

PREHEATING OF DISTILLATION FEED

Milton H. Nollkamper, Sweeny, Tex., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Feb. 1, 1983, Ser. No. 462,850
Int. Cl.³ B01D 3/42; C10G 7/12
U.S. Cl. 208—350 **41 Claims**

1. Apparatus comprising:

(a) a preheating means for heating feed;

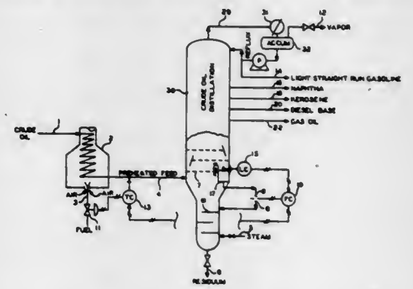
(b) a distillation column;

(c) a feed means for introducing feed heated by said preheating means into said distillation column;

(d) a liquid condensate collection means positioned above said feed means of said distillation column, for collecting liquid produced by the condensation of vapor in said distillation column;

(e) a means for measuring the amount of liquid in said liquid condensate collection means; and

(f) a means to control the extent to which feed is heated by



said preheating means in response to the amount of liquid in said liquid condensate collection means.

4,501,658

METHOD OF CONDITIONING CLAY FOR FLOTATION USING IN SITU FERROUS ACTIVATOR

Raymond H. Young, Macon, Ga., assignor to Freeport Kaolin Company, New York, N.Y.

Filed Aug. 25, 1982, Ser. No. 411,250
Int. Cl.³ B03B 1/00
U.S. Cl. 209—5 **17 Claims**

1. A method of treating a clay containing titanium mineral impurities and reducible iron impurities to remove said impurities therefrom, said method comprising the steps of:

(a) mixing said clay in the form of an aqueous slurry having a solids content of clay of at least 25% by weight with a reducing agent which functions to reduce said reducible iron impurities to a water-soluble ferrous salt and which thereafter reduces said reducible iron impurities to a water-soluble ferrous salt which is an in situ activator for said titanium mineral impurities;

(b) conditioning a mixture of said aqueous clay slurry containing said water-soluble ferrous salt in situ activator and said titanium mineral impurities, a collector for the titanium mineral impurities in said clay, and sufficient activator for said titanium mineral impurities including said in situ activator at a pH below 7 and at a solids content of at least 25% by weight for a time sufficient to dissipate therein at least 25 horsepower hours of energy per ton of solids;

(c) subjecting the conditioned mixture to an air froth flotation process by passing air bubbles upwardly through the conditioned aqueous slurry and removing titanium impurities with the froth; and

(d) recovering clay having a reduced titanium minerals impurities content.

4,501,659

SKIMMER APPARATUS FOR SWIMMING POOLS

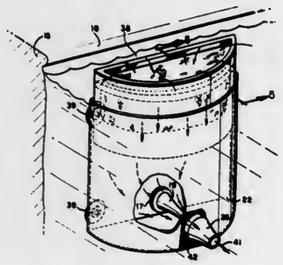
Charles R. Henk, 581 Princeton Ave., Brick Town, N.J. 08723

Filed Dec. 7, 1982, Ser. No. 447,512
Int. Cl.³ E04H 3/16
U.S. Cl. 210—169 **14 Claims**

1. For a swimming pool having a body of water and a water inlet for introducing make-up water into said body to maintain a normal surface level, a skimmer apparatus for collecting solid materials suspended in said body comprising a receiver having an open top and a foraminous portion below said open top, means to support said receiver with its open top adjacent the surface level of the body of water, a receptacle in fluid communication with said foraminous portion of said receiver, means defining a discharge opening in said receptacle for directing water from said receptacle into the body of water, and nozzle means adapted to be connected to said water inlet and positioned in registry with said discharge opening to direct a stream of the make-up water from the inlet through said discharge opening, said opening being sufficiently larger than said

nozzle stream to cause said nozzle to eject water from said receptacle through said outlet along with the make-up water, the ejection of water from said receptacle causing pool water to flow into the open top of said receiver and through the foraminous portion, solid material in the pool water being trapped in said receptacle by said foraminous portion.

13. In combination with a swimming pool having a rigid wall for containing a body of water and a water inlet for introducing make-up water into said body to maintain a normal surface level, a skimmer apparatus for collecting solid materials suspended in the body of water comprising a receiver having an open top and a foraminous portion below said open top, means to support said receiver with its open top adjacent the surface level of the body of water, a receptacle mounted integrally within said rigid wall in fluid communication with said foraminous portion of said receiver, means defining a discharge opening in said receptacle for directing water from said receptacle into said body, said make-up water inlet being positioned within said receptacle to introduce make-up water into the body of water through said receptacle and said discharge opening, and nozzle means connected to said water inlet and positioned in registry with said discharge opening to direct a stream of make-up water from said inlet through said discharge opening, said opening being sufficiently larger than said nozzle stream to cause said nozzle to eject water from said receptacle through said outlet along with the make-up water, the ejection of water from said receptacle causing pool water to flow into the open top of said receiver and through the foraminous portion, solid material in the pool water being trapped in said receptacle by said foraminous portion.



4,501,660

OIL FILTER

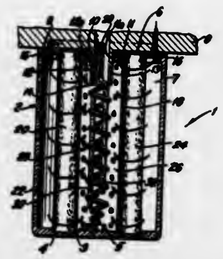
Alfred Hebert, Skidmore Rd., Pleasant Valley, N.Y. 12569

Continuation-in-part of Ser. No. 469,787, Feb. 25, 1983, , which is a continuation of Ser. No. 274,395, Jun. 17, 1981, abandoned. This application Nov. 17, 1983, Ser. No. 552,804

Int. Cl.³ B01D *27/06, 35/06*

U.S. Cl. 210—209 **2 Claims**

1. An oil filter device comprising an outer cylindrical container member having inner and outer ends, the outer end of said member being closed, said inner end having a central annular outlet aperture with internally threaded walls adapted to engage exteriorly threaded walls of an annular conduit extending from an engine block, the outer regions of said inner end having inlet apertures formed therein, a cylindrical perforated shell centrally located within said outer member and defining a filtering regions between the cylindrical walls of the outer container and said shell, an accordian-shaped filter element located in said filtering region, and within the perforated shell a core region, said core region adapted to contain a permanently magnetized metal helical structure within which structure is retained at least one bar of magnesium metal, the inner terminus of said helical structure extending into said central outlet aperture, central windings of said helical structure having a radius less than the radius of said central outlet aperture and greater than the radius of the said annular conduit, whereby oil flowing inwardly through said filtering element flows past said helical structure and magnesium bar, and metallic particles in said oil are removed by said magnetized helix, and acid carried by said oil is neutralized by said magnesium metal, and said oil flows out of said oil filter device through said central outlet aperture.



4,501,661

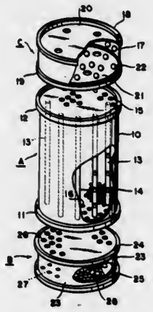
METHOD AND APPARATUS FOR PURIFICATION AND ACTIVATION OF WATER

Masafusa Karasawa, 783-2, Ohaza-Karasugawa, Horiganemura, Minami-azumi-gun, Nagano Prefecture, Japan

Filed Apr. 3, 1984, Ser. No. 596,087

Int. Cl.³ B01D *35/06;* **B03C** *1/02;* **C02F** *1/48*

U.S. Cl. 210—223 **2 Claims**



1. An apparatus for purification and activation of water which comprises dechloration zone charged with an agent having an ability to decompose combined chlorine to free chlorine and to adsorb free chlorine, activation zone to disorder the equilibrium state of water and ionize the thus disordered water wherein particles of magnetic multielementary mineral and one or more magnet bars containing magnets in a midair space are installed among said particles and settlement zone charged with a means to disturb the ionic balance of water and to make the water oriented to be softened.

4,501,662

WIRE MACHINE, FOR DEWATERING STOCK SUSPENSIONS

Mario Biondetti, Schio, Italy, assignor to Escher Wyss GmbH, Ravensburg/Württ., Fed. Rep. of Germany

Filed May 21, 1982, Ser. No. 380,940

Claims priority, application Switzerland, Jun. 3, 1981, 3617/81

Int. Cl.³ D21C *9/12;* **D21F** *1/78, 1/80*

U.S. Cl. 210—391 **9 Claims**

1. A wire machine for dewatering stock suspensions, comprising:

at least two dewatering cylinders;

an endless revolving wire defining an endless wire loop;

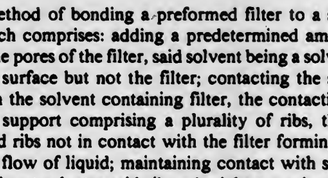
said at least two dewatering cylinders being located within said endless wire loop;

said dewatering cylinders and said wire coacting with one another so as to form therebetween substantially wedge-shaped spaces;

at least one infeed device located within said wire loop for infeeding a respective substantially flat stock jet of the material which is to be dewatered into each of said substantially wedge-shaped spaces between said wire and said dewatering cylinders;

at least one removal device operatively associated and cooperating with each dewatering cylinder and serving for the removal of dewatered material adhering to the surface of the associated dewatering cylinder;

each said dewatering cylinder having a lengthwise axis which is substantially vertically arranged;



said wire having a wire surface which is likewise substantially vertically arranged;

the dewatered material removed by said removal devices being removed under the action of the force of gravity downwardly out of the region of the wire and said dewatering cylinders; and

said wire defining a common wire training about said two dewatering cylinders and forming said endless wire loop.

4,501,663

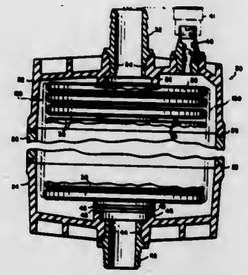
FILTER CARTRIDGES AND METHODS AND COMPONENTS FOR MAKING THEM

Wayne S. Merrill, Litchfield, N.H., assignor to Millipore Corporation, Bedford, Mass.

Continuation of Ser. No. 091,626, Nov. 5, 1979, abandoned. This application Jul. 24, 1981, Ser. No. 286,420

Int. Cl.³ B01D *31/00*

U.S. Cl. 210—347 **18 Claims**



1. The method of bonding a preformed filter to a support surface which comprises: adding a predetermined amount of solvent to the pores of the filter, said solvent being a solvent for the support surface but not the filter; contacting the support surface with the solvent containing filter, the contacting surface of the support comprising a plurality of ribs, the area between said ribs not in contact with the filter forming channels for the flow of liquid; maintaining contact with said ribs until said solvent solvates said rib and wicks a portion thereof into the contacting pores of said filter; and removing the solvent.

4,501,664

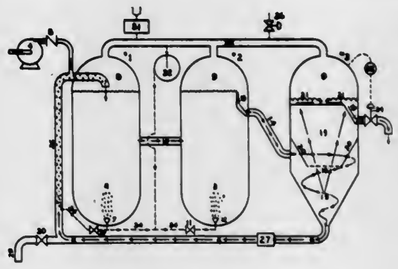
METHOD AND APPARATUS FOR TREATING ORGANIC WASTEWATER

Richard W. Heil, 30 Arthur Ave., Clarendon Hills, Ill. 60514, and Thomas A. Rose, 351 S. Waiola Ave., LaGrange, Ill. 60525

Continuation-in-part of Ser. No. 359,585, Mar. 18, 1982, Pat. No. 4,415,452. This application Nov. 10, 1983, Ser. No. 550,906 The portion of the term of this patent subsequent to Nov. 15, 2000, has been disclaimed.

Int. Cl.³ C02F *3/20*

U.S. Cl. 210—614 **11 Claims**



1. The method of treating organic waste liquid with activated sludge comprising the steps of:

establishing an enclosed continuous flow way for the organic waste liquid and the activated sludge in a mixed liquor form including several aeration chambers, and a separator chamber that are air pressurized to a predetermined pressure, that contain organic waste liquid and activated sludge, and that are consecutively connected in a continuous flow circuit through said aeration chambers, said separator chamber, and return flow to said one aeration chamber,

mixing activated sludge and fresh organic waste liquid in said return flow,

air-lift passing the return flow into said one aeration chamber adjacent the upper end thereof,

dosing the body of the liquor of said one aeration chamber with air in diffused bubble form for flocculating and air saturation of the sludge,

passing continuously from said liquor body a flow of the liquor to a subsequent of said aeration chambers having a second liquor body while diffusing air into said second body from the lower end of same for providing a liquor flow in which the flocculated sludge has assimilated the organic waste in the liquor flow,

continuously passing in a gravity flow to said separator chamber the organic waste assimilated liquor flow, and establishing and maintaining in said separator chamber and in said organic waste assimilated liquor flow a cyclone separating action effecting centrifugal force and gravity induced settling out of the sludge flow thereof to provide said return flow, and a rising effluent centrate flow,

continuously clarifying and discharging the centrate flow as tertiary quality effluent,

and continuously pumping said return flow and returning same to the upper end of said one aeration chamber to effect said mixing and said first mentioned passing steps.

4,501,665

SELF-CONTAINED SEWAGE TREATMENT SYSTEM AND METHOD

Thomas J. Wilhelmson, P.O. Box 2243, Redding, Calif. 96099

Filed Jun. 15, 1984, Ser. No. 621,191

Int. Cl.³ C02F *3/30*

U.S. Cl. 210—630 **13 Claims**

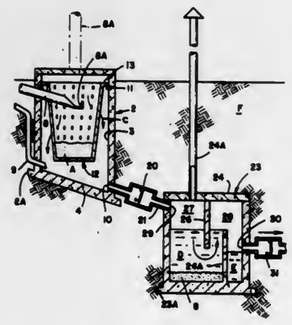
1. A unitized raw sewage treatment system comprising:

a first waterless tank means having suspended therein a

perforated basket means, said tank means having an inlet operable to deposit effluents entering said waterless tank into said perforated basket means and drain means located at the bottom of said waterless tank operable to flow liquids to its outlet means;

a septic tank means having an inlet, an outlet and at least one chamber therein operable to allow particular matter in effluents received in said septic said to settle to the bottom thereof; and

pipe means connecting said outlet of said waterless tank means with said inlet of said septic means whereby solid and semi-solid particulate wastes in raw sewage effluents entering said waterless tank means will be trapped in said basket means where said wastes will undergo aerobic digestion and liquid effluents egressing from said waterless tank will enter said septic tank means where particulate



wastes will therein undergo anaerobic digestion after when settling to the bottom of said septic tank means.

13. A method of treating raw sewage effluents containing solid and semi-solid wastes comprising the steps of:

flowing said effluents into a perforated basket means operable to separate the wastes from the liquids in the effluent;

providing air circulation about said perforated basket means to cause said wastes to undergo aerobic digestion;

collecting all liquids and small particles of the wastes beneath said basket means, including liquids released by the aerobic digestion action;

placing all the resulting collected matter in a septic system having a settling chamber where organic material in such matter will undergo further anaerobic digestion; and

disposing of the resulting liquids from the septic system in a leach field or the like.

4,501,666

PROCESS FOR THE REMOVAL OF BISMUTH AND ANTIMONY FROM AQUEOUS SULFURIC ACID SOLUTION CONTAINING BISMUTH AND/OR ANTIMONY

Takashi Ogata; Hiroshi Hosaka, and Shunichi Kasai, all of Toda, Japan, assignors to Nippon Mining Co., Ltd., Japan

Filed May 2, 1984, Ser. No. 606,372

Claims priority, application Japan, May 11, 1983, 58-82402

Int. Cl.³ C25C *1/12*

U.S. Cl. 210—688 **3 Claims**

1. A process for the selective removal of bismuth and/or antimony from an aqueous sulfuric acid solution containing dissolved bismuth and/or antimony mixed with other metals comprising bringing said sulfuric acid solution into contact with a phosphomethylamino chelate resin.

4,501,667

PROCESS OF INHIBITING CORROSION OF METAL SURFACES AND/OR DEPOSITION OF SCALE THEREON

Barry Cook, Manchester, England, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Feb. 21, 1984, Ser. No. 582,213

Claims priority, application United Kingdom, Mar. 3, 1983, 8305933; Jun. 20, 1983, 8316711

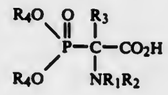
Int. Cl.³ C23F *11/00*

U.S. Cl. 210—700 **19 Claims**

1. Process for conditioning metal surfaces to inhibit their corrosion and/or to inhibit scale deposition thereon, by treating said surfaces:

(A) during contact with an aqueous system capable of corroding said metal surface or of depositing scale thereon, with

(i) a compound having the formula (I)



(I)

or a water-soluble salt (or partialester or -salt) thereof, wherein R_1 and R_2 are the same or different and each is hydrogen, a C_1–C_{12} straight- or branched chain alkyl group (optionally substituted by one or more hydroxy- and/or carboxyl groups and/or optionally interrupted by one or more oxygen atoms), a C_3–C_{12} straight- or branched chain alkenyl group, a C_7–C_{15} aralkyl group, or $—CH_2PO_3H_2$, or R_1 and R_2, together with the nitrogen to which they are each bonded, may form an optionally-substituted heterocyclic ring; R_3 is hydrogen, a C_1–C_{12} straight- or branched chain alkyl group or an optionally substituted C_6–C_{10} aryl group; and R_4 is hydrogen or a C_1–C_4 alkyl group; and optionally

(ii) a metal ion

(B) during contact with an aqueous system capable of corroding a metal surface or of depositing scale thereon, with (a) a compound of formula I or a water-soluble salt (or partial salt) thereof; and optionally (b) a metal ion which enhances, synergistically, the metal conditioning effected, individually, by the compound of formula I and the metal ion.

4,501,668

PROCESS FOR THE ELIMINATION OF HYDROGEN SULFIDE OR IRON SULFIDE FROM AN AQUEOUS SYSTEM

Wolfgang Merk, Tokyo, Japan, and Karl-Heinz Rink, Hanau, Fed. Rep. of Germany, assignors to Degussa Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Dec. 6, 1983, Ser. No. 558,534

Claims priority, application Fed. Rep. of Germany, Dec. 7, 1982, 3245139

Int. Cl.³ C02F *1/00, 1/54*

U.S. Cl. 210—749 **18 Claims**

1. A process for the elimination of hydrogen sulfide, iron sulfide or a mixture of iron sulfide and hydrogen sulfide from an aqueous system comprising adding to the system an effective amount of a water soluble low molecular weight condensation product of acrolein and formaldehyde in the molar ratio of 1:1 to 1:10, said condensation product having been produced in the presence of a basic catalyst, to react with said hydrogen sulfide, said iron sulfide, or said mixture, and form an odor free aqueous solution.

4,501,669

METHOD AND APPARATUS FOR REMOVING LIQUID FROM A SUSPENSION

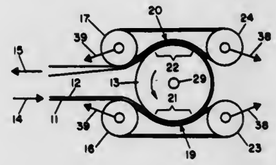
Sven Hakansson, Nynäshamn, and Bengt Lundh, Hedemora, both of Sweden, assignors to Axel Johnson Engineering AB, Nynäshamn, Sweden

Filed Dec. 29, 1982, Ser. No. 454,191

Claims priority, application Sweden, Jan. 4, 1982, 8200023

Int. Cl.³ B01D *33/04*

U.S. Cl. 210—770 **10 Claims**



1. A method for removing liquid from a suspension comprising conveying the suspension by at least one web partly around the surface of at least one press drum, applying a first substantially constant pressure to the web in the radial direction of the drum throughout a first pressure path extending along a first portion of the press drum surface, moving the web in the absence of any radially applied pressure on the web to a second pressure path extending along a second portion of the press drum surface spaced from the first portion and applying a second substantially constant pressure to the web in the radial direction of the drum throughout the second pressure path, the second pressure path being applied in a direction to at least partially balance the load on the press drum resulting from the first pressure.

4. Apparatus for removing liquid from a suspension comprising a press drum, at least one web passing in a path extending partly around the press drum to carry a suspension to be dried therearound, at least two spaced pressure means for applying substantially constant pressure to the web in the radial direction of the drum throughout corresponding spaced portions of the press drum surface which are separated by a portion of the web path extending around the drum in which no radial pressure is applied, the pressure means being positioned with respect to each other so as to substantially balance the load on the press resulting from the application of pressure by the pressure means.

4,501,670

RECOVERY OF OIL AND SULFONATE FROM FILTER CAKE

William H. Tyson, 1874 School St., Moraga, Calif. 94556, and Frank A. Stuart, 360 Riviera Dr., San Rafael, Calif. 94901

Continuation-in-part of Ser. No. 335,261, Dec. 23, 1981, abandoned. This application Jun. 20, 1983, Ser. No. 505,905

Int. Cl.³ B01D *12/00*

U.S. Cl. 210—770 **11 Claims**

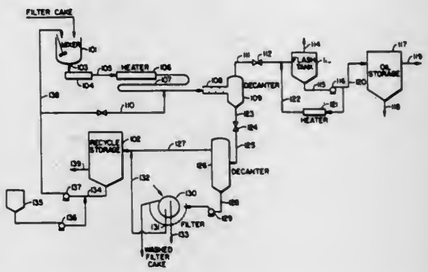
11. A process for treating a filter cake obtained by filtering oil containing an oil soluble alkaline earth metal sulfonate employing a siliceous filter aid, to recover oil and sulfonate from the filter cake which comprises,

(a) mixing the filter cake with about 1.5 to about 3 times its weight of a hot aqueous solution having a pH in the range 11 to 14 and containing as the solute a material selected from the group consisting of sodium hydroxide, sodium carbonate, sodium borate, sodium phosphate and mixtures thereof in a mixing zone,

(b) maintaining the resultant mixture at temperatures in the range 160°–300° F. for at least 5 minutes,

(c) passing the mixture from the mixing zone into a settling zone and adding to the mixture additional aqueous solution in amount sufficient to bring the weight ratio of the aqueous solution to filter cake to at least 4 to 1,

(d) maintaining the mixture obtained in step (c) quiescent at a temperature above 160° F. until it separates forming an upper oil layer and a lower layer containing aqueous solution and filter cake solids,



(e) withdrawing the oil layer,

(f) withdrawing the lower layer, filtering it, and returning at least a portion of the filtrate to the mixing zone, and

(g) washing the filter cake from step (f) with water or with dilute acid to obtain a washed filter cake having a pH below 12.

4,501,671

METHOD AND APPARATUS FOR TREATMENT OF OILY WASTE

Graydon C. Bazell, Poughkeepsie, N.Y., assignor to Alfa-Laval, Inc., Poughkeepsie, N.Y.

Filed Jan. 3, 1984, Ser. No. 567,872

Int. Cl.³ B01D *33/02*

U.S. Cl. 210—781 **10 Claims**

1. In the treatment of oily waste containing oil, water and solids, the method which comprises feeding said waste to a gravity settling tank and there separating the waste into a light oil phase and a heavy phase containing water, solids and residual oil, continuously withdrawing oil as an overflow stream from said tank, continuously passing heavy phase as an underflow from said tank to a first centrifuge and there centrifugally separating said underflow into a light component including oil with some water, an intermediate component which is mainly clarified water, and a heavy sludge component containing some water, continuously returning said light component to the settling tank, continuously and separately discharging said intermediate component from the centrifuge, and passing said separated sludge component to a second centrifuge and there centrifugally separating the sludge component into substantially dry solids and water.

4,501,672

ORGANIC COMPOUNDS

David L. Connell, and Jacqueline A. Coates, both of Leeds, England, assignors to Sandoz Ltd., Basel, Switzerland

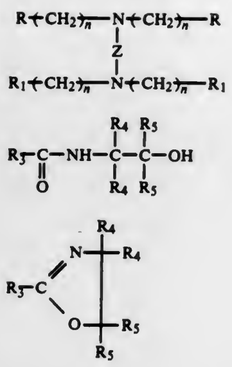
Filed Mar. 25, 1983, Ser. No. 478,679

Claims priority, application United Kingdom, Mar. 30, 1982, 8209275; Mar. 30, 1982, 8209276

Int. Cl.³ C09K *7/06*

U.S. Cl. 252—8.5 M **17 Claims**

1. A fluid loss reducing additive for an oil-based well-working fluid which is the product of mixing together, in an oil or in a two-phase system comprising oil as a continuous phase and up to 15% by weight, based on the total weight of the mixture, of an aqueous disperse phase, lignite or humic acid with a compound containing no primary or secondary amine or amine salt groups and being of formula I, II or III below, or a mixture thereof



in which

each R, independently, and each R_1, independently, is —OH— or —NHCOR', where R' is C_{1-22}alkyl, C_{2-22}alkenyl or C_{2-6}hydroxyalkyl, provided that not more than one group R, and not more than one group R_1, is —OH,

each n, independently, is an integer from 2 to 6, Z is a difunctional bridging group, R_3 is C_{8-20}alkyl or C_{8-20}alkenyl,

each R_4, independently, is hydrogen, C_{1-4}alkyl or C_{1-4}hydroxyalkyl, provided that both R_4's are not hydrogen, and each R_5, independently, has one of the significances of R_4, except that both R_5's may be hydrogen, wherein the proportion by weight of lignite or humic acid to total compound of formula I, II, or III is between 1:2 and 2:1.

4,501,673

COMPOSITIONS FOR USE IN OIL RECOVERY AND METHOD OF USE

Phillip K. G. Hodgson, Reading, England, assignor to The British Petroleum Company p.l.c., London, England

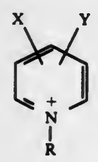
Filed Mar. 31, 1982, Ser. No. 363,864

Claims priority, application United Kingdom, Apr. 3, 1981, 8110559

Int. Cl.³ E21B *43/22*

U.S. Cl. 252—8.55 D **3 Claims**

1. A method for recovering oil from a formation which method comprises the steps of injecting an aqueous medium containing a surfactant into the formation, displacing the oil from the formation and recovering the displaced oil, wherein the surfactant is a betaine of formula



wherein

R is C_8 to C_{24} alkyl which may optionally be substituted by inert substituents;

Y is H, CO_2^- or a SO_3^-;

when Y is H, X is CO_2^-, SO_3^- or $(CH_2)_m SO_3^-$ where m is 1 or 2;

when Y is CO_2^-, X is CO_2^-;

and when Y is SO_3^-, X is SO_3^-.

4,501,674

METHOD FOR REDUCING CORROSIVENESS OF AQUEOUS FLUIDS

Yulin Wu, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Sep. 1, 1982, Ser. No. 413,647

Int. Cl.³ C23F *11/14*

U.S. Cl. 252—8.55 D **26 Claims**

20. The method of claim 19 in which the aqueous fluid is contacted by the enzyme by passing the aqueous fluid across the enzyme immobilized on an inert support.

4,501,675

ENHANCED OIL RECOVERY

Thomas P. Malloy, Lake Zurich, and Raymond J. Swedo, Mount Prospect, both of Ill., assignors to UOP Inc., Des Plaines, Ill.

Continuation-in-part of Ser. No. 274,915, Jun. 18, 1981, abandoned. This application Jul. 18, 1983, Ser. No. 514,717

The portion of the term of this patent subsequent to Nov. 8, 2000, has been disclaimed.

Int. Cl.³ E21B *43/22*

U.S. Cl. 252—8.55 D **8 Claims**

1. A process for the enhanced recovery of oil from a subterranean reservoir of oil which comprises the introduction of a three-component aqueous surfactant into said subterranean reservoir; the three components of said surfactant being:

(1) from about 1% to about 10% of a sulfonate of a gas oil having a molecular weight of from about 240 to about 550 and which has been obtained from the thermal cracking of coal;

(2) from about 1% to about 10% of a lower alkyl alcohol containing from about three to about six carbon atoms; and

(3) from about 0.1% to about 2% of a non-ionic ethoxylated normal alcohol containing from about 12 to about 15 carbon atoms; wherein said three components of said aqueous surfactant are present in a sufficient amount to reduce the interfacial tension between said oil and water.

4,501,676

POLYTETRAFLUOROETHYLENE SOLID LUBRICANT MATERIALS

Peter Moorhouse, Whitley Bay, England, assignor to International Research & Development Company, Newcastle-upon-Tyne, England

Filed Feb. 7, 1983, Ser. No. 464,723

Claims priority, application United Kingdom, May 19, 1982, 8214653

Int. Cl.³ C10M *7/02*

U.S. Cl. 252—12 **6 Claims**

1. In a wear-resistant bearing material comprising a substrate of beryllium-copper or of steel and a solid lubricant layer on the substrate, said lubricant layer being in the form of a matrix comprised principally of polytetrafluoroethylene with lead as an additive, the improvement wherein the lubricant layer additionally contains starch or partially pyrolized cellulose.

4,501,677

HETEROCYCLIC NITROGEN COMPOUNDS—ORGANOMETALLIC SALT COMPLEXES AS CORROSION INHIBITORS IN LUBRICATING OILS

Jacob J. Habeeb, Sarnia, Canada, assignor to Exxon Research & Engineering Co., Florham Park, N.J.

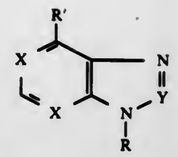
Filed Nov. 2, 1983, Ser. No. 547,984

Int. Cl.³ C10M *1/32, 1/54*

U.S. Cl. 252—37.2 **11 Claims**

1. A lubricating oil composition comprising a major amount of a lubricating oil basestock and an effective amount of a corrosion inhibitor comprising a complex of:

(a) a heterocyclic nitrogen compound having the formula:



where each x is C or N with at least one x being N; Y is C or N; R is H, alkyl of 1 to 20 carbons or $CH_2NR''_2$ where each R'' is H or alkyl of 1 to 20 carbons; and R' is H, alkyl of 1 to 20 carbons or NR'''_2 with each R''' being H or alkyl of 1 to 20 carbons; and

(b) an oil soluble organometallic salt having the formula:



where M is an alkali metal, alkaline earth metal or transition metal selected from the group consisting of sodium, potassium, calcium, magnesium, chromium, manganese, iron, nickel, molybdenum, copper, zinc, tin and lead; R is the hydrocarbon portion of a linear or branched C_4 to C_{22} fatty acid and x is an integer equal to the valence of the metal M.

4,501,678

LUBRICANTS FOR IMPROVING FATIGUE LIFE

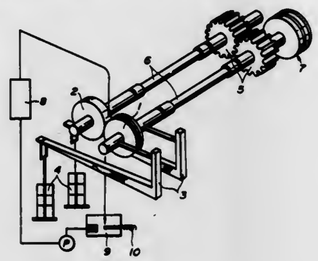
Takao Katayama, Ichihara, and Masahiko Takesue, Sodegaura, both of Japan, assignors to Idemitsu Kosan Company Limited, Tokyo, Japan

Filed Jun. 2, 1983, Ser. No. 500,264

Claims priority, application Japan, Jun. 9, 1982, 57/97774

Int. Cl.³ C10M *1/48, 1/38*

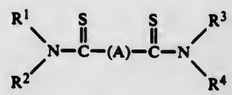
U.S. Cl. 252—32.7 E **20 Claims**



1. A lubricant for improving fatigue life which comprises:

(1) a lubricating base material; and

(2) a compound having alkylthiocarbamoyl groups represented by the formula (i):



(i)

wherein R^1, R^2, R^3, and R^4 are each an alkyl group containing from 1 to 20 carbon atoms, R^1 and R^2, or R^3 and R^4 may be bound to each other to form a ring, and (A) is selected from the group consisting of S, S—S, S—S—S, S—S—S—S, S—S—S—S—S, and S—S—S—S—S—S.

4,501,679

BICYCLIC AMIDE KETAL DERIVATIVES

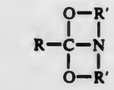
Robert L. Reierson; Hugh F. Hussey, and Edmund P. Woo, all of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 441,346, Nov. 15, 1982, abandoned. This application Feb. 21, 1984, Ser. No. 582,104

Int. Cl.³ C10M *1/32*

U.S. Cl. 252—77 **16 Claims**

8. A process for preventing the deterioration of a functional fluid due to the presence of acid or water comprising adding to the functional fluid an amount effective to prevent the deterioration thereof of a bicyclic amide ketal corresponding to the formula:



wherein R is hydrogen or a substituent of up to 20 carbons selected from the group consisting of alkyl, aryl and inertly-substituted derivatives thereof and R' each occurrence independently is a C_{2-3} alkylene optionally substituted group with up to 4 R'' groups, where R'' is a substituent of up to 10 carbons selected from the group consisting of alkyl, aryl, and inertly-substituted derivatives thereof.

4,501,680

ACIDIC LIQUID DETERGENT COMPOSITION FOR CLEANING CERAMIC TILES WITHOUT ERODING GROUT

Harry W. Aszman, Spotswood; Charles E. Buck, Caldwell, and Cherie H. Everhart, Califon, all of N.J., assignors to Colgate-Palmolive Company, New York, N.Y.

Filed Nov. 9, 1983, Ser. No. 550,247

Int. Cl.³ C11D *7/08*

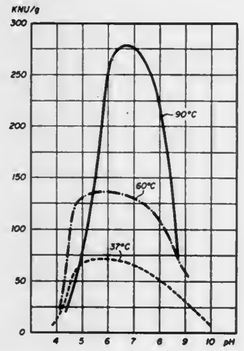
U.S. Cl. 252—142 **14 Claims**

1. An acidic liquid detergent composition, suitable for cleaning ceramic tiles without eroding grout between them, which comprises a minor proportion of glutaric acid, a lesser minor proportion of phosphoric acid, both acids being partially neutralized to a pH in the range of 3 to 5 and the detergent composition being at such pH, and the partially neutralized glutaric and phosphoric acids being present in such proportions that the proportion of partially neutralized glutaric acid in the composition is effective to remove soap scum from tiles and the proportion of partially neutralized phosphoric acid is effective to inhibit erosion of grout between the tiles by the partially neutralized glutaric acid, a minor proportion of a condensation product of ethylene oxide and higher linear alcohol of 8 to 20 carbon atoms, with the content of ethylene oxide being at least about 20 ethylene oxide groups per mole of the alcohol, which condensation product is effective in acid medium to lift soap scum off the tiles being cleaned, a minor proportion of a monolower alkyl ether or phenyl ether of diethylene glycol, wherein the lower alkyl is of 2 to 6 carbon atoms, with the proportion of such monoether of diethylene glycol being effective to assist in removing loosened soap scum from the tiles by helping to transport it away from the location where it was initially bonded to the tiles, and a major proportion of water, in which the partially neutralized glutaric acid, partially neutralized phosphoric acid, condensation product of ethylene oxide and linear alcohol, and diethylene glycol ether are dissolved.

4,501,681
DETERGENT DISH-WASHING COMPOSITION

Alain Groult, Annemasse, France, and Jean Samec, Geneva, Switzerland, assignors to Colgate-Palmolive Company, New York, N.Y.

Filed Dec. 20, 1982, Ser. No. 451,527
Claims priority, application Switzerland, Dec. 23, 1981, 8234/81
Int. Cl.³ C11D *3/386, 3/39*
U.S. Cl. 252—174.12 4 Claims



1. Detergent dish-washing composition containing alkali metals polyphosphates and silicates, at least one non-ionic surfactant, at least one oxidizing agent, enzymes and optionally other conventional additives suitable for detergents, characterized in that said enzymes comprise at least one amylolytic enzyme whose activity is considered to be negligible at pH above 11.5, in that the oxidant is at least one mineral or organic peroxide and in that the alkali content is sufficient to provide a washing bath in a dish-washing machine with a pH above 12.2.

4,501,682
CLEANING AND PROTECTIVE COMPOSITION AND METHOD

Edward Goodman, 265 E. 66th St. - Apt. 11C, New York, N.Y. 10021; James P. Dux, and Fred R. Albright, both of Lancaster, Pa., assignors to Edward Goodman, New York, N.Y.

Filed Dec. 17, 1982, Ser. No. 450,650
The portion of the term of this patent subsequent to Dec. 22, 1998, has been disclaimed.
Int. Cl.³ C08L *83/04;* C09D *9/00;* C11D *7/30*
U.S. Cl. 252—174.15 13 Claims

1. An improved cleaning and protecting composition consisting of an admixture of poly(methylhydrosiloxane), tin octoate and zinc octoate in at least one solvent selected from the group consisting of cyclic poly(dimethylsiloxane)s, poly(dimethylsiloxane) oils, petroleum distillates and methylene chloride and wherein the tin octoate and zinc octoate are present in a weight ratio of 1:1.

4,501,683
RADIATION IMAGE STORAGE PANEL

Satoshi Arakawa, and Junji Miyahara, both of Kaisei, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Aug. 31, 1983, Ser. No. 528,251
Claims priority, application Japan, Sep. 1, 1982, 57-150740
Int. Cl.³ G03C *5/16*
U.S. Cl. 252—301.26 7 Claims

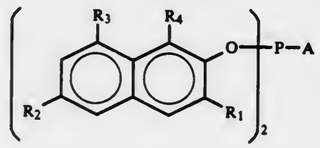
1. A radiation image storage panel comprising a support, a phosphor layer provided thereon which comprises a binder and stimulable phosphor particles dispersed therein, and a protective film provided on said phosphor layer, characterized in that said protective film has a haze value within the range of 4–40%.

4,501,684
2-NAPHTHYL PHOSPHORAMIDITES AND COMPOSITIONS THEREOF

Dwight W. Chasar, Northfield, Ohio, assignor to The B. F. Goodrich Company, Akron, Ohio

Filed Jun. 17, 1983, Ser. No. 505,540
Int. Cl.³ C09K *15/32*
U.S. Cl. 252—400 A 14 Claims

1. 2-naphthyl phosphoramidites of the general formula



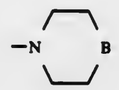
wherein A is



wherein R is an alkyl radical containing 1 to 4 carbon atoms;



wherein a is 3 to 6; or



where B is —O—, —S—, or —NR; R_1 and R_2 are hydrogen or alkyl, R_3 is hydrogen or t-butyl, and R_4 is hydrogen or methyl, ethyl, propyl or isopropyl when R_3 is hydrogen, and at least one of R_1, R_2, R_3 and R_4 is an alkyl radical containing 1 to 4 carbon atoms.

4,501,685
CATALYTIC SELECTIVE HYDROGENATION OF ALIPHATIC UNSATURATION IN COPOLYMERS

Alasdair I. Thomson, and Frank King, both of Reading, England, assignors to Johnson Matthey Public Limited Company, London, England

Filed Sep. 8, 1983, Ser. No. 530,360
Claims priority, application United Kingdom, Sep. 10, 1982, 8225813
Int. Cl.³ C08G *69/26*
U.S. Cl. 502—167 18 Claims

1. A catalyst system comprising from 0.1 to 5% by weight of palladium supported on particulate carbon black (the percentage being based on the weight of non-porous carbon black in the system) wherein the catalyst system also includes a poison comprising at least one poisoning moiety selected from the group consisting of nitrogen moiety, phosphorous moiety and sulphur moiety wherein the carbon black is non-porous and wherein the ratio of the number of atoms of poisoning moiety in the poison to the number of atoms of palladium in the catalyst system is from 0.0005 to 0.25:1, said catalyst system being characterized by its high selectivity for hydrogenation of aliphatic unsaturation in copolymers which also include aromatic unsaturation.

4,501,686
ANION-DOPED POLYMERS OF FIVE-MEMBERED OXYGEN FAMILY HETEROCYCLIC COMPOUNDS AND METHOD FOR PRODUCING SAME

Shu Hotta, Hirakata; Tomiharu Hosaka, Yawata; Nobuo Sonoda, Settsu, and Wataru Shimotsuma, Ibaraki, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Japan

Filed Apr. 25, 1983, Ser. No. 488,598
Claims priority, application Japan, Apr. 26, 1982, 57-70054; May 13, 1982, 57-80895; Jun. 17, 1982, 57-104924; Sep. 2, 1982, 57-153009
Int. Cl.³ H01B *1/06*
U.S. Cl. 252—500 8 Claims

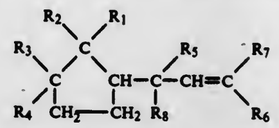
1. A conductive or semiconductive polymeric material consisting essentially of a polymer having recurring units of a five-membered oxygen family heterocyclic ring selected from the group consisting of unsubstituted furan, thiophene, selenophene and tellurophene rings, and furan, thiophene, selephene and tellurophene rings which may be substituted by one or two substituents selected from the group consisting of halogen, hydroxyl, amino and a hydrocarbon group of up to 8 carbon atoms, and anions doped in said polymer and selected from the group consisting of anion radicals of tetrahalogenoborates, perhalogenates, hexahalogenophosphates, hexahalogenoarsenates, hexahalogenoantimonates, sulfate, benzenesulfonate, tetracyanoquinodimethane and derivatives thereof, and mixtures thereof, whereby said polymeric material becomes electrically conductive or semiconductive, there being sufficient anions doped in said polymer to provide improved conductivity of said polymer.

4,501,687
CYCLOPENTANOLS

Jacques Martel, Bondy; Jean Buendia, Le Perreux, and Francois Nezot, Thiais, all of France, assignors to Roussel Uclaf, Paris, France

Filed Nov. 30, 1981, Ser. No. 325,992
Claims priority, application France, Dec. 5, 1980, 80 25869
Int. Cl.³ A61K *7/46;* C07C *35/06*
U.S. Cl. 252—522 R 8 Claims

1. A method of imparting a pleasant odor to a composition comprising incorporating into a composition a sufficient amount of at least one compound of the formula



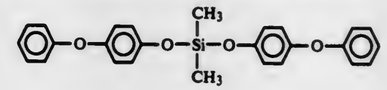
wherein R_1 and R_2 are identical and are selected from the group consisting of hydrogen and alkyl of 1 to 4 carbon atoms, R_3 is selected from the group consisting of —OH, alkoxy of 1 to 8 carbon atoms and acyloxy of an organic carboxylic acid of 1 to 18 carbon atoms, R_4 is selected from the group consisting of hydrogen and alkyl of 1 to 8 carbon atoms, R_5 and R_8 are individually selected from the group consisting of hydrogen, alkyl of 1 to 8 carbon atoms and alkenyl and alkynyl of 2 to 8 carbon atoms and R_6 and R_7 are individually selected from the group consisting of hydrogen, alkyl of 1 to 8 carbon atoms, alkenyl and alkynyl of 2 to 8 carbon atoms, —CN, —$COCH_3$ and —$COOAlK_2$ and AlK_2 is alkyl of 1 to 8 carbon atoms to impart a pleasant odor therein.

4,501,688
SILANE OLIGOMERS USEFUL AS ANTI-TREEING ADDITIVES

Harry Braus, Cincinnati, Ohio, assignor to National Distillers and Chemical Corporation, New York, N.Y.

Filed Feb. 1, 1984, Ser. No. 575,980
Int. Cl.³ H02G *15/24*
U.S. Cl. 252—573 5 Claims

1. A silane oligomer having the general structure:

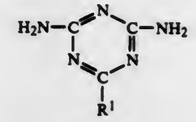


4,501,689
PHOTOPOLYMERIZABLE COMPOSITION

Makoto Yanagawa, No. 7-20, Minamidai 1-chome, Kamifukuoka-shi, Saitama-ken, Japan

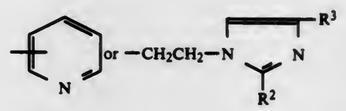
Filed Sep. 26, 1983, Ser. No. 536,061
Int. Cl.³ H01L *13/00*
U.S. Cl. 252—600 18 Claims

1. A photopolymerizable composition which comprises:
(a) 0.1 to 5.0 wt. % of a s-triazine compound represented by general formula I:



(I)

[wherein R^1 stands for



(wherein R^2 stands for a hydrogen atom, an alkyl group or a phenyl group and R^3 stands for a hydrogen atom or a lower alkyl group)];
(b) 5 to 50 wt. % of a photopolymerizable oligomer which has an average molecular weight in the range of 200 to 4000 and has 2 or more of acryloyl groups or methacryloyl groups in a molecule;
(c) 5 to 50 wt. % of vinyl monomer having 1 or more of acryloyl groups or methacryloyl groups which are liquid at 50° C.;
(d) 0.5 to 5 wt. % of a photo-initiator which acts to initiate a cross-linking reaction between said photopolymerizable oligomer and said vinyl monomer when subjected to activated radiation; and
(e) 5 to 60 wt. % of an inorganic filler.

4,501,690
PROCESS FOR TREATING RADIOACTIVE SALT CAKE

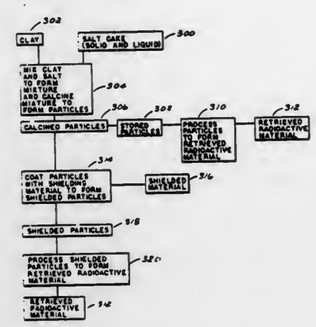
Donald R. Ross, 2329 N. Recker Rd. #19, Mesa, Ariz. 85205

Division of Ser. No. 127,452, Mar. 5, 1980,. This application Sep. 24, 1982, Ser. No. 423,116
Int. Cl.³ G21F *9/16*
U.S. Cl. 252—628 3 Claims

1. A process for treating radioactive salt cake, said process comprising:
a. mixing said radioactive salt cake with clay;
b. heating said mixture to form calcined particles;
c. in heating said mixture burning fuel in the presence of said

mixture to heat said mixture to assist in forming said calcined particles;

d. contacting said mixture with a hot surface to assist in forming said calcined particles;



e. reflecting heat energy radiating from said hot surface toward said mixture on said hot surface to assist in forming said calcined particles; and,

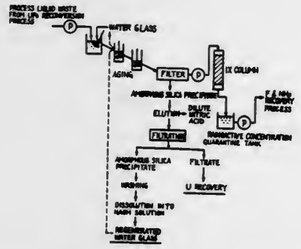
f. said calcined particles being a solid.

4,501,691

PROCESS FOR TREATING A RADIOACTIVE LIQUID WASTE

Shoichi Tanaka, Tokyo; Yoshiharu Tanaka, Okayama, and Eiji Takano, Ibaragi, all of Japan, assignors to Mitsubishi Kinzoku Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 149,034, May 12, 1980, abandoned.
This application Sep. 3, 1982, Ser. No. 414,915
Claims priority, application Japan, Dec. 25, 1979, 54-169076
Int. Cl.³ G21F *9/10*
U.S. Cl. 252—631 **1 Claim**



1. In a system for treating a radioactive liquid waste which comprises removing uranium and β-decay nuclides in solution from a radioactive liquid waste containing uranium and β-decay nuclides by an ion exchange process, the improvement comprising treating said radioactive liquid waste by a flocculation method using water glass as pretreatment of said ion exchange method to make a precipitate composed substantially of an amorphous silica and substantially all of said uranium and a part of said β-decay nuclides which are captured by said precipitate when it is formed, treating said precipitate capturing substantially all of said uranium and a part of β-decay nuclides with a dilute acid to make said captured uranium and β-decay nuclides elute, recovering said eluted uranium and β-decay nuclides as an acidic solution by filtering out said precipitate and dissolving said filtered out precipitate in an alkali metal hydroxide solution to regenerate said amorphous silica constituting said precipitate to water glass, thereby resulting concurrently in a substantial reduction of radioactive material in a final drain to be discharged and deterioration of ion exchange resin, a substantially complete recovery of of said uranium and a part of β-decay nuclides from said radioactive liquid waste and further, a substantially complete prevention of the generation of radioactive decay products of uranium on said ion exchange resins.

4,501,692

CHARGE EFFECTS IN ENZYME IMMUNOASSAYS

Ian Gibbons, Menlo Park; Gerald L. Rowley, Cupertino, and Edwin F. Ullman, Atherton, all of Calif., assignors to Syva Company, Palo Alto, Calif.

Division of Ser. No. 61,099, Jul. 26, 1979, Pat. No. 4,287,300.
This application May 1, 1982, Ser. No. 259,629
Int. Cl.³ A61K *35/14, 37/00, 39/00*
U.S. Cl. 260—112 B **1 Claim**

1. A compound of the formula

Receptor—RX)n

wherein:

Receptor is antibody;

R is a bond or linking group of from about 1 to 10 carbon atoms and from 0 to 4 heteroatoms which heteroatoms are oxygen or sulfur where oxygen is present as oxy or oxo and sulfur is present as thio or thiono;

X is phenoxy;

n is on the average in the range of molecular weight of Receptor divided by from 500 to 10,000;

said compound having a negative charge greater than that of said Receptor.

4,501,693

METHOD OF PREPARING IMMUNOSTIMULANT PROTEOGLYCANS WHICH INDUCE PRODUCTION OF INTERFERON, PROTEOGLYCANS OBTAINED AND PHARMACEUTICAL COMPOSITIONS CONTAINING THEM

Lucien Dussourd d'Hinterland; Gérard Normier, and Anne-Marie Pinel, all of Castres, France, assignors to Pierre Fabre S.A., Paris, France

Filed Mar. 3, 1983, Ser. No. 471,641
Claims priority, application France, Mar. 9, 1982, 82 03921
Int. Cl.³ A61K *37/102, 39/108, 39/40;* C07G *7/00*
U.S. Cl. 260—112 R **8 Claims**

1. A method of preparing bacterial membranous proteoglycans which induce production of interferon from soluble membranous proteoglycans of a strain of gram-negative bacterium, which comprises hydrolyzing the soluble membranous proteoglycans of a strain of gram-negative bacterium by lysozyme, and separating the proteoglycans with a molecular weight between 200,000 and 400,000 from the hydrolysis product.

4,501,694

PHOSPHORYLATED SOYBEAN PROTEIN

Motohiko Hirotsuka, Izumisano, and Makoto Kito, Kyoto, both of Japan, assignors to Fuji Oil Company, Limited, Osaka, Japan

Filed Dec. 27, 1983, Ser. No. 566,024
Claims priority, application Japan, Dec. 28, 1982, 57-229416
Int. Cl.³ A23J *1/14*
U.S. Cl. 260—123.5 **3 Claims**

1. A phosphorylated soybean protein which comprises soybean protein and ortho-phosphate bonded to lysine and histidine residue constituents of the soybean protein, the ratio of bonded phosphorus to nitrogen in the soybean protein being 25 μg/mg nitrogen or more and the isoelectric point of the phosphorylated soybean protein being pH 3.5 or lower.

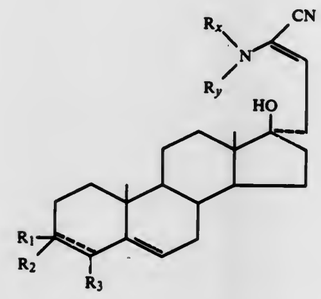
4,501,695

SPIRONALACTONE PROCESS

Verlan H. Van Rheenen, Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

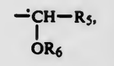
Filed May 16, 1983, Ser. No. 494,740
Int. Cl.³ C07J *19/00*
U.S. Cl. 260—239.57 **45 Claims**

1. A compound of formula II



wherein

(i) R_1 represents a group $—OR_4$ in which R_4 represents a hydrogen atom, an alkyl or alkoxyalkyl group or a



wherein R_5 represents a hydrogen atom or an alkyl group and R_6 represents an alkyl group or R_5 and R_6 together with the carbon and oxygen atoms in which they are attached represent a 5- or 6-membered heterocyclic group, and R_2 and R_3 each represent a hydrogen atom; or

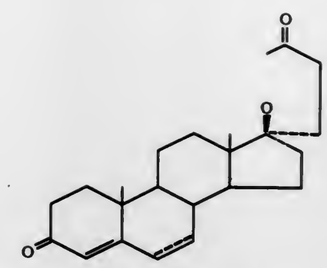
(ii) R_1 and R_2 are the same or different and each represents a group $—OR_4$, wherein R_4 represents an alkyl group, or R_1 and R_2 together represent an alkylendioxy group having 2 or 3 carbon atoms in the alkylene moiety, and R_3 represents a hydrogen atom; or

(iii) R_1 represents a group $—OR_4$, or a group



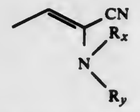
wherein R_7 and R_8 are the same or different and each represents an alkyl group, or R_7 and R_8 together with the nitrogen atom to which they are attached represent a 5- or 6-membered heterocyclic group, which may contain a further hetero atom in the ring, and R_2 and R_3 together represent an additional bond in the 3–4 position; R_x and R_y are the same or different and each represents alkyl of 1 to 5 carbon atoms, aryl of 6 thru 10 carbon atoms or substituted aryl, or R_x and R_y taken together form a 5-, 6- or 7-membered heterocyclic group, which may contain in the ring further hetero atom, selected from the group consisting of nitrogen, oxygen or sulfur.

14. A process for the preparation of 17α-(2-carboxyethyl)-17β-hydroxy-androst-4-en-3-one lactone and 17α-(2-carboxyethyl)-17β-hydroxy-androsta-4,6-diene-3-one lactone of the formula I':



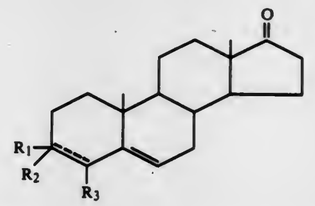
wherein the dotted line between the 6–7 positions indicates the additional double bond of the latter compound, which comprises:

(1) treating a disubstituted amino nitrile of formula A



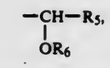
where R_x and R_y are the same or different and each represents alkyl of 1 to 5 carbon atoms, aryl of 6 thru 10 carbon atoms or substituted aryl, or R_x and R_y taken together form a 5-, 6- or 7-membered heterocyclic group, which may contain in the ring a further hetero atom, selected from the group consisting of nitrogen, oxygen or sulfur, with an alkali metal amide deprotonating agent;

(2) reacting the resultant deprotonated nitrile with a 3-protected androst-5-ene-17-one derivative of formula I:



wherein

(i) R_1 represents a group $—OR_4$ in which R_4 represents a hydrogen atom, an alkyl or alkoxyalkyl group or a



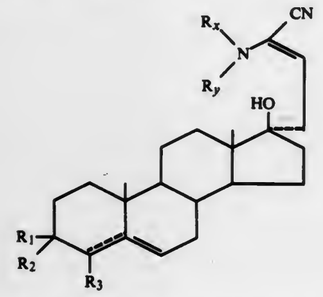
wherein R_5 represents a hydrogen atom or an alkyl group and R_6 represents an alkyl group or R_5 and R_6 together with the carbon and oxygen atoms in which they are attached represent a 5- or 6-membered heterocyclic group and R_2 and R_3 each represent a hydrogen atom; or

(ii) R_1 and R_2 are the same or different and each represents a group $—OR_4$, wherein R_4 represents an alkyl group, or R_1 and R_2 together represent an alkylenedioxy group having 2 or 3 carbon atoms in the alkylene moiety, and R_3 represents a hydrogen atom;

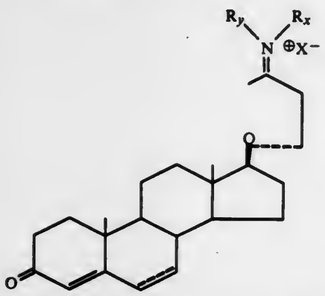
(iii) R_1 represents a group $—OR_4$, or a group



wherein R_7 and R_8 are the same or different and each represents an alkyl group, or R_7 and R_8 together with the nitrogen atom to which they are attached represent a 5- or 6-membered heterocyclic group, which may contain a further hetero atom in the ring and R_2 and R_3 together represent an additional bond in the 3–4 position; to give the amino nitrile adduct (II)



where R_1, R_2, R_3, R_x and R_y are as hereinbefore defined; (3) acidifying the amino nitrile adduct (II) with an acid to form the imino lactone (III); and



(4) neutralizing the imino lactone (III) by reaction with a base to give a 17-spiro-γ-lactone of formula I′.

4,501,696

PROCESS FOR THE PREPARATION OF PENAM DERIVATIVES

John R. M. Dales, Littlehampton, and Marguerita A. Vallance, Worthing, both of England, assignors to Beecham Group p.l.c., England

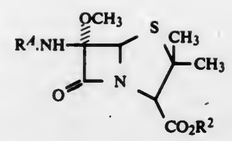
Filed Jul. 9, 1982, Ser. No. 396,646

Claims priority, application United Kingdom, Jul. 10, 1981, 8121303

Int. Cl.³ C07D *499/04;* A61K *31/425*

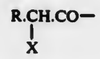
U.S. Cl. 260—245.2 R **11 Claims**

1. A process for the preparation of a penam derivative of formula (I):



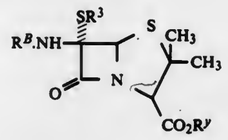
(I)

wherein R^A is hydrogen or a group of formula (Ia):



(Ia)

wherein X is $—CO_2R^1$, or SO_3R^1; R is C_{1-6}alkyl, an optionally substituted 5-membered heterocylic ring containing one or two heteroatoms selected from oxygen, sulphur and nitrogen; phenyl; mono-substituted phenyl where the substituent is halogen, hydroxy, C_{1-6}alkoxy, nitro, amino, C_{1-6}alkyl, C_{1-6}haloalkyl, C_{1-6}alkylcarbonyloxy, or C_{1-6}alkylsulphonylamino; or di-substituted phenyl where the substituents are selected from hydroxy, halogen, methoxy, acetoxy, and amino; R^1 is hydrogen, or a pharmaceutically acceptable salt-forming ion or ester-forming radical, and R^2 represents hydrogen or a pharmaceutically acceptable salt-forming ion or in vivo hydrolysable ester-forming radical; which process comprises reacting a compound of formula (II):



(II)

wherein R^B is hydrogen, a removable amino blocking group, or a group of formula (IIa):



(IIa)

wherein Y is $—CO_2R^x$ or $—SO_3R^x$; R is as defined with respect to formula (Ia) above; R^x represents an ester-forming radical, R^Y represents hydrogen, a salt-forming radical or a carboxyl-blocking group, and R^3 represents an alkyl, benzyl, or aryl group; with methanol in the presence of copper ions; and thereafter if necessary carrying out one or more of the following steps:

(i) removal of any blocking group;

(ii) converting the product to a pharmaceutically acceptable salt or ester thereof.

4,501,697

4-[[(AMIDOMETHYL)OXY]METHYL]-2-OXO-1-AZETIDINESULFONIC ACID SALTS

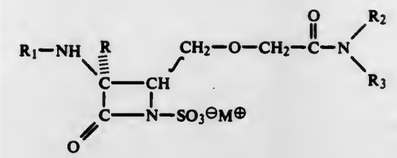
David Kronenthal, Yardley, Pa., assignor to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Jun. 17, 1983, Ser. No. 505,547

Int. Cl.³ C07D *205/08, 403/12, 403/13, 401/12*

U.S. Cl. 260—245.4 **11 Claims**

1. A compound having the formula

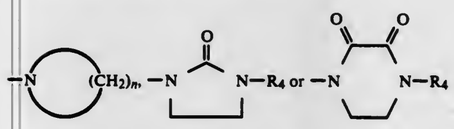


wherein

R is hydrogen or methoxy;

R_1 is an acyl group derived from a carboxylic acid;

R_2 and R_3 are each independently hydrogen, alkyl, phenyl or phenyl substituted with 1, 2 or 3 amino, halogen, hydroxyl, trifluoromethyl, alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms or carboxyl groups, or R_2 and R_3 when taken together with the nitrogen atom to which they are attached are



wherein n is 4 or 5 and R_4 is hydrogen, alkyl or amino; and $M^{\oplus}$ is hydrogen or a pharmaceutically acceptable cation; wherein the term "alkyl" refers to groups having 1 to 10 carbon atoms.

4,501,698

PREPARING 1-(HYDROXYMETHYL)-TRIAZOLOBENZODIAZEPINES AND 1-(AMINOMETHYL)-TRIAZOLOBENZODIAZEPINES

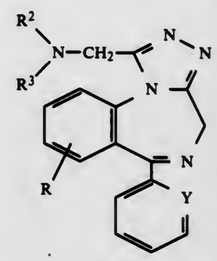
John R. Palmer, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Filed Mar. 31, 1983, Ser. No. 480,978

Int. Cl.³ C07D *487/04*

U.S. Cl. 260—245.5 **5 Claims**

1. A process for preparing a 1-aminomethyl-6-substituted-4H-s-triazolo[4,3-a][1,4]benzodiazepine of the formula



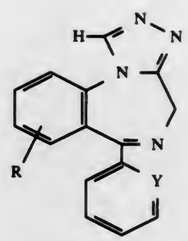
(IV)

wherein R is hydrogen, fluoro, chloro, bromo, trifluoromethyl or nitro

R_2 and R_3 are each hydrogen, C_1 to C_3-alkyl, or R_2 and R_3 are taken together with the nitrogen to which they are bonded to complete a monocyclic, saturated amine ring; selected from the group consisting of N-pyrrolidinyl, N-piperidinyl and N-piperazinyl and Y is a trivalent nitrogen or a $—CR_3=$moiety where R_3 is hydrogen, fluoro or chloro;

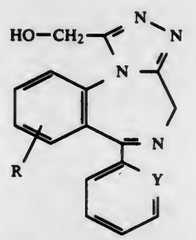
which comprises

heating a mixtutre of paraformaldehyde and a compound of the formula



(I)

where R and Y are as defined hereinabove, in an inert liquid solvent under essentially neutral pH conditions at atmospheric pressure and at a temperature sufficient to dissolve the compound (I) therein and to crack the paraformaldehyde to a reactive form of formaldehyde for a time up to about 5 hours to form a 1-(hydroxymethyl)-compound of the formula

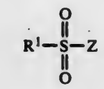


(II)

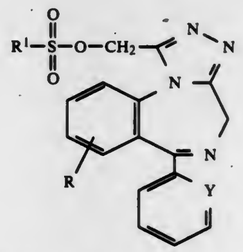
wherein R and Y are as defined hereinabove, without formation of 1,4-bis(hydroxymethyl)-substitution

separating the 1-hydroxymethyl-product (II) from its preparation mixture without using column chromatography procedures;

contacting and reacting the 1-(hydroxymethyl) compound of Formula II with a sulfonyl compound of the formula



where R^1 is C_1 to C_3-hydrocarbon radical, and Z is chloro or bromo, for a time sufficient to form a sulfonate ester of the formula



(III)

where R, R^1 and Y are as defined above, and

contacting and reacting the sulfonyl ester compound III with a compound of the formula



Where R^2 and R^3 are as defined above, in an aqueous, organic, or mixed aqueous-organic medium to form the 1-aminomethyl compound of Formula IV,

and recovering the 1-aminomethyl compound of Formula IV without the need for column chromatography procedures.

4,501,699

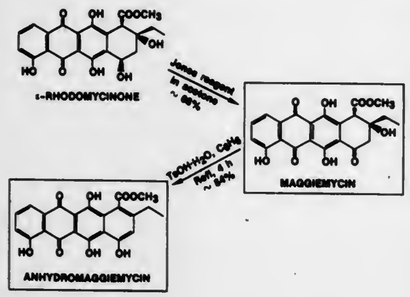
MAGGIEMYCIN, ANHYDROMAGGIEMYCIN AND PROCESSES FOR MAKING

Ramesh C. Pandey; Margaret W. Toussaint; Jeffrey C. McGuire, all of Frederick, and Monica C. Thomas, Columbia, all of Md., assignors to Litton Bionetics, Inc., Kensington, Md.

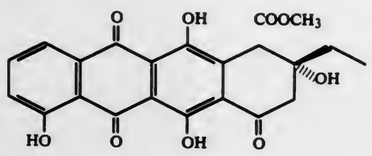
Filed Nov. 1, 1982, Ser. No. 438,306

Int. Cl.³ C07C *49/798*

U.S. Cl. 260—351.1 **4 Claims**

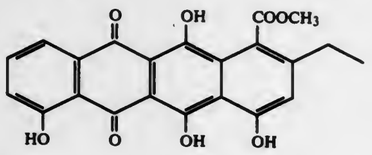


1. Maggiemycin,



and physiologically acceptable salts thereof.

2. Anhydromaggiemycin,



and physiologically acceptable salts thereof.

4,501,700

PREPARATION OF OPTICALLY ACTIVE 4-DEMETHOXYDAUNOMYCINONE

Shiro Terashima, Tokyo; Katsumi Tamoto, Funabashi, and Kenji Koga, Tokyo, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

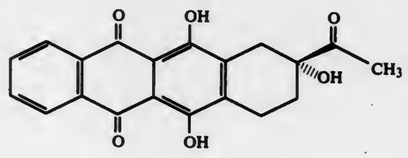
Filed Mar. 2, 1983, Ser. No. 471,354

Claims priority, application Japan, Mar. 2, 1982, 57-33650

Int. Cl.³ C07C *50/36*

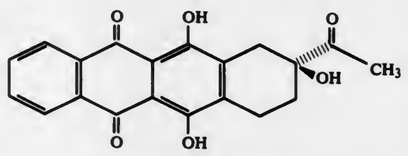
U.S. Cl. 260—351.5 **6 Claims**

1. A process for preparing racemic 4-demethoxy-7-deoxydaunomycinone which comprises methylating the optically active α-hydroxyketone of either one of the formulas:



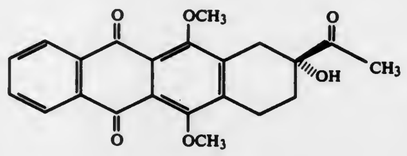
(IV-A)

and



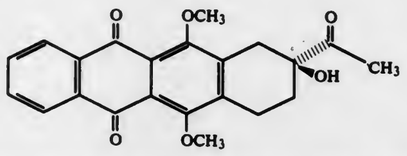
(IV-B)

to give the corresponding methylated product of either one of the formulas:



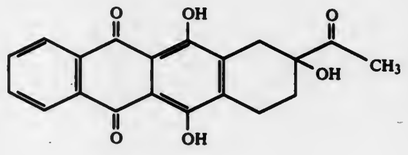
(V-A)

and



(V-B)

and reacting the latter with an acid to give a racemate of the α-hydroxyketone of the formula:



(I)

4,501,701

20-ISOCYANO-$\Delta^{17(20)}$-STEROIDS

Derek H. R. Barton; William B. Motherwell, and Sammir Z. Zard, all of Gif sur Yvette, France, assignors to Roussel Uclaf, Paris, France

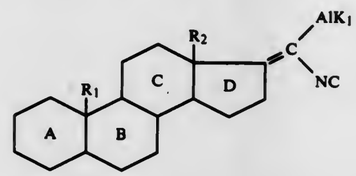
Filed Jul. 7, 1981, Ser. No. 281,552

Claims priority, application France, Jul. 15, 1980, 80 15603

Int. Cl.³ C07J *1/00*

U.S. Cl. 260—397.4 **18 Claims**

1. A 20-isocyano-$^{17(20)}$-steroid of the formula



wherein R_1 is selected from the group consisting of (1) hydrogen, (2) alkyl of 1 to 4 carbon atoms optionally substituted with a member of the group consisting of halogen, hydroxy, carbonyl, amino and cyano and (3) alkenyl and alkynyl of 2 to 4 carbon atoms, R_2 is alkyl of 1 to 4 carbon atoms, AlK_1 is alkyl of 1 to 8 carbon atoms and the A,B,C and D rings may contain one or more double bonds and may be optionally substituted with at least one member of the group consisting of —OH, =O, halogens, alkyl and alkoxy of 1 to 4 carbon atoms and alkenyl and alkynyl of 2 to 4 carbon atoms.

4,501,702

GERMANIUM COMPOUNDS

Eric J. Bulten, Blaricum, and Antonius M. J. Liebregts, Nieuwegein, both of Netherlands, assignors to Nederlandse Centrale Organisatie voor Toegepast-Natuurwetenschappelijk Onderzoek, The Hague, Netherlands

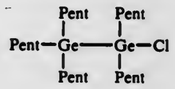
Filed May 29, 1981, Ser. No. 268,139

Claims priority, application Netherlands, May 30, 1980, 8003159; May 8, 1981, 8102268

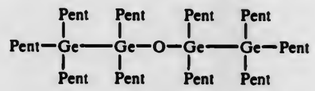
Int. Cl.³ C07F *7/30*

U.S. Cl. 260—429 R **9 Claims**

1. A germanium compound having the formula:



2. A germanium compound having the formula:



4,501,703

PROCESS FOR PREPARING 2-ACETYLTHIOMETHYL-5-GUANIDINOPENTANOIC ACID

Russell L. Barton, Indianapolis; Stephen L. Briggs, Clayton, and Gary A. Koppel, Indianapolis, all of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed Nov. 12, 1982, Ser. No. 441,138

Int. Cl.³ C07C *153/017*

U.S. Cl. 260—455 R **2 Claims**

1. A process for preparing 2-acetylthiomethyl-5-guanidinopentanoic acid, which comprises treating 2-acetylthiomethyl-5-aminopentanoic acid with 1-guanyl-3,5-dimethylpyrazole in a solvent comprising a hydroxylated solvent selected from the group consisting of water, alcohols, and glycols.

4,501,704

AROMATIC SULFONYL ALKANOATES AND ALKYLNITRILES

Jacques Martel, Bondy; Jean Tessier, Vincennes, and Jean-Pierre Demoute, Montreuil-sous-Bois, all of France, assignors to Roussel Uclaf, Paris, France

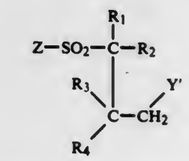
Division of Ser. No. 246,172, Mar. 23, 1981, Pat. No. 4,408,601. This application Mar. 28, 1983, Ser. No. 479,163

Claims priority, application France, Mar. 28, 1980, 80 06979

Int. Cl.³ C07C *121/66, 147/107*

U.S. Cl. 260—465 R **2 Claims**

1. A compound of the formula



wherein Z is a monocyclic aryl, Y' is selected from the group consisting of —CN and —COOR', R' is alkyl of 1 to 6 carbon atoms and R_1, R_2, R_3 and R_4 are individually selected from alkyl of 1 to 4 carbon atoms or R_1 and R_2 or R_3 and R_4 together with the carbon atoms to which they are attached form a carbon homocycle of 3 to 6 carbon atoms with the 2 substituents not forming the ring being alkyl of 1 to 4 carbon atoms or R_1 and R_2 or the one hand and R_3 and R_4 on the other together with the carbon atoms to which they are attached form a carbon homocycle of 3 to 6 carbon atoms.

4,501,705

PROCESS FOR PRODUCING AN ACETAL

Kanenobu Matsui; Shinichiro Uchiumi; Akira Iwayama, and Takashi Umezu, all of Ube, Japan, assignors to Ube Industries, Ltd., Japan

Division of Ser. No. 475,750, Mar. 16, 1983, , which is a continuation of Ser. No. 333,110, Dec. 21, 1981, abandoned. This application Jun. 14, 1983, Ser. No. 504,322

Claims priority, application Japan, Dec. 23, 1980, 55-181332; Dec. 23, 1980, 55-181333; Jul. 30, 1981, 56-118410

Int. Cl.³ C07C *120/00, 41/06*

U.S. Cl. 260—465.6 **10 Claims**

1. A process for producing an acetal comprising the steps of:

introducing an olefin, an alcohol, and an ester of nitrous acid into a reaction system; and

contacting, in a vapor phase, the olefin, the alcohol, and the ester of nitrous acid in the presence of (a) at least one component selected from the group consisting of platinum group metals and the salts thereof and (b) a copper halide.

4,501,706

CARBURETOR AND SYSTEM FOR UTILIZING SAME

Thaddeus Kowalczyk, 8163 Lochdale, Dearborn Heights, Mich. 48127

Continuation-in-part of Ser. No. 526,628, Aug. 29, 1983, , and a continuation-in-part of Ser. No. 602,716, Apr. 23, 1984,. This application Jul. 16, 1984, Ser. No. 631,056

Int. Cl.³ F02M *23/02*

U.S. Cl. 261—50 R **7 Claims**

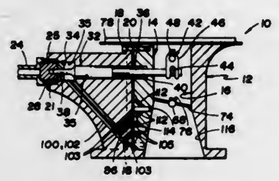
1. An apparatus for supplying an internal combustion engine with vaporized fuel mixed with air in an explosive mixture, the apparatus comprising:

a housing having at least one central aperture including a mixing chamber, the aperture extending completely through the housing between top and bottom surfaces

thereof, the housing also having a fuel inlet for receiving pressurized fuel and an air inlet for receiving pressurized air;

regulating means disposed within said housing for controlling the flow of pressurized air and fuel therein; and

control means disposed in said housing for controlling the flow of air into said mixing chamber from the top surface of said housing; said housing including a plate having an outer face defining a side wall of said mixing chamber and having at least one vaporizer communicating the air and



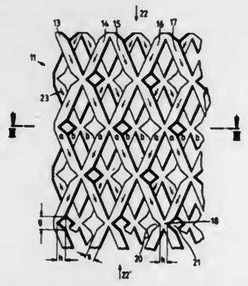
fuel inlets with the mixing chamber, said vaporizer including a central fuel outlet opening into the mixing chamber transverse the central aperture and a plurality of inclined air outlets spaced about the fuel outlet for directing the pressurized air against the fuel in the fuel outlet to vaporize the fuel and to force the vaporized fuel into the mixing chamber for mixing with air allowed therein from the top surface by said control means, the vaporized fuel and air mixture thereafter freely flowing from the mixing chamber and out of said housing at its bottom surface.

4,501,707

PACKING FOR MATERIAL EXCHANGE COLUMNS

Ulrich Bühlmann, Allschwil, Switzerland, assignor to Kuhni AG, Switzerland

Filed Jul. 7, 1982, Ser. No. 395,996
Claims priority, application Switzerland, Jul. 8, 1981, 4480/81
Int. Cl.³ B01F *3/04*
U.S. Cl. 261—94 **14 Claims**



1. Packing (11) for vapor-liquid and gas-liquid contacting in a material exchange column (35) with liquid supply means (22) and vapor or gas supply means (22') and a cavity below said liquid supply means (22) for receiving at least one packing, the liquid supplied by the liquid supply means (22) flowing downward through the packing and the vapor or gas supplied by the vapor or gas supply means (22') streaming in vertical direction through the packing, the packing (11) comprising a plurality of laminated grids (a, b, c, . . .) each having a grid plane (A, B, C, . . .), each grid (a, b, c, . . .) being formed of one integral piece and consisting of a plurality of approximately zigzag-shaped bent laminated strips (13–17), adjacent strips (13/14, 14/15, 15/16, 16/17) of each grid (a, b, c, . . .) being interconnected at their bending points so as to form thereat areal junction zones (18) of the grid (a, b, c, . . .), each laminated strip (13–17) having segments following each other successively in zigzag being inclined toward the grid plane (A, B, C, . . .) and the segments of adjacent strips (13,14,14/15,15/16, 16/17) bounding substantial quadrilateral mesh openings having a larger and a smaller diagonal, the segments bounding each of said mesh openings diverging in a first pair at an acute angle from one end of said larger diagonal and converging in a second pair at an acute angle toward the other end of said larger diagonal, and the packing (11) being adapted to be mounted in the cavity of a column (35) in such a way that said larger diagonals are substantially vertical and parallel to the liquid and to the vapor or gas flow; the lower portions of the two segments of each of said second pairs converging downwardly into said areal junction zones (18) being provided near the junction zones (18) with liquid flow guide means descending towards said junction zone (18) at an angle to each other greater than the acute angle between said two segments of said second pairs, whereby the horizontal component of the liquid flow along said two segments of said second pairs is adapted to be increased at said lower portions near the junction zone (18) to such an extent that the liquid flows to a major extent across the said junction zone (18) and that on the other hand the liquid does not trickle off or dam up at the liquid flow guide means.

4,501,708

REPAIR PAD AND NOZZLE FOR COOLING TOWER

Charles E. Shepherd, 4202 Markham, Houston, Tex. 77027

Filed Aug. 3, 1982, Ser. No. 404,696
Int. Cl.³ B01F *3/04*
U.S. Cl. 261—111 **6 Claims**

1. In combination, a repair pad for use with a cooling tower spray nozzle, comprising: a generally flat flange having a central opening for receiving said spray nozzle; a generally cylindrical mounting element attached to said flange at said central opening and depending from said central opening for attachment to a body of said spray nozzle; and

a spray nozzle having a generally cylindrical body received in said cylindrical mounting element, a mounting flange connected to one end of said body and disposed in contact with an upper surface of said flat flange, dispersion means connected to the opposite end of said cylindrical body for dispersing liquid contacting said dispersion means, and means for holding said spray nozzle in said generally cylindrical mounting element, said holding means comprising a plurality of circumferentially spaced radially outwardly projecting elements mounted to said generally cylindrical body at a position where said projecting elements engage a lower surface of said generally cylindrical mounting element.

4,501,709

VARIABLE VENTURI CARBURETOR

Tadahiro Yamamoto, Yokosuka, and Tadaki Oota, Fujisawa, both of Japan, assignors to Nissan Motor Company, Limited, Yokohama City, Japan

Filed Dec. 28, 1983, Ser. No. 566,405
Int. Cl.³ F02M *9/14*
U.S. Cl. 261—44 D **3 Claims**

1. A variable venturi carburetor for an engine, which comprises:

(a) a carburetor body formed with a main fixed venturi portion, said carburetor body forming a main intake passage;

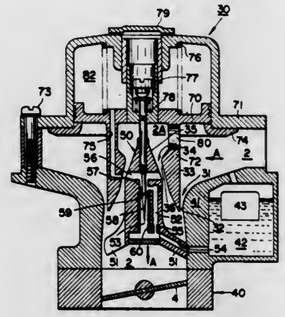
(b) a fuel supply member formed with a first nozzle, a second nozzle and an auxiliary fixed venturi portion on the outer surface thereof;

(c) a suction piston formed with a main movable venturi portion, an auxiliary movable venturi portion and a communication hole, said piston forming an auxiliary intake passage therewithin, the main intake passage communicating with the auxiliary intake passage through the communication hole;

(d) a main venturi formed between the main fixed venturi portion of said carburetor body and the main movable venturi portion of said suction piston;

(e) an auxiliary venturi formed between the auxiliary fixed venturi portion of said fuel supply member and the auxiliary movable venturi portion of said suction piston;

(f) said suction piston being moved toward or away from



said fuel supply member by the vacuum generated due to air passing through the auxiliary venturi; and

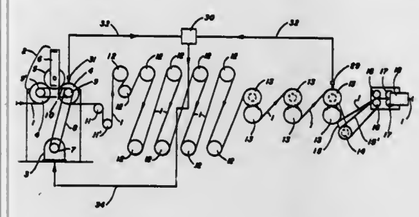
(g) a tapered jet needle attached to said suction piston so as to pass through the second nozzle portion formed in said fuel supply member in order to increase the amount of fuel jetted to the auxiliary intake passages with increasing amount of intake air.

4,501,710

CONTROLLED TOW STRETCHING PROCESS

James G. Abbott; Jerry W. Berley; Allen E. Ward, Jr., and Adolph J. Brandl, Sr., all of Columbia, S.C., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Division of Ser. No. 897,325, Apr. 18, 1978, abandoned, which is a division of Ser. No. 596,042, Jul. 15, 1975, Pat. No. 4,095,318.
This application Jun. 4, 1981, Ser. No. 270,443
Int. Cl.³ D02J *1/22*
U.S. Cl. 264—40.1 **2 Claims**



1. In the process for stretching a tow of filaments by tension on said tow caused by driven rolls dragging said tow across braked drag rolls the improvement comprising

using nip rolls prior to said drag rolls,

sensing variation in a set ratio of speed between at least one driven roll and at least one nip roll, and

continuously controlling at least one nip roll proportional to said sensed variation in ratio of speed.

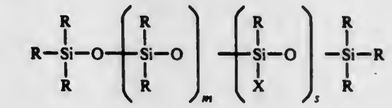
4,501,711

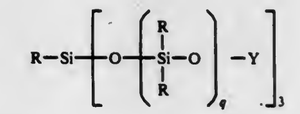
PROCESS AND COMPOSITION FOR PRODUCING OPEN-CELL CROSS LINKED POLYOLEFIN FILM

Akitaka Senuma; Yoshihiko Shimizu, and Kiroku Tsukada, all of Yokohama, Japan, assignors to Union Carbide Corporation, Danbury, Conn.

Filed May 15, 1984, Ser. No. 610,593
Int. Cl.³ B29H *7/20*
U.S. Cl. 264—54 **2 Claims**

2. A process for producing open-cell crosslinked polyolefin foam which consists essentially of forming a composition comprising 100 parts by weight of olefin resin, 1 to 20 parts by weight of blowing agent, 0.3 to 10 parts by weight of organic peroxide crosslinking agent and 0.1 to 5 parts by weight of a silicone block copolymer of the formula:





wherein

R is a monofunctional hydrocarbon group;

X is $-(O)_p-(C_nH_{2n}O)_t-R'$

R' is H, alkyl, allyl, aralkyl, or carbamyl group

p is 0 or 1

Y is $(C_nH_{2n}O)_t-R'$

m is 0 to 300

n is 2 to 10

s is 1 to 30

q is 1 to 300

t is 1 to 300

and wherein: $(C_nH_{2n}O)$ is an oxyalkylene radical or mixtures of such radicals. Said organic peroxide having 10 minute half-value temperature (T_p) of 100° C. to 170° C. and said blowing agent having a decomposition temperature (T_f) of 90° C. to 160° C., T_p and T_f satisfying the following equation:

$$-10° C. \leq T_p - T_f \leq 50° C.$$

molding said composition into pellets, powder, film or sheets, and subsequently heating said moldings in a single step.

4,501,712

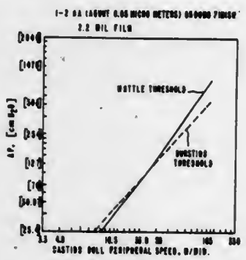
VACUUM PINNING OF MOLTEN THERMOPLASTIC FILM TO A ROUGHENED CASTING ROLL

David E. Heyer, Circleville, Ohio, assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Aug. 20, 1982, Ser. No. 409,877
Int. Cl.³ B29D *7/02*
U.S. Cl. 264—101 **16 Claims**

1. A process for preparing thermoplastic polymeric film comprising extruding a web of said polymeric material in melt form and casting the web onto the surface of a quench roll having a surface roughness of at least three microinches (0.08 micrometers) and yielding a line of contact between the web

and the quench roll while simultaneously applying a vacuum force to the line of contact between the web and the roll



thereby preventing air from being entrapped between the film and the roll.

4,501,713

STABILIZING MELT CRYSTALLIZATION TEMPERATURE IN ARYLENE SULFIDE POLYMER HEAT TREATMENT

Roy F. Wright, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jun. 15, 1983, Ser. No. 504,543
Int. Cl.³ B29B *3/00*
U.S. Cl. 264—176 R **9 Claims**

1. A method for stabilizing the Tmc of PPS subjected to heat treatment in a range up to about 320° C., said method comprising heating said PPS at a rate of temperature increase in a range of at least 20° C. per minute in the range of temperature of between 240° C. and 320° C.

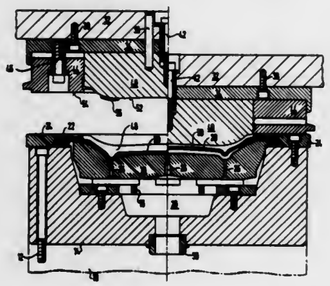
2. A method for stabilizing Tmc in PPS subjected to heat treatment in a range up to about 320° C., said method comprising maintaining the temperature of said PPS at a temperature above at least 350° C. for a time sufficient to stabilize the Tmc.

4,501,714

METHOD FOR MOLDING A CERAMIC ARTICLE

Klaus Strobel, and Klaus Geiger, both of Selb, Fed. Rep. of Germany, assignors to Hutschenreuther Aktiengesellschaft, Selb, Fed. Rep. of Germany

Filed Feb. 24, 1983, Ser. No. 469,302
Claims priority, application Fed. Rep. of Germany, Mar. 2, 1982, 3207565
Int. Cl.³ B29C *9/00*; B29D *9/00, 31/00*
U.S. Cl. 264—245 **20 Claims**



1. A method of producing a molded article from a ceramic material, such as procelain material, with a design or pattern applied to at least part of the surface of the molded article comprising:

(a) providing a mold, said mold consisting of at least two mold parts (18, 20; 40), each of said two mold parts (18, 20; 40) having a mold surface, the mold surfaces of said mold parts (18, 20; 40) defining a mold cavity;

(b) preforming a design or pattern of decorative material on a transfer carrier (123);

(c) transferring said design or pattern to the mold surface of at least one of said mold parts (18, 20; 40);

(d) filling said mold cavity with a dry powdered ceramic material,

(e) subjecting said powdered ceramic material within said mold cavity to a molding pressure such as to produce the respective molded article, the pattern or design of decorative material being transferred from said molding surface to said molded article during said pressing step by said molding pressure;

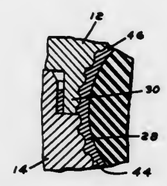
(f) said decorative material being applied to a curved molding surface of a mold part, including the steps of preforming the decorative material onto a planar carrier in a form distorted as compared to the desired design form, and rectifying the distorted design form in transferring the decorative substance from the carrier to the mold part.

4,501,715

MOLD AND METHOD FOR FORMING GOLF BALLS

Gilbert Barfield, 745 Carroll St., Perry, Ga. 31069, and Gary J. Hagopian, 32 Brookmont Dr., Wilbraham, Mass. 01095

Filed May 18, 1983, Ser. No. 495,738
Int. Cl.³ B29D *3/00*
U.S. Cl. 264—248 **11 Claims**



1. A process for compression molding an integral cover for two-piece golf balls, said process comprising:

(a) attaching a pair of telescopically mating male and female dies to a hydraulic press for movement of the dies toward or away from one another in a substantially vertical plane, said male die having a substantially hemispherical mold cavity and an annular projection at the lip of said cavity, said female die having an oppositely facing, annular recess adapted to receive the projection and a substantially hemispherical mold cavity adapted to form a single, spherical mold cavity with said male die cavity when the dies are pushed together;

(b) inserting a substantially hemispherical shell segment of thermoplastic cover material inside one of said cavities with the open end of said shell segment facing upward;

(c) placing a solid core ball inside said shell segment;

(d) placing another substantially hemispherical shell segment of thermoplastic cover material over said core ball with its open end facing the open end of the other shell segment;

(e) operating the press to cause the dies to move toward one another and mate, with the annular projection of said male die entering the recess;

(f) heating the dies to soften the cover material;

(g) trapping extruded cover material from the cavities between the leading edge of the projection and an annular rim in the recess when the projection initially enters the recess;

(h) continuing axial pressure on the dies to fully close the dies together and cause the leading edge of the projection to move closer to the rim and force trapped material to flow back inside the mold cavities to create an integral, spherical cover that is substantially a mirror image of the inside of the mold cavities; and,

(i) draining off excess of the trapped material through a valve during mating of the dies so that the amount of extruded material that is forced back into the mold cavities is substantially only the amount needed to produce a well-shaped cover with a substantially uniform thickness.

8. A mold for compression molding an integral cover for two-piece golf balls, said mold comprising:

(a) a pair of telescopically mating male and female dies which are adapted to be attached to a hydraulic press for movement of the dies toward and away from another;

(b) said male die having a substantially hemispherical mold cavity and an annular piston at the lip of said cavity;

(c) said female die having a recessed area and an adjacent, substantially semispherical mold cavity, wherein the recess is adapted in size and shape to receive the piston when the dies move toward one another and said female mold cavity is adapted in size and shape to form a single, spherical mold cavity with said male cavity when the dies mate, and said female mold cavity is further adapted in size and shape to receive a hemispherical shell of cover stock material and a standard core ball for two-piece golf balls;

(d) wherein said dies include means for trapping extruded cover material from the cavities when the dies are pushed together and for subsequently forcing the trapped material back into the mold cavities to form an integral, spherical cover that is substantially a mirror image of the cavities, said trapping and forcing means comprising a pressure chamber formed by a leading edge of the piston and an annular rim at the bottom of the recess; and,

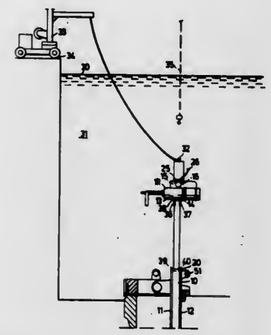
(e) valve means connected with said pressure chamber for draining off excess of the trapped material to insure that the only amount of trapped material transferred back into the cavities is the amount needed to produce a well-formed cover of uniform thickness.

4,501,716

APPARATUS FOR INSPECTING THE INTERIOR OF A REACTOR VESSEL

Alf Engding, Åkersberga, Sweden, assignor to Tekniska Rontgencentralen AB, Stockholm, Sweden

Filed May 11, 1982, Ser. No. 376,998
Claims priority, application Sweden, Sep. 29, 1981, 8105755
Int. Cl.³ G21C *17/00*
U.S. Cl. 376—249 **8 Claims**



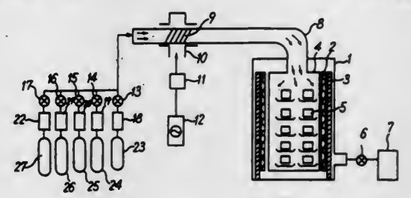
1. An apparatus for inspecting a reactor vessel immersed in a water-filled tank (31), comprising a mast-carriage (2) arranged for movement around an upper opening of the reactor vessel, a mast (9) fixedly connected to the mast-carriage and having first track means (10) extending therealong for an inspection carriage (17) arranged to carry inspection apparatus (19) and provided with drive means (25) for driving said inspection carriage on said first track means, characterized by: a docking unit (21) detachably mounted on an upper end (20) of the mast; second track means (22) on the docking unit connecting with the first track means and having a length such that the inspection carriage can be driven onto the second track means; guide means (36, 37, 39, 40; 64, 65) arranged between the docking unit and the mast for holding the docking unit in a given position relative to the mast; at least two mutually spaced rope means (47, 48) for connecting the docking unit to the mast; a buoyant body (28) arranged on the docking unit for moving the docking unit to the surface (31) of the water in said tank, and means (46, 51; 62, 63) for enabling, during movement of the docking unit to the surface of the water in said tank, an extension of the rope means lying between the docking unit and the mast top, and for generating a tension force by shortening said rope means to cause the docking unit to be returned to the upper end of the mast, wherein the buoyant body comprises a liquid-tight vessel containing a buoyant medium.

4,501,717

SINTERING METHOD USING A PLASMA GAS ATMOSPHERE

Shinya Tsukamoto; Kunihiro Takahashi, and Akira Doi, all of Itami, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Jul. 21, 1983, Ser. No. 515,894
Claims priority, application Japan, Jul. 31, 1982, 57-134332
Int. Cl.³ C22B *34/00*
U.S. Cl. 419—58 **14 Claims**



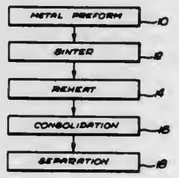
1. In a method which comprises sintering a pressed body of a powder selected from the group consisting of powders to produce cemented carbides, cermets, ceramics and ferrous sintered bodies, the improvement in which a part or all of the sintering process is carried out in a plasma gas atmosphere selected from the group consisting of H_2, N_2, Co, He, Ar and mixtures thereof under a pressure of 0.1 to 50 Torr.

4,501,718

METHOD OF CONSOLIDATING A METALLIC OR CERAMIC BODY

Richard C. Bradt, Bellefonte, Pa., assignor to Metal Alloys, Inc., Signal Hill, Calif.

Filed Feb. 23, 1983, Ser. No. 469,102
Int. Cl.³ B22F *3/00*
U.S. Cl. 419—49 **9 Claims**



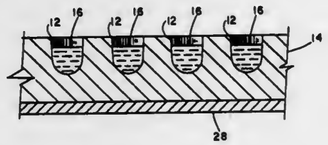
1. A method of consolidating a metallic or ceramic body comprising the steps of:

(a) forming an article of manufacture from powdered metal or ceramics;

(b) sintering said article of manufacture so as to increase the strength thereof;

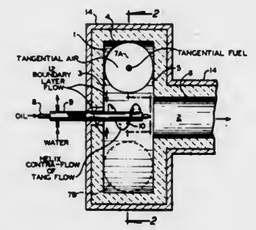
(c) providing a bed of heated, generally spheroidal refractory particles; and
(d) compacting said article of manufacture in said heated bed of generally spheroidal refractory particles under high pressure to thereby consolidate said article of manufacture into a dense, desired shape.

4,501,719
TRAY APPARATUS FOR FREEZE-DRYING BIOLOGICALS HAVING A PREDETERMINED UNIT DOSAGE
Charles D. Williams, Rolling Hills Estate, Calif., assignor to Marquest Medical Products, Inc., Englewood, Colo.
Division of Ser. No. 260,179, May 4, 1981, abandoned. This application Jul. 30, 1982, Ser. No. 403,862
Int. Cl.³ B01L *3/00*; F26B *25/06*
U.S. Cl. 422—102 **1 Claim**



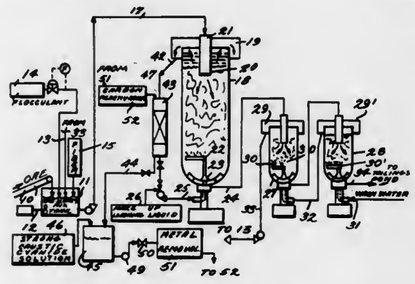
1. Tray apparatus for lyophilizing a solution of biological material into pledgets of predetermined unit dosages of the biological material for use in a freeze drying apparatus having a chamber within which is positioned a plurality of spaced apart superposed thermally controlled shelves comprising:
an upper plate having a length, a width and a thickness and having a plurality of wells extending downwardly from a portion of an upper surface thereof into said upper plate, each of said wells being conical, having downwardly sloping, converging side walls, and terminating in a concave dome shape and having a volume substantially equal to the volume of a solution of the biological material in a liquid, said solution being of such concentration and volume as to yield, upon lyophilization, the predetermined unit dosage size of pledget, each well terminating at a location spaced from a lower continuous surface of said upper plate;
a lower plate having a length, a width and a thickness, an upper continuous surface of said lower plate laminated to said lower continuous surface of said upper plate in a thermally conductive manner, said lower plate comprising a material having a greater thermal conductivity than the material comprising said upper plate;
a sheet of thermal insulating material having a length, a width and a thickness, said thermal insulating material having a continuous lower surface with a surface area substantially equal to or greater than the surface area of said upper surface of said upper plate, said lower surface of said thermal insulating material positioned above said upper surface of said upper plate to establish a thermal gradient through said upper plate wherein lower points in the wells are at lower temperature than upper points in the wells to insure that said solution freezes from the bottom to the top, said thermal insulating material having a lower thermal conductivity than either said upper or lower plates; and,
a separator comprising a continuous rigid sheet positioned between said thermal insulating material and said upper plate, said separator having a lower surface with a surface area substantially equal to or greater than the surface area of said portion of said upper surface of said upper plate from which said plurality of wells extend.

4,501,720
COUNTER-ROTATIONAL FLOW IN A CARBON BLACK REACTOR
Paul J. Cheng, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.
Filed Jun. 24, 1982, Ser. No. 391,896
Int. Cl.³ C09C *1/48*
U.S. Cl. 422—156 **4 Claims**



1. A carbon black reactor comprising
(a) means defining a cylindrical precombustion zone;
(b) a combustion gas introduction means adapted to tangentially introduce combustion gas into said means defining a cylindrical precombustion zone;
(c) means defining a cylindrical reaction zone in open communication with said means defining a cylindrical precombustion zone; wherein the axis of rotation of said means defining a cylindrical precombustion zone are substantially collinear; and
(d) a helix-shaped fin at least partially within said means defining a cylindrical precombustion zone; wherein the axis of rotation of said helix-shaped fin and the axis of rotation of said means defining a cylindrical precombustion zone are substantially collinear;
(e) a conduit at least partially within said means defining a cylindrical precombustion zone adapted to introduce a feedstock into said carbon black reactor; wherein the axis of rotation of said conduit and the axis of said helix-shaped fin are substantially collinear; and wherein said helix-shaped fin is outside of said conduit.

4,501,721
LEACHING AND WASHING A FLOCCULATED SLURRY HAVING A FIBER CONTENT
Michael I. Sherman; Carl L. Elmore, both of Glens Falls, N.Y., and Robert J. Brison, Golden, Colo., assignors to Kamyr, Inc., Glens Falls, N.Y.
Filed Jun. 10, 1983, Ser. No. 503,178
Int. Cl.³ C01G *7/00*
U.S. Cl. 423—27 **14 Claims**



1. A method of removing metal from a particlized metal bearing ore, utilizing a treatment vessel, comprising the steps of:
(a) mixing the particlized ore with a liquid to form a liquid slurry, a flocculating material so as to lock the particlized ore in a stable network in the slurry, and fibers so as to facilitate locking of the particlized ore in a stable network in the slurry;
(b) continuously passing the slurry downwardly in the vessel;
(c) continuously passing a leaching liquid, capable of leaching the metal to be removed from the metal bearing ore, upwardly in the vessel, countercurrent to the slurry passage, to remove metal from the ore in the slurry;
(d) continuously removing the treatment slurry from a bottom portion of the vessel;
(e) continuously removing pregnant leaching liquid, with metal removed from the ore, from a top portion of the vessel; and
(f) continuously washing the slurry removed in step (d).

4,501,722
ABSORPTION OF POLLUTANT MATERIAL FROM A POLLUTED GAS
Michael J. Ashley, Solihull, England; Paul D. Hemphill, Baytown, and Charles C. Leivo, The Woodlands, both of Tex., assignors to Dresser Industries, Inc., Dallas, Tex.
Filed Feb. 18, 1983, Ser. No. 468,270
Claims priority, application United Kingdom, Feb. 25, 1982, 8205581
Int. Cl.³ C01B *17/00*
U.S. Cl. 423—242 **14 Claims**

1. In a method of absorbing pollutant material comprising sulphur dioxide from a polluted gas containing sulphur dioxide wherein an aqueous suspension of solid absorbent comprising calcium hydroxide or calcium carbonate is sprayed into the gas under ambient conditions in which all the water is evaporated and the absorption product dried as it is formed, the improvement comprising the step of controlling the spray droplet size to be a practical maximum consistent with all said water being evaporated and absorption product dried as it is formed.

4,501,723
METHOD OF MAKING YTTRIUM SILICON OXYNITRIDES
Andre Ezis, Grosse Ile, and Howard D. Blair, Romulus, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.
PCT No. PCT/US83/01115, § 371 Date Jul. 19, 1983, § 102(e) Date Jul. 19, 1983, PCT Pub. No. WO85/00583, PCT Pub. Date Feb. 14, 1985
PCT Filed Jul. 19, 1983, Ser. No. 527,643
Int. Cl.³ C04B *35/58*; C01F *17/00*
U.S. Cl. 423—263 **6 Claims**

1. A method of making yttrium silicon oxynitrides according to the formula $Y_aSi_bO_cN_d$, by the steps comprising:
(a) mixing together, in intimate reactive contact, stoichiometric amounts of Y_2O_3, SiO_2, and Si_3N_4 to form a desired yttrium silicon oxynitride where a, b, c, and d represent the required element parts of the compound in equilibrium with the mixture element parts, said SiO_2 may be present as an oxide coating on said Si_3N_4;
(b) heating the mixture in an inert atmosphere to a temperature level and for a time sufficient to convert the stoichiometric amounts of the mixture to the desired yttrium silicon oxynitride; and
(c) grinding said heat agglomerated mixture to a powder.

4,501,724
METHOD FOR THE WET PROCESS MANUFACTURE OF PHOSPHORIC ACID
Walter E. Goers, Briarcliff Manor, N.Y., assignor to Goers Associates Inc., Hawthorne, N.Y.
Filed Feb. 1, 1984, Ser. No. 575,903
Int. Cl.³ C01B *25/16*
U.S. Cl. 423—320 **13 Claims**

1. In the wet process manufacture of phosphoric acid from phosphate rock wherein the phosphate rock is reacted with a concentrated acid reagent to yield concentrated phosphoric acid, the improvement in the process comprising the step of:
reacting the phosphate rock with an effective amount of acid reagent for yielding phosphoric acid wherein said reagent is comprised of a mixture of sulfuric acid and gaseous sulfur trioxide, the gaseous sulfur trioxide being added in an effective amount so as to cause the evaporation of excess water in the feed streams by the release of heat from the reaction between the sulfur trioxide gas and the rock.

4,501,725
PROCESS FOR THE COMBUSTION OF H_2S CONTAINING GASES
Rainer Lell, Kerpen, Fed. Rep. of Germany, assignor to Davy McKee AG, Frankfurt, Fed. Rep. of Germany
Filed Mar. 31, 1983, Ser. No. 480,898
Int. Cl.³ C01B *17/02*
U.S. Cl. 423—573 R **8 Claims**

1. A process for the combustion of H_2S containing gases with either air or oxygen or both into elemental sulfur and the separation of the sulfur from the reaction gas, the process comprising:
burning the H_2S containing gases with air or oxygen or both in a load range of 100 to 5% including a high load range and a low load range in a combustion chamber and adjoining reaction chamber, the amount of air or oxygen or both being of sufficient quantity to produce the required ratio of hydrogen sulfide to sulfur dioxide at the exit of the process;
cooling the reaction gas from the reaction chamber in a cooling chamber to condense and separate the sulfur therefrom;
said burning including, in the high load range between 100% and 15% to 40%, burning the H_2S by one or more main burners in the combustion chamber, and, in the low load range between 15% to 40% and 5%, burning the H_2S in a bypass burner in the combustion chamber along with burning a heating gas in the combustion chamber; and
reducing the cooling surfaces in the cooling chamber when burning in the low load range.

4,501,726
INTRAVASCULARLY ADMINISTRABLE, MAGNETICALLY RESPONSIVE NANOSPHERE OR NANOPARTICLE, A PROCESS FOR THE PRODUCTION THEREOF, AND THE USE THEREOF
Ulf Schröder, Fagottgränden 11 B, S-223 68 Lund, and Klaus Mosbach, Lackalänga 31, S-244 02 Furulund, both of Sweden
PCT No. PCT/SE82/00381, § 371 Date Jul. 8, 1983, § 102(e) Date Jul. 8, 1983, PCT Pub. No. WO83/01738, PCT Pub. Date May 26, 1983
PCT Filed Nov. 11, 1982, Ser. No. 522,159
Claims priority, application Sweden, Nov. 12, 1981, 8106723
Int. Cl.³ B01J *13/02*
U.S. Cl. 424—1.1 **8 Claims**

1. A nanosphere or nanoparticle for intravascular administration, which is magnetically responsive and biologically degradable and which is made up of a matrix in which a magnetic material is enclosed, characterized in that said nanosphere or nanoparticle has an average diameter which does not exceed 1500 nm, and circulates in the vascular system after administration thereto, said matrix comprising a hydrophillic, crystalline carbohydrate.

4,501,727

THERAPEUTIC AGENT

Bernard J. Armitage, and Margaret L. Donaldson, both of Nottingham, England, assignors to The Boots Company PLC, Nottingham, England

Filed Dec. 3, 1982, Ser. No. 446,721

Claims priority, application United Kingdom, Dec. 8, 1981, 8136989

Int. Cl.³ A61K *9/44*; C07C *101/10*

U.S. Cl. 424—16 **8 Claims**

1. The N-methyl-D-glucamine salt of (+)-2-(2-fluoro-4-biphenylyl)propionic acid.

4,501,728

MASKING OF LIPOSOMES FROM RES RECOGNITION

W. Blair Geho, and John R. Lau, both of Wooster, Ohio, assignors to Technology Unlimited, Inc., Wooster, Ohio

Filed Jan. 6, 1983, Ser. No. 456,269

Int. Cl.³ A61K *9/50, 9/42, 37/22*

U.S. Cl. 424—38 **4 Claims**

1. A delivery system consisting essentially of a biochemical membrane containing a drug, hormone, diagnostic or nutritional material covered with sialic acid residues such that the membrane is shielded from the RES thereby providing a coating that masks the surface membrane from recognition by the scavenging cells of the body.

4,501,729

AEROSOLIZED AMILORIDE TREATMENT OF RETAINED PULMONARY SECRETIONS

Richard C. Boucher; John T. Gatzy, and Michael R. Knowles, all of Chapel Hill, N.C., assignors to Research Corporation, New York, N.Y.

Filed Dec. 13, 1982, Ser. No. 449,424

Int. Cl.³ A61K *31/495*

U.S. Cl. 424—45 **8 Claims**

1. A method of removing retained mucus secretions from the lungs of a subject in need of such treatment which comprises delivering an aerosol suspension of amiloride having a particle size within the range of about 3 to 10 microns to the respiratory system of said subject by inhalation of said suspension to thereby achieve concentrations on the airway surfaces of said subject of 10^{-6}M/L–10^{-4}M/L by inhibiting the reabsorption of salt and water from said secretions whereby said secretions are hydrated and are rendered easier to transport from the lung via normal mucociliary mechanisms so that the mucus obstructions are cleared from the airways and respiration is improved.

4,501,730

DEODORANT COMPOSITIONS

Kuniyoshi Torii, and Chikashi Egma, both of Shiga, Japan, assignors to Shiraimatsu Shinyaku Company Ltd., Japan

Continuation of Ser. No. 407,786, Aug. 13, 1982, abandoned. This application Jun. 19, 1984, Ser. No. 621,889

Claims priority, application Japan, Oct. 9, 1981, 56-161796

Int. Cl.³ A61L *13/00*; A61K *35/78*

U.S. Cl. 424—76 **3 Claims**

1. A deodorant distillate produced by a process which comprises dry-distillation of the leaves of Thea sinensis, said distillate having a boiling point of 180°–200° C. (at 20 mm/Hg) and exhibiting the following properties in a 20 w/w% propylene glycol solution:

Refractive index	$n_D^{20} = 1.418 \pm 0.02$
Angle of optical rotation	$\alpha_D^{20} = 0.007° \pm 0.002°$
Specific gravity	$d_{20}^{20} = 1.025 \pm 0.02$
Ultraviolet absorption maximum peak	276 ± 2 mμ (20 w/w % propylene glycol solution diluted by water in the amount of 1.000 times the weight of said solution).

4,501,731

TREATMENT OF DISPARATE BLEEDING DISORDERS WITH FACTOR X ZYMOGEN

Garson H. Tishkoff, 1850 Abbott Rd., B-10, East Lansing, Mich. 48823, and Douglas W. Estry, 1420 Sunnyside Rd., Lansing, Mich. 48910

Filed Jun. 27, 1983, Ser. No. 508,167

Int. Cl.³ A61K *35/16*

U.S. Cl. 424—101 **24 Claims**

1. A method for treating mammalian deficiencies of a blood clotting protein which comprises injecting an effective amount of an injectable composition including human factor X zymogen into the blood circulating system of the mammal, wherein the composition is substantially free of activators which convert the factor X zymogen to factor Xa.

4,501,732

SYNERGISTIC ANTIMICROBIAL COMPOSITIONS

Gábor Kulcsár; Gyula Sebestyén; Ágoston Dávid, and Tibor Zilahi, all of Budapest, Hungary, assignors to Chinoin Gyogyszer es Vegyeszeti Termekek Gyara Rt., Budapest, Hungary

Division of Ser. No. 226,615, Jan. 21, 1981, Pat. No. 4,404,189. This application Jun. 18, 1982, Ser. No. 390,124

Int. Cl.³ A61K *35/00, 35/74*

U.S. Cl. 424—114 **1 Claim**

1. A synergistic antibacterial composition which consists essentially of 30–35% by weight of primycin, 30 to 35% by weight of doxycycline or a pharmaceutically acceptable acid addition salt thereof and 30 to 35% by weight of sisomicin along with a pharmaceutically acceptable inert carrier.

4,501,733

POLYPEPTIDES, A PROCESS FOR THEIR PREPARATION, THEIR USE, AND A PROCESS FOR THE PURIFICATION OF POLYPEPTIDES

Joachim Hörig, Stein, and Hartmut Schultheiss, Raisdorf, both of Fed. Rep. of Germany, assignors to Ferring Arzneimittel GmbH, Kiel, Fed. Rep. of Germany

Filed Feb. 16, 1983, Ser. No. 467,187

Claims priority, application Fed. Rep. of Germany, Feb. 19, 1982, 3205991

Int. Cl.³ A61K *37/00*; C07C *103/52*

U.S. Cl. 514—17 **5 Claims**

1. Polypeptides of the formula

V-X-D-Trp-Y-D-Trp-Leu-Z-NH_2

wherein V represents Arg, Lys, Orn or Pro, X represents Gln or a single bond, Y represents one of the aminoacids Phe, Ile, Val, Tyr or L-p-Cl-Phe, and Z represents the aminoacids Met or Nle, and salts thereof.

4,501,734

PROMOTION OF ABSORPTION OF DRUGS ADMINISTERED THROUGH THE ALIMENTARY SYSTEM

Osamu Tanaka, and Noboru Yata, both of Hiroshima, Japan, assignors to Wakunaga Yakuhin Kabushiki Kaisha, Japan

Filed Mar. 3, 1982, Ser. No. 354,289

Claims priority, application Japan, Mar. 6, 1981, 56-32012; Sep. 30, 1981, 56-155731

Int. Cl.³ A01N *31/00, 65/00*

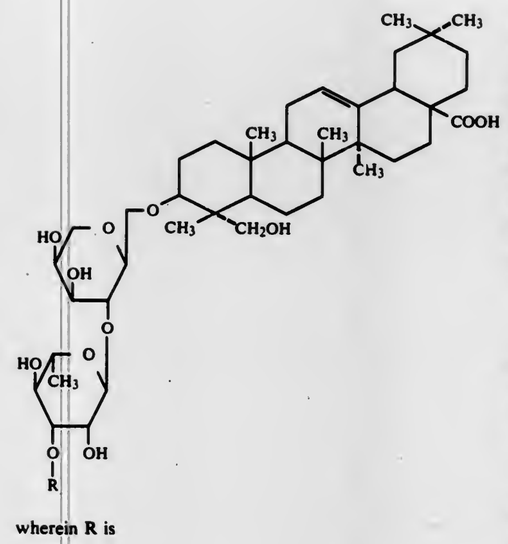
U.S. Cl. 514—198 **6 Claims**

1. A method for enhancing the absorption by an animal of a β-lactam type antibiotic selected from the group consisting of penicillins and cephalosporins, which comprises orally or rectally administering to an animal in need of said antibiotic the

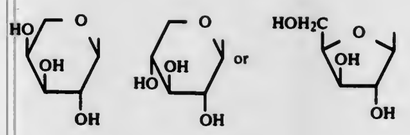
antibiotic and a safe and effective amount of a saponin obtained from a plant selected from the group consisting of:

(a) *Akebia quinata* decne. or plants belonging to the same family (Lardizabalaceae);
(b) *Fatsia japonica* Decne. et Pianch;
(c) *Caulophyllum robustum* Maxim.;
(d) *Hedera rhombea* Bean;
(e) *Clematis chinensis* Osbeck;
(f) *Pulsatilla cernua* Spreng;
(g) *Sapindus mukurossi* Gaertn.;
(h) *Panax japonicum* C. A. Meyer;
(i) *Glycyrrhiza glabra* L.var. glandulifera Regel et Herber, *Glycyrrhiza uralensis* Fisher or plants belonging to the same family (Leguminosae);
(j) *Polygala senega* L. or *Polygala senega* L. var. Latifolia Torrey et Gray;
(k) Platycodon grandiflorum A.D.C.;
(l) *Polygala tenuifolia* Willd.;
(m) *Achyranthes fauriei* Lev. et Van or *Achyranthes bidentata* Blume;
(n) *Cyclamen europaenum;*
(o) *Primula officinalis;*
(p) *Bupleurum falcatum* L. or its varieties (Umbelliferae);
(q) *Panax ginseng* C. A. Meyer;
(r) *Panax notoginseng* Burkill; and
(s) *Panax quinquefolium* L.

5. The method according to claim 1 wherein the saponin is a triterpenoid saponin of the formula



wherein R is



4,501,735

N6-(1- AND 2-BENZOCYCLOALKYL) ADENOSINES

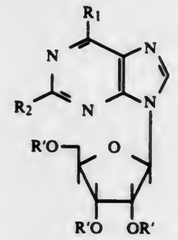
Bharat Trivedi, Canton; Harriet Hamilton, Chelsea, and Walter Moos, Ann Arbor, all of Mich., assignors to Warner-Lambert Company, Morris Plains, N.J.

Filed Dec. 5, 1983, Ser. No. 558,144

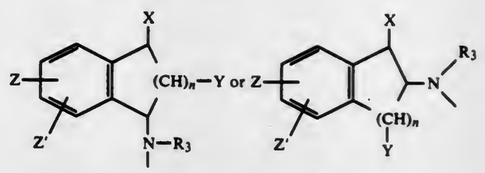
Int. Cl.³ A01N *31/00*; A61K *31/70*; C07H *19/06*

U.S. Cl. 514—46 **16 Claims**

1. A compound of the formula



wherein R_1 is of the formula



in which n is 1; X is hydrogen, lower alkyl or lower alkyl terminally substituted by hydroxy, lower alkoxy or carboxyl, OR where R is hydrogen, lower alkyl, lower alkanoyl or benzoyl, phenyl or phenyl substituted by halogen, hydroxy, lower alkoxy, amino or trifluoromethyl; Y is hydrogen, lower alkyl or lower alkyl terminally substituted by hydroxy, lower alkoxy, or carboxyl, OR where R is hydrogen, lower alkyl, lower alkanoyl or benzoyl; Z and Z' are independently hydrogen, halogen, nitro, trifluoromethyl, amino, lower alkyl, hydroxy or lower alkoxy; R_3 is hydrogen or lower alkyl; R' is hydrogen, acetyl or benzoyl; R_2 is hydrogen or halogen; its diastereomers or mixtures thereof, or a pharmaceutically acceptable acid addition salt thereof.

4,501,736

EXTRACT FROM BARRENWORT

Susumu Mitsuhashi, Musashino; Muneaki Takase, Oizumi; Sosuke Yasui, Tokyo; Ichiro Washizawa, Maebashi, and Kimitomo Yoshioka, Tokyo, all of Japan, assignors to Zenyaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 258,390, Apr. 28, 1981, abandoned. This application Aug. 8, 1983, Ser. No. 520,760

Claims priority, application Japan, Apr. 30, 1980, 55-57424; Jun. 20, 1980, 55-83539

Int. Cl.³ A61K *35/78*

U.S. Cl. 424—195 **9 Claims**

1. A process to obtain an extract from barrenwort obtained from plants belonging to the genus Epimedium of the family of Berberidaceae, comprising the steps of

(A) obtaining said barrenwort, and placing said barrenwort in an extraction solvent selected from the group consisting of
  (i) a mixture of water and a water-miscible organic solvent selected from the group consisting of lower alcohols, acetone, dioxane, and mixtures thereof,
  (ii) water,
  (iii) lower aliphatic acids having a concentration lower than one (1) normality,

(iv) water-miscible lower amines at a concentration lower than one mole per liter, and

(v) alkaline hydroxides easily soluble in water having a concentration lower than (1) one normality,

(B) filtering the resulting solution of said barrenwort and said extraction solvent of step (A) to obtain a filtrate,

(C) concentrating said filtrate of step (B) under reduced pressure to obtain an aqueous extract,

(D) adding to said aqueous extract of step (C) an organic defatting solvent selected from the group consisting of

(i) lower aliphatic esters,

(ii) chloroform,

(iii) diethyl ether,

and

(iv) n-hexane,

(E) shaking the resulting mixture comprising said organic defatting solvent of step (D) and said aqueous extract of step (C), collecting the aqueous layer alone, and removing the small amount of said organic defatting solvent left in said aqueous layer,

(F) filtering the resulting aqueous layer of step (E) to obtain a defatted aqueous extract,

(G) adding to said defatted aqueous extract of step (F) a water-miscible, organic fractional precipitation solvent selected from the group consisting of lower alcohols, acetone, and mixtures thereof, thereby effecting a precipitation, wherein the volume of said water-miscible, organic fractional precipitation solvent is not smaller than the volume of said defatted aqueous extract,

(H) recovering the precipitate resulting from step (G) by filtration,

(I) washing said precipitate of step (H) with a water-miscible, organic washing solvent, selected from the group consisting of lower alcohols, acetone and mixtures thereof, wherein the volume of said washing solvent used is about 5 to about 50 times the weight of said washed precipitate,

(J) mixing the resulting washed precipitate of step (I) with a volume of water from about 20 to about 50 times the weight of said washed precipitate,

(K) adding to the solution resulting from step (J) a volume of water-miscible, organic, second fractional precipitation solvent selected from the group consisting of lower alcohols, acetone and mixtures thereof, that is three (3) or more times the volume of the solution resulting from step (J) to effect precipitation,

(L) recovering the precipitate of step (K) by filtration and drying the same to obtain a dry precipitate,

the resulting extract having the following characteristics:

(1) Properties:

(a) Brown powder

(b) Weakly acidic (pH of about 6.5 (when 100 mg of extract is dissolved in 50 ml of water)

(2) Solubility:

(a) Soluble in water

(b) Insoluble in methanol, ethanol, acetone, ethyl acetate, diethyl ether, hexane and chloroform

(3) Color Reactions:

Positive to

(a) anthrone-sulfuric acid reaction,

(b) Bial's reaction,

(c) Molisch's reaction and

(d) skatol reaction;

negative to

(a) ninhydrin reaction,

(b) 2,4-DNP reaction,

(c) Seliwanoff's reaction and

(d) naphthoresorcinol reaction

(4) Saccharides composition: arabinose and galactose

(5) Infrared absorption:

ν_{max}^{KBr}(cm^{-1})3400,1600,1400,1100

(6) U.V. Absorption:

λ_{max}^{H2O}(nm)280,325

4,501,737

PHARMACEUTICAL COMPOSITION CONTAINING 24,25-DIHYDROXYCHOLECALCIFEROL AS AN ACTIVE INGREDIENT TO TREAT MYODYSTROPHIA

Hideyuki Yamato, Tokyo; Noriyuki Toyoda, Sagamihara; Takayoshi Fujii, Tokyo; Yuji Maeda, Nagareyama; Tadaaki Kato, Tokyo, and Chikao Yoshikumi, Kunitachi, all of Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 15, 1984, Ser. No. 620,922

Claims priority, application Japan, Jun. 30, 1983, 58-119427

Int. Cl.^{3} A61K *31/59*

U.S. Cl. 514—167 **2 Claims**

1. A method for the treatment of myodystrophia, which comprises administering to a patient suffering from myodystrophia an effective amount of a compound of 24,25-dihydroxycholecalciferol.

4,501,738

PHARMACEUTICAL COMPOSITION CONTAINING 24,25-DIHYDROXYCHOLECALCIFEROL AS AN ACTIVE INGREDIENT TO TREAT PAIN, PYREXIA OR INFLAMMATORY DISEASES

Hideyuki Yamato, Tokyo; Yuji Maeda, Nagareyama; Fumisato Yoshino; Kyoya Takahata, both of Tokyo; Masanori Ikuzawa, Tachikawa; Tadaaki Kato, Tokyo, and Chikao Yoshikumi, Kunitachi, all of Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 15, 1984, Ser. No. 620,923

Claims priority, application Japan, Jun. 30, 1983, 58-119423; Jun. 30, 1983, 58-119424; Jun. 30, 1983, 58-119425; Jun. 30, 1983, 58-119426; Jun. 30, 1983, 58-119428

Int. Cl.^{3} A61K *31/59*

U.S. Cl. 514—167 **2 Claims**

1. A method for the treatment of pains, pyrexia or inflammatory diseases, which comprises administering to a patient suffering from pains, pyroxia or inflammatory diseases an effective amount of a comound of 24,25dihydroxycholecalciferol.

4,501,739

THIENO AND FUROPYRIDINIUM-SUBSTITUTED CEPHALOSPORINS

William H. W. Lunn, and Robert T. Vasileff, both of Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

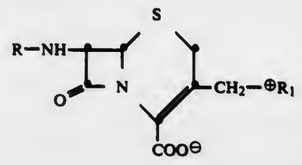
Continuation-in-part of Ser. No. 340,628, Jan. 19, 1982, abandoned, which is a continuation-in-part of Ser. No. 300,357, Sep. 8, 1981, abandoned. This application Dec. 15, 1982, Ser. No. 449,945

The portion of the term of this patent subsequent to Sep. 27, 2000, has been disclaimed.

Int. Cl.^{3} C07D *501/38*; A61K *31/545*

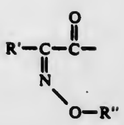
U.S. Cl. 514—203 **51 Claims**

1. The compound of the formula



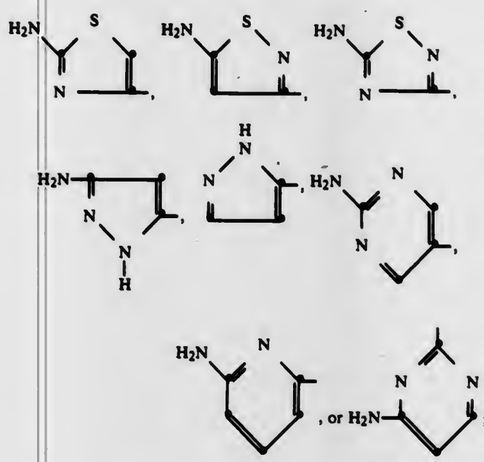
wherein

R is an acyl group of the formula

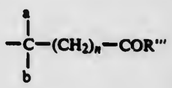


wherein

R' is a 5- or 6-membered heterocyclic ring of the formulas



R'' is hydrogen, C_1–C_4 alkyl, a carboxy-substituted alkyl or carboxy-substituted cycloalkyl group of the formula

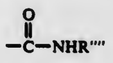


wherein

n is 0–3; a and b when taken separately are independently hydrogen or C_1–C_3 alkyl, and when taken together with the carbon to which they are bonded form a C_3–C_7 carbocyclic ring; R''' is hydroxy, C_1C_4 alkoxy, amino, or OR*, wherein R* is indanyl, phthalidyl, or an acyloxymethyl group of the formula $—CH_2—O—C(O)—R_2$ wherein R_2 is C_1–C_4 alkyl or phenyl; or R* is a carboxy-protecting group;

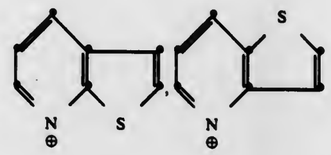
or

R'' is an N-substituted carbamoyl group of the formula

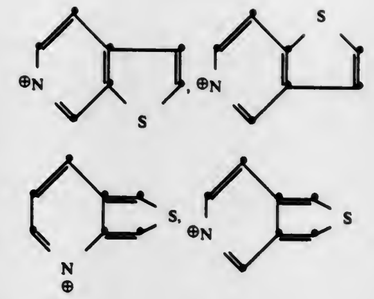


wherein

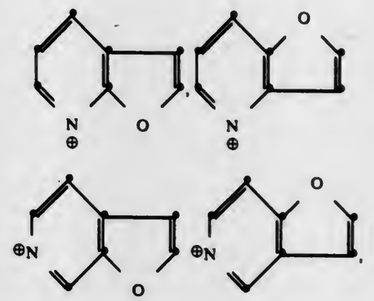
R'''' is C_1–C_4 alkyl, phenyl or C_1–C_3 alkyl substituted by phenyl; $\oplus R_1$ is a bicyclicpyridinium group selected from the group consisting of a thienopyridinium group of the formulas



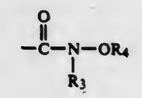
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or a furopyridinium group of the formulas



and said thienopyridinium and said furopyridinium wherein either or both of the hetero rings thereof is substituted by one or two C_1–C_4 alkyl, halogen, carboxy, carbamoyl, C_1–C_4 alkoxycarbonyl groups, $—SO_3H$, hydroxy, C_1–C_4 alkoxy, amino, mono-(C_1–C_4 alkyl)amino, di-(C_1–C_4 alkyl)amino, C_2–C_4 alkanoylamino, aminosulfonyl, cyano, formyl, trifluoromethyl, or a hydroxyamido group of the formula



wherein

R_3 and R_4 independently are hydrogen or C_1–C_4 alkyl; and the pharmaceutically acceptable non-toxic salts thereof.

4,501,740

BLOOD OXYGENATING AND CEREBRAL VASOREGULATING 20,21-DINOREBURNAMENINES

Francois Clemence, Paris; Italo Medici, Bondy; Robert Fournex, Paris, and Colette Tournemine, Livry-Gargan, all of France, assignors to Roussel Uclaf, Paris, France

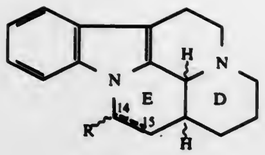
Filed Sep. 21, 1982, Ser. No. 420,791

Claims priority, application France, Oct. 8, 1981, 81 18935

Int. Cl.^{3} A61K *31/435*; C07D *461/00*

U.S. Cl. 514—283 **21 Claims**

1. A compound selected from the group consisting of 20,21-dinoreburnamenines of the formula



wherein R is selected from the group consisting of hydrogen, alkyl of 1 to 4 carbon atoms and $=CH_2$, the wavy line connecting to the E ring being a single bond when R is hydrogen or alkyl of 1 to 4 carbon atoms or a double bond when R is $=CH_2$ and the dotted line being possibly an endo carbon-carbon bond when R is hydrogen or alkyl of 1 to 4 carbon atoms and their non-toxic, pharmaceutically acceptable acid addition salts in all their possible isomers forms, racemic mixtures and optical isomers.

8. A blood oxygenating and cerebral vasoregulating composition comprising a blood oxygenating and cerebral vasoregulating effective amount of at least one compound of claim 1 and a pharmaceutical carrier.

15. A method of treatment of cerebral vascular disorders and cerebral syndromes provoked by an alteration of cerebral vascular circulation comprising administering to warm-blooded animals an effective amount of at least one compound of claim 1.

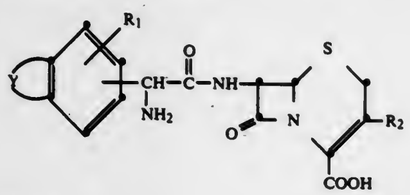
4,501,741

CEPHALOSPORIN ANTIBIOTICS

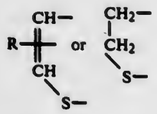
Bernard J. Graves, Indianapolis, and Stjepan Kukolja, Carmel, both of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed Apr. 12, 1983, Ser. No. 484,125
Int. Cl.³ C07D *501/22, 501/58*
U.S. Cl. 514—202 **13 Claims**

1. A compound of the formula



wherein Y is



R is hydrogen, C_1–C_3 alkyl, halogen, nitro, amino, C_1–C_4 alkoxy, C_1–C_4 alkanoylamino, or C_1–C_3 alkylsulfonylamino;

R_1 is hydrogen, C_1–C_3 alkyl, halogen, hydroxy, or C_1–C_4 alkoxy;

R_2 is hydrogen, halogen, methoxy or vinyl, and the pharmaceutically acceptable non-toxic salts thereof.

9. A pharmaceutical formulation comprising an antibiotically effective amount of a compound of claim 1 or a pharmaceutically acceptable non-toxic salt thereof and a pharmaceutically carrier.

4,501,742

INSECTICIDAL 3-FORMYL-2-NITROMETHYLENE-2H-1,3-THIAZINE

Martin Harris, Sittingbourne, England, assignor to Shell Oil Company, Houston, Tex.

Filed Feb. 8, 1984, Ser. No. 578,143
Claims priority, application United Kingdom, Feb. 17, 1983, 8304387
Int. Cl.³ C07D *279/04*; A61K *31/54*
U.S. Cl. 514—226 **6 Claims**

1. 3-formyl-2-nitromethylene-tetrahydro-2H-1,3-thiazine.

3. A insecticidal composition comprising an insecticidally effective amount of the compound of claim 1 together with a carrier.

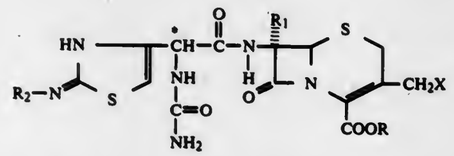
4,501,743

IMINOTHIAZOLYL UREIDO CEPHALOSPORINS

Hermann Breuer; Uwe D. Treuner, and Theodor Denzel, all of Regensburg, Fed. Rep. of Germany, assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

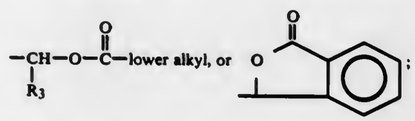
Division of Ser. No. 46,068, Jun. 5, 1979, Pat. No. 4,461,767, which is a continuation-in-part of Ser. No. 916,380, Jun. 16, 1978, abandoned. This application Mar. 12, 1984, Ser. No. 588,831
Int. Cl.³ A61K *31/545*
U.S. Cl. 514—201 **17 Claims**

1. A compound of the formula

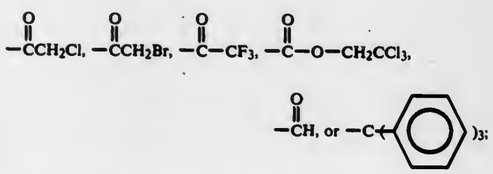


including its amino tautomer from wherein:

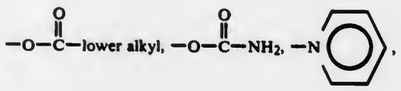
R is hydrogen, sodium, potassium, t-butyl, benzyl, p-methoxybenzyl, p-nitrobenzyl, diphenylmethyl, 2,2,2-trichloroethyl, trimethylsilyl, $—CH_2—O—$lower alkyl,



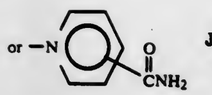
R_1 is in the α-configuration and is hydrogen or methoxy;
R_2 is hydrogen,



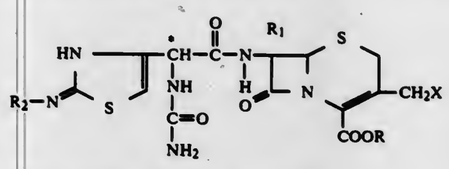
R_3 is hydrogen or lower alkyl; and
X is hydrogen,



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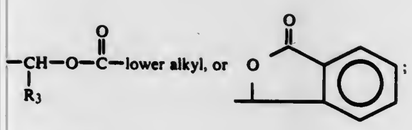


14. An antibacterial pharmaceutical composition comprising a pharmaceutically acceptable carrier and one or more antibacterially active compounds of the formula

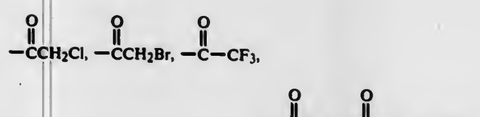


including its amino tautomer form wherein:

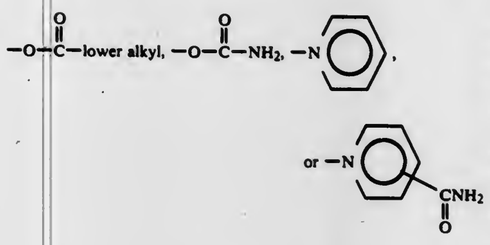
R is hydrogen, sodium, potassium, $—CH_2—O—$lower alkyl,



R_2 is hydrogen,



R_1 is in the α-configuration and is hydrogen or methoxy;
R_3 is hydrogen or lower alkyl; and
X is hydrogen,



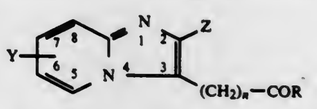
4,501,745

ANXIOLYTIC IMIDAZO[1,2-a]PYRIDINE DERIVATIVES

Jean-Pierre Kaplan, Bourg-la-Reine, and Pascal George, Vitry sur Seine, both of France, assignors to Synthelabo, Paris, France

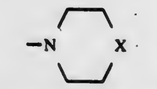
Filed Apr. 13, 1983, Ser. No. 484,591
Claims priority, application France, Apr. 21, 1982, 82 06840
Int. Cl.³ A61K *31/435*; C07D *409/04*
U.S. Cl. 514—222 **9 Claims**

1. An imidazo[1,2-a]pyridine derivative of the formula:



(I)

wherein n represents 2, 3 or 4, Y represents a hydrogen or halogen atom or a C_{1-4} alkyl radical, Z represents a thien-2-yl, furan-2-yl or pyridin-2-yl radical optionally carrying a halogen atom or the methyl or ethyl radical in the 5-position, and R represents the hydroxy radical, or a group $—NR_1R_2$, in which R_1 and R_2 independently of one another each represent a hydrogen atom; a straight- or branched-chain C_{1-5} alkyl radical optionally carrying one or more halogen atoms, a hydroxy radical, a group $—N(C_{1-4}\text{ alkyl})_2$, a carbamoyl radical or a C_{1-4} alkoxy radical; the allyl radical; the propargyl radical; a C_{3-6} cycloalkyl radical; the benzyl radical; or the phenyl radical; or alternatively $—NR_1R_2$ together represent a heterocyclic ring containing from 3 to 6 carbon atoms, or a heterocyclic ring of the formula



in which X is O, S, CHOR' or NR", R' being a hydrogen atom or the benzyl radical and R" being a hydrogen atom, a C_{1-4} alkyl radical or the phenyl radical optionally carrying a methoxy radical or a halogen atom, and pharmaceutically-acceptable acid addition salts thereof.

9. A method for the treatment of anxiety states, sleep disorders and other neurological and psychiatric complaints, for the treatment of vigilance disorders, in particular for combating the behavioural disorders which can be attributed to cerebral vascular damage and to the cerebral sclerosis encountered in geriatrics, and also for the treatment of the absences due to cranial traumatisms and for the treatment of metabolic encephalopathies, which comprises administering to a patient with such an ailment an amount of an imidazo[1,2-a]pyridine derivative of the formula depicted in claim 1 or a pharmaceutically-acceptable acid addition salt thereof, sufficient to ameliorate the condition of the patient.

4,501,744

SUBSTITUTED-AZA-CYTOSINE COMPOUNDS AND ANTI-VIRAL USES THEREOF

Kelvin K. Ogilvie, Candiac, Canada, assignor to ens BIO LOGICALS Inc., Toronto, Canada

Continuation-in-part of Ser. No. 302,790, Sep. 16, 1981, which is a continuation-in-part of Ser. No. 187,631, Sep. 16, 1980, Pat. No. 4,347,360. This application Jul. 28, 1983, Ser. No. 518,196
Int. Cl.³ C07D *251/10*; A61K *31/53*
U.S. Cl. 514—245 **5 Claims**

1. 5-aza-1-[[1-hydroxymethyl-(2-hydroxy)ethoxy]methyl]-cytosine and pharmaceutically acceptable salts thereof.

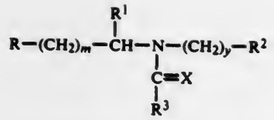
4,501,746

N,N-DISUBSTITUTED CARBOXAMIDE DERIVATIVES, AND FUNGICIDAL USE THEREOF

Eriks V. Krumkalns, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Continuation-in-part of Ser. No. 332,022, Dec. 18, 1981, abandoned. This application Sep. 15, 1982, Ser. No. 418,331
Int. Cl.³ A01N *43/40*; C07D *213/56*
U.S. Cl. 514—357 **29 Claims**

1. A compound of the formula



wherein:

R and R^2 independently are 3-pyridyl, 4-pyridyl, C_4-C_{10} alkyl, C_2-C_{10} alkenyl, C_3-C_8 cycloalkyl, C_1-C_4 alkyl substituted C_3-C_8 cycloalkyl, 3,4-(methylenedioxy)phenyl or phenyl substituted with one or two C_1-C_6 alkyl, C_1-C_6 alkoxy, halogen, C_1-C_6 haloalkyl, C_1-C_6 haloalkoxy or nitro groups; provided that one and only one of R and R^2 is 3-pyridyl or 4-pyridyl;

m and y independently are 0 or 1;

R^1 is H or C_1-C_4 alkyl;

x is O or S;

R^3 is C_4-C_{10} branched alkyl, C_5-C_8 cycloalkyl, -C_1-C_4 alkylene-Z-R^4, wherein

Z is O, S, or a direct link;

R^4 is C_1-C_{10} alkyl, or C_3-C_8 cycloalkyl;

and the agronomically-acceptable salts thereof; with the proviso that when R^4 is C_1-C_{10} alkyl, Z is not a direct link.

23. A method for controlling the growth of fungal diseases which comprises applying to the plant for which control is desired a disease inhibiting and non-herbicidal amount of a compound of claim 1.

4,501,747

CERTAIN AMIDE DERIVATIVES OF 2-GUANIDINO-THIAZOLES AND COMPOSITIONS CONTAINING SAME

Dino Nisato, Pavia; Sergio Boveri, Monza, both of Italy; Romeo Roncucci, Paris, France, and Paolo Carminati, Milan, Italy, assignors to Sanofi, Paris, France

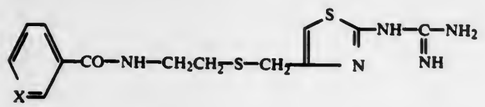
Filed Apr. 29, 1983, Ser. No. 489,723

Claims priority, application France, May 10, 1982, 82 08097; Aug. 13, 1982, 82 14126

Int. Cl.³ C07D *411/12, 263/28;* A01N *31/455, 31/42*

U.S. Cl. 514—342 **8 Claims**

1. An amide of formula



in which X represents a N→O or C-NH-A-B group, wherein A represents a CO or SO_2 group and B represents an alkyl group of from 1 to 6 carbon atoms or a phenyl group, or a pharmaceutically acceptable acid addition salt thereof.

6. A pharmaceutical composition having histamine H_2 receptor antagonist action comprising an effective amount of a compound of claim 1, 2, 3, 4, or 5 as an active ingredient, in combination with an inert pharmaceutically acceptable carrier.

4,501,748

1,4-DIHYDROPYRIDINE DERIVATIVES

Kenji Muto; Akira Karasawa, both of Shizuoka; Tokuyuki Kuroda, Susono, and Nobuhiro Nakamizo, Machida, all of Japan, assignors to Kyowa Hakko Kogyo Co., Ltd., Tokyo, Japan

Filed Oct. 14, 1983, Ser. No. 542,181

Claims priority, application Japan, Jun. 3, 1983, 58-98899

Int. Cl.³ A61K *31/445;* C07D *211/90, 401/12*

U.S. Cl. 514—318 **4 Claims**

1. An optical isomer having an optical rotation degree of (+) from among (±)-α-2,6-dimethyl-4-(3-nitrophenyl)1,4-dihydropyridine-3,5-dicarboxylic acid-3-(1-benzyl-3-piperidyl) ester-5-methyl ester, the hydrochloride of which has melting points ranging from 196° to 202° C.; or a salt thereof.

4. A pharmaceutical composition which has hypotensive effects and which comprises an effective amount of an optical isomer according to claim 1, as an active ingredient and a pharmaceutical carrier.

4,501,749

PERIPHERALLY SELECTIVE DOPAMINE ANTAGONISTS IN THE TREATMENT OF OCULAR HYPERTENSION

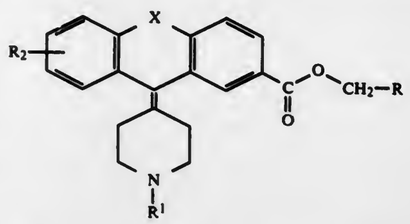
Bradley V. Clineschmidt, Jeffersonville, Pa., assignor to Merck & Co., Inc., Rahway, N.J.

Filed Oct. 31, 1983, Ser. No. 547,188

Int. Cl.³ A61K *31/33, 31/445*

U.S. Cl. 514—326 **2 Claims**

1. A method of treating glaucoma and ocular hypertension which comprises topical application to the eye of a patient in need of such treatment of an effective intraocular pressure lowering amount of a compound of structural formula I with zero or negative optical rotation:

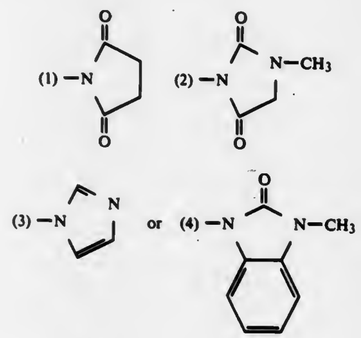


I

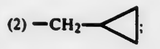
or a pharmaceutically acceptable salt thereof, wherein

X is (1) —CH=CH—, (2) —CH_2—CH_2—, (3) —CH_2—O—, (4) —O—CH_2—, (5) —CH_2—S—, (6) —S—CH_2—, (7) —S—, or (8) —O—;

R is



R^1 is (1) C_{1-3} alkyl, or



and R^2 is (1) hydrogen, (2) C_{1-3} alkyl, or (3) fluoro.

4,501,750

THIAZOLE COMPOUNDS, A PROCESS FOR PREPARING SAME AND A PHARMACEUTICAL COMPOSITION CONTAINING THE THIAZOLE COMPOUNDS

Isao Sakano; Tatsuro Yokoyama; Seitaro Kajiya, all of Yokohama; Yutaka Okazaki, Mobara; Hiroshi Tokuda, Mobara; Hiroshi Kawazura, Mobara; Mikio Kumakura, Mobara; Takuo Nakano, and Akira Awaya, both of Yokohama, all of Japan, assignors to Mitsui Toatsu Kaguku Kabushiki Kaisha, Tokyo, Japan

PCT No. PCT/JP82/00012, § 371 Date Sep. 13, 1982, § 102(e) Date Sep. 13, 1982, PCT Pub. No. WO82/02383, PCT Pub. Date Jul. 22, 1982

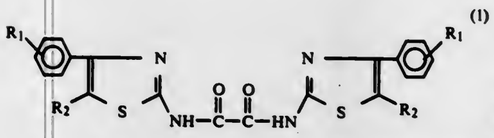
PCT Filed Jan. 13, 1982, Ser. No. 420,257

Claims priority, application Japan, Jan. 13, 1981, 56-2741; Jan. 21, 1981, 56-6231

Int. Cl.³ A01K *31/425;* C07D *417/12*

U.S. Cl. 514—369 **9 Claims**

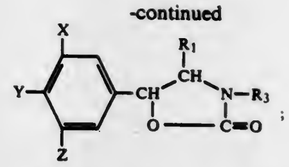
1. A thiazole compound of the formula:



(I)

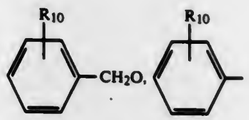
wherein R_1 is a member selected from the group consisting of hydrogen, chloro, bromo, methyl, methoxy, p-phenoxy, p-chlorophenoxy, nitro and cyano, and R_2 is a member selected from the group consisting of hydrogen, and methylthio.

-continued



(Ib)

wherein, X is hydrogen, halogen or —CN; Y is hydrogen, NT_8R_9 or $NHCOR_5$; Z is hydrogen, halogen, OH, CN, CF_3, $COOR_1$, $CONH_2$, C_1-C_4 alkyl, C_1-C_4 alkoxy, NO_2, C_1-C_4 dialkylaminomethyl or hydroxymethyl; R_1 is hydrogen or C_1-C_4 alkyl; R_3 is hydrogen, C_1-C_6 alkyl, cyclohexyl, methoxypropyl, C_3-C_4 alkenyl or phenyl; R_5 is hydrogen, C_1-C_4 alkoxy,



or $N(R_1)_2$; R_7 is hydrogen, C_1-C_4 alkyl or phenyl; R_8 is hydrogen, C_1-C_4 alkyl or C_3-C_4 alkenyl; R_9 is hydrogen, C_1-C_6 alkyl, C_4-C_6 cycloalkyl, C_3-C_4 alkenyl, or benzyl; and when R_8 and R_9 are taken together with the nitrogen to which they are attached, they represent pyrrolidino; R_{10} is hydrogen, chloro, dichloro, methyl, dimethyl, methoxy, dimethoxy or nitro; with the further provisos that when Y is hydrogen, X and Z are halogen; when R_8 is C_1-C_4 alkyl or C_3-C_4 alkenyl, R_9 is hydrogen, C_1-C_4 alkyl or C_3-C_4 alkenyl; when Z is OH, X and Y are hydrogen, that at least one of X, Y, and Z represents a substituent other than hydrogen; and when X is —CN, Z is —CN; when Z is a group other than halogen, Y is NR_8R_9 or $NHCOR_5$; or racemic mixtures of the above-identified compounds, the optically active isomers or non-toxic, pharmacologically acceptable acid addition salts thereof.

4,501,751

PHENYLETHANOLAMINE DERIVATIVES AND ACID ADDITION SALTS THEREOF FOR ENHANCING THE GROWTH RATE OF MEAT-PRODUCING ANIMALS AND IMPROVING THE EFFICIENCY OF FEED UTILIZATION THEREBY

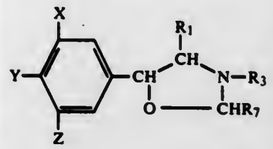
Pamela K. Baker, Hopewell, and Jane A. Kiernan, Kendall Park, both of N.J., assignors to American Cyanamid Company, Stamford, Conn.

Division of Ser. No. 219,054, Dec. 22, 1980, Pat. No. 4,404,222, which is a continuation-in-part of Ser. No. 181,254, Aug. 25, 1980, abandoned, which is a continuation-in-part of Ser. No. 143,069, Apr. 24, 1980, abandoned, which is a continuation-in-part of Ser. No. 66,908, Aug. 16, 1979, abandoned. This application Sep. 2, 1983, Ser. No. 528,765

Int. Cl.³ A61K *31/42*

U.S. Cl. 514—374 **8 Claims**

1. A method for increasing the growth rate of meat-producing animals and improving the efficiency of feed utilization comprising: orally or parenterally administering to said animals an effective amount to increase the growth rate of meat producing animals and improve the efficiency of feed utilization of a compound having the structure:



(Ia)

; or

4,501,752

ANTIULCER DRUG

Koichi Yokoi, Kashiwa; Koichi Tachibana, Narita; Kazuo Isomae, Narashino, and Toshiaki Nakashima, Shisuimachi, all of Japan, assignors to SS Pharmaceutical Co., Ltd., Tokyo, Japan

Filed Apr. 22, 1983, Ser. No. 487,829

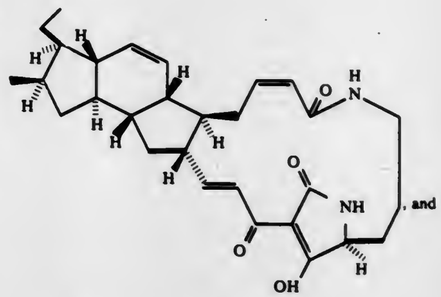
Claims priority, application Japan, Apr. 30, 1982, 57/72960

Int. Cl.³ A61K *31/395*

U.S. Cl. 514—414 **16 Claims**

1. An antiulcer drug comprising:

(a) an antiulcer effective amount of Ikarugamycin of the following formula:



, and

(b) a pharmaceutical acceptable excipient.

4,501,753

COMBATING PESTS WITH NOVEL SUBSTITUTED CARBAMOYLOXIMINO-TETRAHYDROTHIOPHENES AND INTERMEDIATES THEREFOR

Hans-Ludwig Elbe, Wuppertal, and Ingeborg Hammann, Cologne, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

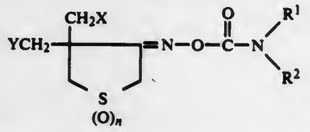
Filed Apr. 5, 1982, Ser. No. 365,929

Claims priority, application Fed. Rep. of Germany, Apr. 24, 1981, 3116297

Int. Cl.³ A01N *43/02*; C07D *333/00*

U.S. Cl. 514—447 **8 Claims**

1. A substituted carbamoyloximino-tetrahydrothiophene, or derivative thereof, of the formula



in which

R^1 represents an alkyl, alkoxyalkyl, alkenyl or alkinyl group,

R^2 represents a hydrogen atom, an alkyl group or a group of the general formula $—SR^3$ or $—S_2R^6$, wherein

R^3 represents an alkyl, halogenoalkyl, optionally substituted phenyl or alkoxycarbonyl group or a grouping of the general formula $—NR^4R^5$, or a radical which is identical to the rest of the molecule to which the group $—SR^3$ is bonded,

R^4 represents an alkyl, alkoxycarbonyl or optionally substituted phenylsulphonyl group,

X represents a hydrogen or halogen atom or a grouping of the general formula $—OR^5$ or $—SR^5$,

Y represents a halogen atom or a grouping of the general formula $—OR^5$ or $—SR^5$,

R^5 represents an alkyl group,

R^6 represents an alkyl group or an optionally substituted phenyl group, and

n is 0, 1 or 2.

4,501,754

METHODS OF TREATING BONE RESORPTION

William J. Wechter, Kalamazoo, Mich., and John E. Horton, Framingham, Mass., assignors to The Upjohn Company, Kalamazoo, Mich.

Continuation of Ser. No. 168,827, Jul. 10, 1980, abandoned, which is a continuation-in-part of Ser. No. 73,398, Sep. 7, 1979, abandoned, and Ser. No. 73,400, Sep. 7, 1979, abandoned. This application Mar. 19, 1982, Ser. No. 360,020

Int. Cl.³ A61K *31/35, 31/275*

U.S. Cl. 514—456 **2 Claims**

1. A method of arresting or preventing bone resorption in an animal exhibiting or susceptible to development of bone resorption which comprises systemically administering to said animal an amount of DSCG effective to treat or prevent said bone resorption.

4,501,755

ISOFLAVONES USEFUL AS ANTI-INFLAMMATORY AGENTS

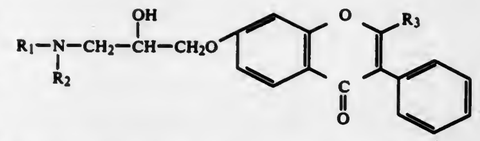
Edwin S. Wu, Rochester, N.Y., assignor to Pennwalt Corporation, Philadelphia, Pa.

Continuation-in-part of Ser. No. 259,403, May 1, 1981, abandoned, and a continuation-in-part of Ser. No. 422,929, Sep. 24, 1982, abandoned. This application Nov. 15, 1982, Ser. No. 441,889

Int. Cl.³ A61K *31/35*; C07D *311/36*

U.S. Cl. 514—456 **10 Claims**

1. A compound of the formula



or a pharmaceutically acceptable acid addition or quaternary ammonium salt thereof and where R_1 is hydrogen, lower alkyl or cycloalkyl of up to six carbon atoms, R_2 is hydrogen or methyl and R_3 is hydrogen, lower alkyl, CF_3, cycloalkyl or furyl.

10. A process for treating a warm-blooded animal for inflammation in need of such treatment which comprises administering to such animal an effective amount of the compound of claim 1.

4,501,756

FUNGICIDAL CARBAMATES USEFUL AGAINST FUNGI RESISTANT TO BENZAMIDAZOLE FUNGICIDES

Toshiro Kato; Junya Takahashi, both of Hyogo, and Katsuzo Kamoshita, Osaka, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Oct. 28, 1981, Ser. No. 315,860

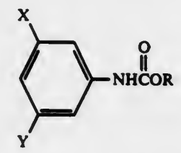
Claims priority, application Japan, Nov. 7, 1980, 55-157237; Nov. 27, 1980, 55-167684; Feb. 13, 1981, 56-20534

Int. Cl.³ A01N *47/20, 43/36, 43/50, 43/52, 57/30*

U.S. Cl. 514—120 **10 Claims**

6. A fungicidal composition comprising:

a fungicidally effective amount effective against fungi which are resistant to benzimidazole fungicides including thiophanate and dicarboximide fungicides of at least one compound of the formula:



wherein X and Y, which are the same or different, are each a lower alkyl group, a lower alkoxy group or a halogen atom and R is a methyl group or an ethyl group;

a fungicidally effective amount of at least one compound selected from the group consisting of benzimidazole fungicides including thiophanate and dicarboximide fungicides; and

an inert carrier.

7. A fungicidal composition according to claim 6, wherein said benzimidazole fungicide including thiophanate is selected from the group consisting of methyl 1-(butylcarbamoyl)benzimidazol-2-ylcarbamate, 2-(2-furyl)benzimidazole, 2-(4-thiazolyl)benzimidazole, methyl benzimidazol-2-ylcarbamate, 1,2-bis(3-methoxycarbonyl-2-thioureido)benzene, 1,2-bis(3-ethoxycarbonyl-2-thioureido)benzene, 2-(O,S-dimethylphosphorylamino)-1-(3'-methoxycarbonyl-2'-thioureido)benzene, and 2-(O,O-dimethylthiophosphorylamino)-1-(3'-methoxycarbonyl-2'-thioureido)benzene and said dicarboximide fungicide is selected from the group consisting of 3-(3',5'-dichlorophenyl)-1,2-dimethylcyclopropane-1,2-dicarboximide, 3-(3-,5'-dichlorophenyl)-1-isopropylcarbamoylimidazolidine-2,4-dione, 3-(3',5'-dichlorophenyl-5-methyl-5-vinyloxazolidine-2,4-dione and ethyl(RS)-3-(3',5'-dichlorophenyl)-5-methyl-2,4-dioxooxazolidine-5-carboxylate.

4,501,757

YEAST AND DOUGH CONDITION COMPOSITIONS

Don L. Smith, and Shirley J. Smith, both of 1683 E. 6550 S., Salt Lake City, Utah 84121, assignors to Don L. Smith and Shirley J. Smith, both of Salt Lake City, Utah

Filed Feb. 1, 1984, Ser. No. 575,920

Int. Cl.³ A23L *1/00*; A21D *2/00*

U.S. Cl. 426—62 **11 Claims**

1. A dough conditioning-yeast quickening composition comprising, in percent by weight, about 0.2–5% fenugreek, 0.1–3% rosemary, 50–75% whey solids, 5–15% lecithin and 5–15% ascorbic acid.

4,501,758

HONEY COATED NUTS

Charles A. Morris, Brooklyn Park, Minn., assignor to Henkel Corporation, Minneapolis, Minn.

Filed May 23, 1983, Ser. No. 497,335

Int. Cl.³ A23L *1/36, 1/08*

U.S. Cl. 426—93 **18 Claims**

1. A process for coating nuts with a dried honey product including the steps of:

(a) contacting the nut to be coated with an aqueous mixture of a sugar and a carbohydrate containing adhesive material to coat the nut;

(b) treating the nut of (a) with a dry mixture comprising:

i. from about 50% to about 90% by weight of a sugar;

ii. from about 5% to about 25% by weight of a starch or a dextrine and mixtures thereof; and,

iii. from about 5% to about 25% by weight of a dried honey to sufficiently coat the nuts with a taste effective amount of honey; and,

(c) roasting the nuts;

thereby obtaining the honey coated nuts.

4,501,759

CEREAL PRESWEETENED WITH ASPARTAME AND COLD WATER SOLUBLE GUM COATING AND METHOD OF PREPARATION

Robert J. Gajewski, Crystal, Minn., assignor to General Mills, Inc., Minneapolis, Minn.

Filed May 21, 1982, Ser. No. 380,655

Int. Cl.³ A23L *1/164*

U.S. Cl. 426—96 **9 Claims**

1. A sweetened, dry comestible consisting essentially of: a dry comestible, said comestible having a coating, said coating comprising

from about 0.05% to 1.5% by weight of the comestible of a water soluble member selected from the group consisting of sodium alginates, propylene glycol alginates, guar gum, locust bean gum, gum Arabic, pectin, kappa carrageenan, methylcellulose, hydroxypropyl methylcellulose, and mixtures thereof, and

about 0.05% to 0.3% by weight aspartyl-phenylalanine methyl ester, and

wherein the coating is present at from about 0.1% to about 1.8% of the coated comestible.

4,501,760

PRODUCTION OF FAT-CONTAINING PROTEIN FIBERS

Terrence J. Maurice, Colborne, and Jennifer M. Grealy, Gores Landing, both of Canada, assignors to General Foods, Inc., Toronto, Canada

Filed Dec. 23, 1982, Ser. No. 452,746

Int. Cl.³ A23J *3/00*

U.S. Cl. 426—250 **9 Claims**

1. A process for the production of protein fibres from a protein source material, which comprises:

(a) forming an aqueous dispersion of protein micelles consisting of amphiphilic protein moieties from at least one vegetable protein source material by solubilization of the protein source material using food grade salt solution and subsequent dilution of the protein solution,

(b) settling said aqueous dispersion of protein micelles to provide an amorphous protein mass containing a substantially undenatured protein isolate having a pH of 5.5 to 5.85, said isolate having substantially no lipid content, substantially no lysinoalanine content and substantially the same lysine content as the storage protein in the protein source material,

(c) separating the amorphous protein mass having a moisture content of about 50 to about 80 wt.% from residual aqueous phase,

(d) admixing the separated amorphous protein mass with an edible vegetable oil under conditions of high shear to form an emulsion containing about 5 to about 20% by weight of the oil,

(e) injecting said emulsion through a plurality of openings of diameter of about 0.005 to about 0.020 inches into water having a pH of about 5.5 to about 7.5 and a temperature of at least about 90° C. to form fibres by coagulation, and

(f) removing the fibres so produced from the hot water.

4,501,761

CONTROLLED COFFEE ROASTING

James P. Mahlmann, Princeton Junction; Steven M. Schecter, Manalapan, both of N.J., and Lawrence Scher, Bronx, N.Y., assignors to General Foods Corporation, White Plains, N.Y.

Filed Dec. 10, 1982, Ser. No. 448,546

Int. Cl.³ A23F *5/04*

U.S. Cl. 426—467 **5 Claims**

1. A continuous coffee roasting method comprising:

(a) continuously charging green coffee beans to the first end of a rotating perforated cylinder, which cylinder is divided into compartments by a helical screw spanning the length of said cylinder;

(b) rotating the perforated cylinder and screw contained therein to advance the coffee completely therethrough in between 2 minutes and 10 minutes;

(c) simultaneously blowing heated gas at a temperature selected from the range between 200° C. and 240° C. upward through the cylinder, along the entire length of said cylinder at a velocity of between 670 m/min and 1250 m/min and at a weight ratio of from about 40/1 to 150/1 said gas to coffee so that the coffee is maintained in a bubbling bed in each said compartment, the temperature of the coffee beans rapidly approaching the temperature of the roasting temperature and being maintained thereat for a combined period of between 2 to 10 minutes until the desired roast is obtained, the bubbling bed condition being intermediate between a static non-fluidized bed where essentially none of the beans are surrounded by the roasting atmosphere and a fluidized bed wherein substantially all of the beans are suspended in the roasting atmosphere, said bubbling bed being one in which the greater mass of coffee beans is suspended in the roasting atmosphere at any given time and a smaller mass of the beans constitute the static bed, whereby heat transfer is promoted causing the bean temperature to closely approach that of the roasting atmosphere; and

(d) continuously withdrawing roasted coffee from the second end of said rotating cylinder.

4,501,762

PROCESS FOR PREPARING ACYL TRIMETHYL CYCLOHEXENE DERIVATIVES AND USE OF INTERMEDIATES THEREFOR IN AUGMENTING OR ENHANCING THE AROMA OR TASTE OF A CONSUMABLE MATERIAL

Robert W. Trenkle, Bricktown; Braja D. Mookherjee, Holmdel; John B. Hall, Rumson; Robin Kasper, Eatontown; Manfred H. Vock, Locust; Ronald Schreck, Keyport; Edward J. Granda, Englishtown, and Joaquin F. Vinals, Red Bank, all of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Division of Ser. No. 156,678, Jun. 5, 1980, Pat. No. 4,260,527, which is a division of Ser. No. 88,451, Oct. 26, 1979, Pat. No. 4,250,332. This application Feb. 19, 1981, Ser. No. 235,822
The portion of the term of this patent subsequent to Aug. 18, 1998, has been disclaimed.
Int. Cl.³ A23L *2/26*
U.S. Cl. 426—538 **1 Claim**

1. A flavor composition which comprises as active ingredient 1-ethynyl-2,2,6-trimethyl cyclohexanol.

4,501,763

PROCESS FOR PREPARING A SARCOCARP-CONTAINING JELLY

Hiroya Yuguchi, Tokyo; Yoshinobu Hayashi, and Yusuke Miyazaki, both of Kanagawa, all of Japan, assignors to Morinaga Milk Industry Co., Ltd., Tokyo, Japan

Filed Aug. 19, 1983, Ser. No. 524,740
Claims priority, application Japan, Aug. 24, 1982, 57-145500
Int. Cl.³ A23L *1/06*
U.S. Cl. 426—573 **14 Claims**

1. A process for preparing a sarcocarp-containing jelly having homogeneously dispersed sarcocarps which comprises the step of:
(a) dissolving starting materials for the manufacture of a jelly, other than gelling agents and sarcocarps, in water, to prepare a syrup;
(b) preparing an isotonized mixture (B) comprising isotonized sarcocarps and the syrup, by adding sarcocarps to the syrup to form a mixture (B) and heating the mixture (B) to pasteurize said mixture;
(c) preparing a solution (A), with a specific gravity and in an amount necessary for the preparation of a liquid portion having a specific gravity substantially equal to that of the isotonized sarcocarps contained in the isotonized mixture (B), of a compounded mixture prepared by mixing the solution (A) with the isotonized mixture (B), wherein said solution (A) is prepared by heating an aqueous solution of starting materials containing gelling agents, in the absence of acidic constituents or the sarcocarps, and, wherein the aqueous solution of starting materials has a substantially neutral pH for pasteurization; and
(d) mixing solution (A) with the isotonized mixture (B) at a temperature of not lower than the gelling temperature of the compounded mixture of the solution (A) and the isotonized mixture (B), and rapidly cooling the compounded mixture to solidify said mixture before reisotonizing the sarcocarps contained therein to the osmotic pressure of the liquid portion of the compounded mixture.

4,501,764

MARGARINE FAT BLEND WITH A REDUCED TENDENCY TO SANDINESS

Anne Gercama, Chanteloup les, France, and Robert Schijf, Vlaardingen, Netherlands, assignors to Lever Brothers Company, New York, N.Y.

Filed Jan. 19, 1983, Ser. No. 459,175
Claims priority, application United Kingdom, Jan. 20, 1982, 8201578
Int. Cl.³ A23D *5/00*
U.S. Cl. 426—607 **17 Claims**

1. A margarine fat blend with a reduced tendency to sandiness, defined as a fat blend which does not contain a substantial proportion of needle-like fat crystals with a size ranging from 10 to 50 microns, which fat blend comprises: an oil (a) having a level of linoleic acid residues of at least 20% and a hydrogenated fat (b) having a level of palmitic acid residues of at least 10% obtained by interesterification of a fat (d) having a level of palmitic acid residues ranging from 50 to 90%, with a fat (c) containing trans-fatty acid residues, wherein the ratio of fat (c) to fat (d) ranges from 20:1 to 5:1.

4,501,765

PRODUCTION OF EDIBLE PROTEIN-CONTAINING SUBSTANCES

Peter J. Towersey, High Wycombe; John Longton, Chesham, and Geoffrey N. Cockram, Remenham Hill, all of England, assignors to Ranks Hovis McDougall Ltd., London, England

Continuation of Ser. No. 813,188, Jul. 5, 1977, abandoned, which is a continuation of Ser. No. 584,451, Jun. 6, 1975, abandoned, which is a continuation of Ser. No. 440,775, Feb. 8, 1974, Pat. No. 3,937,693. This application Aug. 26, 1982, Ser. No. 411,805
Claims priority, application United Kingdom, Feb. 13, 1973, 7087/73
Int. Cl.³ A23J *3/00*
U.S. Cl. 426—656 **17 Claims**

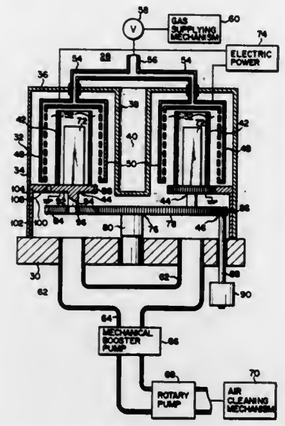
4. An edible protein-containing substance comprising a non-viable edible non-toxic fungal mycelium of a non-toxic strain of *Fusarium graminearum* possessing a reduced level of RNA of below 4%, and being further characterized by improved ease of processing to a form suitable for food use and an essentially white color such as to make the protein-containing substance compatible with food use and a filamentous structure due to the presence of retained fungal cell wall material.

4,501,766

FILM DEPOSITING APPARATUS AND A FILM DEPOSITING METHOD

Katsumi Suzuki, and Shuji Yoshizawa, both of Tokyo, Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Jan. 11, 1983, Ser. No. 457,231
Claims priority, application Japan, Feb. 3, 1982, 57-15870; Feb. 3, 1982, 57-15871; Feb. 3, 1982, 57-15877
Int. Cl.³ B05D *3/06*; C23C *13/08*
U.S. Cl. 427—38 **18 Claims**



1. A film depositing apparatus which deposits a film with a given thickness on each of a plurality of substrates, said apparatus comprising:
a base section;
a casing removably mounted on the base section to form a sealed film depositing chamber;
transfer means for transferring the plurality of substrates in one direction inside the film depositing chamber;
gas supplying means for supplying a material gas into the film depositing chamber of the casing; and
electric discharge means for activating the material gas supplied to the film depositing chamber by the gas supplying means.

15. A method for depositing a film with a given thickness on the surface of each of a plurality of substrates, said method comprising the steps of:
(a) arranging the plurality of substrates on a feed path along a transfer direction;
(b) arranging the internal pressure of a film depositing chamber including an endless transfer path to lead material gas into the film depositing chamber;
(c) causing electric discharge inside the film depositing chamber to activate the material gas;
(d) feeding each of the substrates from the feed path to a predetermined portion of the transfer path in the film depositing chamber through an antechamber;
(e) endlessly driving the substrates in the film depositing chamber along the transfer path to transfer each of the substrates again to the predetermined portion of the transfer path; and
(f) carrying the filmed substrates returned to the predetermined portion of the transfer path to a delivery path via the antechamber.

4,501,767

MULTICOAT FORMING METHOD

Tamio Iimure, Yawata, Japan, assignor to Nippon Paint Co., Ltd., Osaka, Japan

Filed Mar. 28, 1983, Ser. No. 479,250
Claims priority, application Japan, Mar. 30, 1982, 57-51963
Int. Cl.³ B05D *3/06*
U.S. Cl. 427—44 **11 Claims**

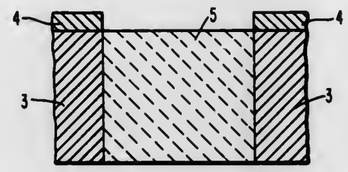
1. A method of forming a multicoat coating on a substrate which comprises the steps of applying on said substrate a photocurable colored base coat containing a photocurable film-forming polymer, a photosensitizer capable of photochemically inducing free radical addition polymerization of said photocurable film-forming polymer and a photocuring accelerator which is an unsaturated polymerizable polymer having an aminobenzoyloxy or N-mono or N,N-di-C_1-C_6 alkyl substituted aminobenzoyloxy group; photocuring said base coat; applying a clear top coat on said base coat; and then baking the resulting multicoat at an elevated temperature.

4,501,768

THIN FILM FLOATING ZONE METAL COATING TECHNIQUE

Ananda H. Kumar, Wappingers Falls, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 18, 1982, Ser. No. 359,445
Int. Cl.³ B05D *3/02, 3/12, 5/00*
U.S. Cl. 427—57 **19 Claims**



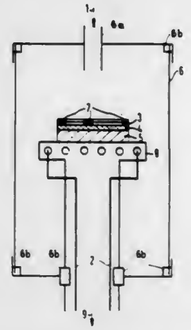
1. A method of selectively depositing brazeable and solderable coatings over an existing metallurgical pattern of a dielectric substrate, comprising:
sequentially blanket coating said substrate, inclusive of said pattern, with discrete levels of two diverse alloyable metals capable of forming a continuous series of solid solutions and showing a minimum in the liquidus curve in their phase diagram to form brazeable and solderable with the alloys of said metals bondable to said pattern and non-wetting to the bare surfaces of said substrate,
heating said substrate to a temperature below the melting points of said metals and above the lowest liquidus temperature in the phase diagram of the alloy system of said metals, with said heating being maintained for sufficient time to obtain interdiffusion of the component metals to form an alloy composition, at the interface with the substrate, corresponding to the composition of the said lowest liquidus temperature in the phase diagram of the component metals, whereby said alloy of said metals contacts and is bonded to said pattern and dewets the bare surfaces of said substrate to form loosely adhered alloy segments thereon;
cooling said substrate to solidify said coating and said segments thereon; and
removing said segments from said bare surfaces of said substrate with retention of a brazeable or solderable alloy coating formed on said pattern.

4,501,769

METHOD FOR SELECTIVE DEPOSITION OF LAYER STRUCTURES CONSISTING OF SILICIDES OF HMP METALS ON SILICON SUBSTRATES AND PRODUCTS SO-FORMED

Konrad Hieber, Munich, and Claudia Wieczorek, Ottobrunn, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Feb. 9, 1983, Ser. No. 465,299
Claims priority, application Fed. Rep. of Germany, Mar. 30, 1982, 3211752
Int. Cl.³ B05D *5/12*; C23C *11/08*
U.S. Cl. 427—95 **11 Claims**



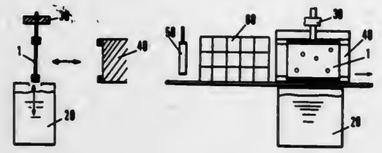
1. A method for selectively depositing layer structures composed of a silicide of a high melting point metal on a substrate surface containing silicon and non-silicon regions, as is particularly used in thin-film and semiconductor technology, by thermal decomposition of gaseous silicon and halogen compounds containing a high melting point metal to produce silicides of such metal and depositing the resultant metal silicide from said gaseous phase onto only the silicon regions of a heated substrate containing silicon and non-silicon regions, said method comprising:
providing a hydrogen halide gas to said reaction gas, said hydrogen halide being selected from the group consisting essential of hydrogen chloride, hydrogen bromide and hydrogen iodine; and
adjusting the substrate temperature and the composition of said reaction gas to respective values at which a nucleation in regions other than on said silicon regions is suppressed during deposition of said metal silicide from such gaseous phase due to the presence of said hydrogen halide.

4,501,770

METHOD FOR REMOVING SOLDER FROM THE DRILL HOLES OF EMPTY PRINTED CIRCUIT BOARDS COATED WITH SOLDER

Imre Bajka, Niederglatt, and Robert Furrer, Zurich, both of Switzerland, assignors to Siemens Aktiengesellschaft Berlin & München, Munich, Fed. Rep. of Germany

Filed Apr. 5, 1982, Ser. No. 365,642
Claims priority, application Switzerland, Apr. 15, 1981, 2512/81
Int. Cl.³ B05D *3/12, 1/18*
U.S. Cl. 427—97 10 Claims



1. A method for the removal of excess solder out of drill holes of a printed circuit board not yet equipped with electrical components, each of the drill holes having an axis and primarily serving to receive and electrically connect the terminals of electric components to metalized conductor tracks on the surface of the printed circuit board, comprising the steps of:

mounting the printed circuit board on a frame;

accelerating at least once said frame including the printed circuit board in the direction of the axis of the drill holes while in a condition in which the solder applied to the printed circuit board is still in a molten state; and

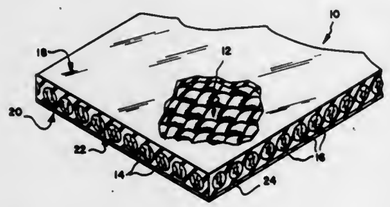
after a predetermined travel of the accelerated frame including the printed circuit board bringing to a sudden standstill the accelerated frame including the printed circuit board in a manner such that excess solder is simultaneously propelled-out of all of the drill holes of the printed circuit board.

4,501,771

ELASTOMER-COATED BIAS REINFORCEMENT FABRIC AND METHOD FOR PRODUCING SAME

Delmar D. Long, Rock Hill, S.C., assignor to Dayco Corporation, Dayton, Ohio

Filed Feb. 22, 1982, Ser. No. 350,969
Int. Cl.³ B05D *3/12*
U.S. Cl. 427—176 13 Claims



1. The method for manufacturing elastomer-coated bias fabric having one tacky surface for use as a reinforcement material in power transmission belts and the like which comprises:

a. pre-impregnating a bias fabric with an elastomeric latex composition,

b. transversely stretching said pre-impregnated bias fabric,

c. applying a non-carboxylated and non-tackified elastomeric latex composition to both surfaces of said fabric such that said composition substantially penetrates the interstices of said fabric and provides a coating of substantially uniform thickness,

d. Drying said coated fabric to solidify said elastomeric composition,

e. applying to one surface only of said coated fabric a tackified, carboxylated, elastomeric latex composition, and

f. drying said tackified, carboxylated latex composition, to a solid tacky nonflowable state.

4,501,772

PROCESS FOR PRODUCING ULTRA REMOVABLE PRESSURE SENSITIVE LABELS

William P. Luxeder, 4171 Mansfield Ave., Akron, Ohio 44319

Filed Mar. 15, 1984, Ser. No. 589,997
Int. Cl.³ B05D *5/10*
U.S. Cl. 427—208.6 4 Claims

1. A method of producing ultra removable paper products having printed matter on at least one surface thereof, comprising the steps of:

(A) printing the printed matter on the selected surface or surfaces of the paper by any conventional printing process;

(B) applying a coating of non-aqueous varnish to both surfaces of the paper;

(C) coating a relief printing plate with a resin bonded fluorocarbon;

(D) heating the plate to the curing temperature of the resin bonded fluorocarbon;

(E) transferring pressure sensitive adhesive from a suitable reservoir to the relief printing plate; and

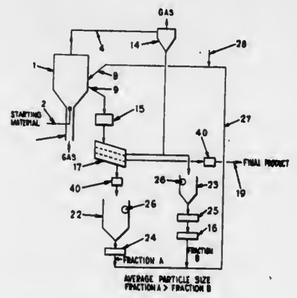
(F) engaging one surface of the paper with the adhesive so as to transfer a coating of adhesive to the paper.

4,501,773

GRANULATION PROCESS

Susumu Nioh, Tokyo; Hiroshi Hirayama; Tetsuzo Honda, both of Funabashi, and Koji Ishida, Mobara, all of Japan, assignors to Toyo Engineering Corporation and Mitsui Toatsu Chemicals, Inc., both of Tokyo, Japan

Continuation of Ser. No. 191,229, Sep. 26, 1980, abandoned. This application Jun. 11, 1982, Ser. No. 387,650
Claims priority, application Japan, Oct. 8, 1979, 54-129613
Int. Cl.³ B05D *3/02*
U.S. Cl. 427—213 21 Claims



1. A granulation process comprising:

(a) spraying droplets of a liquid, adhesive, solidifiable substance into a stream of gas;

(b) flowing said stream of gas containing said droplets into contact with solid seed particles in a granulator thereby causing said droplets to adhere to and thus enlarge said seed particles;

(c) discharging enlarged seed particles from the granulator:

(d) separating said enlarged seed particles into at least three fractions comprising (i) a final granular product having a range of particle sizes within the desired range, (ii) a smaller granular product having a range of particle sizes smaller than the desired particle size range, and (iii) a larger granular product having a range of particles sizes larger than the desired particle size range;

(e) continuously feeding said smaller granular product (ii) at a rate independent of the rate at which said smaller granular product (ii) is obtained in step (d) and mixing same with (iv) solid small particles appropriate for use as seed particles in said granulator and having an average particle size smaller than the average particle size of said smaller granular product (ii), thereby forming a mixture;

(f) feeding said mixture into the granulator so that the particles of said mixture serve as solid seed particles in the granulator; and

(g) altering the amount of said solid small particles (iv) mixed with said smaller granular product (ii) in step (e), in response to the average particle size of said enlarged seed particles discharged from the granulator

(1) to reduce the average particle size of said mixture when the average particle size of said enlarged seed particles increases so as to maintain the maximum content of said larger granular product (iii) in said enlarged seed particles below 10 wt. %, and

(2) to increase the average particle size of said mixture when the average particle size of said enlarged seed particles decreases so as to maintain the maximum content of said smaller granular product (ii) in said enlarged seed particles below 75 wt. %,

thereby controlling variations in the average particle size of said enlarged seed particles discharged from the granulator.

4,501,774

PROCESS FOR THE PRODUCTION OF COBALT-CONTAINING MAGNETIC IRON OXIDE POWDER

Kokichi Miyazawa, Suzuka; Kazuo Nakata, Moriyama; Tsuneo Ishikawa, Kawanishi; Ichiro Honma, Moriyama; Masaharu Hirai, Shiga; Makoto Ogasawara, and Toshihiko Kawamura, both of Moriyama, all of Japan, assignors to Ishihara Sangyo Kaisha, Ltd., Osaka, Japan

Filed Sep. 29, 1982, Ser. No. 427,537
Claims priority, application Japan, Oct. 12, 1981, 56-162554; Aug. 24, 1982, 57-146472
Int. Cl.³ H01F *10/02;* B05D *7/00*
U.S. Cl. 427—215 12 Claims

1. In a process for producing a cobalt-containing magnetic iron oxide powder, comprising preparing acicular hydrous iron oxide from a solution of a ferrous compound and an alkali, dehydrating and, subsequently, reducing or reducing and oxidizing said hydrous iron oxide to form an acicular magnetic iron oxide powder, in which a phosphorus compound is present due to adding to either step of preparing said hydrous iron oxide or step of converting said hydrous iron oxide to said iron oxide powder, and then coating the surface of said iron oxide powder with a cobalt compound or a combination of cobalt and another metallic compound or compounds, the improvement comprising, before the coating step, of:

treating said phosphorus-containing iron oxide powder with an aqueous alkaline medium and/or an aqueous acidic medium under atmospheric pressure and recovering the treated iron oxide powder from the medium.

4,501,775

METHOD FOR REDUCING THE STRENGTH OF ICE

Christ F. Parks, and Kenneth H. Nimerick, both of Tulsa, Okla., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 927,227, Jul. 24, 1978, abandoned, which is a continuation of Ser. No. 855,528, Nov. 28, 1977, Pat. No. 4,117,214, which is a continuation-in-part of Ser. No. 380,778, Jul. 19, 1973, abandoned. This application Apr. 14, 1980, Ser. No. 139,906
The portion of the term of this patent subsequent to Nov. 22, 2000, has been disclaimed.
Int. Cl.³ C09K *3/18;* C10K *5/00;* F25C *1/00, 1/12*
U.S. Cl. 427—220 29 Claims

1. A method for reducing the strength of ice where

(1) an effective amount of a strength reducing composition is dissolved in the water prior to freezing, said composition consisting essentially of water soluble components comprising (A) an alkylene glycol or monoalkyl ether thereof and (B) a water soluble organic nonvolatile compound having at least one carboxyl or carboxylate group, said compound (B) being different from said compound (A) and being selected from the group of nonpolymeric carboxylic acids comprising up to 10 carbon atoms and their salts, and said composition being substantially free of corrosion inducing metal halide salts, and

(2) the solution so formed is thereafter exposed to a temperature sufficiently low to freeze same.

10. A method for treating particulate solids having surface moisture to reduce the cohesive strength of masses of such solids when frozen, said method consisting of contacting such solids with an effective amount of a fluid composition consisting essentially of water soluble components comprising (A) a water soluble polyhydroxy compound or monoalkyl ethr thereof and (B) a water soluble organic nonvolatile compound having at least one carboxyl or carboxylate group, said compound (B) being different from said compound (A) and being selected from the group of nonpolymeric carboxylic acids comprising up to 10 carbon atoms and their salts, and said composition being substantially free of corrosion-inducing metal halide salts.

4,501,776

METHODS OF FORMING A PROTECTIVE DIFFUSION LAYER ON NICKEL, COBALT AND IRON BASE ALLOYS

Srinivasan Shankar, Branford, Conn., assignor to Turbine Components Corporation, Brandford, Conn.

Filed Nov. 1, 1982, Ser. No. 437,952
Int. Cl.³ C23C *11/00*
U.S. Cl. 427—253 15 Claims



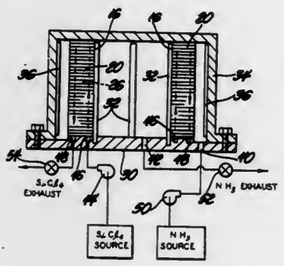
1. A method for forming a protective diffusion layer on selected areas of nickel, cobalt and iron base alloy parts comprising the steps of depositing a coating of a platinum group metal on the surface of the part to be protected and forming a

diffusion layer of platinum and aluminum on said surfaces by gas phase aluminizing said surfaces out of contact with a source of aluminizing gaseous species at elevated temperature.

4,501,777
METHOD OF SEALING OF CERAMIC WALL STRUCTURES

Douglas N. Rose, Macomb, Mich., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Sep. 22, 1982, Ser. No. 421,607
Int. Cl.³ C23C *11/00, 13/00*
U.S. Cl. 427—255 **1 Claim**



1. A method of sealing the pores in a sintered ceramic heat exchanger designed to be used in a hot gas turbine engine, wherein the heat exchanger wall structure is formed of a material selected from silicon nitride and silicon carbide, the heat exchanger wall structure defining two separate flow passages for different gases when the heat exchanger is placed in service:

said method comprising the steps of pumping a first reactant gas into one of the flow passages; pumping a second reactant gas into the other flow passage; maintaining each reactant gas at a sufficient pressure to cause the gases to penetrate into the pores of the heat exchanger walls where they will chemically react to form solid permanent sealing fillers within the pores; and heating the heat exchanger walls while the reactant gases are chemically reacting within the pores; said pumping steps being carried out so that the pressures of the reactant gases are maintained substantially equal during the major part of the time that the chemical reaction is taking place, and the pressures of the reactant gases are selectively varied during the final stages of the reaction to cause one reactant gas to advance further into the porous walls than the other reactant gas; the first reactant gas being a material selected from silicon hydride, silane and silicon tetrachloride; the second reactant gas being a material selected from ammonia and hydrogen; the reactant gases being selected so that the reaction product is the same material as the material originally used to form the heat exchanger wall structure.

4,501,778
METAL EFFECT GLAZES FOR CERAMIC BASES

Rolf Menschner, Frankfurt, and Robert Fischer, Obertshausen, both of Fed. Rep. of Germany, assignors to Degussa Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed May 4, 1984, Ser. No. 607,132
Claims priority, application Fed. Rep. of Germany, May 6, 1983, 3316596
Int. Cl.³ B05D *3/02*
U.S. Cl. 427—376.2 **8 Claims**

1. A metal effect glaze composition suitable for applying to a ceramic base consisting essentially of 75–95 of base glaze and 5–25 color body, the base glaze composition consisting essentially of 20–55% PbO, 0.1–10% Na_2O, 1–15% CaO, 1–18% Al_2O_3, and 8–81% SiO_2 and the color body being made of oxides having a composition consisting essentially of 30–80% MnO_2, 1–20% CuO, 0.1–50% TiO_2, and 0.01–20% NiO.

4,501,779
HEAT RESISTANT HEAT SHRINKABLE FILM

Joseph C. Hsu; Donald W. Vought, both of Neenah, and George H. Walbrun, Menasha, all of Wis., assignors to American Can Company, Greenwich, Conn.

Filed Oct. 5, 1981, Ser. No. 308,950
Int. Cl.³ B65D *11/00*; B32B *7/02*
U.S. Cl. 428—35 **4 Claims**

1. A heat shrinkable bag made from a three layer tubular film, the film comprising:

(a) a first heat sealable layer of ionomer;

(b) a second layer of a vinylidene chloride copolymer; and

(c) a third layer of a blend of an ionomer and an EVA copolymer, wherein the EVA content is no greater than 20% of the blend by weight, and the vinyl acetate content is at least 4.5% of the blend by weight.

4,501,780
TUBULAR FILM HAVING SEALING LAYER OF PROPYLENE ETHYLENE RANDOM COPOLYMER

Johnnie J. Walters, Greer, S.C.; Philip T. Voso, Tryon, N.C., and Karl N. Caldwell, Norcross, Ga., assignors to W. R. Grace & Co., Cryovac Div., Duncan, S.C.

Filed Dec. 15, 1982, Ser. No. 449,895
Int. Cl.³ B65D *65/00*
U.S. Cl. 428—35 **5 Claims**

1. A heat sealable bag made from a coextruded multiply tubular shrink film consisting essentially of:

(a) a first or inner sealing layer which comprises (a) an irradiated, non-cross-linked propylene-ethylene random copolymer having an ethylene content of about 1–5%; and

(b) a second or shrink layer melt bonded to said first layer which comprises a cross-linked ethylene-vinyl acetate copolymer having a vinyl acetate content in the range of 8–25%, further provided that the thickness of said second layer relative to the thickness of said first layer is sufficient such that the shrink temperature of the entire multilayer film, when oriented, is substantially controlled by the shrink temperature of said second layer, and further provided that said second layer has been irradiated to a dosage of 2–10 MR and comprising a blend of ethylene vinyl acetate copolymer as the major component, and the random copolymer of said first layer.

4,501,781
BOTTLE-SHAPED CONTAINER

Hideo Kushida, Yachiyo; Sumio Takahashi, Sakura, and Shuichi Koshio, Koto, all of Japan, assignors to Yoshino Kogyosho Co., Ltd., Tokyo, Japan

Filed Feb. 4, 1983, Ser. No. 463,838
Claims priority, application Japan, Apr. 22, 1982, 57/67780
Int. Cl.³ B65D *23/00*
U.S. Cl. 428—35 **14 Claims**

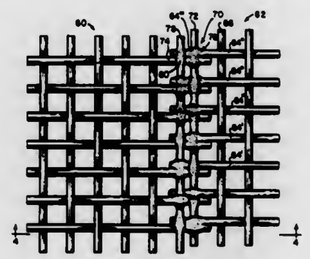


1. A hollow blow-molded biaxially oriented bottle-shaped container comprising a mixture of a polyethylene terephthalate resin and a xylylene group-containing polyamide resin.

4,501,782
METHOD FOR BONDING WEBS EMPLOYING ULTRASONIC ENERGY

Gilbert Weatherly, and A. MacDonald Slade, both of Solano Beach, Calif., assignors to MAC/GIL Ltd., Solano Beach, Calif.

Filed Nov. 18, 1983, Ser. No. 553,149
Int. Cl.³ B32B *3/00*
U.S. Cl. 428—57 **18 Claims**



1. A method for bonding heat-set thermoplastic webs to provide a web loop for use as a Fourdrinier wire for papermaking processes comprising the steps of:

providing a length of heat-set thermoplastic woven web, with the web having two free laterally running ends with warps projecting therefrom;

removing a predetermined number of shutes from each of the ends;

folding the web back on itself to form a loop having a longitudinal axis such that the opposite ends of the web are in spaced-apart opposition;

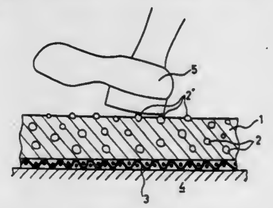
interdigitating the warps of the opposed ends to form a seam by moving one web end toward the other web end such that a warp extending from one end overlies or underlies at least one shute of the other end; and

ultrasonically bonding the overlain or underlain shutes to respective warps by placing the web seam between a platten and an ultrasonic welding head and moving the ultrasonic head transversely to the longitudinal axis of the web along the edges containing the interdigitated warps while the face of the welding head exerts a force directed towards the platten on the seam to provide a continuous bond across the web by ultrasonic welding and crushing down the warps over the corresponding shutes, such that a flat seam coplanar with the web is formed, whereby when the web loop is used in a papermaking process, the resulting solidifying sluice is substantially ripple and bump free over the seam and whereby liquid is permitted to pass through the web at the seam.

4,501,783
NON-SLIP FLOOR MATERIAL

Yoshiaki Hiragami, Mino; Mikio Yabu, Kawanishi, and Yozi Kawaguchi, Itami, all of Japan, assignors to Toyo Linoleum Company, Limited, Hyogo, Japan

Filed Jun. 6, 1983, Ser. No. 501,558
Claims priority, application Japan, Jul. 6, 1982, 57-118086
Int. Cl.³ B32B *27/40*; D06N *7/04*
U.S. Cl. 428—147 **10 Claims**

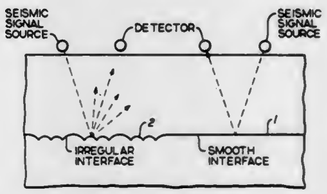


1. A non-slip floor material characterized in that the floor material comprises a polyvinyl chloride matrix surface layer having dispersed therein throughout its entire thickness synthetic resin particles selected from the group consisting of acrylic resin, polyurethane, nylon resin, polyester and ABS resin in an amount of 3 to 30 wt.% of the entire weight of the matrix layer, the resin particles being 100μ to 1 mm in particle size and having a softening point higher than the processing temperature of the resin composition forming the matrix layer and higher abrasion resistance than the matrix layer, a quantity of the resin particles being exposed from the surface of the matrix layer, wherein the difference in abrasion weight loss between the matrix layer and the particles is at least 50 mg and the difference in wear thickness between the matrix layer and the particles is at least 0.01 mm when the floor material is subjected to 1000 cycles of a Taber abraser apparatus at a loading of 500 g on each wheel, the wheels having S-33 sandpaper attached to the surfaces thereof.

4,501,784
DISPERSION OF REFLECTED RADAR

Igor B. Moshinsky, 18703 Candle View, Spring, Tex. 77373

Filed Apr. 5, 1983, Ser. No. 482,176
Int. Cl.³ B32B *3/30*
U.S. Cl. 428—156 **20 Claims**



1. A material of construction for causing a substantial disper-

sion of a radar signal, having a wave length in the short, medium or long range, reflected therefrom,

said material having an external surface with irregularities comprising a plurality of surface portions of different height from the general external surface in spaced relation over the entire exterior surface thereof,

said irregularities having a height R of about 0.2 to about 5.0 times the wave length of the radar signals, and

said irregularities having a spacing approximately 2R of about 0.2 to about 5.0 times the wave length of the radar signals.

4,501,785

HYDROPHILIZED MEMBRANE OF POROUS HYDROPHOBIC MATERIAL AND PROCESS OF PRODUCING SAME

Hikaru Nakanishi, Kawasaki, Japan, assignor to Mitsubishi Rayon Co., Ltd. and Senko Medical Instrument Mfg., Co., Ltd., both of Tokyo, Japan

Filed Jul. 22, 1983, Ser. No. 516,335
Claims priority, application Japan, Aug. 2, 1982, 57-134853
Int. Cl.³ B32B *3/00*
U.S. Cl. 428—195 **9 Claims**

1. A hydrophilized, microporous membrane consisting of a hydrophobic material, said membrane having micropores therethrough, and said membrane having at least a portion of the surfaces thereof coated with polyethylene glycol.

4,501,786

COATED PRODUCT WITH OXIDE WEAR LAYER

Thomas E. Hale, Warren, Mich., assignor to General Electric Company, Detroit, Mich.

Continuation of Ser. No. 331,367, Dec. 16, 1981, abandoned. This application Jan. 25, 1984, Ser. No. 573,867
Int. Cl.³ B24D *11/00*
U.S. Cl. 428—215 **6 Claims**

1. An article of manufacture comprising

(i) a hard metal or cemented carbide substrate;

(ii) an inner layer lying next to said substrate, said inner layer comprising a carbide, a nitride or a carbonitride of titanium, zirconium, hafnium, vanadium, columbium, tantalum, chromium, molybdenum or tungsten

(iii) a surface-oxidized bonding layer adjacent the surface of said inner layer (ii), said bonding layer comprising at least one of the carbides or oxycarbides of tantalum, niobium and vanadium; and

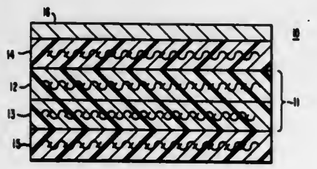
(iv) an oxide wear layer overlying said bonding layer (iii).

4,501,787

FLAME RETARDANT B-STAGED EPOXY RESIN PREPREGS AND LAMINATES MADE THEREFROM

Joseph R. Marchetti, Hempfield Township, Westmoreland County, Pa., and Wilbur R. Thomas, Hampton, S.C., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Apr. 29, 1983, Ser. No. 490,098
Int. Cl.³ B32B *7/00, 17/10*; H05K *1/00*
U.S. Cl. 428—236 **23 Claims**



1. A porous substrate impregnated with a "B"-staged resin, the resin comprising a mixture of:

(I) a brominated epoxy resin, or

(II) a mixture of (A) a non-halogenated epoxy resin and (B) a flame retarding reactive additive containing bromine and phenolic hydroxyl groups, and

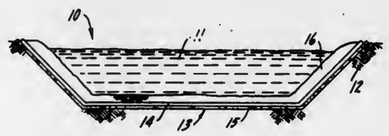
(III) phenolic novolac oligomer curing agent having an average of over 2.5 phenolic hydroxyl groups per oligomeric unit.

4,501,788

WATERPROOFING SOIL

Arthur J. Clem, Chicago, Ill., assignor to Clem Environmental Corp., Chicago, Ill.

Continuation-in-part of Ser. No. 238,701, Feb. 27, 1981, abandoned. This application Sep. 30, 1982, Ser. No. 430,685
Int. Cl.³ B32B *5/16*
U.S. Cl. 428—240 **16 Claims**



1. A flexible sheet for providing a water barrier comprising a flexible non-biodegradable support capable of venting gas and coated with water swellable bentonite.

4,501,789

LATEX CONTAINING ODOR INHIBITOR

Pravinchandra K. Shah, Sheffield Lake, and George J. Antifinger, Avon Lake, both of Ohio, assignors to The B. F. Goodrich Company, Akron, Ohio

Filed Dec. 27, 1983, Ser. No. 565,689
Int. Cl.³ B32B *7/00*
U.S. Cl. 428—274 **36 Claims**

1. Sterilized nonwoven fabric that has a reduced odor on sterilization comprising nonwoven fibers bonded with a latex prepared by free radical initiation comprising a preponderance of a soft hydrophobic monomer having Tg in the range of about −80° C. to −20° C., a lesser amount of a hard hydrophobic monomer having Tg in the range of about +40° C. to +120° C., a small amount of an unsaturated carboxylic acid, a small amount of N-alkylol acrylamide or methacrylamide, and a sufficient amount of an emulsifier, said latex having admixed therein about 0.01 to 5 weight parts per 100 weight parts of latex solids of an odor inhibition agent selected from amine-type antioxidants and hindered phenols that have the function of reducing the odor that is generated on sterilization of the nonwoven fabric.

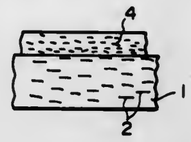
4,501,790

FIBER-REINFORCED URETHANE MOLDING PROVIDED WITH COATING FILMS

Makoto Aizawa; Tauneo Kishimoto, and Yoshio Tanimoto, all of Hiroshima, Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan

Filed Jul. 17, 1984, Ser. No. 631,800
Claims priority, application Japan, Jul. 21, 1983, 58-133655
Int. Cl.³ B32B *5/16*
U.S. Cl. 428—283 **20 Claims**

1. A fiber-reinforced urethane molding provided with coating films, which comprises a molded urethane layer reinforced by inclusion of many reinforcing fibers, and a hard urethane-based coating film overlaid on the surface of said molded urethane layer, said hard urethane-based coating film containing flake-like aluminum dispersed therein in an amount within the range of 5% by weight to 40% by weight.



4,501,791

NON-WOVEN FABRIC FOR V-BELT BEAD WRAP AND CHAFER

Delbert A. Davis, Kernersville, N.C., assignor to Burlington Industries, Inc., Greensboro, N.C.

Continuation of Ser. No. 356,398, Mar. 9, 1982, abandoned. This application Apr. 23, 1984, Ser. No. 602,624
Int. Cl.³ B32B *27/00*
U.S. Cl. 428—286 **9 Claims**

7. A treated non-woven fabric for use in the manufacture of pneumatic tires or V-belts, said treated non-woven fabric being formed by:

applying an isocyanate compound to a non-woven fabric;

drying said non-woven fabric a first time in a heated environment;

applying an adhesive compound to said non-woven fabric;

drying said non-woven fabric a second time in a heated environment; and

impregnating said non-woven fabric with an elastomeric compound, the amount of said elastomeric compound being equal to or greater than 50 percent of the weight of said non-woven fabric.

4,501,792

OPERATING ROOM GOWN AND DRAPE FABRIC

Rory A. Holmes, Princeton, and Eleanor Sun, East Brunswick, both of N.J., assignors to Chicopee, New Brunswich, N.J.

Filed Feb. 3, 1983, Ser. No. 463,459
Int. Cl.³ B32B *5/06*
U.S. Cl. 428—299 **4 Claims**



1. A sterile, low cost, disposable fabric suitable for use in making repellant, breathable, drapes or gowns with enhanced comfort for use in a sterile environment, said fabric comprising cellulosic fibers, and polymeric fibers of 1–2 denier, said fabric further comprising rudimentary discontinuous rows of entangled cellulosic fibers alternating with rudimentary discontinuous rows of loosely entangled polymer fibers, said rows extending in the machine direction, and said fabric having a surface comprising predominantly entangled cellulosic fibers and a surface comprising predominantly entangled polymeric fibers, at least said cellulosic fibers being subject to a repellant treatment, to yield a breathable, repellant soft fabric with enhanced drape and enhanced frictional properties.

4,501,793

SURFACTANT TREATED POLYOLEFINIC MICROPOROUS MATERIALS CAPABLE OF MULTIPLE RE-WETTING WITH AQUEOUS SOLUTIONS

Thyagaraja Sarada, Norwalk, Conn., assignor to Celanese Corporation, New York, N.Y.

Filed Jun. 17, 1983, Ser. No. 505,539
Int. Cl.³ B32B *3/26*; D02G *3/00*
U.S. Cl. 428—315.5 **14 Claims**

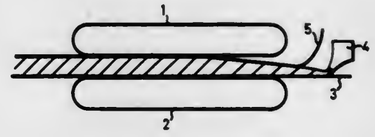
1. A hydrophilic polyolefinic microporous material comprising a normally hydrophobic polyolefinic open-celled microporous substrate impregnated with at least one nonionic surfactant of the class of alkylphenoxy poly(ethyleneoxy) ethanol compounds having an HLB in the range of from about 10 to about 15 in an amount sufficient to render said hydrophobic polyolefinic microporous substrate wettable with aqueous solutions; said surfactant being present in a solvent mixture comprising from about 55 to about 65 volume percent of methanol or acetone and from about 35 to about 45 volume percent water; and wherein said hydrophobic polyolefinic microporous substrate has a reduced bulk density as compared with the bulk density of a corresponding non-porous polyolefinic material, a crystallinity of at least about 30 percent, an average pore size of from about 100 to about 5000 Angstroms, a porosity of from about 40 to about 90%, and a surface area of at least about 10 m^2/gram.

4,501,794

PHENOLIC FOAM COMPOSITES AND PROCESS FOR MAKING THEM

James B. Blackwell, Macclesfield, England; Gerald C. Marks, Cardiff, Wales, and Paul Vereecke, Kortrijk, Belgium, assignors to BP Chemicals Limited, London, England

Filed Jul. 27, 1983, Ser. No. 517,719
Claims priority, application United Kingdom, Jul. 30, 1982, 8222035; Aug. 7, 1982, 8222846
Int. Cl.³ B32B *3/26*
U.S. Cl. 428—316.6 **9 Claims**



1. A phenolic foam composite comprising a sheet of phenolic foam disposed between and bonded to two sheets of flexible insulating material, the thermal conductivity of both of the latter sheets being less than 0.10 W/m°C.

2. A phenolic foam composite which comprises a sheet of phenolic foam disposed between and bonded to two sheets of flexible insulating material comprising polystyrene foam, both of said sheets of polystyrene foam being a thermal conductivity of less than 0.10 W/m°C.

4,501,795

MAGNETIC RECORDING MEDIUM

Takashi Takeuchi; Syoji Kobayashi, both of Utsunomiya; Tsuyoshi Ootani, Ichikaimachi, and Tetsuya Imamura, Utsunomiya, all of Japan, assignors to Kao Corporation, Tokyo, Japan

Filed Feb. 21, 1984, Ser. No. 581,764
Claims priority, application Japan, Mar. 31, 1983, 58-56325
Int. Cl.³ H01F *10/02*
U.S. Cl. 428—329 **9 Claims**

1. A magnetic recording medium comprising a magnetic film coated on a substrate, said magnetic film comprising magnetic particles dispersed in an effective amount of a binder for adhering said magnetic particles to said substrate, said magnetic particles consisting essentially of particles of a magnetic pow-

der (i) coated with a reaction product of (ii) at least one isocyanate compound selected from the group consisting of:

(I) polyisocyanate compounds having at least two isocyanate groups in one molecule and having a molecular weight of 100 to 1,000, and

(II) isocyanate compounds having a hydrolyzable alkoxysilane group and at least one isocyanate group in one molecule and having a molecular weight of 140 to 1,500,

and (iii) at least one phosphoric ester selected from the group consisting of:

(III) phosphoric esters of the formula:

$$(RO)_l PO(OH)_{3-l} \quad (a)$$

wherein R is an alkyl or alkenyl group having 3 to 22 carbon atoms, and l is 1, 1.5 or 2,

(IV) phosphoric esters of the formula:

$$[RO(AO)_n]_l PO(OH)_{3-l} \quad (b)$$

wherein R and l have the same meanings as defined above, A is an alkylene group having 2 to 4 carbon atoms, and n is an integer of from 1 to 30, and

(V) phosphoric esters of the formula:

$$[R'COO(AO)_n]_l PO(OH)_{3-l} \quad (c)$$

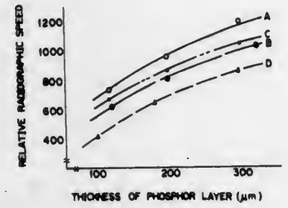
wherein R' is an alkyl or alkenyl group having 2 to 21 carbon atoms, and A, l and n have the same meanings as defined above.

4,501,796

RADIOGRAPHIC INTENSIFYING SCREEN

Akira Kitada, Kaisei, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jul. 6, 1983, Ser. No. 511,149
Claims priority, application Japan, Jul. 8, 1982, 57-117779
Int. Cl.³ B32B 5/16
U.S. Cl. 428—337 **6 Claims**



1. A radiographic intensifying screen comprising a support and at least one phosphor layer provided thereonto wherein said at least one phosphor layer comprises a binder and phosphor particles dispersed therein, and wherein said support is a resin film containing a powdery white pigment in an amount ranging from 0.1 to 10.0 mg/cm², based on the surface area of the support, and said support has a thickness ranging from 100 to 500 μm.

4,501,797

UNBALANCED ORIENTED MULTIPLE LAYER FILM

Scott S. Super; Joseph C. Hsu, both of Neenah; William B. Haffner, Menasha, and Jerry F. Jesse, Neenah, all of Wis., assignors to American Can Company, Greenwich, Conn.

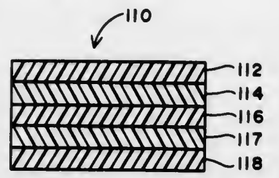
Filed Dec. 1, 1982, Ser. No. 446,009
Int. Cl.³ B32B 27/00
U.S. Cl. 428—349 **8 Claims**

1. An unbalanced multiple layer polymeric film having two outer surfaces, and wherein the interfacial adhesion at each layer interface is at least 50 grams per inch width, the layers comprising, in order through the film:

(a) a first molecularly oriented layer of polypropylene;

(b) a second molecularly oriented adhesive layer of anhydride modified polypropylene;

(c) a third molecularly oriented layer of ethylene vinyl alcohol copolymer; and



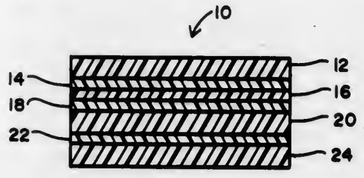
(d) a fourth heat sealable layer; orientation of said film having been accomplished by applying heat to each of said outer surfaces in different amounts, thus creating a temperature differential between said surfaces, and effecting said orientation during the existence of said temperature differential.

4,501,798

UNBALANCED ORIENTED MULTIPLE LAYER FILM

Matthew Koschak, Appleton; Scott S. Super, and Jerry F. Jesse, both of Neenah, all of Wis., assignors to American Can Company, Greenwich, Conn.

Filed May 5, 1983, Ser. No. 492,016
Int. Cl.³ B32B 27/00
U.S. Cl. 428—349 **7 Claims**



1. An unbalanced multiple layer polymeric film having two outer surfaces, and wherein the interfacial adhesion at each layer interface is at least 50 grams per inch width, the layers comprising, in order through the film:

(a) a first molecularly oriented layer of nylon;

(b) a second molecularly oriented layer whose composition is selected from the group consisting of nylon, ethylene vinyl alcohol copolymer, and blends of nylon and ethylene vinyl alcohol copolymer;

(c) a third molecularly oriented layer of nylon;

(d) a fourth molecularly oriented polymeric adhesive layer having carboxy moieties in the polymeric structure;

(e) a fifth molecularly oriented layer comprising a polyethylene or a blend of ethylene polymers;

(f) a sixth molecularly oriented polymeric adhesive layer having carboxy moieties in the polymeric structure; and

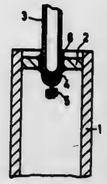
(g) a seventh heat sealant layer; orientation of said film having been accomplished by applying heat directly to each of said outer surfaces in different amounts, thus creating a temperature differential between said surfaces, and effecting said orientation during the existence of said temperature differential.

4,501,799

COMPOSITE BODY FOR GAS DISCHARGE LAMP

Antonius J. G. C. Driessen; Else B. Geertsema; Joris J. C. Oomen, and Jan W. Rouwendal, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 8, 1982, Ser. No. 355,964
Claims priority, application Netherlands, Mar. 11, 1981, 8101177
Int. Cl.³ E05C 7/06
U.S. Cl. 428—446 **7 Claims**



1. A composite body formed from two or more parts, at least one of which consists of an oxidic material, which which oxidic material is bonded to one or more parts of e metallic material or a mixture thereof with a metal oxide (cermet), the oxidic material being chosen from densely sintered aluminum oxide (dga), rare earth perowskites of the types ABO_3 wherein A represents La, Ce, Pr, Nd, or a mixture thereof and B represents: Al, Sc, Lu or a mixture thereof, garnets of the type $A_3Al_5O_{12}$, wherein A is Mg, Li or Y, or sapphire, and the metallic part being chosen from tantalum, niobium, tungsten, molybdenum, alloys having one of these metals as the main component and alloys having iron, nickel or cobalt as the main component, molybdenum-silicon alloys, titanium boride and titanium nitride, which parts are bonded together in a gas and vacuum-tight manner with a bonding material, the bonding material containing aluminum oxide and at least one oxide of a rare earth metal, characterized in that the bonding material consists of a finely dispersed polycrystalline product comprising at least three oxidic components and whose composition is within the following limits in mole %

Al_2O_3—5–70

at least one oxide chosen from Sc_2O_3 and Ti_2O_x, wherein $2<x<4$—2–70

at least one oxide chosen from

Y_2O_3, Gd_2O_3, Tb_2O_3, Dy_2O_3, Ho_2O_3, Er_2O_3, Eu_2O_3, Pr_2O_3, Ce_2O_3, Sm_2O_3, Tm_2O_3, Yb_2O_3, Lu_2O_3, La_2O_3 and Nd_2O_3—7–80

and one or more oxides chosen from

ZrO_2, B_2O_3, SiO_2, P_2O_5, MgO, SrO, BaO and CaO—0–20.

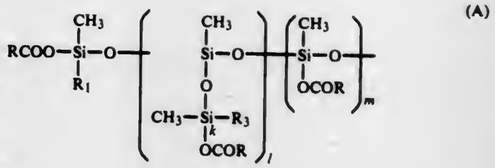
4,501,800

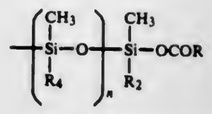
MAGNETIC RECORDING MEDIA COMPRISING ORGANOSILICONES IN A MAGNETIC LAYER THEREOF

Kuniharu Fujiki, Mito, and Shigeru Hashimoto, Tokyo, both of Japan, assignors to Victor Company of Japan, Limited, Japan

Filed Jul. 27, 1983, Ser. No. 517,714
Claims priority, application Japan, Jul. 29, 1982, 57-131153
Int. Cl.³ G11B 5/68, 5/70, 5/72
U.S. Cl. 428—447 **5 Claims**

1. A magnetic recording medium which comprises a support having thereon a recording magnetic layer which is made of a dispersion of magnetic particles in a mixture of a binder and a lubricant, the lubricant being an organosilicone compound of the following general formula (A)





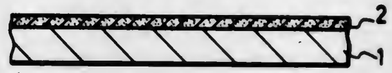
in which each R represents a saturated or unsaturated monovalent hydrocarbon group having from 7 to 21 carbon atoms, R_1, R_2 and R_3 independently represent a methyl or RCOO group wherein R has the same meaning as defined above, R_4 represents a monovalent saturated hydrocarbon group having from 1 to 20 carbon atoms, and k, l, m and n are independently an integer provided that $1 \leqq k < l+m+n$, $1 \leqq l \leqq 200$, $1 \leqq m < 200$, $0 \leqq n < 300$, and $l+m+n \leqq 500$.

4,501,801

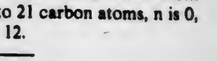
MAGNETIC RECORDING MEDIUM

Shigeo Kimura, Tagajo; Masashi Somezawa, Sendai; Yuji Hinoto, and Hiroshi Yoshioka, both of Annaka, all of Japan, assignors to Sony Corporation and Shin-Etsu Chemical Co., Ltd., both of Tokyo, Japan

Filed Nov. 14, 1983, Ser. No. 551,040
Claims priority, application Japan, Nov. 19, 1982, 57-204338
Int. Cl.³ G11B 5/68, 5/70, 5/72
U.S. Cl. 428—447 **11 Claims**



1. A magnetic recording medium comprising a non-magnetic substrate and a magnetic layer formed on at least one side of said non-magnetic substrate, said medium being lubricated by the presence of an effective amount of an organosilane compound represented by the formula:



wherein R represents a saturated or unsaturated monovalent hydrocarbon residue having from 7 to 21 carbon atoms, n is 0, 1 or 2, and p is an integer from 1 to 12.

4,501,802

HYDRATED CHROMIUM OXIDE-COATED STEEL STRIP USEFUL FOR WELDED CANS AND OTHER CONTAINERS

Seizun Higuchi; Tomonari Ooga; Yukio Tsukamoto; Minoru Kamada, and Yukio Nomura, all of Kitakyushu, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Continuation of Ser. No. 268,115, May 28, 1981, abandoned. This application Aug. 29, 1983, Ser. No. 527,380
Claims priority, application Japan, Jun. 3, 1980, 55-73795; Jun. 7, 1980, 55-77015; Jun. 7, 1980, 55-77016; Jun. 7, 1980, 55-77017; Aug. 14, 1980, 55-111040; Aug. 14, 1980, 55-111041
Int. Cl.³ C25D 5/36
U.S. Cl. 428—629 **5 Claims**

1. A can or container having a welded seam and fabricated

from a hydrated chromium oxide-coated steel strip consisting essentially of:

a steel strip substrate having two surfaces;

plated nickel base layers formed on the surfaces of said steel strip substrate and consisting essentially of metallic nickel in an amount of from 150 to 2500 mg per m^2 on each surface of said steel strip substrate, and;

hydrated chromium oxide-containing coating layers formed on said plated nickel based layers and composed of an underlayer consisting of metallic chromium in an amount of 10 mg or less per m^2 of each surface of said steel strip substrate, and an upper layer consisting of hydrated chromium oxides, the sum of the weights of said underlayer and said upper layer being in the range of 2 to 20 mg, in terms of metallic chromium per m^2 of each surface of said steel strip substrate.

4,501,803

POROUS GAS DIFFUSION-ELECTRODE

John G. Bannochie, Versoix, Switzerland, assignor to Eltech Systems Corporation, Boca Raton, Fla.

Filed Aug. 29, 1983, Ser. No. 527,184

Claims priority, application United Kingdom, Sep. 9, 1982, 8224974

Int. Cl.³ C25F *1/00*; H01M *4/36*

U.S. Cl. 429—101 **8 Claims**

1. A method for conditioning a porous gas-diffusion electrode having ruthenium metal as its predominant electrocatalyst prior to its operation as a hydrogen consuming anode, characterized by connecting the electrode as a cathode in a suitable electrolyte and passing a cathodic current therethrough until said electrode drops below the reversible hydrogen potential and evolves hydrogen.

6. A metal-hydrogen battery comprising a hydrogen-consuming anode in the form of a gas-diffusion electrode conditioned by the method of claim 1.

4,501,804

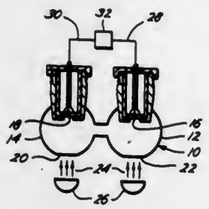
PHOTO-ASSISTED ELECTROLYSIS CELL WITH P-SILICON AND N-SILICON ELECTRODES

John O. Bockris, College Station, Tex.; Marek Szklarczyk, Piaseczno, Poland, and Aliasgar Q. Contractor, College Station, Tex., assignors to Texas A&M University, College Station, Tex.

Filed Aug. 8, 1983, Ser. No. 521,402

Int. Cl.³ H01M *6/36*; C25B *9/00, 11/00*

U.S. Cl. 429—111 **16 Claims**



14. A photoelectric cell comprising:

a container;

an aqueous electrolyte in said container;

a photocathode and a photoanode mounted in said container and each having at least one surface in contact with said electrolyte,

means electrically interconnecting said photocathode and said photoanode; and

means for admitting light to the said surfaces of said photocathode and said photoanode;

said photocathode comprising,

a p-type silicon body and a catalyst on the said surface of said body, said catalyst being selected from the group consisting of nickel, platinum, gold, silver, cobalt, cobalt molybdate and nickel molybdate, and being deposited on said silicon body surface in island form; and

said photoanode comprising,

an n-type silicon body,

a film of silicon dioxide covering the said surface of said n-silicon body; and

an electrically conductive dopant dispersed in said film, said dopant being selected from the group consisting of platinum, palladium, nickel, cobalt, gold, rhodium, ruthenium and tellurium.

4,501,805

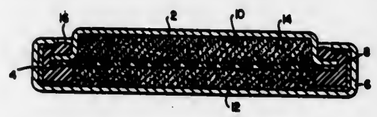
GALVANIC CELL HAVING A SATURATED FLUOROCARBON PLASMA-TREATED SEALING GASKET

Hirotsugu Yasuda, Newburg, Mo., and Johannes A. van Lier, Euclid, Ohio, assignors to Union Carbide Corporation, Danbury, Conn.

Filed Dec. 22, 1983, Ser. No. 564,250

Int. Cl.³ H01M *2/08*

U.S. Cl. 429—174 **2 Claims**



1. A sealed galvanic cell comprising a cathodic material, an anodic material, and an electrolyte housed in a container having an open end, said container being sealed at its open end by a cover with a non-conductive gasket compressively disposed between said cover and said container, said gasket having a first gasket sealing surface and a second gasket sealing surface, said first gasket sealing surface and said second gasket sealing surface being in interfacial sealing contact with said container and said cover respectively, characterized in that at least a portion of at least one of the first gasket sealing surface and the second gasket sealing surface has only a monolayer of plasma-deposited fluorine atoms bound thereto such that said cell exhibits increased resistance to electrolyte leakage.

4,501,806

METHOD FOR FORMING PATTERN AND PHOTORESIST USED THEREIN

Shingo Watanabe, Himeji, and Takeo Itou, Fukaya, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Sep. 1, 1982, Ser. No. 413,895

Int. Cl.³ G03C *5/00, 7/26*

U.S. Cl. 430—25 **3 Claims**

1. A method of forming a pattern, comprising the steps of:

(a) forming a photoresist layer of a photoresist containing a water-soluble bisazidocompound, a water-soluble diazocompound, and a water-soluble polymeric material, on an inner surface of a faceplate of a color cathode ray tube, said water-soluble polymeric material being a mixture of polyvinyl pyrrolidone and polyvinyl alcohol in a mixing ratio by weight of polyvinyl pyrrolidone to polyvinyl alcohol within the range of 0.5 to 3, and a mixing ratio by weight of said water-soluble bisazidocompound to said water-soluble diazocompound within the range of 3 to 7;

(b) selectively exposing parts of said photoresist layer using a shadow mask so as to photocure said parts;

(c) developing said photoresist layer to remove unexposed parts of said photoresist layer, thereby forming dots of said photoresist;

(d) forming a film of a non-light-emitting black material on said inner surface of said faceplate including said dots; and

(e) removing said dots and said non-light-emitting black material on said dots so as to form holes in said film of said non-light-emitting black material.

4,501,807

PHOTOCONDUCTIVE MEMBER HAVING AN AMORPHOUS SILICON LAYER

Shigeru Shirai, Yamato; Kyosuke Ogawa, Sakurashin; Junichiro Kanbe, Yokohama; Keishi Saitoh, Tokyo; Yoichi Osato, Yokohama, and Teruo Misumi, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 8, 1983, Ser. No. 473,278

Claims priority, application Japan, Mar. 8, 1982, 57-36918; Mar. 8, 1982, 57-36919; Mar. 9, 1982, 57-37437; Mar. 25, 1982, 57-37438; Mar. 25, 1982, 57-47800; Mar. 25, 1982, 57-47801; Mar. 25, 1982, 57-47802; Mar. 25, 1982, 57-47803

Int. Cl.³ G03G *5/082*

U.S. Cl. 430—57 **25 Claims**

1. A photoconductive member comprising a support for a photoconductive member, and an amorphous layer exhibiting photoconductivity comprising an amorphous material containing silicon atoms as a matrix, and at least one of hydrogen atoms and halogen atoms, characterized in that said amorphous layer comprises a first layer region extending throughout the entire thickness of said amorphous layer and containing, as constituent atoms, oxygen atoms in a distribution which is nonuniform and continuous in the direction of the layer thickness, and a second layer region containing, as constituent atoms, the atoms (A) belonging to Group III or Group V of the periodic table in a distribution which is continuous in the direction of the layer region thickness, said second layer existing internally beneath the surface of said amorphous layer.

4,501,808

RECORDING MEDIUM AND PROCESS EMPLOYING A PHOTOSENSITIVE ORGANIC FILM

Kiyoshi Sakai, Mitaka; Shozo Ishikawa, Yokohama; Tetsuo Arita, Shiki; Minoru Mabuchi, and Shoji Umehara, both of Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

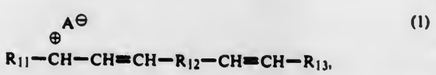
Filed Aug. 25, 1983, Ser. No. 526,533

Claims priority, application Japan, Aug. 30, 1982, 57-150514; Aug. 30, 1982, 57-150515; Aug. 30, 1982, 57-150516; Nov. 5, 1982, 57-194349; Nov. 5, 1982, 57-194350

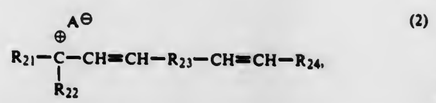
Int. Cl.³ G03G *5/09*

U.S. Cl. 430—59 **56 Claims**

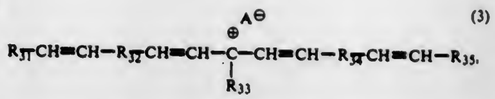
1. An electrophotographic photosensitive member having a conductive substrate and a photosensitive layer which comprises at least one compound of the following formulae (1)-(5), and a binder:


(1)

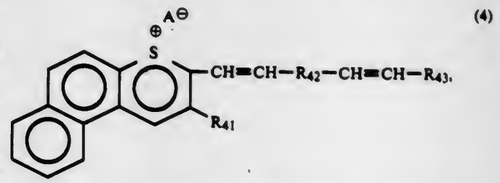
wherein R_{11} and R_{13} each represent substituted or unsubstituted aryl, R_{12} represents substituted or or unsubstituted arylene, and $A^{\ominus}$ represents an anionic residue;


(2)

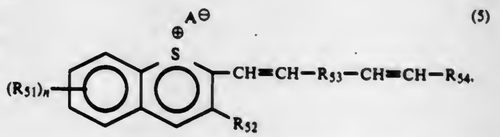
wherein R_{21}, R_{22}, and R_{24} each represent substituted or unsubstituted aryl, R_{23} represents substituted or unsubstituted arylene, and $A^{\ominus}$ represents an anionic residue;


(3)

wherein R_{31}, R_{33}, and R_{35} each represent substituted or unsubstituted aryl, R_{32} and R_{34} each represent substituted or unsubstituted arylene, and $A^{\ominus}$ represents an anionic residue;


(4)

wherein R_{41} represents alkyl, substituted or unsubstituted phenyl, or substituted or unsubstituted styryl, R_{42} represents substituted or unsubstituted arylene, R_{43} represents substituted or unsubstituted aryl, and $A^{\ominus}$ represents an anionic residue; and


(5)

wherein R_{51} represents alkoxy, R_{52} represents alkyl, R_{53} represents substituted or unsubstituted arylene, R_{54} represents substituted or unsubstituted aryl, $A^{\ominus}$ represents an anionic residue, and n represents an integer of 1 or 2.

4,501,809

PHOTOSETTING MICROCAPSULES AND PHOTO- AND PRESSURE-SENSITIVE RECORDING SHEET

Shigetoshi Hiraishi, Tokyo; Sadao Morishita, Ibaraki, and Toshihiko Matsushita, Funabashi, all of Japan, assignors to Mitsubishi Paper Mills, Ltd., Tokyo, Japan

Filed Jul. 14, 1982, Ser. No. 398,280

Claims priority, application Japan, Jul. 17, 1981, 56-111722; Jul. 22, 1981, 56-114620; Jul. 24, 1981, 56-116213; Aug. 3, 1981, 56-121613; Aug. 3, 1981, 56-121614

Int. Cl.³ G03C *1/68, 5/54*

U.S. Cl. 430—138 **15 Claims**

1. A photo- and pressure-sensitive recording sheet which comprises a support having thereon a photo- and pressure-sensitive layer comprising (1) photosetting microcapsules containing principally a photosetting resin, a reactant and a photopolymerization initiator and (2) microcapsules containing a co-reactant forming a colored material upon contact with said reactant.

4,501,810

LITHOGRAPHIC PRINTING PLATE WITH RESIN REINFORCED IMAGE AND PROCESS

Howard A. Fromson, 15 Rogues Ridge Rd., Weston, Conn. 06880, and Robert F. Gracia, Woodstock, Conn., assignors to Howard A. Fromson, Rockville, Conn.

Continuation of Ser. No. 307,335, Sep. 30, 1981, abandoned. This application Mar. 3, 1983, Ser. No. 471,621

Int. Cl.³ G03F *7/02*

U.S. Cl. 430—302 **8 Claims**

1. Process for making a lithographic printing plate which comprises:

(a) providing a substrate having a hydrophilic surface and a coating on said surface of a water-soluble, light sensitive diazo material;

(b) applying to the diazo coating a top coating comprising discrete oleophilic resin particles, said top coating being transparent to actinic light and sufficiently permeable to allow an aqueous developer to penetrate through to the underlying diazo coating;

(c) selectively exposing the diazo coating to actinic light through the top coating whereby the light struck areas of the diazo become water insoluble and selectively adhered in said areas to the hydrophilic surface and the top coating;

(d) removing diazo material and overlying top coating from the non-light struck areas by applying a developer consisting essentially of water and an anionic material to reveal the hydrophilic surface in the non-light struck areas;

(e) applying heat to the plate from step (d) sufficient to coalesce in situ the resin particles adhered to the diazo in the light struck areas.

4,501,811

PROCESS FOR MAKING LITHOGRAPHIC PRINTING PLATES

Masahiko Saikawa; Eiji Kanada; Akira Tanaka, and Kazunaka Endo, all of Nagaokakyo, Japan, assignors to Mitsubishi Paper Mills, Ltd., Tokyo, Japan

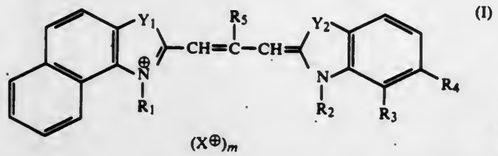
Filed Oct. 13, 1983, Ser. No. 541,656

Claims priority, application Japan, Oct. 16, 1982, 57-181756; Jul. 18, 1983, 58-131388

Int. Cl.³ G03C *5/54, 1/19*

U.S. Cl. 430—204 **9 Claims**

1. A process for making a lithographic printing plate, which comprises imagewise exposing to the radiation from a neon-helium laser or a light-emitting diode a photosensitive element comprising at least emulsion layer of silver halide containing 70 mol-% or more of silver chloride and surface layer containing physical development nuclei, said emulsion layer being spectrally sensitized with an anion- or betaine-type meso-substituted trimethine cyanine dye having at least one β-naphthothiazole nucelus represented by the general formula (I)



(I)

where R_1 and R_2 each represents an alkyl group, an alkenyl group, an aryl group, or an aralkyl group, at least one of R_1 and R_2 is a group having a sulfo or carboxyl group; R_3 and R_4 each represents a hydrogen atom, an alkyl group, an alkoxy group, an aryl group, a hydroxyl group, an alkoxycarbonyl group, or a halogen atom, R_3 and R_4 may jointly form a benzene ring; R_5 represents an alkyl group, an aryl group, or an aralkyl group; Y_1 and Y_2 each represents a sulfur or selenium atom, provided that Y_1 and Y_2 are not simultaneously a selenium atom; X represents a cationic form of a hydrogen atom, an alkali metal atom, or an ammonium group; and m is 1 or 0, and developing the exposed element by the silver complex diffusion transfer process.

4,501,812

PHOTOGRAPHIC COLOR DEVELOPER COMPOSITION PACKAGED IN TWO OR MORE CONCENTRATED PARTS, PARTICULARLY SOLUTIONS, AND CONCENTRATED COLOR DEVELOPER WATER SOLUTION

Carlo Marchesano, Savona, Italy, assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Feb. 2, 1984, Ser. No. 576,349

Claims priority, application Italy, Feb. 10, 1983, 65203 A/83

Int. Cl.³ G03C *5/30, 7/30, 5/24*

U.S. Cl. 430—466 **12 Claims**

1. A photographic color developer composition packaged in two or more concentrated parts, such that on mixing with water the parts, form a ready-for-use silver halide color developer solution, one part thereof consisting of an aqueous concentrated solution containing an N-hydroxyalkyl-substituted p-phenylene diamine salt developing agent and a sulfite compound as antioxidant, characterized by the fact that said aqueous concentrated solution has a pH from 6 to 8.

4,501,813

BIOLUMINESCENCE METHOD FOR DETERMINING NADH OR NADPH

Timo Lövgren, Vallaojantie, and Jukka Lavi, Karjatie, both of Finland, assignors to Wallac OY, Turku, Finland

Filed Jun. 21, 1982, Ser. No. 390,710

Claims priority, application Sweden, Jun. 25, 1981, 8103980

Int. Cl.³ C12Q *1/66, 1/26;* C12N *9/96*

U.S. Cl. 435—8 **5 Claims**

1. Method for determining NADH-concentration and/or NADPH-concentration in sample, comprising contacting the sample with a bioluminescent reagent based on bacterial luciferase, NAD(P)H-FMN oxidoreductase, FMN and aliphatic aldehyde, whereby a reaction takes place, where NAD(P)H is oxidized and FMN is reduced, the reaction being catalyzed by the oxidoreductase, whereafter the $FMNH_2$ formed thereby and the aldehyde are bound to the luciferase and light is emitted, the intensity of such light being measured and constituting a measure of the NADH-concentration or NADPH-concentration, characterized in that the bacterial luciferase is used in combination with an amount of oxidoreductase which consumes a negligible amount of NADH or NADPH in the sample so that a constant light intensity is obtained in the presence of a constant amount of NADH or NADPH, the amount of NAD(P)H-FMN oxidoreductase per analysis being 0.2 to 20 mU, wherein U is the amount of enzyme catalyzing the oxidation of 1 μmol of NADH or NADPH per minute, and the amount of bacterial luciferase per analysis being 0.8 to 80 ug.

4,501,814

PROCESS FOR PRODUCING A HIGH FRUCTOSE SWEETENER, HIGH PROTEIN MEAL, AND CEREAL GERM OILS

Karlheinz W. R. Schoenrock, Ogden, Utah; Thomas H. Henscheid, Twin Falls, Id., and Hugh G. Rounds, Ogden, Utah, assignors to The Amalgamated Sugar Company, Ogden, Utah

Division of Ser. No. 955,092, Oct. 26, 1978, Pat. No. 4,247,636. This application Jul. 21, 1980, Ser. No. 170,642

Int. Cl.³ C12P *19/24, 19/20, 19/14*

U.S. Cl. 435—94 **7 Claims**

1. In the process for producing a high fructose sweetener from an impure starch flour including subjecting a slurry of said flour to enzymatic degradation in a sequence of stages to first liquify the starch and to then saccharify and purify said liquified starch, the improvement which comprises removing substantially all undissolved matter from said slurry subsequent to initiation of the saccharification stage but prior to complete saccharification of said liquified starch thereby to produce a said high fructose sweetener lower in color than is obtainable by subjecting the same said slurry to a similar procedure wherein substantially all of said undissolved matter is removed either before the initiation of or following completion of said saccharification stage.

4,501,815

ARTICLE FOR CULTURING DIFFERENTIATED CELLS

Lola C. M. Reid, Rye, N.Y., and Marcos Rojkind, Ciudad Satelite, Mexico, assignors to Albert Einstein College of Medicine of Yeshiva University, Bronx, N.Y.

Continuation of Ser. No. 89,167, Oct. 29, 1979, Pat. No. 4,352,887. This application Jun. 25, 1982, Ser. No. 392,323

Int. Cl.³ C12M *3/00, 3/04*

U.S. Cl. 435—284 **8 Claims**

1. A cell culture environment consisting essentially of a base support for containing culture medium and said cells cultured thereon and a plurality of connective tissue-derived fibers in suspension within a solution conducive to culturing cells and within said base support, said connective tissue-derived fibers consisting essentially of collagens, non-collagenous proteins and carbohydrates.

4,501,816

METHOD OF DETERMINING IMMUNOGLOBULIN LEVELS IN MAMMALS

Aberra Molla, 6700 E. Montview Blvd., Denver, Colo. 80207

Filed Sep. 30, 1982, Ser. No. 429,044

Int. Cl.³ G01N *33/50, 33/68, 21/82*

U.S. Cl. 436—34 **12 Claims**

1. A method of determining immunoglobulin levels in the body fluids of a mammal, said method comprising:

(a) forming a reaction mixture of a body fluid and an aldehyde wherein the concentration of said aldehyde by weight to body fluid by volume is in excess of about 6.25 mg/ml and wherein said aldehyde is effective as a gelling agent;

(b) determining the positive gelling time; and

(c) comparing the positive gelling time of the reaction mixture to a known positive gelling time of a known mixture of the same aldehyde and body fluid containing a known quantity of an immunoglobulin.

4,501,817

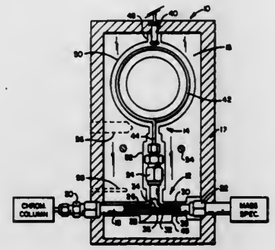
METHOD FOR THE ANALYSIS OF MATERIALS BY CHROMATOGRAPHY AND MASS SPECTROMETRY

Brian D. Andresen, and Kwokei J. Ng, both of Columbus, Ohio, assignors to The Ohio State University, Columbus, Ohio

Division of Ser. No. 306,942, Sep. 30, 1981, Pat. No. 4,391,778. This application May 4, 1983, Ser. No. 491,532

Int. Cl.³ G01N *31/08;* H01J *27/00*

U.S. Cl. 436—161 **6 Claims**



1. In a method for the analysis of a mixture of chromatography of said mixture on a gas chromatography column and passing the output from said column via an open-split interface into a mass spectrometer having a total ionization monitor, wherein the temperature of said column is progressively increased during said analysis from a lower temperature to an upper temperature and an inert gas is supplied to said open-split interface, the improvement which comprises heating said inert gas and said interface to a temperature at least about 10° C. above said upper temperature, the temperature of said inert gas and said interface being maintained substantially constant as the temperature of said column is progressively increased, thereby preventing drift in the base line signal of said total ionization monitor of said mass spectrometer as the temperature of said column is progressively increased.

4,501,818

PROCESS FOR THE PREPARATION OF CERAMIC POWDERS

Giulio A. Rossi, Shrewsbury, Mass., assignor to Norton Company, Worcester, Mass.

Filed Jul. 5, 1983, Ser. No. 511,058

Int. Cl.³ C04B *35/00, 35/48*

U.S. Cl. 501—1 **14 Claims**



Scanning electron photomicrograph (SEM) of zirconia powder containing 5.4 w/o yttrium oxide, prepared according to the present invention, dried in oven at 105°C.

1. A process for the preparation of uniform, sub-micron size sinterable metal oxide ceramic powders, comprising the steps of:

(a) forming a substantially anhydrous first solution of salts of all the metals whose oxides are present in said metal oxide ceramic powders in the proportions present therein and forming a substantially anhydrous second solution of alkali metal hydroxides in the amount stoichiometrically required to react with the metal content of said first solution;

(b) adding said first solution to said second solution, so as to form without evidence of gellation a solid precipitate containing substantially all the ceramic metal content originally in said first solution;

(c) separating said solid precipitate from the bulk of its supernatant liquid;

(d) heating said solid precipitate to remove residual solvent;

(e) washing said solid precipitate with water sufficiently to remove substantially all water-soluble salts therefrom; and

(f) drying said washed solid precipitate at a temperature in excess of the boiling point of water.

4,501,819

GLASS FOR A PHOTOMASK

Hisao Yatsuda, and Mutsumi Miyazaki, both of Sagamihara, Japan, assignors to Kabushiki Kaisha Ohara Kogaku Garasu Seizosho, Kanagawa, Japan

Filed Dec. 15, 1983, Ser. No. 561,750

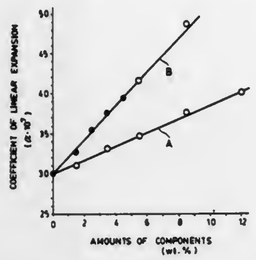
Claims priority, application Japan, Dec. 23, 1982, 57-224957; Sep. 26, 1983, 58-176477

Int. Cl.³ C03C *3/08, 3/10*

U.S. Cl. 501—61 **1 Claim**

1. Glass for a photomask consisting, in weight percent, of 45 to 60% SiO_2, 0.5 to 12% B_2O_3, 10 to 22% Al_2O_3, 5 to 17% MgO, 0 to 5% CaO, 0 to 8% SRO, 1.5 to 15% BaO, 1.5 to 17%

ZnO, 0.5 to 10% PbO, the total content of ZnO and PbO being at least 6%, 0 to 7% $Ta_2O_5+Nb_2O_5+La_2O_3+Gd_2O_3$.



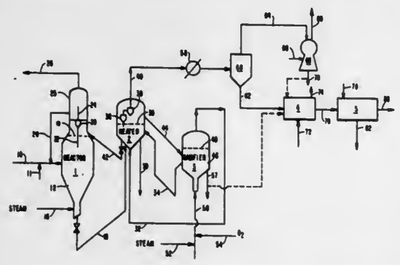
$+Y_2O_3+Bi_2O_3+WO_3$, 0 to 5% ZrO_2+TiO_2, 0 to 2.5% $Na_2O+K_2O+Li_2O$, 0 to 0.5% As_2O_3 and 0 to 0.5% Sb_2O_3.

4,501,820

METHOD FOR THE RECOVERY OF A TUNGSTEN-CONTAINING CATALYST FROM COKE CONTAINING NICKEL AND VANADIUM

David E. Allan; Byron V. Molstedt, both of Baton Rouge, La., and Raam R. Mohan, Berkeley Heights, N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Jul. 28, 1983, Ser. No. 518,026
Int. Cl.³ B01J 23/92; C10G 11/04
U.S. Cl. 502—27 8 Claims



1. A method of recovering a catalyst comprising a tungsten component from solids comprising said catalyst associated with coke comprising metallic components, including nickel and vanadium, said catalyst having become associated with said coke in a coking process conducted in the presence of said catalyst, which comprises the steps of:

(a) contacting said solids with a gas comprising steam at a temperature ranging from about 1600° F. to about 2000° F. to gasify partialy said coke;

(b) heating the resulting solids at a temperature below the fusion point of said metallic components, said temperature being no greater than about 1100° F. in the presence of a molecular oxygen-containing gas for a time sufficient to remove at least a portion of the coke from said solids;

(c) contacting the solids resulting from step (b) in an extraction zone with an extractant comprising nitric acid at a temperature ranging from about 70° to about 250° F., at an acid strength ranging from about 0.2 normal to about 12 normal, to remove selectively said nickel and said vanadium from said solids, and

(d) recovering said catalyst comprising said tungsten component.

7. The method of claim 1 wherein said extractant additionally comprises H_2O_2.

8. The method of claim 1 wherein said extractant comprises an acid having a strength ranging from about 0.2 normal to 1.0 normal.

4,501,821

PROPERTY ENHANCEMENT OF ANIONICALLY POLYMERIZED NYLON WITH DUAL INITIATORS

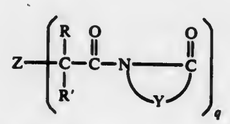
Robert B. Hodek, Gibsonia, and Jerome A. Seiner, Pittsburgh, both of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Jul. 28, 1983, Ser. No. 518,161
Int. Cl.³ C08F 4/50
U.S. Cl. 502—155 10 Claims

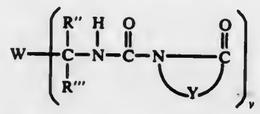
1. A catalyst and initiator composition for lactam polymerization, comprising:

A. an initiator system comprised of

(a) at least one material represented by the following structural formula:

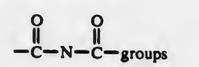


(b) at least one material represented by the following structural formula:



wherein q and v are independently an integer of at least 1; Z and W are independently selected from a compound or polymeric material, said compound being composed of at least two elements in chemical combination which contain up to two repeating structural units, said polymeric material being a macromolecule formed by the chemical union of at least two coreactants and having at least three repeating structural units; with the proviso that at least a portion of either or both the materials (a) or (b) is a polymeric material; R, R', R'', R''' are independently hydrogen, a C_1 to C_{10} aliphatic radical, C_3 to C_{10} cycloaliphatic radical, C_6 to C_{10} aryl or alkaryl radical, and independently R and R'' and the carbon to which each is attached are included as part of a cycloaliphatic or aromatic ring; and Y is an alkylene group having from 3 to 12 carbon atoms or an alkylene group having from 3 to 12 carbon atoms interrupted by a heteroatom; and

B. a Grignard catalyst for lactam polymerization; with the proviso that the equivalent ratio of



to the magnesium of the Grignard catalyst is within the range of from 0.3 to 1 to 4 to 1, and at least 10 percent of the initiator groups of the initiator system are of the (a) type.

4,501,822

HYDROESTERIFICATION OF 1-ALKENE

Paul Foley, Summit, N.J., assignor to Celanese Corporation, New York, N.Y.

Division of Ser. No. 342,636, Jan. 26, 1982, Pat. No. 4,422,977.
This application Aug. 31, 1983, Ser. No. 528,260
Int. Cl.³ B01J 23/44
U.S. Cl. 502—162 2 Claims

1. A catalyst composition consisting of a solvent solution of solute components comprising a halide-free complex of palladium compound and tertiary hydrocarbyl phosphine or phosphite ligand which is in contact with a stabilizing quantity of secondary or tertiary hydrocarbyl thiol compound, and wherein the pH of the solvent solution is in the acidic range between about 1–6.

4,501,823

CATALYST FOR REFORMING OF METHANOL AND PROCESS OF PREPARING SAME

Koji Masuda, Yokosuka, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

Filed Dec. 30, 1983, Ser. No. 567,181
Claims priority, application Japan, Apr. 28, 1983, 58-73905
Int. Cl.³ B01J 21/04, 21/06, 23/10, 23/42, 23/44
U.S. Cl. 502—304 17 Claims

1. A catalyst for the reforming of methanol to hydrogen and carbon monoxide, consisting essentially of:

a carrier which comprises active alumina as a principal material thereof and is coated with a mixture consisting esssentially of cerium oxide and zirconium oxide; and

at least one catalytic metal selected from the group consisting of platinum and palladium, which is deposited on said carrier.

4,501,824

CATALYST FOR MAKING CHLORINE DIOXIDE

Kenneth L. Hardee, Middlefield; Arnold Z. Gordon, Lyndhurst; Charles B. Pyle, Chardon, and Rajat K. Sen, Cleveland Hts., all of Ohio, assignors to Eltech Systems Corporation, Boca Raton, Fla.

Division of Ser. No. 344,304, Feb. 1, 1982, Pat. No. 4,381,290, which is a continuation-in-part of Ser. No. 256,969, Apr. 23, 1981, Pat. No. 4,362,707. This application Jan. 10, 1983, Ser. No. 457,013
Int. Cl.³ B01J 21/06, 23/64
U.S. Cl. 502—339 4 Claims

1. A heterogeneous catalyst for producing chlorine dioxide from an aqueous solution of an acid and a chlorate comprising: a coformed crystal lattice of a plurality of platinum group metal oxides superimposed within a crystal matrix of tantalum oxide, said plurality of platinum group metals being selected from combinations consisting of ruthenium-rhodium, ruthenium-palladium, iridium-rhodium, iridium-platinum, palladium-rhodium and ruthenium-rhodium-palladium wherein each platinum group metal constituent is present in a mole ratio of not less than 0.01.

4,501,825

TIRE SEALER AND INFLATOR

Arpad M. Magyar, Conroe, and Gerald G. Smith, Kingwood, both of Tex., assignors to Pennzoil Company, Houston, Tex.

Filed Jun. 28, 1984, Ser. No. 625,531
Int. Cl.³ C08J 9/30
U.S. Cl. 521—78 20 Claims

1. A tire sealant and inflator composition comprising:

(a) 20–40 wt.% of a resin

(b) 20–40 wt.% of a latex sealant

(c) 2–20 wt.% of an alkylene glycol

(d) 0.1–15 wt.% of fibers

(e) 0.1–15 wt.% alkanolamine

(f) 0.1–10 wt.% of a foaming agent

(g) balance, water,

said composition being contained in admixture with a propellant/inflator.

4,501,826

ANION EXCHANGE RESIN HAVING A MACRORETICULAR STRUCTURE

Erich F. Meitzner, Glenside, and James A. Oline, Wyncote, both of Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Division of Ser. No. 749,526, Jul. 18, 1958, Pat. No. 4,224,415.
This application May 23, 1960, Ser. No. 152,940
Int. Cl.³ C08F 8/32
U.S. Cl. 521—29 7 Claims

1. An anion-exchange resin comprising essentially the resinous reaction product of (a) a polymerized mass comprising essentially a cross-linked copolymer of (1) a polyvinylidene monomer containing a plurality of ethylenically unsaturated groups in nonconjugated relationship and (2) at least one monoethylenically unsaturated aliphatic ester of acrylic acid, said aliphatic ester group containing from 1 to 10 carbon atoms, said copolymer having micropores common to cross-linked copolymers, said polymerized mass being characterized by a reticular structure of microscopic channels throughout said polymerized mass, the apparent density of said polymerized mass being at least 0.02 density units less than the apparent density of a polymerized mass of the same composition without said reticular structure; and (b) an amino compound containing at least two amino groups, at least one of which is a primary amine group.

4,501,827

GLASS-REINFORCED POLYMER COMPOSITION COMPRISING 4-METHYL-1-PENTENE POLYMER IN COMBINATION WITH A GRAFT MODIFIED ACID POLYMER OF 4-METHYL-1-PENTENE POLYMER

Riichiro Nagano, Hiroshima; Hiroshi Kiga, Iwakuni, and Tadao Iwata, Chiba, all of Japan, assignors to Mitsui Petrochemical Industries, Ltd., Tokyo, Japan

Filed Dec. 22, 1983, Ser. No. 564,195
Claims priority, application Japan, Dec. 27, 1982, 57-226948
Int. Cl.³ C08K 3/40
U.S. Cl. 523—214 18 Claims

1. A glass-reinforced polymer composition comprising:

80 to 99.99 parts by weight of a 4-methyl-1-pentene polymer;

0.01 to 20 parts by weight of a graft-modified polymer of 4-methyl-1-pentene having grafted units of an unsaturated carboxylic acid or an acid anhydride thereof in amount of from 0.5% by weight to 15% by weight and a limiting viscosity[n] at 135° C. in decalin falling within a range between 0.3 dl/g and 10 dl/g, inclusive; and

1 to 300 parts by weight of glass fibers with respect to 100 parts by weight of a sum of the 4-methyl-1-pentene polymer and the graft-modified polymer.

4,501,828

DISSOLVING WATER SOLUBLE POLYMERS

Albert F. Hadermann, Ijansville, Md.; Jerry C. Trippe, Fairfax Station, Va., and Paul F. Waters, Washington, D.C., assignors to General Technology Applications,Inc., Reston, Va.

Filed Jan. 20, 1983, Ser. No. 459,506
Int. Cl.³ C08L 33/26, 71/02
U.S. Cl. 523—309 15 Claims

1. A method for dissolving relatively high molecular weight water-soluble polymers in liquids which are solvents for those polymers comprising:

freezing said solvent and forming it into relatively finely divided, free flowing solid particles;

chilling particulate solid polymer to a temperature below the freezing point of said solvent;

mixing said frozen solvent particles with said chilled particulate polymer, and

allowing said mixture to warm to a temperature above the freezing point of said solvent whereby polymer particles dissolve in melting solvent particles to form a solution.

4,501,829

COATING COMPOSITION

Shoji Oda, Hiroshima; Kunihiko Ehara, Osaka; Hirotoshi Umemoto, Kyoto, and Shinji Nakano, Hyogo, all of Japan, assignors to Nippon Paint Co., Ltd., Osaka, Japan

Filed Sep. 6, 1983, Ser. No. 529,873
Claims priority, application Japan, Sep. 6, 1982, 57-155633
Int. Cl.³ C08K *5/34, 3/22*
U.S. Cl. 523—400 **13 Claims**

1. A coating composition comprising

(A) a polyester resin modified with a lactone having 6 to 8 ring carbon atoms (I) or a mixture of said lactone-modified polyester resin (I) and a non-modified polyester resin (II), the lactone content being from 5 to 40% by weight of the total polyester resin solid content of (I) or (I+II), said polyester resin having an average number molecular weight of 800~4000, a hydroxyl value of 50~200 mg KOH/g and a resinous acid value of 2~20 mg KOH/g,

(B) a crosslinking agent,

(C) a pigment and

(D) 0~20% by weight of the total amounts of polyester resin and crosslinking agent of epoxy resins(s),

said pigment amounting to 40~60% by weight of the total solid matter, and wherein the film formed has a static Tg of −10°~30° C., an elongation of 7~80% and a tensile strength of 150~350 Kg/cm².

4,501,830

RAPID SET LIGHTWEIGHT CEMENT PRODUCT

Richard Miller, Crofton, and Janine M. Rizer, Mechanicsville, both of Md., assignors to Research One Limited Partnership, Towson, Md.

Filed Jan. 5, 1984, Ser. No. 568,358
Int. Cl.³ C04B *7/02, 7/32/7/35;* C08G *51/24*
U.S. Cl. 523—401 **8 Claims**

1. A rapid set lightweight cement product which hardens in less than one hour and which then exhibits a density of less than 90 pounds per cubic foot and which has been poured from a mixture comprising in % by weight:

Class H Portland Cement	35 to 45
mixture of Condensed Silica Fume, Flyash, Cenospheres and finely divided Crystalline Silica Particles;	38 to 50
Epoxy emulsion, Curing Agent, Accelerator and Water	10 to 15 5.5 to 15.

4,501,831

AQUEOUS COATING COMPOSITIONS AND PROCESS FOR THEIR PREPARATION FROM EPOXY ACIDIC ACRYLIC POLYMER AND POLYFUNCTIONAL AMINE

Shaw C. Chu, 68 Riverview Ter., Belle Mead, N.J. 08502, and Arthur T. Spencer, 105 Madison Ave., New Providence, N.J. 07974

Filed Dec. 27, 1983, Ser. No. 566,081
Int. Cl.³ C08L *63/00;* C09D *3/58, 5/02*
U.S. Cl. 523—412 **17 Claims**

1. A non-gelled composition which is self-emulsifiable in water containing copolymer having carboxyl groups and substantially free of oxirane groups, which composition is the reaction product of

A. an acidic copolymer having an acid number greater than 150 comprising a solution copolymer of monoethylenically unsaturated monomers containing at least about 20% by weight monoethylenically unsaturated carboxylic acid monomer based on the total weight of the monomers; and

B. an epoxy resin comprising aromatic polyether containing oxirane groups; said epoxy resin comprising at least 20% of the total resin solids and containing sufficient oxirane groups to provide a ratio of oxirane groups to carboxyl groups from 1:2 to 1:20; in which the reaction is conducted in the presence of a poly-tertiary-amine.

4,501,832

WATER-REDUCIBLE EPOXY COATING COMPOSITIONS

Richard A. Albers, Irvine, Calif., assignor to Deft Chemical Coatings, Inc., Irvine, Calif.

Division of Ser. No. 143,916, Apr. 25, 1980, Pat. No. 4,352,898.
This application May 7, 1982, Ser. No. 375,997
Int. Cl.³ C08J *3/08;* C08L *63/00;* C07D *3/58*
U.S. Cl. 523—414 **32 Claims**

1. A kit for forming a coating comprising (a) a first container modified polyamine resin, the modified polyamine resin being inherently insoluble and non-dispersible in water, and (b) a second container containing (i) epoxy resin curable by the modified polyamine resin and (ii) sufficient nitroparaffin so that when the contents of the two containers are combined in about stoichiometric proportions to form a coating, water in an amount of at least 50% by weight of the modified polyamine resin can be added to the coating composition, both containers containing substantially no emulsifier, the nitroparaffin having the formula C_nX_{2n+2} where n is an integer from 1 to 4 and each X is independently selected from the group consisting of chlorine, hydrogen, and NO_2, where at least one but no more than two X's are NO_2.

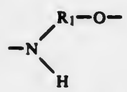
4,501,833

LOW TEMPERATURE AMINOPLAST CURABLE CATIONIC ELECTRODEPOSITABLE COATING COMPOSITIONS

Joseph F. Bosso, Lower Burrell, and William J. Geiger, New Kensington, both of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed May 16, 1983, Ser. No. 495,306
Int. Cl.³ C08L *63/00*
U.S. Cl. 523—416 **16 Claims**

1. An improved, curable cationic coating composition comprising an onium group-containing polymer and an aminoplast curing agent, characterized in that the aminoplast curing agent has at least one group of the structure:



wherein R_1 is carbon derived from an aldehyde or ketone and the aminoplast is present in amounts sufficient to cure the composition.

4,501,834

GELS FORMED FROM ANIONIC AND CATIONIC POLYMERS

Dean T. Su, North Brunswick, N.J., assignor to Colgate-Palmolive Company, New York, N.Y.

Filed Dec. 22, 1983, Ser. No. 564,589
Int. Cl.³ A61K *7/00, 7/06;* B32B *21/04*
U.S. Cl. 524—28 **11 Claims**

1. A clear gel in water which comprises water containing the reaction product formed by the rapid and intensive agitation of a cationic polymer bearing a positive charfe selected from the group consisting of poly (diallyldimethylammonium chloride), poly(diallyldimethylammonium chloride-co-acrylamide), and a quaternary ammonium cellulose ether polymer and an anionic polymer bearing a negative charge selected from the group consisting of polysulfonic acid and alginic acid, said gel having a viscosity sufficient to yield a viscosity upon dilution with water which exceeds the viscosity of a corresponding aqueous concentration of the individual polymers.

4,501,835

POLYACRYLIC ACID/CHITOSAN POLYELECTROLYTE COMPLEX

Carl M. Berke, Cambridge, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Continuation-in-part of Ser. No. 355,679, Mar. 8, 1982, abandoned. This application Nov. 9, 1983, Ser. No. 549,833
The portion of the term of this patent subsequent to Apr. 3, 2001, has been disclaimed.
Int. Cl.³ C08L *5/08;* B01D *13/00*
U.S. Cl. 524—32 **34 Claims**

1. As a novel composition of matter, a polyacrylic acid/-chitosan complex, wherein the molecular weight (weight average) of said polyacrylic acid is less than about 10,000.

21. A method for preparing a membrane which comprises forming a polyelectrolyte complex by dissolving chitosan in an acid, adding a solution of polyacrylic acid having a molecular weight (weight average) of less than 10,000 thereto and coating a support with said complex.

4,501,836

LIQUID REFRACTORY BINDER

Masayuki Nakamura; Masaaki Tsuriya, and Masahiko Funabashi, all of Fujieda, Japan, assignors to Sumitomo Durez Company, Ltd., Tokyo, Japan

Filed May 19, 1983, Ser. No. 496,324
Claims priority, application Japan, May 18, 1982, 57-82448
Int. Cl.³ C08L *95/00*
U.S. Cl. 524—66 **18 Claims**

1. A liquid binder for refractory aggregates comprising tar, pitch or mixture thereof, and a liquid resin component comprising a solvent having a boiling point of at least 75° C. and a resole phenolic resin prepared using a catalyst system of ammonia, amines or mixtures thereof, wherein the range of solvent to 100 parts by weight of effective resole phenolic resin is less than 100 parts by weight, and the solvent is selected from the group consisting of glycols, ketones, esters and ethers.

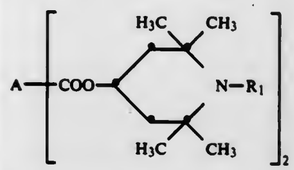
4,501,837

PIPERIDINE DERIVATIVES WHICH ARE STABILISERS FOR SYNTHETIC POLYMERS

Giuseppe Cantatore, Bologna, Italy, assignor to Ciba-Geigy S.p.A., Origgio, Italy

Division of Ser. No. 215,925, Dec. 12, 1980, Pat. No. 4,369,321. This application Aug. 31, 1982, Ser. No. 413,439
Claims priority, application Italy, Dec. 21, 1979, 28324 A/79
Int. Cl.³ C08K *5/34*
U.S. Cl. 524—100 **4 Claims**

1. A compound of the formula

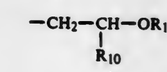


or an acid addition salt thereof, in which

R_1 represents

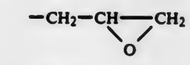
(a) hydrogen,
(b) C_1-C_{12}—alkyl,
(c) —CH_2CN
(d) C_3-C_{12}—alkenyl,
(e) C_3-C_{12}—alkinyl,
(f) benzyl,
(g) benzyl substituted by 1 to 3 C_1-C_4—alkyl radicals,
(h) hydroxybenzyl,
(i) hydroxybenzyl substituted by 1 to 3 C_1-C_4—alkyl radicals
(j) a —COR_8, —$COOR_8$, —Ch_2COOR_8 or —$CONR_8R_9$ radical in which R_8 and R_9, which may be identical or different, represent
(1) linear or branched C_1-C_{12}—alkyl,
(2) C_3-C_{12}—alkenyl,
(3) C_5-C_{12}—cycloalkyl,
(4) phenyl,
(5) phenyl substituted by 1 to 3 C_1-C_8—alkyl radicals,
(6) hydroxyphenyl,
(7) hydroxyphenyl substituted by 1 to 3 C_1-C_8—alkyl radicals,
(8) C_7-C_{12}—aralkyl, or
(9) 2,2,6,6-tetramethyl-piperidin-4-yl,

(k) a



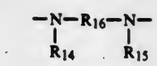
radical, in which R_{10} is hydrogen, methyl or phenyl and R_{11} is hydrogen, —R_8, —COR_8 or —$CONR_8R_9$, in which R_8 and R_9 are as defined above, or

(l) a

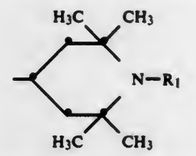


radical;

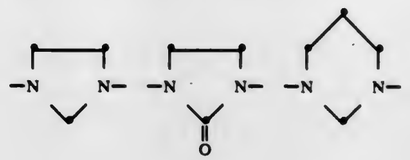
and A is a radical of the formula

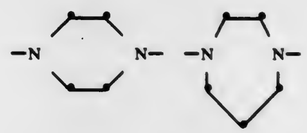


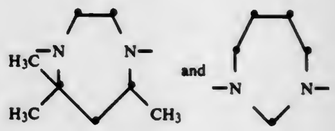
in which R_{14} and R_{15}, which may be identical or different, are C_5-C_{12} cycloalkyl or a radical of the formula



in which R_1 is as defined above, and R_{16} is C_1-C_{20}alkylene, C_6-C_{12}arylene or C_7-C_{12}aralkylene; or A is a bivalent radical selected from the group consisting of







4,501,838

STABILIZED OLEFIN POLYMERS

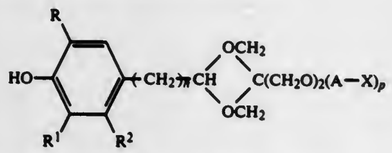
Ingenuin Hechenbleikner, West Cornwall, and William P. Enlow, Falls Village, both of Conn., assignors to Borg-Warner Chemicals, Inc., Parkersburg, W. Va.

Continuation of Ser. No. 262,267, May 11, 1981, abandoned. This application Sep. 14, 1982, Ser. No. 418,104

Int. Cl.³ C08K *5/11*

U.S. Cl. 524—108 **5 Claims**

1. An olefin polymer composition comprising an olefin polymer and a effective stabilizing amount of an ester of a pentaerythritol monoacetal having the structure



where R is alkyl, cycloalkyl or aralkyl having 3–10 carbon atoms, r^1 is alkyl or 1–6 carbon atoms, R_2 is lower alkyl or hydrogen, A is



X is alkyl phenyl or (hydroxy phenyl)alkyl where the alkyl in each case has 1–6 carbon atoms, n is 0–3 and p is 2.

4,501,839

METHOD OF USING HIGHLY CONCENTRATED AQUEOUS SOLUTIONS OF LOW VISCOSITY OF MELAMINE/ALDEHYDE RESINS FOR IMPROVING BUILDING MATERIALS

Theodor A. Bürge, Geroldswil; Jürg Widmer, Zurich; Theodor Meyer, Regensdorf, and Ulrich Sulser, Oberengstringen, all of Switzerland, assignors to Sika AG, vorm. Kaspar Winkler & Co., Zurich, Switzerland

Filed Dec. 14, 1983, Ser. No. 561,328

Claims priority, application Fed. Rep. of Germany, Mar. 2, 1981, 3107852

Int. Cl.³ C08L *61/28*

U.S. Cl. 524—247 **21 Claims**

1. A method of increasing the quality of building materials by incorporating therein a highly concentrated aqueous solution of low viscosity of melamine/aldehyde resins, prepared by reacting to a precondensate in a first step melamine and an aldehyde in an alkaline medium and in the presence of water together with at least one compound (I) selected from the group consisting of an alkali sulfite, an alkaline earth sulfite, an amino sulfonic acid, an amino carboxylic acid, a hydroxycarboxylic acid, a hydroxycarboxylic acid lactone, and a polyhydroxy carboxylic acid lactone then reacting the thus obtained mixture in a second step with at least one compound (II) selected from the group consisting of an amino carboxylic acid, a carboxylic acid, a hydroxy carboxylic acid, a hydroxy carboxylic acid lactone, an amino sulfonic acid including sulfamic acid, a polyhydroxy carboxylic acid and a polyhydroxy carboxylic acid lactone, and then making alkaline the obtained resin solution by adding at least one basic compound (III), said building materials consisting of inorganic binders and additives, in an amount of from 0.01 to 25% by weight, relative to the inorganic binder.

4,501,840

ALKALINE MODIFIED PENTAERYTHRITOL STABILIZER FOR VINYL CHLORIDE RESIN

Peter Werle, Gelnhausen, and Wolfgang Merk, Hanau, both of Fed. Rep. of Germany, assignors to Degussa Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Oct. 20, 1983, Ser. No. 543,965

Claims priority, application Fed. Rep. of Germany, Oct. 22, 1982, 3239086

Int. Cl.³ C08L *27/06*

U.S. Cl. 524—387 **25 Claims**

1. A process for producing a costabilizer suitable for the stabilization of polyvinyl chloride comprising heating pentaerythritol at a temperature of about 180° to 220° C. with a strongly alkaline acting material.

4,501,841

ELASTOMERIC INSULATING MATERIALS FOR ROCKET MOTORS

Liles G. Herring, Waco, Tex., assignor to Hercules Incorporated, Wilmington, Del.

Filed Feb. 3, 1983, Ser. No. 463,365

Int. Cl.³ C08L *21/00*; F42B *9/16*; F02K *9/34*

U.S. Cl. 524—411 **5 Claims**

1. An elastomeric insulating material for use in rocket motors as low smoke case wall or blast tube ramp insulation, said elastomeric insulating material having a density between about 0.035 and 0.045 and consisting essentially of:

100 parts by weight of peroxy crosslinked EPDM in which are dispersed between about 10 and 100 parts by weight of a char forming organic fiber comprising polyaramide pulp and between about 5 and 75 parts by weight of inorganic particulate.

4,501,842

ADHESIVE FOR BONDING CURED EPDM RUBBER

Chester T. Chmiel, Granger, and Daniel J. Cotsakis, Mishawaka, both of Ind., assignors to Uniroyal, Inc., Middlebury, Conn.

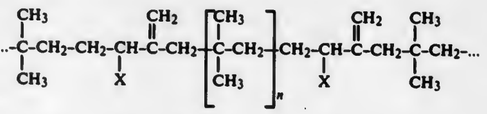
Filed Dec. 27, 1983, Ser. No. 565,266

Int. Cl.³ C08L *9/00, 15/02, 53/00*

U.S. Cl. 524—432 **10 Claims**

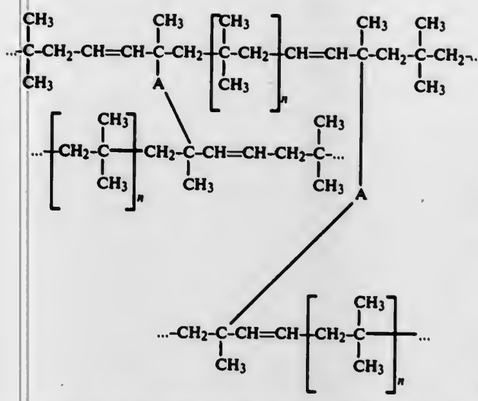
1. An adhesive for bonding cured EPDM comprising:

(A) a halogenated butyl rubber of the formula:



where X is Cl or Br and n is about 50

(B) a pre-cross linked butyl rubber of the formula:



where A is a crosslinking agent and n is about 50

(C) a styrene/ethylene butylene/styrene block thermoplastic rubber,

(D) a thermoplastic, petroleum hydrocarbon feedstock derived aliphatic monomer resin derived from C_5–C_9 streams polymerized to varying molecular weights to give a softening point range of 162°–181° C. and

(E) an aliphatic isocyanate; wherein (A) is at a concentration of 20.0–45.0 PPHR, (B) is at a concentration of 40.0–65.0 PPHR, (C) is at a concentration of 15.0–20.0 PPHR, (D) is at a concentration of 120–160 PPHR and (E) is at a concentration of 20–35 PPHR.

4,501,843

COMPOSITION OF POLYMER OF OLEFIN WITH MIXED MINERAL FILLER

Donald G. Needham, Ramona, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Mar. 23, 1984, Ser. No. 592,495

Int. Cl.³ C08K *3/34*

U.S. Cl. 524—445 **16 Claims**

1. A composition comprising polymer of olefin, mica, and talc having improved flexural modulus as compared to said polymer of olefin alone, said polymer of olefin present in an amount of about 60 to about 80 weight percent of the total composition, said mica present in an amount of about 10 to about 20 weight percent of the total composition and said talc present in an amount of about 10 to about 20 weight percent of the total composition.

4,501,844

POLYAMIDES WITH TALC AS CRYSTALLIZATION PROMOTER

Augustin T. Chen; David J. Goldwasser, both of Cheshire, and Kemal Onder, North Haven, all of Conn., assignors to The Upjohn Company, Kalamazoo, Mich.

Filed Dec. 5, 1983, Ser. No. 558,148

Int. Cl.³ C08K *3/34*

U.S. Cl. 524—451 **10 Claims**

1. A composition comprising a blend of,

a linear polyamide selected from the group consisting of poly(4,4'-methylenediphenylene azelamide), poly(4,4'-methylenediphenylene sebacamide), poly(4,4'-methylenediphenylene undecanediamide), poly(4,4'-methylenediphenylene dodecanediamide), and mixtures thereof, said polyamide characterized in that it has been prepared by the reaction of 4,4'methylenebis (phenyl isocyanate) and the corresponding dicarboxylic acid or by the reaction of 4,4'-methylenebis(aniline) and the corresponding dicarboxylic acid dihalide, said polyamide being further characterized by an inherent viscosity of from about 0.5 to about 1.5 determined as a 0.5 percent by weight solution in N-methylpyrrolidone containing about 4 percent by weight lithium chloride at 30° C; and

talc,

said talc being present in an amount at least sufficient to promote the crystallization of said linear polyamide (A).

4,501,845

EMULSION POLYMER OF HETEROGENEOUS MOLECULAR WEIGHT AND PREPARATION THEREOF

Richard E. Baus, Warminster, and Graham Swift, Blue Bell, both of Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Continuation of Ser. No. 313,400, Oct. 21, 1981, abandoned, which is a continuation of Ser. No. 119,728, Feb. 8, 1980, abandoned. This application May 31, 1983, Ser. No. 499,127

Int. Cl.³ C08F *2/16*

U.S. Cl. 524—460 **10 Claims**

1. In a process of preparing an emulsion polymerized latex addition polymer in which the molecular weight of the polymer is widely divergent and the Tg of the polymer is between 10° C. and −60° C., the improvement in which a monomer mixture which is at least predominantly of alpha, beta-monomethylenically unsaturated monomers and is polymerized by a free radical method, the polymerization being conducted in stages in which the first stage of the polymerization is conducted in the absence of a chain transfer agent, whereby a high molecular weight polymer fraction is obtained, and at least one additional stage of the polymerization is conducted in the presence of the chain transfer agent, whereby at least one low molecular weight fraction is obtained, in which from about 5 to 70% of the monomers are polymerized to give a fraction which has a $\overline{M}_n$ of between about 500 and 100,000 and from about 30% to 90% of the monomers are polymerized to give a fraction which has a $\overline{M}_n$ of about 100,000 to at least 2,000,000 and the ratio of $\overline{M}_w/\overline{M}_n$ is from 15 to 150, the molecular weight being determined by gel permeation chromatography.

4,501,846

COMPOSITION FOR TUFTED CARPETS

Raymond W. Goss, Newark, Del., assignor to Hercules Incorporated, Wilmington, Del.

Filed Jun. 30, 1983, Ser. No. 509,747

Int. Cl.³ C08K *5/01*

U.S. Cl. 524—476 **16 Claims**

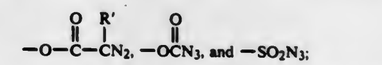
1. A composition having a Brookfield viscosity of from about 25 to 500 centipoise at about 150° C. comprising, by weight:

(a) from about 1% to about 19% of a low density polyethylene having a melt index of from about 70 to about 425;

(b) from about 0.1% to about 5% of a nitrogen-containing silane cross-linking compound having the general formula

$$X_3—Si—R—Z$$

where R is an organic radical, X is selected from halo, hydroxy, alkoxy, aryloxy, organo oxycarbonyl, azido, amine, and amide radicals; and Z is selected from



where R' is selected from hydrogen, alkyl, cycloalkyl, aryl and —COOR" radicals; where R" is selected from alkyl, cycloalkyl, and aryl radicals;

(c) from about 65% to about 85% of a resin having a Ring and Ball softening point of from about 50° C. to about 115° C. selected from the group consisting of hydrocarbon resins and esters of rosin;

(d) from about 5% to about 7% of a hydrocarbon wax; and

(e) up to about 30% of a naphthenic oil.

15. A process for making a composition having a Brookfield viscosity of from about 25 to about 500 centipoise at about 150° C. comprising the steps of:

(a) tumble drying

(i) from about 1% to about 19% of a low density polyethylene having a melt index of from about 70 to about 425; and

(ii) from about 0.1% to about 5% of a nitrogen-containing silane cross-linking compound having the general formula

$$X_3—Si—R—Z$$

where R is an organic radical, X is selected from halo, hydroxy, alkoxy, aryloxy, organo oxycarbonyl, azido, amine, and amide radicals; and Z is selected from

$$—O—\overset{O}{\overset{\|}{C}}—\overset{R'}{\overset{|}{C}}N_2,\ —OCN_3, \text{ and } —SO_2N_3;$$

where R' is selected from hydrogen, alkyl, cycloalkyl, aryl and —COOR" radicals; where R" is selected from alkyl, cycloalkyl, and aryl radicals; to form a product;

(b) admixing

(i) from about 65% to about 85% of a resin having a Ring and Ball softening point of from about 50° C. to about 115° C. selected from the group consisting of hydrocarbon resins and esters of rosin; and

(ii) from about 5% to about 7% of a hydrocarbon wax to form a blend;

(c) adding the product of (a) to the blend of (b); and

(d) admixing.

16. The process of claim 15 wherein the blend of (b) further comprises up to about 30% naphthenic oil mixed therein.

4,501,847

POLYMERIC ANTITUMOR AGENT

Victor D. Papanu, Maryland Heights, Mo., assignor to Monsanto Company, St. Louis, Mo.

Filed Jul. 9, 1981, Ser. No. 281,544

Int. Cl.³ C08K *3/16*; C08F *122/04*

U.S. Cl. 524—502 **6 Claims**

1. An antitumor-active composition of matter selected from the group consisting of low molecular weight homopolymers of itaconic anhydride having average molecular weights of from about 400 to about 5000 and derivatized to contain (a) half-amide, half-carboxyl acid groups and (b) imide groups in which said imide groups comprise from about 3% by weight to about 35% by weight of said derivatized groups, and the pharmaceutically acceptable cationic salt derivatives of said derivatized homopolymers.

4,501,848

VINYLIDENE CHLORIDE COPOLYMER-BASED MOLDING COMPOUND

Larry G. Bourland, Downingtown, Pa., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed May 24, 1984, Ser. No. 613,848

Int. Cl.³ C08L *27/08, 23/16, 23/12, 23/26*

U.S. Cl. 524—527 **14 Claims**

1. A molding compound comprising: (a) a vinylidene chloride copolymer resin and (b) from about 0.1 to about 10 parts per each 100 parts of vinylidene chloride copolymer resin of a high melt flow rate isotactic propylene-based polymer containing 0 to 15 mole % recurring units of an olefinic comonomer having the general formula:

$$CH_2=CRR^1$$

wherein R is a member selected from the group consisting of hydrogen and aromatic and aliphatic hydrocarbon groups containing 2 to 20 carbon atoms and R^1 is a member selected from the group consisting of hydrogen and methyl, said high melt flow rate propylene based polymer having a melt flow rate of at least 300 grams/10 minutes measured using ASTMD-1238-79 Condition L.

4,501,849

CHLORINATED POLYVINYL CHLORIDE MOLDING COMPOUND

Larry G. Bourland, Downingtown, Pa., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed May 24, 1984, Ser. No. 613,848

Int. Cl.³ C08L *23/12, 23/16, 27/24, 23/26*

U.S. Cl. 524—527 **16 Claims**

1. A molding compound comprising a chlorinated polyvinyl chloride resin and a high melt flow rate isotactic propylene-based polymer containing 0 to 15 mole % recurring units of an olefinic comonomer having the general formula:

$$CH_2=CRR^1$$

wherein R is a member selected from the group consisting of hydrogen and aromatic and aliphatic hydrocarbon groups containing 2 to 20 carbon atoms and R^1 is a member selected from the group consisting of hydrogen and methyl, said high melt flow rate propylene based polymer having a melt flow rate of at least 300 grams/10 minutes measured using ASTMD-1238-79 Condition 2.

4,501,850

POLYVINYL CHLORIDE MOLDING COMPOUND

Larry G. Bourland, Downingtown, Pa., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed May 24, 1984, Ser. No. 613,855

Int. Cl.³ C08L *23/12, 23/16, 23/26, 27/06*

U.S. Cl. 524—527 **15 Claims**

1. A molding compound comprising a polyvinyl chloride resin and from about 0.1 to about 10 parts per each 100 parts of polyvinyl chloride resin of a high melt flow rate isotactic propylene-based polymer containing 0 to 15 mole % recurring units of an olefinic comonomer having the general formula:

$$CH_2=CRR^1$$

wherein R is a member selected from the group consisting of hydrogen and aromatic and aliphatic hydrocarbon groups containing 2 to 20 carbon atoms and R^1 is a member selected from the group consisting of hydrogen and methyl, said high melt flow rate propylene based polymer having a melt flow rate of at least 300 grams/10 minutes measured using ASTMD-1238-79 Condition L.

4,501,851

UREA-FORMALDEHYDE PRECURSOR

James H. Williams, Louisville, Ky., assignor to Borden, Inc., Columbus, Ohio

Continuation-in-part of Ser. No. 416,573, Sep. 10, 1982, Pat. No. 4,410,685. This application Feb. 28, 1984, Ser. No. 584,441

Int. Cl.³ C08L *51/00*; C08G *12/12*

U.S. Cl. 524—542 **29 Claims**

27. An aqueous dispersion of a urea-formaldehyde resin precursor having a molar ratio of formaldehyde to urea in the range from about 3.25:1 to about 2.5:1, said dispersion being characterized by having a solids content in the range 62% to 69%, a pH of 7.2 to 8.0, and a viscosity not in excess of about 200 cps as measured on a Brookfield Viscometer Model RVF, No. 1 spindle, at 20 rpm and at 25° C., after storage, following its production, for 102 days at a temperature of 72° F.

4,501,852

STABLE, AQUEOUS DISPERSIONS OF POLYURETHANE-UREAS

Peter H. Markusch, McMurray; James W. Rosthauser, Imperial, and Michael C. Beatty, Pittsburgh, all of Pa., assignors to Mobay Chemical Corporation, Pittsburgh, Pa.

Filed Jun. 20, 1983, Ser. No. 505,600

Int. Cl.³ C08L *75/12*

U.S. Cl. 524—591 **17 Claims**

1. A stable, aqueous dispersion of polyurethane-ureas wherein said polyurethane-ureas contain

(i) about 10 to 120 milliequivalents per 100 grams of said polyurethane-ureas of chemically incorporated anionic groups, and

(ii) up to about 10% by weight, based on the weight of said polyurethane-ureas, of lateral and/or terminal hydrophilic chains, containing ethylene oxide units, wherein the counterions of said anionic groups are a mixture of volatile and nonvolatile cations in an equivalent ratio of about 1:4 to 4:1.

4,501,853

EPOXY RESIN COMPOSITION AND METHOD FOR THE PREPARATION OF THE SAME

Masaru Sugimori; Koichiro Sanji, both of Takatsuki; Hirohide Tomoyasu, Moriyama, and Toshimori Sakakibara, Shiga, all of Japan, assignors to Sunstar Giken Kabushiki Kaisha, Osaka, Japan

Filed Sep. 29, 1982, Ser. No. 428,160

Claims priority, application Japan, Nov. 26, 1981, 56-190103

Int. Cl.³ C08L *9/00, 63/00, 75/04, 81/04*

U.S. Cl. 525—122 **8 Claims**

1. A curable epoxy resin composition which comprises 100 parts by weight of an epoxy resin which is liquid at room temperature or at an elevated temperature and 0.05 to 60 parts by weight of vulcanized rubber particles having a particle size of 0.5 to 30μ, said composition made by vulcanizing with a vulcanizing agent at an elevated temperature a dispersion in the epoxy resin of fine particles of a liquid rubber immiscible at that elevated temperature with the epoxy resin, wherein said epoxy resin remains uncured at the time of the vulcanization of said rubber particles.

6. A method for the preparation of a curable epoxy resin composition, which comprises the steps of heating an epoxy resin, to form a liquid epoxy resin adding thereto a liquid rubber incompatible with the epoxy resin in an amount of 0.05 to 60 parts by weight per 100 parts by weight of the epoxy resin, stirring the mixture and thereby dispersing the liquid rubber in the liquid epoxy resin, and vulcanizing the rubber with a vulcanizing agent to form a dispersion of solid fine particles of vulcanized rubber having a particle size of 0.5 to 30μ in said liquid epoxy resin.

4,501,854

AMINOPLAST CURABLE COMPOSITIONS CONTAINING DISULFONIC ACID ESTERS AS LATENT ACID CATALYSTS

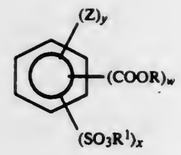
Debra L. Singer, Pittsburgh; Gregory J. McCollum, Glenshaw, and Rostyslaw Dowbenko, Gibsonia, all of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Nov. 14, 1983, Ser. No. 551,388

Int. Cl.³ C08L *61/28*

U.S. Cl. 525—162 **9 Claims**

1. In a curable composition capable of acid catalyzed cross-linking, comprising an active hydrogen-containing resin, a curing agent present externally and/or internally as a part of the active hydrogen-containing resin, and an acid catayst, wherein the improvement comprises using as the acid catalyst a catalytic amount of a sulfonate represented by the following structural formula:



wherein:

Z is a radical independently selected from C_1 to C_{20} alkyl, C_3 to C_{20} cycloalkyl, C_6 to C_{18} aryl, halogen, alkoxy, hydroxyl, and aryloxy;

R is independently selected from hydrogen, C_1 to C_{20} alkyl, C_3 to C_{20} cycloalkyl, and C_6 to C_{18} aryl;

R^1 is independently selected from C_1 to C_{20} alkyl, C_3 to C_{20} cycloalkyl, hydroxyalkyl, and hydroxycycloalkyl;

y is an integer from 0 to 4,

w is an integer from 0 to 2, and

x is an integer from 1 to 3, with the proviso that when w is 0, y is an integer from 1 to 4 and x is an integer from 2 to 3 and when y is 0, w is an integer from 1 to 2 and x is an integer from 1 to 3.

4,501,855

COMB CATIONIC POLYMERS AND AQUEOUS DISPERSIONS THEREOF

Gerry K. Noren, Hoffman Estates, Ill., assignor to DeSoto, Inc., Des Plaines, Ill.

Filed Oct. 29, 1981, Ser. No. 316,960

Int. Cl.³ C08L *33/26*

U.S. Cl. 525—218 **14 Claims**

1. A comb cationic polymer constituted by an amine polymer rendered cationic and water dispersible with the aid of a solubilizing acid, said amine polymer being the product of reaction of: (1) a soluble reactive polymer having an average molecular weight in the range of about 500 to about 10,000 and having a plurality of functional groups reactive with carboxyl or amino hydrogen functionality; with (2) a solution addition copolymer of monoethylenically unsaturated monomers containing copolymerized tertiary amine monomer, said copolymer being terminated with a single carboxy group or a single amino hydrogen atom, and said copolymer being free of reactive groups capable of reacting with the functional groups of said soluble polymer, except for said single carboxyl group or single amino hydrogen atom, and said copolymer being used in an amount of at least 10% of the weight of said soluble polymer and being substantially completely reacted therewith.

4,501,856

COMPOSITE CONTAINING POLYOLEFIN FIBER AND POLYOLEFIN POLYMER MATRIX

Gary A. Harpell, Morristown; Sheldon Kavesh, Whippany; Igor Palley, Madison, and Dusan C. Prevorsek, Morristown, all of N.J., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Filed Mar. 19, 1982, Ser. No. 359,974

Int. Cl.³ C08L *23/06, 23/12*

U.S. Cl. 525—240 **15 Claims**

1. A composite structure comprising:

(a) a network of polyolefin fibers selected from the group consisting of polyethylene and polypropylene fibers having a weight average molecular weight of at least about 500,000, a tenacity of at least about 15 g/denier and a main melting point of at least about 140° C. for polyethylene fiber, and a tenacity of at least about 11 g/denier and a main melting point of at least about 168° C. for polypropylene fiber; and

(b) a matrix comprising a polymer having polyethylene or polypropylene crystallinity with a melting or sticking point at least 3° C. lower than the melting point of the polyolefin fiber;

said composite structure having a tenacity at least 75% of the volume average tenacity of the polyolefin fiber network and the polymer matrix.

4,501,857

METHOD FOR HYDROGENATION OF POLYMER

Yasushi Kishimoto, Ayase, and Hideo Morita, Yokohama, both of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Jan. 6, 1984, Ser. No. 568,692

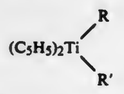
Claims priority, application Japan, Jan. 20, 1983, 58-6718; Oct. 7, 1983, 58-186983

Int. Cl.³ C08F *8/04*

U.S. Cl. 525—338 **31 Claims**

1. A method for the hydrogenation of a conjugated diene polymer in an inert organic solvent, said polymer being obtained by polymerization or copolymerization of a conjugated diene, which comprises effecting selective hydrogenation of unsaturated double bonds in the conjugated diene units of said conjugated diene polymer in the presense of:

(A) at least one bis-(cyclopentadienyl)titanium compound represented by the formula:



wherein R and R′ denote the same or different moieties selected from the group consisting of C_1–C_8alkyl and alkoxy groups, C_6–C_8aryl, aryloxy, aralkyl and cycloalkyl groups, halogen groups, and carbonyl groups, and

(B) at least one hydrocarbon lithium compound having at least one lithium atom ion

as catalysts, with the molar ratio of lithium atoms to titanium atoms being from 0.1 to 100.

4,501,858

ACCELERATORS FOR VULCANIZING VINYLIDENE FLUORIDE ELASTOMERIC COPOLYMERS

Giovanni Moggi, Milan, Italy, assignor to Montedison S.p.A., Milan, Italy

Filed Mar. 21, 1984, Ser. No. 591,994

Claims priority, application Italy, Mar. 22, 1983, 20196 A/83

Int. Cl.³ C08J *3/24*

U.S. Cl. 525—340 **4 Claims**

1. A vulcanizable fluoroelastomeric composition, comprising:

(A) a copolymer of elastomeric nature based on vinylidene fluoride and of at least another fluorinated monomer,

(B) a substance having the property of neutralizing acids, selected from amongst the oxides of divalent metals, the hydroxides of divalent metals and mixtures of such oxides and hydroxides with metal salts of weak acids,

(C) a polyhydroxyl aromatic compound suited to act as a vulcanizing agent for the copolymer,

and characterized in that it contains, as a vulcanization accelerator, a compound having the structure of bis(triarylphosphin)-iminium salt of general formula:

$$[Ar_3P{=}N{=}N\ Ar_3]_n{}^+.X^{n-}$$

wherein Ar is an aryl radical, n=1 or 2, X is a monovalent or divalent anion.

4,501,859

PROCESS FOR THE MANUFACTURE OF HALOGENATED POLYMERS

Neil F. Newman, Edison, and Ronald C. Kowalski, New Providence, both of N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Continuation-in-part of Ser. No. 481,369, Apr. 1, 1983, Pat. No. 4,486,575, which is a continuation-in-part of Ser. No. 306,882, Sep. 30, 1981, Pat. No. 4,384,072. This application Apr. 1, 1983, Ser. No. 481,279

The portion of the term of this patent subsequent to May 17, 2000, has been disclaimed.

Int. Cl.³ C08F *8/22*

U.S. Cl. 525—356 **48 Claims**

1. A process for the continuous production of halogenated polymer by reacting said polymer and a halogenating agent in an extruder-reactor, said extruder-reactor comprising feed zone (A), reaction zone (B) and neutralization zone (C) in sequence; screw means traversing zones (A) through (C); first flow restriction means following said feed zone; injection means for supplying said halogenating agent to said reaction zone; mixing means for subjecting said polymer in said reaction zone to a high degree of mixing; second flow restriction means disposed between said reaction zone and said neutralization zone; and injection means for supplying neutralizing agent to the product mixture produced in said reaction zone; further comprising subjecting polymer in said feed zone to conditions of temperature and pressure sufficient to generate a cohesive mass; conveying said mass past said first restriction means to said reaction zone; halogenating said polymer in said reaction zone by injecting said halogenating agent at a position filled with said polymer and subjecting the reactants to a high degree of mixing; conveying said product mixture past said second restriction means; injecting said neutralizing agent and neutralizing said product mixture with said neutralizing agent in said neutralizing zone; and delivering said halogenated polymer product from the extruder-reactor.

4,501,860

REAGENTS FOR GRAFT COPOLYMERS

David S. Campbell; Andrew J. Tinker, and Peter G. Mente, all of Hertfordshire, England, assignors to The Malaysian Rubber Producers' Research Association, England

Filed May 4, 1982, Ser. No. 374,866

Claims priority, application United Kingdom, May 7, 1981, 8113986

Int. Cl.³ C08K *5/23*; C08L *25/04, 33/08, 83/04*

U.S. Cl. 525—359.4 **8 Claims**

1. A method of preparing an azodicarboxylate-functional polymer by mixing a hydroxyl-functional polymer with a compound having the formula:

$$ZCO.N(H)_x.N(H)_x.CO.OR$$

where ZCO—is a carboxylic acid derivative reactive towards hydroxyl groups, wherein 2 is halogen or aryloxy

x is 0 or 1, and

R is a C_1 to C_{12} primary or secondary straight- or branched-chain alkyl, cycloalkyl, aralkyl, aryl or alkaryl group;

in an anhydrous organic reaction medium which is a solvent for the reactants; maintaining the mixture under conditions to effect reaction between the polymer and the compound; when x is 1, oxidizing the hydrazo group of the product to an azo group; and recovering the resulting azodicarboxylate-functional polymer.

4,501,861

THERMOPLASTIC POLYAMIDE COMPOSITIONS

James C. Woodbrey, Chesterfield, Mo., assignor to Monsanto Company, St. Louis, Mo.

Continuation-in-part of Ser. No. 437,990, Nov. 1, 1982, abandoned. This application Jan. 31, 1983, Ser. No. 462,248

The portion of the term of this patent subsequent to Aug. 24, 1999, has been disclaimed.

Int. Cl.³ C08L *77/00*

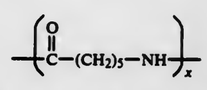
U.S. Cl. 525—421 **35 Claims**

1. A composition comprising:

(a) poly(ε-caprolactam) resin of viscosity average molecular weight of at least about 15,000; and

(b) at least one block polymer having

(i) from about 25 to about 80 weight percent poly(ε-caprolactam) segments of the formula:



wherein x is an integer equal to 5 or more; and

(ii) from about 75 to about 20 weight percent of segments having a number average molecular weight of at least 300 selected from the group consisting of segments of poly(-propylene oxide), polycaprolactone, polytetrahydrofuran, polybutadiene, polyisoprene, polyisobutylene, poly(C-$_1$–C_8 alkylene acrylate), poly(C_1–C_4 dialkylene siloxane), poly(ethylene-co-propylene), poly(ethylene-co-carbon monoxide), and combinations thereof; said (ii) segments being connected to an (i) polyamide segment through groups selected from amide, ester, urea, carbamate, and imides;

provided that the composition contains from about 15 to about 85 weight percent of Component (a) and from about 85 to about 15 weight percent of Component (b).

4,501,862

WET STRENGTH RESIN FROM AMINOPOLYAMIDE-POLYUREYLENE

Gerald I. Keim, West Grove, Pa., assignor to Hercules Incorporated, Wilmington, Del.

Continuation-in-part of Ser. No. 497,362, May 23, 1983, abandoned. This application Aug. 26, 1983, Ser. No. 526,304

Int. Cl.³ C08G *69/48*

U.S. Cl. 525—430 **13 Claims**

1. A process for preparing an aqueous solution of a water-soluble, cationic thermosetting resin which process comprises reacting methylbisaminopropylamine with (a) oxalic acid or a lower alkyl diester of oxalic acid and (b) urea to form an aminopolyamide-polyureylene intermediate containing tertiary amine groups, the mole ratio of (a) to (b) being from about 0.1:1 to about 10:1 and the mole ratio of methylbisaminopropylamine to (a) plus (b) being from about 0.9:1 to about 1.2:1, and reacting the intermediate in aqueous solution with from about 1 mole to about 1.5 moles of an epihalohydrin per mole of tertiary amine groups present in said intermediate.

4,501,863

POLYCARBOXYLIC ACID RESINOUS COMPOSITION, ITS PREPARATION AND COATING COMPOSITION CONTAINING THE SAME

Hirotoshi Umemoto; Hisaki Tanabe, both of Kyoto; Mitsuo Yamada, and Shinji Nakano, both of Osaka, all of Japan, assignors to Nippon Paint Co., Ltd., Japan

Filed Dec. 30, 1983, Ser. No. 567,313

Claims priority, application Japan, Dec. 30, 1982, 57-232900

Int. Cl.³ C08F *283/00*; C08G *63/76*; C08L *61/00*

U.S. Cl. 525—443 **4 Claims**

1. A resinous composition for coating use comprising a resin having a resinous acid value derived from polycarboxylic acid whose titration midpoint potential in non-aqueous potentiometric titration is more than −300 mV under the state capable of developing resinous acid value, of 2 to 50 and having a functional group reactive with crosslinking agent.

4,501,864

POLYMERIZABLE COMPOSITIONS COMPRISING POLYAMINES AND POLY(DIHYDROBENZOXAZINES)

Harold P. Higginbottom, Wilbraham, Mass., assignor to Monsanto Company, St. Louis, Mo.

Filed Dec. 22, 1983, Ser. No. 564,638

Int. Cl.³ C08G *73/06*

U.S. Cl. 525—484 **29 Claims**

1. A polymerizable composition comprising a poly(3,4-dihydro-3-substituted-1,3-benzoxazine) and a reactive polyamine or polyamine generating compound, wherein the poly(dihydrobenzoxazine) is of number average molecular weight in the range of about 250 to about 2000, with the majority of the individual molecules containing at least two dihydrobenzoxazine groups, and is the reaction product of about 1 equivalent of a primary amine selected from the group consisting of mono- and poly-primary amines, about 1 equivalent of a phenol selected from the group consisting of mono- and poly-phenols having phenolic hydroxy groups with at least one unsubstituted position ortho to such hydroxy groups and about 2 equivalents of formaldehyde, and wherein the reactive polyamine is at least difunctional and its reactive groups are primary or secondary amine.

4,501,865

POLYMERIZATION PROCESS

Joachim König; Carlhans Süling, both of Odenthal, and Siegfried Korte, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jun. 20, 1983, Ser. No. 505,655

Claims priority, application Fed. Rep. of Germany, Jul. 8, 1982, 3225521; Oct. 7, 1982, 3237076

Int. Cl.³ C08F *2/16*

U.S. Cl. 526—71 **9 Claims**

1. A process for the bead polymerisation or precipitation polymerization of vinyl monomers in heterogeneous aqueous phase comprising adding liquids to the reaction medium for the removal of heat and to regulate the reaction temperature which liquids are chlorohydrocarbon, chlorofluorohydrocarbon or fluorohydrocarbon, are immiscible with the reaction mixture, do not dissolve the polymer under the reaction conditions and the boiling temperatures of which are lower than the technically predetermined reaction temperatures under the polymerization conditions applied, and removing the heat which is released in the reaction system by evaporation of these liquids.

4,501,866

CONTINUOUS METHOD FOR PREPARING HIGH CIS-1,4 POLYBUTADIENE

David M. Roggeman; Shrikant R. Malani, both of Akron, and Jung W. Kang, Clinton, all of Ohio, assignors to The Firestone Tire & Rubber Company, Akron, Ohio

Filed Jul. 23, 1984, Ser. No. 633,814

Int. Cl.³ C08F *4/82*

U.S. Cl. 526—133 **18 Claims**

1. A method for preparing high cis-1,4 polybutadiene by a continuous polymerization process which comprises continuously polymerizing 1,3-butadiene in solution under adiabatic conditions, said method comprising the steps of:

(I) feeding continuously to a single agitated polymerization reactor:

(a) a monomer stream comprising 1,3-butadiene in a hydrocarbon solvent;

(b) a preformed π allyl catalyst stream formed by admixing a carboxylated metal oxy borate compound represented by the formulae $(RCOOMO)_3B$ or (RCOO-

$MO)_2B$-OR' wherein R and R' are alkyl radicals containing from 7 to 17 carbon atoms and M is nickel or cobalt, an organoaluminum compound, an alcohol, a small amount of 1,3-butadiene and a hydrocarbon solvent; and

(c) a cocatalyst stream comprising a boron trifluoride complex with an alcohol; and

(II) withdrawing continuously from said reactor high cis-1,4 polybutadiene at the same rate as said monomer, preformed catalyst and cocatalyst streams are fed to the reactor.

4,501,867

METHOD FOR PRODUCING A POLYBUTADIENE MATERIAL

Haruo Ueno, Chiba; Hidetomo Ashitaka, Ichihara, and Koichi Nakajima, Chiba, all of Japan, assignors to Ube Industries, Ltd., Yamaguchi, Japan

Filed Oct. 7, 1983, Ser. No. 539,999

Claims priority, application Japan, Oct. 14, 1982, 57-179150

Int. Cl.³ C08L *61/00*

U.S. Cl. 526—136 **16 Claims**

1. A method for producing a polybutadiene material, comprising the steps of:

subjecting a solution containing 1,3-butadiene dissolved in a polymerization solvent to a 1,2-polymerization in the presence of a 1,2-polymerization catalyst consisting essentially of (A) a cobalt catalytic component consisting of at least one cobalt compound soluble in the polymerization solvent, (B) an aluminum catalytic component consisting of at least one organic aluminum halide, (C) a magnesium catalytic component consisting of at least one organic magnesium compound, and (D) a sulfur catalytic component consisting of at least one member selected from the group consisting of carbon disulfide and phenyl isothiocyanate; and isolating the resultant polybutadiene material from the 1,2-polymerization mixture.

4,501,868

SUPERIOR SOLVENT BLENDS FOR SYNTHESIS OF ACRYLIC RESINS FOR HIGH SOLIDS COATINGS

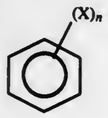
Constantine J. Bouboulis, Union, and Irving Kuntz, Linden, both of N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Jun. 28, 1982, Ser. No. 393,080

Int. Cl.³ C08F *2/06, 220/20*

U.S. Cl. 526—208 **12 Claims**

1. An improved process for forming acrylic copolymer resins which comprises effecting a polymerization reaction by contacting under polymerization conditions, a monomer mixture comprising from about 5 to 30 wt.%, based on said monomer mixture, of at least one hydroxy-substituted alkyl(meth)acrylate monomer and from about 5 to 95 wt.%, based on said monomer mixture, of at least one non-hydroxy substituted alkyl(meth)acrylate monomer, in the presence of a free radical initiator and a solvent therefor, said solvent comprising a blend of from about 35 to 80 wt.%, methyl isobutyl ketone and, as the balance thereof, at least one alkyl-substituted benzene solvent comprising at least one aromatic compound of the formula:



wherein n is an integer of from 1 to 4, and X is in each instance in which it appears independently selected from the group consisting of straight and branched-chain alkyl of from 1 to 4 carbon atoms, with the proviso that when n is 1, the X groups must contain a total of at least 2 carbon atoms and with the further proviso that when n is 2 or higher, the X groups must contain a total of at least 3 carbon atoms, and mixtures of the foregoing aromatic compounds, said hydroxy substituted alkyl(meth)acrylate monomer and said non-hydroxy substituted alkyl(meth)acrylate monomer comprising at least about 60 wt.% of said monomer mixture.

4,501,869

CROSS LINKABLE FLUORINE-CONTAINING POLYMER

Masayoshi Tatemoto, Ibaraki; Masahiko Oka, Ohtsu; Hideo Kano, Settsu; Masayasu Tomoda, Ohtsu, and Yutaka Ueta, Toyonaka, all of Japan, assignors to Daikin Kogyo Co., Ltd., Osaka, Japan

Filed Jul. 26, 1983, Ser. No. 517,334

Claims priority, application Japan, Jul. 27, 1982, 57-130781

Int. Cl.³ C08F *214/16*

U.S. Cl. 526—249 **28 Claims**

1. An easily cross linkable fluorine-containing polymer comprising: (1) a polymeric chain comprising one or more polymer segments, at least one polymer segment of which consists of units of at least one fluorine-containing ethylenically unsaturated compound having 2 to 8 carbon atoms, or units of said fluorine-containing ethylenically unsaturated compound and at least one other monomer selected from the group consisting of a fluorine-free ethylenically unsaturated compound having 2 to 4 carbon atoms and a fluorine-containing diene having 4 to 8 carbon atoms, (2) at least one bromine atom linked to a terminal carbon atom liberated from a brominated compound of the formula: RBr_x, wherein R is a saturated hydrocarbon residue and x is a number corresponding to the bonding valency of the residue, in an amount of 0.001 to 10% by weight based on the polymer weight and (3) a fragment of the brominated compound excluding said liberated bromine atom therefrom bonded to the polymeric chain, said polymer being prepared by polymerizing said fluorine-containing ethylenically unsaturated compound with or without said other monomer in the presence of a radical producing source and said brominated compound in at least one step.

4,501,870

FINE PARTICLES OF POLYVINYL CHLORIDE AND PROCESS FOR PRODUCING THE SAME

Kunizoh Kidoh; Hideki Wakamori; Fujio Suzuki, and Takao Iwasaki, all of Iwaki, Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed May 24, 1984, Ser. No. 614,223

Claims priority, application Japan, May 24, 1983, 58-91028

Int. Cl.³ C08F *114/06*

U.S. Cl. 526—344.1 **2 Claims**

1. A process for producing fine particles of polyvinyl chloride, which comprises subjecting vinyl chloride to bulk polymerization in the presence of a dispersion stabilizer under gentle stirring without causing sedimentation or agglomeration of the polymer particles formed, wherein the polymerization is terminated at a polymerization yield of 5 to 30% thereby to obtain fine particles of polyvinyl chloride comprising substantially discrete spherical particles with particle sizes of 0.2 to 2 microns, which are characterized in that a plastisol prepared by adding 80 parts by weight of dioctyl phthalate to 100 parts by weight of said particles has a viscosity of 50,000 centipoise or less (measured by a B-type viscometer, No. 4 rotor, 12 rpm, 25° C.).

4,501,871

PROCESS FOR THE PRODUCTION OF ANHYDRIDE-GROUP- OR CARBOXYL-GROUP-CONTAINING GRAFT COPOLYMERS OF POLYSACCHARIDE ESTERS

Herbert Bartl, Odenthal; Heinrich Alberts, Cologne, and Klaus Schuster, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Continuation of Ser. No. 325,845, Nov. 30, 1981, abandoned. This application Dec. 20, 1983, Ser. No. 563,660

Claims priority, application Fed. Rep. of Germany, Dec. 3, 1980, 3045487

Int. Cl.³ C08G *63/00*; C08L *1/10, 3/06, 5/00*

U.S. Cl. 527—313 **2 Claims**

1. A process for producing a graft copolymer which comprises radically polymerizing in homogeneous solution 0.1 to 2 parts by weight of a monomer mixture of

(a) 1 mole of a vinyl ester of a C_1–C_{18}-monocarboxylic acid and

(b) from 0.5 to 3 moles of maleic acid anhydride and/or a semiester of maleic acid and/or fumaric acid with aliphatic C_1–C_{24}-monoalcohols in the presence of one part by weight of a polysaccharide ester of an aliphatic C_1–C_5-monocarboxylic acid and in the presence of a catalytic amount of a radical initiator selected from the group consisting of organic peroxides, peroxydicarbonates, readily decomposable azo compounds and short-wave radiation.

4,501,872

MOISTURE CURABLE COMPOSITIONS CONTAINING REACTION PRODUCTS OF HYDROPHOBIC POLYOLS AND ORGANOSILICON-CONTAINING MATERIALS

Wen-Hsuan Chang; David T. McKeough, both of Gibsonia, and John R. Peffer, Pittsburgh, all of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Jan. 31, 1983, Ser. No. 462,573

The portion of the term of this patent subsequent to Aug. 21, 2001, has been disclaimed.

Int. Cl.³ C08G *77/06, 77/04*

U.S. Cl. 528—18 **18 Claims**

1. A liquid composition comprising a reaction product prepared by reacting:

(A) at least one hydrophobic polyol; and

(B) an organosilicon-containing material comprising

(1) at least one organosilicon-containing substance free of functional groups attached to carbon and essentially free of alkali metal ions, having atoms bonded directly to Si, all of said atoms being selected from O, N, and/or Cl, said organosilicon-containing substance additionally having moieties directly bonded to Si which are displaceable by reaction with water and/or alcohol, wherein at least a part of said organosilicon-containing substance is hydrolyzed to a compound or a mixture of compounds, said compound or mixture of compounds containing a residual amount of said moieties directly bonded to Si which are displaceable;

(2) optionally a nonfunctional organosilane, a hydrolyzed nonfunctional organosilane, or a mixture thereof; and

(3) optionally a functional organosilane, a hydrolyzed functional organosilane, or a mixture thereof;

wherein said reaction product has a ratio of milliequivalents of said residual moieties which are displaceable to milliequivalents of hydroxyl moieties from said polyol greater than 1, is capable of self curing to a continuous film in the presence of moisture, and remains ungelled when subjected to a three-step gel test consisting of (1) heating a 10 gram sample of said reaction product in a glass jar covered with a cap at 149° C. for 120 minutes, followed by (2) heating said sample at 149° C. for 120 minutes, in the presence of 0.5 grams of stannous octoate in said glass jar with a vent hole covered by a piece of masking tape in said cap, followed by (3) repeating step 2 except that no additional stannous octoate is introduced into said sample and said heating is conducted at a temperature of 204° C.

4,501,873

PREPARATION OF POLYAMINES BY HYDROLYZING A POLYISOCYANATE IN THE PRESENCE OF AN ISOCYANATE-REACTIVE COMPOUND WITH WATER

Werner Rasshofer, Cologne, Fed. Rep. of Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Nov. 25, 1983, Ser. No. 555,241

Claims priority, application Fed. Rep. of Germany, Dec. 4, 1982, 3244913

Int. Cl.³ C08G *18/82*

U.S. Cl. 528—48 **15 Claims**

1. A process for the preparation of relatively high molecular weight aromatic polyamines linked by urethane groups to segments of relatively high molecular weight compounds comprising

(a) hydrolyzing

(i) a polyisocyanate having an isocyanate content of from 21 to 52.5 wt. % which polyisocyanate is not a preformed isocyanate prepolymer or semiprepolymer in presence of

(ii) an isocyanate-reactive group-containing compound having a molecular weight of from 400 to 10,000 at an isocyanate to isocyanate-reactive group equivalent ratio of from 0.1 to 5 mixed with

(iii) water in an amount such that the equivalent ratio of water to isocyanate groups is greater than 1 and

(iv) a basic catalyst and

(b) isolating the product amine from the reaction mixture of (a).

4,501,874

2,3-EPOXY CARBAMATES

Joseph W. Hanafin, Framingham, Mass., assignor to The Dow Chemical Company, Midland, Mich.

Filed May 2, 1984, Ser. No. 606,055

Int. Cl.³ C08G *59/26, 59/28*

U.S. Cl. 528—103 **42 Claims**

1. A novel compound comprising one or more 2,3-epoxyalkyl carbamate moieties; wherein the carbamate nitrogen atom is tertiary, and the carbamate nitrogen atom is substituted by a alicyclic or aliphatic moiety or is part of a heterocyclic ring, wherein the heterocyclic ring can contain an oxygen or sulfur atom or may contain a tertiary nitrogen atom of a 2,3-epoxyalkyl carbamate moiety; or wherein two or more 2,3-epoxyalkyl carbamates are linked by an aliphatic or alicyclic moiety.

4,501,875

POLYCARBONATE FROM CARBONYL HALIDE, BISCHLOROFORMATE AND DIHYDRIC PHENOL

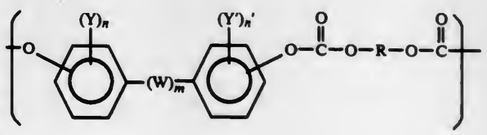
Victor Mark, Evansville, Ind., assignor to General Electric Company, Mt. Vernon, Ind.

Filed Aug. 23, 1982, Ser. No. 410,311

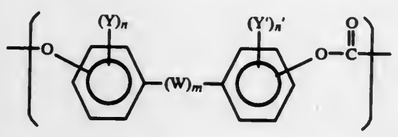
Int. Cl.³ C08G *63/62*

U.S. Cl. 528—196 **14 Claims**

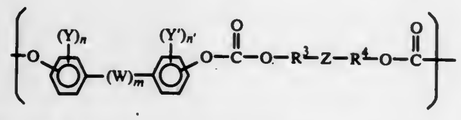
1. High molecular weight thermoplastic aromatic polycarbonate exhibiting improved processability consisting essentially of at least one recurring structural unit represented by the general formula



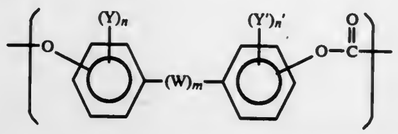
and at least one recurring structural unit represented by the general formula



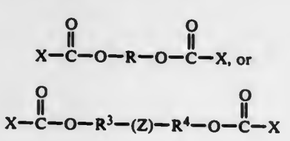
or at least one recurring structural unit represented by the general formula



and at least one recurring structural unit represented by the general formula



derived from (i) a carbonyl halide carbonate precursor; (ii) at least one dihydric phenol; and (iii) at least one bishaloformate selected from bishaloformates represented by the general formulae

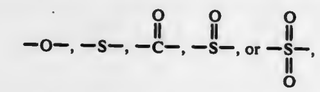


wherein:

Y is independently selected from halogen, monovalent hydrocarbon or monovalent hydrocarbonoxy radicals,

Y′ is independently selected from halogen, monovalent hydrocarbon or monovalent hydrocarbonoxy radicals,

W is selected from divalent hydrocarbon radicals,

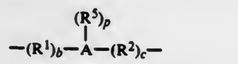


n and n′ are independently selected from whole numbers having a value of from 0 to 4 inclusive,

m is either zero or one,

X is independently selected from chlorine or bromine radicals,

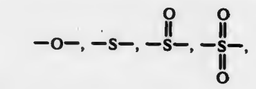
R is selected from alkylene radicals, cycloalkylene radicals, or divalent radicals represented by the general formula



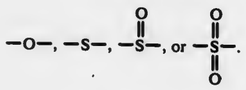
wherein R^1 and R^2 are independently selected from alkylene radicals, R^5 is independently selected from alkyl radicals, A represents a cycloalkylene radical, the letters b and c are independently selected from zero or one, with the proviso that the sum of b and c is at least one, and p represents a whole number having a value of from zero up to the number of replaceable hydrogen atoms present on A,

R^3 and R^4 are independently selected from alkylene radicals, and

Z is selected from the following divalent radicals



the $-(R^6)_d-Ar-(R^7)_e-$ radical wherein Ar represents a divalent mono, di- or polynuclear aromatic residue, R^6 and R^7 are independently selected from alkylene radicals, and the letters d and e are independently selected from zero or one, or a divalent organic aliphatic hetero noncyclic radical containing at least one carbon atom and at least one hetero group selected from



4,501,876

FILM-FORMING POLY(CONJUGATED POLYMETHINE-TYPE)DYE

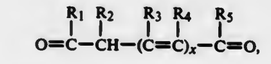
George E. Zahr, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 514,890, Jul. 18, 1983, abandoned. This application Mar. 1, 1984, Ser. No. 585,107

Int. Cl.³ C08G *12/08*

U.S. Cl. 528—232 23 Claims

1. A film-forming poly (conjugated polymethine-type) dye which is the polycondensation reaction product in the presence of a strong protic acid of an aromatic polyamine and a dicarbonyl compound corresponding to the formula:



in which R_1 and R_5 are independently selected from the group consisting of —H, C_{1-4} alkyl, phenyl, C_{7-12} aralkyl, C_{7-12} alkaryl and C_{5-8} cycloalkyl and, when R_1 and R_5 are combined, C_{2-5} alkylene, thus forming a C_{5-8} member ring, R_2, R_3 and R_4 are independently selected from the group consisting of —H, C_{1-3} alkyl and halogen, and χ is either 0 or an integer of 1 to 3.

4,501,877

HIGHER MOLECULAR WEIGHT POLYESTERS FROM DIACID ANHYDRIDES AND CYCLIC ALKYLENE CARBONATES

David R. Fagerburg, Kingsport, Tenn., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 5, 1983, Ser. No. 558,391

Int. Cl.³ C08G *63/00*

U.S. Cl. 528—271 7 Claims

1. The process for preparing a polyester of increased molecular weight, comprising contacting in a reaction system at from about 100° C. to about 230° C. at least one diacid anhydride with at least one cyclic alkylene carbonate, wherein the reaction system contains less than about 0.1% by weight of water and the percent of opened anhydride rings is less than 5.0 percent, for a sufficient period to give an inherent viscosity of above about 0.1 as determined according to ASTM D2857-70 procedure, at 25° C. using a polymer concentration of 0.5% by weight in 60/40 by weight of phenol/tetrachloroethane.

4,501,878

PROCESS FOR THE PREPARATION OF HIGH MOLECULAR WEIGHT POLYESTERS

L. Jane Adams, Kingsport, Tenn., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jan. 30, 1984, Ser. No. 575,371

Int. Cl.³ C08G *63/04, 63/38*

U.S. Cl. 528—286 9 Claims

1. In the process for the preparation of high molecular weight linear polyester by the steps of

(a) reacting dimethyl terephthalate with a glycol containing up to about 8 carbon atoms in the presence of a transesterification catalyst to form a bis-dihydroxy ester prepolymer,

(b) polycondensing said prepolymer in the presence of one or more phosphorous-containing compounds and a transition metal containing polycondensation catalyst which is active in the presence of said phosphorous compound,

the improvement comprising employing a transesterification catalyst which is substantially inactive in the presence of said phosphorous-containing compound and introducing said phosphorous compound into the polycondensation reaction zone after first polycondensing said prepolymer until a low molecular weight linear polyester having an average degree of polymerization of about 2 to about 10 is obtained and polycondensing in the presence of said phosphorous compound until a linear polyester having an inherent viscosity of about 0.35 to about 0.8 is obtained.

4,501,879

POLYESTERAMIDES AND CONTAINERS HAVING IMPROVED GAS BARRIER PROPERTIES FORMED THEREFROM

Robert B. Barbee; Roy K. Bass; Burns Davis, all of Kingsport, and Larry A. Minnick, Bluff City, all of Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 26, 1984, Ser. No. 593,057

Int. Cl.³ C08G *63/44*

U.S. Cl. 528—288 40 Claims

1. A novel polyesteramide having improved gas barrier properties which comprises the reaction product of

(A) a diamine having 2 to about 20 carbon atoms;

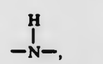
(B) a diol containing up to about 24 carbon atoms; and

(C) a dicarboxylic acid component consisting essentially of

(i) about 5 to 100 mole percent of a first, heteroatom-containing dicarboxylic acid of the formula

$HO_2CCH_2X(RX)_yCH_2CO_2H$

wherein X represents —O—, —S—, or



y is 0 or 1, and R represents an aromatic moiety comprising 6 to about 24 carbon atoms, and

(ii) 0 to about 95 mole percent of a second dicarboxylic acid containing up to about 24 carbon atoms,

wherein component (A) comprises about 10 to 90 mole percent of the total of components (A) and (B) in said polyesteramide.

8. The polyesteramide of claim 1 wherein said diol comprises an aliphatic glycol.

4,501,880

COPOLYOXADIAZOLE-IMIDE CONTAINING 5-TERTIARY BUTYL PHENYLENE MOIETY

James R. Stephens, Naperville, Ill., assignor to Standard Oil Company (Indiana), Chicago, Ill.

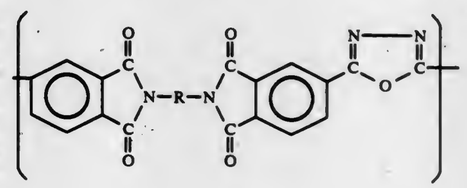
Continuation-in-part of Ser. No. 424,607, Sep. 27, 1982, abandoned. This application Dec. 30, 1983, Ser. No. 567,083

Int. Cl.³ C08G *73/08*

U.S. Cl. 528—322 52 Claims

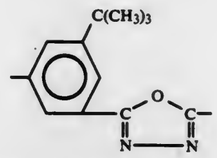
1. A moldable copolyoxadiazole-imide comprising the following repeating structural units:

A.



and

B.



wherein the mole ratio of A to B is about 1:99 to about 99:1 and wherein R is an aliphatic or aromatic radical.

4,501,881

PREPARATION OF POLYAMIDE BY CONTACTING DIAMINE, DINITRILE, WATER, DICARBOXYLIC ACID

Janice L. Greene, Chagrin Falls, and Roman Loza, Solon, both of Ohio, assignors to The Standard Oil Company, Cleveland, Ohio

Filed Apr. 5, 1982, Ser. No. 365,808

Int. Cl.³ C08G *69/00*

U.S. Cl. 528—336 10 Claims

1. A process for preparing a polyamide comprising contacting a diamine, a dinitrile and water in the presence of a dicarboxylic acid.

4,501,882

BATCH PROCESS FOR PREPARING 6TA/6IA COPOLYMERS HIGH IN 6TA

LeMoyne W. Plischke, Lillian, Ala., assignor to Monsanto Company, St. Louis, Mo.

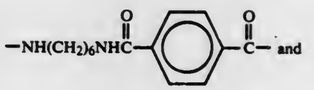
Filed Nov. 16, 1983, Ser. No. 552,531

Int. Cl.³ C08G *69/28*

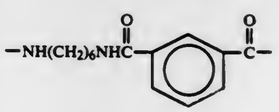
U.S. Cl. 528—336 11 Claims

1. In a process for preparing successive batches of a random copolyamide consisting essentially of the following recurring units

(a)



and



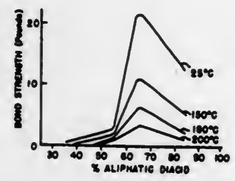
wherein each batch of said copolyamide is prepared by heating an aqueous solution consisting essentially of a mixture of hexamethylene diammonium terephthalate (6TA salt) and hexamethylene isophthalate (6IA salt) in a weight ratio of 6TA salt to 6IA salt ranging from about 45:55 to 80:20 in a vessel closed to the atmosphere wherein said heating is conducted under controlled conditions of time, temperature and pressure to remove water from the vessel, effect polymerization of said salts and provide said copolyamide in the molten state in the vessel and wherein said copolyamide in the molten state is then extruded from the vessel except for a minor amount thereof which remains on the inner surfaces of the vessel, the improvement comprising the additional step of adding a base to said vessel prior to the extrusion of said molten copolyamide, said base being added in an amount sufficient to permit successive batches of said copolyamide to be prepared in said vessel without cleaning the vessel between each successive batch to remove said minor amount of copolyamide therefrom.

4,501,883

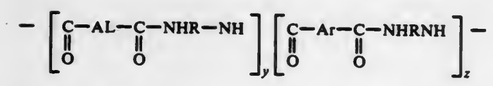
BONDABLE POLYAMIDE

George A. Walrath, Scotia, and Scott D. Smith, Ballston, both of N.Y., assignors to Schenectady Chemicals, Inc., Schenectady, N.Y.

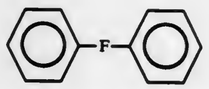
Division of Ser. No. 311,385, Oct. 14, 1981, Pat. No. 4,420,535.
This application Jul. 15, 1983, Ser. No. 514,035
Int. Cl.³ C08G *69/26, 18/34, 18/68*
U.S. Cl. 528—340 64 Claims



1. A self bondable copolyamide having the recurring unit



where AL is the divalent hydrocarbon residue of an unsubstituted aliphatic dicarboxylic acid having at least 6 carbon atoms, R is tolylene, phenylene,



where F is O, CH_2, or SO_2, Ar is p-phenylene, y is 35 to 80% of the recurring units and z is 65 to 20% of the recurring units.

4,501,884

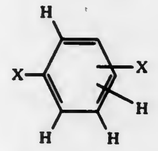
PROCESS FOR THE PRODUCTION OF OPTIONALLY BRANCHED POLYARYLENE SULPHIDE WITH PIPERAZINONE SOLVENT

Edgar Ostlinning, Duesseldorf, and Karsten Idel, Krefeld, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Oct. 31, 1983, Ser. No. 546,883
Claims priority, application Fed. Rep. of Germany, Nov. 10, 1982, 3241514
Int. Cl.³ C08G *75/14*
U.S. Cl. 528—388 9 Claims

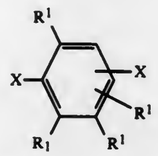
1. A process for the production of high molecular weight polyarylene sulphide from

(a) 0 to 100 mol % of at least one dihalogen aromatic compound corresponding to the formula



(I)

and from 100 to 0 mol % of at least one dihalogen aromatic compound corresponding to the formula



(II)

wherein

X represents meta- or para-positioned chlorine or bromine relative to each other, and

R^1 is the same or different and represent hydrogen, alkyl, cycloalkyl, aryl, alkylaryl, arylalkyl, or two radicals of R^1 link together to form an aromatic ring or heterocyclic ring having 1–3 nitrogen, oxygen or sulfur heteroatoms, and one radical R^1 is always different from hydrogen, and

(b) from 0 to 3 mol %, based on the total of components (a) and (b), of a tri- or tetra-halogen aromatic compound corresponding to the formula

$$ArX_n \quad \text{(III)}$$

wherein

Ar represents an aromatic ring or heterocyclic ring having 1–3 nitrogen, oxygen or sulfur heteroatoms,

X represents chlorine or bromine, and

n represents 3 or 4, and

(c) alkali sulphide, or a mixture thereof with alkali hydroxide, the molar ratio of (a+b):c ranging from 0.85:1 to 1.15:1, and,

(d) a piperazinone organic solvent with the molar ratio of alkali sulphides (c) to organic solvent (d) ranging from 1:2 to 1:15, and the reacting temperature is from 160° to 265° C.

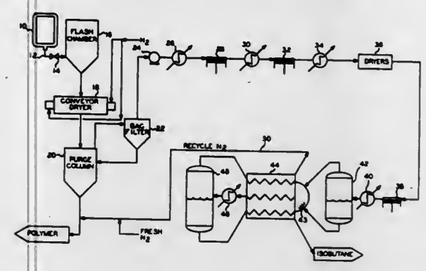
4,501,885

DILUENT AND INERT GAS RECOVERY FROM A POLYMERIZATION PROCESS

Fred T. Sherk, and Janet L. Inkrott, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Oct. 14, 1981, Ser. No. 311,479
Int. Cl.³ C08F *6/06*
U.S. Cl. 528—501 4 Claims

1. In a polymerization process wherein a slurry of olefin polymer solids and diluent is passed from the polymerization zone into a flash zone wherein a substantial portion of the diluent is separated from the polymer and the polymer solids containing residual amounts of diluent are passed to a purge zone wherein said polymer solids are contacted with a heated noncombustible gas to separate additional amounts of the diluent therefrom, the improvement comprising cooling and compressing the vaporous effluent from the purge zone to



produce a mixed stream comprising liquid comprising said diluent and vapor comprising said noncombustible gas, separating said liquid stream and said vapor stream, using both said vapor stream and said liquid stream as heat exchange fluids for a portion of the cooling to which the mixed stream is subjected, recovering said diluent stream, and using said vapor stream as at least a portion of the noncombustible gas in the purge zone.

4,501,886

CELLULOSIC FIBERS FROM ANISOTROPIC SOLUTIONS

John P. O'Brien, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 406,533, Aug. 9, 1982, Pat. No. 4,464,323. This application Aug. 1, 1983, Ser. No. 519,100
Int. Cl.³ C08B *3/06, 3/20*
U.S. Cl. 536—57 6 Claims

1. Cellulose triacetate fibers having at least 42.5% by weight acetyl groups, an inherent viscosity in hexafluoroisopropanol at 0.5 g/dl of at least 5, a tenacity of at least 10 dN/tex, an orientation angle of 35° or less, an AACS value of at least 130 and an exotherm in their DSC scan in the range between 190° and 240° C.

5. Regenerated cellulose fibers having a tenacity of at least 12.4 dN/tex and a modulus of at least 220 dN/tex, and an orientation angle of 18° or less.

4,501,887

PREPARING CELLULOSE ETHERS IN A DIMETHOXYETHANE/(DISPERSING AUXILIARY) MEDIUM

Wolfgang Kornrumpf, Eppstein-Bremthal; Eberhard Perplies, Walluf; Josef Hilbig, Taunusstein, and Utz-Hellmuth Felcht, Bad Soden - Neuenhain, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Feb. 17, 1984, Ser. No. 581,233
Claims priority, application Fed. Rep. of Germany, Feb. 25, 1983, 3306621
Int. Cl.³ C08B *11/04, 11/08, 11/12, 11/193*
U.S. Cl. 536—84 17 Claims

1. In a process for preparing a cellulose ether from cellulose and etherifying agent in a reaction medium comprising base and inert organic solvent, the improvement wherein the inert organic solvent is an admixture of dimethoxyethane with at least one further organic solvent selected from the group consisting of alkanol, alkane diol and alkoxy alkanol, the admixture comprising from 0.1 to 50 percent by weight of the other organic solvent, based on the weight of the admixture.

4,501,888

PROCESS FOR PRODUCING ESTERS OF CARBOHYDRATE MATERIALS

James C. Schmidt, Champaign, Ill., assignor to A. E. Staley Manufacturing Company, Decatur, Ill.

Filed Jan. 24, 1984, Ser. No. 573,789
Int. Cl.³ C08B *31/04*
U.S. Cl. 536—110 17 Claims

1. A process for esterifying a starch including the steps of:

(a) dispersing a starch in an organic acid;

(b) contacting the starch with an organic acid anhydride; and,

(c) reacting the starch and the organic acid anhydride in the presence of a quaternary ammonium halide,

thereby obtaining the esterified starch product.

4,501,889

MORPHOLINE COMPOUNDS PREPARED VIA PHOSPHATE CATALYSTS

James E. Wells, Ardmore, and Victoria Eskinazi, Boothwyn, both of Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Filed May 24, 1982, Ser. No. 381,233
The portion of the term of this patent subsequent to May 1, 2001, has been disclaimed.
Int. Cl.³ C07D *295/02*
U.S. Cl. 544—106 6 Claims

1. A process which comprises converting a diglycolamine compound to a morpholine compound at a temperature in the range of about 285° C. to 420° C., and in the presence of a catalyst selected from the group consisting of the pyrophosphate and the monohydrogen and dihydrogen phosphate of strontium.

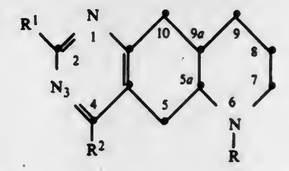
4,501,890

TRANS-(±)-2,4,6-SUBSTITUTED-5,5A,6,7,8,9,9A,10-OCTAHYDRO-PYRIMIDO[4,5-g]QUINOLINES

Cynthia L. Nichols, and Edmund C. Kornfeld, both of Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed Sep. 26, 1983, Ser. No. 535,503
Int. Cl.³ C07D *487/17, 215/00;* A61K *31/505*
U.S. Cl. 514—267 29 Claims

1. A trans-(±)-2,4,6-permissibly substituted octahydropyrimido[4,5-g]quinoline of the formula:



I

wherein R is H, CN, C_{1-3} alkyl O—CO, C_{1-3} alkyl or allyl; R^1 is NH_2, NHR^3, NR^4R^5, R^2 is H, CH_3, Cl or Br; R^3 is methyl, ethyl or n-propyl, C_{1-3} alkyl-CO, phenyl-CO or substituted phenyl-CO, wherein said substituents are 1 or 2 members of the group: chloro, fluoro, bromo, methyl, ethyl, methoxy, ethoxy and trifluoromethyl; R^4 and R^5 are individually methyl, ethyl or n-propyl; and pharmaceutically acceptable acid addition salts thereof.

4,501,891

METHOD OF FORMING A SOLUTION OF PAPAVRINE CARBANION

André Buzas, 25, Rte. de Versailles, 91570 Bievres, and Gilbert Lavielle, Orleans, both of France, assignors to André Buzas, France

Continuation-in-part of Ser. No. 169,180, Jul. 15, 1980, abandoned. This application Feb. 11, 1982, Ser. No. 348,147

Claims priority, application United Kingdom, Jul. 19, 1979, 7925275

Int. Cl.³ C07D *217/20*

U.S. Cl. 546—149 **3 Claims**

1. A method of forming a solution having papaverine carbanion, said method consisting essentially of reacting, in a solvent, papaverine with an agent selected from the group consisting of butyl-lithium, a lithium alkyl amide, sodium amide and potassium amide.

4,501,892

PYRIDYL BENZENEDIOLS

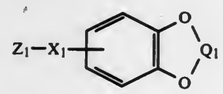
Gordon L. Bundy, Kalamazoo County, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Filed Jul. 28, 1982, Ser. No. 402,515

Int. Cl.³ C07D *405/04, 405/06, 405/12;* A61K *31/335*

U.S. Cl. 546—270 **12 Claims**

1. A compound of the formula I



I

wherein Z_1 is
(a) 4-pyridinyl,
(b) 3-pyridinyl,
(c) 3-pyridinyl substituted at the 4 position by
(1) methyl,
(2) $-OCH_3$,
(3) $-N(CH_3)_2$, or
(4) $-NH_2$, or
(5) at the 2, 4, 5, or 6 position by chlorine;
(d) imidazolyl, or
(e) imidazolyl substituted by (C_1-C_3)alkyl;
wherein X_1 is
(a) $-(CH_2)_n-$,
(b) $-O-$,
(c) $-S-$,
(d) $-S(O)-$,
(e) $-S(O)_2-$,
(f) $-CH_2-O-$,
(g) $-CH_2-N(R_3)-$,
(h) $-N(R_3)-CH_2-$,
(i) $-CH(OH)-$,
(j) $-C(O)-$, or
(k) $-O-CH_2-$;
with the proviso that when X_1 is $-(CH_2)_n-$ and n is zero or when X_1 is (b), (c), (d), (e), (f), (g), (h), or (k), Z_1 is (a), (b), or (c), i.e., a pyridinyl substituent;
wherein Q_1 is
(a) $-CH(-(CH_2)_mR_7)-$,
(b) $-C(O)-$, or
(c) $-CHR_5-CHR_6-$;
wherein R_5 and R_6 are different and are
(a) hydrogen or
(b) $-COOR_1$;
wherein R_1 is
(a) hydrogen,
(b) a pharmacologically acceptable cation, or
(c) (C_1-C_{12})alkyl;
wherein R_3 is
(a) hydrogen, or
(b) methyl;
wherein R_7 is
(a) hydrogen,
(b) $-CH_2OH$, or
(c) $-COOR_1$;
wherein m and n are the same or different and are the integers 0 to 4, inclusive;
including, pharmacologically acceptable acid addition salts thereof.

4,501,893

3-{6-[3-PYRROLIDINO-1-(4-TOLYL)PROP-1-ENYL]-2-PYRIDYL}ACRYLIC ACID AND PHARMACEUTICALLY ACCEPTABLE SALTS THEREOF

John W. A. Findlay, Rte. 2, Box 514, Chapel Hill, N.C., and Geoffrey G. Coker, No. 80 Pickhurst Park, Bromley, Kent, England

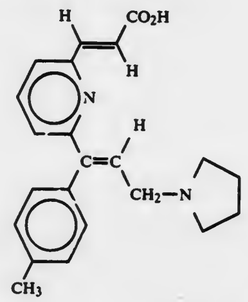
Filed Feb. 1, 1983, Ser. No. 462,872

Claims priority, application United Kingdom, Apr. 2, 1982, 8203261

Int. Cl.³ C07D *401/06*

U.S. Cl. 546—281 **21 Claims**

1. The compound of formula (I)



I

straight and branched lower alkyl (1–4 carbon atoms) esters, and pharmaceutically acceptable salts thereof.

4,501,894

HETEROCYCLIC ALCOHOLS AND THEIR DERIVATIVES

Francois Nezót, Thiais; Pierre Girault, Paris; Jean Tessier, Vincennes, and Jacques Martel, Bondy, all of France, assignors to Roussel Uclaf, Paris, France

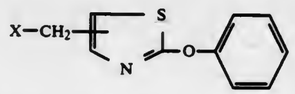
Filed Feb. 25, 1982, Ser. No. 352,256

Claims priority, application France, Feb. 26, 1981, 81 03830

Int. Cl.³ C07D *277/34*

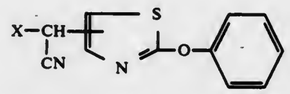
U.S. Cl. 548—186 **2 Claims**

1. A compound of the formula



wherein X is selected from the group consisting of chlorine, bromine, iodine and —OH.

2. A compound of the formula



wherein X is selected from the group consisting of chlorine, bromine, iodine and —OH.

4,501,895

[HALO-4-(4,5-DIHYDRO-4,4-DIMETHYL-2-OXAZOLYL)-PHENYL]OCTADECAN-OLS AND -ONES

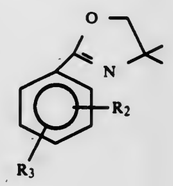
Richard A. Mueller, Glencoe, and Richard A. Partis, Evanston, both of Ill., assignors to G.D. Searle & Co., Skokie, Ill.

Division of Ser. No. 492,843, May 9, 1983, Pat. No. 4,469,885. This application Jul. 2, 1984, Ser. No. 627,324

Int. Cl.³ C07D *263/12, 263/14*

U.S. Cl. 548—239 **6 Claims**

1. A compound of the formula:



wherein R_2 is
(a) halogen; or
(b) trifluoromethyl;
wherein R_3 is
(a) $-C(O)R_4$;
(b) $-CH(OH)R_4$;
(c) $-CH_2R_4$; or
(d) $-CH=CHR_4$;
wherein R_4 is alkyl of 13 to 25 carbon atoms inclusive, and the pharmacologically acceptable base addition salts thereof.

4,501,896

PHENYLMERCAPTOTETRAZOLO- AND NITROINDAZOLO MASKED DEVELOPMENT/IMAGE MODIFIERS

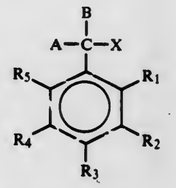
Dennis S. Donald, Mendenhall, Pa., and Ross A. Lee, Webster, N.Y., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 172,999, Jul. 25, 1980, Pat. No. 4,343,893. This application Aug. 6, 1981, Ser. No. 290,497

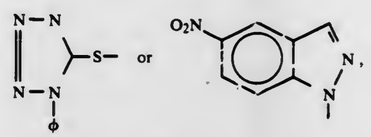
Int. Cl.³ C07D *257/02, 231/54*

U.S. Cl. 548—251 **17 Claims**

1. A masked compound of the formula



wherein A and B each represents hydrogen, alkyl, carboxyalkyl or alkyl carboxyalkyl, said alkyl moiety comprising 1–3 carbon atoms; each of R_1 to R_5 is a member selected from the group consisting of hydrogen, halogen, $-CF_3$, cyano, or nitro group, X is a radical with one of the following structures:



such that either 1-phenyl-5-mercaptotetrazole or 5-nitroindazole, is released by electron transfer: and wherein the R_1 to R_5-substituted ring has an electron withdrawing effect designated by a Hammet sigma function value of $\sigma=0.50$ to 1.00.

4,501,897

PROCESS FOR THE PREPARATION OF E-ISOMERS OF 1-CYCLOHEXYL-2-(1,2,4-TRIAZOL-1-yl)-1-PENTEN-3-ONE DERIVATIVES

Wolf Reiser; Hans-Ludwig Elbe, both of Wuppertal, and Peter Feyen, Mettmann, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

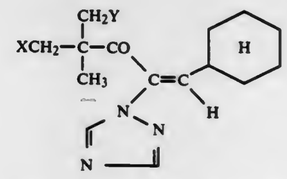
Filed Aug. 16, 1983, Ser. No. 523,537

Claims priority, application Fed. Rep. of Germany, Aug. 21, 1982, 3231205

Int. Cl.³ C07D *249/08*

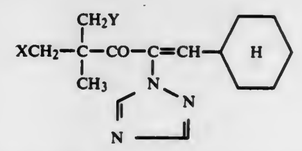
U.S. Cl. 548—262 **11 Claims**

1. A process for the preparation of an E-isomer of 1-cyclohexyl-2,2(1,2,4-triazol-1-yl)-1-penten-3-one of the formula



(I)

wherein X and Y independently of one another represent hydrogen or halogen which comprises contacting a mixture of isomers of 1-cyclohexyl-2-(1,2,4-triazol-1-yl)-1-penten-3-one of the formula



(II)

wherein X and Y have the previous indicated meaning, with at least one secondary amine.

4,501,898

PHOTOGRAPHIC DEVELOPMENT INHIBITOR (1H- OR 2H-) INDAZOLYL HYDROQUINONE DERIVATIVES

Shigeo Hirano, and Kei Sakanoue, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

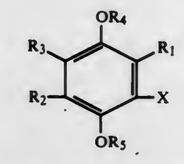
Division of Ser. No. 259,278, Apr. 30, 1981, Pat. No. 4,345,024. This application Jun. 3, 1982, Ser. No. 384,809

Claims priority, application Japan, Apr. 30, 1980, 55-57270

Int. Cl.³ G03C *7/00, 1/40;* C07D *231/56*

U.S. Cl. 548—336 **2 Claims**

1. A photographic development inhibitor releasing compound represented by the following formula (I):



wherein X is an indazolyl group which may be substituted with a NO_2 group, a NH_2 group, a CO_2H group, a CN group, a halogen atom, a hydroxy group, an alkyl group having 1 to 12 carbon atoms, an alkoxy group having 1 to 12 carbon atoms, an

alkoxycarbonyl group having 2 to 13 carbon atoms, an alkylthio group having 1 to 12 carbon atoms, a lower alkanoyl group, $-SO_2NR_6R_7$, wherein R_6 and R_7 are independently hydrogen or alkyl having up to 30 carbon atoms, a $-C(=O)NR_6R_7$ group, wherein R_6 and R_7 are independently hydrogen or alkyl having up to 30 carbon atoms, a $NHCOR_{11}$ group where R_8 is an alkyl group having up to 8 carbon atoms, an alkanoyloxy group having up to 11 carbon atoms and which is bonded to the benzene nucleus through the nitrogen atom at the 1-position or 2-position thereof, R_1, R_2 and R_3, which may be the same or different, are each hydrogen, an alkyl group having 1 to 18 carbon atoms, a phenyl or naphthyl group, a halogen atom, a hydroxy group, an alkoxy group having 1 to 19 carbon atoms, a phenoxy group, a lower alkanoyl group, an alkoxycarbonyl group having 2 to 19 carbon atoms, a $NHCOR_9$ group where R_9 is an alkyl group having up to 17 carbon atoms, $-NHSO_2R_{10}$ where R_{10} is an alkyl group having up to 17 carbon atoms, $-SO_2NR_6R_7$, wherein R_6 and R_7 are independently hydrogen or alkyl having up to 30 carbon atoms, an imidazolin-1-yl group or any of the groups described above for X; further R_2 and R_3 may combine with each other to form a ring which is a naphthohydroquinone ring, 5,6-tetramethylenehydroquinone ring or 5,6-(1,3-cyclopentylenyl)-hydroquinone ring; and R_4 and R_5, which may be the same or different, are each hydrogen or a lower alkanoyl group substituted by halogen, a lower alkoxycarbonyl group or a phenoxycarbonyl group.

4,501,899

RESOLUTION OF (+)-1,8-DIETHYL-1,3,4,9-TETRAHYDROPYRANO[3,4-B]INDOLE-1-ACETIC ACID USING CHOLESTERYL ANILINE

Nedumparambil A. Abraham, Dollard-des Ormeaux, and Christopher A. Demerson, Montreal, both of Canada, assignors to American Home Products Corporation, New York, N.Y.

Filed Aug. 16, 1983, Ser. No. 523,985
Int. Cl.³ C07D *491/052*
U.S. Cl. 548—432 **4 Claims**

1. A process for preparing (+)-1,8-diethyl-1,3,4,9-tetrahydropyrano[3,4-b]indole-1-acetic acid, which comprises dissolving one part by weight of (±)-1,8-diethyl-1,3,4,9-tetrahydropyrano[3,4-b]indole-1-acetic acid and about 1.6 to 1.8 parts by weight of cholesteryl aniline in about 35 to 55 parts by weight of methanol at about 50° to 65° C.; cooling the solution to crystallize the corresponding salt of (+)-1,8-diethyl-1,3,4,9-tetrahydropyrano[3,4-b]indole-1-acetic acid with cholesteryl aniline; dissolving the latter salt in a mixture of water-immiscible organic solvent and an aqueous mineral acid; separating the water-immiscible organic solvent; and isolating substantially pure (+)-1,8-diethyl-1,3,4,9-tetrahydropyrano[3,4-b]indole-1-acetic acid from the water-immiscible organic solvent.

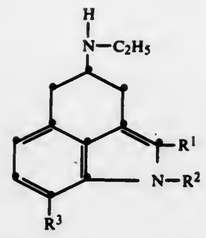
4,501,900

AMINO SUBSTITUTED TETRAHYDROBENZINDOLES

John J. Baldwin, Lansdale; James H. Jones, and George F. Lundell, both of Blue Bell, all of Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation of Ser. No. 096,948, Nov. 23, 1979, Pat. No. 4,282,240. This application Mar. 4, 1981, Ser. No. 240,350
The portion of the term of this patent subsequent to Aug. 4, 1998, has been disclaimed.
Int. Cl.³ C07D *209/90*
U.S. Cl. 548—436 **2 Claims**

1. Compounds of the formula



and pharmaceutically acceptable salts thereof wherein
R^1 is H or halogen
R^2 is H, alkyl having up to six carbon atoms phenyl-C_1-C_3 alkyl or monosubstituted phenyl-C_1-C_3-alkyl wherein the substituent is halogen, C_1-C_3 alkyl or C_1-C_3 alkoxy and
R^3 is H, OH, C_1-C_3 alkyl or OCH_3.

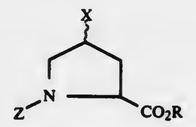
4,501,901

METHOD FOR MAKING SUBSTITUTED PROLINES

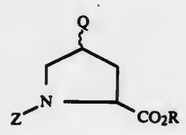
John K. Thottathil, Trenton; Jerome L. Moniot, Chester; David Floyd, Pennington, and Steven Brandt, Plainsboro, all of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Sep. 19, 1983, Ser. No. 533,705
Int. Cl.³ C07D *207/12*
U.S. Cl. 548—532 **7 Claims**

1. A method for making substituted prolines of the structure



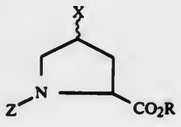
wherein X is phenyl, 1-naphthyl, 2-naphthyl, biphenyl or lower alkyl having up to 7 carbons, R is H, lower alkyl having up to 7 carbons or an alkali metal, Z is a chemically removable N-protecting group and the wavy line ( ) indicates that X is either trans or cis to the proline ring, which comprises reacting a compound of the structure



wherein Z and R are as defined above and Q is Br, tosyloxy or mesyloxy, and the wavy line ( ) indicates that Q is either trans or cis to the proline ring, with an organic copper lithium compound of the structure

XYCuLi

wherein X and Y may be the same or different and X is as defined above and Y is phenyl, 1-naphthyl, 2-naphthyl, biphenyl, lower alkyl having up to 7 carbons or CN, to form a compound of the structure



wherein X is trans to the proline ring where Q is trans to the proline in the starting material or X is cis to the proline ring where Q is cis to the proline ring in the starting material.

4,501,902

N-METHYL PYRROLIDONE-2 PURIFICATION

James W. Cleary, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Dec. 21, 1982, Ser. No. 451,668
Int. Cl.³ C07D *206/267*
U.S. Cl. 548—555 **11 Claims**

1. A process for removing acidic compounds from N-methyl-2-pyrrolidone(NMP); in which NMP containing at least one acidic compound is contacted with an amount of an inorganic compound chosen from among the group consisting of alkaline earth carbonates, alkaline earth hydroxides, alkaline earth oxides and alumina said amount sufficient to reduce the acidic compound content of said solvent thereby producing NMP of reduced acid content and said NMP of reduced acid content is removed from contact with said inorganic compound.

4,501,903

CHLOROMETHYLATION PROCESS

Stanley B. Mirviss, Stamford, Conn., assignor to Stauffer Chemical Company, Westport, Conn.

Filed Jul. 5, 1983, Ser. No. 511,073
Int. Cl.³ C07D *333/12*
U.S. Cl. 549—29 **8 Claims**

1. A method of producing chloromethylthiophene comprising reacting thiophene with paraformaldehyde, gaseous hydrogen chloride and aqueous hydrochloric acid for a period of time necessary to complete the reaction and wherein the addition rate of the gaseous hydrogen chloride is from about 0.6 mole per mole of thiophene per hour to about 1.5 moles per mole of thiophene per hour.

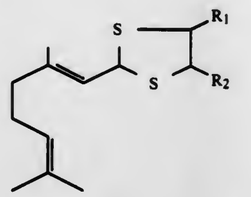
4,501,904

METHYL SUBSTITUTED 2-(2,6-DIMETHYL-1,5-HEPTADIENYL)-1,3-DITHIOLANES

Alan O. Pittet, Atlantic Highlands; Thomas F. Courtney, Jr., Oakhurst, and Ranya Muralidhara, Fair Haven, all of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Filed Sep. 19, 1983, Ser. No. 533,666
Int. Cl.³ C07D *339/06*
U.S. Cl. 549—35 **3 Claims**

1. A methyl substituted 2-(2,6-dimethyl-1,5-heptadienyl)-1,3-dithiolane having the structure:



wherein R_1 and R_2 are the same or different and each represents methyl or hydrogen with the proviso that at least one of R_1 and R_2 is methyl.

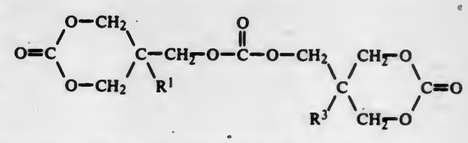
4,501,905

CYCLIC CARBONIC ACID DERIVATIVES

Heinrich Krimm, and Hans-Josef Buysch, both of Krefeld, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Division of Ser. No. 340,943, Jan. 20, 1982, Pat. No. 4,440,937. This application Nov. 28, 1983, Ser. No. 555,754
Claims priority, application Fed. Rep. of Germany, Jan. 30, 1981, 3103139; Jan. 30, 1981, 3103138; Jan. 30, 1981, 3103136
Int. Cl.³ C07D *319/06*
U.S. Cl. 549—228 **2 Claims**

1. A cyclic carbonic acid compound of the formula



wherein R^1 and R^3 are independently methyl or ethyl.

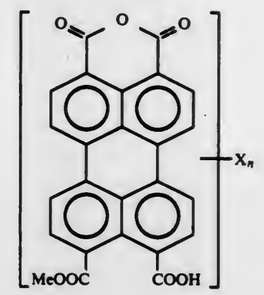
4,501,906

MONOALKALI METAL SALTS OF PERYLENE-3,4,9,10-TETRACARBOXYLIC ACID MONOANHYDRIDE AND PROCESS FOR THEIR MANUFACTURING

Ernst Spietschka, Idstein, and Helmut Tröster, Königstein, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

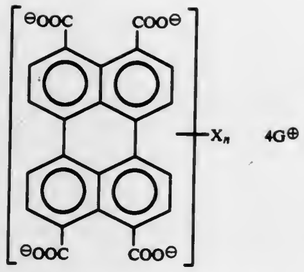
Continuation of Ser. No. 239,909, Mar. 3, 1981, abandoned. This application Feb. 10, 1983, Ser. No. 465,463
Claims priority, application Fed. Rep. of Germany, Mar. 5, 1980, 3008420
Int. Cl.³ C07D *311/78*
U.S. Cl. 549—232 **8 Claims**

1. A compound of the formula



wherein Me is potassium, X is chlorine or bromine and n is a nunmber of from zero to 4.

3. A process for preparing a compound as defined in claim 1, which comprises reacting a salt of the formula



wherein X and n are defined as in claim 1 and G^+ is a cation at a temperature of 20° to 100° C. with three molar equivalents of an acid sufficiently strong to set free the acid form of three of the carboxylic acid groups, said reaction being carried out in the presence of at least one molar equivalent of potassium if no G^+ is potassium.

4,501,907

MALEIC ANHYDRIDE PRODUCTION USING HIGH BUTANE FEED CONCENTRATION

Gerald K. Kwentus, Pensacola, Fla., and Michael Suda, St. Louis, Mo., assignors to Monsanto Company, St. Louis, Mo.

Filed Dec. 20, 1982, Ser. No. 451,118

Int. Cl.³ C07D *307/60*

U.S. Cl. 549—259 **6 Claims**

1. In a process for producing maleic anhydride by the catalytic vapor phase oxidation of butane, in the presence of a catalyst comprising phosphorus, vanadium and oxygen, the reaction being conducted in a fixed bed tube-type reactor packed with catalyst, the improvement comprising in combination (1) employing a feed concentration of butane to air of about 3-5% by volume at a space velocity from about 364 hr^{-1} to about 536 hr^{-1}; (2) diluting the upstream portion of the catalyst pack to the extent necessary to prevent hot spot runaway; and (3) using a reactor tube of sufficient length, consistent with inside diameter and air flow space within the catalyst packing to permit a single pass conversion of at least about 70% of butane fed to the reactor.

4,501,908

2,3-ISOPROPYLIDENE RIBONIC ACID, 1,4-LACTONES

Colin C. Duke, Dee Why, and Robert J. Wells, Cromer, both of Australia, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

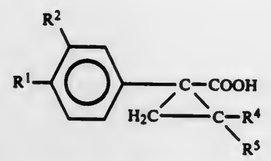
Filed Mar. 1, 1982, Ser. No. 353,755

Claims priority, application United Kingdom, Mar. 12, 1981, 8107737; Feb. 8, 1982, 8203596

Int. Cl.³ C07D *307/77*

U.S. Cl. 549—305 **8 Claims**

1. A lactone ester of 2,3-isopropylidene-D(+)-ribonic acid-1,4-lactone or 2,3-isopropylidene-L(−)-ribonic acid-1,4-lactone and an optically active carboxylic acid, said acid being either in racemic form or as a single optically active enantiometer thereof, wherein the optically active carboxylic acid is a compound selected from the group consisting of a compound of the formula



I

in which R^1 represents hydrogen or a C_1–C_9 alkoxy group, a C_1–C_9 alkylthio group, fluoro, chloro, bromo, a C_1–C_9 alkyl group, a nitro or amino group, R^2 represents hydrogen or a C_1–C_9 alkyl group or R^1 and R^2 together represents a methylenedioxy group and R^4 and R^5 are the same or different and represent fluoro, bromo, chloro or a C_1–C_9 alkyl group;

cis-3-(2,2-dichlorovinyl)-2,2-dimethyl-cyclopropane carboxylic acid;

cis/trans-3-(2,2-dichlorovinyl)-2,2-dimethyl-cyclopropane carboxylic acid;

cis-3-(2,2-dibromovinyl)-2,2-dimethyl-cyclopropane carboxylic acid;

3-(1,2-dibromo-2,2-dichloroethyl)-2,2-dimethyl-cyclopropane carboxylic acid;

2,2-dimethyl-3-(2,2,2-trichloroethyl)-cyclopropane carboxylic acid;

2,2-dimethyl-4,5-benzospiro[2,4]-hepta-4,6-diene-1-carboxylic acid;

cis-3-(Z-2-chloro-3,3,3-trifluoroprop-1-enyl)-2,2-dimethylcyclopropane carboxylic acid;

2-(2-chloro-α,α,α-trifluoro-p-toluidino)-3-methyl lactic acid;

2-(4-chlorophenyl)-3-methyl lactic acid;

2-(4-chlorophenoxy)-3-methylbutanoic acid;

2-(4-difluoromethoxyphenyl)-3-methyl lactic acid;

1-(4-ethoxyphenyl)-2,2,3,3-tetrafluorocyclobutane carboxylic acid;

1-(4-bromophenyl)-2,2,3,3-tetrafluorocyclobutane carboxylic acid;

1-(4-chlorophenyl)-2,2,3,3-tetrafluorocyclobutane carboxylic acid;

1-(3,4-methylenedioxyphenyl)-2,2,3,3-tetrafluorocyclobutane carboxylic acid;

2,3-dimethyl-3-(2,2-dichlorovinyl)-cyclopropane carboxylic acid; 1,4,5,6,7,7-hexachloro-8,9,10-trinorborn-5-ene-2-carboxylic acid;

2-chloropropanoic acid; and

2-phenylbutanoic acid.

4,501,909

AMINOPOLYOL DERIVATIVES

Tamejiro Hiyama, and Kazuhiro Kobayashi, both of Sagamihara, Japan, assignors to Sagami Chemical Research Center, Tokyo, Japan

PCT No. PCT/JP83/00263, § 371 Date Apr. 4, 1984, § 102(e) Date Apr. 4, 1984, PCT Pub. No. WO84/00755, PCT Pub. Date Mar. 1, 1984

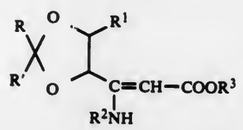
PCT Filed Aug. 12, 1983, Ser. No. 599,440

Claims priority, application Japan, Aug. 12, 1982, 57-139196

Int. Cl.³ C07D *317/72*

U.S. Cl. 549—342 **8 Claims**

1. A compound represented by the general formula

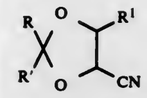


(I)

wherein each of R and R′ represents a hydrogen atom, or an alkyl or aryl group or R and R′, taken together, form an alkylene group, R^1 represents a lower alkyl group, R^2 represents a hydrogen atom or an acyl group, and R^3 represents a lower alkyl group.

5. The compound of claim 1 which is t-butyl (4R, 5S)-3-amino-4,5-(cyclohexylidenedioxy)-2-hexenoate.

8. A process for producing the compound of claim 1, which comprises reacting a compound of the formula

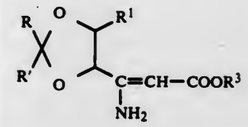


(II)

wherein R, R′ and R^1 are as defined in claim 1, with an acetic acid ester of the formula

CH_3COOR^3 (III)

wherein R^3 is as defined in claim 1, and as required, acylating the resulting compound of the formula



(Ia)

wherein R, R′, R^1 and R^3 are as defined above.

4,501,910

PROCESS FOR TRANSFORMING AN ALDEHYDE INTO AN ALKENE

Michel Delmas, Entraygues; Antoine Gaset, Toulouse, and Yves le Bigot, Saint Martin de Londres, all of France, assignors to Agrifurane, S.A., Bon Encountre, France

Filed Oct. 12, 1982, Ser. No. 434,048

Int. Cl.³ C07D *307/28*

U.S. Cl. 549—506 **10 Claims**

1. A process for transforming an aldehyde into a corresponding alkene of the predominantly E type comprising placing an aldehyde in an alcohol solvent in the presence of a phosphoric reagent and a base, said base being selected from the group consisting of mineral bases evincing a basic strength less than or equal to the basic strength of the hydroxide ion, and organic amine bases, and limiting the hydration rate of the reaction medium to a value of approximately 10 moles of water per mole of aldehyde.

4,501,911

ORGANOSILICON-MODIFIED POLYDIENES, PROCESS FOR THEIR SYNTHESIS AND THEIR USE AS EMULSION BREAKERS FOR CRUDE OIL

Götz Koerner, and Christian Weitemeyer, both of Essen, Fed. Rep. of Germany, assignors to Th. Goldschmidt AG, Essen, Fed. Rep. of Germany

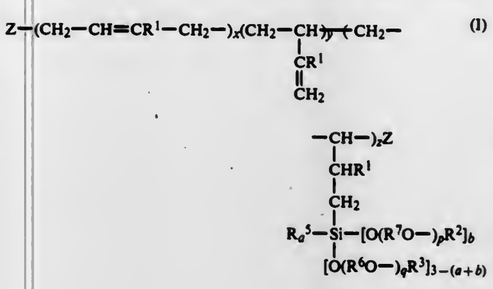
Filed Jul. 19, 1983, Ser. No. 515,369

Claims priority, application Fed. Rep. of Germany, Jul. 28, 1982, 3228135

Int. Cl.³ C07F *7/08, 7/18*

U.S. Cl. 556—446 **10 Claims**

1. Organosilicon-modified polydienes having the formula:



(I)

in which

Z represents a chain terminating group,

R^1 is a hydrogen or methyl radical,

R^2, R^3, and R^4 are lower alkyl radicals with 1 to 4 carbon atoms, which can be the same or different within the polymeric molecule,

R^5 is a methyl radical or the $O—(R^8O—)_s—R^4$ group;

R^6, R^7, R^8 are alkylene radicals with 2 to 4 carbon atoms,

a is 0 to 2,

$2<b<3$, whereby $0<a+b<3$,

p, q, s ≧2,

x, y ≧0, and

z ≧3

and wherein the C:O ratio of R^6O is 2.25 to 3:1, the C:O ratio of R^7O is 2 to 2.75:1, the C:O ratio of R^8O is 2 to 3:1, the difference in the C:O ratio of R^6O and R^7O is not less than 0.25 and the C:O ratio of R^8O is less than that of R^7O or greater than that of R^6O.

4,501,912

METHOD FOR TREATING GLAUCOMA BY THE TOPICAL ADMINISTRATION OF SELECTIVELY METABOLIZED BETA-BLOCKING AGENTS

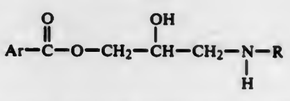
William L. Matier, Liberty, and Sheung-Tsam Kam, Vernon Hills, both of Ill., assignors to American Hospital Supply Corporation, Evanston, Ill.

Division of Ser. No. 276,657, Jun. 23, 1981, Pat. No. 4,402,974. This application Dec. 13, 1982, Ser. No. 449,197

Int. Cl.³ C07C *69/76*; A01N *37/10*; D01K *31/235*

U.S. Cl. 560—66 **13 Claims**

1. A compound of the formula



wherein R is lower hydroxyalkyl or lower alkynyl and Ar is substituted or unsubstituted aromatic; with the proviso that when Ar is phenyl substituted with 2 or 3 hydroxy groups, or phenyl substituted with acyloxy wherein the acyl portion is alkanoyl of from 2 to about 5 carbon atoms or benzoyl (optionally substituted by halogen, alkoxy, alkyl or hydroxy), R may optionally additionally be isopropyl, t-butyl or dimethoxyphenethyl; or a pharmaceutically acceptable salt thereof.

4,501,913

PROCESS FOR PREPARING ESTERS OF ARYL ALKANOIC ACIDS

Claudio Giordano, Vicenza, and Graziano Castaldi, Briona, both of Italy, assignors to Zambon S.p.A., Vicenza, Italy

Filed Nov. 1, 1983, Ser. No. 547,632

Claims priority, application Italy, Nov. 3, 1982, 24030 A/82

Int. Cl.³ C07G *69/76*

U.S. Cl. 560—100 **4 Claims**

1. Process for preparing esters of aryl alkanoic acids of formula



where

Ar is an aryl radical having from 6 to 15 carbon atoms,

R is hydrogen or an alkyl radical having from 1 to 3 carbon atoms,

R1 is an alkyl radical having from 1 to 6 carbon atoms or an aryl alkyl radical having from 7 to 12 carbon atoms,

which comprises the oxidation with bromine or iodine of a ketone of formula

where Ar and R have the above mentioned meanings, in the presence of an alcohol having formula R1—OH, where R1 has the above mentioned meanings, characterized in that the oxidation is carried out in the presence of a zind halide.

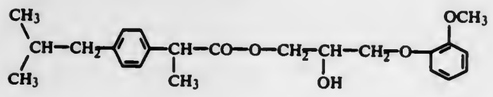
4,501,914

2-HYDROXY-3-(O-METHOXY-PHENOXY)PROPYL 2-(P-ISOBUTYL-PHENYL)-PROPIONATE AND PHARMACEUTICAL COMPOSITIONS CONTAINING THE SAME

Leonardo De Vincentiis, Rome, Italy, assignor to Ausonia Farmaceutici S.r.l., Pomezia, Italy

Filed Nov. 12, 1982, Ser. No. 441,106
Claims priority, application Italy, Mar. 10, 1982, 20073 A/82
Int. Cl.³ C07C *69/76*
U.S. Cl. 560—105 **2 Claims**

1. 2-hydroxy-3-(o-methoxy-phenoxy)propyl 2-(p-isobutyl-phenyl)-propionate of formula (I)



as a new compound.

4,501,915

PREPARATION OF N-ALKYL-MONOSUBSTITUTED CARBAMATES

John J. McCoy, Media, Pa., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed Jul. 30, 1980, Ser. No. 173,515
The portion of the term of this patent subsequent to Aug. 9, 2000, has been disclaimed.
Int. Cl.³ C07C *125/065*
U.S. Cl. 560—157 **19 Claims**

1. A process for the preparation of an alkyl-N-monosubstituted carbamic acid ester which comprises reacting an aliphatic primary amine having the formula RNH_2 wherein R is a straight or branched chain alkyl group containing from 1 to 18 carbon atoms, with urea and at least a stoichiometric amount of a monohydric aliphatic alcohol, based on the aliphatic amine and, having from 1 to 18 carbon atoms at a temperature in the range of from about 125° C. to 250° C. in the presence of a catalytic amount of a tertiary amine containing from 1 to 18 carbon atoms and selected from the group consisting of trialkylamines wherein the alkyl groups are the same, triphenylamine, n-dodecyldimethylamine, n-tetradecyldimethylamine, n-hexyldecyldimethylamine, n-octyldecyldimethylamine, N,N,N',N'-tetramethylethylenediamine, 1,4-diazabicyclo[2.2.2]octane, 4(N,N-dimethylamino)pyridine, pyridine, 1,5-diazabicyclo[4.3.0]non-5-ene, 1,8-diazabicyclo[5.4.0]undec-7-ene; methyldiethylamine, butyldimethylamine and benzyldimethylamine.

4,501,916

PROCESS FOR PREPARING ALKYL ESTERS OF C-ALKYL-TARTRONIC OR C-HALOGENALKYL-TARTRONIC ACIDS

Vincenzo Di Toro, Como; Franco Gozzo, and Pier M. Boschi, both of San Donato Milanese, all of Italy, assignors to Montedison S.p.A., Milan, Italy

Filed Jan. 11, 1982, Ser. No. 338,620
Claims priority, application Italy, Jan. 12, 1981, 19088 A/81
Int. Cl.³ C07C *67/02, 67/22*
U.S. Cl. 560—180 **6 Claims**

1. A process for preparing the alkyl esters of acids selected from the group consisting of C-alkyl tartronic acids and C-halogenalkyl tartronic acids in which the alkanoic ester of a 1-hydroxy-1,1-dicyano-alkane or a 1-hydroxy-1,1-dicyano-alkane substituted by a halogen in the C_1–C_5 alkyl part is reacted with an alcohol R'OH wherein R' is a C_1–C_5 alkyl, in a molar ratio between alkanoic ester and lower alcohol of from 1:4 to 1:10 at 0° C. to 20° C. under anhydrous conditions and in the presence of a strong mineral acid, the molar ratio of acid to alkanoic ester being from 1:1 to 4:1, combined with hydrolyzing the resulting imido ester with two moles of water per mole of ester of the starting dinitrile, at the boiling temperature of the reaction mixture, while distilling to remove 15 to 30% by weight of the reaction mixture, and working up the solid mixture according to conventional techniques to isolate the alkyl ester of C-alkyl or C-halogenalkyl tartronic acid.

4,501,917

PROCESS FOR CARBONYLATING FORMALDEHYDE ACETALS

Hans-Joachim Schmidt, Königstein, and Hans-Jürgen Arpe, Frankfurt am Main, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Filed Aug. 5, 1982, Ser. No. 405,429
Claims priority, application Fed. Rep. of Germany, Aug. 7, 1981, 3131355
Int. Cl.³ C07C *69/66*
U.S. Cl. 560—187 **8 Claims**

1. A process for reacting formaldehyde acetals of the formula RO—CH_2—OR in which the two R radicals can be identical or different and denote alkyl, alkoxyalkyl, cycloalkyl or phenylalkyl groups having up to 10 carbon atoms at elevated temperatures and pressures with carbon monoxide in the liquid phase, which process comprises using as catalyst acid organic ion exchange materials having an exchange capacity of more than 0.5 mEq per gram.

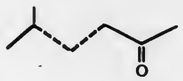
4,501,918

SUBSTITUTED METHYL ISOPROPYL OXOCYCLOHEXANE DERIVATIVES, ORGANOLEPTIC USES THEREOF AND PROCESS FOR PREPARING SAME

Philip T. Klemarczyk, Old Bridge, N.J., assignor to International Flavors & Fragrances Inc., New York, N.Y.

Division of Ser. No. 343,571, Apr. 16, 1982, Pat. No. 4,451,403. This application Oct. 12, 1983, Ser. No. 541,265
Int. Cl.³ C07C *67/08*
U.S. Cl. 500—231 **3 Claims**

1. A product produced according to the process of reacting isobutyraldehyde with acetone in the presence of a catalyst selected from the group consisting of an alkali metal hydroxide, an alkaline earth metal hydroxide, aluminum chloride, sulfuric acid and pyrrolidinium acetate in the presence of an inert solvent thereby forming a mixture of compounds defined according to the structure:



wherein in the mixture one of the dashed lines is a carbon-carbon double bond and the other of the dashed lines is a carbon-carbon single bond; then dimerizing the resulting mixture of ketones to form a mixture of cyclic dimers at a temperature in the range of from about 25° C. up to 120° C. atmospheric pressure in the presence of:

(a) a solvent selected from the group consisting of hydrocarbons and inert alkanols and a catalyst selected from the group consisting of alkali metal hydroxides, aluminum chloride, alkaline earth metal hydroxides and pyrrolidinium acetate, the mole ratio of isobutyraldehyde:acetone varying from about 1.5:0.5 up to 0.5:1.5 isobutyraldehyde:acetone, the reaction temperature for the reaction of isobutyraldehyde with acetone varying from about 25° C. up to about 120° C.; and then

(b) reacting the resulting unsaturated ketone mixture with hydrogen in the presence of a hydrogenation catalyst selected from the group consisting of palladium, palladium on a carbon support, palladium on a calcium carbonate support or palladium on a barium sulfate support at a hydrogen pressure of from 50 psig up to 10 atmospheres, the mole ratio of hydrogen:ketone dimer reactant being in the range of from 1:1 hydrogen:ketone up to about 3:1 hydrogen:ketone, the reaction being carried out in an inert solvent and the reaction temperature varying from about 20° C. up to about 100° C.

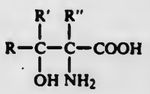
4,501,919

PROCESS FOR THE PRODUCTION OF SERINE DERIVATIVES

Melvin V. Koch, Milan, and Ambrogio Magni, Osnago-Como, both of Italy, assignors to Gruppo Lepetit S.p.A., Italy

Filed May 22, 1980, Ser. No. 152,447
Int. Cl.³ C07C *51/353*
U.S. Cl. 562—437 **10 Claims**

1. A process for the production of a serine derivative of the formula



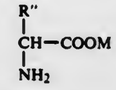
(I)

Wherein R stands for phenyl, substituted phenyl of the groups of methylphenyl, methoxyphenyl, ethoxyphenyl, halogenophenyl, hydroxyphenyl, acetylphenyl, nitrophenyl, cyanophenyl, biphenylyl sulfamoylphenyl and methylsulfonylphenyl, tert-butyl or a heteroaromatic mono- to bi-cyclic radical of the group of pyrrolyl, thienyl, furyl, pyridinyl, pyrazinyl, quinolinyl, isoquinolinyl and phthalazinyl,

R' represents hydrogen or (C_1–C_4)alkyl and

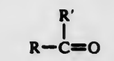
R'' is hydrogen, (C_1–C_4)alkyl or phenyl,

which comprises reacting an alkali metal salt of a glycine derivative of the formula



(III)

wherein R'' is as defined above and M stands for sodium, lithium or potassium, with two equimolecular proportions of a carbonyl compound of the formula



(II)

wherein R and R' are as defined above, in an aqueous-organic two-phase system in the presence of a concentrated alkali metal hydroxide and an ammonium quaternary salt of the formula $R'_4{}'' N^+ X^-$, wherein each of the four R''', which may be equal or different, represents an alkyl group of from 1 to 20 carbon atoms, and X^- stands for a normal anion which derived from an organic or inorganic acid, at a temperature comprised between 0° and 25° C., hydrolizing the obtained intermediate with a strong mineral acid and recovering the compound of formula I in the form of its acid addition salt by common procedures.

4,501,920

PREPARATION OF TRIMETHOXYBENZOATE SALTS AND TRIMETHOXYBENZOIC ACID

Muthunadar P. Periasamy, Creve Coeur, Mo., assignor to Mallinckrodt, Inc., St. Louis, Mo.

Filed Sep. 29, 1982, Ser. No. 426,449
Int. Cl.³ C07C *65/00, 69/76*
U.S. Cl. 562—473 **20 Claims**

1. A process for preparing a salt of 3,4,5-trimethoxybenzoic acid, which comprises:

(a) reacting hydrolyzable tannin with a methylation agent in an alkaline medium under methylation conditions to form methylated tannin, and

(b) hydrolyzing the methylated tannin by reaction thereof with a hydrolysis agent under alkaline hydrolysis conditions to form a 3,4,5-trimethoxybenzoate salt of the hydrolysis agent.

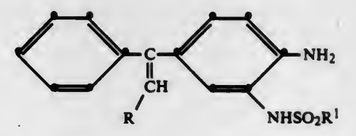
4,501,921

SYNTHESIS OF ALKYLIDENE INTERMEDIATES

Charles W. Ryan, and Bruce A. Slomski, both of Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed Nov. 18, 1982, Ser. No. 442,710
Int. Cl.³ C07C *143/75, 143/86*
U.S. Cl. 564—99 **16 Claims**

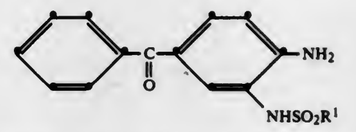
1. A process for preparing a compound of the formula



wherein R is methyl or ethyl;

R^1 is C_3–C_5 branched alkyl or NR^2R^3, wherein R^2 and R^3 are independently C_1–C_3 alkyl, or combine with the nitrogen atom to which they are attached to form pyrrolidino, piperidino or morpholino;

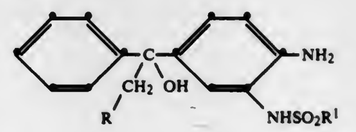
which process comprises reacting a benzoyl intermediate of the formula



with a Grignard reagent of the formula
RCH_2MgX

wherein X is bromo or chloro;

in an organic solvent suitable for Grignard reactions to form a hydroxy intermediate of the formula



and dehydrating the hydroxy intermediate with dilute acid.

4,501,922
AROMATIC AMINES FROM ALKALI METAL AMIDE AMINATING AGENT AND AROMATIC
Roland E. Grandin, Alburtis, and Barton Milligan, Coplay, both of Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.
Filed Jun. 29, 1983, Ser. No. 509,259
Int. Cl.³ C07C 85/00
U.S. Cl. 564—408 2 Claims

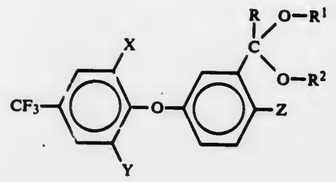
1. In a process for forming a mononuclear aromatic amine by reacting a mononuclear aromatic compound with an aminating agent under conditions effective for forming said mononuclear aromatic amine, the improvement which comprises:
forming an intermediate reaction product of a toluene amine by effecting reaction between toluene and an alkali metal amide in the presence of a metallic hydrogenation catalyst group consisting of nickel, rhodium and cobalt, said catalyst being present in a proportion of from 0.1 to 5% based upon the weight of said toluene; and
adding a protonating agent to the reaction product in sufficient amount to form said toluene amine.

4,501,923
PROCESS FOR PREPARING ADRENOCHROME
Deryck F. Boot, Knighton, England, assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed Sep. 13, 1982, Ser. No. 417,608
Claims priority, application United Kingdom, Sep. 21, 1981, 8128457
Int. Cl.³ C07D 209/36
U.S. Cl. 548—484 9 Claims

1. A process for preparing adrenochrome which comprises oxidizing adrenaline or a salt thereof with a persulfate in an aqueous medium at a pH in the range 4 to 8 in the presence of one or more water-soluble salts of bismuth.

4,501,924
HERBICIDALLY ACTIVE SUBSTITUTED DIPHENYL ETHER ACETALS OR KETALS
Dennis K. Krass, Canal Fulton, Ohio, assignor to PPG Industries, Inc., Pittsburgh, Pa.
Filed May 2, 1983, Ser. No. 490,818
Int. Cl.³ C07C 43/30
U.S. Cl. 568—592 4 Claims

1. A compound represented by the formula:



wherein:
X and Y are hydrogen or halogen provided that at least one of X or Y is halogen;
Z is nitro, halogen or cyano;
R is hydrogen or $-CH_2R^3$ wherein R^3 is hydrogen, halogen, C_1 to C_3 alkyl or haloalkyl, C_1 to C_3 alkoxy or alkylthio, mono or dialkylamino, or cyano; and
R^1 and R^2 are C_1 to C_4 alkyl.

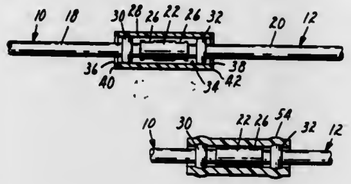
4,501,925
CHEMICAL REACTION PROMOTED BY CATALYTICALLY ACTIVE AMORPHOUS SILICA
Dean A. Young, Yorba Linda, and Jeffery W. Koepke, La Habra, both of Calif., assignors to Union Oil Company of California, Los Angeles, Calif.
Continuation-in-part of Ser. No. 526,866, Aug. 25, 1983, , which is a division of Ser. No. 356,351, Mar. 9, 1982, Pat. No. 4,414,137. This application Sep. 16, 1983, Ser. No. 533,199
Int. Cl.³ C07C 2/68
U.S. Cl. 585—467 20 Claims

1. A process for promoting the alkylation of an aromatic compound, said process comprising contacting said aromatic compound and an alkylating material under conversion conditions with a catalyst prepared by a method comprising forming a hydrogel or precipitate in a reaction mixture comprising water, silicate anions and an organic reactant selected from the group consisting of amines having a pK_a value above about 10.0, quaternary ammonium cations having a nitrogen atom bonded to four carbon atoms, quaternary phosphonium cations having a phosphorus atom bonded to four carbon atoms, precursors of the foregoing and mixtures thereof, and dehydrating the resultant hydrogel or precipitate to yield a product containing amorphous silica.

4,501,926
CATALYTIC DEWAXING PROCESS WITH ZEOLITE BETA
Rene B. LaPierre, Medford; Randell D. Partridge, Princeton; Nai Y. Chen, Titusville, all of N.J., and Steven S. Wong, Langhorne, Pa., assignors to Mobil Oil Corporation, New York, N.Y.
Division of Ser. No. 379,422, May 18, 1982, Pat. No. 4,419,220. This application Sep. 16, 1983, Ser. No. 533,017
The portion of the term of this patent subsequent to Dec. 6, 2000, has been disclaimed.
Int. Cl.³ C10G 11/05, 45/64; C07C 5/13
U.S. Cl. 585—739 11 Claims

1. A process for dewaxing a hydrocarbon feedstock comprising slightly branched chain paraffins as a waxy component, which comprises contacting the feedstock with a catalyst comprising zeolite beta having a silica:alumina ratio of at least 30:1 and a hydrogenation/dehydrogenation component under isomerization conditions, to isomerize the the waxy component.

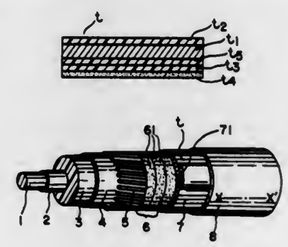
4,501,927
APPARATUS AND METHOD FOR SEALING SPLICES IN INSULATED ELECTRICAL CABLES
James A. Sievert, Stillwater, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed Aug. 31, 1983, Ser. No. 528,059
Int. Cl.³ H02G 15/18
U.S. Cl. 174—93 8 Claims



1. In combination with a pair of insulated cables butt-spliced together, a protective and sealing assembly comprising:
a protective cylindrical sleeve having an internal diameter greater than that of said insulated cables so that said sleeve may freely slide along said cables and having a length substantially longer than said butt-splice so that said sleeve spans said splice and extends beyond said splice along each of said insulated cables; and
at least one toroidal sealing ring disposed at each end of said sleeve, between said sleeve and said cables, and substantially midway between the ends of said sleeve and said butt-splice, said rings when undeformed having an internal diameter less than the diameter of said insulated cables and an external diameter greater than the internal diameter of said sleeve so that said rings seal to the insulation of said cables and to said sleeve and are compressed between said sleeve and said insulated cables.

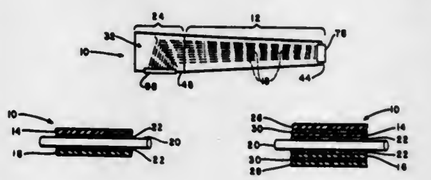
8. A method of protecting and sealing the splice of two insulated cables having ends to be butt-spliced together comprising the steps of:
rolling at least one toroidally shaped sealing ring having an internal diameter less than that of said insulated cables along each of said cables to points removed from the ends of said cables;
inserting an end of one of said cables through a protective sleeve having an internal diameter less than the external diameter of said sealing rings but greater than that of said insulated cables so that said protective sleeve is free to slide along said cable, said cable being inserted until said protective sleeve is spaced from said end of said cable and disposed between said end of said cable and one of said sealing rings;
splicing said cables;
rolling one of said sealing rings along its respective cable to a position adjacent said splice;
engaging said one sealing ring with one end of said protective sleeve and moving said sleeve in the direction from said splice toward said one ring until the other end of said sleeve is adjacent the end of said splice opposite said one ring whereby said one ring is rolled along the cable with the movement of said sleeve away from said splice to a position intermediate said one end of said sleeve and said splice;
rolling the other of said sealing rings to a position adjacent said splice and said other end of said sleeve; and
engaging said other sealing ring with said other end of said sleeve and moving said sleeve in the direction from said splice toward said other ring until said sleeve is substantially centered over said splice, thereby compressing said other ring between the inner surface of said sleeve and said cable and causing said other ring to roll away from said splice while said movement of said sleeve from said splice toward said other ring causes said one ring to roll toward said splice resulting in both rings being substantially equally spaced from said ends of said sleeve and substantially equally spaced from said splice.

4,501,928
SHIELDING TAPE AND ELECTRIC CABLES USING SAME
Masami Ishitobi, Yokohama, Japan, assignor to Dainichi-Nippon Cables, Ltd., Hyogo, Japan
Filed May 9, 1983, Ser. No. 492,600
Int. Cl.³ H01B 7/28
U.S. Cl. 174—107 9 Claims



8. An electric cable comprising a core, a sheath of vinyl chloride polymer and a water impermeable layer of a shielding tape longitudinally placed beneath the sheath and composed of a lead foil and a layer of vinyl chloride polymer formed over each surface of the lead foil, the sheath being adhered to the underlying vinyl chloride polymer layer of the shielding tape with a non-reaction-curable adhesive, the shielding tape overlapping itself with its vinyl chloride polymer layers adhered to each other at the lap with the same type of adhesive as above.

4,501,929
MULTICONDUCTOR FLAT CABLE
Edward A. Escallier, Norwalk; Stanley R. Dawson, Corona, and Joseph M. Shaheen, La Habra, all of Calif., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.
Division of Ser. No. 375,640, May 6, 1982,. This application Mar. 7, 1984, Ser. No. 586,953
Int. Cl.³ H01B 7/08
U.S. Cl. 174—117 F 2 Claims



1. A multiconductor flat cable, comprising:
(a) an insulation cover sheet;
(b) an insulation base sheet;
(c) multiple runs of a conductor located between said cover and base sheets;
(d) said cover and base sheets being bonded together so as to form a first lamination;
(e) said cover and base sheets of said first lamination being severed into an end portion and a body portion interconnected by exposed portions of said multiple conductor runs;
(f) said end portion of said first lamination being angularly displaced through a predetermined angle relative to, and within the plane of, its body portion so as to form a corre-

sponding angular turn in said exposed portions of said multiple conductor runs;

(g) an insulation cover layer;

(h) an insulation base layer;

(i) said first lamination being located between said cover and base layers such that said cover and base layers overlap said end and body portions of said first lamination and cover said angular turn in said multiple conductor runs; and

(j) said cover and base layers being bonded together and to said cover and base sheets of said end and body portions of said first lamination so as to form a second lamination which permanently maintains said angular turn in said multiple conductor runs.

4,501,930

TELEPRINTER

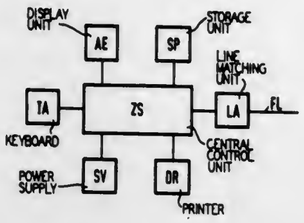
Roman Lutz, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Mar. 18, 1983, Ser. No. 476,557

Claims priority, application Fed. Rep. of Germany, Apr. 8, 1982, 3213290

Int. Cl.³ H04L *21/02, 21/04*

U.S. Cl. 178—4 **11 Claims**



1. A teleprinter for input/transmission and/or reception and output of characters representing graphic characters, said characters being coded by teleprinter symbols and each being provided with start and stop elements and being transmitted in accordance with the start-stop operation, said teleprinter comprising a storage means for storing characters of at least one row, and a printer for printing out said graphic characters, said printer printing said characters exclusively row-by-row and returning to a start position before each printout of characters, a means for controlling operation of said printer such that after the occurrence of a predetermined control signal generated whenever no characters are entered or received during a predetermined period of time, said printer generates an output consisting of all characters within a row which have not yet been printed at the time of said control signal, and a display unit for displaying graphic characters comprising at least a portion of a row to be printed before said graphic characters are printed.

4,501,931

COLOR INFORMATION INPUT SYSTEM FOR ELECTRONIC BLACKBOARD

Nobumasa Ohya, Yokohama; Ryusaku Imai, Kawasaki, and Hitoshi Sato, Yokohama, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Jun. 24, 1983, Ser. No. 507,497

Claims priority, application Japan, Jun. 26, 1982, 57-110267

Int. Cl.³ G08C *21/00*

U.S. Cl. 178—18 **10 Claims**

1. A color information input system for an electronic blackboard which accepts hand written information generated on an entry area by pens of different colors and displays the hand written information on a display unit, comprising:

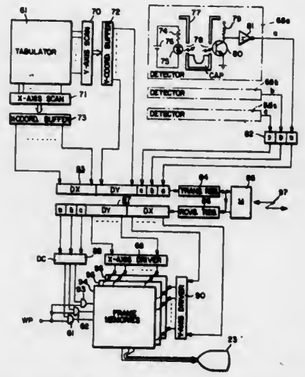
pen stockers for stocking the pens of different colors;

detectors, each of said detectors provided for a corresponding pen stocker and generating a detection signal indicating whether one of said pens is stocked in said corresponding pen stocker;

a color information generator, operatively connected to said detectors, for generating color information in accordance with the detection signal from each of said detectors; and

a holder, for holding a pen selected from said pen stockers while generating the hand written information, comprising a signal generator for generating a signal;

a position coordinate sensor for detecting coordinates of the signal generated by the signal generator in said holder



while on the entry area and generating coordinate information; and

transmitting means, operatively connected to said color information generator, said position coordinate sensor and the display unit, for transmitting color and coordinate information to the display unit, said transmitting means changing the color information transmitted when one of said detectors detects that the selected pen has been taken out of said corresponding pen stocker and, color information for the selected pen is generated by said color information generator and input to said transmitting means.

4,501,932

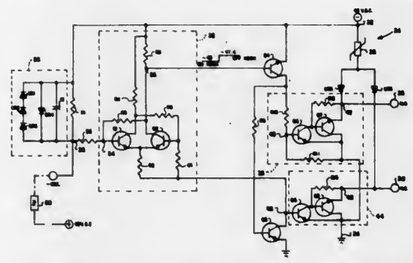
SOLID STATE ELECTRONIC DIAL PULSE RECEIVER CIRCUIT

William T. Mostyn, Jr., Waco, Tex., assignor to Telco Systems, Inc., Waco, Tex.

Filed Aug. 6, 1981, Ser. No. 290,731

Int. Cl.³ H03K *17/60*; H04Q *3/04*

U.S. Cl. 179—16 AA **11 Claims**



7. In a load responsive switching device having a load sensing node, a supply voltage node, and a ground reference node, a bistable switching circuit having an input node coupled to said load sensing node and having first and second output nodes, the bistable switching circuit having first and second

operating states wherein the first and second output nodes are placed at the supply voltage node potential and at the ground reference node potential, respectively, in the first operating state of the bistable switching circuit, and the first and second output nodes are placed at the ground reference node potential and at the supply voltage node potential, respectively, in the second oerating state of the bistable switching circuit, and voltage bias means coupled to said sensing node for placing said bistable switching circuit in the second operating state when an external impedance load is connected to said sensing node, and for placing said bistable switching circuit in the first operating state when the external impedance load is disconnected, the improvement comprising:

a voltage input limiter circuit coupled between the supply voltage node and the load sensing node for clamping the load sensing node at a bias voltage level corresponding with operation of said bistable switching circuit in its second operating state in response to current flow from said sensing node through an external impedance load having an impedance magnitude less than a predetermined maximum operative level.

4,501,933

TRANSISTOR BRIDGE VOLTAGE RECTIFIER CIRCUIT

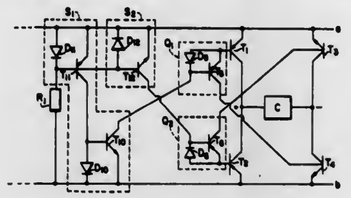
Marco Siligoni, Vittuone, and Nazareno Rossetti, Milan, both of Italy, assignors to SGS-ATES Componenti Elettronici S.p.A., Milan, Italy

Filed Jun. 28, 1982, Ser. No. 393,088

Claims priority, application Italy, Jun. 30, 1981, 22636 A/81

Int. Cl.³ H04M *1/74*

U.S. Cl. 179—81 R **7 Claims**



1. A transistor bridge voltage rectifier circuit for connecting an electronic circuit of a telephone set to a two-wire telephone line, said circuit comprising first and second bipolar transistors having a first type of conductivity, and third and fourth bipolar transistors having a second type of conductivity which is opposite to that of the first type of conductivity,

the collector of said first transistor being connected to the collector of said second transistor and the collector of said third transistor being connected to the collector of said fourth transistor, said connections respectively forming first and second terminals to which said electronic circuit of said telephone set is connected,

the emitters of said first and the third transistors being connected to a first wire of said telephone line, the emitters of said second and of the fourth transistors being connected to a second wire of said telephone line;

said rectifier circuit further comprising a biasing circuit which comprises:

first and second controlled current gain bipolar transistors having a conductivity of said first type, the emitter and the collector of said first controlled current gain transistor being respectively connected to the base of said first transistor and to the base of said fourth transistor, the emitter and the collector of said second controlled current gain transistor being respectively connected to the base of said second transistor and the base of said third transistor; and,

a control circuit for controlling said first and second controlled current gain transistors, said control circuit being sensitive to the polarity of the telephone line voltage and connected to the base of said first controlled current gain transistor and the base of said second controlled current gain transistor.

4,501,934

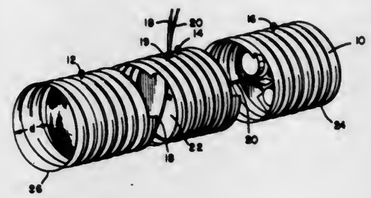
LOUDSPEAKER SYSTEM

David M. Wiener, Westport, Conn., assignor to W² Vehicle Design and Development, Westport, Conn.

Filed Jul. 18, 1983, Ser. No. 514,876

Int. Cl.³ H05K *5/00*

U.S. Cl. 179—146 E **15 Claims**



1. A loudspeaker system comprising:

a flexible tube;

first and second loudspeakers;

means for mounting said first loudspeaker within one end of said flexible tube, said first loudspeaker oriented to direct sound outwardly from said one end;

means for mounting said second loudspeaker within the other end of said flexible tube, said second loudspeaker oriented to direct sound outwardly from said other end; and

a baffle plate mounted within said tube, intermediate said first and second loudspeakers.

4,501,935

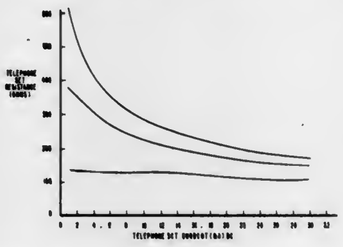
DETECTING A DC NONLINEARITY TERMINATING A NETWORK

Michael A. Gray, Parsippany, assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Jul. 20, 1983, Ser. No. 515,538

Int. Cl.³ H04M *1/24*

U.S. Cl. 179—175 **8 Claims**



1. A method for determining if a DC nonlinearity terminates a network accessible via an input port, said method comprising the steps of

measuring first and second DC resistances at said input port in response to first and second DC sources, and

indicating the presence of said nonlinearity whenever the difference between said first and second resistances falls within a predetermined range.

4,501,936
PROTECTIVE COVER FOR TELEPHONE

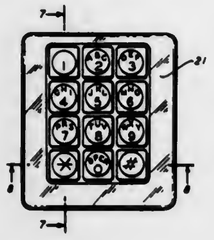
Milton Morse, Fort Lee, N.J., assignor to APM Corporation, Englewood, N.J.

Continuation-in-part of Ser. No. 236,757, Feb. 23, 1981, Pat. No. 4,438,300, Ser. No. 261,647, May 7, 1981, abandoned, Ser. No. 286,063, Jul. 23, 1981, abandoned, and Ser. No. 299,509, Sep. 4, 1981, Pat. No. 4,436,965. This application May 25, 1982, Ser. No. 381,905

The portion of the term of this patent subsequent to Mar. 20, 2001, has been disclaimed.

Int. Cl.³ H01H 9/02

U.S. Cl. 179—184 16 Claims



1. A protective cover for a push-button array extending through a generally planar surface of a telephone set, each of the push-buttons having indicia thereon, comprising:

a metal frame adapted to fit over the planar surface of the telephone set;

a flexible elastomeric sheet having a grid of upwardly-directed pockets which are adapted to overlie the said push-buttons of the array; each of said pockets being defined by substantially vertical side walls rising above the main plane of said sheet and an upper top portion extending across the tops of said vertical walls, each said pocket thereby extending above the said plane of said sheet and being open at the lower end for receiving each of the buttons of said array and thereby overlying the array of push-buttons on said telephone, said top portion of each said pocket being provided with an upwardly protruding portion, the lateral periphery of which is inward of said vertical side walls, said pockets being elastically depressible independently of one another toward their open ends to permit individual displacement of the underlying telephone set push-buttons received in said pockets; said sheet including a skirt portion extending laterally beyond the side walls of said pockets, and said sheet being continuous between its lateral edges, whereby said entire push-button array may be overlaid by said cover and thereby protected from environmental hazards, said cover being disposed wholly within and permanently secured to said frame; and

adhesive means to attach said sheet and frame to said planar surface.

4,501,937
INTEGRAL MULTISWITCH DISPLAY PANEL

Harry B. Anderson, and Jack J. Zalewski, both of Bradenton, Fla., assignors to Eaton Corporation, Cleveland, Ohio

Filed Mar. 14, 1983, Ser. No. 474,939

Int. Cl.³ H01H 9/26

U.S. Cl. 200—5 A 10 Claims

1. A manually-operated integral multiswitch control and display panel comprising:

an open top housing;

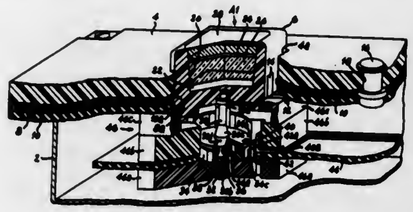
a multiswitch panel closing the top of said housing and having a plurality of openings therein;

a plurality of pushbutton switches, each having an insulating base within said housing and a pushbutton extending up through one of said openings;

a control circuitry printed circuit board within said housing common to said switches and having a plurality of holes therein, one for each of said switches;

each said switch having stationary and movable contact means mounted on the rim of the associated hole and connected to the printed circuit on said board and actuator means within said base comprising an actuating member extending from the associated pushbutton down through said hole for closing and opening said contact means when said pushbutton is actuated;

an electrically energizable multicharacter display mounted within said pushbutton so as to be visible from the top thereof;



a display drive printed circuit board beneath said panel common to said switches and having a plurality of apertures therein, one for each of said pushbuttons;

each said switch having sliding connector means comprising stationary contacts mounted on the rim of the associated aperture and connected to the display drive printed circuit on said board and movable contacts mounted on said pushbutton and connected to said display;

and means whereby said display is controlled through said display drive printed circuit board and said control circuitry printed circuit board in response to operation of said pushbutton switches.

4,501,938
KEYBOARD SWITCH

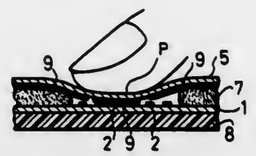
Masahiko Kawauchi, Miyagi, Japan, assignor to Alps Electric Co., Ltd., Tokyo, Japan

Filed Apr. 6, 1983, Ser. No. 482,579

Claims priority, application Japan, Sep. 4, 1982, 57-50558[U]

Int. Cl.³ H01H 9/00

U.S. Cl. 200—5 A 3 Claims



1. A keyboard switch including an insulating sheet provided with a lower-electrode pattern formed by arranging lower electrodes at given distances, each of said lower electrodes being composed of a pair of electrode portions having interfitted teeth spaced from one another; and a second insulating sheet provided with an upper-electrode pattern formed by a plurality of lines of upper electrodes each formed by bar-shaped elements spaced from one another with the bar-shaped elements of each line being offset from the bar-shaped elements of the adjacent lines so that said upper electrodes can cross adjacent teeth of said pair of electrode portions of said lower electrodes.

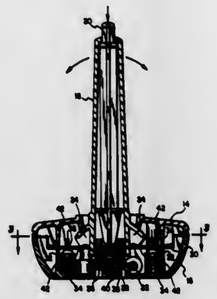
4,501,939
DIGITAL JOYSTICK CONTROLLER

Tom M. Hyltin, Dallas; Thomas G. Milner, Fort Worth, and Elam C. Frye, Jr., Dallas, all of Tex., assignors to Personal Peripherals Inc., Irving, Tex.

Filed Nov. 4, 1983, Ser. No. 548,658

Int. Cl.³ H01H 25/00

U.S. Cl. 200—6 A 15 Claims



1. An electronic joystick controller comprising:

a hollow base portion having an upper and lower surface and encompassing a plurality of fixed electrical contact points;

a first elongate member pivotally mounted at a first end thereof through said upper surface of said hollow base portion; and

a planar conductive member disposed within said hollow base portion and suspended a selected distance above said plurality of fixed electrical contact points, said planar conductive member having a plurality of coplanar elongate contact portions for urging said first elongate member into an erect position and for contacting selected ones of said plurality of fixed electrical contact points in response to deflection of said coplanar elongate contact portions induced by manual displacement of said first elongate member from said erect position.

4,501,940
OPPOSED CONTACT SWITCH

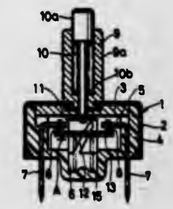
Masaru Suzuki, Aichi, Japan, assignor to Kabushiki Kaisha Tokai Rika Denki Seisakusho, Aichi, Japan

Filed Oct. 17, 1983, Ser. No. 542,818

Claims priority, application Japan, Oct. 18, 1982, 57-157718[U]

Int. Cl.³ H01H 15/00

U.S. Cl. 200—16 A 2 Claims



1. An opposed contact switch, comprising:

two stationary contacts,

a movable contact for contacting and electrically interconnecting said two stationary contacts,

first spring biasing means for biasing said movable contact into a first vertical position in contact with said two stationary contacts, said biasing means consisting of a contact spring directly in contact with said movable contact,

said movable contact having engaging knobs protruding therefrom,

a contact holder having vertically extending sides with guides therein inclined with respect to the vertical, said engaging knobs slidably fitting into said guides, and

plunger means for moving said contact holder vertically through a first portion of a stroke to cause said guides and engaging knobs to move said movable contact laterally across, but still in contact with said stationary contacts, and through a second portion of a stroke to cause said movable contact to move vertically away from the first position to a second vertical position out of contact with said stationary contacts, and

release of said plunger means results in the opposite sequence of movement of said movable contact.

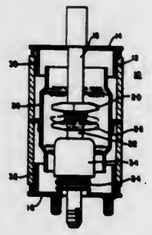
4,501,941
VACUUM INTERRUPTER CONTACT MATERIAL

Sidney J. Cherry, Elmira, N.Y., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Oct. 26, 1982, Ser. No. 436,867

Int. Cl.³ H01H 33/66

U.S. Cl. 200—144 B 6 Claims



1. An improved vacuum interrupter electrical contact which exhibits an improved high voltage withstand characteristic and comprises a minor proportion of selected refractory metal, and a major proportion of dispersion strengthened copper.

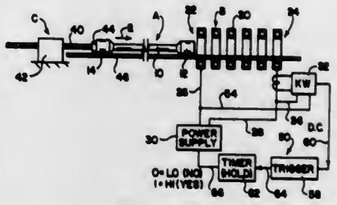
4,501,942
METHOD AND APPARATUS FOR UNIFORM INDUCTION HEATING OF AN ELONGATED WORKPIECE

John C. Lewis, Dundas, Canada, assignor to Park-Ohio Industries, Inc., Shaker Heights, Ohio

Filed Sep. 9, 1982, Ser. No. 416,274

Int. Cl.³ H05B 6/40

U.S. Cl. 219—10.43 16 Claims



1. A method for inductively heating an elongated workpiece to a generally uniform temperature over the length thereof wherein said workpiece has a first portion with a uniform cross-section extending over a major part of the workpiece length and a second portion with a cross-section greater than said first portion, said method comprising the steps of:

(a) providing a multi-turn inductor having an entrance end

and an exit end with said inductor being generally coaxially disposed about an elongated workpath and selectively energizable by a controllable power supply to either one of two different preselected energization levels;

(b) moving at least one of said inductor and workpiece relative to the other at a constant rate along said workpath with consecutive sections of said workpiece and said inductor disposed in an inductively coupled relationship for heating said workpiece;

(c) energizing said inductor to a first one of said preselected energization levels during said step of moving said inductor and workpiece relative to one another, for inductively heating one of said workpiece first and second portions to generally a preselected temperature as it passes through said inductor;

(d) sensing the instantaneous electrical power absorbed by the workpiece from said inductor as the other one of said first and second workpiece portions is moved into an inductively coupled relationship therewith to create a first electrical signal proportional to the sensed instantaneous power absorbed from said energized inductor;

(e) creating a second signal in response to said first signal reaching a predetermined value; and,

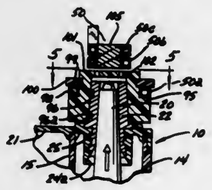
(f) shifting the energization level of said inductor to the other one of said preselected energization levels directly in response to said second signal, and maintaining said inductor energized at said other one of said energization levels for a predetermined time interval, for inductively heating said other one workpiece portion to generally said preselected temperature as it passes through said inductor.

4,501,943

APPARATUS AND METHOD FOR FUSING BATTERY TERMINALS WITH IMPROVED INDUCTION HEATING POWER CONTROL

David L. Lund, Minneapolis, Minn., assignor to GNB Batteries Inc., Mendota Heights, Minn.

Filed Sep. 19, 1983, Ser. No. 533,079
Int. Cl.³ H05B *6/06, 6/10*
U.S. Cl. 219—10.43 **12 Claims**



1. An apparatus for fusing the end of a lead battery cell terminal post to the end of a hollow lead bushing fixed in the cover of a battery being assembled and within which the terminal post is concentrically disposed comprising

an induction heating coil;

means supporting said induction heating coil;

means supporting a battery being assembled such that a terminal post and bushing thereof are in concentric operative relation to said induction heating coil;

means for generating a high-frequency oscillating current in said coil to induce current flow in a terminal post and bushing in operative relation to said coil; and

means for energizing said high-frequency current generating means to a predetermined first power level, maintaining said power level for a first predetermined period for melting the ends of said terminal post and bushing by induced current flow therein, and then continuously decreasing said power level to zero in a controlled manner for a second predetermined period of time to effect the fusion of the ends of the terminal post and bushing to a controlled depth said second predetermined period being shorter than said first predetermined period.

7. A method for fusing the end of a lead battery cell terminal post to the end of a hollow lead bushing fixed in the case of a battery being assembled and within which the terminal post is concentrically disposed comprising

supporting an induction heating coil;

supporting said battery being assembled such that a terminal post and bushing thereof are in concentric operative relation to said induction heating coil; and

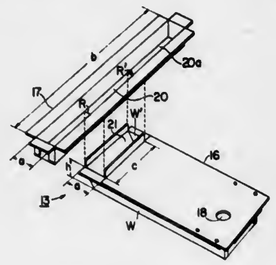
energizing said coil to a first predetermined power level for generating a high-frequency oscillating current in said coil to induce current flow in a terminal post and bushing in operative relation to said coil, maintaining said power level for a first predetermined period for melting the ends of said terminal post and bushing by said induced current flow, and then continuously decreasing said power level to zero in a controlled manner for a second predetermined period of time to effect the fusion of the ends of the terminal post and bushing to a controlled depth said second predetermined period being shorter than said first predetermined period.

4,501,944

TURNTABLE TYPE HIGH-FREQUENCY HEATING APPARATUS

Haruo Matsushima, Yamatokoriyama, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Dec. 21, 1982, Ser. No. 451,781
Claims priority, application Japan, Dec. 25, 1981, 56-213466
Int. Cl.³ H05B *6/74*
U.S. Cl. 219—10.55 F **3 Claims**



1. A high-frequency heating apparatus comprising:

a heating chamber for accommodating an article to be heated;

a door provided at an opening at the front of said heating chamber;

a rectangular waveguide having a terminating opening coupled with said heating chamber at a bottom wall thereof, said rectangular waveguide extending vertically from said terminating opening downwardly;

said rectangular waveguide being excited in a $TE_{0,n}$ mode, where n is any positive integer;

a high-frequency oscillator coupled to said waveguide;

a turntable of a dielectric material disposed in said heating chamber above and in the vicinity of the terminating opening of said rectangular waveguide, so that an electric field substantially similar to said $TE_{0,n}$ mode in said rectangular waveguide and parallel to said turntable is produced on said turntable; and

means for rotating said turntable;

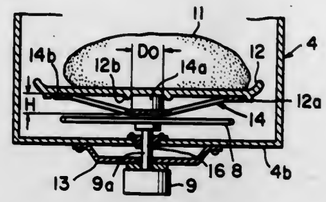
the rotating center of said turntable being disposed substantially on a bisector between a loop and a node adjacent to the loop of a standing wave produced in said rectangular waveguide.

4,501,945

MICROWAVE OVEN PROVIDED WITH TURNTABLE

Yoshinari Arabori, and Hisao Sato, both of Nagoya, Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Jun. 8, 1983, Ser. No. 502,336
Claims priority, application Japan, Jun. 9, 1982, 57-99010
Int. Cl.³ H05B *6/78*
U.S. Cl. 219—10.55 F **14 Claims**



1. A microwave oven comprising:

a heating chamber defined by microwave reflecting walls;

means for generating microwave energy;

means for coupling the microwave energy into said heating chamber;

a rotary support member within said heating chamber and adapted to support on its top surface a turntable, said rotary support including a central portion, a peripheral edge disposed substantially horizontally in said chamber, and arms interconnecting said central portion and peripheral edge and defining openings with said central portion and peripheral edge for permitting reflected microwave energy to pass through said support member, said central portion having a microwave reflecting member protruding centrally from said top surface, said microwave reflecting member being axially symmetric with respect to the axis of rotation of said support member and terminating before penetrating a plane defined by an upper surface of said peripheral edge; and

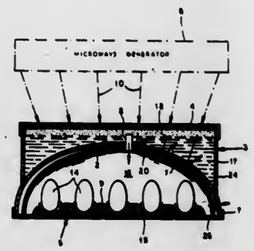
means for rotating said rotary support member.

4,501,946

DEVICE FOR COOKING FOODS WITH MICROWAVES

Bodo B. Nibbe, Karlsplatz 6/IV, D-8000 Munich 2, and Paul Hirsch, Karl-Theodor-Str. 91, D-8000 Munich 40, both of Fed. Rep. of Germany

Division of Ser. No. 349,964, Feb. 18, 1982,. This application Jun. 11, 1984, Ser. No. 618,992
Claims priority, application Fed. Rep. of Germany, Feb. 20, 1981, 3106236
Int. Cl.³ H05B *6/80*
U.S. Cl. 219—10.55 E **8 Claims**



1. A device usable with a cooking stove equipped with a microwave source for rapidly boiling foods not suitable for cooking with direct microwave radiation, comprising:

a vessel positioned for irradiation by microwaves from said source, said vessel forming a vapor space above an area reserved for a quantity of water to be vaporized by said microwaves;

a receptacle underneath said vessel provided with conduit means communicating with said vapor space for admitting evolving steam to foods disposed in said receptacle; and

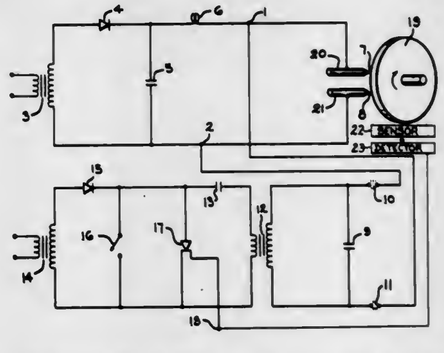
a radiation shield interposed between said receptacle and said vessel for protecting the contents of said receptacle from said microwaves.

4,501,947

ELECTRIC ARC UNBALANCE CORRECTION SYSTEM

Jack H. Kerlin, 1722 Sanford Place, Ann Arbor, Mich. 48103

Filed Dec. 15, 1983, Ser. No. 561,768
Int. Cl.³ B23K *37/00*
U.S. Cl. 219—68 **6 Claims**

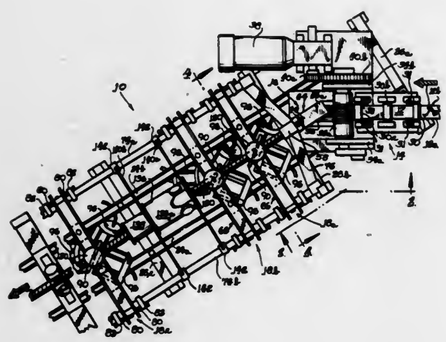


1. An electric arc unbalance correction system for correcting an unbalanced rotatable mass by electric arc removal of material from the mass, said system comprising electrode structure defining an air gap within which a portion of an unbalanced mass is disposed and via which an electric arc is delivered to remove material from the unbalanced mass while mass is being rotated, a capacitor bank power supply, coupling circuit means operatively coupling said capacitor bank power supply with said electrode structure for supplying electric current from the discharge of said capacitor bank via said electrode structure across the gap to remove material from the unbalanced mass, said capacitor bank power supply being incapable by itself of initiating electric arc discharge across the gap but being capable of sustaining and augmenting electric arc discharge across the gap once initiated, and an arc discharge initiation circuit operatively coupled with said coupling circuit means for producing a high-voltage, high-frequency pulse which is effective to initiate electric arc discharge across the gap so that said capacitor bank power supply can become effective to sustain and augment the discharge thereby removing material from the unbalanced mass, said coupling circuit means comprising a low resistance conductor between said capacitor bank and said electrode structure including several turns forming a low inductance choke coil but being free of other electrical circuit components, said choke coil being effective to prevent said capacitor bank power supply from impairing the effectiveness of said arc discharge initiation circuit yet allowing said capacitor bank power supply to sustain and augment the electric arc discharge without any substantial impediment of current flow, and means for causing said arc discharge initiation circuit to inject a high-voltage, high frequency pulse directly across the gap when a heavy spot of the unbalanced mass is disposed at the gap.

4,501,948
METHOD AND APPARATUS FOR FORMING SPIRAL TUBING

Jack S. Yampolsky, and Endre F. Peszeszer, both of San Diego, Calif., assignors to GA Technologies Inc., San Diego, Calif.

Filed Aug. 16, 1982, Ser. No. 408,076
Int. Cl.³ B23K 27/00
U.S. Cl. 219—121 LC 9 Claims



1. Apparatus for forming spirally wound unperforated tube with an uninterrupted leakproof welded seam without flanges thereon from metallic strip material having parallel laterally spaced longitudinal edges, said apparatus comprising, in combination,

frame means,

tube forming die means supported by said frame means and defining a substantially cylindrical bore therethrough having an entrance end and an exit end,

means for feeding a length of said metallic strip material into said entrance end of said die means in a direction such that the longitudinal axis of the strip subtends a predetermined acute angle with the axis of said bore, said feeding means being operative to advance said strip material through said cylindrical bore in a manner to form a spiral tube having said longitudinal edges in juxtaposed relation,

said tube forming die means being of the closed tube kind including a cylindrical wall therein defining the substantially cylindrical bore for forming the tube solely by contact with said cylindrical wall,

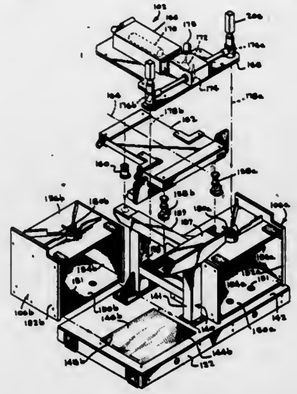
welding means supported by said frame means to receive said spiral tube from said die forming means and weld said juxtaposed edges so as to form an uninterrupted leakproof, continuous seam between said juxtaposed edges, and

torquing means supported by said frame means and including a plurality of driven torque wheels adapted to apply a torque to said spiral tube in a manner to selectively control the relationship between said juxtaposed edges of said spirally wound tube during welding of said spiral tube, said torquing means comprising at least three torque wheels equally spaced about the circumference of said spiral tube and opposed to each other and having frictional contact with the spirally wound tube adjacent the closed tube forming die means to hold the longitudinal edges within the tube forming means and to reduce springback at the exit of the tube forming means and thereby reduce the force of the tube on the cylindrical wall forming the tube.

4,501,949
MOVABLE MACHINING CHAMBER WITH ROTATABLE WORK PIECE FIXTURE

Ronald F. Antol, North Huntingdon Township, Westmoreland County; Ralph W. Kalkbrenner, Irwin, and Donald L. Wolfe, Allison Park, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Sep. 1, 1982, Ser. No. 414,263
Int. Cl.³ B23K 27/00
U.S. Cl. 219—121 LC 14 Claims



1. Machining apparatus for establishing a machining environment about a work piece of a gas non-reactive with respect to the material of the work piece and for selectively moving the work piece with respect to a laser beam, and machining apparatus comprising:

(a) a machining chamber for receiving the work piece and for establishing the machining environment about the work piece, said machining chamber having an upper edge defining an opening for receiving the work piece, the remainder of said machining chamber defining a gas-tight envelope for preventing the interchange of the non-reactive gas within said machining chamber and a reactive gas outside of said machining chamber;

(b) means for generating and directing the laser beam into said machining chamber and onto the work piece;

(c) sealing means;

(d) means for moving selectively said machining chamber and the work piece with respect to the laser beam and said sealing means; and

(e) a slide table for movably supporting said moving means and said machining chamber between a first position, wherein said machining chamber is disposed beneath said sealing means and the laser beam is directed onto the work piece, and a second position, wherein said machining chamber is removed from said sealing means to permit the work piece to be disposed within said machining chamber;

(f) said sealing means disposed at a substantially uniform spacing from said upper edge to provide a peripheral gap between said sealing means and said machining chamber to facilitate the movements without restraint as imparted respectively by said moving means and said slide table, of said machining chamber with respect to said sealing means;

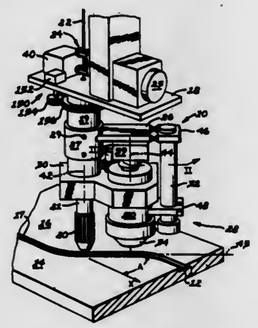
(g) wherein there is further included measuring means responsive to the laser beam to provide a manifestation indicative of the energy of the laser beam, said measuring means mounted upon said slide table and said slide table is movable to a third position, wherein the laser beam is aligned with said measuring means, whereby a manifestation indicative of the power level of the incident laser beam is provided; and

(h) wherein there is included first locator means disposed to engage said slide table for accurately locking said slide table in each of its first and third positions.

4,501,950
ADAPTIVE WELDING SYSTEM

Richard W. Richardson, Columbus, Ohio, assignor to Caterpillar Tractor Co., Peoria, Ill.

PCT No. PCT/US82/01235, § 371 Date Sep. 7, 1982, § 102(e) Date Sep. 7, 1982, PCT Pub. No. WO84/00913, PCT Pub. Date Mar. 15, 1984
PCT Filed Sep. 7, 1982, Ser. No. 432,888
Int. Cl.³ B23K 9/12
U.S. Cl. 219—124.34 33 Claims



1. In a welding system (10) having a weld torch (20), a weld torch axis (42), a weld torch support assembly (21), means (28,38) for tracking and analyzing a weld path (12) of a workpiece (14,16) to which weld material (17) is to be applied, and means (101) for moving said weld torch support assembly (21) along said weld path (12) in response to signals generated by said tracking means (28,38), the improvement comprising:

said tracking and analyzing means (28, 38) including a workpiece scanning assembly (28) connected to said weld torch support assembly (21), said workpiece scanning assembly (28) including,

means (31) for projecting a beam of light (60) against said workpiece (14,16) and for moving said beam of light (60) in a closed path about an optical scanning axis (44) of fixed orientation parallel to and spaced apart from said weld torch axis (42);

means (33) for receiving and focusing reflections from said workpiece (14,16) of said beam of light (60),

means (19,40) for pivoting said scanning assembly (28) relative to said weld torch support assembly (21); and,

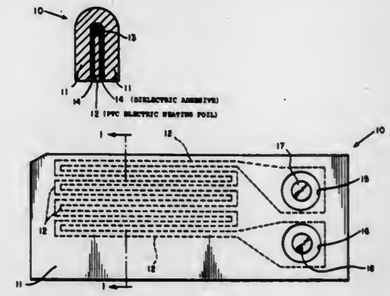
said tracking and analyzing means (28,38) further including means (38) for sensing and analyzing the focused reflections and controlling the position of said workpiece scanning assembly (28) in response to data obtained from the analysis of the focused reflections.

4,501,951
ELECTRIC HEATING ELEMENT FOR STERILELY CUTTING AND WELDING TOGETHER THERMOPLASTIC TUBES

Joshua Benin, and Robert P. Luoma, II, both of Newark, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Aug. 16, 1982, Ser. No. 408,417
Int. Cl.³ B29C 27/06; H05B 3/10; B26D 7/10
U.S. Cl. 219—243 22 Claims

1. A heating element for sterilely welding first and second thermoplastic tubes together transversely of the axis of each tube consisting essentially of as an outer layer, a folded sheet of metal having a thermal conductivity of at least about 173 watts/m °K. at a 0.10 mm thickness and a tensile yield strength of at least about 34×10^4 kPa at a 0.10 mm thickness, a resistor disposed inside the fold of said folded sheet of metal; a layer of dielectric adhesive, stable to about 260° C., between inner surfaces of said folded sheet of metal and surfaces of said



resistor, thereby electrically insulating the resistor from the folded sheet and bonding the resulting structure together; said resistor having exposed terminals for reception of electrical current and the folded edge of said metal sheet being the melting edge of the heating element.

4,501,952
ELECTRIC FLUID HEATER TEMPERATURE CONTROL SYSTEM PROVIDING PRECISE CONTROL UNDER VARYING CONDITIONS

Kenneth E. Lehrke, Maple Grove, Minn., assignor to Graco Inc., Minneapolis, Minn.

Filed Jun. 7, 1982, Ser. No. 386,017
Int. Cl.³ H05B 1/02; F24H 1/10; B05B 1/24; F28F 1/36
U.S. Cl. 219—305 17 Claims



1. An electrically operated fluid heater and control circuit comprising

(a) an elongated hollow tube adapted for insertion into a fluid flow line;

(b) an electrically operated heater in said hollow tube;

(c) a helical coil arranged about said heater in said hollow tube, said coil creating a helical fluid flow path in said hollow tube and around said heater;

(d) temperature sensing means for detecting the temperature of fluid in said tube, said sensing means comprising a conical housing having its apex contacting said heater and a conical surface area increasing in a direction away from said heater but in said fluid flow path, and a temperature responsive resistance element in said housing, and electrical conductors connected to said resistance element and projecting external said housing; and

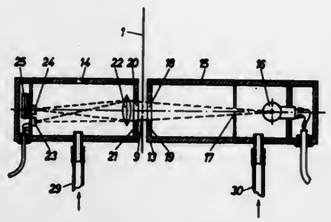
(e) temperature control circuit means connected to said electrical conductors and to said electrically operated heater, for controlling said electrically operated heater in response to the temperature of the fluid flowing through said flow path as sensed by said resistance element.

4,501,953

METHOD OF AND APPARATUS FOR CONTROLLING APPARATUS FOR PERFORATING STRIPS OF PAPER OR THE LIKE BY DISRUPTIVE SPARK DISCHARGES

Walter Hollinetz, Traun, Austria, assignor to Tann-Papier Gesellschaft m.b.H., Traun, Austria

Filed Jan. 7, 1982, Ser. No. 337,830
Claims priority, application Austria, Jan. 9, 1981, 50/81
Int. Cl.³ G01N *15/08, 21/00*; H05B *7/18*
U.S. Cl. 219—384 **3 Claims**



1. In an apparatus for perforating a perforate strip of material by disruptive spark discharge wherein the improvement comprises:

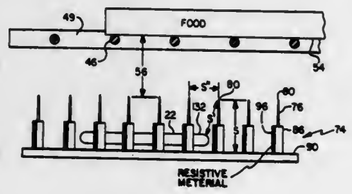
at least two chambers, means for guiding and moving the perforate strip between said chambers, a transmitter disposed in one of said chambers for transmitting electromagnetic waves, first and second receivers disposed in the other of said chambers and being adapted to receive electromagnetic waves transmitted by the transmitter and for generating respective signals, said chambers being provided with slots adjacent to the strip for passing said electromagnetic waves, and discharge control means for varying the intensity of spark discharges in dependence of the difference between said signals, wherein the chamber which contains the receivers includes a lens disposed near the slot that is permeable to the electromagnetic waves, and said lens serves to focus the waves at the receivers, and wherein the chamber which contains the transmitter includes a wave stop disposed between the transmitter and the slot which is permeable to the electromagnetic waves.

4,501,954

MECHANICAL ELECTRODE

Eugene J. Sturdevant, Wilmington, Del., assignor to Proctor-Silex, Inc., Chillicothe, Ohio

Filed Jun. 27, 1983, Ser. No. 507,739
Int. Cl.³ F24C *7/00*
U.S. Cl. 219—399 **11 Claims**



1. A mechanical electrode for use in an electrical circuit in a cooking appliance having a heating element means to cook food, the electrical circuit including a voltage power supply electrically connected to communicate voltage to the food, a surface of the food being in spaced relationship to the mechanical electrode for defining an electrical field for supporting electrical current, and a voltage control means interposed between the mechanical electrode and the voltage power supply for regulating the voltage supplied to the food for maintaining constant current flow in the field, the mechanical electrode operating at a different potential with respect to the food for establishing current contact with the food through the electrical field; the mechanical electrode comprising;

a plurality of electrically conductive needle elements, each of said needle elements having a pointed tip opposing the food surface, each said pointed tip being in current contact with an aligned portion of the food surface, said tip having a proximate voltage concentration determined by the voltage supply from the food through the electrical field and said voltage concentration normally being below an arcing potential for causing said pointed tip to generate corona current used to enhance heat and mass transfer at the food surface;

a plate member supporting and electrically interconnecting said plurality of needle elements, said plate member being electrically coupled to the voltage control means for communicating conducted current from said needle elements to the voltage control means; and

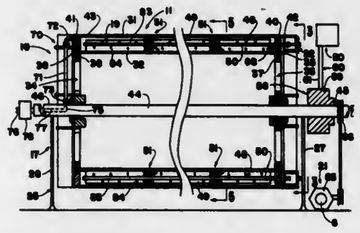
an electrical resistive material forming a discrete path of current-limiting resistivity, said electrical resistive material electrically connecting each one of said needle elements to said plate member and being operable to electrically isolate an individual needle element from adjacent needle elements and from said plate member when said voltage concentration proximate said pointed tip of said individual needle element approaches arcing potential, said pointed tip of each one of said adjacent needle elements continuing in corona current generating operation while said resistive material associated with one of said needle elements is absorbing voltage to suppress the formation of an arc.

4,501,955

ROTATABLE HEATING APPARATUS

Hal W. Bick, P.O. Box 20386, Billings, Mont. 59104

Filed Nov. 21, 1983, Ser. No. 553,521
Int. Cl.³ F28D *11/02*
U.S. Cl. 219—469 **19 Claims**



1. Rotatable heating apparatus including a support portion, a shell portion, a heating portion, a drive portion, a power supply portion and a control portion; said support portion including a frame section, said frame section including spaced upstanding sections, said upstanding sections including shaft support means; said shell portion including a substantially cylindrical outer section, a smaller substantially cylindrical inner section disposed within said outer section adjacent thereto and spaced therefrom, substantially parallel first and second end sections adjacent the ends of said cylindrical inner section, first and second annular sections enclosing the spacing between the ends of said inner and outer cylindrical sections, a shaft member disposed along the axis of said shell portion, ends of said shaft member extending outwardly beyond said end sections to said shaft support means; said heating portion including a plurality of spaced electrical heating elements disposed between said inner and outer cylindrical sections, said heating elements extending from said first annular section to a point adjacent said second annular section, insulating support members disposed along the lengths of said heating elements spacing them from said cylindrical sections, said power supply portion including electrical collector means disposed on said shaft member adjacent to said first end section, electrical connector means extending from each of said heating elements adjacent said first annular section to said collector means; said drive portion including rotatable drive means disposed adjacent to said support portion, said drive means being operatively connected to said shaft member; said control portion including thermostat means for said heating elements and speed control means for said drive means; whereby a continuous substrate can be heated as it contacts said cylindrical outer section of said rotatable shell portion.

4,501,956

ELECTRICAL RESISTANCE HEATING ELEMENT

Hans A. Bergersen, Oslo, and Eilif Risberg, Osteras, both of Norway, assignors to International Standard Electric Corporation, New York, N.Y.

Filed Sep. 18, 1981, Ser. No. 303,439
Int. Cl.³ H05B *3/10*
U.S. Cl. 219—553 **12 Claims**





1. An electrical heating element comprising:

a sheet of an electrical resistance metal having a predetermined melting temperature; and

a strip of a metallic fuse material having a melting temperature below said predetermined melting temperature arranged in a predetermined pattern incorporated in said resistance metal sheet, said fuse material and said resistance metal strip constituting a conductive path of a uniform cross-section throughout.

4,501,957

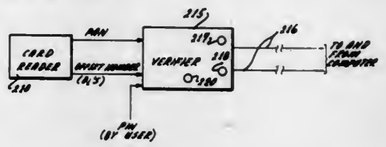
VERIFIER FOR A PERSONAL INDENTIFICATION SYSTEM

Marvin Perlman, Granada Hills, and Milton Goldfine, La-Crescenta, both of Calif., assignors to Trans-Cryption, Inc., La-Crescenta, Calif.

Continuation-in-part of Ser. No. 229,085, Jan. 28, 1981, Pat. No. 4,376,279. This application Dec. 1, 1982, Ser. No. 445,915
Int. Cl.³ H04L *9/00*
U.S. Cl. 235—379 **11 Claims**

1. A verifier for use in a personal identification system of the type in which a card is issued to a person by an entity with a personal assigned number, definable as PAN, which is recorded on the card, and a number definable as an Offset Number, which is also recorded on the card, said Offset Number being generated by a generator of said system as a function of at least said PAN and a secret code in the form of a digital sequence secretly chosen, by and known only by said person, definable as PIN, the verifier comprising:

first means for receiving said PAN and said Offset Number, recorded on said card, for processing said PAN and thereafter mapping said PAN and the digits of the Offset Number, definable as D_j's, to provide a sequence of digits, definable as C_f's;



second means for receiving a PIN from a person the identity of which is to be verified and for processing said PIN to provide a sequence of digits, definable as C_j's; and

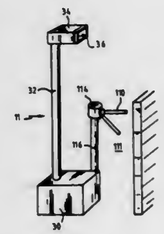
comparing means for comparing corresponding C_f's and C_j's to provide a valid signal when C_f's$=C_j$'s for each i and for providing an invalid signal when C_f's$\neq C_j$'s for one or more i's.

4,501,958

VERIFICATION SYSTEM, FOR EXAMPLE FOR PASSING THROUGH A TOLL POINT

Jean-Pierre Glize, Labastide D'Armagnac, and Michel M. Gaucher, Le Mesnil Saint-Denis, both of France, assignors to Electronique Marcel Dassault, Paris, France

Filed Mar. 3, 1982, Ser. No. 354,506
Claims priority, application France, Mar. 5, 1981, 81 04446
Int. Cl.³ H04Q *1/30*
U.S. Cl. 235—382 **7 Claims**



1. A portable object for use with an automatic verification system, comprising:

a casing;

an electronic circuit in said casing having at least one shift register memory for storing data including an indication of a number of units of value and quality data;

an emitter-receiver device in said casing capable of non-contacting coupling to a terminal of the verification system for emitting signals of bits in series corresponding to a read of the data in said shift register, and for receiving signals of bits in series to write data in said shift register;

means in said casing for storing check data received from said terminal through said emitter-receiver device;

a device for verifying the concordance between a portion of the received check data and first validity data stored in said object to deliver a read authorization;

means responsive to a read authorization for delivering the data stored in said shift register memory to said emitter-receiver device, for transmission to said terminal, while recirculating the same data through said shift register memory;

a device for verifying the concordance between said check data and second validity data stored in said object and

comprising a portion of the data in said shift register memory, to deliver a write authorization, and

means responsive to such write authorization for filling said shift register memory with new data received from said terminal,

whereby said terminal can change the second validity data upon each rewriting of new data in the portable object, and together with said units of value.

4,501,959

METHOD AND APPARATUS FOR ALIGNING FLAT DATA SUPPORTS

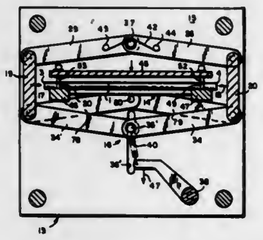
Hermann Stockburger, Kirnachweg 7, D-7742 St. Georgen, and Hans-Georg Winderlich, Niedere Str. 36, D-7730 Villingen, both of Fed. Rep. of Germany

Continuation of Ser. No. 247,167, Mar. 24, 1981,. This application Oct. 11, 1983, Ser. No. 540,821

Claims priority, application Fed. Rep. of Germany, Mar. 24, 1980, 3011318

Int. Cl.³ G06K *13/063, 13/067*

U.S. Cl. 235—485 **3 Claims**



1. A method of aligning a generally flat flexible data support, the steps of deforming the data support into a shape having a generally waved cross section in a plane substantially normal on one main surface of said data support, and thereafter exerting an alignment force on at least one edge of said data support by moving an alignment member in a direction being substantially perpendicular to said plane into engagement with said one edge.

4,501,960

MICROPACKAGE FOR IDENTIFICATION CARD

Adrien Jouvet, Colomiers, and Eric Duvois, Toulouse, both of France, assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jun. 22, 1981, Ser. No. 275,569

Int. Cl.³ G06K *19/06*

U.S. Cl. 235—492 **17 Claims**



1. A micropackage identification card adapted to be carried and used by an individual and having machine-readable identifying information, comprising:

an integrated semiconductor device enclosed in encapsulating material and having electrical terminals extending from the encapsulating material; a first flexible sheet having an opening adapted to accommodate the integrated semiconductor device, the electrical terminals of the integrated semiconductor device being adapted to lie along a surface of the first flexible sheet; and a second flexible sheet having an opening larger than the opening in the first flexible sheet, the second flexible sheet being superimposed over the first flexible sheet in a manner to accommodate the electrical terminals in the opening of the second flexible sheet so that the electrical terminals are accessible for contact by a machine used to read the identifying information.

4,501,961

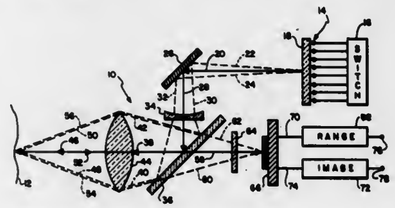
VISION ILLUMINATION SYSTEM FOR RANGE FINDER

Norman L. Stauffer, Englewood, Colo., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Sep. 1, 1982, Ser. No. 413,946

Int. Cl.³ G01J *1/20*

U.S. Cl. 250—201 **15 Claims**



9. Apparatus for use with character recognition and range finding equipment which comprises an array of radiation sensitive detectors positioned to receive radiation along a first path from a remote object and operable to produce a first output containing information relative to the character of the remote object and a second output containing information relative to the range to the remote object comprising:

radiation emitting means having first and second conditions, in the first condition said emitting means transmits radiation to the remote object so that the radiation from the remote object to the detector array may be used to produce the first output and, in the second condition, said emitting means transmits radiation so as to illuminate the remote object in a non-uniform pattern so that the radiation from the remote object to the detector array may be used to produce the second output; and

control means connected to said emitting means and operable to change said emitting means from the first condition to the second condition.

4,501,962

METHOD OF FOCUSING OPTICAL APPARATUS

Clarence F. Luck, Jr., Waltham, Mass., assignor to Raytheon Company, Lexington, Mass.

Division of Ser. No. 155,862, Jun. 2, 1980, Pat. No. 4,383,168. This application May 9, 1983, Ser. No. 492,858

The portion of the term of this patent subsequent to May 10, 2000, has been disclaimed.

Int. Cl.³ G01J *1/20*

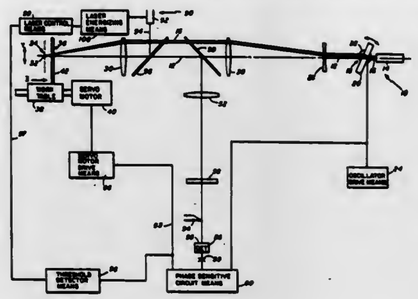
U.S. Cl. 250—201 **2 Claims**

1. A method of locating the focal plane of a lense and comprising the steps of:

producing a laterally translating beam of electromagnetic radiation

directing said beam successively along a plurality of paths intersecting at a focal spot in a focal plane:

detecting lateral translational movement of the directed beam in a transverse plane adjacent the focal plane; and



determining the position of said transverse plane relative to said focal plane.

4,501,963

REVERSING DEVICE FOR ROLLER DOORS

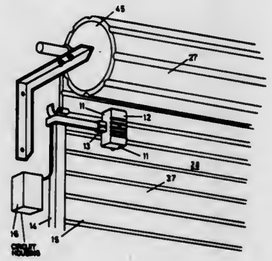
Milan Perisic, Woodforde, Australia, assignor to Automatic Roller Doors, Australia, Pty., Ltd., Adelaide, Australia

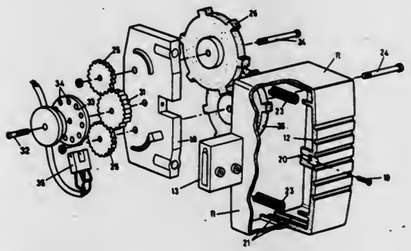
Filed Nov. 3, 1982, Ser. No. 438,987

Claims priority, application Australia, Nov. 3, 1981, PF1401

Int. Cl.³ E05F *3/00;* **G01D** *5/38*

U.S. Cl. 250—231 SE **7 Claims**





1. A reversing device for use with a roller door of the kind having a sheet metal curtain carried on an overhead roller driven by a reversible motor, and guided for vertical movement by tracks engaging its edges, which said device, when installed on such a door, comprises:

rotational means in such engagement with a face of the curtain that descent of the curtain effects rotation thereof,

electrical impulse means operatively coupled to the rotational means,

a timer,

a timer output switch and motor switching circuit,

and electrical interconnection means between said impulse means, timer, output switch and motor switching circuit, so that said impulse means imparts a series of impulses to the timer upon said rotation of the rotational means, each impulse resetting the timer, but upon reduction of descent speed, said timer times out its entire timing period and actuates the timer and output switch, in turn actuating the motor switching circuit to reverse direction of rotation of the motor.

4,501,964

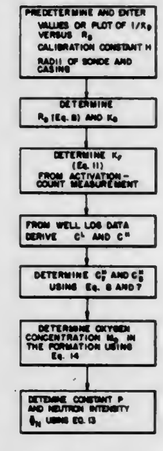
BOREHOLE COMPENSATED OXYGEN ACTIVATION NUCLEAR WELL LOGGING

Dan M. Arnold, Houston, Tex., assignor to Texaco Inc., White Plains, N.Y.

Filed Aug. 3, 1981, Ser. No. 289,664

Int. Cl.³ G01V *5/10*

U.S. Cl. 250—270 **21 Claims**



1. A method of nuclear well logging to determine oxygen concentration of a formation adjacent a well borehole while compensating for the effects of oxygen present in the well borehole, comprising the steps of:

(a) bombarding the formation and borehole constituents with high energy neutrons from a neutron source in a sonde;

(b) detecting with a gamma ray detector spaced from the source in the sonde gamma radiation resulting from the $O^{16}(n,p)N^{16}$ reaction from bombarded oxygen in the formation and borehole;

(c) obtaining a measure of detected gamma radiation in at least two gamma ray energy count windows;

(d) obtaining a borehole oxygen ratio of the gamma radiation in the gamma ray energy windows from bombarded oxygen in the borehole;

(e) obtaining a formation oxygen ratio of the gamma radiation in the gamma ray energy windows from the formation in the absence of bombarded borehole oxygen in the vicinity of the detector; and

(f) obtaining from the borehole oxygen ratio and the formation oxygen ratio a measure of the oxygen concentration in the formation.

10. A method of measuring neutron output intensity from a neutron source in a sonde which bombards formation and well borehole constituents with neutrons during well logging, comprising the steps of:

(a) bombarding the formation and borehole constituents with high energy neutrons from a neutron source in a sonde;

(b) detecting with a gamma ray detector spaced from the source in the sonde gamma radiation resulting from the

$O^{16}(n,p)N^{16}$ reaction from bombarded oxygen in the formation and borehole;

(c) obtaining a measure of detected gamma radiation in at least two gamma ray energy count windows;

(d) obtaining a borehole oxygen ratio of the gamma radiation in the gamma ray energy windows from bombarded oxygen in the borehole;

(e) obtaining a formation oxygen ratio of the gamma radiation in the gamma ray energy windows from the formation in the absence of bombarded borehole oxygen in the vicinity of the detector; and

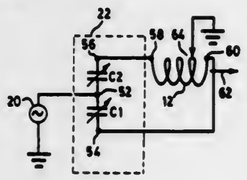
(f) obtaining from the borehole oxygen ratio and the formation oxygen ratio a measure of the neutron output intensity during said step of bombarding.

4,501,965

METHOD AND APPARATUS FOR SAMPLING A PLASMA INTO A VACUUM CHAMBER

Donald J. Douglas, Toronto, Canada, assignor to MDS Health Group Limited, Rexdale, Canada

Filed Jan. 14, 1983, Ser. No. 458,009
Int. Cl.³ H01J *49/04, 49/26*
U.S. Cl. 250—288 **23 Claims**



1. Apparatus for sampling a plasma into a vacuum chamber comprising:

(a) means for generating a plasma, including an electrical induction coil having first and second terminals and at least one turn between said first and second terminals, said turn defining a space within said coil for generation of said plasma,

(b) a vacuum chamber including an orifice plate defining a wall of said vacuum chamber,

(c) said orifice plate having an orifice therein located adjacent said space for sampling a portion of said plasma through said orifice into said vacuum chamber,

(d) and circuit means connected to said coil between said terminals to reduce the peak to peak voltage swing in said plasma.

4,501,966

INFRARED MICROSCOPE INSPECTION APPARATUS

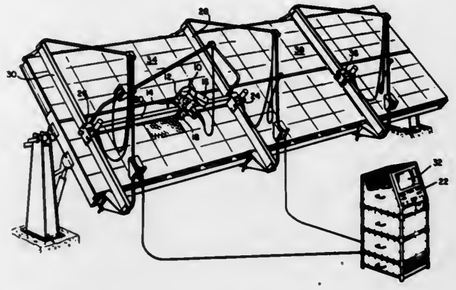
Steven E. Forman, Framingham, and James W. Caunt, Concord, both of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Mar. 13, 1981, Ser. No. 243,415
Int. Cl.³ H01J *31/50*
U.S. Cl. 250—332 **6 Claims**

1. Apparatus for illuminating an infrared transparent surface with infrared light and measuring light reflected through said surface which comprises:

a. means for irradiating said surface with infrared radiation from at least three sources, each of said sources being positioned at an angle between about 15° and 60° from the orthogonal direction to said surface,

b. a lens positioned above said surface having its axis orthogonal to said surface and adapted to receive infrared radiation reflected from said surface,



c. means for converting infrared radiation transmitted through said lens to visible light, and

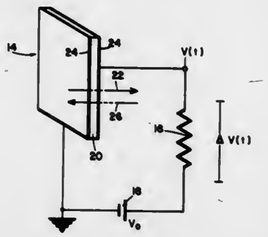
d. means for sensing said visible light.

4,501,967

BROAD BAND PYROELECTRIC INFRARED DETECTOR

Avner Shaulov, Monsey, N.Y., assignor to North American Philips Corporation, New York, N.Y.

Filed Nov. 18, 1982, Ser. No. 442,804
Int. Cl.³ G01J *5/24*
U.S. Cl. 250—338 **17 Claims**



12. An infrared thermal detector comprising:

an infrared thermal sensing element comprising a pyroelectric material whose electrical conductivity changes with temperature, said sensing element having two substantially planar opposite sides on which first and second electrodes are provided, respectively;

a load resistor having first and second electrodes, the first electrode of the load resistor being electrically connected to the first electrode of the sensing element; and

voltage supply means for providing a voltage across the second electrodes of the sensing element and the load resistor;

characterized in that:

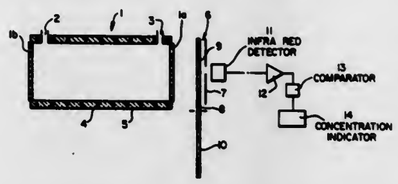
at the average equilibrium temperature of operation of the sensing element the ratio, k, of the thermal time constant of the sensing element to the PTB time constant of the detector is greater than zero.

4,501,968

INFRARED RADIATION GAS ANALYZER

Hiroyuki Ebi, and Kimio Miyatake, both of Kyoto, Japan, assignors to Horiba, Ltd., Kyoto, Japan

Filed Mar. 2, 1983, Ser. No. 471,455
Claims priority, application Japan, Mar. 9, 1982, 57-33703[U]
Int. Cl.³ G01J *1/00*
U.S. Cl. 250—343 **4 Claims**



1. An infrared radiation gas analyzer for determining the concentration of an ingredient in a sample gas, comprising:

a sample gas containing means for containing a sample gas at a temperature at which the ingredient the concentration of which is to be determined will emit infrared radiation in a range characteristic of the ingredient and means for allowing said infrared radiation to escape from said containing means;

a pair of filters, one of said filters transmitting only radiation in said range and the other of said filters transmitting only radiation in a range near to said firstmentioned range;

means for alternately passing said filters across the path of radiation escaping from said containing means;

an infrared radiation detector positioned for receiving the radiation passed by said respective filters and emitting a pulsed signal;

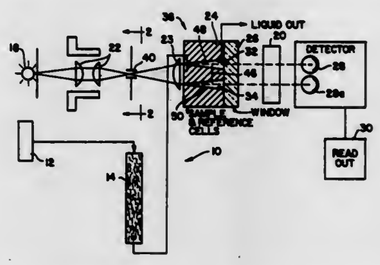
means for determining the difference between or the ratio of the respective pulses of said signal as an indication of the concentration of the ingredient the concentration of which is to be determined in the sample gas.

4,501,969

PHOTOMETRIC APPARATUS AND PROCESS

Anthony C. Lymneos, West Upton, Mass., assignor to Millipore Corporation, Bedford, Mass.

Filed Mar. 8, 1982, Ser. No. 356,064
Int. Cl.³ G01J *5/08*
U.S. Cl. 250—373 **22 Claims**



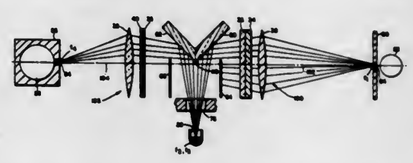
1. In a photometer of the type utilizing a light source, a sample cell adapted to transmit a continuously-flowing liquid to be analyzed from an inlet port near one end thereof through a flowpath to an outlet port near the other end thereof, a means for measuring the absorption of light in said sample cell, a light detector forming means to receive substantially all nonabsorbed light transmitted from said sample cell, means for eliminating liquid lens effects, said means comprising a generally conical sample cell, a smaller end of said sample cell being nearer said light source, such that there is substantially reduced loss of light refracted by said lenses on walls of said sample cell, wherein improvement comprises an elliptical aperture interposed between said light source and said sample cell to render a light beam entering said sample cell substantially circular.

4,501,970

FLUOROMETER

Keith E. Nelson, Virdes, Calif., assignor to Dynatech Laboratories Incorporated, Alexandria, Va.

Filed Oct. 12, 1982, Ser. No. 433,825
Int. Cl.³ G01N *21/64*
U.S. Cl. 250—458.1 **8 Claims**



1. A fluorometer for measuring the fluorescence of a material in an open top microtest well comprising support means for supporting the structure defining said well, a source of exciting light, first means for passing a beam of said exciting light downwardly through the open top of said well to strike and fluorescently excite the material in said well when said well is positioned at a preselected location on said support means, a photo-detector, and second means for directing the light which is emitted by the fluorescently excited material and which passes upwardly through the open top of the well to said photodetector for detection thereby, said first means including a lens for focusing said beam on a spot within said well.

4,501,971

RADIOGRAPHIC INTENSIFYING SCREEN

Takeji Ochiai, Minamiashigara, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Nov. 19, 1982, Ser. No. 442,957
Claims priority, application Japan, Nov. 20, 1981, 56-187502
Int. Cl.³ H01J *1/64*
U.S. Cl. 250—483.1 **3 Claims**

1. A radiographic intensifying screen comprising a substrate and a fluorescent layer provided on said substrate and consisting essentially of a binder and a radioluminescent phosphor dispersed therein, said binder comprising linear polyester resin and nitrocellulose.

4,501,972

FLOAT DETECTION SYSTEM

Charles E. Foerster, Jr., Northville; Robert E. Miller, Ann Arbor, both of Mich., and Aldren M. Pace, Reseda, Calif., assignors to Scans Associates, Inc., Livonia, Mich.

Filed Mar. 1, 1982, Ser. No. 353,166
Int. Cl.³ G01N *15/06*
U.S. Cl. 250—577 **18 Claims**

1. A float detection system for detecting the position of a float in a glass tube flow meter undergoing calibration, said float detection system including:

(a) a means for tracking said float operatively mounted adjacent to said glass flow tube;

(b) a ball screw operatively connected to said means for tracking said float to move it in an axial direction;

(c) a stepper motor connected to said ball screw to operate the same;

(d) a pulse encoder attached to the other end of said ball screw;

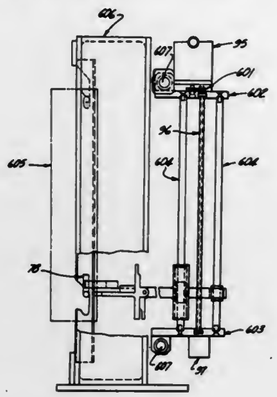
(e) a pulse encoder circuit to produce pulses related to the rotation of said ball screw;

(f) a float detector display circuit connected to said pulse

encoder to indicate the position of said means to track said float;

(g) a float detector position display connected to said float detector display circuit to display the position of said float detector;

(h) an optical conditioner circuit connected to said means to track said float to supply power thereto;



(i) a stepper driver circuit adapted to supply appropriate signals to said stepper motor;

(j) a float detector control circuit adapted to receive signals from said optical conditioner circuit and to utilize them to supply signals to said stepper driver circuit; and

(k) a travel limit circuit connected to said float detector control circuit.

4,501,973

SKIDS FOR ROTATING MACHINERY

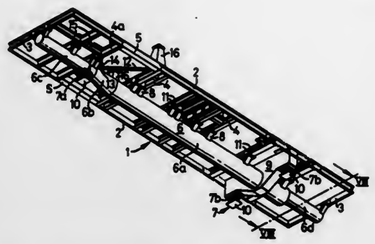
Keith E. Fenemore, Sleaford; George P. Foden, Newark, and Christopher J. Baker, Lincoln, all of England, assignors to Ingersoll-Rand Company, Woodcliff Lake, N.J.

Filed May 13, 1982, Ser. No. 377,728

Claims priority, application United Kingdom, May 14, 1981, 8114831

Int. Cl.³ F16N *1/04*

U.S. Cl. 290—1 A **15 Claims**



1. A skid for mounting and supporting rotating machinery comprising only three spaced supporting members each incorporating a universal joint, an elongate torsion resisting member rigidly connected to said supporting members and a machinery support platform connected to said torsion resisting member in torque transmitting relationship thereto; wherein

said torsion resisting member has first and second portions which have separate, parallel axes; and

one of said first and second portions is connected to but one of said supporting members, and the other of said portions is connected to the other two of said three supporting members.

4,501,974

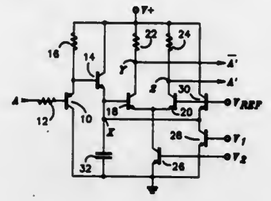
PULSE STRETCHING AND LEVEL SHIFTING CIRCUIT

Ira Miller, Tempe; Michael W. Null, and Robert N. Dotson, both of Mesa, all of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 13, 1982, Ser. No. 449,035

Int. Cl.³ H03K *17/56, 3/017*

U.S. Cl. 307—246 **4 Claims**



1. A pulse stretching circuit, comprising:

a capacitor having first and second terminals;

first transistor means coupled to said first terminal for supplying a charging current to said capacitor and charging said capacitor to a first voltage when an input signal pulse is in a first logical state;

differential transistor means having a first input coupled to said first terminal and a second input coupled to a reference voltage which is smaller than said first voltage, said differential transistor means for generating a first output when the voltage at said first terminal is less than said reference voltage and for generating a second output when the voltage at said first terminal is greater than said reference voltage; and

second transistor means coupled to said first terminal for discharging said capacitor when said input signal pulse is in a second logical state causing the voltage at said first terminal to fall below said reference voltage;

said first transistor means comprising a first transistor having an emitter coupled to a first source of supply voltage, a collector coupled to a second source of supply voltage and a base coupled to receive said input signal pulse; and a second transistor having a collector coupled to said first source of supply voltage, a base coupled to the emitter of said first transistor, and an emitter coupled to said first terminal and to said first input; and

said second transistor means comprising a third transistor having a collector coupled to said first terminal, an emitter coupled to said second source of supply voltage, and base coupled to a third source of supply voltage which causes said third transistor to remain in its active region.

4,501,975

JOSEPHSON JUNCTION LATCH CIRCUIT

Richard M. Josephs, Willow Grove, and Tsing-Chow Wang, Norristown, both of Pa., assignors to Sperry Corporation, New York, N.Y.

Filed Feb. 16, 1982, Ser. No. 349,414

Int. Cl.³ H03K *3/00, 3/38*

U.S. Cl. 307—277 **5 Claims**

1. A Josephson junction latch circuit of the type adapted to store one bit of data comprising,

an AND gate comprising at least four Josephson junctions,

said AND gate having at least one data input and one enable input,

said data input and said enable input having two logic states,

a biasing current source connected to said AND gate,

said biasing current source having two logic clock states,

a Josephson flip-flop comprising a flux storage loop,

said flip-flop having a data input coupled to the output of said AND gate,

said flip-flop having a reset input coupled to a reset input line,

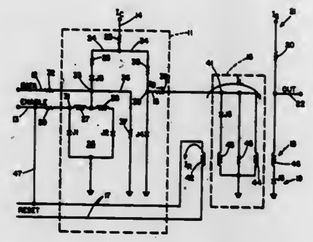
said flip-flop having a true quantity output,

said flip-flop comprising a sense line coupled to said true quantity output and having at least one Josephson junction and a source impedance in said sense line adapted to sense the state of flux in said flux storage loop,

said flux storage loop being set in a high flux state by the presence of a high logic level data input, a high logic level enable input and a high logic level biasing current source clock,

a Josephson OR logic circuit connected to the output of said sense line to provide an amplified true quantity output,

a sink line connected to said Josephone OR logic circuits and to a low voltage reference,



a second stage Josephson junction amplifier having an input branch and an output branch, said input branch being connected to said sink line, said output branch providing an inverted true quantity output,

whereby, a high logic input to said OR logic circuit switches said OR logic circuit ON and reduces the current in said sink line causing said second stage amplifier to be switched OFF, and

whereby, a low level logic input to said OR logic circuit switches said OR logic circuit OFF and increases the current in said sink line causing said second stage amplifier to be switched ON.

4,501,976

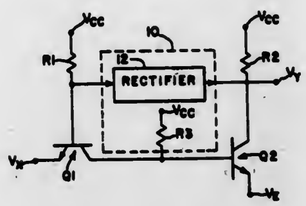
TRANSISTOR-TRANSISTOR LOGIC CIRCUIT WITH HYSTERESIS

Jeffery A. West, Pleasant Grove, and Thomas D. Fletcher, Provo, both of Utah, assignors to Signetics Corporation, Sunnyvale, Calif.

Filed Sep. 6, 1982, Ser. No. 415,109

Int. Cl.³ H03K *19/003, 19/088, 19/20*

U.S. Cl. 307—456 **12 Claims**



1. An electronic circuit which has: a first current source; a first bipolar transistor having an emitter for receiving an input signal, a base coupled to the first current source, and a collector; a second current source; and a like-polarity second bipolar transistor having an emitter at a control voltage, a base coupled to the collector of the first transistor, and a collector coupled to the second current source, wherein the second transistor turns on as the input signal moves in a first voltage rise/fall direction to a first threshold voltage; characterized by hysteresis means coupled to the base of the second transistor and coupled between its collector and the first current source for causing the second transistor to turn off as the input signal moves in a second voltage rise/fall direction opposite to the first rise/fall direction to a second threshold voltage where the absolute value of the difference between the first threshold voltage and the control voltage as the second transistor turns on exceeds the absolute value of the difference between the second threshold voltage and the control voltage as the second transistor turns off.

4,501,977

AND-OR LOGIC CIRCUIT INCLUDING A FEEDBACK PATH

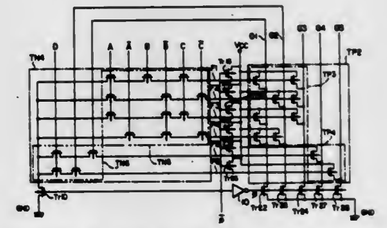
Hideharu Koike, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Dec. 3, 1982, Ser. No. 446,772

Claims priority, application Japan, Dec. 7, 1981, 56-196571

Int. Cl.³ H03K *19/017, 19/096, 19/177*

U.S. Cl. 307—469 **11 Claims**



1. An AND-OR logic circuit having two power supply terminals and an output signal line, comprising:

a first AND circuit having a plurality of series circuits which comprise transistors of a first conductivity type coupled in series along their current conduction paths and which respectively receive input signals at their respective control electrodes;

a first OR circuit having transistors of a second conductivity type which have their current conduction paths selectively connected in parallel to each other between one of said power supply terminals and said output signal line and selectively receive AND signals from said series circuits at their respective control electrodes;

a second AND circuit having a plurality of series circuits which comprise transistors of the first conductivity type connected in series along their current conduction paths and which selectively receive at least two output signals from said first OR circuit at their respective control electrodes;

a second OR circuit having transistors of the second conductivity type which have their current conduction paths selectively connected in parallel to each other between one of said power supply terminals and said output signal line and selectively receive AND signals from said series circuits of said second AND circuit at their respective control electrodes;

a precharge circuit connected between one end of each of said series circuits of said first and second AND circuits and one of said power supply terminals;

a first pull-down circuit connected between the other end of each of said series circuits of said first and second AND circuits and the other of said power supply terminals;

a second pull-down circuit coupled between one end of said output signal line and other of said power supply terminals; and

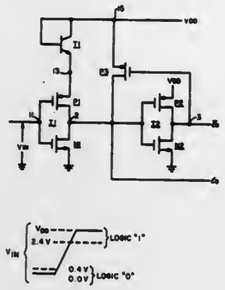
a control means for controlling said precharge circuit and said first pull-down circuit with a first synchronizing signal and said second pull-down circuit with a second synchronizing signal of the substantially opposite phase to said first synchronizing signal.

4,501,978

LEVEL SHIFT INTERFACE CIRCUIT

Carmine J. Gentile, Hightstown; Melvin L. Hagge, Bridgewater, both of N.J., and Robert C. Croes, Nijmegen, Netherlands, assignors to RCA Corporation, New York, N.Y.

Filed Nov. 24, 1982, Ser. No. 444,459
Int. Cl.³ H03K *19/017, 19/094, 19/092*
U.S. Cl. 307—475 **13 Claims**



8. A level shift interface circuit comprising:

first and second power terminals for the application thereto of first and second operating voltages, respectively;

an input signal terminal for receiving signals varying between a "low" level approximately equal to the voltage at said second power terminal and a "high" level intermediate said first and second operating voltages;

first and second output terminals for driving loads;

first, second, third, fourth and fifth insulated-gate field-effect transistors (IGFETs), each IGFET having source and drain electrodes defining the ends of a conduction path, and a control electrode; said first, third and fifth IGFETs being of one conductivity type and said second and fourth IGFETs being of complementary conductivity type;

means connecting the control electrodes of said first and second IGFETs to said signal input terminal;

means connecting said source electrode of said second IGFET to said second power terminal;

a relatively constant voltage dropping means, having a relatively constant voltage offset, connected between said source electrode of said first IGFET and said first power terminal for producing a reduced voltage at said source electrode of said first IGFET;

means connecting the drain electrodes of said first and second IGFETs to said first output terminal for producing thereat either a voltage approximately equal to said reduced voltage when said first IGFET is first turned-on in response to a "low" level input signal, or a voltage approximately equal to said second operating voltage when said second IGFET is turned-on in response to a "high" level input signal;

means interconnecting said third and fourth IGFETs to form a complementary inverter, including means connecting the source of said third IGFET to said first power terminal, the source of said fourth IGFET to said second power terminal, the control electrodes of said third and fourth IGFETs to said first output terminal and their drains to said second output terminal for producing at said second output terminal either a first signal which makes a transition from said first and said second operating voltage in response to said "low" level input or a second signal which goes from said second to said first operating voltage in reponse to said "high" level input; and

means connecting the source-to-drain path of said fifth IGFET between said first power terminal and one of said first output terminal and said source of said first IGFET, and means connecting its control electrode to said second output terminal for, in response to said low level signal at said input terminal, turning-on said fifth IGFET and, concurrently,

(a) quickly raising the level at said first output terminal towards the potential at said first power terminal,

(b) establishing the full value of said first operating voltage at said first output terminal,

(c) positively driving any load connected to said first output terminal to the voltage at said first power terminal,

(d) turning-off said third IGFET regardless of the value of its threshold voltage relative to the value of the offset of said voltage dropping means, and

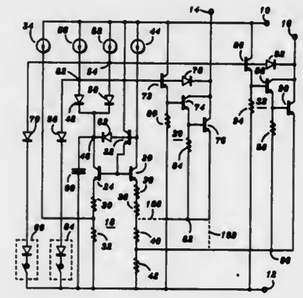
(e) producing complementary signals at said first and second output terminals which can swing fully between said first and second operating voltages.

4,501,979

CURRENT AMPLIFIER HAVING MULTIPLE SELECTABLE OUTPUTS

Michael W. Null; Robert N. Dotson, both of Mesa, and Robert B. Davis, Tempe, all of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Aug. 30, 1982, Ser. No. 413,054
Int. Cl.³ H03K *17/62;* **H03F** *3/04*
U.S. Cl. 307—494 **5 Claims**



1. A current amplifier having a first and a second voltage terminal, comprising:

plurality of output means coupled between said first and said second voltage terminals;

current means couped between said first and said second voltage terminals and coupled to said plurality of output means for providing a predetermined current to said output terminal, said current means comprising:

a first transistor coupled to a plurality of nodes; and

a plurality of current sources, one each of said plurality of current sources coupled between said first voltage terminal and one each of said plurality of nodes, one each of said nodes coupled to one each of said plurality of output means; and

plurality of selection means, each of said plurality of selection means coupled to a respective one of said plurality of output means, each one of said plurality of selection means receiving one of a plurality of digital input signals for selecting at least one of said output means.

4,501,980

HIGH TORQUE ROBOT MOTOR

Ross D. Welburn, Santa Rosa, Calif., assignor to Motornetics Corporation, Santa Rosa, Calif.

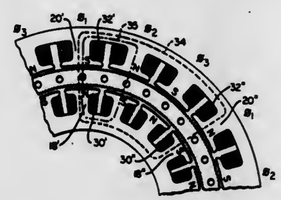
Filed Jun. 4, 1982, Ser. No. 385,034
Int. Cl.³ H02K *37/00*
U.S. Cl. 310—12 **9 Claims**

1. An improved electric motor of the type having first and second stators having stator poles and a rotor mounted between them, the rotor and the stators each having opposing teeth, and electric coils wrapped about the stator poles for generating a magnetic flux therein and in the rotor which flux brings some segment of the rotor teeth into alignment with the opposed teeth of the magnetically energized stator poles, wherein the improvement comprises:

opposed stator pole pieces on the first and second stators, with the stator teeth projecting from the pole pieces,

the rotor teeth project from the surface of the rotor in opposition to the stator pole piece teeth and have the same angular pitch as the opposing stator teeth, and

a plurality of coils, a single one of each of said coils encircling a separate one of the stator pole pieces, the coils of opposed pole pieces being connected together as a pair and a plurality of such pairs being connected together to form a single one of a plurality of phases, the coils of each phase being wound on stator pole pieces which as a group



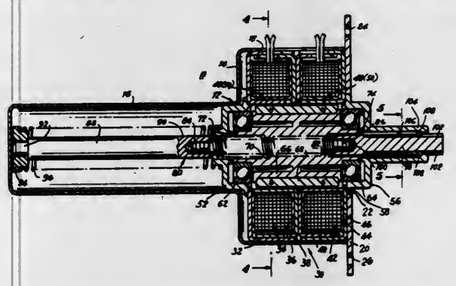
have pole piece teeth which are all simultaneously alignable with the opposing rotor teeth, the coils being connected and wound such that when a particular phase is energized, a magnetic flux is generated in each stator pole piece of such phase which flux has a magnetic polarity opposite to the magnetic polarity of the flux generated in the opposed pole piece and in the nearest stator pole piece of the same phase and also opposite to the magnetic polarity of the flux generated in the immediately adjacent pole piece during the preceding energized phase, whereby the rotor teeth align with the stator pole piece teeth of the energized phase and the magnetic flux generated travels only in stators between adjacent stator poles of the energized phase, only travels in the rotor transversely, and only travels through the rotor between opposed poles of the energized phase.

4,501,981

RETURN-TO-ZERO STEPPER MOTOR

Charles W. Hansen, Wolcott, Conn., assignor to Haydon Switch & Instrument, Inc., Waterbury, Conn.

Filed Oct. 15, 1981, Ser. No. 311,754
Int. Cl.³ H02K *37/00*
U.S. Cl. 310—49 R **25 Claims**



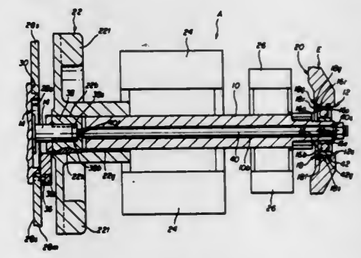
1. A stepper motor comprising a stator assembly having first and second toroidal stator electromagnets each having a plurality 2n of evenly spaced axial teeth forming alternating salient stator poles, the stator poles of the first and second stator electromagnets being offset from one another by an electrical angle of 90°; a permanent-magnet rotor having a rotor magnet with a plurality n of pairs of poles thereon arranged to face said stator poles, a rotor core supporting said rotor magnet and having a threaded central axial aperture, and bearing means mounting said rotor core for rotation relative to said stator electromagnets; an axially movable shaft assembly including a threaded screw disposed in said axial aperture and adapted to mate therewith, and engaging means engaging a longitudinal track on said shaft assembly for preventing relative rotation of said screw and said rotor assembly while permitting axial movement of said screw, at least to a limited extent; and means urging said screw to a zero axial position thereof whenever no current is applied to said stator electromagnet wherein the central axial aperture of the core and the threaded screw have a thread pitch selected to be low enough to permit rotation of said rotor to advance said shaft assembly when stepping current is applied to said stator electromagnets, but steep enough to permit force of said urging means to return said shaft assembly to said zero axial position when no current is applied to said electromagnets.

4,501,982

ELECTRIC GENERATOR WITH REPLACEABLE MOTOR

Robert R. McMinn, Crosby, Tex., assignor to Harrison Equipment Co., Inc., Houston, Tex.

Filed Mar. 3, 1983, Ser. No. 471,700
Int. Cl.³ H02K *5/16*
U.S. Cl. 310—90 **5 Claims**



1. An electrical generator with a rapidly replaceable motor of the type which comprises a housing with an end bell portion, a generator shaft rotable within the housing, an armature connected to a shaft within the interior of the housing, an opening formed in the end bell of the housing opposite a motor with a rotating motor shaft for rotating the generator shaft, a bearing assembly frictionally mounted within the opening rotably supporting one end of the generator shaft opposite the motor, the invention comprising:

a shoulder formed in the interior of the housing concentric to the opening, said shoulder comprising a first side parallel to the longitudinal axis of the generator shaft and a second side perpendicular to said first side, said second side extending between said first side and the opening;

outer and inner removable retaining rings; an annular outer groove formed in said first side of said annular shoulder for mounting said removable outer retaining ring to restrict the bearing assembly against undesired longitudinal movement inward of the housing;

an inner groove formed in the outer surface of the bearing assembly adjacent the opening for mounting said removable inner retaining ring to restrict the bearing assembly against undesired longitudinal movement outward of the housing and locking the bearing assembly in the opening;

a through-stud extending through a central axis bore of the generating shaft; and

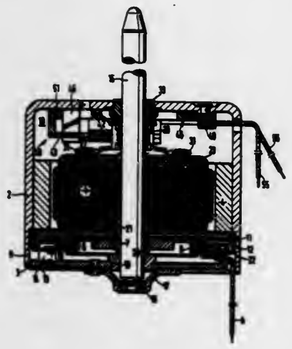
a tap slug adaptor connected to one end of said through-stud; said adapter having an axial bore for receiving a portion of the motor shaft to demountably secure the motor shaft in an essentially aligned relationship with the generator shaft; said bore of said tap slug adaptor having means for coupling said adapter and the motor shaft to

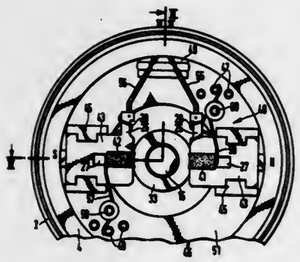
transmit the rotation of the motor shaft to the generator shaft.

4,501,983
ELECTRIC MACHINE

Fritz Schmider, Hornberg, Fed. Rep. of Germany, assignor to Papst Motoren KG, St. Georgen, Fed. Rep. of Germany

Continuation of Ser. No. 928,885, Jul. 28, 1978, abandoned. This application Mar. 31, 1981, Ser. No. 249,339
Claims priority, application Fed. Rep. of Germany, Jan. 1, 1978, 2803956
Int. Cl.³ H02K 47/04
U.S. Cl. 310—113 21 Claims



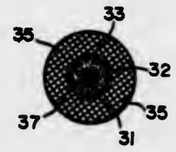


1. An electric drive motor for signal processing equipment comprising a stator and a rotor together forming a cylindrical radial air gap, a stationary motor housing of generally cylindrical configuration, said motor housing being made of soft magnetic material and serving as part of the magnetic circuit of the motor, brush means located between one axial end of said motor housing and said rotor; a separate flux guide member of generally cylindrical configuration mounted in the interior of the motor housing between the other axial end thereof and said rotor coaxial with the rotation axis of the latter, and having a diameter slightly smaller than the diameter of the motor housing and being of a magnetically soft material; rpm-signal generating means located in the flux guide member part to be shielded at least from electromagnetic interference originating exteriorly of the motor housing; the rpm-signal generating means including a relatively thin ferromagnetic rotor disk connected to the rotor coaxially with the axis of rotation thereof and having a plurality of teeth on its circumference, a stationary ring surrounding said rotor disk and being formed with a number of permanent magnetic pole pairs of opposite pole polarity and corresponding to the number of teeth on the rotor disk, and a stationary inductive coil arranged coaxially with the axis of rotation of said rotor in proximity to the path of movement of the teeth of the rotor disk to generate rpm signals.

4,501,984
COLUMNAR SOLID BODY ROTOR

Matsuo Mishima, Tokyo, Japan, assignor to Micro Technology Laboratory Co., Ltd., Japan

Continuation of Ser. No. 259,430, May 1, 1981, abandoned, which is a continuation of Ser. No. 929,963, Aug. 1, 1978, abandoned. This application Dec. 15, 1983, Ser. No. 561,649
Claims priority, application Japan, Aug. 3, 1977, 52-93557; Nov. 17, 1977, 52-138216
Int. Cl.³ H02K 1/22
U.S. Cl. 310—261 6 Claims



1. A rotor for d-c dynamo electric machines wherein said rotor is to be rotated at a high speed, has a relatively low loss, low inertia and is mechanically rigid and has an extremely low permeability; said rotor comprising, in combination:
a rotor shaft rotatable around the axis thereof and made of a non-magnetic material;
a cylindrical dust core of small volume compared to the volume of said rotor and symmetrically disposed around said shaft, said cylindrical dust core comprising a hollow cylinder having an outer diameter and having an interior diameter, said interior diameter being fixed to said rotor shaft, the length of said cylindrical dust core being greater than its said outer diameter; said dust core consisting of finely powdered ferromagnetic particles which are bound within and are interspersed within a solid insulation medium, whereby said dust core can have a high flux density while having a small eddy current loss;
insulation sleeve means fixed to and surrounding and electrically insulating said outer diameter of said dust core;
a winding fixed to the outer surface of said insulation sleeve means and closely wound around said dust core and having an outer diameter which encloses a given cross-sectional area which is perpendicular to said rotor shaft;
the volume conversion permeability of said rotor as a whole, including said dust core, said rotor shaft, said winding and said insulation sleeve being at least several times higher than the permeability of free space;
said outer diameter of said dust core enclosing an area A_1 which is perpendicular to the axis of said rotor shaft and wherein said given cross-sectional area enclosed by said winding is an area A_2; the ratio of A_2/A_1 being in the range of 0.3 to 0.7.

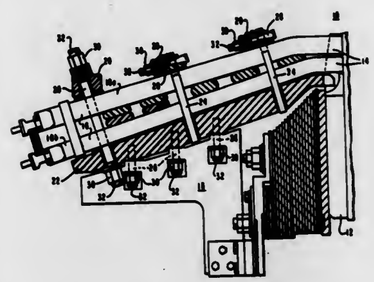
4,501,985
DYNAMOELECTRIC MACHINE WITH END TURN SUPPORT ASSEMBLY HAVING FASTENERS WITH LOCKING DEVICES

Diane P. Dobson, Pleasant Hills; Michael J. Farrell, Swissvale, both of Pa., and Raymond S. Lutz, Louisville, Ky., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed May 1, 1984, Ser. No. 605,957
Int. Cl.³ H02K 3/46
U.S. Cl. 310—270 5 Claims

1. A dynamoelectric machine comprising:
windings that have end turns extending from ends of a core and an end turn support assembly for said end turns;
said end turn support assembly comprising means for uniting said end turns and comprising one or more fasteners that each join some other elements of said end turn support assembly;
each of said fasteners comprising a stud having scew threads,

a nut engaged on said stud screw threads, an outer portion of said stud extending beyond said nut, and a locking device on said outer portion of said stud for securing said nut against loosening in service;
said locking device comprising one or more layers of cord

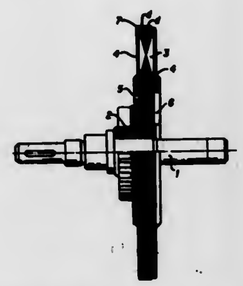


wrapped and tied on said stud outer portion screw threads and a cured coating of resinous material on said layers of cord, said stud outer portion having a flat surface area providing a noncylindrical stud cross section to which said wrapped cord conforms and preventing rotation of said cord.

4,501,986
FERROMAGNETIC CORE DISK ARMATURE WITH BAR WINDINGS

Olaru Gheorghe, Bucharest, Romania, assignor to Institutul de Cercetari Pentru Industria Electro-Tehnica-Icpe, Bucharest, Romania

Filed Aug. 21, 1979, Ser. No. 68,496
Int. Cl.³ H02K 1/22
U.S. Cl. 310—268 10 Claims

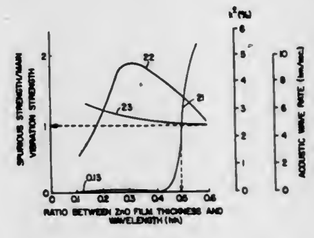


1. An armature for axial air gap electric motors or the like, comprising: a disk-shaped ferromagnetic core; and means forming one armature winding in a single layer with one collector, said means comprising a plurality of first winding sections disposed on one side of the core and each having a radially inwardly extending prolongation forming the one collector, a plurality of second winding sections disposed on the other side of the core and each identical to the first winding sections without the prolongation and means interconnecting the first and second winding sections only at the periphery of the core.

4,501,987
SURFACE ACOUSTIC WAVE TRANSDUCER USING A SPLIT-FINGER ELECTRODE ON A MULTI-LAYERED SUBSTRATE

Tsuneo Mitsuyu, Hirakata; Shusuke Ono, Takatsuki; Ritsuo Inaba, Hirakata, and Kiyotaka Wasa, Nara, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Dec. 3, 1981, Ser. No. 327,039
Claims priority, application Japan, Dec. 8, 1980, 55-172845
Int. Cl.³ H03H 9/25
U.S. Cl. 310—313 A 1 Claim

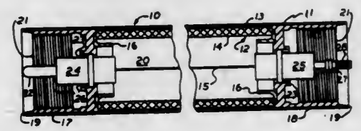


1. A surface acoustic wave transducer comprising:
a multi-layered substrate having a non-piezoelectric substrate composed of one of either sapphire or α-alumina or silicon and having a zinc oxide piezoelectric film deposited directly thereon, the surface acoustic wave of said piezoelectric film having a smaller phase velocity than that of said non-piezoelectric substrate; and
an interdigital electrode formed on a surface of said piezoelectric film, said interdigital electrode having split-type fingers;
wherein said non-piezoelectric substrate comprises a (0112) face sapphire crystal, and said piezoelectric film comprises a (1120) face zinc oxide single crystal film, said zinc oxide single crystal film having a thickness h in the range of $0.1 < h/\lambda \leqq 0.5$ (where λ is a wavelength of said surface acoustic wave);
whereby said thickness of said piezoelectric film is in a range in which the strength of fundamental response is smaller than that of a harmonic response.

4,501,988
ETHYLENE QUENCHED MULTI-CATHODE GEIGER-MUELLER TUBE WITH SLEEVE-AND-SCREEN CATHODE

Nicholas M. Mitrofanov, Cleveland, and Victor G. Berner, Mayfield Heights, both of Ohio, assignors to Harshaw/Filtrol Partnership, Cleveland, Ohio

Filed Apr. 1, 1982, Ser. No. 364,466
Int. Cl.³ H01J 47/08
U.S. Cl. 313—93 4 Claims



1. In a Geiger-Mueller radiation detector including an outer tubular stainless steel cathode, an anode disposed in spaced apart relationship thereto in a sealed chamber walled by said cathode, and a gaseous mixture of noble gas containing a minor amount of a quench gas sealed in said chamber, the improvement comprising a sleeve-and-screen cathode in contact with said gaseous mixture, the sleeve comprising a tungsten layer in electrical contact with said outer tubular cathode, and the

screen being in electrical contact with said sleeve and comprising a 6 to 140 size mesh (U.S. Standard Screen) metal selected from the group consisting of brass and nickel, said screen coated with bismuth in an amount in the range from about 15 mg/cm^2 to about 30 mg/cm^2 of screen surface area.

4,501,989

RADIATION DETECTING ARRANGEMENT FOR COUNTING AN IONIZING RADIATION

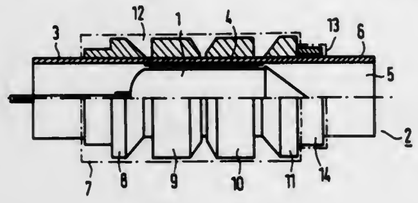
Dieter von der Brake, Altena, Fed. Rep. of Germany, assignor to International Standard Electric Coporation, New York, N.Y.

Filed Nov. 30, 1982, Ser. No. 445,628

Claims priority, application Fed. Rep. of Germany, Dec. 11, 1981, 3149148

Int. Cl.³ H01J *47/08, 5/16*; G01T *1/18*

U.S. Cl. 313—93 **8 Claims**



1. A radiation detecting arrangement for measuring an ionizing radiation comprising:

a radiation detector having a tubular shape; and

a compensating filter arrangement including

a slightly absorbing supporting tube surrounding said detector, and

ring-shaped filter parts fastened to and surrounding an outer surface of said tube,

said tube being made from a metal having a low medium ordinal number of the periodic system of elements and having an adhesive layer on said outer surface thereof, and

said filter parts are individual parts of at least one selected one of a heavy metal sleeve and a heavy-metal alloy sleeve, said related one of said sleeves being fastened by said layer to said tube and said filter parts being formed from said selected one of said sleeves by removal of excessive sleeve material therefrom after said selected one of said sleeves is fastened to said tube by said layer.

4,501,990

ELECTRON TUBE, ESPECIALLY TRANSMITTING TUBE, WITH A DEVICE FOR ELIMINATING INTERFERING RETARDING-FIELD EFFECTS

Jochen Stahl, Berlin, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Continuation of Ser. No. 282,720, Jul. 13, 1981, abandoned. This application Dec. 16, 1983, Ser. No. 563,001

Claims priority, application Fed. Rep. of Germany, Jul. 22, 1980, 3027756

Int. Cl.³ H01J *1/46, 21/10*

U.S. Cl. 313—299 **6 Claims**

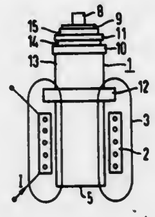
1. In an electron tube assembly, having:

an electron tube with given electron trajectories and a given electron oscillation period;

coaxial anode and cathode electrodes and grids each defined substantially by coaxial cylindrical surfaces; the improvement which comprises:

means disposed around said tube for generating a magnetic field for operating said tube at higher modulation and with residual plate voltages near zero to eliminate interfering retarding field effect oscillations;

said magnetic field having field lines running inside said tube substantially parallel to the cylindrical surfaces of the electrodes and grids, said field lines substantially perpendicularly intersecting the trajectories of the electrons moving radially from the cathode electrode to the anode electrode during operation of said electron tube, and said



field lines elongating the trajectories of the electrons for increasing the oscillation period of the electrons and thereby eliminating interfering retarding

field effect oscillations at anode voltages that are close to zero potential.

4,501,991

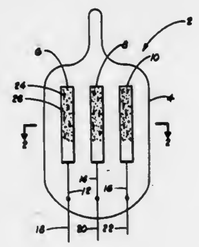
LOW BREAKDOWN VOLTAGE, HIGH CURRENT GLOW LAMP

John Fajt, Wynnewood, Okla., assignor to Xenell Corporation, Wynnewood, Okla.

Filed Apr. 12, 1982, Ser. No. 367,557

Int. Cl.³ H01J *1/14, 1/30, 17/48, 61/64*

U.S. Cl. 313—589 **10 Claims**



1. A glow lamp, comprising:

at least two electrodes, each electrode being spaced from each other electrode and having a member constructed of a substance which causes adjacent ones of said electrodes to require a first breakdown voltage to be applied thereto before a first appreciable current flows therebetween;

a material applied to each of said members for causing adjacent ones of said electrodes to require a second breakdown voltage within the range between approximately 80 volts (rms) and approximately 100 volts (rms) to be applied thereto before a second appreciable current flows therebetween, said second breakdown voltage being less than said first breakdown voltage;

a compound applied to each of said members for permitting a third appreciable current of at least approximately 10 amperes (rms) to flow between respective ones of said electrodes when said second breakdown voltage is applied, said third appreciable current being greater than said second appreciable current; and

a housing having said electrodes disposed therein.

4,501,992

ENERGY CONSERVING INSTANT-START SERIES-SEQUENCE FLUORESCENT LAMP SYSTEM AND FLUORESCENT LAMP WITH OVERCURRENT PROTECTION

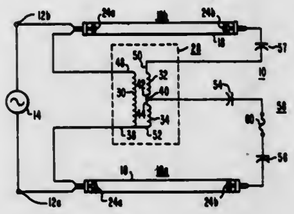
George S. Evans, Caldwell; Edward W. Morton, Teaneck; John F. Gilmore, deceased, late of Verona, and by Roderick A. Gilmore, Administrator, West Orange, all of N.J., assignors to North American Philips Lighting Corp., New York, N.Y.

Continuation-in-part of Ser. No. 300,319, Sep. 8, 1981, Pat. No. 4,435,670. This application Aug. 23, 1982, Ser. No. 410,763

The portion of the term of this patent subsequent to Jun. 22, 1999, has been disclaimed.

Int. Cl.³ H05B *37/00*

U.S. Cl. 315—122 **12 Claims**



1. In combination with an instant-start series-sequence fluorscent lamp system including a pair of input terminal means for connecting said system to a power source, a pair of fluorescent lamp means each comprising an elongated tubular vitreous envelope enclosing a discharge-sustaining filling and carrying phosphor means on the inner surface thereof, substantially hollow vitreous re-entrant stem presses sealed to each end portion of said envelope and having lead-in means sealed therethrough and operatively supporting electrodes within said envelope proximate each end portion thereof, transformer means including a primary winding, a secondary winding and an auxiliary winding, a first of said lamp means having one of said electrodes in circuit between one of said input terminal means and one end of said primary winding, the other of said electrodes of said first lamp means in circuit with a point common to one end of said secondary winding and one end of said auxiliary winding, the second of said lamp means having one of said electrodes in circuit between the other of said input terminals and the other end of said primary winding, the other of said electrodes of said second lamp means in circuit with the other end of said secondary winding, the other end of said auxiliary winding in circuit with said one end of said primary winding, and ballast capacitor means in circuit between said common point and said other electrode of said first lamp means, the improvement which comprises:

a first power-reducing capacitor means of predetermined capacitance in series circuit with said first lamp means and a second power-reducing capacitor means of predetermined capacitance in series circuit with said second lamp means, and protective device means in circuit with said first power-reducing capacitor means and responsive to a predetermined increase in the system operating current through said first power-reducing capacitor means to effectively remove from circuit said first power-reducing capacitor means, whereby said lamp system is protected from overload conditions encountered upon failure of said second lamp means.

4,501,993

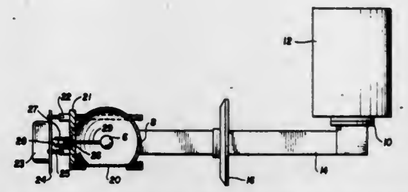
DEEP UV LAMP BULB

Peter Mueller, Gaithersburg; Michael G. Ury, Bethesda, and Charles H. Wood, Rockville, all of Md., assignors to Fusion Systems Corporation, Rockville, Md.

Filed Oct. 6, 1982, Ser. No. 433,070

Int. Cl.³ H05B *41/16, 41/24*

U.S. Cl. 315—248 **2 Claims**



2. A microwave generated electrodeless lamp for producing relatively high output in the deep UV part of the spectrum (210–240 nm) having an electrodeless lamp bulb wherein loss of bulb transparency with exposure to said deep UV radiation over time is substantially reduced, resulting in substantially increased bulb lifetime and the requirement that the bulb can be changed only relatively infrequently, resulting in minimal lamp down time, comprising,

means for generating microwave energy,

an electrodeless lamp bulb comprised of an envelope which is filled with a plasma forming medium, which when excited emits radiation in the deep UV part of the spectrum (210–240 nm), and

means for coupling said generated microwave energy to said bulb to excite said plasma and cause said deep UV radiation to be generated, and wherein,

said lamp envelope is made of substantially water-free synthetic quartz.

4,501,994

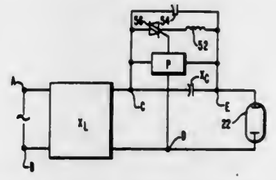
BALLAST MODIFYING DEVICE AND LEAD-TYPE BALLAST FOR PROGRAMMING AND CONTROLLING THE OPERATING PERFORMANCE OF AN HID SODIUM LAMP

Robert J. Spreadbury, Murrysville, Pa., assignor to Cooper Industries, Inc., Houston, Tex.

Continuation of Ser. No. 414,114, Sep. 2, 1982, abandoned, which is a continuation-in-part of Ser. No. 282,993, Jul. 14, 1981, abandoned, which is a continuation-in-part of Ser. No. 264,324, May 18, 1981, abandoned. This application Aug. 10, 1983, Ser. No. 522,544

Int. Cl.³ H05B *37/02*

U.S. Cl. 315—307 **24 Claims**



1. In combination with a lead-type ballast apparatus for operating a high-intensity-discharge lamp, a device for modifying said ballast apparatus in order to program and control the operating performance of the high-intensity-discharge lamp as operated by said modified ballast apparatus;

said lead-type ballast apparatus having apparatus input terminals adapted to be coupled to a source of AC energizing

potential and apparatus output terminals across which said lamp to be operated is adapted to be coupled; and

said lead-type ballast apparatus comprising an inductive reactance portion and a capacitive reactance portion, said inductive reactance portion comprising a current-limiting high-reactance transformer means having primary winding means coupled to said apparatus input terminals and secondary winding means coupled to the secondary winding means output terminals, said capacitive reactance portion comprising capacitor means coupled between said secondary winding means output terminals and said apparatus output terminals; said modifying device comprising:

additional inductance means coupled in circuit in one of (1) a parallel coupling with said capacitor means, and (2) a coupling across said secondary winding means output terminals,

controlled switching means having a high impedance open position and a low impedance closed position and control terminal means, said switching means being coupled in circuit with said additional inductance means so that when said switching means is open, said modified ballast apparatus delivers a first level of current to an operating lamp, and when said switching means is closed, said modified ballast apparatus delivers a second and different level of current to an operating lamp; and

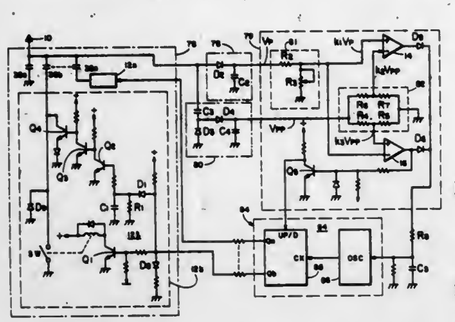
sensing and programming means operable to sense at least one predetermined lamp operating parameter and to generate an output control signal which is indicative of a predetermined parameter desired for said operating lamp, and said sensing and programming means having an output connected to the control terminal means of said switching means to control the relative proportion of time said switching means is open and closed in order to control in programmed fashion the predetermined lamp operating parameter desired for said operating lamp.

4,501,995

AUTOMATIC "S" CORRECTION CIRCUIT

Harold W. Olmstead, Hillsboro; Gary D. Andrews, Portland, both of Oreg., and Clayton C. Walquist, West Valley City, Utah, assignors to Tektronix, Inc., Beaverton, Oreg.

Filed Apr. 6, 1982, Ser. No. 366,011
Int. Cl.³ H01J *29/56*
U.S. Cl. 315—371 **5 Claims**



1. An automatic 'S' correction circuit for use with a resonant scan deflection circuit including deflection coil means, said correction circuit comprising:

S-shaping capacitor means having a terminal for connection to the deflection coil means, said capacitor means being of selectively variable effective capacitance;

detector means connected to said S-shaping capacitor means for detecting the peak voltage and the peak-to-peak voltage across the capacitor means; and

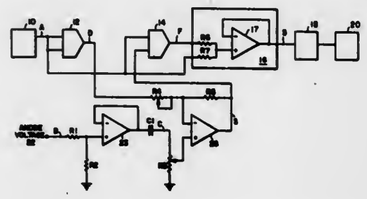
control means connected to the detector means and the S-shaping capacitor means and responsive to the detected values of said peak voltage and said peak-to-peak voltage to vary the effective capacitance of the capacitor means to maintain said peak voltage and said peak-to-peak voltage in a predetermined relationship.

4,501,996

DEFLECTION DISTORTION CORRECTING CIRCUIT

Hidefumi Yamaguchi, Fujisawa, Japan, assignor to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 474,406, Mar. 11, 1983,. This application Apr. 18, 1984, Ser. No. 601,112
Claims priority, application Japan, Mar. 19, 1982, 57-43065
Int. Cl.³ H01J *29/56*
U.S. Cl. 315—371 **1 Claim**



1. A deflection distortion correcting circuit for a deflecting circuit for cathode ray tube display using interlaced scanning and having a circuit for generating a saw tooth wave for deflecting an electron beam in the direction perpendicular to raster scanning lines and an output linear amplifier circuit for driving the deflecting coil, the improvement comprising:

first multiplying means for generating a squared output in response to said saw tooth wave,

second multiplying means for receiving said saw tooth wave at one input thereof,

first adding means having an output connected to said output linear amplifier circuit and for adding the output of said second multiplying means to said saw tooth wave,

means responsive to the anode voltage of said cathode ray tube to generate a signal indicating the change of the anode voltage,

second adding means for generating the difference between the output of said first multiplying means and said signal indicating the change of the anode voltage, and

means for connecting the output of said second adding means for the other input of said second multiplying means.

4,501,997

MAGNETIZATION FOR BRUSHLESS DIRECT CURRENT OUTER ROTOR MOTOR

Rolf Müller, St. Georgen, Fed. Rep. of Germany, assignor to Papst-Motoren GmbH & Co KG, St. Georgen, Fed. Rep. of Germany

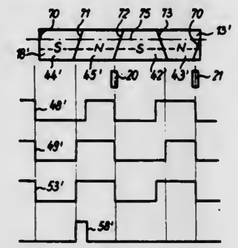
Filed Jan. 14, 1983, Ser. No. 457,744
Claims priority, application Fed. Rep. of Germany, Jan. 18, 1982, 3201280
Int. Cl.³ H02P *6/02*
U.S. Cl. 318—254 **8 Claims**

2. A brushless direct current outer rotor motor particularly for driving magnetic storage discs, said motor having a substantially cylindrical air gap and comprising:

an outer rotor;

a permanent magnetic exciting magnet having at least two pairs of poles;

a permanent magnetic control magnet having the same number of poles as said exciting magnet, both said magnets being supported on the interior of said rotor, each pole being separated from its circumferentially adjacent pole by an interface, a first of the pole pair of said control magnet being asymmetrical in that the pole of one magnetizing direction of said first pair is circumferentially shorter than the other pole of said first pair and the other pole pairs being symmetrical, the pole interfaces of said exciting and control magnets being substantially linear, the interfaces with respect to the rotor axis being obliquely angled, the slope of all pole interfaces except a first pole interface being substantially identical to one another and the slope of said first pole interface diverging with respect to the other pole interfaces, the reciprocal spacings between said pole interfaces being substantially



the same in the center, as measured in the rotor axis direction, of the exciting magnet;

two position detectors, each providing output signals and facing said control magnet and positioned stationarily substantially diametrically opposite one another on a line extending through the rotor axis, said detectors being sensitive to said control magnet; and

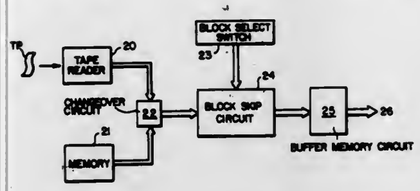
an evaluation circuit responsive to the output signals of said position detectors, said evaluation circuit producing only one pulse per rotor rotation.

4,501,998

NUMERICAL CONTROLLER EQUIPPED WITH OPTIONAL BLOCK SKIP FUNCTION

Ryoichiro Nozawa, Shibuya; Tsuyoshi Nagamine, Hachioji; Hideaki Kawamura, Hachioji, and Mitsuto Miyata, Hachioji, all of Japan, assignors to Fujitsu Fanuc Limited, Minamitsuru, Japan

PCT No. PCT/JP81/00279, § 371 Date Jun. 11, 1982, § 102(e) Date Jun. 11, 1982, PCT Pub. No. WO82/01425, PCT Pub. Date Apr. 29, 1982
PCT Filed Oct. 13, 1981, Ser. No. 395,077
Claims priority, application Japan, Oct. 13, 1980, 55-142569
Int. Cl.³ G05B *19/42*
U.S. Cl. 318—568 **5 Claims**



1. A numerical controller having an optional block skip function, comprising:

numerical information storage medium means for storing a cutting program having inserted in a predetermined section thereof a plurality of machining blocks, each block including at its head or intermediate portion skip object indicating information for specifying that the block is the object of optional block skip control and skip select information which is data for deciding whether to skip the block and which can assume at least two values;

block select switch means for entering skip indicating information indicating which ones of the blocks stored as the objects of the optional block skip control in the numerical information storage medium means are to be skipped during actual machining; and

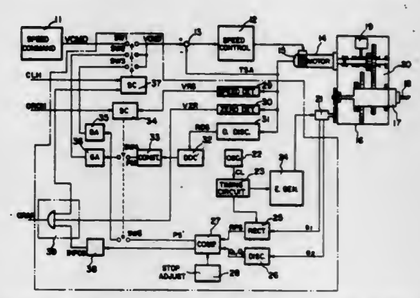
block skip circuit means for determining whether the skip object indicating information is present at the head or intermediate portion of each block read out from the numerical information storage medium means, and, if not present, for executing the block and if present, comparing the skip select information with the skip indicating information from the block select switch means and skipping or executing the block depending on whether the block is to be skipped.

4,501,999

SYSTEM FOR STOPPING SPINDLE AT COMMANDED POSITION

Yoshinori Kohzai, Hino; Yoshiki Fujioka, Higashiyamato, and Naoto Ota, Hino, all of Japan, assignors to Fanuc Ltd, Minamitsuru, Japan

PCT No. PCT/JP81/00341, § 371 Date Jul. 27, 1982, § 102(e) Date Jul. 27, 1982, PCT Pub. No. WO82/01841, PCT Pub. Date Jun. 10, 1982
PCT Filed Nov. 18, 1981, Ser. No. 403,641
Claims priority, application Japan, Dec. 4, 1980, 55-171157
Int. Cl.³ G05D *23/275*
U.S. Cl. 318—632 **6 Claims**



1. A system for stopping a spindle at a commanded position operating at a commanded speed, comprising:

an electric motor;

a speed detector, operatively connected to said electric motor, for detecting a speed of rotation of said electric motor and for producing an actual speed signal;

a speed control circuit, operatively connected to said speed detector and to receive the commanded speed, for effecting control to nullify the offset of the actual speed from the commanded speed;

a spindle operatively connected to and driven by said electric motor; and

a position control circuit, operatively connected to said spindle and said speed control circuit, for generating a position offset signal corresponding to an offset of a position of a predetermined portion of said spindle from the commanded position at which said portion of said spindle is to be stopped, the rotation of said spindle being controlled by said speed control circuit to maintain said commanded speed and by said position commanded to nullify said position offset signal, said position control circuit comprising:

a resolver, operatively connected to said spindle, having a secondary coil and having two primary coils producing output voltages;

a resolver exciting signal generator, operatively connected to said resolver, for supplying an exciting signal to the secondary coil of said resolver;

a synchronous rectifier circuit, operatively connected to

one of the primary coils of said resolver, for providing synchronous rectification of the output voltage from said one of said primary coils;

a quadrant discrimination circuit, operatively connected to the other of said primary coils, for converting the output voltage from said other of said primary coils into rectangular waves;

a waveform combining circuit, operatively connected to said synchronous rectifier circuit and said quandrant discrimination circuit, for combining the output voltage of said synchronous rectifier circuit and the output voltage from said quadrant discrimination circuit to produce said position offset signal which smoothly crosses a zero level at the commanded position at which said spindle is to be stopped; and

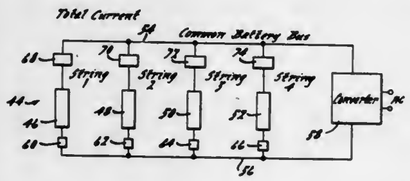
a stopping position adjusting circuit, operatively connected to said waveform combining circuit, for adjusting a position of a lattice point at which said position offset signal crosses the zero level.

4,502,000

DEVICE FOR BALANCING PARALLEL STRINGS

Matthew S. Mashikian, Storrs, Conn., assignor to Energy Development Associates, Inc., Madison Heights, Mich.

Filed Jul. 19, 1983, Ser. No. 515,348
Int. Cl.³ H02J *3/32, 7/00*
U.S. Cl. 320—6 **17 Claims**



1. In a battery plant having a plurality of battery strings connected electrically in parallel where each of said battery strings is formed by a plurality of batteries connected electrically in series, the improvement comprising:

magnetic circuit means in association with each of said battery strings for balancing the electrical current flow through said battery strings.

9. A battery plant system, comprising:

power conditioning means for converting alternating current electrical power to direct current electrical power during the charging of said battery plant and converting direct current electrical power to alternating current electrical power during the discharging of said battery plant;

a plurality of battery strings connected electrically in parallel across common bus conductors to said power conditioning means;

a plurality of battery modules connected electrically in series to form each of said battery strings;

bypass switching means, in association with each of said battery modules, for redirecting electrical current flow around a failed battery module in response to a failure condition; and

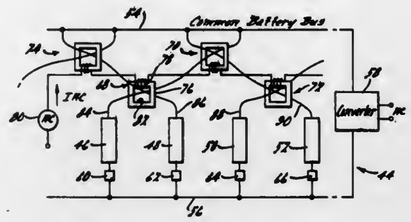
magnetic circuit means in association with each of said battery strings for balancing the electrical current flow through said battery strings in response to at least one failed battery module by equalizing the voltages across said common bus conductors for each of said battery strings.

4,502,001

CURRENT BALANCING FOR BATTERY STRINGS

James H. Galloway, New Baltimore, Mich., assignor to Energy Development Associates, Inc., Madison Heights, Mich.

Filed Jul. 19, 1983, Ser. No. 515,351
Int. Cl.³ H02J *3/32, 7/00*
U.S. Cl. 320—6 **20 Claims**



1. In a battery plant having a plurality of battery strings connected electrically in parallel where each of said battery strings is formed by a plurality of batteries connected electrically in series, the improvement comprising:

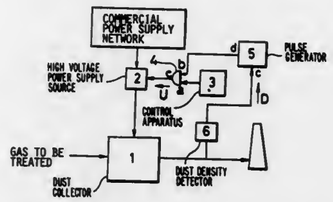
magnetic circuit means for balancing the electrical current flow through said battery strings, said magnetic circuit means being associated with said battery strings such that conductors carrying the electrical current flow through each of said battery strings pass through said magnetic circuit means in directions which cause the electromagnetic fields of at least one predetermined pair of said conductors to oppose each other.

4,502,002

ELECTROSTATICALLY OPERATED DUST COLLECTOR

Takashi Ando, Kobe, Japan, assignor to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 2, 1982, Ser. No. 413,984
Int. Cl.³ B03C *3/68*
U.S. Cl. 323—237 **3 Claims**



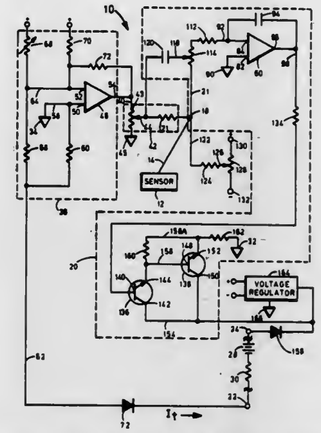
1. An electrostatically operated dust collector comprising a high voltage power supply circuit on which is taxed a direct current of high voltage fed from a commercial power supply and a control circuit for controlling said high voltage power supply circuit, the dust collector further including a dust-density measuring device, a pulse generator capable of transmitting a pulse as a gate signal for a width of time T_1 for a period of time, T_1+T_2, so that when the dust density detected by said dust-density meansuring device is decreased, $T_1/(T_1+T_2)$ can be reduced and when it is increased, said $T_1/(T_1+T_2)$ can be increased, and a gate circuit for transmitting an input from said control circuit to said high voltage power supply circuit while said pulse for said width of time is being transmitted as said gate signal.

4,502,003

TWO WIRE CIRCUIT HAVING AN ADJUSTABLE SPAN

Roger L. Frick, Eden Prairie, Minn., assignor to Rosemount Inc., Eden Prairie, Minn.

Filed Jul. 29, 1983, Ser. No. 518,377
Int. Cl.³ G05F *1/58;* **G08C** *19/02*
U.S. Cl. 323—275 **9 Claims**



1. A two wire circuit having a total direct current signal, I_t, at least a portion of which is representative of a sensor signal and which is responsive to a parameter to be sensed, wherein I_t flows through a first terminal coupled to an external power source and load and then through a second terminal, and wherein the circuit comprises:

current control means coupled to the first and second terminals and to the sensor for controlling the portion of I_t representative of the sensor signal;

feedback means coupled to the current control means for providing a feedback signal which is a function of I_t;

feedback amplifier means coupled to the current control means for amplifying the feedback signal to provide an amplified feedback signal; and

span means coupled to the feedback amplifier means and to the current control means for solely adjusting the amplified feedback signal such that I_t is controlled by the current control means at least as a function of the sensor signal and the adjusted, amplified feedback signal.

4,502,004

CURRENT PULSE MONITOR

John A. Schindler, P.O. Box 703, Metairie, La. 70004

Continuation-in-part of Ser. No. 164,231, Jun. 30, 1980. This application Dec. 2, 1982, Ser. No. 430,588
Int. Cl.³ G01R *19/16, 19/26, 1/22*
U.S. Cl. 324—103 P **7 Claims**

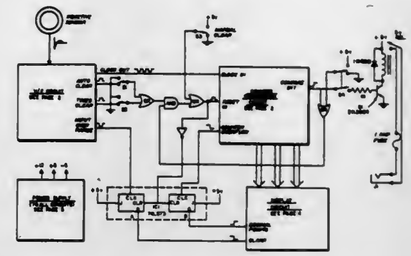
1. An apparatus for monitoring current pulse within a conductor comprising:

a. a sensor member, inductively coupled to said conductor, having a first, positive and a second negative electrical lead;

b. means, electrically connected to said first and second leads, responsive to the passage of a single, non-sinusoidal current signal coupled to said sensor member for determining the instantaneous peak value of said pulse signal, further comprising;

c. a unipolar voltage-to-frequency converter means, electrically connected to said leads, adapted for converting a positive voltage pulse induced by said single electrical current signal coupled to said sensor member into a series of electrical pulses, the frequency of said pulses being proportional to the induced voltage;

e. resetting means, electrically connected to said leads, adapted for converting a negative voltage pulse induced by said single electrical current signal coupled to said sensor member into a single reset pulse; and



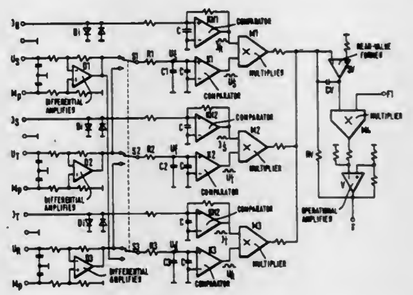
f. digital counter means connected to said converter means and said resetting means, adapted for counting the total number of the electrical pulses generated by said converter means, between successive reset pulses.

4,502,005

METHOD AND APPARATUS FOR DETERMINING THE ANGLE BETWEEN THE AIR-GAP FLUX VECTOR AND THE STATOR CURRENT VECTOR OF AN ASYNCHRONOUS MACHINE FED FROM AN INTERMEDIATE CURRENT-LINK FREQUENCY CONVERTER

Herbert Lisner, Ludwigshafen, and Peter Michalak, Weinheim, both of Fed. Rep. of Germany, assignors to Brown, Boveri & Cie AG, Mannheim-Kafertal, Fed. Rep. of Germany

Filed Mar. 29, 1982, Ser. No. 363,128
Claims priority, application Fed. Rep. of Germany, Mar. 28, 1981, 3112326
Int. Cl.³ G01R *31/02*
U.S. Cl. 324—158 MG **17 Claims**

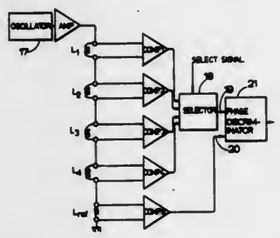


1. Method for determining the angle between the air-gap flux vector and the stator current vector of a three-phase asynchronous machine being fed from a frequency converter with an intermediate current-link, at which stator voltages and stator currents are measured, which comprises transforming current blocks of the stator currents into square waves of constant amplitude and extending the current blocks of the stator currents to 180° el., filtering out fundamental components from the stator voltages, shifting the phase of the fundamental components lagging 90° el., converting the phase-shifted fundamental components into square waves of constant amplitude, multiplying at least one square wave of the currents by the square wave of the voltage phase following the current phase, and forming the mean value thereof.

4,502,006
DISPLACEMENT MEASURING TRANSDUCERS AND THEIR USE FOR SENSING VEHICLE SUSPENSION DISPLACEMENTS

Alan Goodwin, Birmingham, and Malcolm Brearley, Solihull, both of England, assignors to Lucas Industries Limited, Birmingham, England

Continuation of Ser. No. 256,783, Apr. 23, 1981, abandoned. This application Oct. 7, 1983, Ser. No. 539,631
Claims priority, application United Kingdom, Apr. 26, 1980, 8013857; Apr. 8, 1981, 8111023
Int. Cl.³ G01B *7/14;* G01R *33/12;* G01N *27/72*
U.S. Cl. 324—208 **14 Claims**

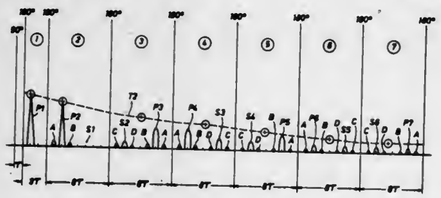


1. A displacement measuring transducer for measuring the displacement of a monitored object comprising a coil, an A.C. source connected to said coil, a core assembly fixedly associated with said monitored object and which is axially movable relative to said coil, said core assembly comprising a short-circuit turn and a magnetic flux concentrator arranged to enhance the flux linkage between said short-circuit turn and said coil, and measuring means connected to said coil for measuring changes in the phase relationship between the voltage and current in said coil, said core assembly being so arranged that on increasing penetration of said core assembly into said coil the inductance of said coil increases and the reflected shunt resistance across said coil decreases to provide said changes in said phase relationship.

4,502,007
METHOD OF MEASURING NMR SPIN-SPIN RELAXATION TIME (T_2) USING SPIN-ECHOS

Gary L. Mee, 1958 Gloxridge Dr., and M. Robert Willcott, 3502 Drummond, both of Houston, Tex.

Filed Jan. 31, 1983, Ser. No. 462,137
Int. Cl.³ G01R *33/08*
U.S. Cl. 324—307 **5 Claims**

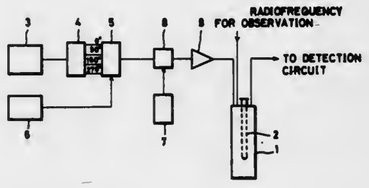


1. A method of measuring the NMR spin-spin relaxation time (T_2) of nuclei using spin-echos comprising the steps of locating the nuclei in a static magnetic field, applying an RF pulse to the nuclei at the Larmor frequency of the nuclei of sufficient duration to rotate the net magnetic moment of the nuclei 90°, waiting a time period tau that is at least the time required for the free induction decay signal to go to zero, applying an RF pulse at the same Larmor frequency to the nuclei of sufficient duration to rotate the net magnetic moment of the nuclei 180°, recording the primary echo induced, waiting a time period equal to at least 3 tau to cause the stimulated echos produced by the inhomogeneities in the RF magnetic field to fall into separate time zones from each other and the primary echo, applying an RF pulse at the same Larmor frequency to the nuclei of sufficient duration to rotate the net magnetic moment of the nuclei another 180° to produce the primary and stimulated echos, recording the primary and error stimulated echos induced thereby during a time period sufficient to allow the peaks of all of the stimulated echos and the primary echo to appear in different time slots in the time zone, repeating the last three steps to obtain a series of frames each of which contain a primary echo and stimulated echos, adding the primary echo and related stimulated echos in each frame to obtain points on a decay curve indicating T2 relaxation time.

4,502,008
METHOD AND APPARATUS FOR NUCLEAR MAGNETIC RESONANCE SPECTROSCOPY

Muneki Ohuchi, Tokyo, Japan, assignor to JEOL Ltd., Tokyo, Japan

Filed Feb. 9, 1983, Ser. No. 465,324
Claims priority, application Japan, Feb. 19, 1982, 57-25492
Int. Cl.³ G01R *33/08*
U.S. Cl. 324—311 **5 Claims**



1. A decoupling method for nuclear magnetic resonance spectroscopy comprising,

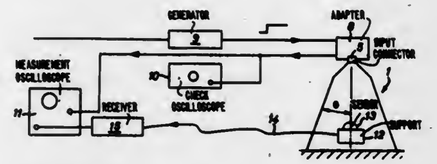
repeatedly applying a pulse train to a sample for decoupling, said pulse train containing a series of radiofrequency pulses joined without interval, each radiofrequency pulse being phased at 0°, 90°, 180°, or 270°, and

reversing the phase of the radiofrequency carrier of the pulse train at the interval longer than the repetitive cycle of the pulse train asynchronously with the repetition of application of the pulse train.

4,502,009
APPARATUS ADAPTED FOR SINGLE PULSE ELECTROMAGNETIC MEASUREMENTS OF SOIL CONDUCTIVITY AND DIELECTRIC CONSTANT

Charles Rodiere, Marly Le Roi, and Michel Crochet, Verneuil sur Seine, both of France, assignors to Societe Nationale Industrielle Aerospatiale, Paris, France

Filed Jan. 19, 1982, Ser. No. 340,592
Claims priority, application France, Jan. 20, 1981, 81 01019
Int. Cl.³ G01V *3/12;* H01Q *1/04*
U.S. Cl. 324—337 **16 Claims**



1. An aerial simulator adapted for determination of the dielectric constant and conductivity of the ground, soil, or earth comprising

a generator means for generating electric impulses,

input connector means connected to receive electric impulses from said generator means,

a plurality of at least two conductive layers connected between said input connector means and the ground, extending outward from said input connector means in the shape of a horn open toward the ground for emitting towards the surface of the ground, at a selected incidence angle, electromagnetic pulses derived from said electric impulses received through said input connector means,

a buried structure including

conductive means connected to said conductive layers and extending under the ground for guiding said electromagnetic pulses down underground to a predetermined depth in the ground so as to radiate said pulses through an excited zone in the ground and adjacent air space,

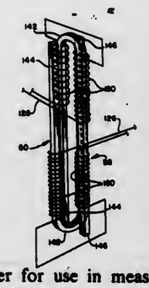
electromagnetic field sensor means located within a space defined by said conductive layers and said buried structure for delivering a signal representative of a local resulting electromagnetic field at a predetermined point in said excited zone,

and first and second measuring means connected to receive electronic signals from said input connector means and said sensor means respectively for measuring electric and magnetic fields to determine the dielectric constant and conductivity of the ground.

4,502,010
APPARATUS INCLUDING A MAGNETOMETER HAVING A PAIR OF U-SHAPED CORES FOR EXTENDED LATERAL RANGE ELECTRICAL CONDUCTIVITY LOGGING

Arthur F. Kuckes, Ithaca, N.Y., assignor to Gearhart Industries, Inc., Fort Worth, Tex.

Continuation-in-part of Ser. No. 130,764, Mar. 17, 1980, Pat. No. 4,323,848. This application Nov. 22, 1982, Ser. No. 443,234
Int. Cl.³ G01V *3/26;* G01R *33/02*
U.S. Cl. 324—338 **16 Claims**



1. A magnetometer for use in measuring subsurface AC injected magnetic fields for borehole logging, comprising:

first and second magnetic field sensors, said first sensor lying in a first plane and said second sensor lying in a second plane;

fastening means for securing said sensors in axial alignment with the plane of said first sensor perpendicular to the plane of said second sensor;

an elongated heat-insulating housing adapted to receive said sensors, said housing having a relatively small diameter and being adapted for insertion vertically into a borehole; said first and second sensors comprising:

first and second generally U-shaped core segments each having first and second spaced, parallel, elongated leg portions extending from opposite ends of a relatively short base portion, said first and second core segments being mounted in opposite directions with said elongated leg portions of said first core segment being interleaved with said elongated leg portions of said second core segment; and

coil means disposed around said elongated leg portions of each of said first and second core segments;

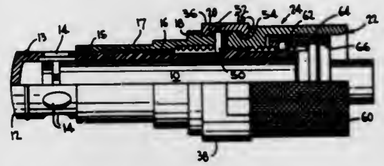
circuit means connected to said coil means of each of said sensors for producing signals representing AC magnetic field components detected by said first and second sensors; and

means for securing said circuit means to at least one of said sensors.

4,502,011
RETAINING CLAMP FOR COMBINATION VALVE AND CONDUCTIVITY CELL ASSEMBLY

Harvey A. Druker, Bethel, Conn., assignor to McNab Incorporated, Mount Vernon, N.Y.

Filed Feb. 25, 1982, Ser. No. 352,340
Int. Cl.³ G01N *27/02*
U.S. Cl. 324—446 **4 Claims**



1. A valve and conductivity cell assembly comprising a housing adapted to be mounted on and in communication with a liquid flow conduit containing a liquid to be tested, a valve sleeve of plastic material reciprocably mounted in said housing and having a head in contact with the liquid in the flow conduit, a valve nipple mounted on the valve sleeve for reciprocation thereof, an operating safety nut for reciprocating said valve sleeve and valve nipple to and from a closed position, a conductivity cell removably mounted in said valve sleeve for reciprocation therewith and in testing contact with the liquid when the valve sleeve is in open position, a clamp having identical first and second halves each having inwardly facing flanges formed on the inner surface thereof, said valve nipple and operating safety nut having laterally outwardly projecting flanges arranged in facial confronting relation and cooperatively engaged by the inwardly facing flanges on the inner surfaces of the clamp halves, one end of each half of the clamp being attached to form a hinge for free swinging action between said halves, the other ends of said halves being releasably fixed to maintain said clamp in a closed position, said flanges being relieved adjacent the releasably fixed ends with the inner radius being reversed, retaining pin means fixedly mounted on one of said halves and extending inwardly therefrom, whereby when said clamp is mounted on said valve assembly the flanges on said clamp will engage said valve nipple and said operating safety nut without damaging the same and retain the same connected and said retaining pin will engage said valve sleeve whereby said valve nipple and said operating safety nut will be maintained in fixed position relationship during reciprocation of said valve sleeve.

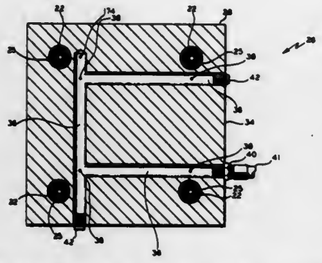
4,502,012
METHOD OF DISCHARGING AN AEROSOL CONTAINER TO MEASURE CHARGE BUILDUP ON THE CONTAINER

Elton E. Rush, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 210,504, Nov. 26, 1980. This application Sep. 29, 1982, Ser. No. 427,225
Int. Cl.³ G01N *27/60*
U.S. Cl. 324—452 **6 Claims**

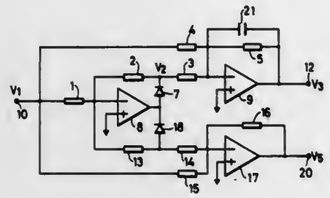
6. A method for preventing an electrical flow between a pair

of spaced apart conducting materials in flow communication with the discharge of an aerosol container comprising flowing



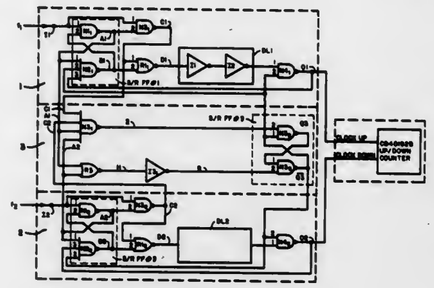
a stream of air between the pair of spaced apart conductive materials and into the discharge.

4,502,013
INPUT CONVERTING CIRCUIT
Masaji Usui, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Filed Jul. 6, 1982, Ser. No. 395,154
Claims priority, application Japan, Jan. 27, 1981, 56-11046
Int. Cl.³ H03K *5/00*
U.S. Cl. 328—26 **5 Claims**



1. An input converting circuit, comprising, an input terminal adapted to receive an input ac voltage;
first and second output terminals independent from one another;
a first operational amplifier circuit comprising, an operational amplifier having a grounded non-inverting input, an inverting input and an output; a first resistor connected between said input terminal and said inverting input; a first feedback circuit connected between said output and said inverting input and comprising a series connection of a second resistor and a first diode, said first diode being connected to provide current flow in said first feedback circuit only when the voltage at said input terminal is negative with respect to ground; and a second feedback circuit connected between said amplifier output and said inverting input and comprising a series connection of a third resistor and a second diode, said second diode connected to provide current flow in said second feedback circuit only when the voltage at said input terminal is positive; whereby the voltage at the point of connection between said first diode and second resistor is a negative half-wave rectified voltage, and said voltage at the point of connection between said second diode and said third resistor is a positive half-wave rectified voltage;
a second operational amplifier circuit comprising, a second operational amplifier having a grounded non-inverting input, an inverting input, and an output; a fourth resistor connected between said inverting input and the connection point of said first diode and second resistor; a fifth resistor connected between said inverting input and said input terminal; and a sixth resistor connected between said output and said inverting input; said output of said second operational amplifier being connected to the first output terminal of said converting circuit and providing a negative fullwave rectified voltage output,
a third operational amplifier circuit comprising, a third operational amplifier having a grounded non-inverting input, an inverting input, and an output; a seventh resistor connected between said inverting input and the connection point of said second diode and third resistor; an eighth resistor connected between said inverting input and said input terminal; and a ninth resistor connected between said output and said inverting input; said output of said third operational amplifier being connected to the second output terminal of said converting circuit and providing a positive full-wave rectified voltage output of opposite polarity to that provided at said first output terminal.

4,502,014
COINCIDENT PULSE CANCELLING CIRCUIT
Otto H. Bismarck, Fords, N.J., assignor to RCA Corporation, New York, N.Y.
Filed Nov. 24, 1982, Ser. No. 444,164
Int. Cl.³ H03K *21/06, 19/21*
U.S. Cl. 328—110 **3 Claims**

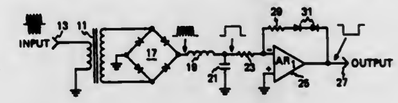


1. The combination comprising:
first and second inputs each for receiving input pulses;
first and second networks coupled to said first and second inputs, respectively, each network including a storage means set to a first state in response to the leading edge of an input pulse at its input, and each network including means responsive to the trailing edge of the input pulse and to its storage means being set to said first state for producing an output pulse at a respective output; and
control means, coupled to the storage means of said first and second networks, responsive to the coincident presence of input pulses at said first and second inputs for resetting the storage means to a second state in said first and second networks and preventing the subsequent production of output pulses on the trailing edges of the input pulses.

4,502,015
DIODE DETECTOR WITH LINEARITY COMPENSATING CIRCUIT
John F. Nicholas, Liverpool, and Edward A. Salvagni, Camillus, both of N.Y., assignors to General Electric Company, Syracuse, N.Y.
Filed Mar. 31, 1982, Ser. No. 364,142
Int. Cl.³ H03D *1/10*
U.S. Cl. 329—166 **4 Claims**

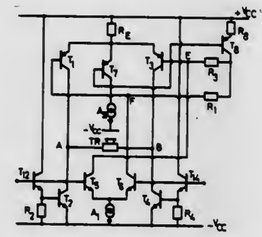
1. A linear detector circuit comprising:
(a) a detector bridge including an input terminal and paired semiconductor diodes connected to provide full wave rectified output from a modulated carrier input applied to said input terminal;
(b) low pass filter means connected to the output of said detector bridge for removing carrier frequency components from said bridge output;

(c) an operational amplifier connected to receive the signal passed by said filter and to provide a buffered output to a load; and
(d) means for nonlinearizing the gain of said operational amplifier including a feedback loop around said amplifier



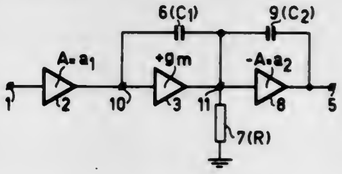
containing at least one diode having operational characteristics matched to those of said bridge diodes, whereby the nonlinearity thus given the amplifier gain characteristics may compensate for nonlinearity in impedance of said detector bridge with variations in temperature and input signal level.

4,502,016
FINAL BRIDGE STAGE FOR A RECEIVER AUDIO AMPLIFIER
Marco Siligoni, Vittuone, and Pietro Consiglio, Milan, both of Italy, assignors to SGS-ATES Componenti Elettronici S.p.A., Agrate Brianza, Italy
Filed Aug. 13, 1982, Ser. No. 407,785
Claims priority, application Italy, Aug. 26, 1981, 23646 A/81
Int. Cl.³ H03F *3/183, 3/45*
U.S. Cl. 330—146 **12 Claims**



1. A final bridge stage for a receiver audio amplifier operating at a low voltage, which is monolithically integratable and useable to control an electroacoustic transducer having first and second terminals;
said stage comprising first, second, third, and fourth semiconductor circuit elements, each element having at least a first terminal, a second terminal, and a control terminal;
said first and third circuit elements having a first type of conductivity, and said second and fourth circuit elements having a second type of conductivity which is opposite to the first type of conductivity;
a first terminal of said first and third circuit elements being connected to a first pole of a supply voltage generator through a common constant current generator means;
a first terminal of said second and fourth circuit elements being connected to a second pole opposite to the first pole of said supply voltage generator;
a second terminal of said first circuit element being connected to a second terminal of said second circuit element, said connection constituting a first terminal to which said first terminal of said electroacoustic transducer is connected;
a second terminal of said third circuit element being connected to a second terminal of said fourth circuit element, said connection constituting a second terminal to which said second terminal of said electroacoustic transducer is connected;
a control terminal of said second circuit element and a control terminal of said fourth circuit element being connected to a signal source which controls such circuit elements so as to operate in phase opposition to each other;
said stage further comprises a fifth and a sixth semi-conductor circuit element, each having a conductivity of the second type and each having at least a first terminal, a second terminal, and a control terminal, the first terminal of each such circuit elements being connected to the second pole of said supply voltage generator through another common constant current generator means, the control terminals of said fifth and said sixth circuit elements being connected to a signal source, which controls said fifth and said sixth circuit elements so as to operate in phase opposition to each other and in phase respectively with said second and said fourth circuit elements;
the second terminal of said fifth circuit element being connected to both the control terminal of said third circuit element and through a first resistor element to a circuit means for generating a reference voltage, the second terminal of said sixth circuit element being connected to both the control terminal of said first circuit element and through a second resistor element to said circuit means for generating a reference voltage.

4,502,017
OPERATIONAL AMPLIFIER HAVING FREQUENCY COMPENSATION
Rudy J. Van de Plassche, and Else C. Dijkmans, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.
Filed Dec. 23, 1982, Ser. No. 452,569
Claims priority, application Netherlands, Oct. 19, 1982, 8204024
Int. Cl.³ H03F *1/14*
U.S. Cl. 330—151 **2 Claims**



1. An operational amplifier comprising at least a first amplifier stage, a second amplifier stage driven by the first amplifier stage, and a first and a second junction point, a first capacitive signal path for improving the high-frequency properties of the operational amplifier between said junction points, which first junction point is coupled to an output of the first amplifier stage and which second junction point is coupled to an output of the second amplifier stage, the gain from the first junction point to the second junction point being non-inverting and the impedance of the output of the second amplifier being high relative to the impedance of the first junction point, characterized in that the output of the second amplifier stage is connected to an input of a third amplifier stage having an output coupled to a third junction point, a second capacitive signal path between the second and the third junction points, which third amplifier stage is inverting between the second and the third junction points, so that said third amplifier stage in conjunction with the second capacitive signal path exhibits a Miller effect.

4,502,018

GAIN REGULATION CIRCUIT FOR AN AMPLIFIER CIRCUIT

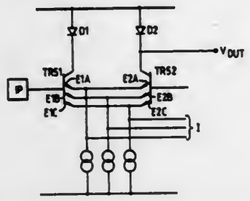
Peter F. Blomley, Bishop's Stortford, England, assignor to International Standard Electric Corporation, New York, N.Y.

PCT No. PCT/GB82/00070, § 371 Date May 5, 1983, § 102(e) Date May 5, 1983, PCT Pub. No. WO83/03177, PCT Pub. Date Sep. 15, 1983

PCT Filed Mar. 4, 1982, Ser. No. 491,688

Int. Cl.³ H03F *3/45*; H03G *3/30*

U.S. Cl. 330—254 **8 Claims**



1. A gain regulator and signal amplifier circuit for an electronic telephone subset, said circuit comprising a first long tailed pair of transistors having substantially identical characteristics, and 2n further long tailed pairs of transistors, where n is an integer including unity, wherein corresponding transistors of said 2n further pairs have emitter areas in the ratio 1:a; a:1, where a lies between zero and unity, whereby gain maxima of gain characteristics corresponding to said 2n further pairs are symmetrically disposed about signal zero of a circuit gain characteristic so as to provide together said circuit gain characteristic having a substantially constant gain region of significantly lower gain than gain maxima of said first long tailed pair, and wherein said circuit further includes control means coupled to emitters of said first pair and said 2n further pairs whereby weighted contributions to said circuit gain characteristic may be provided for said first long tailed pair and from said 2n further pairs so as to provide a stage gain adjustable between limits defined by the gain of said first pair and the gain of said 2n further pairs.

4,502,019

DYNAMIC AMPLIFIER CIRCUIT

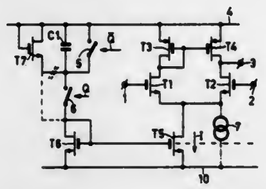
Arthur H. M. Van Roermund, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 10, 1982, Ser. No. 448,656

Claims priority, application Netherlands, Dec. 31, 1981, 8105919

Int. Cl.³ H03F *3/16*

U.S. Cl. 330—261 **2 Claims**



1. A dynamic amplifier circuit for amplifying a signal in a first time interval under control of a clock signal, which circuit comprises a bias circuit for obtaining a bias current in the amplifier circuit during said first time interval, which bias current decreases from an initial value, characterized in that the bias circuit comprises an additional source for obtaining a current in the amplifier circuit, which current is substantially constant relative to said bias current and has a comparatively small value relative to the said initial value in order to define the minimum bias current in the amplifier circuit at the end of said time interval.

4,502,020

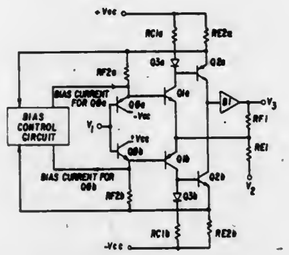
SETTLING TIME REDUCTION IN WIDE-BAND DIRECT-COUPLED TRANSISTOR AMPLIFIERS

David A. Nelson, and Kenneth R. Saller, both of Loveland, Colo., assignors to Comlinear Corporation, Loveland, Colo.

Filed Oct. 26, 1983, Ser. No. 545,753

Int. Cl.³ H03F *3/26*

U.S. Cl. 330—265 **36 Claims**



1. A wide-band, variable gain, differential input, DC-coupled amplifier employing current feedback to enhance the settling time characteristic of the amplifier, the amplifier comprising:

a first pair of transistors each having emitter, base, and collector electrodes, said first pair of transistors being connected to receive a first input signal;

a second pair of transistors connected to said first pair of transistors, each of said second pair of transistors having emitter, base, and collector electrodes, and being further connected in a command emitter configuration;

inverting gain means having a high input impedance, a high output impedance, and an inverting voltage gain, said inverting gain means having a pair of inputs connected to the collector electrodes of said second pair of transistors;

unity gain means having a high input impedance and a low output impedance, said unity gain means having an input connected to an output of said inverting gain means;

first resistor means connected between an output of said unity gain means and the common emitter electrodes of said second pair of transistors to provide a feedback path therebetween; and

second resistor means connected between the common emitter electrodes of said second pair of transistors and a second input signal.

4,502,021

CONSTANT BANDWIDTH AUTOMATIC GAIN CONTROL SYSTEM

John P. Hill, Broomfield, and James J. Touchton, Boulder, both of Colo., assignors to Storage Technology Corporation, Louisville, Colo.

Filed Mar. 31, 1983, Ser. No. 481,084

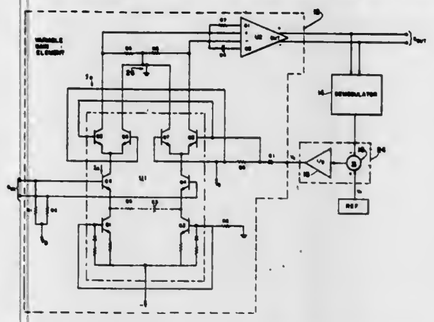
Int. Cl.³ H03G *3/10*

U.S. Cl. 330—279 **11 Claims**

1. In an automatic gain control (AGC) system, a method of maintaining a relatively constant automatic gain control loop bandwidth that is independent of input signal level, said AGC loop comprising a variable gain element that relates an output signal, e_{OUT}, to an input signal, e_{IN}, as expressed by the relationship $e_{OUT}=b\,e_{IN}$, where b is the gain of said variable gain element, and further where the value of b has a maximum value of 1.0, which value is determined by a control signal, said control signal being a function of an error signal, and wherein said error signal is the difference between a reference signal

and a feedback signal derived from said output signal e_{OUT}, said method comprising the steps of:

(a) varying the value of b with said control signal, such that



b changes inversely proportional to e_{IN}, whereby the product be_{IN}, and hence e_{OUT}, remains substantially constant; and

(b) limiting the value of b to a value that is no more than 0.5.

4,502,022

SUPPORT FOR AN OSCILLATOR

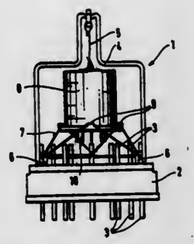
André Stahl, Orsay; Daniel Munier, Torcy, and André Bertrand, Chaville, all of France, assignors to Quartz & Electronique Alcatel, Asnieres, France

Filed Mar. 29, 1983, Ser. No. 480,159

Claims priority, application France, Mar. 30, 1982, 82 05422

Int. Cl.³ H03B *1/00*; H03H *9/10*

U.S. Cl. 331—68 **4 Claims**



1. An oscillator support comprising a connection base fitting, a hood covering said base fitting and being sealably mounted thereto, the improvement comprising a bracket mounted on said base fitting within said hood, a first wire suspending an oscillator from said bracket above said base fitting, and a second wire connected alternately at spaced positions about said base fitting to the base fitting and to the base of the oscillator at a plurality of fixing points for drawing said oscillator towards said base fitting.

4,502,023

METHOD OF FABRICATING A VARACTOR/OSCILLATOR DIODE MODULE FOR A TUNABLE OSCILLATOR

Michel Heitzmann, Paris, France, assignor to Thomson-CSF, Paris, France

Filed Jun. 14, 1982, Ser. No. 388,157

Claims priority, application France, Jun. 19, 1981, 81 12145

Int. Cl.³ H01L *23/32*; H03B *7/14*

U.S. Cl. 331—107 R **7 Claims**

1. A method of fabricating a module having an oscillator diode and a varactor diode mounted in series, said method comprising the steps of:

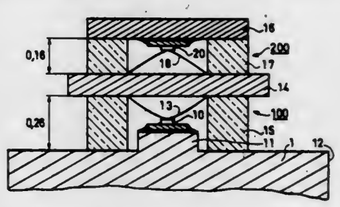
(A) mounting one of the diodes by welding one of its anode and cathode on a first metallic base which performs the function of a thermal radiator and of a electrode of the module, and thus forming a first subassembly;

(B) mounting the other diode by welding one of its anode and cathode on a second metallic base which performs the function of a second electrode of the module, and thus forming a second subassembly;

(C) equipping each subassembly with a dielectric ring having a first flat face welded to the respective base, said ring surrounding the respective diode so as to provide a second flat face parallel to said first face and forming together with the base surface delimited by the ring and internal walls of said ring, a cylinder which entirely contains the respective diode;

(D) bonding flexible connection so as to connect the other one of said anode and cathode which has remained free in each diode to the second flat face of the respective ring; and

(E) mounting the two subassemblies so that the same face each other with their flat faces bonded to the flexible connections, and welding the same to a third electrode of the module, said third electrode being formed by a metallic disk having a diameter of a size so as to readily obtain oscillation of the oscillator diode at a predetermined frequency.



6. A tunable oscillator incorporating a module comprising an oscillator diode and a varactor diode mounted in series, wherein the module comprises:

one of said diodes having one of its anode and cathode welded on a first metallic base which performs the function of a thermal radiator,

the other of said diodes having one of its anode and cathode welded on a second metallic base,

a metallic disk placed between the two diodes, parallel to the first and second metallic base and connecting the two diodes in series with the help of flexible connections,

two dielectric rings, each ring being placed between the metallic disk and one of the metallic bases in order to enclose the respective diode,

said tunable oscillator comprising a cavity provided with three openings through which are introduced respectively the module with the help of its first metallic base, a first biasing rod placed in contact with the metallic disk, and a second biasing rod placed in contact with the second metallic base.

4,502,024

PULSE-WIDTH MODULATION CIRCUIT

Meisei Nishikawa, Yokohama; Masahide Nagumo, Kawasaki, and Tadashi Kojima, Yokosuka, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Mar. 10, 1983, Ser. No. 473,763

Claims priority, application Japan, Jun. 15, 1982, 57-102821; Dec. 22, 1982, 57-225217

Int. Cl.³ H03K *7/08*

U.S. Cl. 332—9 R **3 Claims**

1. A pulse-width modulation circuit, characterized by comprising:

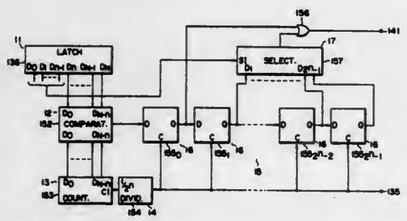
N-bit latching means for holding count data obtained by counting a reference clock signal in accordance with a period of a signal to be modulated;

frequency dividing means for frequency-dividing the reference clock signal by $\frac{1}{n}$ (N>n);

(N−n)-bit counting means for counting an output from said frequency dividing means at a predetermined period;

comparing means for comparing (N−n)-bit count data from said counting means and (N−n)-bit count data which is held in said latching means and which excludes n-bit data starting from a least significant bit of said latching means, and for producing a pulse-width modulation signal;

delaying means for producing delayed signals by delaying



outputs from said comparing means by single pulses of the reference clock signal, the delayed signals corresponding to the number of logic level combinations of the n-bit data starting from the least significant bit of said latching means; and

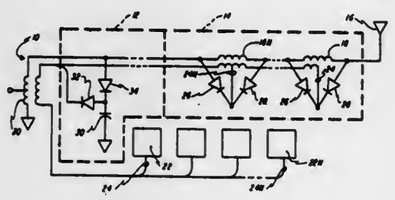
selecting means for selecting the delayed signals from said delaying means in accordance with the number of logic level combinations of the n-bit data starting from the least significant bit of said latching means, and for adding at least one selected signal to the pulse-width modulation signal.

4,502,025

HIGH SPEED PIN DIODE SWITCHED ANTENNA COUPLER AND METHOD

Robert H. Carl, Jr., Rochester; Floyd Koontz, Holcomb, and Daniel F. Pedtke, Fairport, all of N.Y., assignors to Harris Corporation, Melbourne, Fla.

Filed Apr. 23, 1982, Ser. No. 371,247
Int. Cl.³ H03H *1/00, 7/00*
U.S. Cl. 333—24 R **14 Claims**



1. A high speed antenna coupler for electrically coupling an antenna to a utilization circuit comprising:

a plurality of inductors each having an axial passageway and wound to a predetermined value of inductance, each of said inductors being apertured adjacent the mid-length thereof;

a plurality of PIN diodes each having an anode connected to one end of one of said plurality of inductors, the cathodes of the two diodes connected to each of said inductors being interconnected,

a driver circuit for each of said plurality of inductors;

a plurality of control wires each connected between one of said plurality of driver circuits and one of said interconnections,

each of said control wires passing through the axial passageway of those of said plurality of inductors intermediate the one of said plurality of driver circuits and the one of said plurality of inductors to which connected, and each passing through the aperture in the one of said plurality of inductors to which connected; and

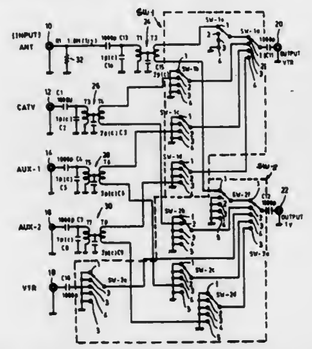
means for selectively operating said plurality of driver circuits to thereby selectively switch said plurality of inductors into and out of the circuit between an antenna and a utilization circuit by the biasing of the two diodes associated therewith.

4,502,026

SIGNAL DISTRIBUTING APPARATUS

Kazuyoshi Imazeki, and Hisashi Wani, both of Tokyo, Japan, assignors to General Research of Electronics, Inc., Tokyo, Japan

Filed Mar. 3, 1983, Ser. No. 471,894
Claims priority, application Japan, Apr. 1, 1982, 57-54983
Int. Cl.³ H03H *7/48;* H04B *1/16*
U.S. Cl. 333—101 **9 Claims**



9. A signal distributing apparatus for distributing each of a plurality of input signals to one or more of a plurality of utilization devices comprising: a plurality of input terminals, each coupled to receive one of said plurality of input signals; a plurality of output terminals respectively coupled to said plurality of utilization devices; a plurality of coupling means respectively coupled intermediate said input terminals and said output terminals for receiving the input signals from said plurality of input terminals; a plurality of switching means respectively coupled intermediate said plurality of coupling means and said plurality of output terminals for selectively interconnecting each of said coupling means with each of said plurality of output terminals; said coupling means comprising means for coupling the input signals to the switching means substantially without interference between the input signals or between the output utilization devices and substantially without input losses; wherein said plurality of utilization devices and said plurality of output terminals are respectively two in number; and wherein one of said two utilization devices additionally supplies an additional input signal to an additional input terminal.

4,502,027

BIDIRECTIONAL SWITCH

Yalcin Ayasli, Waltham, Mass., assignor to Raytheon Company, Lexington, Mass.

Continuation of Ser. No. 353,118, Mar. 1, 1982,. This application Oct. 24, 1983, Ser. No. 545,102
Int. Cl.³ H01P *1/15*
U.S. Cl. 333—103 **5 Claims**

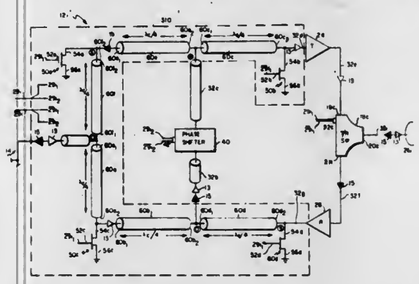
3. A switching element having a common port, a pair of branch ports, and a pair of intermediate ports comprising:

means for providing an electrical path between the pair of intermediate ports;

a first pair of transmission lines coupled together at a first common junction and to the common port;

a second pair of transmission lines coupled together at a second common junction and to a first one of the pair of intermediate ports, having a first end coupled to a first end of the first pair of transmission lines, and having a second end coupled to a first one of the pair of branch ports;

a third pair of transmission lines coupled together at a third common junction and to a second one of the pair of intermediate ports, having a first end coupled to a second end of the first pair of transmission lines, and having a second end coupled to a second one of the pair of branch ports;



a first pair of transistors, each transistor having output and control electrodes, with the output electrode of each one of such transistors being coupled to a corresponding end of the second pair of transmission lines; and

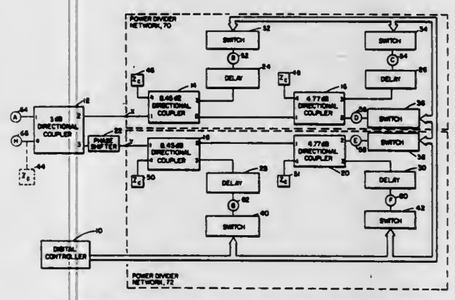
a second pair of transistors, each transistor having output and control electrodes, with the output electrode of each one of such transistors being coupled to a corresponding end of the third pair of transmission lines.

4,502,028

PROGRAMMABLE TWO-PORT MICROWAVE NETWORK

Bernard W. Leake, Framingham, Mass., assignor to Raytheon Company, Lexington, Mass.

Filed Jun. 15, 1982, Ser. No. 388,781
Int. Cl.³ H01P *5/18*
U.S. Cl. 333—109 **51 Claims**



1. An adjustable two-port network for generating a discrete number of reflection and transmission coefficients comprising:

a four-port reciprocal coupling means for dividing an input signal into two isolated output signals;

means for providing a phase shift to a first one of said output signals;

means coupled to a second one of said output signals and said phase shift means for producing in response to a control signal a selected one of a plurality of reflections comprising different discrete amplitudes with similar phase, thereby producing said discrete number of reflection and transmission coefficients of said two-port network; and

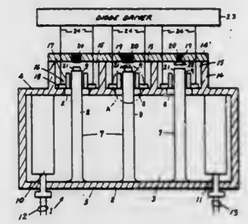
digital controller means for generating said control signal, thereby selecting any one of said discrete number of reflection and transmission coefficients.

4,502,029

EXTENDED RESONATOR ELECTRONICALLY TUNABLE BAND PASS FILTER

Robert E. Reed, Fort Wayne, Ind., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Feb. 17, 1983, Ser. No. 467,542
Int. Cl.³ H01P *1/205*
U.S. Cl. 333—203 **29 Claims**



1. A narrow band pass filter electronically tunable over a predetermined frequency range by signals issued by an electronic drive, comprising

a housing bounding a tuned cavity and having two opposite walls one of which has a plurality of through openings;

a plurality of resonators each extending from the other of said opposite walls toward one of said through openings and each having an extension projecting through the respective opening to the exterior of said tuned cavity;

a set of tuning capacitors for each of said resonators, including capacitor plates arranged around the respective extension externally of said tuned cavity; and

means for selectively activating and deactivating said capacitor plates in dependence on said signals to thereby include the respective tuning capacitors of the respective sets in, and exclude the same from, electric circuit with the respective resonators, and thus to vary the tuned frequency band of the filter.

4,502,030

HIGH RELIABILITY SOLENOID SWITCH

Peter J. Caruso, Wayne, N.J., assignor to Allied Corporation, Morris Township, Morris County, N.J.

Filed Aug. 26, 1983, Ser. No. 526,850
Int. Cl.³ H01H *9/20*
U.S. Cl. 335—164 **8 Claims**

6. Switching assembly having at least one make-or-break connection, which is switchable between a first status and a second status in response to electrical signals, characterized by:

(a) solenoid means providing force in response to the electrical signals;

(b) a moveable switch armature, the status of the make-or-break connection being controlled by reciprocal movement of the switch armature, the armature being connected to the solenoid means so that force from the solenoid biases the armature in order to effect that reciprocating movement when the solenoid responds to said electrical signals;

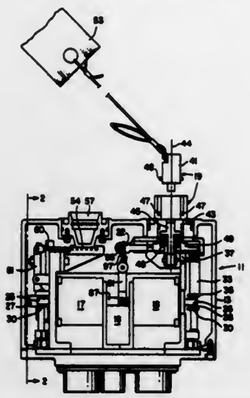
(c) means to rotate the armature in response to said reciprocal movement;

(d) the armature having a cylindrical portion;

(e) a plurality of contact members establishing said make-or-break connection with at least one shorting bar and juxtaposed to the cylindrical portion; and

(f) the cylindrical portion including a dielectric surface

interrupted by said shorting bar, the shorting bar being substantially flush with the outer surface of the cylindrical



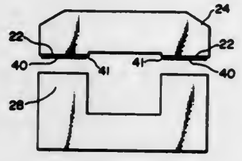
portion and extending around the cylindrical portion so that the shorting bar's outer circumference has a substantially circular cross-section.

4,502,031

ELECTROMAGNET AND METHOD OF PRODUCING THE SAME

Haruhiko Ito, and Mineo Sano, both of Aichi, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 23, 1982, Ser. No. 422,508
Claims priority, application Japan, Sep. 24, 1981, 56-141515[U]
Int. Cl.³ H01F *7/08*
U.S. Cl. 335—277 **9 Claims**



1. In an electromagnet in which an attractive force is generated between a moving and a fixed-iron core by a d.c. current or rectified a.c. current, the improvement comprising a melt-type adhesive layer of a thermally-melting adhesive composed of an oxygen-free copper or silver solder provided on at least one contacting electrode surface of the moving-iron core and the fixed-iron core, and a thin non-magnetic plate for preventing attraction between said cores due to remanence fixed through said melt-type adhesive layer onto said contacting electrode surface.

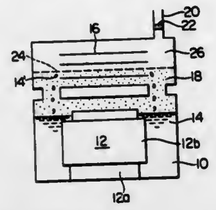
4,502,032

EBULLITION COOLED TRANSFORMER

Minoru Kimura, Itami, and Hisamitsu Takahashi, Takarazuka, both of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 16, 1984, Ser. No. 580,637
Claims priority, application Japan, Apr. 21, 1983, 58-71305
Int. Cl.³ H01F *27/10*
U.S. Cl. 336—58 **3 Claims**

1. An ebullition cooled transformer comprising a housing, a core and coil assembly fixedly disposed on a lower portion of said transformer, an amount of a condensible electrically insulating refrigerant charged into the lower portion of said housing to immerse said core and coil assembly therein, a cooler unit disposed above said core and coil assembly within said housing, a communicating tube disposed at a top of said housing to communicate with the outside air, and a filter disposed in said communicating tube to permit the air to permeate the same but prevent a vapor of said condensible electrically insulating refrigerant from permeating the same.

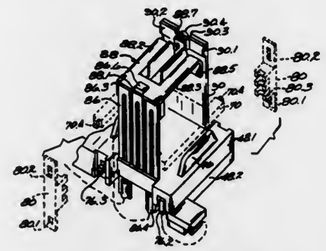


4,502,033

CIRCUIT CONTROL DEVICE

Aime J. Grenier, N. Attleboro, Mass., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Jul. 6, 1982, Ser. No. 395,534
Int. Cl.³ H01H *71/16*
U.S. Cl. 337—75 **9 Claims**



1. A circuit control device comprising first and second contact assembly means movable relative to one another into circuit engagement and circuit disengagement positions, latching means to latch the contact assembly means in the circuit engagement position,

a current carrying bimetal member having opposite ends, the current carrying bimetal member anchored at one end,

an ambient temperature compensating bimetal member having opposite ends, the ambient compensating bimetal member anchored at one end and extending generally parallel to the current carrying bimetal member,

trip arm means comprising a pair of trip arms pivotably mounted at the opposite end of one of the bimetal members,

a generally rectangular latch plate having an open central portion and having first and second opposite ends attached to the opposite end of the other bimetal member, the latch plate having a latch surface formed at the first end of the plate adapted to engage the trip arms, the trip arms extending through the open central portion, the latch surface location moving with changes in ambient temperature to maintain generally the same spatial relationship with the trip arm means,

the latching means being interconnected with the trip arm means, and

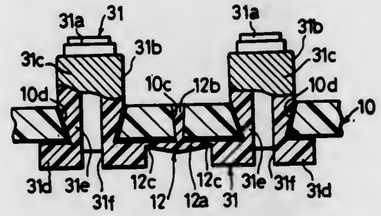
biasing means adapted to place a selected bias on the latching means tending to maintain the contact assembly means latched in the circuit engagement position only when the trip arm means are in engagement with the latch surface.

4,502,034

ELECTRIC COMPONENT

Satsuo Endo, Ishinomaki, Masaru Saito, Miyagi, and Yoshihiro Ohashi, Miyagi, all of Japan, assignors to Alps Electric Co., Ltd., Tokyo, Japan

Filed Aug. 19, 1983, Ser. No. 524,787
Claims priority, application Japan, Aug. 25, 1982, 57-146185; Oct. 18, 1982, 57-181443
Int. Cl.³ H01C *10/16*
U.S. Cl. 338—128 **12 Claims**



1. An electric component comprising

a holder having shaft holes;

a plurality of rotary members, each consisting of a shaft portion fitting into a respective one of said shaft holes of said holder, an operation portion formed integrally with said shaft portion, and a driving portion;

a connection member for connecting each of said rotary members to at least one other rotary member adjacent to said rotary member; and a break-off portion formed on said connection member, capable of breaking easily when each of said rotary members is forced to rotate; each of said rotary members becoming rotatable with respect to said holder when said break-off portion breaks off; wherein said connection member consists of a connecting portion connecting said rotary members with each other via break-off portions, and a holding portion embedded into said holder and preventing said connecting portion from falling off even when said connecting portions are broken off from said rotary members.

4,502,035

GOLFER'S HEAD MOTION SENSOR

James E. Obenauf, 8457 E. Desert Steppes, Tucson, Ariz. 85710, and Charles E. Brodish, 8805 SE. 78th. St., Mercer Island, Wash. 98040

Filed Jul. 11, 1983, Ser. No. 512,236
Int. Cl.³ G08B *23/00, 21/00;* A63B *69/36*
U.S. Cl. 340—323 B **9 Claims**



1. A device for sensing and in real time indicating movement of a golf player's head comprising:

a motion sensor operably attached to the head of a golf player, said motion sensor continuously outputting an electrical signal proportional to the movement sensed;

a signal processing unit to receive signals from said motion sensor and to output a continuously processed signal; and

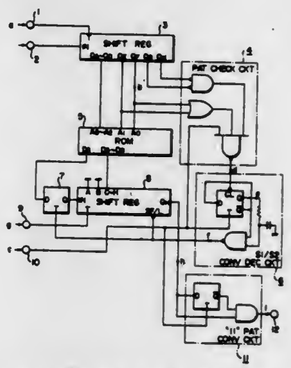
an audio output device adapted to receive the output from said signal processing unit and give audio indication of the movement sensed whereby said audio output device indicates audibly to the golf player that his head is moving.

4,502,036

ENCODING AND DECODING SYSTEMS FOR BINARY DATA

Teruo Furukawa, Amagasaki, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Chiyodaku, Japan

PCT No. PCT/JP81/00253, § 371 Date Feb. 17, 1982, § 102(e) Date Feb. 17, 1982, PCT Pub. No. WO83/01141, PCT Pub. Date Mar. 31, 1983
PCT Filed Sep. 25, 1981, Ser. No. 355,548
Int. Cl.³ H03K *13/24*
U.S. Cl. 340—347 DD **2 Claims**



1. A binary data encoding system for converting a first sequence of binary data into a second different converted sequence of binary data, said system comprising:

a means for converting respective data groups from said first sequence into corresponding 6-bit data groups of said second sequence when a 4-bit data group corresponds to any one of a predetermined set of thirteen 4-bit data groups according to the following table:

Original Data		S1 Converted Code
1100	⟷	X00000
1101	⟷	X00001
1110	⟷	X00101
1111	⟷	010101
1000	⟷	X01001
1001	⟷	010001
1010	⟷	X00010
1011	⟷	X01010
0100	⟷	010010
0101	⟷	X00100
0110	⟷	010100
0111	⟷	X01000
0000	⟷	010000

wherein X is a complementary logic value of a code bit immediately preceding said code bit X in said converted sequence;

second means for converting 6-bit data groups from said first sequence into corresponding 9-bit data groups of said second sequence when said 4-bit data group does not correspond to any of said predetermined set of thirteen 4-bit data groups, said second converting means convert-

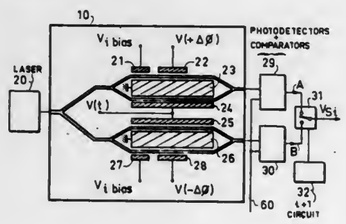
ing said 6-bit data groups according to the following table:

Original Data	S2	Converted Code
000100	⟷	X00010001
000101	⟷	X00100001
000110	⟷	X01000001
000111	⟷	X01010001
001000	⟷	010000001
001001	⟷	010010001
001010	⟷	010100001
001011	⟷	X00010000
001100	⟷	X01010000
001101	⟷	010010000
001110	⟷	X00100000
001111	⟷	010100000
		X01000000

4,502,037
ANALOG-DIGITAL OPTICAL CONVERSION PROCESS AND APPARATUS

Guy Le Parquier, and Claude Puech, both of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Jun. 25, 1982, Ser. No. 392,245
Claims priority, application France, Jun. 26, 1981, 81 12614
Int. Cl.[3] H03K *13/02*
U.S. Cl. 340—347 AD 11 Claims



11. An optical analog-digital converter apparatus, comprising:

a coder including: (1) n channels corresponding to n bits of a digital output word; (2) n light intensity modulators, each having an electrooptical material substrate on which a two-armed interferometer is arranged, wherein each one of said n light intensity modulators corresponds to one of said n channels; and (3) at least two electrodes arranged on each of said substrates of said n light intensity modulators in the vicinity of at least one of said interferometer arms, wherein a potential difference representing a signal V(t) to be digitized is applied to all the interferometers;

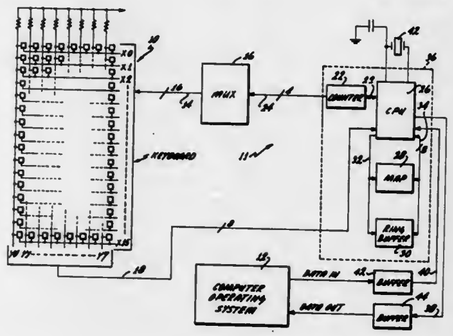
means for detecting the positive and negative half-cycles of output signals from each of said n channels of said coder, said detecting means comprising a photodetector followed by a comparator, coupled to each of said n channels; and

means for applying another potential difference to one of the two arms of each interferometer so as to successively produce a phase shift of $+\Delta\Phi$ and $-\Delta\Phi$ as a function of the positive or negative half-cycles of a signal representing an i+1 channel of said n channels whose significance is immediately below that of an ith channel, wherein i varies between 1 and n and the digital output word is output in Gray code form.

4,502,038
KEYBOARD SCANNING AND INTERFACE METHOD AND CIRCUIT

Richard W. Lowenthal, Los Gatos; Stephen C. Seike, Sunnyvale, and Gregory V. Walsh, Palo Alto, all of Calif., assignors to Convergent Technologies, Inc., Santa Clara, Calif.

Filed Oct. 15, 1981, Ser. No. 311,511
Int. Cl.[3] G06F *3/02*
U.S. Cl. 340—365 S 14 Claims



1. A method for communicating keyed input information comprising the steps of:

scanning a keyboard to detect activated keys;

memorizing said activated keys;

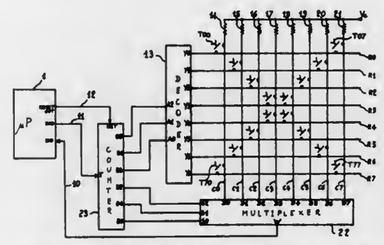
generating from the memorized keys a binary word having a bit length defined by the number of activated keys detected during one scan of said keyboard, said word having an identifiable byte corresponding to each of said memorized keys; and

communicating said binary word.

4,502,039
KEYBOARD CODING APPARATUS

Arturo Vercesi, Rho, and Francesco Marzocca, Milan, both of Italy, assignors to Honeywell Information Systems Italia, Milan, Italy

Filed Apr. 30, 1982, Ser. No. 373,769
Claims priority, application Italy, May 7, 1981, 21539 A/81
Int. Cl.[3] G06F *3/02*
U.S. Cl. 340—365 S 6 Claims



1. Keyboard coding apparatus and control apparatus interconnected through an interface consisting of a minimum number of interconnecting signals lines, said keyboard coding apparatus including:

a keyboard having a plurality of keys; and,

scanning means connected to select each of said keys in a predetermined sequence for detecting the actuated non-actuated state of said each of said keys, said scanning means having first and second input terminals and an output terminal; and,

said control apparatus including:

memory means having a plurality of locations for storing control programs and predetermined locations for storing character codes related to the selection of said keys; and,

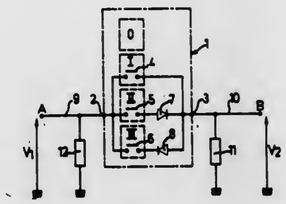
processing means coupled to said memory means, said processing means having an internal register for storing a value for accessing said predetermined locations and first and second output terminals and an input terminal connected to said first and second input terminals and to said output terminal respectively of said scanning means providing said interface consisting of said minimum number of interconnecting signal lines; and,

said processing means applying pulses to said first and second output terminals respectively for resetting said scanning means to a known state and for conditioning said scanning means to select a next key, said scanning means in response to each of said pulses applied to said second input terminal being operative to apply to said processing means input terminal a logic signal indicative of said actuated/non-actuated state of a selected key, said processing means being operative in response to each said logic signal indicative of said non-actuated state of said key to transfer another pulse to said second input terminal of said scanning means and concurrently increment by one said value stored by internal register and said processing means being operative in response to said each logic signal indicative of said actuated state of said selected key to address one of said predetermined locations of said memory means specified by said value stored in said internal register for accessing a character code representative of said selected key and thereafter transfer said another pulse to said scanning means and concurrently increment said internal register value.

4,502,040
KEYBOARD HAVING KEYS ACTIVATED BY ELECTRICAL CONTACTS AND THE CAPACITY TO READ ONE STATE FROM AMONG FOUR POSSIBLE STATES

Michel Castel, Fenouillet, France, assignor to Renix Electronique, Toulouse Cedex, France

Filed Jun. 23, 1982, Ser. No. 391,291
Claims priority, application France, Jun. 23, 1981, 81 12338
Int. Cl.[3] G06F *3/02*
U.S. Cl. 340—365 R 3 Claims



1. A keyboard comprising:

plural keys each having respective electrical contacts;

a pair of terminals between which at least a group of three of said contacts are positioned, said group of three contacts disposed in parallel and including respective connectors to said terminals,

wherein said group of three contacts comprises a first contact having short-circuit connectors to said pair of terminals, a second contact connected in series with a first diode between said pair of terminals, and a third contact connected in series with a second diode between said pair of terminals, said first and second diodes connected with opposite polarity relative to said pair of terminals;

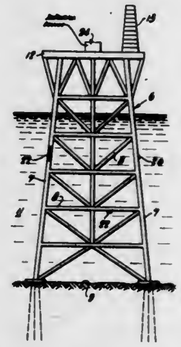
means for successively applying reverse voltages to said terminals; and

a logic detector for reading the states of said contacts upon successive application of said reverse voltages to determine which if any of said keys are depressed.

4,502,041
STRUCTURE FAILURE DETECTOR WITH SIGNAL TRANSMISSION THROUGH THE STRUCTURE ITSELF

Joseph Penzien, Lafayette, Calif., assignor to The Regents of the University of California, Berkeley, Calif.

Filed May 3, 1982, Ser. No. 373,967
Int. Cl.[3] G08B *1/00*; G01F *23/00*
U.S. Cl. 340—532 3 Claims



1. A structural failure detector especially for an offshore tower wherein a platform having well-servicing machinery transmitting vibrations at frequencies associated with said servicing machinery is supported on a hollow frame extending beneath the water comprising a signal generator adapted to generate a signal having a frequency distinct from said frequencies associated with said servicing machinery and to transmit said signal at said distinct frequency through said hollow frame to said platform, means connected to said hollow frame and effective to activate said signal generator to generate a signal at said distinct frequency in response to leakage of water into said hollow frame, and means on said platform for receiving from and through said hollow frame said signal having said distinct frequency and for indicating receipt of said signal having said distinct frequency.

4,502,042
PROXIMITY SWITCH, WHICH INDICATES THE PRESENCE OR ABSENCE OF FIELD CHANGING OBJECTS AT A DEFINED DISTANCE FROM THE PROXIMITY SWITCH BY A BINARY SIGNAL WITH THE AID OF EXCITATION AND DETECTION OF A FIELD

Arno Wührl, Mülheim, and Werner Kistner, Offenbach am Main, both of Fed. Rep. of Germany, assignors to M.A.N.-Roland Druckmaschinen Aktiengesellschaft, Offenbach am Main, Fed. Rep. of Germany

Filed Mar. 18, 1982, Ser. No. 359,378
Claims priority, application Fed. Rep. of Germany, Mar. 30, 1981, 3112560
Int. Cl.[3] G08B *21/00, 13/26*
U.S. Cl. 340—568 4 Claims

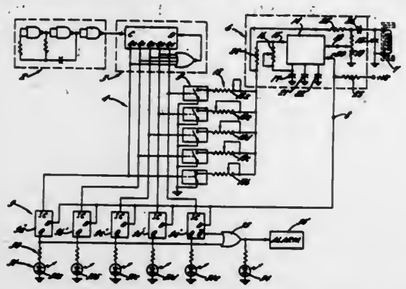
1. A multi-position proximity switch comprising, in combination:

proximity detecting switch means having a field exciting transducer and a binary output for indicating the presence or absence of a field perturbing object at a preselected distance from the field transducer and an electronic gain control input for adjusting said preselected distance,

digital-controlled gain adjusting means having a digital input and an electronic output for generating an electronic gain

control signal in response to the digital input, the electronic output being connected to the gain control input of the proximity detecting switch,

digital scanning means for generating a digital time-varying scanning signal, the digital signal being applied to the digital-controlled gain adjusting means, thereby adjusting the proximity detecting switch to detect the presence or



absence of a field perturbing object at a plurality of difference preselected distances from the field transducer, and

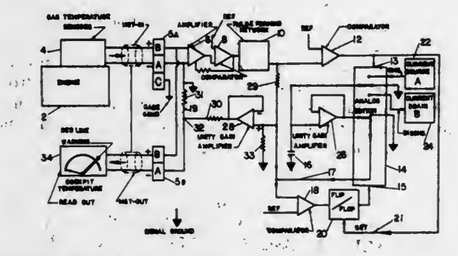
coincidence detecting means for detecting the coincidence between the digital scanning signal and the binary output of the proximity detecting switch, so that the presence or absence of a field perturbing object at each preselected distance from the field transducer is detected.

4,502,043

ENGINE TEMPERATURE TRANSIENT COMPENSATING CIRCUIT

M. Samuel Moore, Northridge, Calif., assignor to Semco Instruments, Inc., North Hollywood, Calif.

Filed Mar. 12, 1982, Ser. No. 357,587
Int. Cl.³ G01M *15/00*
U.S. Cl. 340—588 **14 Claims**



1. An engine transient compensating circuit comprising:

means for sensing the temperature of an engine which may have a harmless overtemperature transient for a predetermined period of time, and for providing a signal representing said temperature;

means for generating an opposing compensating signal modified to reduce said transient, for a period of time approximately said predetermined period of time, including a capacitor and switching circuit means for initiating the charging and discharging of said capacitor to form the opposing compensating signal;

means for combining said temperature signal and said compensating signal to provide a compensated output signal in which said overtemperature transient is reduced;

means for displaying temperature readout including an overtemperature warning; and

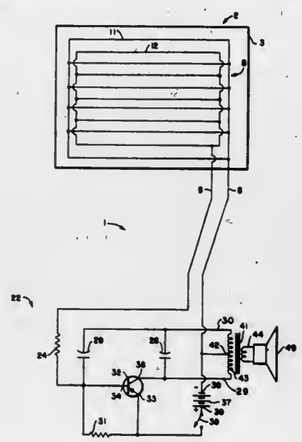
means for applying said compensated output signal to said displaying means so that said overtemperature transient does not produce an overtemperature warning under normal operating conditions, but an abnormally high transient overtemperature condition will still produce an overtemperature warning.

4,502,044

MOISTURE ALARM SYSTEM

James R. Farris, and James R. Farris, Jr., both of 225 W. Winter Ave., New Castle, Pa. 16105

Filed May 19, 1982, Ser. No. 379,619
Int. Cl.³ G08B *21/00*; G01W *1/14*
U.S. Cl. 340—604 **2 Claims**



1. A moisture alarm system comprising:

(a) a grid having at least two conductors, said conductors being provided with a plurality of interjacently spaced extensions connected to said conductors, said grid further providing an impedance between said conductors which decreases in the presence of moisture;

(b) an absorbent flexible sheet to which said grid is secured;

(c) a regenerative oscillator circuit coupled to said conductors of said grid, said oscillator circuit being responsive to said decrease in said impedance between said conductors such that said oscillator circuit commences to oscillate at a predetermined audio frequency when said impedance decreases to a predetermined value, said oscillator including an LC tank circuit, said LC tank circuit including a first capacitor and a coil connected across said first capacitor, said coil also being a primary winding of an audio frequency transformer, said primary winding having a center tap connected to one of said conductors of said grid, said oscillator circuit further having emitter, base and collector electrodes, said emitter electrode being connected to a ground potential within said oscillator circuit, said base electrode being serially connected through resistance means to said other conductor of said grid;

(d) a transducer for converting oscillations of said oscillating circuit to an audible sound, said transducer being coupled to a secondary winding of said transformer;

(e) a second capacitor connected in circuit with said collector electrode, said LC tank circuit, and said base electrode for feeding back a portion of said oscillators of said circuit to said base electrode;

(f) a direct current power source connected in circuit with said emitter electrode and said center tap of said LC tank circuit; and

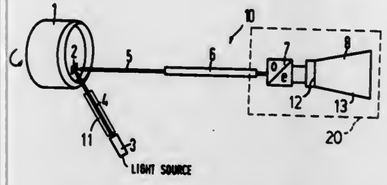
(g) switching means serially connected in circuit with said power source for interrupting a flow of current from said power source.

4,502,045

OPTICAL DEVICE FOR MONITORING CRITICAL SPEEDS OF A ROTATING MEMBER

Ingrid Fromm, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Continuation of Ser. No. 181,694, Aug. 27, 1980, abandoned. This application Aug. 5, 1982, Ser. No. 405,572
Claims priority, application Fed. Rep. of Germany, Sep. 12, 1979, 2936908
The portion of the term of this patent subsequent to Jun. 14, 2000, has been disclaimed.
Int. Cl.³ G08B *21/00*
U.S. Cl. 340—671 **14 Claims**



1. An optical device for monitoring critical speeds of a rotating member having a periphery, said device including at least one reflector being arranged on a surface of the rotating member near the periphery of the member to rotate in a circular path, means for directing an input light beam along a path toward a point on the circular path of the reflector to create a reflected beam pulse on a reflected beam path each time the input beam is reflected by the reflector, a light waveguide being arranged on the reflected beam path at an interval from the circular path to receive the reflected beam pulses from said reflector, an opto-electrical transducer being connected to said light waveguide to receive the reflected beam pulses and to convert the beam pulses into electrical pulses, and sound means for generating an alarm being directly connected to an electrical output of said transducer, said sound means comprising a piezoceramic plate with a resonator, said resonator having a natural resonance which is matched to a given pulse frequency of the reflected beam pulses when the rotating member is at said critical speed, said sound means generating an alarm in response to said given pulse frequency of electrical pulses from the transducer so that at normal speeds for the rotating member the electrical pulses applied to the sound means do not create an alarm signal, but at critical speeds the frequency of the electrical pulses is matched to the given pulse frequency and the sound means emits an alarm.

4,502,046

SYSTEM FOR MONITORING METAL-TO-METAL CONTACT IN ROTATING MACHINERY

James W. Woma, Hempfield Township, Westmoreland County, and Robert L. Osborne, Wallingford, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

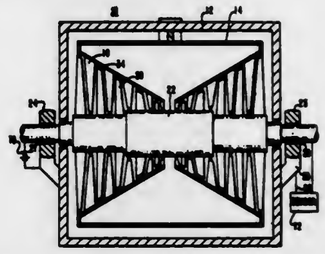
Filed Jun. 1, 1982, Ser. No. 383,400
Int. Cl.³ G08B *21/00*
U.S. Cl. 340—682 **14 Claims**

1. Apparatus for detecting rubs in rotating machinery, comprising

(A) a stationary machine assembly;

(B) a rotating assembly, rotatable relative to said stationary assembly;

(C) electrical means continuously connecting said stationary and rotating assemblies for establishing an electric current discharge path between them, and



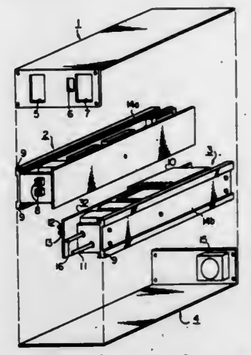
(D) means for detecting deviations of the current in said discharge path with respect to a pre-established normal.

4,502,047

ELECTRONIC PARTS-MOUNTING DEVICE WITH EASY ASSEMBLY AND MAINTENANCE

Kaisaku Fujiwara, Kanagawa; Shigenori Yokooji, and Yasuji Morishita, both of Odawara, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Nov. 18, 1981, Ser. No. 322,690
Claims priority, application Japan, Nov. 19, 1980, 55-161992
Int. Cl.³ G08B *23/00, 17/00*
U.S. Cl. 340—693 **9 Claims**



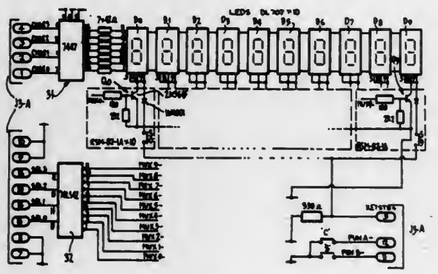
1. An electronic device including a plurality of electric parts, first and second plate-like substrates each mounting on one face a portion of said electric parts and positioned so that said faces oppose each other, a first cover plate having a first side connected to a first side of said first substrate and a second side (opposed to said first side) connected to a first side of said second substrate, and a second cover plate having a first side connected to a second side of the first substrate (opposed to said first substrate first side) and a second side (opposed to said second plate first side) connected to a second side of the second substrate (opposed to said second substrate first side).

4,502,048

SECURITY MEANS

Werner J. Rehm, 22 Lomatta St., The Gap, Queensland, 4061, Australia

PCT No. PCT/AU81/00014, § 371 Date Nov. 13, 1981, § 102(e) Date Nov. 13, 1981, PCT Pub. No. WO81/02349, PCT Pub. Date Aug. 20, 1981
PCT Filed Feb. 5, 1981, Ser. No. 324,388
Claims priority, application Australia, Feb. 15, 1980, PE2391
Int. Cl.³ H04Q *9/00*; E05B *49/00*; G06F *3/02*
U.S. Cl. 340—825.31 **12 Claims**



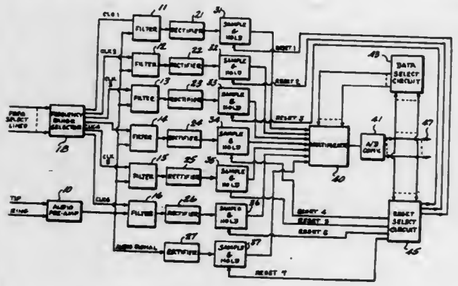
1. Security apparatus comprising:
a keyboard having an array of selectively actuable keys;
a key value designation means for designating a value for each of the keys, said designation means including means for randomly scrambling the designated value of said keys;
a key value display means for displaying the designated values of the keys when said values are designated;
register means, operable for each key actuation, to register the designated value of a key at the time of its actuation.

4,502,049

UNIVERSAL SIGNALLING TONE RECEIVER

Roger F. Atkinson, Huntsville, Ala., assignor to Itec, Inc., Huntsville, Ala.

Filed Aug. 30, 1982, Ser. No. 413,142
Int. Cl.³ H04Q *9/14*
U.S. Cl. 340—825.73 **12 Claims**



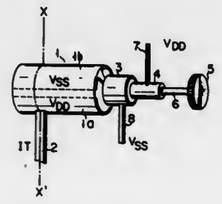
1. A universal signalling tone receiver for separating signal tones from a wide band audio signal, said receiver comprising:
clock generator means for providing a plurality of clock signals having selectively adjustable frequencies;
a plurality of switched component filter means, one for each of said clock signals, each receiving said wide band audio signal and a respective clock signal and passing only components of said wide band audio signal which reside in a narrow pass band centered about a sub-multiple of the frequency of the received clock signal;
a plurality of rectifier means, one for each filter means, each for rectifying signal components passed by a respective filter means; and
a plurality of resettable sample and hold circuits, one for each rectifier means, each for sampling and storing, until reset, rectified signal components from a respective rectifier means.

4,502,050

POSITION DISCRIMINATION DEVICE FOR A THUMB WHEEL SWITCH

Toshio Hibi, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Apr. 12, 1982, Ser. No. 367,768
Claims priority, application Japan, Apr. 24, 1981, 56-62227
Int. Cl.³ G08C *9/00*
U.S. Cl. 340—870.01 **7 Claims**



1. A voltage level discrimination device for a thumb wheel switch comprising:
a rotatable cylindrical member having on its outer circumference a power source part, a grounding part and an insulating part;
a conductive terminal successively contacting with said power source part, said grounding part and said insulating part as said rotatable cylindrical member rotates in a first direction, and successively contacts said power source part, said insulating part and said grounding part as said rotatable cylindrical member rotates in a second direction;
register means electrically connected to said conductive terminal for storing data;
means for inverting data received from said register means, said inverting means having an input coupled to said register means, and said inverting means having an output coupled to said conductive terminal; and
means for generating signals indicating the state of said thumb wheel switch, said generating means being electrically connected to said register means, said inverting means and said conductive terminal to receive data from said register means and inverted data from said inverting means and from said conductive terminal corresponding to the state of the switch to supply data to said register means, and to generate a state signal indicating the state of said thumb wheel switch.

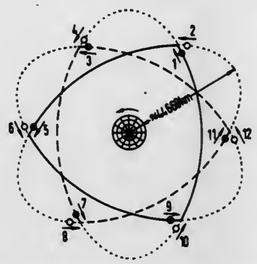
4,502,051

TELECOMMUNICATION SYSTEM WITH SATELLITES POSITIONED IN GEOSTATIONARY POSITIONAL LOOPS

Peter Dondl, Rossdorf, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Feb. 11, 1982, Ser. No. 347,697
Claims priority, application Fed. Rep. of Germany, Feb. 28, 1981, 3107762; Nov. 13, 1981, 3145207
Int. Cl.³ H04B *7/19*
U.S. Cl. 343—356 **9 Claims**

1. A telecommunications satellite system with geostationary positional loops consisting of a plurality of satellites which orbit on circular or elliptical paths inclined relative to the equatorial plane, wherein relative to a fixed earth station, said plurality of satellites move on the same apparent path with preferably chronologically identical spacings and wherein their apparent paths form intersect loops or, respectively, contacts at equal intervals around the sphere (FIG. 1/FIG. 3), and the points of intersection or, respectively, of contact (KP) of the apparent path are simultaneously traversed by two respective satellites 1 and 2 with one on each of the two orbit branches, and at the time of the smallest spacing of an associated pair of said plurality of satellites relative to one another (in KP), the telecommunication pay-load of the satellite (for example, 1) leaving the geostationary loop is inactivated by a control center and the satellite (for example, 2) simultaneously entering the geostationary loop is activated (FIGS. 1 and 2/FIGS. 3 and 4).

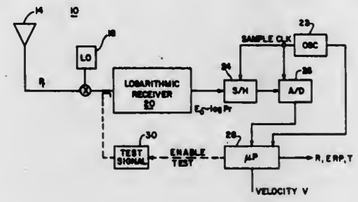


4,502,052

PASSIVE DATA ACQUISITION AND ANALYSIS SYSTEM FOR MICROWAVE

George V. Colby, Jr., Lexington, Mass., assignor to Avco Corporation, Wilmington, Mass.

Filed Jan. 24, 1983, Ser. No. 460,458
Int. Cl.³ G01S *3/02*
U.S. Cl. 343—458 **8 Claims**



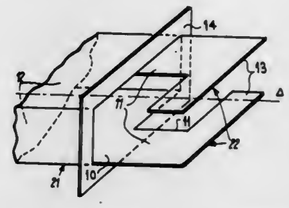
1. A passive data determination system for use in a traveling projectile comprising:
means for providing a signal V representing the relative velocity of said projectile to a target;
means defining a logarithmic receiver for receiving a power signal P_r from a source target and emitting in response thereto an output voltage signal E_o which is proportional to the logarithm of P_r;
means for providing a clock pulse signal to measure a change in time, Δt, required to produce a change in output voltage ΔE_o; and
microprocessor means coupled to said logarithmic receiver to produce a signal proportional to ΔE_o, to said clock means to produce a signal proportional to Δt, and to said velocity means to receive the signal V, all for providing a signal R which is a function of $(KV\Delta t)/(\Delta E_o)$, where K is equal to -2 (log e), and where R indicates the range of said projectile to said target.

4,502,053

CIRCULARLY POLARIZED ELECTROMAGNETIC-WAVE RADIATOR

Albert Dupressoir, and Francois Salvat, both of Paris, France, assignors to Thomson-CSF, Paris, France

Filed May 10, 1982, Ser. No. 376,718
Claims priority, application France, May 15, 1981, 81 09760
Int. Cl.³ H01Q *1/36, 1/38*
U.S. Cl. 343—727 **6 Claims**



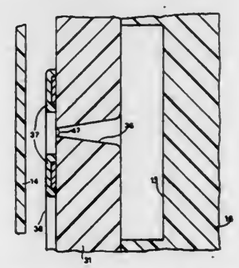
1. A radiator of circularly polarized electromagnetic waves, comprising:
a first source of linearly polarized electromagnetic waves constituted by a waveguide having a radiation aperture;
a second source of linearly polarized electromagnetic waves with a direction of polarization perpendicular to that of said first source, said second source being constituted by a dipole with oppositely pointing metallic stems joined to said waveguide at opposite points of the periphery of said aperture by way of respective feed lines of a length corresponding to a fraction of a wavelength at a midfrequency of an operating band supplied to said waveguide, said stems lying in planes which symmetrically parallel the waveguide axis and are perpendicular to the direction of polarization of the waves radiated by said waveguide; and
a flat metallic reflector surrounding said waveguide around the periphery of said aperture in conductive contact with said waveguide and with said feed lines for making the phase center of said dipole coincide with that of said waveguide at said aperture, said feed lines being dimensioned to match the impedances of said dipole and said waveguide and to establish phase quadrature between the waves respectively emitted thereby.

4,502,054

SELECTIVE INK-JET PRINTING DEVICE

Riccardo Brescia, Ivrea; Mario Buat, Carema; Giandomenico Dagna, and Alessandro Scardovi, both of Ivrea, all of Italy, assignors to Ing. C. Olivetti & C., S.p.A., Ivrea, Italy

Filed Jun. 28, 1982, Ser. No. 392,664
Claims priority, application Italy, Jul. 10, 1981, 67959 A/81
Int. Cl.³ G01D *15/18*
U.S. Cl. 346—75 **37 Claims**



6. Selective ink-jet dot printing device, in which printing of a dot is carried out by selectively inducing an emission of particles of an electrically conductive liquid ink through a

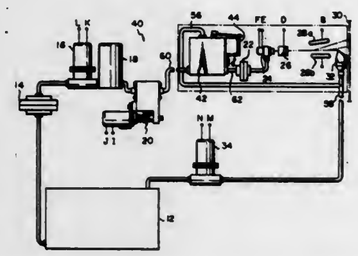
nozzle from an insulting container, wherein the ink is kept under such a pressure such as to form a concave meniscus in the nozzle, said nozzle having an exit diameter of between 20 to 100 micron and a length of at least six times said diameter and the printing of a dot is carried out by a voltage pulse between a first electrode which is in contact with the ink in the container and a second electrode which is disposed outside the nozzle, so as to create excitation of the meniscus and an electric current in the ink in the nozzle such as to create an instantaneous vaporization of a part of ink adjacent said exit, which cause the expulsion of ink particles.

4,502,055

INK JET DEAERATION APPARATUS

Masanori Horike, Tokyo, and Chuji Ishikawa, Kawasaki, both of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Apr. 28, 1983, Ser. No. 489,299
Claims priority, application Japan, May 4, 1982, 57-74821; May 4, 1982, 57-74822
Int. Cl.³ G01D *15/18*
U.S. Cl. 346—75 **14 Claims**



1. An apparatus for removing air from ink which is fed under pressure from an ink pressurizing source to an ink ejection nozzle, comprising:
- a first valve disposed in an ink passageway which extends between the ink pressurizing source and the ink ejection nozzle;
- a deaerating unit located in an ink passageway between said first valve and the nozzle, said deaerating unit having an ink inlet port communicating to an outlet port of the first valve, an ink outlet port communicating to the nozzle and an air outlet port which is formed in upper part of a bore thereof;
- a second valve for selectively opening and closing said air outlet port of the deaerating unit; and
- control means for maintaining the first valve open and the second valve closed during ink ejection printing operation of the apparatus;
- the control means closing and maintaining the first valve closed and opening the second valve for a predetermined length of time to terminate the ink ejection printing operation and allow air to escape from said deaerating unit through the air outlet port.

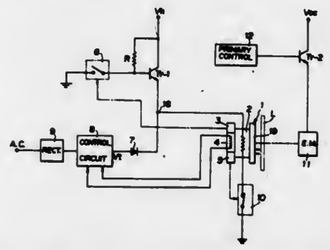
4,502,056

TEMPERATURE CONTROL SYSTEM

Yasuhiko Matsuda, Hanamaki, Japan, assignor to Kabushiki Kaisha Sato, Japan

Filed Apr. 21, 1983, Ser. No. 487,256
Claims priority, application Japan, Apr. 30, 1982, 57-71535
Int. Cl.³ G01D *15/16*
U.S. Cl. 346—76 PH **4 Claims**

1. A thermal printer and a temperature control system therefor; said printer including a printing plate, a heater for said plate and means for moving said plate against a heat transfer printing medium; said control system including a relatively high voltage, a control circuit for producing a relatively low voltage related to an input to said control circuit, first means for applying said high voltage to said heater during an initial heating period to rapidly raise the temperature of said plate, first sensor means operatively connected to said first means for interrupting application of said high voltage to said heater when said first sensor means detects that temperature of said plate has reached a predetermined first temperature close to an optimal printing temperature, second means for applying said



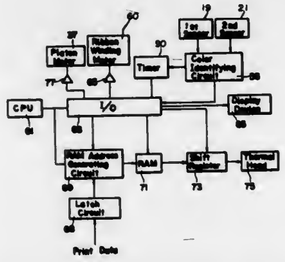
low voltage to said heater following said initial period, second sensor means for supplying said input to said control circuit in response to temperature of said plate detected by said second sensor means; said control circuit regulating said low voltage to raise the temperature of said plate to said optimal printing temperature and then maintaining temperature of said plate essentially at said optimal printing temperature.

4,502,057

METHOD AND APPARATUS FOR DETECTING ERRORS IN AN INK RIBBON IN A THERMAL TRANSFER TYPE MULTICOLOR PRINTER

Junji Kawano, and Fumio Takahashi, both of Ise, Japan, assignors to Shinko Electric Co., Ltd., Tokyo, Japan

Filed Aug. 26, 1983, Ser. No. 526,874
Claims priority, application Japan, Aug. 30, 1982, 57-151086
Int. Cl.³ B41J *3/20*
U.S. Cl. 346—76 PH **3 Claims**



1. A method of detecting an error such as a cutoff or the like of an ink ribbon used in a thermal transfer type multicolor printer, wherein the ink ribbon is provided with sets of ink zones containing heat dissolving inks, each set of the ink zones including ink zones, disposed in a predetermined order, of different colors, comprising the steps of:
- (a) presetting a timer for providing an electric signal representative of detection of the error at an end of a predetermined timing interval equal to a time period necessary in an ink detection mode, in which one of the ink zones having a specified color is detected, for passing at least one ink zone through a printing position where a multicolor printing is made by means of a thermal head;
- (b) winding the ink ribbon at a predetermined speed in the ink detection mode;
- (c) setting the timer at the winding of the ink ribbon;

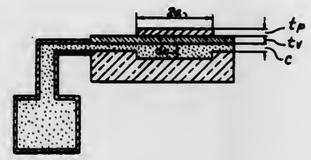
- (d) then, detecting a sensor mark, provided each of the ink zones for indicating its color, and thereby providing a color signal representative of the color indicated by the sensor mark;
- (e) resetting the timer according to the color signal; and
- (f) providing the error detection signal at the end of the predetermined timing interval when no color signal is supplied to the timer within the timing interval.

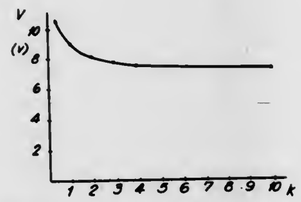
4,502,058

LOW VOLTAGE INK-JET PRINTHEAD

Haruhiko Koto, Shiojiri, Japan, assignor to Shinshu Seiki Kabushiki Kabushiki Kaisha Suwa Seikosha, Japan

Filed Jun. 30, 1982, Ser. No. 393,971
Claims priority, application Japan, Jul. 2, 1981, 56-104287
Int. Cl.³ G01D *15/18*
U.S. Cl. 346—140 R **13 Claims**





1. In an ink-jet printer head including a piezoelectric element having an electrical capacitance cp, a pressurization chamber coupled to said piezoelectric element for containing ink therein, and an ink ejection passage including a nozzle of cross-section A and a flow passage interconnecting said pressurization chamber and said nozzle, said ink ejection passage having fluid inertance m_3, said piezoelectric element being deformable upon application of a drive voltage V to change the volume of said pressurization chamber for ejecting ink from said nozzle, the improvement therein comprising:
- a vibratory system including said piezoelectric element, said vibratory system having an acoustic capacitance Co;
- a flow passage system including said ink ejection passage, said pressurization chamber and an ink supply passage for providing ink to said pressurization chamber, the physical and electrical interrelationships in said ink-jet printer head being represented by the equation

$$V = \sqrt{\frac{2\psi^2 Co}{K^2 cp}}$$

where $$\psi = \frac{VmAm_3C\sqrt{E^2 + D^2}}{Co\exp[-D \cdot \arctan(E/D)/E]}$$

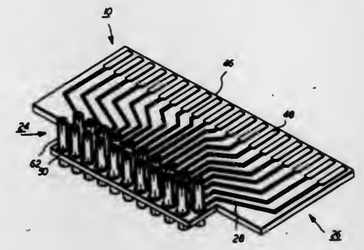
and ψ is the pressure imposed by the piezoelectric element, K is a proportional constant, Vm is the desired ejection speed of ink from said nozzle, C is the acoustic capacitance taking into account compressibility in the pressure chamber, D is a damping coefficient, and E is angular frequency, said acoustic capacitance Co being selected to bring said driving voltage V nearly to a minimum.

4,502,059

ELECTRICAL INTERCONNECTION SYSTEM

Daniel R. Blessington, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Aug. 20, 1982, Ser. No. 409,803
Int. Cl.³ G01D *15/16*
U.S. Cl. 346—140 R **8 Claims**



1. An ink jet printing machine of the type having at least one nozzle for projecting a flow of ink droplets therefrom, wherein the improvement includes:
- a transducer in communication with said nozzle, said transducer having at least two electrically conductive regions electrically insulated from one another;
- a planar member having at least one aperture extending therethrough, said planar member having at least two spaced opposing planar surfaces with at least one conductive element on each opposing planar surface electrically insulated from the other;
- said transducer being mounted through said aperture of said planar member, and having one of said conductive regions thereof electrically connected with one of said conductive elements of said planar member, and the other of said conductive regions thereof electrically connected with the other of said conductive elements of said planar member so as to provide a separate electrical connection from both said conductive elements on said opposing surfaces of said planar member to each of said two conductive regions of said transducer; and
- means, in electrical communication with both said conductive elements of said planar member, for generating an electrical signal which excites said transducer to eject a droplet of ink from said nozzle.

4,502,060

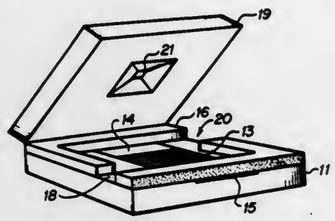
BARRIERS FOR THERMAL INK JET PRINTERS

Glenn H. Rankin, Menlo Park, and Harold W. Levie, Livermore, both of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed May 2, 1983, Ser. No. 490,683
Int. Cl.³ G01D *15/18*
U.S. Cl. 346—140 R **6 Claims**

1. An ink jet print head comprising:
- a substrate;
- an orifice plate having a surface spaced apart from said substrate for containing ink therebetween and having an orifice therein for ejecting ink;
- heating means located on said substrate for producing bubbles in said ink; and
- barrier means, between said substrate and said surface, for

partially surrounding said heating means for directing the flow of ink to said heating means in a generally circular



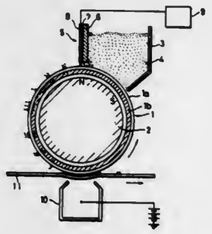
direction other than toward the center of said heating means.

4,502,061

IMAGE FORMING APPARATUS

Yujiro Ando, and Haruo Fujii, both of Yokohama, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 13, 1982, Ser. No. 417,468
Claims priority, application Japan, Sep. 22, 1981, 56-149740; Dec. 15, 1981, 56-203340; May 19, 1982, 57-84169
Int. Cl.³ G01D *15/06*
U.S. Cl. 346—153.1 **11 Claims**



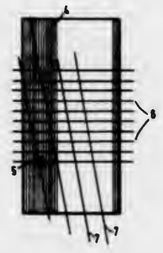
1. Apparatus for forming images using particulate developer containing a magnetic component, comprising:
- a container for accumulating the particulate developer containing a magnetic component;
- image holding means disposed to pass said container while contacting the developer in said container;
- gate means having a number of electrodes arranged in the direction of the record width and electrically isolated from each other, said gate means having a magnetic property and being provided at an outlet side of said container;
- magnetic force generating means disposed at a position opposed to said gate means such that image holding means passes therebetween; and
- means for applying a signal voltage to said electrodes of said gate means to correspond to information to be recorded;
- wherein during non-recording the outflow of the developer from said container is blocked by the magnetic field formed between said gate means and said magnetic force generating means and during recording said signal voltage is applied to the electrodes of said gate means to adhere the developer to said image holding means and form a record image corresponding to the information to be recorded by enabling the developer to move out from said container against the magnetic field.

4,502,062

APPARATUS FOR RECORDING DATA ON A RECORDING CARRIER

Hermann Künst, Berlin, Fed. Rep. of Germany, assignor to Technomed Elektromed.Apparatebau GmbH and Ingenieurburo Dipl.-Ing. Hermann Kunst, both of, Fed. Rep. of Germany

Filed Sep. 13, 1982, Ser. No. 417,393
Claims priority, application Fed. Rep. of Germany, Oct. 28, 1981, 3143135
Int. Cl.³ G01D *15/08*
U.S. Cl. 346—155 **25 Claims**



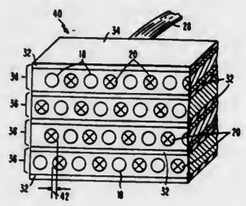
1. An apparatus for recording data on a recording carrier comprising:
- a plurality of juxtaposed, insulated recording electrodes forming a fixed recording comb;
- selection circuit means for separately controlling each individual electrode;
- a grid-like contact panel disposed over the recording electrodes, the contact panel having a plurality of contact surfaces; and wherein
- each contact surface extending over more than one recording electrode and contacting a single recording electrode.

4,502,063

ELECTRODE CONFIGURATION FOR THE PRINT HEAD OF AN ELECTROLYTIC PRINTER

Michael Accial, Newark Valley; Charles R. Pigos, Endicott, both of N.Y., and Charles G. Speicher, Brackney, Pa., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 1, 1983, Ser. No. 481,511
Int. Cl.³ G01D *15/06*
U.S. Cl. 346—155 **4 Claims**



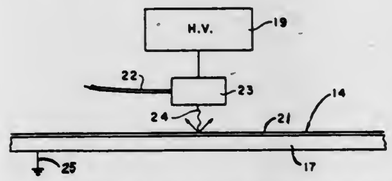
1. Print head apparatus for an electrolytic printer wherein printing is effected by applying electrical pulses of appropriate duration and amplitude supplied by control means therefor to a recording medium to thereby cause any electrolytically involved leuco dye on the upper surface of the recording medium to be shifted into its visible range, said apparatus comprising:
- (a) a block of insulating material;
- (b) a first plurality of electrodes, secured in said insulating block at a predetermined distance from each other, permanently connected to said control means for actuation thereby only as anodes;
- (c) a second plurality of electrodes, secured in said insulating block at a predetermined distance from each other and from said first plurality of electrodes and positioned between adjacent ones of said first plurality of electrodes so that no two of said first plurality of electrodes are horizontally adjacent with respect to the normal orientation of said insulating block, said second plurality of electrodes being permanently connected to an electrical drain to serve only as cathodes; and
- (d) at least one plane of conductive material, one for each pair of interspersed rows of said first and second electrodes used in said print head, said plane being formed in said insulating block between said rows of electrodes, said plane being connected to said electrical drain to also serve as a cathode.

4,502,064

PAGE PRINTER

Ben A. Shapir, Ramat-Gan, Israel, assignor to Avmat Computers Ltd., Tel-Aviv, Israel

Filed Sep. 22, 1983, Ser. No. 534,662
Int. Cl.³ G03G *15/00*
U.S. Cl. 346—160 **9 Claims**



1. A page printer for selectively printing on a paper, said page printer comprising:
- means for selectively charging said paper,
- said selective charging means comprising means for selectively applying radiant energy to selected portions of said paper to cause electrons to be removed from the normal bond,
- means for generally applying a high voltage field proximate to said paper to prevent the removed electrons from returning to said paper, thereby charging said paper,
- means responsive to said selective charges for applying toner, and
- means for fixing said toner to obtain the desired printout.

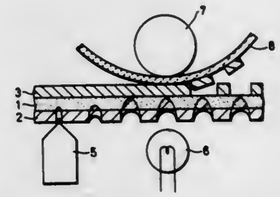
4,502,065

TRANSFER TYPE HEAT-SENSITIVE RECORDING MEDIUM

Haruhiko Moriguchi; Yoshiki Kikuchi, and Takashi Ohmori, all of Kanagawa, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Feb. 10, 1983, Ser. No. 465,373
Claims priority, application Japan, Feb. 10, 1982, 57/18788
Int. Cl.³ B41M *5/18*
U.S. Cl. 346—204 **10 Claims**

8. A method of obtaining an image from an electronic signal comprising the steps of:
- moving a transfer type of heat-sensitive recording medium having a porous base impregnated with a colorless color former, a layer of thermally melting ink on one side of said porous base and a layer of thermally melting wax containing a color developer formed on an opposite side of said porous base in proximity to a thermal head receiving an input electronic signal with said wax layer confronting said thermal head;
- selectively heating and melting said wax layer in accordance with said input signal wherein said wax permeates said porous base to allow the color developer to color on reaction with said colorless color former;
- further heating said wax layer to melt said ink in correspondence with said coloring; and



transferring said molten ink onto a recording sheet in contact with said ink layer.

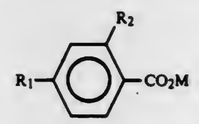
4,502,066

HEAT-SENSITIVE RECORDING SHEET

Toshimi Satake; Kazuo Maruyama, and Fumio Fujimura, all of Tokyo, Japan, assignors to Jujo Paper Co., Ltd., Tokyo, Japan

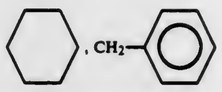
Filed Aug. 17, 1983, Ser. No. 524,521
Claims priority, application Japan, Aug. 30, 1982, 57/149241
Int. Cl.³ B41M *5/18*
U.S. Cl. 346—209 **10 Claims**

1. Heat-sensitive recording sheet having a color forming layer comprising a colorless basic dyestuff and a monophenolic 4-hydroxyphenyl compound, wherein said color-forming layer contains a metal salt of p-alkylbenzoic acid having a general formula (I) or a metal salt of o-benzoylbenzoic acid having the general formula (I)



(I)

(where R_1 represents H, CH_3, C_2H_5, C_3H_7, iso-C_3H_7, tert-C_4H_9, C_5H_{11},



or C_6H_5, providing that R_2 represents CO—C_6H_5 in the case of R_1 is H, or R_2 represents H in other cases, and M represents a polyvalent metal).

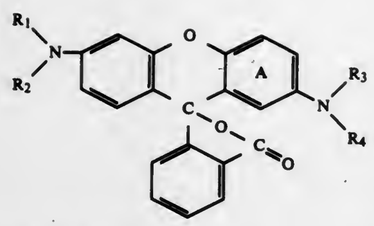
4,502,067

HEAT-SENSITIVE BLACK RECORDING MATERIAL

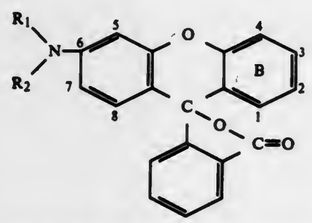
Masanori Matsuda, Sakai; Haruo Koyama, Hirakata, and Nobuhiro Miyakawa, Abiko, all of Japan, assignors to Mita Industrial Company Limited, Osaka, Japan

Filed Jun. 29, 1983, Ser. No. 509,068
Claims priority, application Japan, Jun. 30, 1982, 57-111476
Int. Cl.³ B41M *5/18*
U.S. Cl. 346—214 **15 Claims**

1. A heat-sensitive recording material capable of forming an image of a hue close to a pure black at a low density, which comprises a dispersion of a leuco dye, a heat-fusible organic acidic substance solid at normal temperature and a sensitizing agent in a binder, wherein the leuco dye comprises a fluoran type leuco dye for forming a black color, which is a compound represented by the following general formula:



wherein R_1 and R_2 each represent an alkyl or aryl group having up to 4 carbon atoms or R_1 and R_2 are bonded to form a nitrogen-containing heterocyclic ring group together with the nitrogen atom, R_3 represents a hydrogen atom or a lower alkyl or aralkyl group, R_4 represents an unsubstituted or substituted aryl group, and the ring A may be substituted with a halogen atom or an alkyl group, and a benzofluoran type leuco dye for forming a red dye, which is a compound represented by the following general formula:



wherein R_1 and R_2 each represent an alkyl group having up to 4 carbon atoms or an aryl group and are bonded to form a nitrogen-containing heterocyclic group together with the nitrogen atom, and the ring B may have a ring fused thereto to form a naphthalene ring as a whole and said naphthalene ring may be substituted with a hydroxyl group, an alkoxy group, an amino group or a substituted amino group, in an amount of 0.01 to 1% by weight based on said black color-forming leuco dye.

4,502,068

THERMOSENSITIVE RECORDING MATERIAL

Keishi Taniguchi, Shizuoka, and Kiyotaka Iiyama, Mishima, both of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

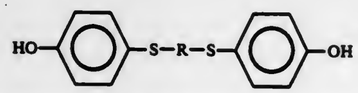
Filed Aug. 30, 1983, Ser. No. 527,899

Claims priority, application Japan, Sep. 20, 1982, 57-163650; Oct. 12, 1982, 57-178882; Oct. 20, 1982, 57-184141; Nov. 1, 1982, 57-192036

Int. Cl.³ B41M *5/18, 5/22*

U.S. Cl. 346—216 **6 Claims**

1. In a thermosensitive recording material comprising a colorless or light-colored coloring material, a color developer capable of inducing color formation in said colorless or light-colored coloring material upon application of heat thereto, support means for supporting said coloring material and said color developer so that said color formation can be induced, the improvement wherein said color developer is a phenolic material of the formula



wherein R is selected from the group consisting of an alkylene group having 1 to 10 carbon atoms; an alkylene group having 1 to 8 carbon atoms and containing 1 to 3 carbonyl groups which are not directly bonded to S in the formula; and an alkylene group having 2 to 15 carbon atoms and containing 1 to 5 ether bonds.

4,502,069

CONTACT FOR AN MIS-SEMICONDUCTOR COMPONENT AND METHOD FOR MANUFACTURING THE SAME

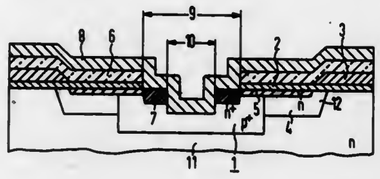
Gottfried Schuh, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Apr. 28, 1981, Ser. No. 258,367

Claims priority, application Fed. Rep. of Germany, Apr. 30, 1980, 3016749

Int. Cl.³ H01L *29/78, 29/06, 23/48, 29/44*

U.S. Cl. 357—23.4 **4 Claims**



1. MIS-semiconductor component comprising:
(a) a substrate having a surface;
(b) a zone of a given first conductivity type embedded in said substrate;
(c) a source zone of a given second conductivity type embedded in said zone of a given first conductivity;
(d) at least one insulating layer disposed on said substrate surface;
(e) an ohmic contact;
(f) an auxiliary zone surrounding at least part of said contact, being of said second conductivity type, being embedded in said zone of first conductivity and more heavily doped than said source zone;
(g) said at least one insulating layer and said auxiliary zone having a hole formed therein;
(h) said contact being connected to said zone of first conductivity through said hole of said auxiliary zone;
(i) said contact being electrically connected to said source zone through said auxiliary zone; and
(j) a channel zone of a first conductivity type disposed between said substrate and said source zone.

4,502,070

FET CONTROLLED THYRISTOR

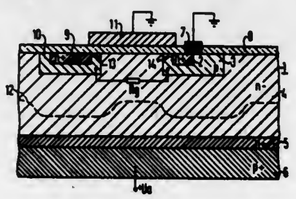
Ludwig Leipold; Jens P. Stengl, and Jenö Tihanyi, all of Munich, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Jun. 22, 1981, Ser. No. 276,196

Claims priority, application Fed. Rep. of Germany, Jun. 26, 1980, 3024015

Int. Cl.³ H01L *29/74, 27/02, 29/78*

U.S. Cl. 357—38 **6 Claims**



1. Controlled semiconductor switch with a semiconductor body containing a thyristor structure having a first zone of first conductivity type, free of external connection, embedded in coplanar relationship in a second zone of second conductivity type, free of external connection;
also containing a third zone of the first conductivity type and a fourth zone of the second conductivity type; and further containing an MIS-FET integrated into the semiconductor body and having a source zone of the first conductivity type embedded in coplanar relationship in a zone of the second conductivity type;
an insulating layer disposed on the surface of the semiconductor body, a control electrode lying on the insulating layer and covering a first channel zone operatively associated with the FET; and a cathode electrode on the semiconductor body, comprising the features that:
(a) the zone of the second conductivity type of the MIS-FET constitutes a fifth zone of the semiconductor body and is embedded in the third zone in coplanar relationship therewith and forms the first channel zone at the surface of the semiconductor body;
(b) the source zone of the first conductivity type of the MIS-FET constitutes a sixth zone of the semiconductor body and is embedded in said fifth zone in coplanar relationship therewith;
(c) the second zone of the thyristor structure is embedded in the third zone in coplanar relationship therewith and forms a second channel zone at the surface of the semiconductor body;
(d) the third zone extends to the surface of the semiconductor body between the two channel zones;
(e) the control electrode also covers said second channel zone and the part of the third zone extending to the surface of the semiconductor body; and
(f) the cathode electrode is in contact with the source zone of the MIS-FET.

4,502,071

FET CONTROLLED THYRISTOR

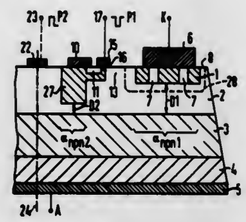
Helmut Herberg, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Jan. 29, 1982, Ser. No. 344,061

Claims priority, application Fed. Rep. of Germany, Mar. 31, 1981, 3112940

Int. Cl.³ H01L *29/74, 29/78, 27/02, 29/167*

U.S. Cl. 357—38 **13 Claims**



1. In a thyristor of the type including a semiconductor body having a boundary surface and including a first emitter of a first conductivity type, a first base of a second, opposite conductivity type carrying said first emitter, a second base of the first conductivity type carrying and forming a pn junction with said first base, a second emitter of the second conductivity type carrying said second base, a pair of emitter electrodes having respective terminals for connection to a load respectively carried on said first and second emitters, and an auxiliary emitter of the first conductivity type for internal current gain located in said first base spaced from said first emitter and extending to said boundary surface and carrying an auxiliary emitter electrode at said boundary surface, the improvement therein comprising:
a semiconductor switch connected between and operable to electrically connect and disconnect said auxiliary emitter electrode and said first base adjacent said auxiliary emitter
wherein:
said first and second bases and said first emitter form a first structure having a first amplification factor α_1; said first and second bases and said auxiliary emitter form a second structure having a second amplification factor α_2;
and
with a blocking voltage applied to said pair of emitter electrodes, the amplification factor α_2 is greater relative to the charge carriers emitted by said auxiliary emitter than the amplification factor α_1.

4,502,072

FET CONTROLLED THYRISTOR

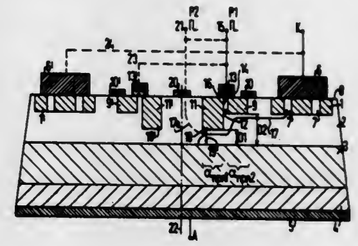
Helmut Herberg, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Feb. 4, 1982, Ser. No. 345,925

Claims priority, application Fed. Rep. of Germany, Mar. 31, 1981, 3112941

Int. Cl.³ H01L *29/74, 29/78, 27/02, 29/167*

U.S. Cl. 357—38 **13 Claims**



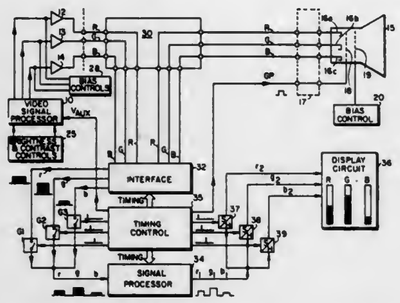
1. In a thyristor of the type having a semiconductor body comprising a first base of a first conductivity type contacting a second base of a second conductivity type, a first emitter of the second conductivity type on the first base carrying a first electrode at a boundary surface of the semiconductor body, a second emitter of the first conductivity type carried on the second base, and, for internal current gain, an auxiliary emitter of the second conductivity type spaced laterally from the first emitter and extending from the boundary surface into the first base toward the pn junction of the first and second bases, the auxiliary emitter being a first auxiliary emitter and forming a first semiconductor structure, together with the first and second bases, which has a current transfer ratio α_2, the improvement therein comprising:
a second auxiliary emitter extending into the first base from the boundary surface, spaced from the first auxiliary emitter, and forming a second semiconductor structure, together with the first and second bases, having a current transfer ratio α_1; and
a semiconductor switch operable to selectively connect and disconnect the first and second auxiliary emitters, the current transfer ratio α_1 of the second semiconductor structure, with the application of a blocking voltage to the thyristor, being greater than the current transfer ratio α_2 of the first semiconductor structure in the conductive state of said semi-conductor switch, relative to the charge carriers emitted by said second auxiliary emitter due to the recombination rate of the first auxiliary emitter being significantly greater than that of the second auxiliary emitter because of the greater distance of the first auxiliary emitter to the pn junction of the first and second bases.

4,502,073

NOISE SUPPRESSING INTERFACE CIRCUIT IN A KINESCOPE BIAS CONTROL SYSTEM

Werner Hinn, Zollikerberg, and Hans-Rudolf Fecht, Berikon, both of Switzerland, assignors to RCA Corporation, New York, N.Y.

Filed Dec. 29, 1982, Ser. No. 454,460
Claims priority, application United Kingdom, Apr. 6, 1982, 8210219
Int. Cl.³ H04N 9/62
U.S. Cl. 358—10 **23 Claims**



14. A service instrument for use with a television receiver including an image reproducing device comprising an electron gun responsive to video signals applied thereto, said electron gun comprising cathode and grid electrodes; and a driver amplifier for providing at an output video signals suitable for driving said cathode electrode; control apparatus operative during sensing and reference intervals within black image intervals when normal video signal image information is suppressed, comprising:

interface means comprising an active device having a first terminal coupled to said output of said driver amplifier, a second low impedance terminal coupled to said cathode, and a third terminal coupled to an output network; said first and second terminals comprising a signal path from said driver amplifier output to said cathode;

bias control signal processing means responsive to signals from said output network for producing a control signal related to the magnitude of black image representative currents conducted by said image display device;

means for biasing said electron gun during said sensing intervals to induce a cathode current representative of the black image current of said image reproducing device, said representative current being applied to said low impedance second terminal of said interface means; and

means responsive to said control signal for indicating the magnitude of said black current; wherein

the signal gain from said first terminal of said interface means to said output network is significantly less than the signal gain from said low impedance second terminal to said output network, so that spurious signals including noise from said output of said driver amplifier are significantly attenuated at said output network to prevent distortion of black current representative signals processed by said bias control signals processing means.

4,502,074

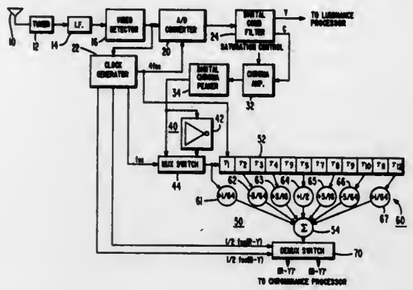
DIGITAL TELEVISION SIGNAL PROCESSING SYSTEM

Glenn A. Reitmeier, Trenton, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Nov. 9, 1981, Ser. No. 319,459
Int. Cl.³ H04N 9/535
U.S. Cl. 358—23 **11 Claims**

1. In a television signal receiver, including a source of digital chrominance signals modulated in phase and frequency, apparatus for producing a plurality of filtered and demodulated digital color signals comprising:

means, having an input coupled to said source to receive said digital chrominance signals, and an output, for producing baseband digital color signals of interleaved sampling phases;



a digital filter, having an input coupled to receive said baseband digital color signals, and an output, and exhibiting a response characteristic which is substantially equal to the desired passband of said demodulated digital color signals; and

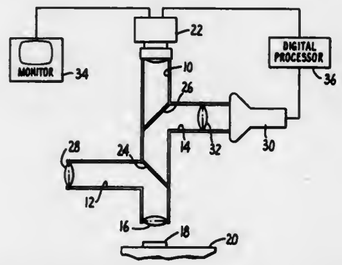
means, coupled to the output of said digital filter, for producing said plurality of filtered and demodulated digital color signals.

4,502,075

METHOD AND APPARATUS FOR PRODUCING OPTICAL DISPLAYS

Sherman E. De Forest, Encinitas; Gunner Bolz, Solano Beach, and Robert E. La Quey, La Jolla, all of Calif., assignors to International Remote Imaging Systems, Chatsworth, Calif.

Filed Dec. 4, 1981, Ser. No. 327,367
Int. Cl.³ H04N 7/18
U.S. Cl. 358—93 **14 Claims**



1. A method of creating an optical display which comprises:

producing a representation of a real optical scene;

establishing an image transmission path with the path including a stage at which the representation is produced; and

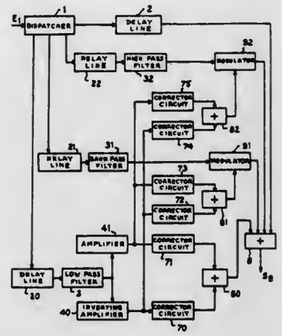
projecting a parameter of the representation onto the real optical scene, whereby a combined optical display is produced comprising the real optical scene combined with a parameter of the representation of the real scene.

4,502,076

SELECTIVE EFFICIENCY VIDEOFREQUENCY NON-LINEARITY CORRECTION DEVICE

Claude Cluniat, and Joseph Delattre, both of Chatou, France, assignors to LGT Laboratoire General des Telecommunications, Chatou, France

Filed Apr. 5, 1982, Ser. No. 365,388
Claims priority, application France, Apr. 14, 1981, 81 07459
Int. Cl.³ H04N 5/38
U.S. Cl. 358—160 **7 Claims**



1. A selective efficiency video frequency nonlinearity correcting device, for precorrecting nonlinearities introduced in video frequency signals in high frequency stages of television equipment:

a video frequency signal;

a dispatcher, receiving said video frequency signal, said dispatcher having at least two outputs connected respectively to the input of a wide band channel and to the input of a low frequency correction channel;

wherein said correction channel comprises

a low pass filter whose output is coupled to at least one threshold corrector circuit comprising means for selecting threshold ranges of signal levels to be corrected, and

associated amplitude adjustment means coupled to said low pass filter for adjusting the amplitude of said low pass filter output, and

the output of the corrector circuit is coupled to an output of said low frequency correction channel by a summator output circuit; and

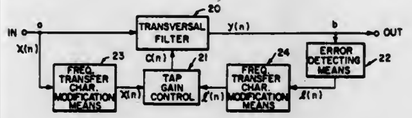
the outputs of the wide band channel and the correction channel are connected to two corresponding inputs of said summator output circuit such that combination of said two corresponding inputs forms a precorrected signal.

4,502,077

GHOST CANCELING APPARATUS

Noriaki Morotomi, Neyagawa, and Takeshi Sato, Hirakata, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Oct. 29, 1981, Ser. No. 316,423
Claims priority, application Japan, Oct. 29, 1980, 55-152917
Int. Cl.³ H04N 5/21; H04B 3/04
U.S. Cl. 358—167 **7 Claims**



1. A ghost component signal canceling apparatus for canceling a ghost component in a video signal, said apparatus comprising (a) a ghost component signal transferring path which transfers a signal including a ghost component signal and comprises:

an input terminal to which a video signal is inputted;

a transversal filter operatively coupled at an input terminal thereof to said input terminal of said ghost component signal transferring path for canceling said ghost component signal;

an error detecting means operatively coupled at an input terminal thereof to an output terminal of said transversal filter for detecting a ghost component canceling error signal from said video signal; and

a tap gain control means operatively coupled at an input terminal thereof to an output terminal of said error detecting means for generating a tap gain control signal to said transversal filter from said ghost component canceling error signal, (b) a control signal path for supplying said control signal from said tap gain control means to a tap gain control terminal of said transversal filter, said transversal filter canceling a ghost component signal under the control of said tap gain control signal, and (c) an outputting path for supplying an output signal of said transversal filter to an output terminal of said ghost component signal canceling apparatus, wherein said ghost component signal canceling apparatus further comprises a frequency transfer characteristic modification means provided in said ghost component signal transferring path for amplifying a signal level at a specified frequency range of said signal which is transferred through said ghost component transferring path;

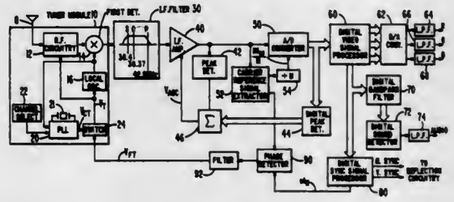
wherein said frequency transfer characteristic modification means is connected between said output terminal of said transversal filter and said input terminal of said error detecting means.

4,502,078

DIGITAL TELEVISION RECEIVERS

Steven A. Steckler, Clark, and Alvin R. Balaban, Lebanon, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Feb. 22, 1982, Ser. No. 351,307
Int. Cl.³ H04N 5/44
U.S. Cl. 358—188 **20 Claims**



10. In a television signal processing system, including a source of analog television information intermediate frequency signals including an i.f. picture carrier of a given frequency, signal translation apparatus comprising:

intermediate frequency signal processing circuitry, having an input coupled to received said analog television intermediate frequency signals, and including an intermediate frequency filter for shaping an i.f. signal passband of frequencies including said i.f. picture carrier signal, an intermediate frequency amplifier, and an output at which intermediate frequency signals contained within said i.f. signal passband are produced;

means, responsive to said intermediate frequency signals, for producing a sampling signal which is less than twice the frequency of said i.f. picture carrier;

an analog to digital converter, having an input coupled to the output of said intermediate frequency signal processing circuitry, and responsive to said sampling signal for sampling said intermediate frequency signals contained

within said i.f. signal passband to produce digital signal samples representing said television information and contained within a band of frequencies which is lower in frequency than said i.f. signal passband frequencies; and

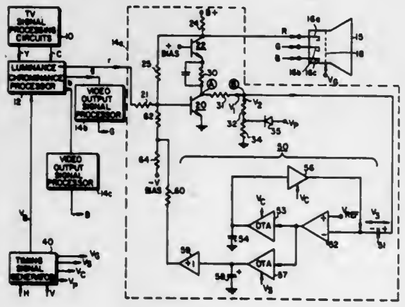
digital signal processing means, responsive to said digital signal samples, for producing processed digital television signals.

4,502,079

SIGNAL SAMPLING NETWORK WITH REDUCED OFFSET ERROR

Paul Filliman, Indianapolis, Ind., assignor to RCA Corporation, New York, N.Y.

Filed Oct. 29, 1982, Ser. No. 437,827
Int. Cl.³ H04N 5/68
U.S. Cl. 358—243 19 Claims



1. Signal processing apparatus operative during a reference interval and a subsequent signal sampling interval, comprising:

a source of reference voltage;

biasing means;

signal utilization means;

a first amplifier with an input coupled to said biasing means, and an output;

a second amplifier with an input coupled to said biasing means, and an output;

first switching means for selectively enabling signals from said output of said first amplifier and a voltage related to said reference voltage to be applied to said biasing means during said reference interval, for establishing a reference condition for said baising means; and

second switching means associated with said second amplifier for selectively enabling signals from said output of said second amplifier to be applied to said signal utilization means during said sampling interval; wherein

said first and second amplifiers produce substantially the same output signal at the end of said reference interval.

4,502,080

OPERATION DEVICE FOR FACSIMILE

Shin Tsuda, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

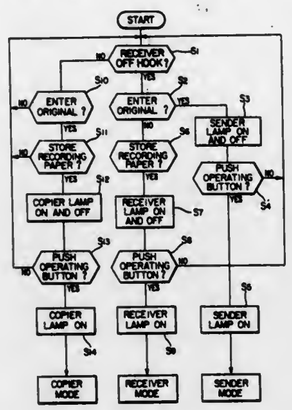
Filed Jul. 19, 1982, Ser. No. 399,287
Claims priority, application Japan, Aug. 7, 1981, 56-122946
Int. Cl.³ H04M 1/00
U.S. Cl. 358—256 21 Claims

1. An operating device for facsimile comprising:

a single switch for causing the operation of the sending and receiving modes of facsimile;

first detecting means for detecting the state of a telephone handset;

second detecting means for detecting the presence or absence of an original document; and



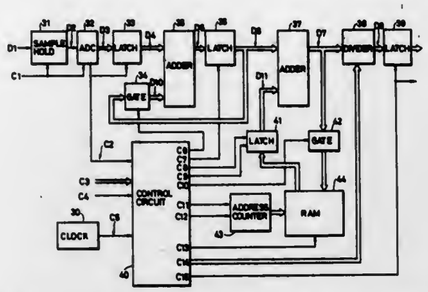
control for controlling the mode of said switch means according to the result of detection by said first and second detecting means.

4,502,081

VARIABLE DENSITY SCANNER

Hirotaka Otsuka, Kawasaki; Hideo Uchida, Tokyo; Yoshihiro Uno, Machida; Katsuo Nakazato, Tokyo; Kunio Sannomiya, Atsugi; Hidehiko Kawakami, Machida, and Hiroshi Tsuchiya, Kawasaki, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd. and Matsushita Graphic Communications Systems, Inc., both of, Japan

Filed Sep. 29, 1982, Ser. No. 428,235
Int. Cl.³ H04N 1/40
U.S. Cl. 358—280 11 Claims



1. An apparatus for scanning an original at a variable density in response to a control signal, comprising:

first means for scanning a light beam of a fixed spot size on said original along each of a plurality of parallel line paths at a constant speed to generate a video signal and successively shifting the line path to the next;

second means for sampling said video signal and generating therefrom a video sample;

third means responsive to said control signal for dividing each of said line paths into a plurality of line segments so that each segment derives a plurality of said video samples and forming said line paths into a plurality of groups of adjacent line paths so that said video samples are derived from a plurality of patterns of rows and columns; and

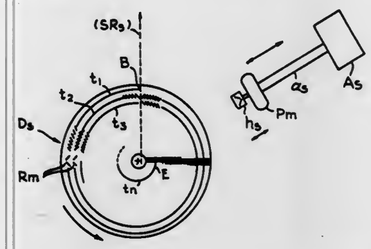
fourth means for arithmetically dividing the total value of the video samples of each pattern by their number in response to said control signal to derive an average value.

4,502,082

SPIRAL RECORDING AND ASSOCIATED SYSTEM

Herbert U. Ragle, and Norman S. Blessum, both of Thousand Oaks, Calif., assignors to Burroughs Corporation, Detroit, Mich.

Continuation-in-part of Ser. No. 807,155, Jun. 16, 1977,. This application Dec. 18, 1978, Ser. No. 970,578
Int. Cl.³ G11B 5/43
U.S. Cl. 360—76 24 Claims



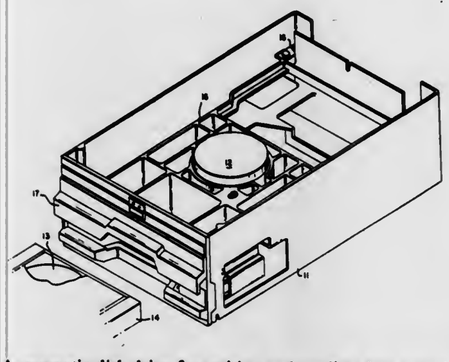
1. A high density digital data recording medium comprised of at least one "spiral" track, each track comprising respective magnetic "skew bit transitions"; these transitions being oriented in a "first skew direction" along certain non-adjacent track-loops and in a "second skew direction" along all "other" track-loops, this second skew direction being orthogonal to the "first", as "sighted" along the reference spiral track direction, so that, as a result, adjacent spiral tracks present skew bits which are transverse to one another and thus minimize "adjacent bit interference" and therefore also minimize, or eliminate, inter-track "guard bands" common with such high density recording.

4,502,083

MAGNETIC DISK DRIVE HAVING A MOVABLE DRIVE MOTOR

Randall C. Bauck, Davis County; S. Peter Kleczkowski, and Anton J. Radman, both of Weber County, all of Utah, assignors to Iomega Corporation, Ogden, Utah

Filed Apr. 22, 1981, Ser. No. 256,594
Int. Cl.³ G11B 5/016
U.S. Cl. 360—99 5 Claims



1. A magnetic disk drive for writing and reading data to and from a magnetic disk contained in a cartridge which is inserted through an opening into said disk drive comprising:

a yoke rotatable about a pivot in said disk drive;

a bezel member mounted on the end of said yoke to normally close said opening and;

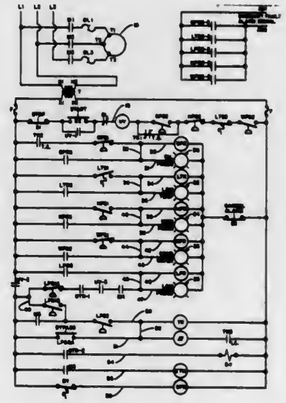
a motor having a spindle for engaging said magnetic disk to rotate it, said motor being mounted on said yoke so that rotation about said pivot moves said bezel member out of said opening and moves said motor spindle out of engagement with said disk and opposite rotation of said yoke moves said bezel member into said opening and moves said motor spindle into engagement with said disk.

4,502,084

AIR CONDITIONING SYSTEM TROUBLE REPORTER

William J. Hannett, Jamesville, N.Y., assignor to Carrier Corporation, Syracuse, N.Y.

Filed May 23, 1983, Ser. No. 497,460
Int. Cl.³ H02H 3/04
U.S. Cl. 361—23 3 Claims



1. In a system driven by a motor, apparatus for providing a persistent indication of an impending shutdown when any of a plurality of preselected conditions reach a first level and for shutting off said motor when any one of said preselected conditions reaches a second level comprising:

circuit means for shutting off said motor when any one of said preselected conditions reaches said second level;

a plurality of electrical paths in parallel with said circuit means with each of said plurality of electrical paths being made up of a first and second parallel circuit in series;

each of said first parallel circuits having a first branch containing a first open switch means closable in response to one of said preselected conditions reaching its said first level and a second branch containing a normally open relay operated second switch means;

each of said second parallel circuits having a first branch containing a relay coil means for controlling the second switch means in the corresponding first parallel circuit and a second branch containing indicator means whereby upon any one of said preselected conditions reaching its said first level, the corresponding first switch means closes thereby activating the corresponding relay coil means which in turn closes the corresponding second switch means and activates said indicator means.

4,502,085

POWER AMPLIFIER WITH CONTROLLABLE LOSSLESS SNUBBER CIRCUIT

Heber J. Morrison, Ellicott City, and Lawrence W. Koenig, Linthicum, both of Md., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

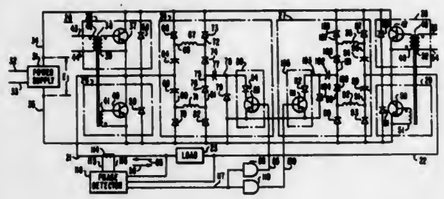
Filed Oct. 26, 1982, Ser. No. 436,866
Int. Cl.³ H02H 7/20
U.S. Cl. 361—56 15 Claims

1. A power amplifier comprising:

a first switch coupled between a first and second terminal;

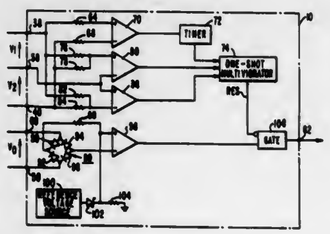
a second switch coupled between said second and a third terminal;

a third switch coupled between said first and a fourth terminal;
a fourth switch coupled between said fourth and third terminal;
said first terminal adapted for coupling to a positive potential of a power supply;
said third terminal adapted for coupling to a return path of said power supply;
said second and said fourth terminal adapted for coupling across a load;
a first diode coupled across said first switch having its cathode coupled to said first terminal;
a second diode coupled across said second switch having its cathode coupled to said second terminal;
a third diode coupled across said third switch having its cathode coupled to said first terminal;
a fourth diode coupled across said fourth switch having its cathode coupled to said fourth terminal;



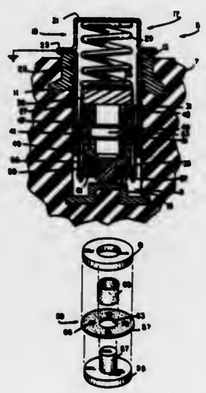
first means for turning said first and fourth switches on at first times to conduct current through said load in a first direction and for turning said second and third switches on at second times to conduct current through said load in a second direction opposite said first direction;
a first capacitor having one side coupled to said second terminal and the other side coupled to the anode of a fifth diode, the cathode of said first diode coupled to said first terminal;
first means for charging said first capacitor to a predetermined voltage at times said second switch is conducting;
a second capacitor having one side coupled to said second terminal and the other side coupled to the cathode of a sixth diode, the anode of said second diode coupled to said third terminal;
second means for charging said second capacitor to a predetermined voltage at times said first switch is conducting.

4,502,086
DIFFERENTIAL PROTECTIVE RELAY
Toshinobu Ebisaka, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Filed Jun. 22, 1983, Ser. No. 506,577
Claims priority, application Japan, Jul. 1, 1982, 57-115988
Int. Cl.³ H02H *3/28, 7/045*
U.S. Cl. 361—87 **7 Claims**



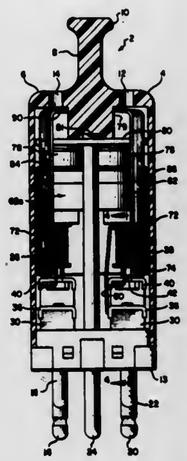
1. A differential protective relay for detecting a fault in a protected device of an ac electrical power system, and for opening a circuit breaker in response to the fault, said differential protective relay comprising:
means for producing a first current-derived signal representative of the current flowing into the protected device;
means for producing a second current-derived signal representative of the current flowing out of the protected device;
means for producing first, second, and third evaluation signals, wherein said first evaluation signal is representative of said first current-derived signal during the positive half-cycle thereof, and wherein said second evaluation signal is representative of said first current-derived signal during the negative half-cycle thereof and representative of the second current-derived signal during the negative half-cycle thereof, and wherein said third evaluation signal is representative of the phasor difference between said first and second current-derived signals;
means for producing a predetermined reference signal;
comparator means for producing an operating signal having a first state when said third evaluation signal exceeds said predetermined reference signal, and wherein said operating signal is in a second state at all other times;
suppression means for producing a suppression signal having a first state when the absolute values of said first and second evaluation signals are equal, wherein said suppression signal is in said first state for a predetermined duration, and wherein said suppression signal is in a second state at all other times;
and trip means responsive to said operating and suppression signals for producing a trip signal when said operating signal is in said first state and said suppression signal is in said second state, wherein the circuit breaker is responsive to said trip signal for opening the circuit breaker.

4,502,087
SURGE VOLTAGE ARRESTER ASSEMBLY
Jean-Marie Huvet, Rilly la Montagne, France, assignor to GTE Products Corporation, Stamford, Conn.
Continuation of Ser. No. 433,498, Oct. 8, 1982, abandoned. This application Sep. 17, 1984, Ser. No. 651,656
Claims priority, application France, Jul. 20, 1982, 82 12667
Int. Cl.³ H02H *9/06*
U.S. Cl. 361—119 **8 Claims**



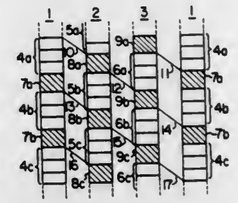
1. A surge voltage arrester assembly comprising:
a metallic tubular housing member;
an electrically conductive cage positioned within said housing member and having outwardly extending resilient fingers slideably engaging said housing member;
electrically conductive contact means within said electrically conductive cage;
a hermetically sealed cold cathode gas tube with first and second electrodes spaced by an electrical insulator forming a primary arc gap, said cold cathode gas tube being positioned within said cage with said first electrode contacting said electrically conductive contact means;
a first electrically conductive member contacting said second electrode of said cold cathode gas tube within said electrically conductive cage, said first electrically conductive member having an axially extending protuberance;
centrally apertured electrical insulator means having a plurality of circumferentially spaced and isolated holes, said insulator means being telescoped over said axially extending protuberance of said first electrically conductive member and positioned adjacent said first conductive member;
a sleeve of electrical insulating material telescoped over said protuberance of said first electrically conductive member; and
a second electrically conductive member having a central aperture and telescoped over said sleeve of electrical insulating material, said second electrically conductive member being positioned immediately adjacent said electrical insulator means and retained by and contacting said resilient fingers within said electrically conductive cage whereby said circumferentially spaced holes provide secondary arc gaps intermediate said first and second electrically conductive members.

4,502,088
LINE PROTECTOR FOR A COMMUNICATIONS CIRCUIT
Bertram W. Baumbach, Arlington Heights, Ill., assignor to Reliance Electric Company, Cleveland, Ohio
Filed Mar. 18, 1983, Ser. No. 476,703
The portion of the term of this patent subsequent to Dec. 20, 2000, has been disclaimed.
Int. Cl.³ H02H *9/06*
U.S. Cl. 361—124 **3 Claims**



1. A line protector for a communications circuit comprising a housing having an end wall and an opening opposite to said end wall, an insulating member forming a base and having step surfaces, said base closing said opening, conductive line pins projecting from said base, a first conductive element rigidly secured to one of said line pins and a second conductive element rigidly secured to the other line pin, said conductive elements being respectively supported by the step surfaces and each conductive element and its associated pin being electrically insulated from the other conductive element and its associated pin, a heat coil assembly having telescoping portions rigidly secured together by a fusible substance, a coil of wire surrounding said telescoping portions and having one end of the coil connected to one conductive element and the other end of the coil connected to the other conductive element, thereby to form a protector circuit between the line pins and wherein the coil generates heat to melt the fusible substance upon an overcurrent condition in a communications line circuit in which the protector circuit is a part, one of said telescoping portions being rigidly secured to one of said conductive elements, the conductive elements being between the heat coil and the insulating member, a conductive test terminal in said housing, said test terminal extending between said end wall and one of said conductive elements, said test terminal being resilient and having a normal length that is greater than the distance between said end wall and said one conductive element so that said test terminal is bent within its elastic limits to a condition foreshortened from its normal length to maintain intimate pressure contact with said one conductive element and with said end wall, and said end wall having an aperture at which said test terminal is exposed for receiving a test probe to test said line circuit.

4,502,089
LIGHTNING ARRESTER
Jun Ozawa; Katuji Shindo, and Shingo Shirakawa, all of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Apr. 14, 1983, Ser. No. 484,893
Claims priority, application Japan, Apr. 24, 1982, 57-68047
Int. Cl.³ H02H *9/04*
U.S. Cl. 361—127 **3 Claims**

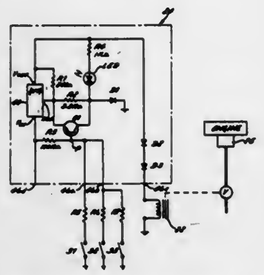


1. A lightning arrester comprising a plurality of stacks of resistor units made of a first nonlinear resistance material and spacer units made of a second nonlinear resistance material providing a substantially continuous voltage-current characteristic and having a specific resistance value greater than that of the first nonlinear resistance material of said resistor units, said spacer units being disposed between every two adjacent resistor units in each stack, and means for electrically connecting in series resistor units alternately selected from the respective stacks such that every two adjacent series-connected resistor units are connected in parallel with one of said spacer units.

4,502,090
PROTECTIVE CONTROL SYSTEM FOR ENGINE
Albert H. Sloan, 4200 Kean Rd., Fort Lauderdale, Fla. 33314
Filed Feb. 24, 1983, Ser. No. 469,292
Int. Cl.³ H01H *47/22*
U.S. Cl. 361—153 **8 Claims**

1. A control system for controlling energization of a load from a source of electric power in response to a predetermined condition comprising:
a source of electric power;
a load energizable from said source of electric power;
a circuit including a solid state voltage regulating device connected between said source of electric power and said load, said device comprising an adjustment terminal responsive to the magnitude of a bias signal thereon to regulate the power supplied to said load from said source of electric power;
said circuit further including an impedance connected be-

tween said adjustment terminal and said source of electric power;
and switch means responsive to said predetermine condition to control shunting of said impedance to effect the magnitude of said bias signal, said switch means comprising a transistor having its emmitter-collector circuit connected across said impedance,
and further comprising at least one condition responsive switch connected to said base terminal of said transistor.

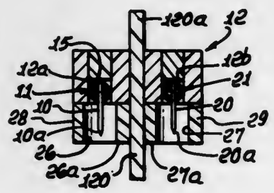


4,502,091

POSITIVE AND NEGATIVE ION DISTRIBUTOR BAR

Donald G. Saurenman, 6787 Worsham Dr., Whittier, Calif. 90602

Continuation-in-part of Ser. No. 420,904, Sep. 21, 1982, which is a continuation-in-part of Ser. No. 369,925, Apr. 19, 1982, which is a continuation-in-part of Ser. No. 290,423, Aug. 6, 1981, Pat. No. 4,390,923, which is a continuation-in-part of Ser. No. 259,503, May 1, 1981, Pat. No. 4,388,667, which is a continuation-in-part of Ser. No. 241,684, Mar. 9, 1981, which is a continuation-in-part of Ser. No. 124,242, Feb. 25, 1980, Pat. No. 4,282,830. This application Feb. 21, 1984, Ser. No. 581,732
Int. Cl.³ H05F 3/06
U.S. Cl. 361—213 1 Claim



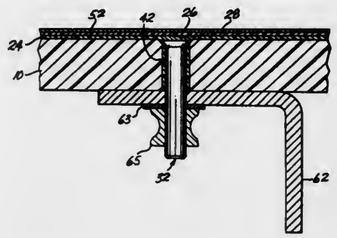
1. In apparatus for reducing static electricity on work surfaces, the combination that includes:
(a) first electrical conductor means having first tips spaced therealong in a first longitudinal row to dispense positive ions in response to first voltage application to the first conductor means,
(b) second electrical conductor means having second tips spaced therealong in a second longitudinal row to dispense negative ions in response to second voltage application to the second conductor means, the first and second voltages being different, and
(c) a longitudinally elongated, electrically insulative bar mounting said conductor means at locations and separations from one another characterized in that static electricity at or proximate the work to be treated is effectively reduced to non-objectionable levels when such differential voltages are applied to the conductor means,
(d) the first and second rows being parallel, said tips being in first and second recesses, respectively, defined by the bar,
(e) the first conductor means including a first conductor adapted to have positive voltage applied thereto, and the second conductor means includes a second conductor adapted to have negative voltage applied therebetween, the conductors located within said bar, and being flexible, said bar including first and second bar sections, said first section defining said first recesses and said second section defining said second recesses, said sections consisting of electrically insulative plastic material,
(f) each section defining a chamber receiving one of said conductors adjacent the recesses, each conductor including an electrically conductive core and an insulative sheath thereon, the needles pressed through said cores to sidewardly adhere to the core,
(g) the bar further including a divider plate,
(h) said sections mounted along opposite sides of the divider plate so that the first recesses are staggered relative to the second recesses.

4,502,092

INTEGRAL LIGHTNING PROTECTION SYSTEM FOR COMPOSITE AIRCRAFT SKINS

Engbert T. Bannink, Jr., Auburn, and Glenn O. Olson, Seattle, both of Wash., assignors to The Boeing Company, Seattle, Wash.

Continuation-in-part of Ser. No. 454,206, Sep. 30, 1982. This application Feb. 24, 1983, Ser. No. 469,346
Int. Cl.³ H05F 1/02
U.S. Cl. 361—218 6 Claims



1. In combination:
an integral lightning protection system for an aircraft graphite epoxy structure having a fastener inserted therein;
an electrically conductive substructural member for supporting said aircraft graphite epoxy structure; and,
electrically non-conductive means coupled between said fastener and said electrically conductive substructural member.

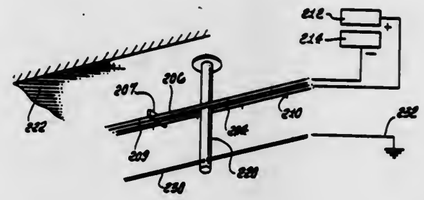
4,502,093

CONTROL OF STATIC NEUTRALIZATION EMPLOYING CABLES AND WIRES

Donald G. Saurenman, Whittier, Calif., assignor to Consan Pacific Incorporated, Whittier, Calif.

Continuation-in-part of Ser. No. 369,925, Apr. 19, 1982, which is a continuation-in-part of Ser. No. 290,423, Aug. 6, 1981, Pat. No. 4,390,923, which is a continuation-in-part of Ser. No. 259,503, May 1, 1981, Pat. No. 4,388,667, which is a continuation-in-part of Ser. No. 241,684, Mar. 9, 1981, which is a continuation-in-part of Ser. No. 124,242, Feb. 25, 1980, Pat. No. 4,282,830. This application Sep. 21, 1982, Ser. No. 420,904
Int. Cl.³ H05F 3/06
U.S. Cl. 361—231 25 Claims

1. In apparatus for reducing static electricity in a work zone, the combination that includes:
(a) first electrically conductive cable means having tips spaced therealong to dispense positive ions in response to first voltage application to the first cable means,
(b) second electrically conductive cable means having tips spaced therealong to dispense negative ions in response to second voltage application to the second cable means, said first and second voltages being different, and
(c) spacers carried by the cable means and holding said cable means at locations and separations from one another characterized in that static electricity at or proximate the work to be treated is effectively reduced to non-objectionable levels when said differential voltages are applied to the cable means,
(d) and the spacers spaced apart along the lengths of the cables and said tips located in close association with the spacers,



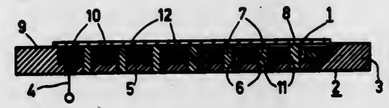
(e) said tips projecting in generally the same direction and said first and second cable means being flexible between said spacers,
(f) and including auxiliary means spaced from the first and second cable means in the direction of ion flow therefrom toward the work, said auxiliary means being at a selected potential and having exposed electrically conductive surface extent, and control means connected with said auxiliary means to apply a controlled level of voltage thereto.

4,502,094

ELECTROSTATIC CHUCK

Ian H. Lewin, Forest Row; Michael J. Plummer, Redhill, and Rodney Ward, Crawley, all of England, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Sep. 10, 1982, Ser. No. 416,723
Claims priority, application United Kingdom, Sep. 14, 1981, 8127638.
Int. Cl.³ H01F 13/00
U.S. Cl. 361—234 13 Claims



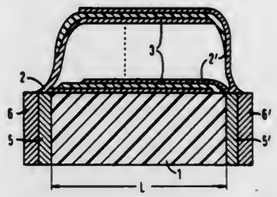
1. An electrostatic chuck for holding a semiconductor wafer in a fixed plane relative to said chuck, which chuck comprises an electrically conductive member separated from said fixed plane by a layer of dielectric material, means for electrically contacting the wafer, and means for supporting the wafer in said plane, including thermally conductive portions for contacting the wafer, the electrically conductive member comprising parts which extend laterally between said thermally conductive portions, and the dielectric layer extending at least on said parts.

4,502,095

REGENERABLE ELECTRIC LAYER CAPACITOR

Horst Pachonik, Taufkirchen, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Aug. 19, 1983, Ser. No. 524,892
Claims priority, application Fed. Rep. of Germany, Aug. 25, 1982, 3231576
Int. Cl.³ H01G 1/017
U.S. Cl. 361—273 4 Claims



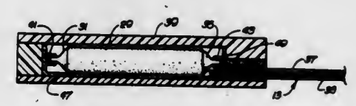
1. Regenerable electric layer capacitor, comprising a carrier being formed of insulating material and having two sides, aluminum layers of different polarity and dielectric layers produced by glow polymerization alternatingly disposed on said carrier, said aluminum layers of each polarity being extended beyond said dielectric layers toward a different respective side of said carrier, and said aluminum layers containing substantially 1.5 to 10% by weight of copper for prevention of thermomigration.

4,502,096

LOW-INDUCTANCE CAPACITOR

Edgar W. Malone, Goleta, Calif., assignor to Reynolds Industries Inc., Los Angeles, Calif.

Filed Aug. 11, 1983, Ser. No. 521,986
Int. Cl.³ H01G 1/13, 7/00
U.S. Cl. 361—308 14 Claims

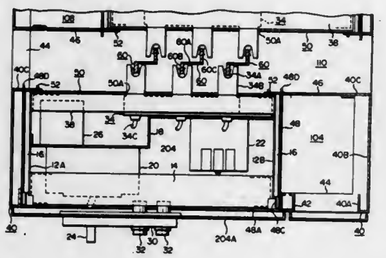


1. A low-inductance capacitor comprising:
two elongated foil strips of substantially the same width;
two elongated dielectric strips interleaved with the two foil strips and wound to form an oblong spiral roll having flat opposing sides, the two foil strips being spaced a predetermined distance apart from each other for all of the successive windings of the roll;
wherein the two foil strips are offset laterally with respect to each other such that they form oblong spiral-shaped projections defining opposite ends of the roll;
two clamps for independently compressively gripping the two oblong spiral-shaped projections and thereby making electrical contact with them and serving as elongated, flat electrical terminals for the roll;
a foil strip transmission line including two foil conductor strips secured to the opposite sides of a flat insulator strip; and
electrical connection means for interconnecting each of the two clamps with a separate foil conductor strip of the transmission line, the electrical connection means extending substantially along the entire lengths of the two clamps.

4,502,097
CONTROL CENTER HAVING CABINET WITH IMPROVED LATERAL STRENGTH AND SAFETY

Masaru Takahashi, Gifu, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 16, 1982, Ser. No. 408,720
Claims priority, application Japan, Aug. 18, 1981, 56-128877
Int. Cl.³ H02B *1/04*
U.S. Cl. 361—342 **3 Claims**



1. A control center comprising:
a cabinet having a vertical bus compartment disposed in the central portion of said cabinet and dividing said cabinet into a front portion and a rear portion, a pair of unit compartments disposed in said front and rear portions respectively, and a vertical wiring compartment disposed beside each of said unit compartments, a plurality of horizontal partition plates spaced vertically from each other in each of said unit compartments for partitioning each of said unit compartments into a plurality of unit rooms vertically superposed one above another, a pair of supporting plates at the rear of each of said unit rooms adjacent said vertical bus compartment and on each of the opposite lateral sides thereof and spaced laterally from each other, and a rear sheet metal plate disposed in the rear of each of said unit rooms and connected between said supporting plates and closing the space between said supporting plates and between adjacent ones of said partition plates, respectively, said rear plate further including at least one opening for allowing a plug-in type connector to extend therethrough;
a plurality of plug-in type control units, each housed in an associated unit room, each plug-in type control unit including spaced opposed lateral plates and a crossarm connected between the upper corners of said lateral plates which, when the unit is housed in a corresponding unit room, is toward said vertical bus compartment, the remainder of the space between the edges of said lateral plates which are toward said vertical bus compartment being open, at least one plug-in type connector on said crossarm, and a mounting plate connected to said lateral plates and having electric equipment mounted thereon, said edges of said lateral plates, when the unit is housed in a corresponding unit room, abutting a corresponding supporting plate and rear plate.

4,502,098
CIRCUIT ASSEMBLY

David F. Brown, 22 Waterpump Ct., Thorplands, Northampton, and Michael J. Anstey, Penhallow, Kiln Ride Extension, Wokingham, Berks, both of England

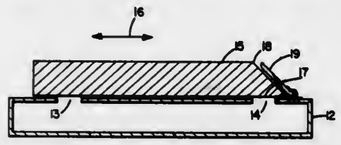
Filed Feb. 8, 1982, Ser. No. 346,539
Claims priority, application United Kingdom, Feb. 10, 1981, 8103954; Nov. 3, 1981, 8133177; Nov. 24, 1981, 8135415; Feb. 1, 1982, 8202829
Int. Cl.³ H05K *7/20*
U.S. Cl. 361—383 **28 Claims**

1. An electrical circuit assembly, comprising;
a plurality of substantially identically-shaped electrical component carrier members each having a predetermined plurality of electrical contacts arranged along its periphery and each being similarly sized and each carrying a respective single electrical component which is electrically connected directly to at least some of the said contacts, and
a mounting structure supporting the said members in predetermined stacked relationship,
the mounting structure including a plurality of conductive members electrically engaging the contacts on the said carrier members, at least some of the conductive members each making common electrical contact with said contacts on different ones of said carrier members, whereby the mounting structure provides electrical connection between such different ones of said carrier members,
the mounting structure defining openings between said component carrier members to improve cooling and to facilitate testing and interconnection.

4,502,099
PRINTED CIRCUIT CARD AIR COOLING SYSTEM

Kenneth L. Manes, Lafayette, and William D. Hart, Louisville, both of Colo., assignors to Storage Technology Partners II, Louisville, Colo.

Filed May 27, 1983, Ser. No. 497,049
Int. Cl.³ H05K *7/20*
U.S. Cl. 361—383 **10 Claims**

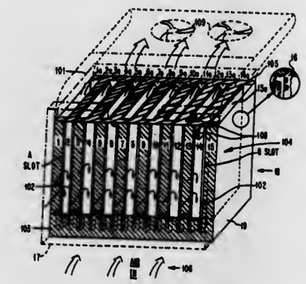


1. An improved air cooling system including cooling articles in a movable enclosure, comprising:
(a) an air supply housing having first and second openings spaced-apart on a first surface;
(b) means for delivering pressurized cooling air into said air supply housing;
(c) a manifold slidably connected to said air supply housing, said manifold having said article-containing enclosure rigidly mounted to a mounting surface thereof, said mounting surface having one opening therein through which cooling air from said manifold may enter said article-containing enclosure, and said manifold further having another opening on a second surface thereof through which cooling air passing through one of said first or second openings of said air supply housing may enter said manifold, said first opening of said air supply housing being positioned so that it is opposite said manifold second surface opening when said manifold is in a closed position, and said second opening of said air supply housing being positioned so that it is opposite said manifold second surface opening when said manifold is slidably moved to an extended position;
(d) first blocking means for blocking said first opening in said air supply housing when said manifold is in the extended position; and
(e) second blocking means for blocking said second opening in said air supply housing when said manifold is in the closed position;
whereby cooling air flows from said air supply housing through said manifold, and into said article-containing enclosure by said air delivering means regardless of whether said manifold, and consequently said article-containing enclosure, is in the closed or extended position.

4,502,100
COOLING SYSTEM WITH COUNTER FLOW OF COOLANT

Stephen B. Greenspan, and Omkarnath R. Gupta, both of Boca Raton, Fla., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 24, 1982, Ser. No. 444,411
Int. Cl.³ H05H *7/20*
U.S. Cl. 361—384 **2 Claims**

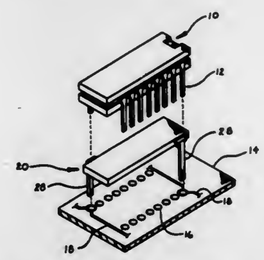


1. A counter flow cooling assembly which cools electronic circuit cards with an air cooling agent, said assembly having enclosed rear, oppositely positioned side, and bottom surfaces and further having unenclosed front and top portions thereof and said assembly comprising;
support means including slotted receptacles on the rear inside surface of said assembly supporting an array of said circuit cards in spaced apart relationship from side to side within said assembly, each of said circuit cards having an area substantially congruent with the area of either of said side surfaces of said assembly and each circuit card in one dimension from rear to front of said assembly having substantially the same dimension as the rear to front dimension of a said side surface but each circuit card in a transverse direction from top to bottom within said assembly having a substantially shorter dimension than the top to bottom dimension of said side surfaces thereby establishing a common air flow area between the lowermost edges of said circuit cards and the bottom surface of said assembly;
a first set of air flow baffles positioned on the front edges of selected alternate pairs of said circuit cards to block and prevent passage of air between said selected alternate pairs of said circuit cards, said first set of air flow baffles further also defining entry passageways for passage of air between alternate pairs of circuit cards not blocked by said first set of air flow baffles;
a second set of air flow baffles abutting the top edges of said circuit cards to block and prevent passage of air between the top edges of the same selected alternate pairs of circuit cards having front entry passageways therebetween established by the first set of air flow baffles, said second set of air flow baffles further defining a set of exit passageways for passage of air between alternate circuit cards not blocked by said second set of air flow baffles;
a plenum mounted at the lowermost ends of said first set of air flow baffles to further define an air flow entry area for said assembly;
exhaust fan means directing air through said assembly including passage through said entry passageways at the front edges of said circuit cards, through said common air flow area, and through said exit passageways to establish flow of air through said systems substantially in a downward direction past even numbered alternate pairs of said circuit cards as air passes from said entry area to said common air flow area at the bottom of said circuit cards the air in going downwardly acquiring heat from the circuit cards and creating a thermal boundary layer relative to said circuit cards which starts from the top and which thickens downwardly, with the thicker boundary layer having a higher external thermal resistance, and to further establish flow of air substantially in an upward direction past odd numbered alternate pairs of said circuit cards as air passes from said common air flow area through said exit passageways, the now heated air in going upwardly acquiring additional heat from the circuit cards and creating a thermal boundary layer relative to said circuit cards that starts from the bottom of the cards and thickens upwardly, the thicker boundary layer having a higher external thermal resistance, thereby cooling said circuit cards more effectively due to counter flow passage of air on both sides of each circuit card which establishes uniform thermal resistance characteristics and enhanced boundary layer conditions all over said circuit cards.

4,502,101
DECOUPLED INTEGRATED CIRCUIT PACKAGE

Raymond C. Jodoin, Scottsdale, Ariz., assignor to Rogers Corporation, Rogers, Conn.

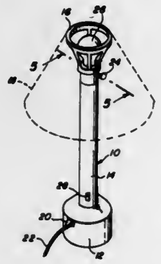
Filed Jul. 30, 1982, Ser. No. 403,408
Int. Cl.³ H05K *7/20*
U.S. Cl. 361—386 **8 Claims**



1. An electronic subassembly comprising:
an integrated circuit package, said circuit package having a plurality of pins extending outwardly therefrom in the same direction, said pins and a first surface of said package defining a space;
a circuit board, said circuit board having spaced holes receiving said circuit package pins, a pair of specially displaced of said holes defining power supply sockets; and
decoupling capacitor means, said decoupling capacitor means being positioned in said space and thus being interposed between said first surface of said circuit package and said board, said capacitor means comprising:
a flat rectangular body having a pair of opposed surfaces;
a metalized coating on each of said pair of opposed surfaces of said ceramic body;
an insulating film encapsulating said ceramic body and metalized surfaces, said conductors extending through said insulating film;
a conductor extending from each of said metalized coatings,

said conductors being received in said board power supply socket, said conductors extending outwardly and downwardly from points located adjacent opposite sides of said body.

4,502,102
COMBINATION FLASHLIGHT AND LAMP
Henri L. Phipps, Phipps Enterprises, 53 W. Fordham Rd., Bronx, N.Y. 10468
Filed Mar. 1, 1984, Ser. No. 585,275
Int. Cl.³ F21L 7/00
U.S. Cl. 362—183 **5 Claims**

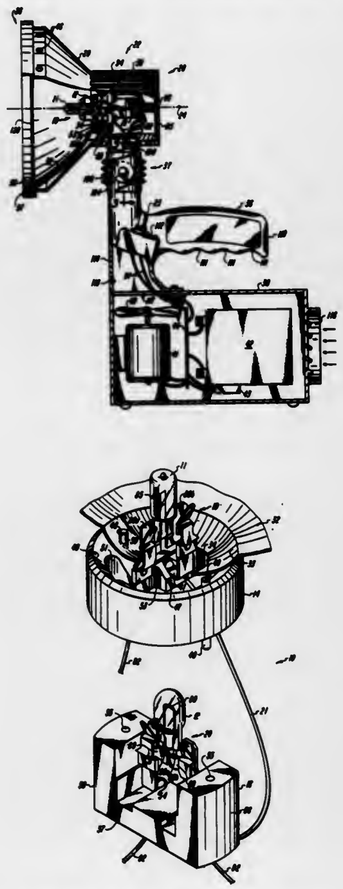


1. A combination flashlight and lamp, comprising in combination: an elongated handle, a flared head portion at one end thereof for receiving a flashlight bulb, a removable lamp socket means at the other end of said elongated handle for receiving a lamp bulb, a flashlight switch positioned along said elongated handle for turning on and off of said flashlight bulb, a lamp switch contained in said lamp socket means for turning on and off of said lamp bulb, a plug contained in said flashlight for removably receiving a line cord from an AC power source for energizing said lamp bulb, a battery charger contained in said elongated handle for charging a rechargeable battery in said elongated handle which battery energizes the flashlight bulb, said battery charger being operated from the line cord, whereby with said flared head portion serving as a base and said handle serving as a post, said combination operates as a fixed lamp which also recharges the flashlight battery, and upon removal of the line cord and the lamp socket means, said combination operates as a portable flashlight.

4,502,103
LIGHT WITH MOUNT FOR PLURAL LAMP BULBS
William J. Collins, Boulder, Colo., assignor to Collins Dynamics, Aurora, Colo.
Filed Jul. 30, 1982, Ser. No. 404,333
Int. Cl.³ F21V 21/00; H01R 13/10
U.S. Cl. 362—249 **6 Claims**

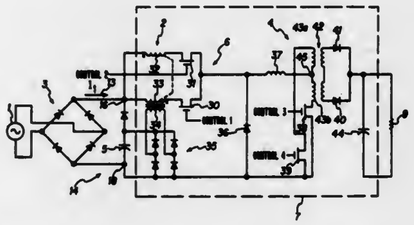
1. A mount for a light assembly for connecting two lamp bulbs in axial alignment along an axis of rotation of a geometrically shaped parabolis light reflecting member of the lamp assembly and in predetermined spaced relationship from the reflecting member on the axis of rotation to cause light emanating from one of the bulbs to be reflected from the reflecting member in a spot pattern and to cause light emanating from the other of the bulbs to be reflected in a flood pattern, said mount comprising:

a forward base of generally cylindrical configuration conformable with said reflecting member and having an opening therethrough central along said axis, said forward base having socket means connected thereto for supporting one of said lamp bulbs, and a rearward base connected to said forward base in a predetermined alignment, said rearward base having second socket means connected thereto for supporting another of said lamp bulbs, said another lamp bulb projecting through said opening in said forward base, and means operably connecting said bases, each socket means being substantially identical for physically retaining and electrically connecting either one of a



flanged type of halogen lamp bulb or a twin pin type of halogen bulb.

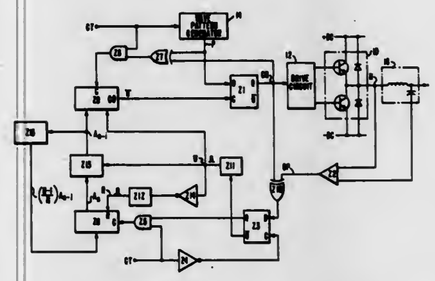
4,502,104
BOOTSTRAPPED AC-DC POWER CONVERTER
Daniel M. Mitchell, Cedar Rapids, Iowa, assignor to Rockwell International Corporation, El Segundo, Calif.
Filed Dec. 23, 1982, Ser. No. 452,470
Int. Cl.³ H02M 3/335
U.S. Cl. 363—26 **6 Claims**



1. An AC to DC power converter, comprising:

means for providing a rectified voltage of an alternating current signal at an output;
means coupled to regulate voltage at said output for providing a regulated direct current voltage; and
means coupled to said output for providing a predetermined direct current voltage level and responsive to said rectified voltage for maintaining voltage at said output at said predetermined direct current voltage level.

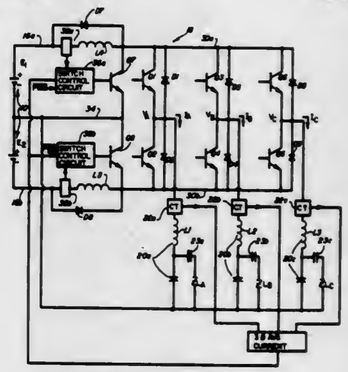
4,502,105
INVERTER FIRING CONTROL WITH PULSE AVERAGING ERROR COMPENSATION
Ralph D. Jessee, Shawnee Township, Allen County, Ohio, assignor to Westinghouse Electric Corp., Pittsburgh, Pa.
Filed Apr. 29, 1983, Ser. No. 490,080
Int. Cl.³ H02M 1/12
U.S. Cl. 363—41 **11 Claims**



1. A pole switch firing control circuit for controlling a pulse width modulated inverter in accordance with a reference pulse signal, said control circuit comprising:

means for receiving a clock signal containing voltage pulses;
means for generating a control signal having transition points for initiating a pole switch switching sequence in the inverter;
a first counter, being presettable to start counting from a supplied number, for counting the number of said clock voltage pulses which occur between a selected transition point in said control signal and the switching of an associated pole switch and for dividing the counted number by a preselected number N to obtain an approximate average count equal to the sum of said supplied number and the counted number of clock pulses divided by N;
memory means for storing the approximate average count counted by said first counter during each pole switch switching sequence;
means for generating said supplied number wherein said supplied number is equal a selected previous approximate average count multiplied by the factor $(N-1)/N$; and
a second counter, being presettable to start counting at a selected previous approximate average count, and connected to count said clock voltage pulses which occur after a preselected transition point in said reference signal until a predetermined count has been reached, whereupon said second counter produces a carry output signal pulse which causes said means for generating a control signal to create a second transition point in said control signal, to initiate a second pole switch switching sequence in the inverter.

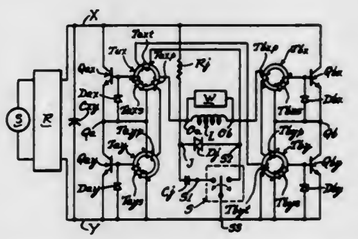
4,502,106
CURRENT SOURCE SINE WAVE INVERTER
Timothy F. Glennon, Rockford, Ill., assignor to Sundstrand Corporation, Rockford, Ill.
Filed Oct. 17, 1983, Ser. No. 542,577
Int. Cl.³ H02H 7/122
U.S. Cl. 363—56 **16 Claims**



1. In an n-phase current source inverter for developing n-phase AC power from a DC source having two terminals each coupled to the inverter through a bus line and a rail associated therewith, a choke coil being connected between one of the bus lines and the associated rail, the inverter being switched between an on state in which current flows from the DC source through the inverter and a load connected thereto, and an off state, the improvement comprising:

a switch coupled between the rail associated with the one bus line and the other bus line;
first means for sensing the current level through the choke coil when the inverter is on;
second means for sensing the current level through the load; and
means connected to the first and second sensing means and the switch for closing the switch when the inverter is off to maintain current flow through the choke coil that sufficient load current is available to supply the load when the inverter is subsequently switched on.

4,502,107
FULL-BRIDGE ELECTRONIC INVERTER CIRCUIT
Ole-K. Nilssen, Caesar Dr., Rte. 5, Barrington, Ill. 60010
Filed Sep. 17, 1982, Ser. No. 419,495
Int. Cl.³ H02M 7/537
U.S. Cl. 363—133 **12 Claims**



1. An inverter circuit adapted to be powered from a source of DC voltage and operative to provide an AC output for a load, said source of DC voltage having a B+ terminal and a B— terminal, said circuit comprising:

a first pair of transistor switching means connected in series with one another at a first junction to form a first series-

pair, each of said transistor switching means having a pair of switching control terminals, said first series-pair being connected between said B+ terminal and said B− terminal;

a second pair of transistor switching means connected in series with one another at a second junction to form a second series-pair, each of said transistor switching means having a pair of switching control terminals, said second series-pair being connected between said B+ terminal and said B− terminal;

positive feedback drive means connected in circuit between said junctions and said pairs of switching control terminals, said drive means being operative to drive said series-pairs in alternating push-pull fashion such as to provide between said junctions an output voltage characterized by alternating back and forth between a substantially constant-magnitude positive voltage and a substantially constant-magnitude negative voltage, but with a distinct period between each alternation where the output voltage is substantially of zero magnitude; and

electrical connection means connected in circuit with said junctions and operative to provide said AC output for said load.

4,502,108

POSITION ERROR CORRECTION EQUIPMENT

Ryoichiro Nozawa, Shibuya; Tsuyoshi Nagamine, Hachioji; Hideaki Kawamura, Hachioji, and Mitsuto Miyata, Hachioji, all of Japan, assignors to Fujitsu Fanuc Limited, Minamitsuru, Japan

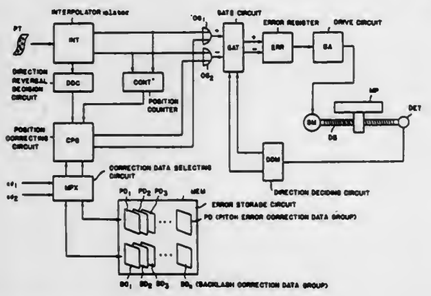
PCT No. PCT/JP81/00308, § 371 Date Jun. 29, 1982, § 102(e) Date Jun. 29, 1982, PCT Pub. No. WO82/01601, PCT Pub. Date May 13, 1982

PCT Filed Oct. 28, 1981, Ser. No. 395,005

Claims priority, application Japan, Oct. 30, 1980, 55-152874

Int. Cl.³ G06F *15/46*; G05B *19/18*

U.S. Cl. 364—170 **4 Claims**



1. Position error correction equipment for correcting an error in the position of movement relative to a commanded position in a numerical control machine tool, comprising:

an error storage circuit in which error correction data groups, where each group is predetermined by measurement in respective states of the numerical control machine tool, are stored corresponding to the respective states, each group containing plural correction values where each value corresponds to a different position or range of positions;

an error correction data selecting circuit, operatively connected to said error storage circuit, for selecting one of the error correction data groups corresponding to the particular state of the numerical control machine tool from the error correction data groups stored in the error storage circuit; and

a position correcting circuit, operatively connected to said error correction data selecting circuit and the numerical control machine tool, for correcting the error in the position of movement in dependence upon the correction values associated with the position in the error correction data group selected by the error correction data selecting circuit.

4,502,109

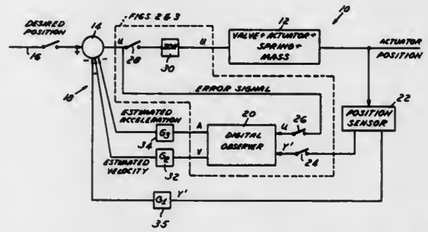
APPARATUS FOR ESTIMATING PLURAL SYSTEM VARIABLES BASED UPON A SINGLE MEASURED SYSTEM VARIABLE AND A MATHEMATICAL SYSTEM MODEL

Arthur H. Delmege, Detroit; Yehia M. El-Ibiary, Troy; Melvin A. Rode, W. Bloomfield, and Lael B. Taplin, Union Lake, all of Mich., assignors to Vickers, Incorporated, Troy, Mich.

Filed Sep. 14, 1982, Ser. No. 418,086

Int. Cl.³ G05B *15/00*; G05D *3/00*

U.S. Cl. 364—174 **11 Claims**



1. A power servo system which includes an actuator adapted to variably position a load, means for receiving a state command signal, means for providing an error signal to control said actuator as a combined function of said state command signal and N dynamic state variable signals indicative of state conditions at said actuator and load, with N being an integer greater than one, and means reponsive to state conditions at said actuator and load for providing said N variable signals comprising:

sensor means responsive to said actuator and load for providing a first signal as a function of one dynamic state variable at said actuator; and

observer means responsive to said first signal for estimating the remaining N−1 of said N dynamic state variable signals at said actuator and load as a function of a mathematical model of dynamic behavior at said actuator and load, said observer means comprising

means for periodically sampling said error signal and said first signal,

a plurality of adjustable means for selective adjustment as a function of said dynamic behavior at said actuator and load, and

programmed digital computation means for selectively and periodically operating said sampling means, and responsive to the sampled error and first signals and to said adjustable means for estimating said N−1 dynamic state variable signals.

4,502,110

SPLIT-CACHE HAVING EQUAL SIZE OPERAND AND INSTRUCTION MEMORIES

Masato Saito, Tokyo, Japan, assignor to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Dec. 10, 1980, Ser. No. 214,932

Claims priority, application Japan, Dec. 14, 1979, 54-163260

Int. Cl.³ G06F *9/38*

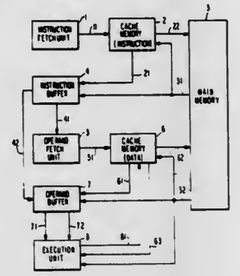
U.S. Cl. 364—200 **6 Claims**

1. In a data processing system, a memory control apparatus connected to a main memory unit (MMU) and a processing unit (PU), said processing unit including an instruction fetch unit, an operand fetch unit, and an execution unit, said control apparatus comprising:

a data cache memory (6) for storing a copy of a portion of a plurality of data stored in the MMU;

an instruction cache memory (2) having the same memory capacity as said data cache memory for storing a copy of a portion of a plurality of instructions stored in the MMU; and

each of said instruction cache memory (2) and data cache memory (6) including address storing means (204) and data storing means (208), said data cache memory (6) being connected to the operand fetch unit (5) via a first line (51) and said instruction cache memory (2) being



connected to the instruction fetch unit (1) via a second line (11);

whereby the ratio of missing probabilities, θ is minimized, and the average instruction execution time is shortened relative to that of a conventional single cache memory having a capacity equal to the combined capacities of the data cache memory and the instruction cache memory, and the average instruction execution time is shortened relative to a conventional split-cache having unequal size stores where the instruction cache memory has a different storage capacity from that of the data cache memory.

4,502,111

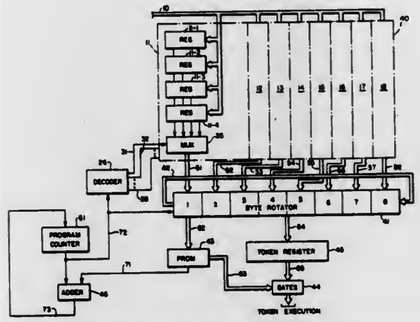
TOKEN GENERATOR

Josephus Riffe, Plantation, and Richard Rice, West Palm Beach, both of Fla., assignors to Harris Corporation, Melbourne, Fla.

Filed May 29, 1981, Ser. No. 268,370

Int. Cl.³ G06F *13/00*

U.S. Cl. 364—200 **20 Claims**



1. For use in a data processing system wherein a sequence of data messages of variable length are to be processed, an arrangement for separating the individual data messages from each other for processing comprising:

a memory having a plurality of M storage sections, each storage section containing N memory stages thereby defining a matrix of NXM memory stages and into which memory stages successive data messages of variable length are coupled so as to be stored therein, with each respective section including means for coupling the contents of a selected one of the stages of that section to an output of said respective section;

first means, coupled to the outputs of the respective sections of said memory, for retrieving and storing in respective sections of said first means the contents of selected stages of predetermined ones of successive storage sections of said memory;

second means, coupled to said first means, for arranging the contents of said retrieved and stored selected stages of predetermined ones of successive storage sections of said memory as stored by said first means in a prescribed order, so that at least the contents of those selected stages of predetermined ones of successive storage sections of said memory in said first means which make up at least one complete data message are in sequence, said second means including means for specifying the length of said data message in terms of the number of stages therefor in said memory; and

third means, coupled to said first and second means, for reading out a prescribed portion of the contents stored in said first means which forms said complete data message in response to said length specifying means.

4,502,112

SEQUENCE CONTROL APPARATUS

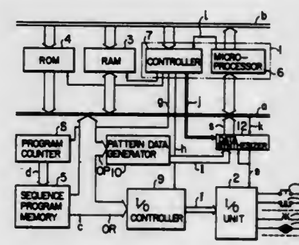
Katsuhiro Fujiwara, and Kazuyoshi Osako, both of Narashino, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 17, 1981, Ser. No. 284,341

Claims priority, application Japan, Jul. 18, 1980, 55-97554

Int. Cl.³ G06F *3/00*

U.S. Cl. 364—200 **8 Claims**



1. A sequence control apparatus comprising:

(a) means including a program memory for storing a sequence program made up of a combination of instructions each of which has an operation part and an operand part and consists of a plurality of bits, said sequence program serving to control a multiplicity of output instruments into predetermined conditions in response to condition signals produced from a multiplicity of input instruments; and

(b) operation processing means for sequentially reading out said instructions from said program memory, for sequentially taking in the condition signals of designated ones of said input instruments in accordance with said sequence program and for controlling said output instruments into said predetermined conditions in response to the condition signals received from said input instruments, including

(b−1) a microprocessor having an accumulator for temporarily storing data made up of a plurality of bits, said microprocessor including means for performing predetermined processing operations on words having a predetermined plural numcer of bits in accordance with the operation part of a read out instruction,

(b−2) pattern data generating means for generating pattern data having a predetermined bit arrangement corresponding to the processing operation required by the operation part of each instruction read out from said program mem-

ory, the number of bits of said pattern data being less than the bit capacity of said accumulator and

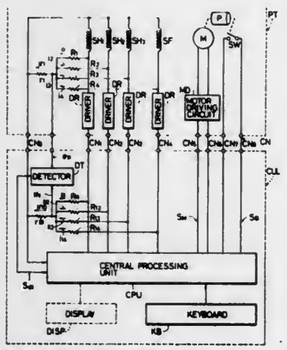
(b—3) data synthesizing means for forming the pattern data generated from said pattern data generating means and the condition signal received from one of said input instruments designated by an operand part of an instruction, in response to the operation part of which instruction said pattern data is generated from said pattern data generating means, and including means for sending the resulting composite data to said microprocessor in the form of plural bits corresponding in number to the bit capacity of said accumulator and for storing said composite data in said accumulator, the predetermined bit arrangement of said pattern data generated by said pattern data generating means being such that the values of the bits present in said accumulator and corresponding in position to the respective bits of said pattern data are not changed from the result required by the logical operation called for by said instruction when said composite data is stored in said accumulator.

4,502,113

SYSTEM FOR CHECKING AN ELECTRICAL CONNECTION BETWEEN A COMPUTER AND A PRINTER

Haruhisa Katoh, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 8, 1982, Ser. No. 366,575
Claims priority, application Japan, May 26, 1981, 56-80621
Int. Cl.³ G06F *3/12*
U.S. Cl. 364—200 **6 Claims**



1. An electronic system comprising:

a central processing unit for generating driving signals;

a printer unit detachably connected to said central processing unit and having a plurality of printing elements and a plurality of drivers each for operating a respective one of said printing elements in response to a driving signal;

a plurality of conductive paths each electrically connecting said central processing unit to one of said drivers for conducting a driving signal thereto; and

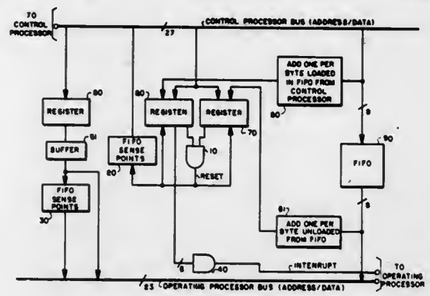
detecting means for detecting an incomplete electrical condition in said plurality of conductive paths, said detecting means comprising means provided in said central processing unit for generating a first signal representing a sum of said driving signals from said central processing unit, means provided in said printer unit for generating a second signal representing a sum of said output signals from the drivers, the first and second signals being generated with the same timing, and a comparator for examining coincidence in amplitude between said first and second signals to issue a signal indicative of the incomplete electrical connection condition in said conductive paths.

4,502,114

CIRCUIT FOR RELIABLE DATA TRANSFER BETWEEN TWO CENTRAL PROCESSING UNITS

Krikor A. Krikor, Glendale, and Kuang-Cheng Hu, Phoenix, both of Ariz., assignors to GTE Automatic Electric Incorporated, Northlake, Ill.

Filed Oct. 29, 1982, Ser. No. 437,647
Int. Cl.³ G06F *15/16*
U.S. Cl. 364—200 **7 Claims**



1. A circuit for reliable data word transfer is connected between a first and a second CPU for said data word transfer between said CPUs, said circuit comprising:

first and second CPU buses respectively connected between said first and second CPUs and said circuit;

buffer means connected to said first and second CPUs via said first and second buses and said buffer means operated to store and to transmit a number of said data words from said first to said second CPU;

said buffer means having a maximum capacity of said data words;

first register means connected between said first and second CPUs and operated to store a representation of a particular number of said data words to be transferred from said first to said second CPU;

said second CPU operated to receive said stored representation of said particular number of data words;

second register means connected between said first and second CPUs and operated to store a representation of the difference between the number of said data words to be transferred and said maximum capacity of said data words of said buffer means;

adding means connected to said first and second CPUs and operated to increment said stored representation of said second register means for each data word stored and each data word transmitted by said buffer means; and

indication means connected between said second register means and said first CPU, said indication means operated in response to said second register means to provide an acknowledgement signal to said first CPU for indicating said particular number of stored data words of said buffer means are transferred to said second CPU.

4,502,115

DATA PROCESSING UNIT OF A MICROPROGRAM CONTROL SYSTEM FOR VARIABLE LENGTH DATA

Kazutoshi Eguchi, Tokyo, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Sep. 22, 1982, Ser. No. 421,310
Claims priority, application Japan, Sep. 30, 1981, 56-155188
Int. Cl.³ G06F *9/22*
U.S. Cl. 364—200 **12 Claims**

1. A data processing unit for transferring variable length data having a data length from one area of a main memory to another area of said main memory, comprising:

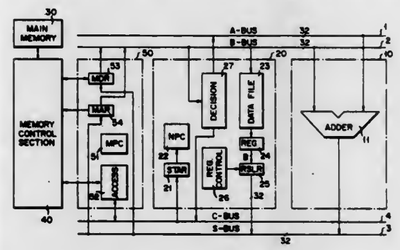
a. a memory address register holding a write address and a read address of said main memory;

b. a memory data register holding write data for and read data from said main memory;

c. access type deciding means, receiving, as input data, the data length of the variable length data and a lower two bits of a start write address set in said memory address register, and producing a number of bytes to be written and a command which indicates a type of write operation from among byte write, half-word write and full-word write in accordance with the input data;

d. a data buffer for storing the variable length data which is read out from said main memory, coupled to the output of said memory data register;

e. a result register for temporarily holding data, the output of



said result register being coupled to said memory data register;

f. register controlling means for reading out and arraying a portion of the variable length data from said data buffer into said result register in units of one byte according to said command;

g. memory controlling means for transferring said portion to said memory data register and for writing said portion from said memory data register starting at the write address of said main memory held by said memory address register in accordance with said command; and

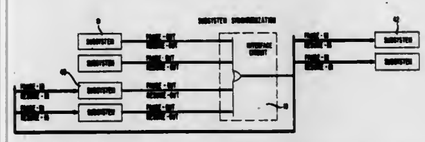
h. memory address updating means for adding the number of bytes to be written produced by said access type deciding means to the write address, and for setting an updated write address in said memory address register for a next memory access.

4,502,116

MULTIPLE PROCESSOR SYNCHRONIZED HALT TEST ARRANGEMENT

Glenn D. Fowler, Canal Winchester, Ohio; Patrick A. Shannon, Oak Park, Ill.; Ronald L. Stout, Elgin, Ill., and Jean Yao, Naperville, Ill., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Nov. 17, 1982, Ser. No. 442,353
Int. Cl.³ G06F *15/16*
U.S. Cl. 364—200 **12 Claims**



1. In an arrangement for testing a multiprocessing system comprising a plurality of processors, the combination comprising

means in one of said processors for generating a pause signal to request a pausing of an execution of a sequence of program instructions by other of said processors, and

means responsive to a generated pause request signal from said one of said processors to produce a pause control signal; and

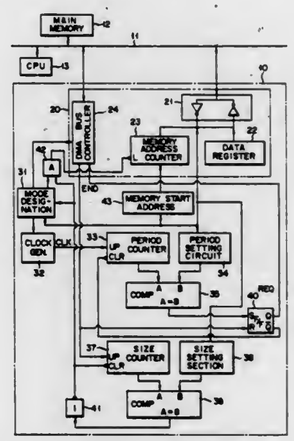
each of said other of said processors comprising means responsive to said pause control signal to halt said execution of sequence of program instructions.

4,502,117

DMA BUS LOAD VARYING UNIT

Jyun-ichi Kihara, Tokyo, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Feb. 24, 1983, Ser. No. 469,300
Claims priority, application Japan, Mar. 4, 1982, 57-34468
Int. Cl.³ G06F *11/00, 13/00, 15/40*
U.S. Cl. 364—200 **6 Claims**



1. A DMA bus load varying unit applied to a data processing system having a DMA bus and a memory connected to the DMA bus, comprising:

a. mode-designating means for designating a memory read and write operation, a continuous operation of the memory read and write operation, and a memory start and a memory stop operation of the memory read and write operation;

b. clock-pulse generating means connected to said mode-designating means;

c. first counting means connected to said clock-pulse generating means for counting clock signals from said clock-pulse generating means;

d. period-setting means for specifying an arbitrary period;

e. first comparing means for comparing the output from said first counting means with the output from said period-setting means and for producing a first coincident signal when they are equal;

f. DMA bus request signal generating means connected to said first comparing means for producing the DMA bus request signal in accordance with the coincident signal;

g. DMA bus circuit means connected to said mode-designating means and said DMA bus request signal generating means which is triggered by the DMA bus request signal and performs the memory access through the DMA bus in accordance with the mode designated by said mode-designating means;

h. second counting means connected to said DMA bus circuit means for counting the number of DMA bus cycles of said DMA bus circuit means;

i. transfer data size-setting means for specifying an arbitrary transfer data size; and

j. second comparing means for comparing the output from said second counting means and the output from said transfer data size-setting means and for producing a second coincident signal when they are equal, the second

coincident signal being supplied to initialize said DMA bus circuit means.

4,502,118

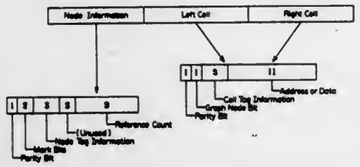
CONCURRENT NETWORK OF REDUCTION PROCESSORS FOR EXECUTING PROGRAMS STORED AS TREELIKE GRAPHS EMPLOYING VARIABLE-FREE APPLICATIVE LANGUAGE CODES

Carl F. Hagenmaier, Jr., Pittstown, N.J.; Gary L. Logadon, Round Rock, Tex.; Brent C. Bolton, and Robert L. Miner, Jr., both of Austin, Tex., assignors to Burroughs Corporation, Detroit, Mich.

Continuation of Ser. No. 281,065, Jul. 7, 1981,. This application Sep. 7, 1983, Ser. No. 530,066

Int. Cl.³ G06F *13/00, 15/00*

U.S. Cl. 364—200 **12 Claims**



1. A network of reduction processing systems for executing variable-free applicative language code, said network comprising:

a plurality of random access storage means each storing a portion of said code in various storage locations therein as two-cell nodes, some of said cells of said nodes containing storage addresses of other of said node storage locations so as to link said nodes to form a treelike graph, other of said cells of said nodes containing functional variables, still other of said cells of said nodes containing operators each of which defines a reduction transformation of a graph containing that operator, to a new graph not containing that operator; and

a plurality of processor means, one for each random access storage means, each processor means including retrieving means coupled to said corresponding one of said random access storage means to retrieve said graph and transformation means to produce a reduced graph through execution of one or more steps of a series of said graph transformations defined by one or more of said operators in said graph.

4,502,119

ELECTRONIC REGISTER

Hanzo Tsuzuki, Tokyo, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan

Filed Nov. 2, 1981, Ser. No. 317,593

Claims priority, application Japan, Nov. 12, 1980, 55-158141

Int. Cl.³ G06F *15/02, 15/20*

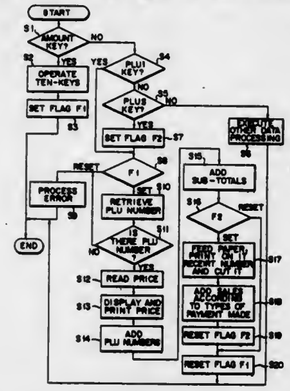
U.S. Cl. 364—405 **2 Claims**

1. An electronic cash register comprising:

inputting means including: numeral keys for inputting code data corresponding to goods being sold; at least one payment type key for designating at least one of different payment types; a first price look-up key for initiating an addition of a number of sold goods of a given type corresponding to said code data; and a second price look-up key for initiating an addition of the number of sold goods corresponding to said code data and an addition of a price of sold goods for one of said different payment types;

memory means including: a price look-up memory having a plurality of respective storing areas for storing unit prices of goods corresponding to said code data inputted by said numeral keys and for storing a total number of sold goods; and a payment type memory having storing area for storing a total amount of sales for one of said different payment types;

arithmetic means coupled to said inputting means and to said memory means, for adding "+1" to said total number of sold goods corresponding to said code data in response to the operation of said first price look-up key, and for adding "+1" to said total number of sold goods and for adding a unit price of said sold goods, which corresponds



to said code data and is read from said price look-up memory, to said total amount of sales in response to the operation of said second price look-up key; and

receipt issuing means coupled to said arithmetic means for issuing a receipt having said price printed thereon, after said arithmetic means performs the addition for obtaining the total number of sold goods and the addition for obtaining the total amount of sales in response to the operation of said second price look-up key.

4,502,120

SYSTEM FOR DATA TRANSMISSION BETWEEN ELECTRONIC CASH REGISTERS

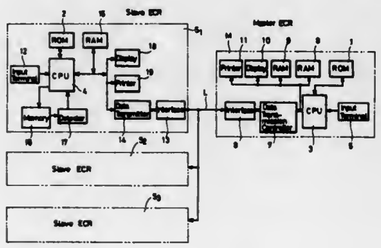
Souichi Ohnishi, Yao, and Fusahiro Shiono, Habikino, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed May 24, 1982, Ser. No. 381,221

Claims priority, application Japan, May 29, 1981, 56-82740

Int. Cl.³ G06F *15/20*

U.S. Cl. 364—405 **9 Claims**



1. A cash register system comprising:

at least one remote cash register means for accumulating transaction data;

master cash register means operatively interconnected to said remote cash register means for accumulating all said transaction data accumulated by each said remote cash register means;

each said remote cash register means including,

input means for introducing data into said remote cash register means,

remote register memory means responsive to said introduced data for storing said data, and

means for transmitting said data stored in said remote register memory means to said master cash register means; said master cash register means including,

means for receiving data transmitted by said remote cash register means, and

accumulator means for accumulating the data from each said remote cash register means, said accumulator means having master register memory means for storing said accumulated data, said master register memory means having a predetermined memory capacity;

at least one memory means associated with at least one of said remote register means having a remote memory capacity greater than said predetermined memory capacity of said master register memory means;

means for informing said master cash register means of the remote memory capacity of the remote register memory means of each said remote cash register means;

said transmitting means repeatedly transmitting only portions of said data sized to correspond to said predetermined memory capacity, each said portion being being received by said means for receiving of said master cash register, said repeated transmission being terminated only after all data within said remote register memory means has been transmitted.

4,502,121

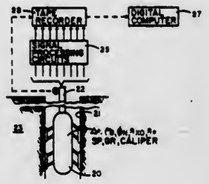
MACHINE METHOD FOR DETERMINING THE PRESENCE AND LOCATION OF HYDROCARBON DEPOSITS WITHIN A SUBSURFACE EARTH FORMATION

Christian M. Clavier, Ridgefield, Conn.; Jean L. Dumanoir, Houston, Tex., and Alexis C. Dumestre, Danbury, Conn., assignors to Schlumberger Technology Corporation, New York, N.Y.

Continuation of Ser. No. 112,004, Feb. 2, 1971, abandoned. This application Mar. 12, 1979, Ser. No. 19,492

Int. Cl.³ G06F *15/20*

U.S. Cl. 364—422 **24 Claims**



1. A machine method for exploring subsurface earth formations to determine the presence and location of hydrocarbon deposits within the earth formation surrounding a borehole formed in the earth formation by probing a plurality of depth levels over a borehole section of such subsurface earth formation with one or more signals produced in investigating devices adapted to be suspended in said borehole and acquiring and analyzing signals responsive to said probing signals, comprising the steps of:

(a) providing first electrical signals representative of the bulk density of the formation over a plurality of depth levels of the borehole, said first electrical signals being derived from signals responsive to the reaction of the subsurface earth formation to gamma rays emitted into said subsurface earth formation surrounding the borehole from a source of gamma rays located in one of said investigating devices;

(b) providing second electrical signals representative of the hydrogen content of the formation over a plurality of depth levels of the borehole, said second electrical signals being derived from signals responsive to the reaction of the subsurface earth formation to neutrons emitted into the subsurface earth formation surrounding the borehole from a source of neutrons located in one of said investigating devices;

(c) providing at least third electrical signals representative of formation shale content over a plurality of depth levels of the borehole, said at least third electrical signals being derived from the formation surrounding the borehole;

(d) combining said electrical signals to produce first and second output electrical signals for a plurality of depth levels related to shale corrected values of said hydrogen content and bulk density electrical signals respectively;

(e) comparing said first output electrical signals related to shale corrected values of hydrogen content with said second output electrical signals related to shale corrected values of bulk density to produce one or more further electrical signals for a plurality of depth levels indicative of the presence of hydrocarbons or the accuracy of said first and second electrical signals output; and

(f) adjusting at least one of said first or second output electrical signals in response to one of said further output electrical signals to bring about a preselected relationship between said first and second output electrical signals related to hydrogen content and related to bulk density, respectively, and making a record thereof over a plurality of depth levels from which the presence and location of hydrocarbon deposits within the subsurface earth formation can be determined.

4,502,122

METHOD AND APPARATUS FOR MEASURING VEHICLE DRIVER'S FATIGUE TO GIVE AN ALARM

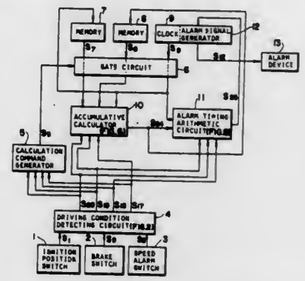
Takayuki Yanagishima, Yokosuka, and Yasutoshi Seko, Yokohama, both of Japan, assignors to Nissan Motor Company, Limited, Japan

Filed Jun. 1, 1982, Ser. No. 384,031

Claims priority, application Japan, Jun. 3, 1981, 56-84425

Int. Cl.³ G08B *21/00*

U.S. Cl. 364—424 **26 Claims**



20. A system for detecting fatigue of an automotive vehicle driver and for alarming the driver when detected fatigue exceeds a predetermined allowable level, comprising:

a timer means for sequentially measuring elapsed time to produce a timer signal having a value indicative of the measured elapsed time;

a detector means for detecting vehicle driving conditions including a first condition in which the driver is substantially resting and a second condition in which the driver's fatigue accumulates at a greater rate than that accumulated under normal driving condition, said detector means producing a detector signal having a value variable according to the detected vehicle driving condition;

arithmetic means for deriving a fatigue value representative of accumulated driver fatigue on the basis of the values of

said timer signal and said detector means signal, said arithmetic means producing a fatigue value indicative signal having a value indicative of the derived fatigue value;

a reference signal generator means producing a reference signal having a value representative of a time threshold corresponding to said predetermined allowable fatigue level, said reference signal generator means being responsive to said detector means signal and to said fatigue value indicative signal for modifying the value of said reference signal;

a comparator means for comparing the value of said timer signal with the value of said reference signal as modified to produce a comparator signal when the value of said timer signal is greater than the value of said reference signal as modified; and

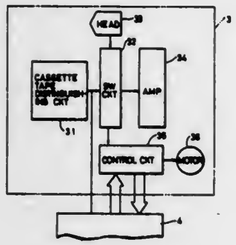
an alarm generator means responsive to said comparator signal to generate the alarm.

4,502,123

NAVIGATION SYSTEM FOR USE WITH AN AUTOMOBILE AND READING UNIT FOR THE SYSTEM

Kazuaki Minami, Kariya; Shinzo Totani, Nagoya; Kunio Miura, Okazaki; Kazushi Akutsu, and Shinji Ohyama, both of Kariya, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Jul. 6, 1982, Ser. No. 395,338
Claims priority, application Japan, Jul. 7, 1981, 56-106570
Int. Cl.³ G06F *15/50*
U.S. Cl. 364—424 **9 Claims**



8. A navigation system for use with an automobile, comprising:

(a) a direction detector for producing an output signal indicative of the travelling direction of said autombile;

(b) a distance sensor for producing a signal each time said automobile travels a predetermined unit distance;

(c) a reading unit for deriving either road map information or audio information from a detachable recording medium, said reading unit including first means for driving said recording medium, a second means for detecting whether the contents of said recording medium is road map data or audio information so as to distinguish recording medium carrying said road map data from other recording medium carrying audio information; and fifth third means for outputting, via a first output terminal, road map data read out from said recording medium only when said recording medium has been determined by said second means as carrying said road map data, and for outputting, via a second output terminal, audio information read out from said recording medium only when said recording medium has been determined by said second means as carrying said audio information;

(d) a microcomputer, responsive to the road map information from said first output terminal of said third means for producing first output data, and to the output signals from said direction detector and said distance sensor for producing second output data;

(e) a display controller, responsive to said first and second output data, for producing a video signal; and

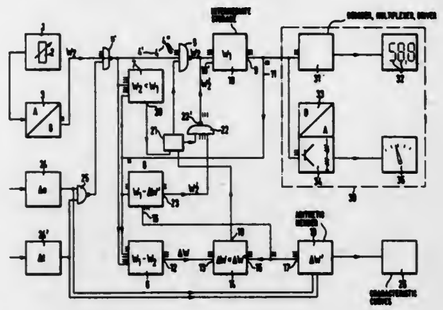
(f) a display unit responsive to said video signal for displaying said road map data as well as the present location of the automobile.

4,502,124

PROCESS FOR DETERMINATION OF THE STORED QUANTITY OF OPERATING FLUIDS FOR AUTOMOTIVE VEHICLES, AND CIRCUIT FOR CONDUCTING THE PROCESS

Kurt Grohmann, and Walter Weishaupt, both of Munich, Fed. Rep. of Germany, assignors to Bayerische Motoren Werke AG, Fed. Rep. of Germany

Filed Jul. 17, 1980, Ser. No. 169,793
Claims priority, application Fed. Rep. of Germany, Jul. 17, 1979, 2928767
Int. Cl.³ G06F *15/48*
U.S. Cl. 364—442 **24 Claims**



1. A process for the determination of the stored quantity of operating fluids for automotive vehicles, wherein a measuring signal of a quantity of operating fluids is indicated, characterized in

storing the measuring signal,

transmitting said stored signal for indication,

interrupting the storing of the measuring signal upon an acceleration-dependent change in the liquid level,

determining the measuring signal in temporally or distance-dependent, identical intervals,

comparing a determined measuring signal with a preceding determined measuring signal and

storing a standardized measuring signal instead of the measuring signal if the measuring signal lies above an upper limit value or below a lower limit value.

4,502,125

NUMERICAL CONTROLLER FOR AN ANGULAR SLIDE GRINDING MACHINE

Takao Yoneda, Toyoake, and Yasuji Sakakibara, Hekinan, both of Japan, assignors to Toyoda Koki Kabushiki Kaisha, Kariya, Japan

Filed Jan. 18, 1983, Ser. No. 458,823
Claims priority, application Japan, Jan. 29, 1982, 57-13857
Int. Cl.³ G06F *15/46*; E05D *15/22*; H02M *5/16, 5/22*
U.S. Cl. 364—474 **7 Claims**

1. A numerical controller for a grinding machine wherein a work table rotatably carrying a workpiece and having a dressing tool fixed thereon is movable in a first direction parallel with the rotational axis of said workpiece and wherein a wheel head rotatably carrying a grinding wheel is movable in a second direction which makes an acute angle with said first direction, comprising:

a first counter for indicating a present position of said work table in a machine coordinate system which originates from an original table position spaced a predetermined distance from an original machine position in said first direction, said original machine position being defined by an end surface of said grinding wheel when a cylindrical surface of said grinding wheel reaches the axis of said workpiece;

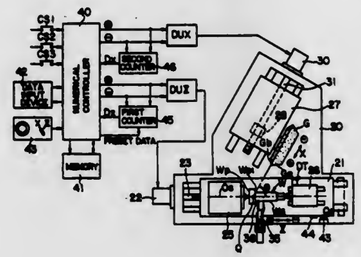
a second counter for indicating a present position of said wheel head as a distance between said axis of said workpiece and said cylindrical surface of said grinding wheel;

said present positions respectively indicated by said first and second counters being for use in controlling movements of said work table and said wheel head in accordance with numerical control data;

first data processing means responsive to said present positions respectively indicated by said first and second counters when said work table is moved to such a position as to bring said dressing tool into slight contact with said end surface of said grinding wheel, for calculating a dressing reference value indicative of a positional relation between said machine original position and said dressing tool;

first storage means for storing said dressing reference value calculated by said first data processing means;

data setting means for setting in said first counter a distance between said original machine position and a reference end surface of said workpiece in said first direction when under the control of a sizing device engageable with said



workpiece said work table is positioned to present said reference end surface to a predetermined positional relation with said original machine position, so as to enable said first counter to indicate said present position of said work table in a workpiece coordinate system prior to a grinding operation of said workpiece;

second data processing means for obtaining a coordinate difference between said machine coordinate system and said workpiece coordinate system when under the control of said sizing device said work table is positioned to set said reference end surface of said workpiece in said predetermined positional relation with said original machine position;

second storage means for storing said coordinate difference obtained by said second data processing means; and

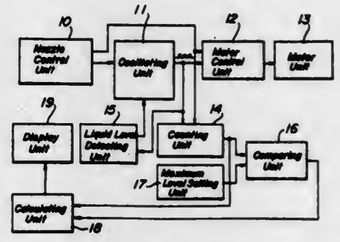
third data processing means responsive to said dressing reference value and said coordinate difference respectively stored in said first and second storage means and said present position indicated by said second counter when said wheel head is at a dressing start position thereof, for calculating a dressing start position of said work table in said workpiece coordinate system prior to a dressing operation which is performed following said grinding operation.

4,502,126

APPARATUS FOR DETECTING AN AMOUNT OF LIQUID REMAINED IN A VESSEL

Fumio Mizoguchi, Hachioji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed May 18, 1982, Ser. No. 379,478
Claims priority, application Japan, May 21, 1981, 56-72793[U]
Int. Cl.³ G01F *13/00*
U.S. Cl. 364—509 **13 Claims**



1. An apparatus for detecting a residual amount of a liquid to be delivered by a delivery nozzle which is moved downward into contact with the surface of the liquid for selectively withdrawing a portion of the liquid, said apparatus comprising:

means for detecting a distance along which the nozzle is moved downward from a reference level until the tip of the nozzle contacts the surface of the liquid;

and

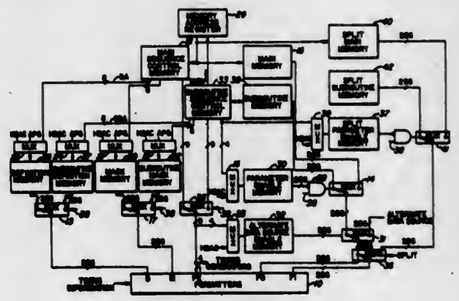
calculating means for processing said detected distance to calculate a residual amount of the liquid, said calculating means comprising means for deriving a difference between said detected distance and a predetermined maximum distance, and a calculating unit to calculate the residual amount of the liquid from said difference.

4,502,127

TEST SYSTEM MEMORY ARCHITECTURE FOR PASSING PARAMETERS AND TESTING DYNAMIC COMPONENTS

R. F. Garcia, San Jose, and Robert L. Hickling, Sunnyvale, both of Calif., assignors to Fairchild Camera and Instrument Corporation, San Jose, Calif.

Filed May 17, 1982, Ser. No. 378,937
Int. Cl.³ G06F *11/00, 13/00*; G01R *31/28*
U.S. Cl. 364—900 **13 Claims**



1. A test system memory architecture comprising:

main data storage means for storing test data;

main mask storage means for storing first type information;

main definition storage means for storing second type information;

main control storage means connected to the main data

storage means and to each of the main mask storage means and the main definition storage means for storing control information to control the main mask storage means and the main definition storage means;

subroutine data storage means for storing test data;

subroutine control storage means connected to the subroutine data storage means for storing control information;

first switching means connected to the main data storage means, the subroutine data storage means, and a formatting means; and

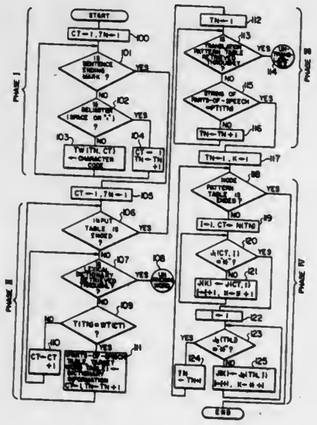
parameter enabling means connected to the subroutine control storage means and the first switching means for controlling the first switching means to enable selected data stored in the main data storage means and the subroutine data storage means to be supplied to the formatting means.

4,502,128

TRANSLATION BETWEEN NATURAL LANGUAGES

Atsushi Okajima, Yokohama; Yoshihiko Nitta, Fujisawa, and Fumiyuki Yamano, Kawasaki, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jun. 1, 1982, Ser. No. 383,952
Claims priority, application Japan, Jun. 5, 1981, 56-85722
Int. Cl.³ G06F *15/38*
U.S. Cl. 364—900 **11 Claims**



1. A method of performing translations between first and second natural languages comprising:

a first step of sectioning a source text described by a first natural language word by word and storing the words in storage;

a second step of deriving information regarding the parts-of-speech of the stored source words through retrieval of the parts-of-speech information from a lexical dictionary storage in which words are registered together with information regarding the parts-of-speech thereof;

a third step of deriving target words in the second natural language which are equivalent in meaning to the respective stored source words in the first natural language;

a fourth step of translating a first pattern of a string of parts-of-speech formed by gathering the parts-of-speech for each of the stored source words derived in said second step into a pattern in which the order of the parts-of-speech is in accordance with said first natural language, into a second pattern of a string-of-parts of speech with an order in accordance with said second natural language by referring to a translation pattern table which registers therein the correspondences between first patterns of parts-of-speech strings defining sequences of parts-of-speech of the first natural language and second patterns of parts-of-speech strings defining sequences of parts-of-speech of the second natural language; and

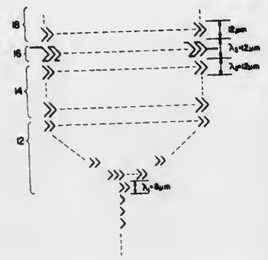
a fifth step of generating a sentence in the second natural language by sequencing said target words in accordance with the sequential order of the parts-of-speech in said translated second pattern of the string of parts-of-speech of said second natural language.

4,502,129

MAGNETIC BUBBLE DETECTOR

Ryo Suzuki, Kodaira; Minoru Hiroshima, Hachioji; Masatoshi Takeshita, Tokorozawa, and Yutaka Sugita, Mobara, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jun. 17, 1983, Ser. No. 505,486
Claims priority, application Japan, Jun. 18, 1982, 57-103825
Int. Cl.³ G11C *19/08*
U.S. Cl. 365—8 **7 Claims**



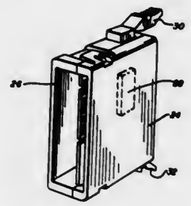
1. A magnetic bubble detector having a stretcher part for stretching a magnetic bubble while propagating said magnetic bubble and a detection part for detecting said magnetic bubble while propagating said magnetic bubble, wherein the period of arrangement of bubble propagation elements forming the exit of said stretcher part viewed in a bubble propagation direction is made larger than the period of arrangement of bubble propagation elements forming the entrance of said stretcher part viewed in a bubble propagation direction.

4,502,130

REMOVABLE MEMORY PACKAGE, ASSOCIATED APPARATUS AND METHOD OF USE

William R. Kuckuk, Grafton, Wis., assignor to Square D Company, Palatine, Ill.

Filed May 13, 1982, Ser. No. 377,899
Int. Cl.³ G11C *13/00*
U.S. Cl. 365—52 **3 Claims**



1. A memory package for connection to an interface switching circuit of a programmable controller for receiving a program from the programmable controller, storing the program at a location that may be remote from the programmable controller, and returning the program to the programmable controller, the memory package comprising:

An erasable programmable read-only memory (EPROM);

a releasable holder supporting the EPROM physically and connected electrically to it; and

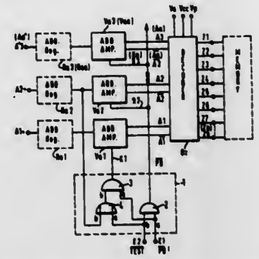
means for effecting an electrical connection between the releasable holder and the programmable controller to connect the programmable controller electrically to the EPROM to store a program from the programmable controller in the EPROM and to read a program from the EPROM into the programmable controller.

4,502,131

ELECTRICALLY PROGRAMMABLE MEMORY MATRIX

Burkhard Giebel, Denzlingen, Fed. Rep. of Germany, assignor to ITT Industries, Inc., New York, N.Y.

Filed Sep. 9, 1983, Ser. No. 530,528
Claims priority, application European Pat. Off., Sep. 22, 1982, 82108757.4
Int. Cl.³ G11C *29/00*
U.S. Cl. 365—201 **9 Claims**



1. An electrically programmable memory matrix comprising:

a plurality of memory cells arranged in a matrix of "n" rows, the memory cells in each of said rows being coupled to one of a plurality of "n" row selecting lines, each of said row selecting lines controlling "m" memory cells;

a plurality of "a" row address circuits wherein $n=2^a$, each of said address circuits having an input terminal, first and second output terminals, and a control terminal, each address circuit being responsive to a first control signal level at said control terminal such that an address bit signal at said input terminal is coupled to said first output terminal and the complement of said address bit signal is applied to said second output terminal, each address circuit being responsive to a second control signal level at said control terminal such that said first and second output terminals are maintained at the same output signal level;

a row decoder having "n" outputs, and "a" pairs of input terminals, each of said row decoder outputs being coupled to one of said row selecting lines and each pair of input terminals being coupled to one of said row address circuits with one terminal of said pair of input terminals being coupled to said first output terminal and the other terminal of said pair of input terminals being coupled to said second output terminal, said row decoder being operable to supply a ground potential, a supply potential or a programming potential to each of said row decoder outputs;

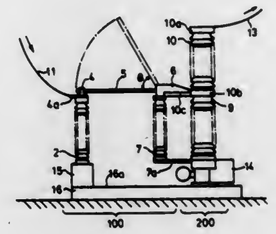
a control circuit having a first input for receiving a first mode control signal, a second input for receiving a test control signal, a first output coupled to the control terminal of one of said address circuits, a second output coupled to the control terminals of the remaining ones of said address circuits, and a third input coupled to the input terminal of one of said remaining ones of said address circuits, said control circuit being responsive to a first test signal level at said control circuit first input and a first activating signal level at said control circuit second input such that said first control signal level is generated at said first and second control signal outputs, said control circuit being responsive to said first test signal level at said control circuit first input and a second activating signal level at said control circuit second input such that said second control signal level is generated at said first and second control signal outputs, said control circuit being responsive to a second test signal level at said control circuit first input such that said second control signal level is generated at said second control signal output and the signal level at said first control signal output is determined by the signal level at said third input.

4,502,132

POWER SWITCH APPARATUS

Akira Nishikawa; Toru Saito, and Kenichi Otsuka, all of Amagasaki, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 4, 1983, Ser. No. 539,057
Claims priority, application Japan, Oct. 9, 1982, 57-178029; Apr. 29, 1983, 58-76707
Int. Cl.³ H02B *1/04*
U.S. Cl. 361—332 **12 Claims**



1. A power switch apparatus including a disconnect switch part and a breaker part, comprising:

a common frame;

a fixed contact supporting insulator mounted at one end thereof on said common frame;

a fixed contact supported on the other end of said fixed contact supporting insulator;

a common supporting insulator having one end thereof mounted on said common frame apart from said fixed contact supporting insulator, the other end of said common supporting insulator being at substantially the same height as that of said other end of said fixed contact supporting insulator;

driving means mounted on said other end of said common supporting insulator, disposed at substantially the same height as that of said the other end of said fixed contact supporting insulator;

a moving contact movably mounted on said driving means and positioned to establish contact between the free end of said moving contact and said fixed contact when said moving contact is driven by said driving means;

a driving insulator having one end thereof connected to said driving means, said driving means driving said moving contact through said driving insulator; and

a breaker mounted on said other end of said common supporting insulator.

4,502,133

AUTOMATIC HANDLING MECHANISM FOR AN OPTICAL DISC ENCLOSED IN A PROTECTIVE CARTRIDGE

Bohdan W. Siryj, Cinnaminson, and Angelo G. Lazzery, Oaklyn, both of N.J., assignors to RCA Corporation, New York, N.Y.

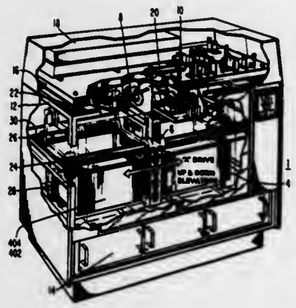
Filed Nov. 30, 1982, Ser. No. 445,489
Int. Cl.³ G11B *17/00, 5/48*
U.S. Cl. 369—34 **12 Claims**

1. In a data processing system for use with a disc-shaped record medium, the data processing system including a storage module having a plurality of storage locations for storing record media and a user station for recording information on

and playing back information from a recording surface of said record medium, an apparatus comprising:

transporting means for transporting said record media from said storage module to an incoming position proximate said user station and from an outgoing position proximate said user station to said storage module, said transporting means including a first transfer means for transferring a selected record medium from a storage location of said storage module to said incoming position and a second transfer means for transferring said selected record medium from said outgoing position to a storage location of said storage module;

means for conveying said selected record medium from said incoming position to said user station, said conveying means including attachment means for holding said selected record medium while said selected record medium is conveyed from said incoming position to said user station;



ejector means for transferring said selected record medium from said user station to said outgoing position; and

alignment means for aligning said selected record medium as said selected record medium is conveyed from said incoming position to said user station, said alignment means including spring means for maintaining said selected record medium in said incoming position while said attachment means engages said selected record medium and for releasing said selected record medium from said incoming position while said conveying means conveys said selected record medium to said user station, said alignment means aligning said selected record medium as said ejector means transfers said selected record medium from said user station to said outgoing position, said spring means preventing said record medium from being transferred into said incoming position from said outgoing position.

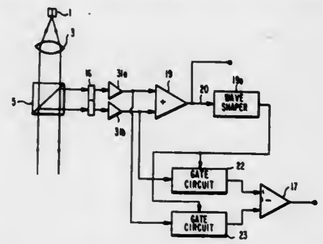
4,502,134

OPTICAL DISC SIGNAL REPRODUCING SYSTEM WITH TILT IMMUNIZATION

Mitsushige Kondo; Kazuo Okada, and Kazuo Hirasawa, all of Nagaokakyo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 30, 1982, Ser. No. 393,944
Claims priority, application Japan, Jul. 16, 1981, 56-111630
Int. Cl.³ G11B *7/00*
U.S. Cl. 369—46 **5 Claims**

1. An optical signal reproducing system comprising a record disc (11) having alternating pits (13) and lands in a surface thereof defining an information recording track (12), a light source (1), a collimating lens (9) for focusing light from said source to form a light spot (10) on said record disc, a dual optical detector (16) for converting light bearing information reflected from said disc into electrical signals, summing amplifier means (19) for adding outputs of said dual optical detector, a differential amplifier (17) for producing a differential output from signals received from said dual optical detector, and means (15) responsive to said differential output for controlling the position of said light spot in a direction transverse to said recording track, characterized by: means operatively coupled between an output of said summing amplifier means and said differential amplifier for constraining the output of said differential amplifier to contain only signals derived from light reflected from pits on said record disc, whereby erroneous disc tilt induced lateral tracking offset corrections due to light reflected from lands on said record disc are avoided.

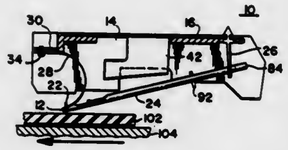


4,502,135

PICKUP CARTRIDGE HAVING IMPROVED STYLUS FLYLEAD

Anil R. Dholakia, East Windsor, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Oct. 20, 1983, Ser. No. 543,718
Int. Cl.³ G11B *3/50*
U.S. Cl. 369—170 **7 Claims**



1. A protective cartridge for housing a pickup stylus including an electrode adapted for recovering prerecorded information from a disc record; said protective cartridge comprising:

(A) a compliant stylus holder for supporting said pickup stylus;

(B) a stylus arm having said compliant stylus holder disposed at one end thereof, and having its other end yieldably supported in said cartridge;

(C) a stylus flylead, separate from said stylus holder, for electrically connecting said stylus electrode to a terminal disposed on said cartridge; and

(D) means for damping said stylus flylead consisting of a coating of damping material disposed on said flylead.

4,502,136

APPARATUS FOR CENTERING AND CLAMPING AN INFORMATION RECORDING DISK IN A DATA STORAGE DEVICE

David W. Rickert; Richard A. Wilkinson, Jr., both of Boulder, and William C. Hunt, Lafayette, all of Colo., assignors to Storage Technology Partners II, Louisville, Colo.

Filed Apr. 4, 1983, Ser. No. 481,963
Int. Cl.³ G11B *9/06, 19/20*
U.S. Cl. 369—271 **4 Claims**

1. An apparatus for the accurate centering and clamping of an information recording disk in an information recording device, comprising:

an information recording disk;

a disk support assembly, said disk support assembly having,

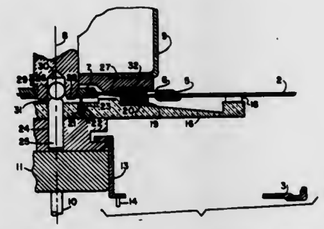
a disk support hub, said disk support hub having a means for receiving a first disk support assembly clamping means, and

a disk support platter, said disk support platter attached to the disk support hub, said disk support platter having a first, raised circular rim located upon the upper outer surface of said disk support platter and supporting the middle portion of the disk, further having a second, raised circular rim located upon the upper inner surface of the disk support platter and supporting the inner portion of the disk, further having a disk centering means;

a disk rotating means, said disk rotating means having a rotating spindle, said spindle having a bottom facing surface for the mounting of the disk, said bottom surface having a downward projecting neck, said neck having a tapered outer surface to accept an inner taper of a centering collar of the disk, and said spindle neck further having a cylindrical passage, said passage having a tapered lower rim to closely accept a centering stem of a disk centering assembly;

a disk elevator assembly, said disk elevator assembly raising the disk and the disk support assembly until the disk is centered and clamped onto the disk rotating means, said disk elevator assembly thereafter retracting so as to disengage from the disk support assembly, thereby allowing free rotation of the disk and the disk support assembly with the disk rotating means, the disk elevator assembly remaining stationary;

a disk centering assembly, said assembly having



a centering stem, said centering stem having a ball-shaped upper portion and wherein the lower portion of the centering stem is closely seated in a first opening in the disk support platter and disk support hub for that purpose,

at least three plunger and spring assemblies, each assembly mounted in one of a set of at least three equally spaced plunger holes in the disk support platter surface said plunger holes for the purpose of accepting the plunger and spring assemblies, said plunger and spring assemblies arranged in the plunger holes such that the springs cause the plungers to be pushed to a fully extended, upward position,

a flexible spacer ring, having the outside edge of said flexible spacer ring fixed to the inner edge of the disk, said disk having an opening for the attachment of said flexible spacer ring, said flexible spacer ring also having an inner opening for attachment of a disk centering collar, and;

a disk centering collar, the outer edge of which is fixed to the inner opening in the flexible spacer ring, said disk centering collar also having an interior opening, said interior opening having a taper to allow said flexible spacer ring interior opening to closely fit the tapered outer surface of the spindle neck such that the plunger contacts and causes the flexible spacer ring to flex upward, allowing the disk centering collar to contact the outer tapered surface of the spindle neck prior to the disk contacting the bottom surface of the spindle;

a first, disk support assembly clamping means, said disk support assembly clamping means selectively clamping the disk support assembly to the disk elevator assembly during disk centering, clamping and unclamping operations, but releasing the disk support assembly to rotate with the disk rotating means during device operation, and;

a second, disk clamping means, said means selectively clamping the disk between the disk support assembly and the spindle,

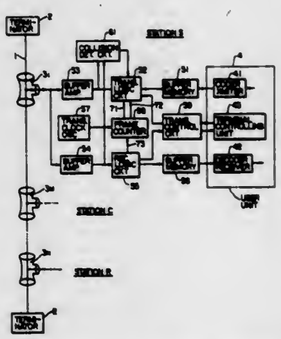
such that, as the disk elevator assembly raises the disk and disk support means toward the spindle where the centering stem contacts the lower rim of the cylindrical passage of the spindle neck, the centering stem and the cylindrical passage cooperating to cause the initial centering of the disk and disk support means with respect to the spindle, and as the disk and disk centering means continues upwards, the inner taper of the centering collar contacts the outer tapered surface on the spindle neck, causing the disk to move laterally for precise centering of the disk with respect to the spindle.

4,502,137

DIGITAL SIGNAL TRANSMITTING METHOD

Yoichi Tan, Kanagawa, Japan, assignor to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Mar. 17, 1982, Ser. No. 359,011
Claims priority, application Japan, Mar. 19, 1981, 56-38714
Int. Cl.³ H04J *3/14*
U.S. Cl. 370—85 **9 Claims**



1. In a multipoint communication network wherein a plurality of taps are disposed at arbitrary positions on a communicating cable whose end-to-end signal propagation time is long relative to a bit period, personal stations are connected to said communicating cable through said taps, and transmission and reception of digital signals are performed, a digital signal transmitting method comprising the steps of

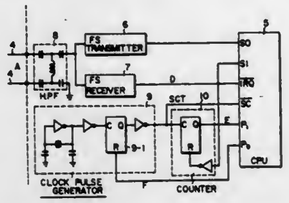
determining at each of said stations the timing of a repeatable frame, said frame being subdivided into a plurality of successive blocks, and transmitting packets of information from said stations to said cable during blocks selected and monopolized by said stations to provide time division multiplexed signals on said cable, said determination based on already transmitted packets of information received by said stations and if no packets are being received said determination being set by the first station to transmit a packet.

4,502,138

SYNCHRONIZATION SYSTEM FOR KEY TELEPHONE SYSTEM

Akiho Doi, and Norio Saneyoshi, both of Tokyo, Japan, assignors to Iwasaki Tsushinki Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 30, 1982, Ser. No. 403,333
Claims priority, application Japan, Aug. 3, 1981, 56-120685
Int. Cl.³ H04J 3/06
U.S. Cl. 370—100 **6 Claims**



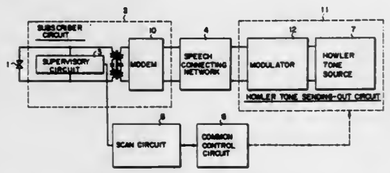
1. In a key telephone systems having a key service unit, a plurality of key telephone sets, intercom lines connecting the key telephone sets and the key service unit, the improvement which comprises, a synchronizing system in each key telephone set for synchronizing signal transmissions from the corresponding individual key telephone sets to the key service unit with transmissions from the key service unit, the synchronizing system in each key telephone set comprising means for receiving a multiplex transmission from the key service unit having a multiplexed frequency shift signal as a control signal and a voice signal, the control signal including control transmission data from the key service unit to the synchronizing system including a start bit following a fixed number of signals having a binary state opposite to a binary state of the start bit, means for removing the voice signal from the multiplex transmission received from the key service unit, means for converting the received frequency shift signal free of the voice signal to the transmission data control signal with the control transmission data, means for detecting the reception of the start bit following a fixed succession of the fixed number of signals having a binary state opposite to the binary state of the start bit and developing an output upon detection of the start bit, means receptive of said output for determining the received output is a synchronizing signal and for developing a reset pulse, and a shift clock pulse generator receptive of the reset pulse for developing output timing shift clock pulses for effecting synchronization of transmissions between the key service unit and the corresponding key telephone set.

4,502,139

HOWLER TONE SENDING-OUT SYSTEM IN TIME-DIVISION ELECTRONIC EXCHANGES

Teruo Matsufuji, Koganei, Japan, assignor to Iwasaki Tsushinki Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 27, 1982, Ser. No. 343,189
Claims priority, application Japan, Feb. 12, 1981, 56-19544
Int. Cl.³ H04J 3/12
U.S. Cl. 370—110.2 **2 Claims**



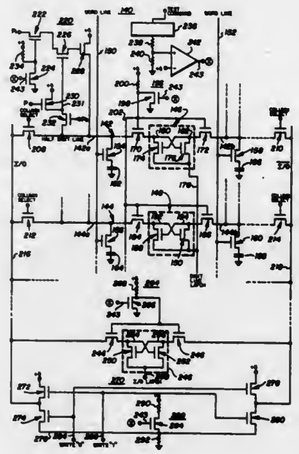
1. In a time-division telephone switching system, a subscriber circuit having a time-division demodulator and a supervisory circuit connected to a telephone set for supervision of incoming calls, call-answering, line-busy and on-hook supervision, on said telephone set, a common control circuit for receiving on-hook status signals from the supervisory circuit representative of the off-hook state of the telephone set if the subscriber of the corresponding telephone set has not correctly replaced the handset of the telephone set after a call, a scan circuit connected to the supervisory circuit and to the control circuit for applying on-hook status signals to the control circuit, a howler tone sending-out circuit connected to receive signals from the common control circuit and having a howler tone source for transmission of a howler tone signal to the demodulator for conversion to a howler tone audible signal indicating the handset of the telephone set is not correctly replaced, a time-division modulator in said howler tone sending-out circuit for modulating the howler tone signal for time-division transmission thereof, a time-division speech connecting network for time-division transmission of speech signals between, from and to said telephone set and connected for time-division transmission of the modulated howler tone signal to the telephone set, the time-division demodulator connected in the subscriber circuit for time-division demodulating the modulated howler tone signal and applying the howler tone signal to the telephone set for conversion to said howler tone audible signal.

4,502,140

GO/NO GO MARGIN TEST CIRCUIT FOR SEMICONDUCTOR MEMORY

Robert J. Proebsting, Dallas, Tex., assignor to Mostek Corporation, Carrollton, Tex.

PCT No. PCT/US80/01150, § 371 Date Sep. 8, 1980, § 102(e) Date Sep. 8, 1980
Continuation of Ser. No. 516,865, Jul. 25, 1983, , which is a continuation of Ser. No. 251,533, Sep. 8, 1980,. This PCT application Sep. 8, 1980, Ser. No. 599,208
Int. Cl.³ G01R 31/28
U.S. Cl. 371—28 **18 Claims**



1. A margin testing circuit for a semiconductor memory having a plurality of memory cells in which first and second states are normally stored therein to represent binary data, the testing circuit comprising elements integral with said memory including:

means for receiving a test command,

means for generating a fixed test state in response to receiving said test command, said test state having an amplitude between said first and said second states when said semiconductor memory is operated with normal power supply voltage levels, and

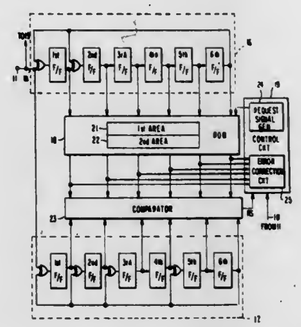
means for storing said test state in at least one of said memory cells.

4,502,141

CIRCUIT FOR CHECKING BIT ERRORS IN A RECEIVED BCH CODE SUCCESSION BY THE USE OF PRIMITIVE AND NON-PRIMITIVE POLYNOMIALS

Takakuni Kuki, Tokyo, Japan, assignor to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Sep. 8, 1982, Ser. No. 415,873
Claims priority, application Japan, Sep. 11, 1981, 56-144526
Int. Cl.³ G06F 11/10
U.S. Cl. 371—37 **3 Claims**



1. An error checking circuit responsive to an input succession of bit sequences for checking bit errors in said input succession by deciding whether each bit sequence includes a single error or a t-tuple error where t represents an integer which is greater than unity, said single error being present at a bit location in said each bit sequence, each of said bit sequences being determined by a combination of a predetermined number of information bits and a preselected number of check bits generated by a predetermined generator polynomial to ensure a minimum intercode distance which is not less than four, said predetermined generator polynomial being equal to a product of factors comprising a primitive and a non-primitive polynomial, said error checking circuit comprising:

first dividing means for successively dividing the individual bit sequences by said primitive polynomial to calculate first residues, respectively, and to produce first residue signals representative of the respective first residues, the first residues calculated when the single errors are present in the bit sequences divided by said primitive polynomial, respectively, becoming first non-zero residues, respectively, said first non-zero residues being unique with respect to the bit locations at which the last-mentioned single errors are present, respectively;

second dividing means for successively dividing the individual bit sequences by said non-primitive polynomial to calculate second residues, respectively, and to produce second residue signals representative of the respective second residues, the second residues calculated in whichever of a first case where the bit sequences divided by said non-primitive polynomial include the single errors, respectively, and a second case where the bit sequences divided by said non-primitive polynomial include the t-tuple errors, respectively, becoming second special residues, respectively;

memorizing means for memorizing a plurality of reference signals representative of reference numbers, respectively, said reference numbers being in one-to-one correspondence to said first non-zero residues and being identical with those of said second special residues which would be calculated by said second dividing means only in said first case;

accessing means responsive to said first residue signals for accessing said memorizing means to make said memorizing means produce said reference signals as output reference signals, respectively, when the first residue signals responsive to which said memorizing means is accessed represent said first non-zero residues, respectively, the output reference signal produced when the first residue signal responsive to which said memorizing means is accessed represents one of said first non-zero residues being representative of the reference number which is in one-to-one correspondence to said one of the first non-zero residues;

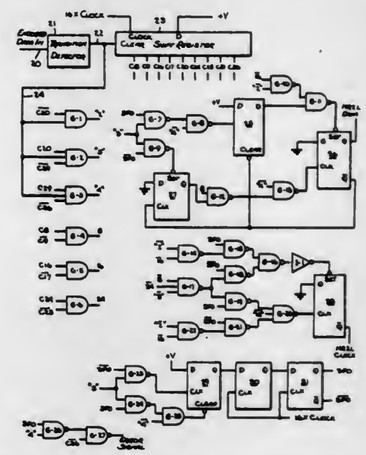
comparing means for comparing the second residue signal produced when each bit sequence is divided by said non-primitive polynomial with the output reference signal produced in response to the first residue signal produced when the last-mentioned bit sequence is divided by said primitive polynomial, said comparing means thereby producing a result signal representative of presence of a single and a t-tuple error in the last-mentioned bit sequence when the reference number represented by the last-mentioned output reference signal is in one-to-one correspondence to the first non-zero residue represented by the last-mentioned first residue signal and is not, respectively.

4,502,142

APPARATUS FOR DETECTING ERRORS IN A DIGITAL DATA STREAM ENCODED IN A DOUBLE DENSITY CODE

Ladislao C. Csengery, Woodbridge, N.J., assignor to Lockheed Electronics Company, Inc., Plainfield, N.J.

Filed Sep. 7, 1982, Ser. No. 415,695
Int. Cl.³ H03K 13/24, 13/32
U.S. Cl. 371—55 **7 Claims**



1. A real-time error detection system for double density Miller or similarly encoded binary data wherein, during decoding of the waveform containing said data, signals are generated indicative of the intervals between successive transitions of said waveform, which intervals for an error-free waveform are of short, intermediate or long duration related in the ratio of 2:3:4, said error detection system comprising in combination first means for providing said signals indicative of the interval between successive transitions of a waveform, second means for applying a waveform to be decoded to said first means, thrid means having a first and second operable state, said third means having an input coupled to an output of said first means which contains said signals indicative of an intermediate interval for responding to each of said signals indicative of an intermediate interval by alternating between said states, said third means also having an input coupled to an output of said

first means which contains said signals indicative of a long interval for responding to each of said signals indicative of a long interval by assuming said first operable state, and fourth means coupled to outputs of said first and third means for providing an error signal each time said third means is in said second state when said first means provides a signal indicative of a long interval.

4,502,143

CONSECUTIVE IDENTICAL DIGIT SUPPRESSION SYSTEM IN A DIGITAL COMMUNICATION SYSTEM

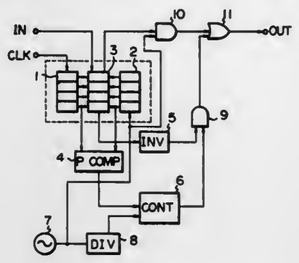
Masami Kato, Tokyo, and Noriaki Yoshikai, Yokosuka, both of Japan, assignors to Nippon Telegraph & Telephone Public Corporation, Tokyo, Japan

Filed Apr. 19, 1982, Ser. No. 369,838

Claims priority, application Japan, Apr. 20, 1981, 56-59944; Dec. 25, 1981, 56-209103; Dec. 28, 1981, 56-209993; Dec. 28, 1981, 56-209994

Int. Cl.³ H03K 5/26

U.S. Cl. 371—57 **9 Claims**



1. A consecutive identical digit suppression bit insertion system in a digital communication system comprising;

an input terminal for receiving an input signal,

rate converting means coupled to the input terminal for converting the transmission bit rate of the input signal to $(m+1)/m$ times the rate of the input signal where m is the integer number of input bits between insertion bits,

means coupled to the converting means for receiving the converted signal and inserting an additional bit after the mth bit, the insertion bit comprising the complement of the kth bit previous to the insertion bit where k is an integer satisfying $1<k<m$ and the insertion bit has the same bit rate as the m converted bits, and

an output terminal coupled to the inserting means for providing an encoded signal with m bits of input signal and one inserted bit.

4,502,144

GAIN TUNED LASER RESONATOR

Dennis R. Suhre, Monroeville, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jun. 10, 1982, Ser. No. 387,299

Int. Cl.³ H01S 3/10

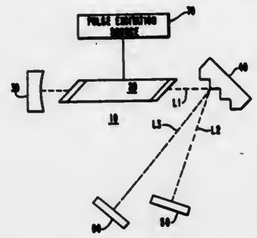
U.S. Cl. 372—23 **3 Claims**

1. In a laser apparatus having a single laser gain medium and operating in a pulsed mode, the combination of:

optical elements disposed relative to said single laser gain medium to produce two or more wavelengths from said single laser gain medium,

said optical elements including first and second mirror means, and a grating element, said first mirror means being a totally reflecting mirror, said second mirror means being two or more partially reflecting mirrors, said grating element cooperating with said first mirror means through said single laser gain medium to define separate optical paths between said first and second mirror means, each path corresponding to a separate wavelength;

said partially reflecting mirrors being positioned with respect to said grating element to establish path lengths for the optical paths of the respective wavelengths such that



each wavelength exhibits a predetermined temporal spacing, pulse width and/or pulse energy.

4,502,145

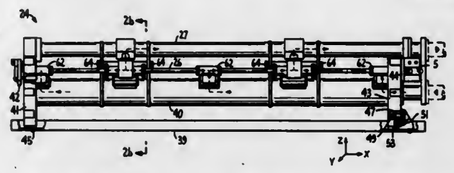
POWER SUPPLY FOR A LASER

Peter N. Allen, Los Altos Hills, and William Blake, Palo Alto, both of Calif., assignors to Coherent, Inc., Palo Alto, Calif.

Filed May 6, 1983, Ser. No. 492,496

Int. Cl.³ H01S 3/00

U.S. Cl. 372—38 **10 Claims**



1. In a gas laser of the type having a gas discharge tube containing a gas lasing medium, a power supply for operating said laser in a continuous mode, wherein said power supply having three leads for connecting to a three phase power source, said leads being connected to a plurality of primary coils; a plurality of secondary coils; and a transformer means for increasing the voltage from the power source through the primary coils to the secondary coils, wherein the improvement comprising:

means for generating magnetic flux asymmetry in said transformer means;

whereby said magnetic flux asymmetry causes said laser to operate in a pulsing mode.

4,502,146

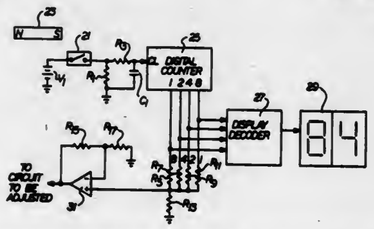
ADJUSTMENT OF ELECTRONIC SKI BINDING CIRCUITRY

Nicholas F. D'Antonio, 7695 Admiral Dr., Liverpool, N.Y. 13088

Filed Feb. 25, 1982, Ser. No. 352,385

Int. Cl.³ H03K 17/945, 17/95

U.S. Cl. 377—2 **24 Claims**



1. A proximity adjustment means for generating electrical control signals to adjust an electrical value within inaccessible

electrical circuitry in response to the presence of a proximity stimulus, said proximity adjustment means comprising:

proximity stimulus response means for producing an electrical response to the presence of the proximity stimulus within its vicinity,

isolating means for isolating said proximity stimulus response means from the proximity stimulus, and

transducing means operatively connected to said proximity stimulus response means, said transducing means including accumulating means for generating digital signals of increasing or decreasing cumulative value corresponding to the electrical responses produced by said proximity stimulus response means to produce said electrical control signals for said proximity adjustment.

4,502,147

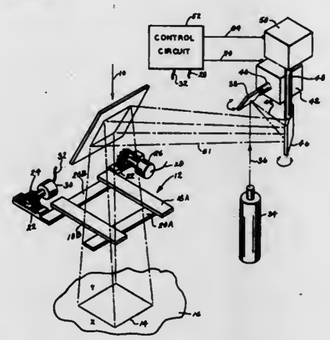
MEANS FOR VISUALLY INDICATING AN X-RAY FIELD

Terry J. Michaels, Milwaukee, Wis., assignor to Charles Lescrenier, Milwaukee, Wis.

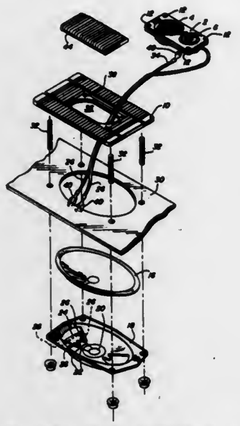
Continuation-in-part of Ser. No. 406,217, Aug. 9, 1982, abandoned. This application Jan. 18, 1984, Ser. No. 572,169

Int. Cl.³ A61B 6/08; G21F 5/04

U.S. Cl. 378—206 **20 Claims**



accommodated in said receptacle, whereby said second module is adapted to operate either while accommodated in said



receptacle as part of a co-axial loudspeaker system, or, alternatively as an independent loudspeaker.

4,502,150

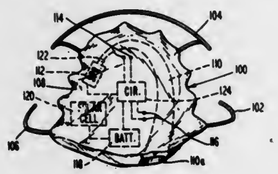
ARTIFICIAL LARYNX

Philip Katz, Princeton Junction; Henry S. Brenman, Cinnaminson, both of N.J.; Louis D. Lowry, Villanova, and Harold Schwartz, King of Prussia, both of Pa., assignors to Thomas Jefferson University, Philadelphia, Pa.

Continuation of Ser. No. 249,140, Mar. 30, 1981, Pat. No. 4,473,905. This application Sep. 30, 1982, Ser. No. 428,848

Int. Cl.³ A61F *1/20*

U.S. Cl. 381—70 **4 Claims**



1. An intraoral artificial larynx, comprising:

(a) prosthetic means for mounting said larynx within the oral cavity;

(b) a power source mounted on said prosthetic means;

(c) signal generation means mounted on said prosthetic means for generating a preselected electrical signal;

(d) speaker means mounted on said prosthetic means for converting said signal into acoustic energy; and

(e) a tongue activatable intraoral switch mounted on said prosthetic means; said switch comprising a contact for completing a ground path of said larynx through the tongue.

4,502,151

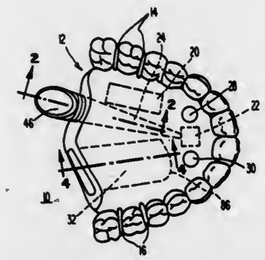
REPLACEABLE SALIVA BARRIER FOR INTRA-ORAL LARYNX

Craig A. Castle, Ponte Verdra Beach; Jon M. Benson, and Theodore H. Toch, both of Jacksonville, Fla., assignors to Xomed, Inc., Jacksonville, Fla.

Filed Nov. 1, 1983, Ser. No. 547,772

Int. Cl.³ A61F *1/20*

U.S. Cl. 381—70 **6 Claims**



1. An intra-oral artificial larynx comprising:

prosthetic means for mounting said larynx within the intra-oral cavity;

signal generation means mounted on said prosthetic means for generating a preselected electrical signal;

speaker means mounted on said proshetic means for converting said signal into acoustic energy;

a horn having an input opening coupled to said speaker means for acoustically amplifying the output of said speaker means, said horn also having an output opening;

barrier means removably mounted to the output opening of said horn for precluding penetration of saliva into the horn, said barrier means including

a mounting having a central opening therein, a first end of said mounting being telescopically received in the output opening of said horn;

a second end having a mouth, said second end being formed on a bias to the longitudinal axis of said mounting whereby said mouth is elliptical in cross-section when viewed in a direction normal to the mouth, said mounting being rotatable with respect to said horn, whereby the orientation of said mouth with respect to said prosthetic means may be selectively varied; and

a microporous membrane sealing said mouth;

a tongue activated switching means enabling said signal generation means and said speaker means; and

a power source for said signal generation means and said speaker means.

4,502,152

LOW CURRENT LINEAR/HIGH CURRENT CHOPPER VOLTAGE REGULATOR

Walter Sinclair, Westoning, England, assignor to Lucas Industries Limited

Continuation of Ser. No. 64,643, Aug. 7, 1979, abandoned. This application Jan. 17, 1984, Ser. No. 571,133

Claims priority, application United Kingdom, Aug. 16, 1978, 33540/78

Int. Cl.³ H04B *1/40*; G05F *1/58*

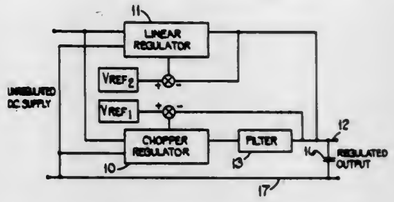
U.S. Cl. 455—73 **9 Claims**

1. A power supply circuit in combination with a transmitter/receiver system, said system having a current drain when operable in a transmit mode and also having a current drain when operable in a receive mode, said power supply circuit comprising:

linear voltage regulator means, connected to said supply voltage and providing a first voltage output, for regulating said voltage output to a first reference voltage, said linear voltage regulator means having a current voltage

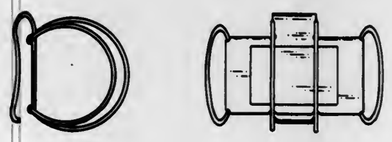
characteristic such that said output voltage falls below a second reference voltage when current through said linear voltage regulator means increases above a predetermined level, wherein said predetermined level is greater than said current drain of said transmitter/receiver operating in said receive mode and less than the current drain of said transmitter/receiver operating in said transmit mode;

chopper voltage regulator means connected to said supply voltage and providing a second voltage output, for regulating said chopper voltage regulator means output to said

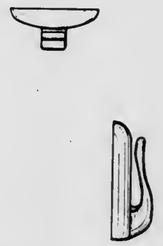


second reference voltage, said second voltage is of less absolute magnitude than said first reference voltage; and means for interconnecting said regulator means outputs.

277,709
BELT MOUNTED BALL CARRIER
William Toriumi, 41079 Pajaro Dr., Fremont, Calif. 94538
Filed Aug. 27, 1982, Ser. No. 412,153
Term of patent 14 years
U.S. Cl. D2—400



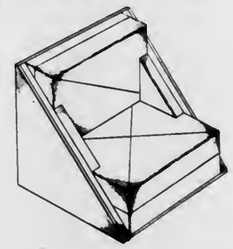
277,710
KEY HOLDER FOR A PURSE
Richard A. Engle, and Angeline V. Engle, both of 7594 12 Mile Rd., Warren, Mich. 48092
Filed Mar. 24, 1982, Ser. No. 361,417
Term of patent 14 years
U.S. Cl. D3—54



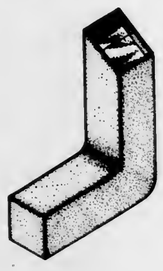
277,711
DISPLAY STAND FOR CONFECTIONERY PRODUCTS
Lorenzo Cillario, Alba, Italy, assignor to Ferrero S.p.A., Alba, Italy
Filed Jul. 7, 1982, Ser. No. 395,868
Claims priority, application Italy, Feb. 1, 1982, 52860/82[U]
Term of patent 14 years
U.S. Cl. D6—464



277,712
CHAIR
Derek W. Dutton, 50 Catalpa Dr., Atherton, Calif. 94025, and Katherine W. De Foyd, 108 Bush St., Ashland, Oreg. 97520
Filed Jan. 3, 1983, Ser. No. 455,063
Term of patent 14 years
U.S. Cl. D6—334



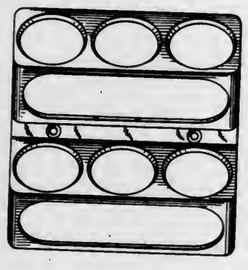
277,713
JEWELRY DISPLAY PROP
Dennis Crawford, Dallas, Tex., assignor to Bufkor, Inc., Buffalo, N.Y.
Filed Nov. 8, 1979, Ser. No. 92,367
Term of patent 14 years
U.S. Cl. D6—329



277,714
TOILET TISSUE ROLL COVER
Peggy Noble, 3604 Forest Hill Rd., Baltimore, Md. 21207
Filed Jan. 12, 1983, Ser. No. 457,428
Term of patent 14 years
U.S. Cl. D6—610

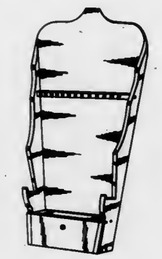


277,715
WALL MOUNTED HOLDER FOR REMOVABLE BINS
Edward D. Levy, Franklin Lakes, and Michael P. Ballone, New Providence, both of N.J., assignors to Gee Associates, Fort Lee, N.J.
Filed Sep. 29, 1982, Ser. No. 426,300
Term of patent 14 years
U.S. Cl. D6—571

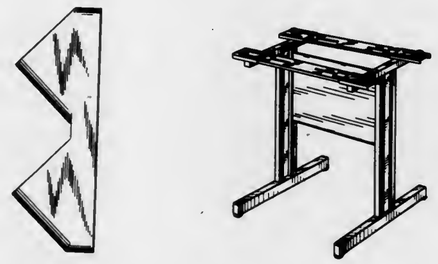


277,716
BOW AND ARROW RACK
Richard W. Galente, P.O. Box 111, Dover Plains, N.Y. 12522
Filed May 3, 1982, Ser. No. 374,182
Term of patent 14 years
U.S. Cl. D6—552

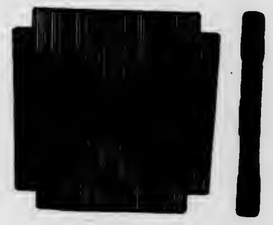




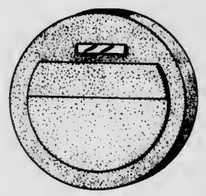
277,717
COMPUTER PRINTER STAND
David C. Petrick, Park Ridge, Ill., assignor to Bretford Manufacturing, Inc., Schiller Park, Ill.
Filed Sep. 3, 1982, Ser. No. 414,778
Term of patent 14 years
U.S. Cl. D6—495



277,718
WOVEN CHAIR SEAT
Sandra D. C. de Madaria, P.O. Box 1200, 89000 Tampico, Tamps, Mexico
Filed Dec. 1, 1982, Ser. No. 446,024
Term of patent 14 years
U.S. Cl. D6—502



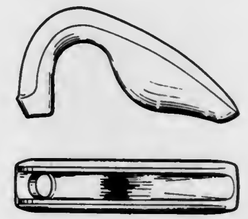
277,719
ROUND SEAT CUSHION AND CARRIER
Gregory C. Spaneas, 13 Exeter St., Danvers, Mass. 01923
Filed Sep. 30, 1982, Ser. No. 431,782
Term of patent 14 years
U.S. Cl. D6—596



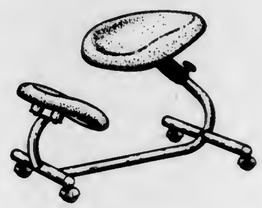
277,720
MIRROR
Heinz J. Leifert, Bad Essen, Fed. Rep. of Germany, assignor to Holz-Design Hofman & Schafer GmbH, Starnberg, Fed. Rep. of Germany
Filed Nov. 18, 1982, Ser. No. 442,511
Claims priority, application Fed. Rep. of Germany, May 21, 1982, 11 AR 1768/82
Term of patent 14 years
U.S. Cl. D6—306



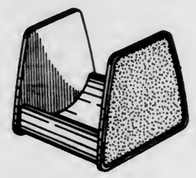
277,721
COATHANGER HANDLE
David J. Jordan, 2505 W. Iola, Broken Arrow, Okla. 74012
Filed Sep. 22, 1982, Ser. No. 421,050
Term of patent 14 years
U.S. Cl. D6—328



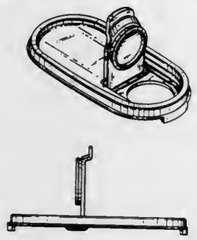
277,722
CHAIR
Svein A. Gusrud, Tokerudberget 18, N-Oslo 9, Norway
Filed Mar. 18, 1983, Ser. No. 476,614
Claims priority, application Norway, Sep. 28, 1982, 63303
Term of patent 14 years
U.S. Cl. D6—340

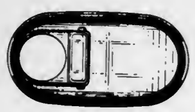


277,723
TUMBLER SEAL RACK OR THE LIKE
Martin J. Wolff, North Providence, R.I., assignor to Dart Industries Inc., Northbrook, Ill.
Filed Oct. 12, 1982, Ser. No. 433,949
Term of patent 14 years
U.S. Cl. D6—475

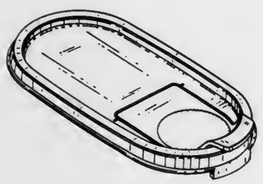


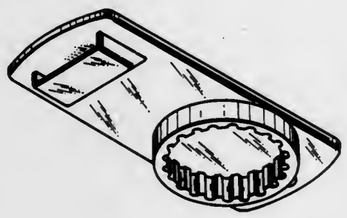
277,724
CONTAINER CLOSURE WITH CAPPED OPENING OR THE LIKE
Robert H. C. M. Daenen, Hekelgem, Belgium, and Martin J. Wolff, North Providence, R.I., assignors to Dart Industries Inc., Northbrook, Ill.
Filed Aug. 13, 1982, Ser. No. 407,975
Term of patent 14 years
U.S. Cl. D7—392



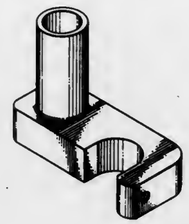


277,725
COMBINED BOTTLE AND CAN OPENER
Jerrold W. Silkebakken, 502 Lucia, Newport Beach, Calif. 92660, and Bruce H. Hale, 3861 Magnolia St., Irvine, Calif. 92710
Filed Mar. 4, 1983, Ser. No. 472,094
Term of patent 14 years
U.S. Cl. D8—40





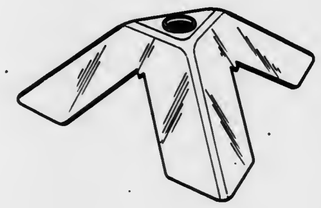
277,726
RISER STABILIZER FOR SPRINKLER SYSTEM PIPES
Cecil Galloway, Glendora, Calif., assignor to Brownline Pipe Inc., Pomona, Calif.
Filed Aug. 16, 1982, Ser. No. 408,270
Term of patent 14 years
U.S. Cl. D8—356



277,727
CONSTRUCTION JOINT
Dinko Klaric, 165 City Rd., South Melbourne, Victoria, Australia
Filed Nov. 23, 1982, Ser. No. 444,688
Claims priority, application Australia, May 26, 1982, 0517/82
Term of patent 14 years
U.S. Cl. D8—382



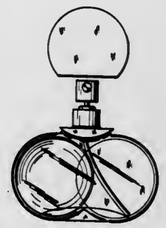
277,728
ANGLE FITTING
Frank Ahlund, Box 8069, 421 08 Vastra Frolunda, Sweden
Filed Jul. 27, 1982, Ser. No. 402,284
Claims priority, application Sweden, Feb. 4, 1982, 247/82
Term of patent 14 years
U.S. Cl. D8—400



277,729
STIRRER FOR PAINTS OR THE LIKE
John Maxwell, Winlock, Wash., assignor to Ted E. Nickerson, Winlock, Wash.
Filed Sep. 7, 1982, Ser. No. 415,669
Term of patent 14 years
U.S. Cl. D8—14



277,730
COMBINED BOTTLE AND CAP
Serge Mansau, Neuilly sur Seine, France, assignor to American Cyanamid Company, Stamford, Conn.
Filed Jun. 18, 1982, Ser. No. 389,650
Claims priority, application France, May 27, 1982, 820110
Term of patent 14 years
U.S. Cl. D9—300



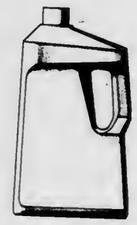
277,731
WINDHSIELD WASHER PUMP PACKAGE
Bernard C. Sharp, White Plains, N.Y., and Manuel Lopez, Trumbull, Conn., assignors to Parker Hannifin Corporation, Shelton, Conn.
Filed Jun. 30, 1982, Ser. No. 393,687
Term of patent 14 years
U.S. Cl. D9—337



277,732
BOTTLE
Milan Lang, Longueuil, Canada, assignor to Les Promotions Atlantiques, Inc., Lonqueuil, Canada
Filed Apr. 16, 1981, Ser. No. 254,910
Claims priority, application Canada, Feb. 26, 1981, D-26-02-81-4
Term of patent 14 years
U.S. Cl. D9—367



277,733
BOTTLE
Thomas B. Aldrich, III, Spring Valley, N.Y., and Albert H. Torongo, Jr., Yardley, Pa., assignors to The Procter & Gamble Company, Cincinnati, Ohio
Filed Jul. 12, 1982, Ser. No. 397,643
Term of patent 14 years
U.S. Cl. D9—376



277,734
COMBINED BOTTLE AND CAP
Ned Harris, New City, N.Y., assignor to American Cyanamid Company, Stamford, Conn.
Filed Sep. 27, 1982, Ser. No. 423,881
Term of patent 14 years
U.S. Cl. D9—385



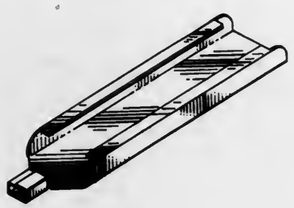
277,735
COMBINED BOTTLE AND CAP
Serge Mansau, Neuilly sur Seine, France, assignor to American Cyanamid Company, Stamford, Conn.
Filed Jun. 18, 1982, Ser. No. 389,811
Claims priority, application France, Jan. 15, 1982, 82.820110
Term of patent 14 years
U.S. Cl. D9—403



277,736
CONTAINER CAP
David F. Long, San Jose, Calif., assignor to Pacer Technology & Resources, Inc., Campbell, Calif.
Filed Sep. 20, 1982, Ser. No. 420,590
Term of patent 14 years
U.S. Cl. D9—443



277,737
ANTHURIUMS PACKING BOARD
Harold T. Tanouye, 279 Aipuni St., Hilo, Hi. 96720
Filed Jun. 14, 1982, Ser. No. 388,448
Term of patent 14 years
U.S. Cl. D9—456



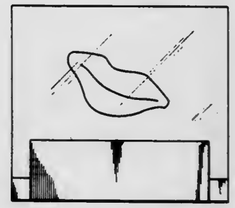
277,738
COMBINED ROAD MARKER AND LOCK-IN SIGN
Nick G. Grammas, Plymouth, and Michael T. Callas, Edina, both of Minn., assignors to Lamba Systems, Inc., St. Paul, Minn.
Filed Mar. 14, 1983, Ser. No. 475,079
Term of patent 14 years
U.S. Cl. D10—109



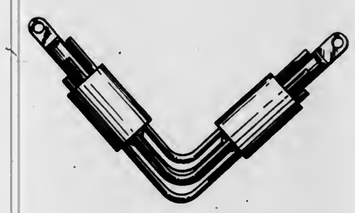
277,739
COMBINED ROAD MARKER AND FLASHING LIGHT
Nick G. Grammas, Plymouth, and Michael T. Callas, Edina, both of Minn., assignors to Lamba Systems, Inc., St. Paul, Minn.
Filed Mar. 14, 1983, Ser. No. 475,080
Term of patent 14 years
U.S. Cl. D10—109



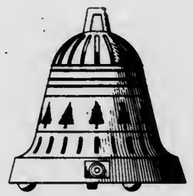
277,740
LIPS DISPLAY
Harry L. Harmeson, 3726 Faculty Dr., Indianapolis, Ind. 46224
Filed Sep. 17, 1981, Ser. No. 303,095
Term of patent 14 years
U.S. Cl. D11—157



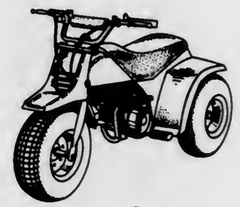
277,741
PENDANT
Tibor Arvai, 31, Avenue Princesse Grace, Monte Carlo, Monaco
Filed May 3, 1983, Ser. No. 491,211
Claims priority, application Switzerland, Nov. 4, 1982, DM001959
Term of patent 14 years
U.S. Cl. D11—79



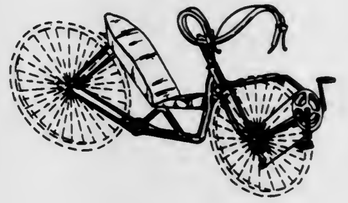
277,742
COMBINED SCENT DIFFUSER AND CHRISTMAS TREE ORNAMENT
Merril Hermanson, Palm Beach, Fla., assignor to Mr. Christmas Incorporated, New York, N.Y.
Filed Jun. 10, 1983, Ser. No. 502,911
Term of patent 14 years
U.S. Cl. D11—125



277,743
MOTORTRICYCLE
Hisashi Murakoshi, Shizuoka, Japan, assignor to Suzuki Jidosha Kogyo Kabushiki Kaisha, Shizuoka, Japan
Filed May 26, 1982, Ser. No. 382,302
Claims priority, application Japan, Dec. 11, 1981, 56-54842
Term of patent 14 years
U.S. Cl. D12—110



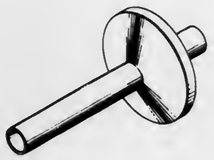
277,744
BICYCLE FRAME
Thomas D. Traylor, 22407 Warmside, Torrance, Calif. 90505
Filed May 3, 1982, Ser. No. 373,996
Term of patent 14 years
U.S. Cl. D12—111



277,745
BABY STROLLER
Shinroku Nakao, Kanagawa; Yoshiyasu Ishii, and Hiroaki Matsuda, both of Tokyo, all of Japan, assignors to Combi Co., Ltd., Tokyo, Japan
Filed Sep. 14, 1982, Ser. No. 417,955
Term of patent 14 years
U.S. Cl. D12—129



277,746
MUD GUARD FOR INSIDE OF WHEEL OF OFF-ROAD VEHICLE
Gary B. Hunsaker, 11015 Cozycroft, Chatsworth, Calif. 91311
Filed Jul. 21, 1982, Ser. No. 400,368
Term of patent 14 years
U.S. Cl. D12—184



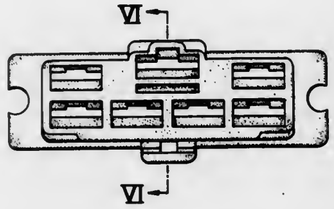
277,747
BATTERY OR SIMILAR ARTICLE
Richard J. Toth, Boca Raton, Fla., assignor to Motorola, Inc., Schaumburg, Ill.
Filed Aug. 16, 1982, Ser. No. 408,353
Term of patent 14 years
U.S. Cl. D13—8



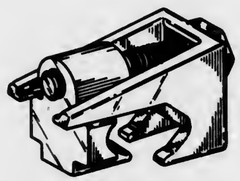
277,748
PINNED-EXTRUSION HEAT SINK FOR ELECTRONIC DEVICES
Alfred F. McCarthy, Belmount, N.H., assignor to Aavid Engineering, Inc., Laconia, N.H.
Filed Sep. 30, 1982, Ser. No. 431,164
Term of patent 14 years
U.S. Cl. D13—23



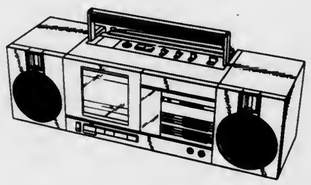
277,749
ELECTRICAL CLAMP CONNECTOR
Jerald C. Todd, Birmingham, Ala., assignor to Square D Company, Palatine, Ill.
Filed Jul. 20, 1982, Ser. No. 400,204
Term of patent 14 years
U.S. Cl. D13—24



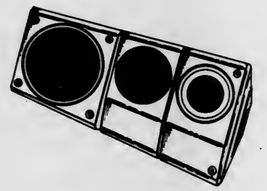
277,750
CONNECTOR HOUSING
Yoshio Ito, Yokkaichi, and Noriyuki Yoshida, Suzuka, both of Japan, assignors to Tokai Electric Wire Co., Ltd., Yokkaichi, Japan
Filed Aug. 31, 1982; Ser. No. 413,553
Claims priority, application Japan, Mar. 5, 1982, 57-9221
Term of patent 14 years
U.S. Cl. D13—24



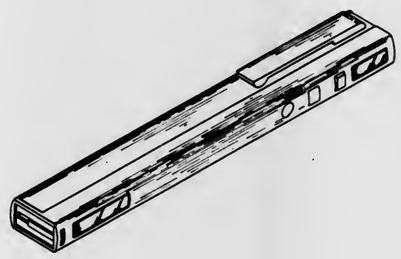
277,751
COMBINED TAPE RECORDER AND RADIO RECEIVER
Akio Ohno, Osaka; Kikuo Ohto, Nara; Takao Okada, Kyoto; Satsuki Yabunaka, and Benito Mishiro, both of Osaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Nov. 12, 1982, Ser. No. 441,013
Term of patent 14 years
U.S. Cl. D14—5



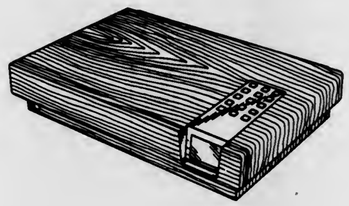
277,752
LOUDSPEAKER
Hitoshi Nakamura, Tokyo, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan
Filed Nov. 29, 1982, Ser. No. 444,914
Claims priority, application Japan, Jul. 2, 1982, 57-29921
Term of patent 14 years
U.S. Cl. D14—34



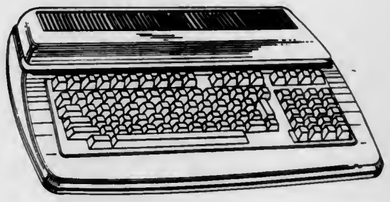
277,753
RADIO PAGER OR SIMILAR ARTICLE
John A. Eckmann, Baldwinsville, N.Y.; Donald K. Krumin, Ft. Lauderdale, Fla.; Richard J. Toth, Boca Raton, Fla., and William J. Scheid, Coral Springs, Fla., assignors to Motorola, Inc., Schaumburg, Ill.
Filed Sep. 17, 1982, Ser. No. 419,292
Term of patent 14 years
U.S. Cl. D14—70



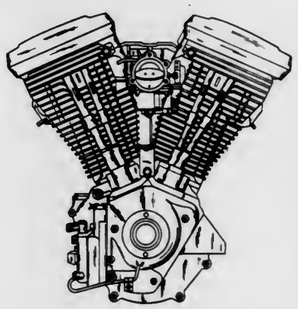
277,754
TELEVISION CONVERTER-DECODER
Robert W. Becker, Naperville, and David P. Chuboff, North Barrington, both of Ill., assignors to Zenith Electronics Corporation, Glenview, Ill.
Filed Oct. 25, 1982, Ser. No. 437,418
Term of patent 14 years
U.S. Cl. D14—84

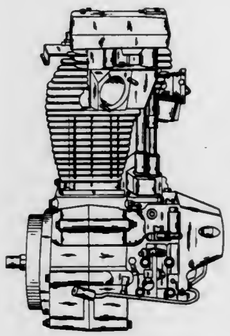


277,755
COMPUTER
Ira Velinsky, Plainfield, N.J., assignor to Commodore Electronics Limited, Wayne, Pa.
Filed Aug. 27, 1982, Ser. No. 412,309
Term of patent 14 years
U.S. Cl. D14—100

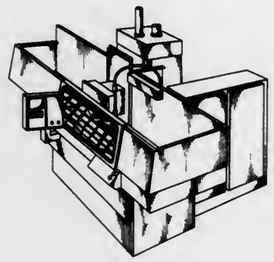


277,756
MOTORCYCLE ENGINE
William G. Davidson, Elm Grove, Wis., assignor to Harley-Davidson Motor Co., Inc, Milwaukee, Wis.
Filed Sep. 29, 1982, Ser. No. 428,284
Term of patent 14 years
U.S. Cl. D15—1

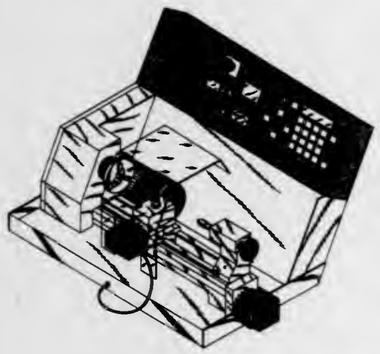




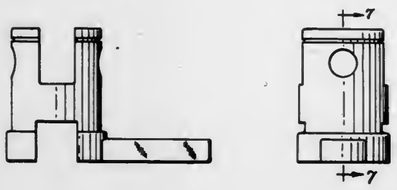
277,757
SURFACE GRINDING MACHINE
Raymond J. Guertin, East Greenwich; Chuhong Kang, North Kingston, and Peter P. Matthews, West Warwick, all of R.I., assignors to Brown & Sharpe Manufacturing Company, North Kingstown, R.I.
Filed Sep. 7, 1982, Ser. No. 415,685
Term of patent 14 years
U.S. Cl. D15—124



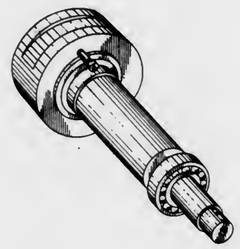
277,758
NUMERICALLY CONTROLLED LATHE
Winfried Nemetz, Salzburg, Austria, assignor to Maier & Co., Salzburg, Austria
Filed Jun. 29, 1982, Ser. No. 393,524
Term of patent 14 years
U.S. Cl. D15—130



277,759
LEVER ACTUATOR
Douglas M. Coleman, Bristol, Wis., assignor to Coleman Tool and Manufacturing Corp., Bristol, Wis.
Filed Sep. 27, 1982, Ser. No. 423,508
Term of patent 14 years
U.S. Cl. D15—138



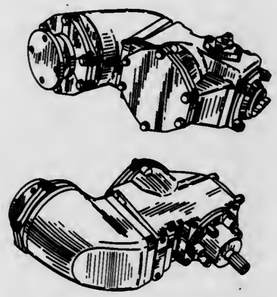
277,760
BALANCE MEASURING APPARATUS FOR MACHINERY
Louis D. Wilson, Folsom; Wesley G. Wilson, Sunnyvale, and Mark Vrilakas, West Sacramento, all of Calif., assignors to Drive Line Service, Incorporated, Sacramento, Calif.
Filed Sep. 27, 1982, Ser. No. 424,275
Term of patent 14 years
U.S. Cl. D15—138



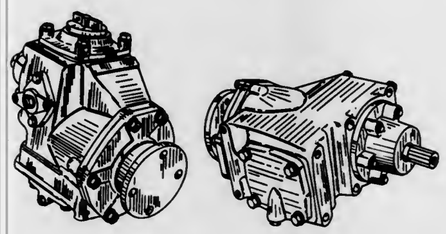
277,761
AUTOMATIC CIRCUIT-PLATE ASSEMBLER
Vyacheslav V. Korovin, ulitsa Shekhurdina, 60, kv. 30; Vladimir Y. Kurganov, 3 proezd Stroitelei, 4, kv. 43; Bronislav I. Gulyaev, ulitsa Lebedeva-Kumacha, 72, kv. 168; Konstantin N. Shishkin, Knyazevsky vzvoz, 11/13, kv. 42, and Alexandr I. Kuryshev, ulitsa Vavilova, 32, kv. 1, all of Saratov, U.S.S.R.
Filed Aug. 27, 1981, Ser. No. 296,917
Term of patent 14 years
U.S. Cl. D15—144



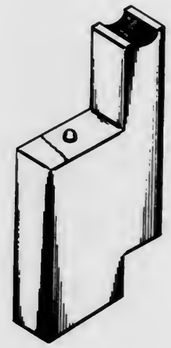
277,762
TRANSMISSION FOR BOATS
Kjell Borgersen, Hjalteby, and Lennart Brandt, Fjaras, both of Sweden, assignors to AB Volvo Penta, Gothenburg, Sweden Division of Ser. No. 105,242, Dec. 19, 1979, Pat. No. Des. 264,724. This application Sep. 14, 1981, Ser. No. 301,965
Term of patent 14 years
U.S. Cl. D15—149



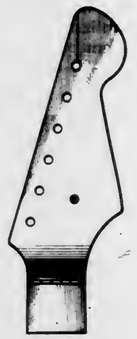
277,763
TRANSMISSION FOR BOATS
Kjell Borgersen, Hjalteby, and Lennart Brandt, Fjaras, both of Sweden, assignors to AB Volvo Penta, Gothenburg, Sweden Division of Ser. No. 105,242, Dec. 19, 1979, Pat. No. Des. 264,724. This application Sep. 14, 1981, Ser. No. 301,966
Term of patent 14 years
U.S. Cl. D15—149



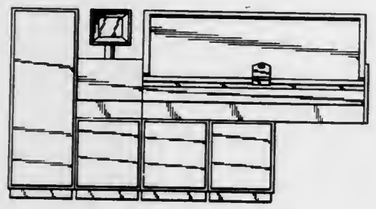
277,764
PIANO LID HEIGHT ADJUSTER BLOCK
Ted Henkle, 5415 Reynolds St., Savannah, Ga. 31405
Continuation-in-part of Ser. No. 244,198, Mar. 16, 1981, abandoned. This application Sep. 29, 1982, Ser. No. 426,483
Term of patent 14 years
U.S. Cl. D17—9

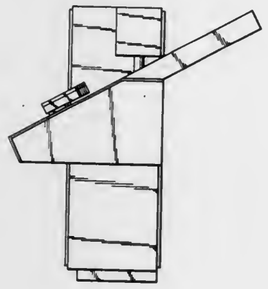


277,765
GUITAR HEADSTOCK
Masaaki Sugai, Fort Worth, Tex., assignor to Rhythm Band, Inc., Fort Worth, Tex.
Filed Aug. 2, 1982, Ser. No. 404,533
Term of patent 14 years
U.S. Cl. D17—20

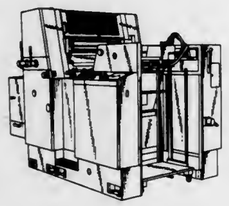


277,766
APPARATUS FOR PRINTING AND PAPER PREPARATION
Alfred Schott, and Kurt Reichenberger, both of Radebeul, German Democratic Rep., assignors to Veb Kombinat Polygraph "Werner Lamberz", Leipzig, German Democratic Rep.
Filed Feb. 8, 1982, Ser. No. 346,912
Claims priority, application Fed. Rep. of Germany, Apr. 20, 1981, 1400G-V2221
Term of patent 14 years
U.S. Cl. D18—13

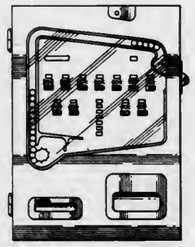




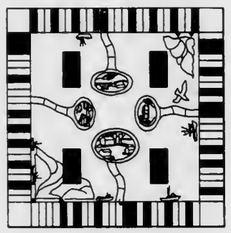
277,767
PRINTING MACHINE
Masakazu Sakamoto, Chiba; Shozo Tanibe, and Takashi Mimura, both of Hiroshima, all of Japan, assignors to Ryobi Ltd., Hiroshima, Japan
Filed Sep. 28, 1982, Ser. No. 426,033
Claims priority, application Japan, Apr. 2, 1982, 57-14181
Term of patent 14 years
U.S. Cl. D18—13



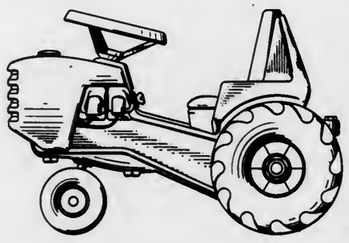
277,768
SLOT MACHINE
Martti I. Kärkkäinen, Espoo, and Lauri Martti, Helsinki, both of Finland, assignors to Raha-Automaattiyhdistys, Helsinki, Finland
Filed May 18, 1982, Ser. No. 379,310
Claims priority, application United Kingdom, Nov. 30, 1981, 1 003 901
Term of patent 14 years
U.S. Cl. D21—12



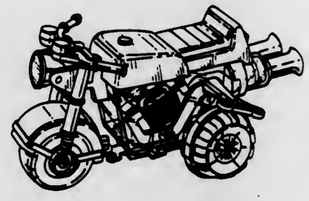
277,769
GAME BOARD
Ben Mabberley, Galiano Island, B.C., Canada (V0N 1P0), and Rennie Weatherell, Saturna Island, B.C., Canada V0N 2Y0
Filed Jul. 30, 1982, Ser. No. 403,562
Claims priority, application Canada, Jun. 14, 1982, 14-06-82-4
Term of patent 14 years
U.S. Cl. D21—25



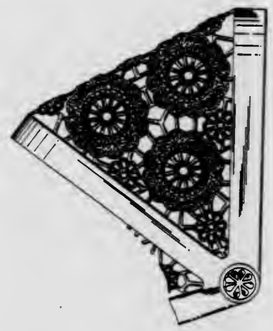
277,770
TOY TRACTOR
James F. Mariol, 481 Dean View Dr., Cincinnati, Ohio 45224
Filed Jan. 21, 1983, Ser. No. 459,779
Term of patent 14 years
U.S. Cl. D21—79



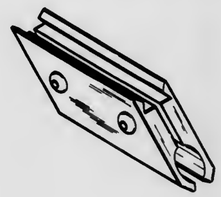
277,771
TOY MOTORCYCLE
Kazutaka Takeuchi, Yachiyo, Japan, assignor to Blue Box Toy Factory Limited, Hong Kong, Hong Kong
Filed Dec. 2, 1982, Ser. No. 446,146
Claims priority, application United Kingdom, Jul. 8, 1982, 1007604
Term of patent 14 years
U.S. Cl. D21—81



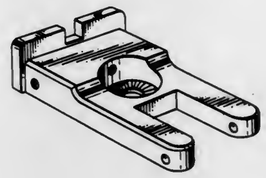
277,772
DOLL CARRIAGE
Susan A. Marsh, and George E. Schaefer, both of South Bend, Ind., assignors to Coleco Industries, Inc., Hartford, Conn.
Filed Jul. 8, 1981, Ser. No. 281,415
Term of patent 14 years
U.S. Cl. D21—134



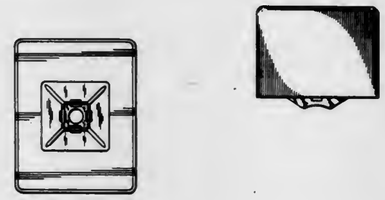
277,773
SCOPE MOUNT FOR A PELLET PISTOL OR THE LIKE
Daniel L. Bechtel, P.O. Box 11281, Fort Worth, Tex. 76109
Filed Nov. 1, 1982, Ser. No. 438,021
Term of patent 14 years
U.S. Cl. D22—7



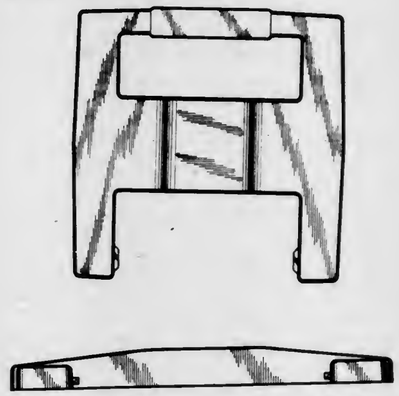
277,774
REAR GUNSIGHT
Mario F. Ruffino, 300 Beauregard Heights, Hampton, Va. 23669
Filed Sep. 7, 1982, Ser. No. 415,646
Term of patent 14 years
U.S. Cl. D22—8



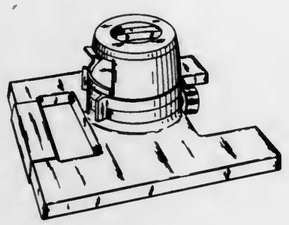
277,775
MAGNETIC FLUID CONDITIONER
John C. Moran, 3124 Lake Ave., Fort Wayne, Ind. 46805, and Gale M. Weisenbarger, 217 E. Israel St., Eaton, Ohio 45320
Filed Jan. 19, 1984, Ser. No. 572,117
Term of patent 14 years
U.S. Cl. D23—3



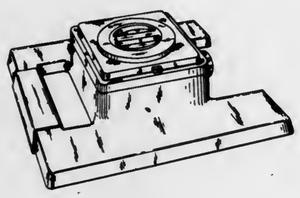
277,776
SPRINKLER BASE
Jack L. Lemkin, Cincinnati, Ohio, assignor to The O. M. Scott & Sons Company, Marysville, Ohio
Filed Oct. 4, 1982, Ser. No. 432,744
Claims priority, application Israel, Apr. 9, 1982, 8976
Term of patent 14 years
U.S. Cl. D23—7



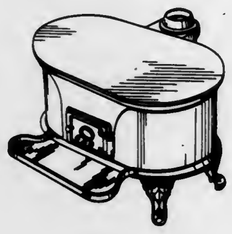
277,777
SPRINKLER
Jack L. Lemkin, Cincinnati, Ohio, assignor to The O. M. Scott & Sons Company, Marysville, Ohio
Filed Apr. 8, 1983, Ser. No. 483,154
Term of patent 14 years
U.S. Cl. D23—7



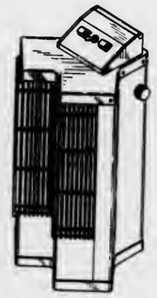
277,778
SPRINKLER
Jack L. Lemkin, Cincinnati, Ohio, assignor to The O. M. Scott & Sons Company, Marysville, Ohio
Filed Apr. 8, 1983, Ser. No. 483,155
Term of patent 14 years
U.S. Cl. D23—7



277,779
STOVE
Oreste G. Nosenzo, Asti, Italy, assignor to C.S. di NOSENZO Oreste, Asti, Italy
Filed Dec. 7, 1982, Ser. No. 447,551
Claims priority, application Italy, Apr. 3, 1981, 53080/81[U]
Term of patent 14 years
U.S. Cl. D23—97



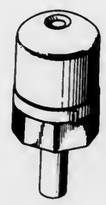
277,780
SPACE HEATER
Paul V. Horst, Sr., Boulder; Charles D. Hoyt, Northglenn, and Joseph E. Velazquez, Englewood, all of Colo., assignors to Crockett & Kelly, Inc., Westminster, Colo.
Filed Oct. 13, 1982, Ser. No. 434,069
Term of patent 14 years
U.S. Cl. D23—122



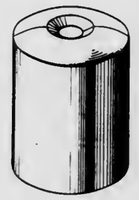
277,781
COMBINED FINGER CLIP AND CUP HOLDER FOR DENTAL CLEANING PASTE OR THE LIKE
Edward A. Weissenburger, Mercerville, N.J., assignor to Johnson & Johnson Dental Products Company, East Windsor, N.J.
Filed Mar. 22, 1982, Ser. No. 360,132
Term of patent 14 years
U.S. Cl. D24—10



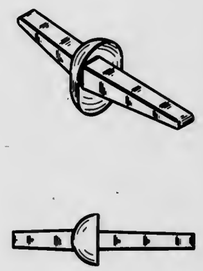
277,782
AIRWAY AIRFLOW INDICATOR FOR FACILITATING BLIND NASAL OR BLIND ORAL INTUBATION OF THE TRACHEA AND THE LIKE
George P. Beck, P.O. Box 16385, Lubbock, Tex. 79470
Filed Aug. 10, 1982, Ser. No. 406,923
Term of patent 14 years
U.S. Cl. D24—17



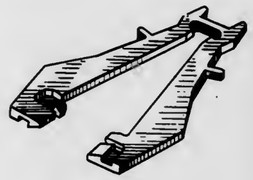
277,783
AIRWAY AIRFLOW INDICATOR FOR FACILITATING BLIND NASAL OR BLIND ORAL INTUBATION OF THE TRACHEA AND THE LIKE
George P. Beck, P.O. Box 16385, Lubbock, Tex. 79470
Filed Aug. 5, 1982, Ser. No. 406,383
Term of patent 14 years
U.S. Cl. D24—17



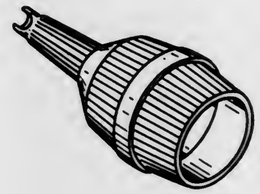
277,784
LESSER TOE METATARSAL PHALANGEAL IMPLANT
Thomas E. Sgarlato, Los Gatos, and James M. Christensen, San Diego, both of Calif., assignors to Sutter Biomedical, Inc., San Diego, Calif.
Filed Jun. 25, 1982, Ser. No. 392,360
Term of patent 14 years
U.S. Cl. D24—33



277,785
SURGICAL CLIP
David T. Green, Norwalk, Conn., assignor to United States Surgical Corporation, Norwalk, Conn.
Filed Sep. 30, 1982, Ser. No. 429,260
Term of patent 14 years
U.S. Cl. D24—27



277,786
STOPPER FOR PLASTIC OR GLASS TUBES FOR USE IN TAKING, TRANSPORTATION AND PRESERVING BACTERIOLOGICAL SAMPLES
Kosti T. Hellman, Espoo, and Lauri M. Sivonen, Helsinki, both of Finland, assignors to Orion-Yhtyma Oy., Helsinki, Finland
Filed Jun. 22, 1981, Ser. No. 276,121
Claims priority, application Finland, May 13, 1981, 366/81
Term of patent 14 years
U.S. Cl. D24—29



277,787
ELECTRODE CAP
Sue E. Corbett, 901 Harvard Pl., Woodland, Calif. 95695
Filed Aug. 26, 1982, Ser. No. 411,798
Term of patent 14 years
U.S. Cl. D24—34



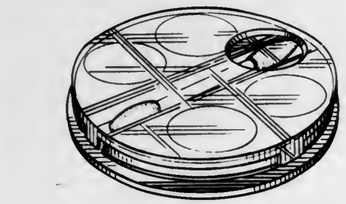
277,788
CONTAINER FOR LIQUID FOR CHEMICAL ANALYSIS OR SIMILAR ARTICLE
Max D. Liston, Irvine, and Paul K. Hsei, Huntington Beach, both of Calif., assignors to American Hospital Supply Corporation, Evanston, Ill.
Filed Jul. 20, 1982, Ser. No. 400,103
Term of patent 14 years
U.S. Cl. D24—99



277,789
HAIR DRYER
Witold Pajak, Wayne, N.J., assignor to Conair Corporation, Edison, N.J.
Filed Mar. 14, 1983, Ser. No. 476,022
Term of patent 14 years
U.S. Cl. D28—13

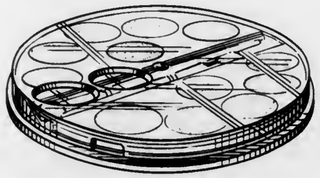


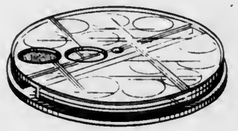
277,790
COSMETIC COMPACT
Eli I. Schefer, Sands Point, N.Y., assignor to Revlon, Inc., New York, N.Y.
Filed Sep. 13, 1982, Ser. No. 416,799
Term of patent 14 years
U.S. Cl. D28—82





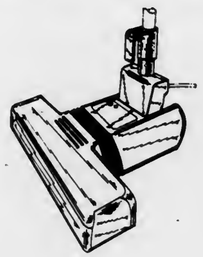
277,791
COSMETIC COMPACT
Eli I. Schefer, Sands Point, N.Y., assignor to Revlon, Inc., New York, N.Y.
Filed Sep. 13, 1982, Ser. No. 416,803
Term of patent 14 years
U.S. Cl. D28—82







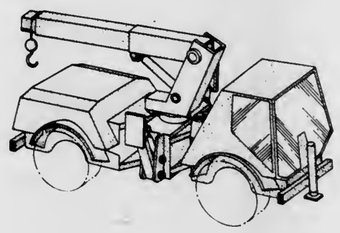
277,792
FLOOR CLEANER HEAD
Christoph Hoesch, Essen, Fed. Rep. of Germany, assignor to Vorwerk & Co Elektrowerke KG, Wuppertal, Fed. Rep. of Germany
Filed Jan. 25, 1982, Ser. No. 342,170
Claims priority, application Fed. Rep. of Germany, Jul. 27, 1981, 54 MR 14 534
Term of patent 14 years
U.S. Cl. D32—15



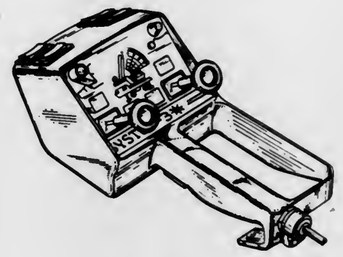
277,793
FOLDING SHOPPER'S CART
Katherine E. Allen, 741 Calle de los Amigos, Santa Barbara, Calif. 93105
Filed Aug. 5, 1982, Ser. No. 405,467
Term of patent 14 years
U.S. Cl. D34—17



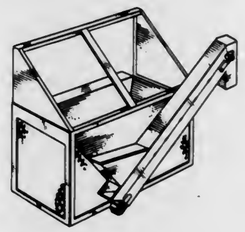
277,794
ARTICULATED MATERIAL HANDLING VEHICLE
Ralph C. Lanphere, Racine; Paul G. Nelson, Milwaukee, and Jerry A. Waite, Racine, all of Wis., assignors to J. I. Case Company, Racine, Wis.
Filed Mar. 12, 1982, Ser. No. 357,539
Term of patent 14 years
U.S. Cl. D34—34



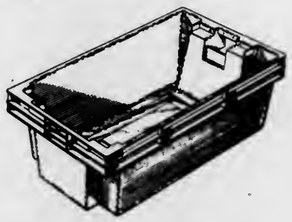
277,795
JOY STICK CONSOLE FOR REMOTE POSITION AND ENGINE CONTROL OF A CRANE OR THE LIKE
Edward E. Griffiths, 3200 Polaris St., #23, Las Vegas, Nev. 89102
Filed Jun. 8, 1981, Ser. No. 271,622
Term of patent 14 years
U.S. Cl. D34—35



277,796
HOPPER UNLOADER
Jay M. Teitelbaum, and Henry S. Teitelbaum, both of 3840 S. Jason St., Engelwood, Colo. 80110
Filed Feb. 18, 1982, Ser. No. 350,123
Term of patent 14 years
U.S. Cl. D34—29



277,797
TOTE BOX
Jean-Marie Chabot, St-Damien, Canada, assignor to Les Industries Provinciales Ltée., St-Damien Bellechasse, Canada
Filed Aug. 30, 1982, Ser. No. 412,561
Term of patent 14 years
U.S. Cl. D34—40



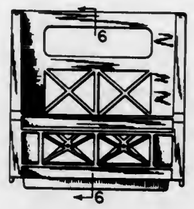
277,798
STACKABLE CRATE
Frank DiSesa, Lunenburg, Mass., assignor to Tucker Housewares, Inc., Leominster, Mass.
Filed Sep. 29, 1982, Ser. No. 426,993
Term of patent 14 years
U.S. Cl. D34—43



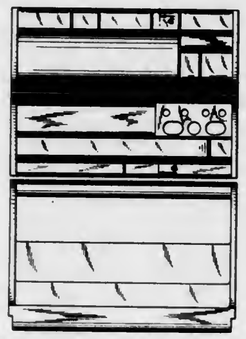
277,799
HOLDER FOR UTENSILS
Frank DiSesa, 74 Goodrich St., Lunenburg, Mass. 01462
Filed Sep. 29, 1982, Ser. No. 426,994
Term of patent 14 years
U.S. Cl. D34—43



277,800
STACKABLE CRATE
Frank DiSesa, Lunenburg, Mass., assignor to Tucker Housewares, Inc., Leominster, Mass.
Filed Sep. 29, 1982, Ser. No. 426,995
Term of patent 14 years
U.S. Cl. D34—43



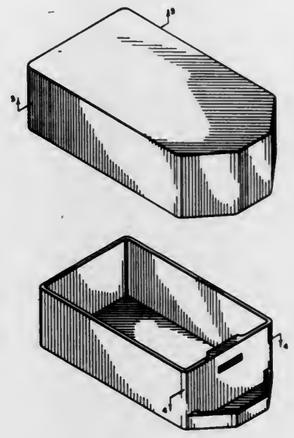
277,801
TOOL TRAY
Edward D. Levy, Franklin Lakes, and Michael P. Ballone, New Providence, both of N.J., assignors to Gee Associates, Fort Lee, N.J.
Filed Sep. 29, 1982, Ser. No. 426,793
Term of patent 14 years
U.S. Cl. D34—44



277,802
ROSARY
Lucas R. Luchetti, 133 Half Mile Rd., North Haven, Conn. 06473
Continuation-in-part of Ser. No. 174,911, Aug. 11, 1980, which is a continuation-in-part of Ser. No. 125,943, Feb. 29, 1980. This application Sep. 16, 1980, Ser. No. 184,701
Term of patent 14 years
U.S. Cl. D99—26



277,803
LOCK BOX
Lloyd Franko, 9580 Crackel Rd., Aurora, Ohio 44202, and Lenard Lapchynski, 8219 S. Bedford Rd., Macedonia, Ohio 44056
Filed Sep. 29, 1982, Ser. No. 427,898
Term of patent 14 years
U.S. Cl. D99—28



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 26TH DAY OF FEBRUARY, 1985

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A. E. Staley Manufacturing Company: *See—*
Schmidt, James C., 4,501,888, Cl. 536-110.000.

A/S Nunc: *See—*
Johansson, Arne, 4,501,108, Cl. 53-440.000.

A/S Sparevirke: *See—*
Lyngstrup, Arne, 4,501,203, Cl. 109-635.000.

A. W. Chesterton Company: *See—*
Rockwood, Robert E.; and Antkowiak, Richard P., 4,501,530, Cl. 415-170.00A.

AB Volvo: *See—*
Zellmer, Michael, 4,501,254, Cl. 123-556.000.

AB Volvo Penta: *See—*
Brandt, Lennart; and Pichl, Heinz, 4,501,560, Cl. 440-53.000.

Abbott, James G.; Berley, Jerry W.; Ward, Allen E., Jr.; and Brandi, Adolph J., Sr., to Allied Corporation. Controlled tow stretching process. 4,501,710, Cl. 264-40.100.

Abbott, Lee W. Cranberry harvester. 4,501,111, Cl. 56-8.000.

Abe, Naoto; Akimoto, Hidetoshi; and Nomori, Hiroyuki, to Konishiroku Photo Industry Co., Ltd. Method for removing a selenium layer from a substrate. 4,501,621, Cl. 134-17.000.

Abex Corporation: *See—*
Cerny, Frank T.; and Lapsker, Irving, 4,501,347, Cl. 188-250.00G.

Abraham, Nedumparambil A.; and Demerson, Christopher A., to American Home Products Corporation. Resolution of (+)-1,8-diethyl-1,3,4,9-tetrahydropyrano[3,4-b]indole-1-acetic acid using cholesteryl aniline. 4,501,899, Cl. 548-432.000.

Abramov, Vsevolod V.; Kuznetsov,.Vsevolod V.; Veselov, Alexandr V.; Tkhai, Vitaly S.; Rysin, Nikolai I.; and Gerasimov, Vasily I. Injection mold with replacable insert in mold cavity outlet opening. 4,501,549, Cl. 425-542.000.

Accettella, Serge: *See—*
Goulard, Claude; Accettella, Serge; Cathaly-Pretou, Gerard; Fages, Bernard; Jeannin, Daniel; Laloux, Philippe; and Le Fur, Jean, 4,501,489, Cl. 355-54.000.

Acciai, Michael; Pigos, Charles R.; and Speicher, Charles G., to International Business Machines Corporation. Electrode configuration for the print head of an electrolytic printer. 4,502,063, Cl. 346-155.000.

Adachi, Muneo: *See—*
Takahashi, Yuji; Masaki, Hisaji; Adachi, Muneo; and Igarashi, Masaru, 4,501,419, Cl. 271-288.000.

Adachi, Yasuto: *See—*
Yazu, Kazumasa; Adachi, Yasuto; and Yoshizaki, Takayoshi, 4,501,610, Cl. 75-0.5AA.

Adam, Jean-Marie; and Bloch, Peter, to Ciba-Geigy Corporation. Anthraquinone dyes, process for their preparation, and use thereof. 4,501,592, Cl. 8-676.000.

Adams, L. Jane, to Eastman Kodak Company. Process for the preparation of high molecular weight polyesters. 4,501,878, Cl. 528-286.000.

Adamson, Donald, to Envopak Limited. Disposable one-piece security sealing device. 4,501,049, Cl. 24-30.50P.

Adolph Coors Company: *See—*
Thompson, Roger A., 4,501,366, Cl. 209-556.000.

Advanced Micro Devices, Inc.: *See—*
Wonnacott, Gerald, 4,501,061, Cl. 29-591.000.

Affiliated Hospital Products, Inc.: *See—*
Mason, Edward M.; Tanner, Murray Q., III; and Finley, Michael J., 4,501,414, Cl. 269-325.000.

Agrifurane, S.A.: *See—*
Delmas, Michel; Gaset, Antoine; and le Bigot, Yves, 4,501,910, Cl. 549-506.000.

Air Products and Chemicals, Inc.: *See—*
Grandin, Roland E.; and Milligan, Barton, 4,501,922, Cl. 564-408.000.
Wells, James E.; and Eskinazi, Victoria, 4,501,889, Cl. 544-106.000.

Aisin Seiki Kabushiki Kaisha: *See—*
Inada, Masami; and Hashimoto, Kenji, 4,501,298, Cl. 137-625.480.

Aizawa, Makoto; Kishimoto, Tsuneo; and Tanimoto, Yoshio, to Mazda Motor Corporation. Fiber-reinforced urethane molding provided with coating films. 4,501,790, Cl. 428-283.000.

Akashi, Goro: *See—*
Nagao, Makoto; Nahara, Akira; and Akashi, Goro, 4,501,225, Cl. 118-718.000.

AKG Akustische u.Kino-Gerate Gesellschaft m.b.H: *See—*
Fidi, Werner, 4,501,462, Cl. 339-93.00R.

Akimoto, Hidetoshi: *See—*
Abe, Naoto; Akimoto, Hidetoshi; and Nomori, Hiroyuki, 4,501,621, Cl. 134-17.000.

Akutagawa Confectionery Co., Ltd.: *See—*
Akutagawa, Tokuji, 4,501,544, Cl. 425-218.000.

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Akutsu, Kazushi: *See—*
Minami, Kazuaki; Totani, Shinzo; Miura, Kunio; Akutsu, Kazushi; and Ohyama, Shinji, 4,502,123, Cl. 364-424.000.

Albers, Richard A., to Deft Chemical Coatings, Inc. Water-reducible epoxy coating compositions. 4,501,832, Cl. 523-414.000.

Albert Einstein College of Medicine of Yeshiva University: *See—*
Reid, Lola C. M.; and Rojkind, Marcos, 4,501,815, Cl. 435-284.000.

Albert, Frank, Jr., to Preformed Marine, Inc. Ball type universal joint and method of manufacture. 4,501,511, Cl. 403-24.000.

Alberta Oil Sands Technology and Research Authority: *See—*
Ritter, Robert A., 4,501,648, Cl. 204-149.000.

Alberts, Heinrich: *See—*
Bartl, Herbert; Alberts, Heinrich; and Schuster, Klaus, 4,501,871, Cl. 527-313.000.

Albright, Fred R.: *See—*
Goodman, Edward; Dux, James P.; and Albright, Fred R., 4,501,682, Cl. 252-174.150.

Alexandrov, Boris I.: *See—*
Lipets, Adolf U.; Alexandrov, Boris I.; Kuznetsova, Svetlana M.; Okerblom, Jury I.; Ershov, Jury A.; Frolova, Nadezhda A.; Malkis, Valery A.; Sotnikov, Ivan A.; Fedosov, Alexei Z.; and Petrosyan, Robert A., 4,501,320, Cl. 165-144.000.

Alfa-Laval, Inc.: *See—*
Bazell, Graydon C., 4,501,671, Cl. 210-781.000.

Alfred University Research Foundation, Inc.: *See—*
Funk, James E., 4,501,205, Cl. 110-347.000.

Allan, David E., to Exxon Research & Engineering Co. Delayed coking process with split fresh feed and top feeding. 4,501,654, Cl. 208-92.000.

Allan, David E.; Molstedt, Byron V.; and Mohan, Raam R., to Exxon Research & Engineering Co. Method for the recovery of a tungsten-containing catalyst from coke containing nickel and vanadium. 4,501,820, Cl. 502-27.000.

Allegheny Ludlum Steel Corporation: *See—*
Ames, S. Leslie; Gray, Thomas H.; and Kish, Lewis L., 4,501,316, Cl. 164-463.000.

Allen, Peter N.; and Blake, William, to Coherent, Inc. Power supply for a laser. 4,502,145, Cl. 372-38.000.

Allen, Richard S.: *See—*
Frazier, Terry L.; Grimm, Henry J.; Rooney, John F.; Allen, Richard S.; Brown, Alfred; and Mims, Donald S., 4,501,325, Cl. 166-250.000.

Allied Corporation: *See—*
Abbott, James G.; Berley, Jerry W.; Ward, Allen E., Jr.; and Brandi, Adolph J., Sr., 4,501,710, Cl. 264-40.100.
Caruso, Peter J., 4,502,030, Cl. 335-164.000.
Harpell, Gary A.; Kavesh, Sheldon; Palley, Igor; and Prevorsek, Dusan C., 4,501,856, Cl. 525-240.000.

Allis-Chalmers Corp.: *See—*
Chaulk, Donald E., 4,501,168, Cl. 74-526.000.

Allsop, Inc.: *See—*
Biasini, Lino; Biasini, Americole R.; and Clausen, Eivind, 4,501,220, Cl. 118-73.000.

Alperin, Henry: *See—*
Kessel, Jason H.; and Alperin, Henry, 4,501,033, Cl. 5-200.00R.

Alps Electric Co., Ltd.: *See—*
Endo, Satsuo; and Saito, Massaru, 4,502,034, Cl. 338-128.000.
Kawauchi, Masahiko, 4,501,938, Cl. 200-5.00A.

Althoff, Heinz J., to Vereinigte Deutsche Metallwerke AG. Alloy and process for manufacturing rolled strip from an aluminum alloy especially for use in the manufacture of two-piece cans. 4,501,627, Cl. 148-437.000.

Alvarado, Daniel D., to Alvarado, Robert J. Business organization game. 4,501,425, Cl. 273-256.000.

Alvarado, Robert J.: *See—*
Alvarado, Daniel D., 4,501,425, Cl. 273-256.000.

Amalgamated Sugar Company, The: *See—*
Schoenrock, Karlheinz W. R.; Henscheid, Thomas H.; and Rounds, Hugh G., 4,501,814, Cl. 435-94.000.

Amano, Matsuo; Sakamoto, Shinichi; Hirayama, Takeshi; and Sasayama, Takao, to Hitachi, Ltd. Fuel injection control apparatus for internal combustion engine. 4,501,249, Cl. 123-478.000.

American Can Company: *See—*
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Chandler, Curtis S.; Novotny, Larry G.; and Watts, Elvert S., 4,501,459, Cl. 339-48.000.
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Plisky, John J., 4,501,043, Cl. 15-250.420.
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Arcan, Mircea. Contact gauge and method of employing same. 4,501,159, Cl. 73-862.530.
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Partus, Fred P., 4,501,442, Cl. 285-190.000.
Atkinson, Roger F., to Itec, Inc. Universal signalling tone receiver. 4,502,049, Cl. 340-825.730.
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Automatic Roller Doors, Australia, Pty., Ltd.: *See—*
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Awaya, Akira: *See—*
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Ayasli, Yalcin, to Raytheon Company. Bidirectional switch. 4,502,027, Cl. 333-103.000.
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Ballard, Lowell D.: *See—*
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Bannochie, John G., to Eltech Systems Corporation. Porous gas diffusion-electrode. 4,501,803, Cl. 429-101.000.
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Barnes, Lant I. Casting rod. 4,501,085, Cl. 43-19.000.
Bartl, Herbert; Alberts, Heinrich; and Schuster, Klaus, to Bayer Aktiengesellschaft. Process for the production of anhydride-group- or carboxyl-group-containing graft copolymers of polysaccharide esters. 4,501,871, Cl. 527-313.000.
Barton, Derek H. R.; Motherwell, William B.; and Zard, Sammir Z., to Roussel Uclaf. 20-Isocyano-$\Delta^{17(20)}$-steroids. 4,501,701, Cl. 260-397.400.
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Bauer, Friedrich; and Leonhard, Kurt, to M.A.N. Maschinenfabrik Augsburg-Nurnberg Aktiengesellschaft. Air-compressing, direct-injection internal combustion engine. 4,501,239, Cl. 123-261.000.
Baumbach, Bertram W., to Reliance Electric Company. Line protector for a communications circuit. 4,502,088, Cl. 361-124.000.
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Benin, Joshua; and Luoma, Robert P., II, to Du Pont de Nemours, E. I., and Company. Electric heating element for sterilely cutting and welding together thermoplastic tubes. 4,501,951, Cl. 219-243.000.
Benson, Jon M.: *See—*
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Bercovici, Serge, to Cegedur Societe de Transformation de l'Aluminium Pechiney. Method of controlling and regulating operational parameters of a machine for continuously casting bands between cylinders, allowing adhesion to be avoided. 4,501,315, Cl. 164-454.000.
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Bergersen, Hans A.; and Risberg, Eilif, to International Standard Electric Corporation. Electrical resistance heating element. 4,501,956, Cl. 219-553.000.
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Bick, Hal W. Rotatable heating apparatus. 4,501,955, Cl. 219-469.000.
Bickford, Harold J.: *See—*
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Biondetti, Mario; and Baur, Roland, to Escher Wyss GmbH. Method and apparatus for washing stock suspensions by removing undesired material through an endless wire. 4,501,040, Cl. 8-156.000.
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Kurtz, Leonard D.; and LiCausi, Joseph, 4,501,581, Cl. 604-52.000.
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Bismarck, Otto H., to RCA Corporation. Coincident pulse cancelling circuit. 4,502,014, Cl. 328-110.000.
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Blackwell, James B.; Marks, Gerald C.; and Vereecke, Paul, to BP Chemicals Limited. Phenolic foam composites and process for making them. 4,501,794, Cl. 428-316.600.
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Blessington, Daniel R., to Xerox Corporation. Electrical interconnection system. 4,502,059, Cl. 346-140.00R.
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Blum, Michael R.: *See*—
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Bannink, Engbert T., Jr.; and Olson, Glenn O., 4,502,092, Cl. 361-218.000.
Klees, Garry W.; and Wright, Charles P., 4,501,393, Cl. 239-265.130.
Welch, Alfred F., 4,501,380, Cl. 221-298.000.
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Bogese, Stephen B., II, to Virginia Patent Development Corporation. Modular connector with improved housing and contact structure. 4,501,464, Cl. 339-176.00M.
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Higashi, Robert E.; Johnson, Robert G.; and Bohrer, Philip J., 4,501,144, Cl. 73-204.000.
Boisvert, J. Roger; Schultz, Samuel; and Blaugrund, Robert. Fly trap with disposable collector. 4,501,088, Cl. 43-118.000.
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Bolz, Gunner: *See*—
De Forest, Sherman E.; Bolz, Gunner; and La Quey, Robert E., 4,502,075, Cl. 358-93.000.
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Riess, Louis P.; and Bonnecaze, Bernard F., 4,501,551, Cl. 432-15.000.
Boot, Deryck F., to Minnesota Mining and Manufacturing Company. Process for preparing adrenochrome. 4,501,923, Cl. 548-484.000.
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Armitage, Bernard J.; and Donaldson, Margaret L., 4,501,727, Cl. 424-16.000.
Borden, Inc.: *See*—
Williams, James H., 4,501,851, Cl. 524-542.000.
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Hechenbleikner, Ingenuin; and Enlow, William P., 4,501,838, Cl. 524-108.000.
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Kotulla, Bernhard; Weiser, Martin; Faltin, Jurgen; Preis, Lothar; Schmidt, Rudolf; and Born, Eberhard, 4,501,516, Cl. 405-260.000.
Borrelli, Nicholas F.; Keck, Donald B.; Morse, David L.; and Sachenik, Paul A., to Corning Glass Works. Integral optical imaging devices using grin lens systems. 4,501,468, Cl. 350-96.250.
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Bosso, Joseph F.; and Geiger, William J., to PPG Industries, Inc. Low temperature aminoplast curable cationic electrodepositable coating compositions. 4,501,833, Cl. 523-416.000.
Bostian, Clarence L., Jr.; and Gelula, Jerome D., to Gelula, Jerome D. Method for producing unwoven novel oriented pre-stressed web. 4,501,631, Cl. 156-161.000.
Bott, John A. Cross rail for vehicle luggage carrier. 4,501,385, Cl. 224-319.000.
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Boucher, Richard C.; Gatzy, John T.; and Knowles, Michael R., to Research Corporation. Aerosolized amiloride treatment of retained pulmonary secretions. 4,501,729, Cl. 424-45.000.
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Faulkner, Albert A.; and Bouton, John C., 4,501,495, Cl. 356-244.000.
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Nisato, Dino; Boveri, Sergio; Roncucci, Romeo; and Carminati, Paolo, 4,501,747, Cl. 514-342.000.
Bower, Frank A., Jr. Apparatus for delivering liquid under pressure. 4,501,533, Cl. 417-388.000.
Bowers, Russell E.: *See*—
Rogers, Robert M.; Treiber, Fritz F.; and Bowers, Russell E., 4,501,105, Cl. 53-64.000.
Treiber, Fritz F.; and Bowers, Russell E., 4,501,106, Cl. 53-66.000.
Boyd, Collis E., to International Harvester Co. Thermal shock barrier for injection pump. 4,501,532, Cl. 417-313.000.
Boyer, Jack C., to Deere & Company. Self-locking hinge. 4,501,045, Cl. 16-331.000.
BP Chemicals Limited: *See*—
Blackwell, James B.; Marks, Gerald C.; and Vereecke, Paul, 4,501,794, Cl. 428-316.600.
Bradt, Richard C., to Metal Alloys, Inc. Method of consolidating a metallic or ceramic body. 4,501,718, Cl. 419-49.000.
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Dennis, James G.; Bramlett, Kenneth W.; and Jackson, G. C., Jr., 4,501,454, Cl. 384-619.000.
Brandi, Adolph J., Sr.: *See*—
Abbott, James G.; Berley, Jerry W.; Ward, Allen E., Jr.; and Brandi, Adolph J., Sr., 4,501,710, Cl. 264-40.100.
Brandl, Rudolf; and Doll, Herbert, to Heckler & Koch GmbH. Silenced hand-held firearm with rotating tube and sleeve. 4,501,189, Cl. 89-14.400.
Brandt, Lennart; and Pichl, Heinz, to AB Volvo Penta. Inboard outboard drive. 4,501,560, Cl. 440-53.000.
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Brashear, William S.: *See*—
Kemp, Billy W.; and Brashear, William S., 4,501,336, Cl. 175-61.000.
Braus, Harry, to National Distillers and Chemical Corporation. Silane oligomers useful as anti-treeing additives. 4,501,688, Cl. 252-573.000.

Bray, Carl R.; and Cueni, Lee. Cotton candy accessory for blender. 4,501,538, Cl. 425-9.000.
Brdr. Schur International A/S: *See*—
Lambach, Heinrich W., 4,501,364, Cl. 206-626.000.
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Breda, Enzo; and Ciotti, Alfredo, to SALUS Ricerca e Sviluppo di CROCE' Dr. Francesco & C. Snc. Device for optical indication of the phenomena of coagulation of blood, concentration and aggregation of blood platelets, or the like. 4,501,491, Cl. 356-39.000.
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Katz, Philip; Brenman, Henry S.; Lowry, Louis D.; and Schwartz, Harold, 4,502,150, Cl. 381-70.000.
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Breuer, Hermann; Treuner, Uwe D.; and Denzel, Theodor, to E. R. Squibb & Sons, Inc. Iminothiazolyl ureido cephalosporins. 4,501,743, Cl. 514-201.000.
Bridgestone Cycle Co., Ltd.: *See*—
Tanaka, Mitsuo; and Kozakae, Kunitoshi, 4,501,576, Cl. 474-141.000.
Brieger, Emmet F., to GEO Vann, Inc. Method of completing a well. 4,501,331, Cl. 166-297.000.
Briggs, Stephen L.: *See*—
Barton, Russell L.; Briggs, Stephen L.; and Koppel, Gary A., 4,501,703, Cl. 260-455.00R.
Brison, Robert J.: *See*—
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Begg, Alan R., 4,501,611, Cl. 75-0.50R.
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Hodgson, Phillip K. G., 4,501,673, Cl. 252-8.55D.
Paersch, Michael; Mrotzek, Herbert; Haukelt, Helmut; and Schreckenberg, Heinz-Wilhelm, 4,501,593, Cl. 44-23.000.
British Underwater Pipeline Engineering: *See*—
Lowes, John M., 4,501,514, Cl. 405-227.000.
Brodish, Charles E.: *See*—
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Brown, Alfred: *See*—
Frazier, Terry L.; Grimm, Henry J.; Rooney, John F.; Allen, Richard S.; Brown, Alfred; and Mims, Donald S., 4,501,325, Cl. 166-250.000.
Brown, Boveri & Cie AG: *See*—
Lisner, Herbert; and Michalak, Peter, 4,502,005, Cl. 324-158.0MG.
Brown, David F.; and Anstey, Michael J. Circuit assembly. 4,502,098, Cl. 361-383.000.
Brown, William J., to Emerson Electric Co. Whole house attic fan. 4,501,194, Cl. 98-42.070.
Brown, William J.: *See*—
Jacobi, Cecil T., Jr.; Maupin, Charles G.; Woodsmall, James B.; Brown, William J.; Thomas, Bruce E.; Owens, Walton D.; Cunningham, Robert J.; and Smith, Rocky D., 4,501,072, Cl. 34-1.000.
Brownlie, James: *See*—
Tatton, James P.; and Brownlie, James, 4,501,447, Cl. 299-43.000.
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Zodrow, Rudolf; and Buchholz, Rainer, 4,501,633, Cl. 156-242.000.
Buck, Charles E.: *See*—
Aszman, Harry W.; Buck, Charles E.; and Everhart, Cherie H., 4,501,680, Cl. 252-142.000.
Buendia, Jean: *See*—
Martel, Jacques; Buendia, Jean; and Nezot, Francois, 4,501,687, Cl. 252-522.00R.
Buhlmann, Ulrich, to Kuhni AG. Packing for material exchange columns. 4,501,707, Cl. 261-94.000.
Buirley, William L.; Koopman, Donald E.; McQuain, David B.; and Reeves, William H., to Vectra International Corporation. Thermographic cholesteric coating compositions and plates. 4,501,503, Cl. 374-162.000.
Bukhteev, Pavel I.; Posleider, Grigory Y.; Kartavtsev, Viktor M.; and Bytsak, Vladimir S., to Nauchno-Issledovatelsky I Experimentalny Institut Avtomovilnogo Elektrooborudovania I Avtopriborov. Machine for laying conductors into slots. 4,501,059, Cl. 29-564.500.
Bulten, Eric J.; and Liebregts, Antonius M. J., to Nederlandse Centrale Organisatie voor Toegepast-Natuurwetenschappelijk Onderzoek. Germanium compounds. 4,501,702, Cl. 260-429.00R.
Bunce, William A. Fish attractor variable speed sliding attractor blade. 4,501,086, Cl. 43-42.200.
Bundy, Gordon L., to Upjohn Company, The. Pyridyl benzenediols. 4,501,892, Cl. 546-270.000.
Bunnell Life Systems, Inc.: *See*—
Usry, Joe D., 4,501,405, Cl. 251-7.000.
Burch, Donald F.: *See*—
Bethell, George L.; Burch, Donald F.; and Hinkhouse, Lysle R., 4,501,541, Cl. 425-117.000.
Burge, Theodor A.; Widmer, Jurg; Meyer, Theodor; and Sulser, Ulrich, to Sika AG, vorm. Kaspar Winkler & Co. Method of using highly concentrated aqueous solutions of low viscosity of melamine/aldehyde resins for improving building materials. 4,501,839, Cl. 524-247.000.
Burkhardt, Volker. Chain conveyor. 4,501,353, Cl. 198-779.000.
Burlington Industries, Inc.: *See*—
Davis, Delbert A., 4,501,791, Cl. 428-286.000.
Burns, Lyle D., to Phillips Petroleum Company. Motor fuel. 4,501,596, Cl. 44-63.000.
Burroughs Corporation: *See*—
Hagenmaier, Carl F., Jr.; Logsdon, Gary L.; Bolton, Brent C.; and Miner, Robert L., Jr., 4,502,118, Cl. 364-200.000.
Ragle, Herbert U.; and Blessum, Norman S., 4,502,082, Cl. 360-76.000.
Bushby, Maxwell J., to Commonwealth Moulding Pty. Limited. Container and closure having lug fastening means. 4,501,376, Cl. 220-298.000.
Buysch, Hans-Josef: *See*—
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Buzas, Andre ; and Lavielle, Gilbert, to Buzas, Andre . Method of forming a solution of papavrine carbanion. 4,501,891, Cl. 546-149.000.
Bytsak, Vladimir S.: *See*—
Bukhteev, Pavel I.; Posleider, Grigory Y.; Kartavtsev, Viktor M.; and Bytsak, Vladimir S., 4,501,059, Cl. 29-564.500.
Cabalquinto, Santiago C.: *See*—
Lay, Khin M.; Palguta, Stephen E.; Fernandez, Ramon B.; and Cabalquinto, Santiago C., 4,501,037, Cl. 8-149.200.
Cairone, David C., Sr. Luminescent foam floats and method. 4,501,564, Cl. 441-20.000.
Caldwell, Karl N.: *See*—
Walters, Johnnie J.; Voso, Philip T.; and Caldwell, Karl N., 4,501,780, Cl. 428-35.000.
California Ceramic Supply Co.: *See*—
Divoky, Ralph A., 4,501,545, Cl. 425-275.000.
Cam Gears Limited: *See*—
Webber, Gordon E. G.; and Wilson, Alan G., 4,501,191, Cl. 91-375.00A.
Cameron Iron Works, Inc.: *See*—
Crews, Mark E., 4,501,441, Cl. 285-143.000.
Campbell, David S.; Tinker, Andrew J.; and Mente, Peter G., to Malaysian Rubber Producers' Research Association, The. Reagents for graft copolymers. 4,501,860, Cl. 525-359.400.
Canadian Fram Limited: *See*—
Charles, Herbert N., 4,501,129, Cl. 62-239.000.
Canivet, Guy M. C., to Societe Nationale d'Etude de Construction de Moteurs d'Aviation. Device for controlling and regulating the cross section of a variable area propulsive nozzle. 4,501,117, Cl. 60-235.000.
Cannon, William N., to Eli Lilly and Company. Nitrosamine inhibition. 4,501,608, Cl. 71-121.000.
Canon Kabushiki Kaisha: *See*—
Ando, Yujiro; and Fujii, Haruo, 4,502,061, Cl. 346-153.100.
Kataoka, Hiroyuki; Yamada, Masanori; and Suzuki, Nobuyuki, 4,501,481, Cl. 354-413.000.
Katoh, Haruhisa, 4,502,113, Cl. 364-200.000.
Miyamoto, Koichi; and Tonomura, Yoshinobu, 4,501,490, Cl. 355-55.000.
Sakai, Kiyoshi; Ishikawa, Shozo; Arita, Tetsuo; Mabuchi, Minoru; and Umehara, Shoji, 4,501,808, Cl. 430-59.000.
Shirai, Shigeru; Ogawa, Kyosuke; Kanbe, Junichiro; Saitoh, Keishi; Osato, Yoichi; and Misumi, Teruo, 4,501,807, Cl. 430-57.000.
Takahashi, Yuji; Masaki, Hisaji; Adachi, Muneo; and Igarashi, Masaru, 4,501,419, Cl. 271-288.000.
Tsuda, Shin, 4,502,080, Cl. 358-256.000.
Canron Corp.: *See*—
Delucia, Anthony, 4,501,200, Cl. 104-10.000.
Cantatore, Giuseppe, to Ciba-Geigy S.p.A. Piperidine derivatives which are stabilsers for synthetic polymers. 4,501,837, Cl. 524-100.000.
Carding Specialists (Canada) Ltd.: *See*—
Varga, John M., 4,501,048, Cl. 19-106.00R.
Carl, Robert H., Jr.; Koontz, Floyd; and Pedtke, Daniel F., to Harris Corporation. High speed PIN diode switched antenna coupler and method. 4,502,025, Cl. 333-24.00R.
Carlsen, Arthur T.: *See*—
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Carlson, Roland W.; and Blaskis, Edward A., to Technicare Corporation. Method for assembling a high vacuum rotating anode X-ray tube. 4,501,566, Cl. 445-28.000.
Carminati, Paolo: *See*—
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Carrier Corporation: *See*—
Hannett, William J., 4,502,084, Cl. 361-23.000.
Hargis, Larry N., 4,501,534, Cl. 417-572.000.
Caruso, Peter J., to Allied Corporation. High reliability solenoid switch. 4,502,030, Cl. 335-164.000.
Casella, Sharon: *See*—
Chu, George; and Casella, Sharon, 4,501,306, Cl. 141-94.000.
Casio Computer Co., Ltd.: *See*—
Tsuzuki, Hanzo, 4,502,119, Cl. 364-405.000.
Cassidy, Benjamin J., to International Paper Company. Anti-sift carton. 4,501,388, Cl. 229-37.00R.
Castaldi, Graziano: *See*—
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Castel, Michel, to Renix Electronique. Keyboard having keys activated by electrical contacts and the capacity to read one state from among four possible states. 4,502,040, Cl. 340-365.00R.
Castel, Yvon; and Iato, Michel, to Societe Nationale Elf Aquitaine (Production). Tool for disconnecting a guideline connector and a process for using same. 4,501,056, Cl. 29-252.000.
Castle, Craig A.; Benson, Jon M.; and Toch, Theodore H., to Xomed, Inc. Replaceable saliva barrier for intra-oral larynx. 4,502,151, Cl. 381-70.000.
Caterpillar Tractor Co.: *See—*
Richardson, Richard W., 4,501,950, Cl. 219-124.340.
Satzler, Ronald L., 4,501,629, Cl. 156-149.000.
Cathaly-Pretou, Gerard: *See—*
Goulard, Claude; Accettella, Serge; Cathaly-Pretou, Gerard; Fages, Bernard; Jeannin, Daniel; Laloux, Philippe; and Le Fur, Jean, 4,501,489, Cl. 355-54.000.
Cathell, Philip W. Elongated wand-type wind-up and trigger-released separable actuator for motorized toy. 4,501,567, Cl. 446-430.000.
Caunt, James W.: *See—*
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Causer, Roy; and Orr, Donald, to United Kingdom Atomic Energy Authority. Manipulator. 4,501,522, Cl. 414-4.000.
CBM Display Group Limited: *See—*
Fox, Clifford R., 4,501,369, Cl. 211-133.000.
CBS Inc.: *See—*
Stone, George C.; and Ross, Stuart E., 4,501,424, Cl. 273-148.00B.
Cegedur Societe de Transformation de l'Aluminium Pechiney: *See—*
Bercovici, Serge, 4,501,315, Cl. 164-454.000.
Celanese Corporation: *See—*
Foley, Paul, 4,501,822, Cl. 502-162.000.
Sarada, Thyagaraja, 4,501,793, Cl. 428-315.500.
Celette, Germain, to Celette S.A. Device for straightening automobile bodies or the like. 4,501,136, Cl. 72-447.000.
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Goulard, Claude; Accettella, Serge; Cathaly-Pretou, Gerard; Fages, Bernard; Jeannin, Daniel; Laloux, Philippe; and Le Fur, Jean, 4,501,489, Cl. 355-54.000.
Centro Ricerche Fiat S.p.a.: *See—*
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Cerny, Frank T.; and Lapsker, Irving, to Abex Corporation. Segmented disc brake pad. 4,501,347, Cl. 188-250.00G.
CertainTeed Corporation: *See—*
Piotrowski, Tony S., 4,501,107, Cl. 53-438.000.
Chaki, Takao, to Clarion Co., Ltd. Cross arm mechanism in a pushbutton tuner. 4,501,165, Cl. 74-10.330.
Chaki, Takao, to Clarion Co., Ltd. Cross arm mechanism in a pushbutton tuner. 4,501,166, Cl. 74-10.330.
Chambers, William S. Thrust bearing. 4,501,505, Cl. 384-152.000.
Champion International Corporation: *See—*
Wells, Henry A., 4,501,642, Cl. 162-198.000.
Chandler, Curtis S.; Novotny, Larry G.; and Watts, Elvert S., to AMP Incorporated. Electrical connector. 4,501,459, Cl. 339-48.000.
Chang, Wen-Hsuan; McKeough, David T.; and Peffer, John R., to PPG Industries, Inc. Moisture curable compositions containing reaction products of hydrophobic polyols and organosilicon-containing materials. 4,501,872, Cl. 528-18.000.
Charles, Herbert N., to Canadian Fram Limited. Integral engine air conditioning system. 4,501,129, Cl. 62-239.000.
Chasar, Dwight W., to B. F. Goodrich Company, The. 2-Naphthyl phosphoramidites and compositions thereof. 4,501,684, Cl. 252-400.00A.
Chaulk, Donald E., to Allis-Chalmers Corp. Adjustable stop for position control lever for draft load sensing system. 4,501,168, Cl. 74-526.000.
Chen, Augustin T.; Goldwasser, David J.; and Onder, Kemal, to Upjohn Company, The. Polyamides with talc as crystallization promoter. 4,501,844, Cl. 524-451.000.
Chen, Nai Y.: *See—*
LaPierre, Rene B.; Partridge, Randell D.; Chen, Nai Y.; and Wong, Steven S., 4,501,926, Cl. 585-739.000.
Cheng, Paul J., to Phillips Petroleum Company. Counter-rotational flow in a carbon black reactor. 4,501,720, Cl. 422-156.000.
Cherry, Sidney J., to Westinghouse Electric Corp. Vacuum interrupter contact material. 4,501,941, Cl. 200-144.00B.
Chesebrough-Pond's Inc.: *See—*
Dodds, Stephen G., 4,501,076, Cl. 36-11.000.
Chevron Research Company: *See—*
DePriester, Coral L., 4,501,329, Cl. 166-292.000.
Chicago Bridge & Iron Company: *See—*
Cutler, Donald R., 4,501,122, Cl. 62-116.000.
Chicago Rawhide Manufacturing Company: *See—*
Peisker, Glenn; Christiansen, Keith; and Jaime, Gil, 4,501,431, Cl. 277-134.000.
Chicopee: *See—*
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Chikura Kogyo Kabushiki Kaisha: *See—*
Yoshida, Kei; Murokawa, Masayuki; and Nomura, Toshiaki, 4,501,090, Cl. 49-264.000.
Chinoin Gyogyszer es Vegyeszeti Termekek Gyara Rt.: *See—*
Kulcsar, Gabor; Sebestyen, Gyula; David, Agoston; and Zilahi, Tibor, 4,501,732, Cl. 424-114.000.
Chisso Corporation: *See—*
Yazu, Kazumasa; Adachi, Yasuto; and Yoshizaki, Takayoshi, 4,501,610, Cl. 75-0.5AA.
Chivens, David E.; and Cloward, Laramie J., to L & F Industries. Stress sensor for yield-point detection in a stretch press. 4,501,135, Cl. 72-302.000.
Chmiel, Chester T.; and Cotsakis, Daniel J., to Uniroyal, Inc. Adhesive for bonding cured EPDM rubber. 4,501,842, Cl. 524-432.000.
Christiansen, Keith: *See—*
Peisker, Glenn; Christiansen, Keith; and Jaime, Gil, 4,501,431, Cl. 277-134.000.
Christman, Chris L., to United States of America, Health and Human Services. Ultrasonic therapy applicator that measures dosage. 4,501,151, Cl. 73-646.000.
Chu, George; and Casella, Sharon, to Collagen Corporation. Automatic syringe filling system. 4,501,306, Cl. 141-94.000.
Chu, Shaw C.; and Spencer, Arthur T. Aqueous coating compositions and process for their preparation from epoxy acidic acrylic polymer and polyfunctional amine. 4,501,831, Cl. 523-412.000.
Chubachi, Noriyoshi: *See—*
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Chugai Ro Co., Ltd.: *See—*
Imose, Masayuki; Seno, Takao; and Sakaguchi, Yoshihito, 4,501,553, Cl. 432-59.000.
Churchill, John E.: *See—*
Stockdale, Trevor J.; and Churchill, John E., 4,501,164, Cl. 73-864.250.
Cianci, James P.; and Dunn, William J., to Kendall Company, The. Liquid drainage system with formed hinged support sheet. 4,501,584, Cl. 604-322.000.
Ciba-Geigy Corporation: *See—*
Adam, Jean-Marie; and Bloch, Peter, 4,501,592, Cl. 8-676.000.
Cook, Barry, 4,501,667, Cl. 210-700.000.
Ciba-Geigy S.p.A.: *See—*
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Ciotti, Alfredo: *See—*
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Cities Service Company: *See—*
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DiNozzi, Robert D.; Vancelette, Stanley R.; Powell, Lionel E.; McLean, George F., Jr.; Sleger, Leon F.; and Mason, Ronald C., to USM Corporation. Micro component assembly machine. 4,501,064, Cl. 29-832.000.
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Drinkuth, William H.; Bires, Robert J.; Miller, Robert J.; and Selleck, Franklin G., to United Technologies Corporation. Method and apparatus for grinding turbine engine rotor assemblies using dynamic optical measurement system. 4,501,095, Cl. 51-165.720.
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Dux, James P.: *See—*
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Dyer, Lawrence D.; and McGregor, Anderson D., to Texas Instruments Incorporated. Kerf loss reduction in internal diameter sawing. 4,501,258, Cl. 125-13.00R.
Dykstra, Richard A. Solid state magneto ignition switching device. 4,501,256, Cl. 123-651.000.
Dynatech Laboratories Incorporated: *See—*
Nelson, Keith E., 4,501,970, Cl. 250-458.100.
E. R. Squibb & Sons, Inc.: *See—*
Breuer, Hermann; Treuner, Uwe D.; and Denzel, Theodor, 4,501,743, Cl. 514-201.000.
Kronenthal, David, 4,501,697, Cl. 260-245.400.
Thottathil, John K.; Moniot, Jerome L.; Floyd, David; and Brandt, Steven, 4,501,901, Cl. 548-532.000.
Wood, Thomas G., 4,501,494, Cl. 356-240.000.
Eagles, Brian A., to Coal Industry (Patents) Limited. Fluid supply for rotary cutter heads for mining machines. 4,501,449, Cl. 299-81.000.
Eastman Kodak Company: *See—*
Adams, L. Jane, 4,501,878, Cl. 528-286.000.
Barbee, Robert B.; Bass, Roy K.; Davis, Burns; and Minnick, Larry A., 4,501,879, Cl. 528-288.000.
Fagerburg, David R., 4,501,877, Cl. 528-271.000.
Romansky, John A.; and Matson, Gary R., 4,501,483, Cl. 355-3.0FU.
Stryjewski, Walter A., 4,501,482, Cl. 355-3.0FU.
Eaton Corporation: *See—*
Anderson, Harry B.; and Zalewski, Jack J., 4,501,937, Cl. 200-5.00A.
Ebi, Hiroyuki; and Miyatake, Kimio, to Horiba, Ltd. Infrared radiation gas analyzer. 4,501,968, Cl. 250-343.000.
Ebisaka, Toshinobu, to Mitsubishi Denki Kabushiki Kaisha. Differential protective relay. 4,502,086, Cl. 361-87.000.
Ed. Zublin Aktiengesellschaft: *See—*
G'aser, Eberhard; and Beitinger, Eberhard, 4,501,446, Cl. 299-9.000.
Edelman, Seymour; and Ballard, Lowell D., to United States of America, Army. Piezoelectric polymer heat exchanger. 4,501,319, Cl. 165-84.000.
Edmunds, Neil R., to Gulf Canada Limited. In-situ recovery of viscous hydrocarbonaceous crude oil. 4,501,326, Cl. 166-272.000.
Edwards, Harold W., to Du Pont de Nemours, E. I., and Company. Process for dispersing solids in liquid media. 4,501,501, Cl. 366-336.000.
Egma, Chikashi: *See—*
Torii, Kuniyoshi; and Egma, Chikashi, 4,501,730, Cl. 424-76.000.
Eguchi, Kazutoshi, to Tokyo Shibaura Denki Kabushiki Kaisha. Data processing unit of a microprogram control system for variable length data. 4,502,115, Cl. 364-200.000.
Ehara, Kunihiko: *See—*
Oda, Shoji; Ehara, Kunihiko; Umemoto, Hirotoshi; and Nakano, Shinji, 4,501,829, Cl. 523-400.000.
Eisai Co., Ltd.: *See—*
Nanba, Yuzaburo, 4,501,497, Cl. 356-246.000.
Eisele, Hermann; and Frank, Bruno, to Robert Bosch GmbH. Apparatus for ascertaining control variables in an internal combustion engine. 4,501,248, Cl. 123-478.000.
Elbe, Hans-Ludwig; and Hammann, Ingeborg, to Bayer Aktiengesellschaft. Combating pests with novel substituted carbamoyloximinotetrahydrothiophenes and intermediates therefor. 4,501,753, Cl. 514-447.000.
Elbe, Hans-Ludwig: *See—*
Reiser, Wolf; Elbe, Hans-Ludwig; and Feyen, Peter, 4,501,897, Cl. 548-262.000.
Electro-Biology, Inc.: *See—*
Pescatore, Eugene A., 4,501,265, Cl. 128-1.500.
Electronique Marcel Dassault: *See—*
Glize, Jean-Pierre; and Gaucher, Michel M., 4,501,958, Cl. 235-382.000.
Eli Lilly and Company: *See—*
Barton, Russell L.; Briggs, Stephen L.; and Koppel, Gary A., 4,501,703, Cl. 260-455.00R.
Cannon, William N., 4,501,608, Cl. 71-121.000.
Graves, Bernard J.; and Kukolja, Stjepan, 4,501,741, Cl. 514-202.000.
Krumkalns, Eriks V., 4,501,746, Cl. 514-357.000.
Lunn, William H. W.; and Vasileff, Robert T., 4,501,739, Cl. 514-203.000.
Nichols, Cynthia L.; and Kornfeld, Edmund C., 4,501,890, Cl. 514-267.000.
Ryan, Charles W.; and Slomski, Bruce A., 4,501,921, Cl. 564-99.000.
El-Ibiary, Yehia M.: *See—*
Delmege, Arthur H.; El-Ibiary, Yehia M.; Rode, Melvin A.; and Taplin, Lael B., 4,502,109, Cl. 364-174.000.
Elmore, Carl L.: *See—*
Sherman, Michael I.; Elmore, Carl L.; and Brison, Robert J., 4,501,721, Cl. 423-27.000.
Eltech Systems Corporation: *See—*
Bannochie, John G., 4,501,803, Cl. 429-101.000.
Hardee, Kenneth L.; Gordon, Arnold Z.; Pyle, Charles B.; and Sen, Rajat K., 4,501,824, Cl. 502-339.000.
Emerson Electric Co.: *See—*
Brown, William J., 4,501,194, Cl. 98-42.070.
Endo, Isao; Nagamune, Teruyuki; and Inoue, Ichiro, to Rikagaku Kenkyusho. Autosampler. 4,501,161, Cl. 73-863.240.
Endo, Kazunaka: *See—*
Saikawa, Masahiko; Kanada, Eiji; Tanaka, Akira; and Endo, Kazunaka, 4,501,811, Cl. 430-204.000.
Endo, Satsuo; and Saito, Massaru, to Alps Electric Co., Ltd. Electric component. 4,502,034, Cl. 338-128.000.
Energy Conversion Devices, Inc.: *See—*
McCormick-Goodhart, Mark H., 4,501,487, Cl. 355-27.000.
Energy Development Associates, Inc.: *See—*
Galloway, James H., 4,502,001, Cl. 320-6.000.
Mashikian, Matthew S., 4,502,000, Cl. 320-6.000.
Engding, Alf, to Tekniska Rontgencentralen AB. Apparatus for inspecting the interior of a reactor vessel. 4,501,716, Cl. 376-249.000.
Engineered Air Systems, Inc.: *See—*
Norton, John P., 4,501,126, Cl. 62-185.000.
Enloe, Kenneth M., to Kimberly-Clark Corporation. Disposable diaper having improved absorbent pad arrangement. 4,501,587, Cl. 604-385.000.
Enlow, William P.: *See—*
Hechenbleikner, Ingenuin; and Enlow, William P., 4,501,838, Cl. 524-108.000.
ens BIO LOGICALS Inc.: *See—*
Ogilvie, Kelvin K., 4,501,744, Cl. 514-245.000.
Envopak Limited: *See—*
Adamson, Donald, 4,501,049, Cl. 24-30.50P.
Ernst Leitz Wetzlar GmbH: *See—*
Jacoby, Hans-Dieter; and Schmidt, Peter, 4,501,527, Cl. 414-225.000.
Reinheimer, Guenter; and Kraft, Winfried, 4,501,476, Cl. 350-520.000.
Ershov, Jury A.: *See—*
Lipets, Adolf U.; Alexandrov, Boris I.; Kuznetsova, Svetlana M.; Okerblom, Jury I.; Ershov, Jury A.; Frolova, Nadezhda A.; Malkis, Valery A.; Sotnikov, Ivan A.; Fedosov, Alexei Z.; and Petrosyan, Robert A., 4,501,320, Cl. 165-144.000.
Escallier, Edward A.; Dawson, Stanley R.; and Shaheen, Joseph M., to United States of America, Air Force. Multiconductor flat cable. 4,501,929, Cl. 174-117.00F.
Escher Wyss GmbH: *See—*
Biondetti, Mario; and Baur, Roland, 4,501,040, Cl. 8-156.000.
Biondetti, Mario, 4,501,662, Cl. 210-391.000.
ESCO Corporation: *See—*
Hahn, Frederick C.; and Jones, Larren F., 4,501,079, Cl. 37-141.00R.
Eskinazi, Victoria: *See—*
Wells, James E.; and Eskinazi, Victoria, 4,501,889, Cl. 544-106.000.
Estry, Douglas W.: *See—*
Tishkoff, Garson H.; and Estry, Douglas W., 4,501,731, Cl. 424-101.000.
Evans, George S.; Morton, Edward W.; Gilmore, John F., deceased; and by Gilmore, Roderick A., Administrator, to North American Philips Lighting Corp. Energy conserving instant-start series-sequence fluorescent lamp system and fluorescent lamp with overcurrent protection. 4,501,992, Cl. 315-122.000.
Everhart, Cherie H.: *See—*
Aszman, Harry W.; Buck, Charles E.; and Everhart, Cherie H., 4,501,680, Cl. 252-142.000.
Evolution Enterprises, Inc.: *See—*
Straayer, Robert O., 4,501,332, Cl. 172-41.000.
Ewing, John J.: *See—*
Frank, Robert G.; Fecik, Michael T.; and Ewing, John J., 4,501,603, Cl. 65-106.000.
Ex-Cell-O Corporation: *See—*
Hobson, James C., 4,501,190, Cl. 89-41.00H.
Wroble, Arthur J., 4,501,188, Cl. 89-41.00M.
Excelermatic Inc.: *See—*
Kraus, Charles E., 4,501,172, Cl. 74-867.000.
Extracorporeal, Inc.: *See—*
Troutner, Vernon H., 4,501,583, Cl. 604-118.000.
Exxon Production Research Co.: *See—*
Garcia, Juan A., 4,501,330, Cl. 166-297.000.
Exxon Research & Engineering Co.: *See—*
Allan, David E., 4,501,654, Cl. 208-92.000.
Allan, David E.; Molstedt, Byron V.; and Mohan, Raam R., 4,501,820, Cl. 502-27.000.
Bouboulis, Constantine J.; and Kuntz, Irving, 4,501,868, Cl. 526-208.000.

Habeeb, Jacob J., 4,501,677, Cl. 252-37.200.
Hamner, Glen P., 4,501,653, Cl. 208-89.000.
Newman, Neil F.; and Kowalski, Ronald C., 4,501,859, Cl. 525-356.000.

Ezis, Andre; and Blair, Howard D., to Ford Motor Company. Method of making yttrium silicon oxynitrides. 4,501,723, Cl. 423-263.000.

F. J. Burrus & Cie.: *See—*
Boegli, Serge; and Lebet, Jean-Pierre, 4,501,579, Cl. 493-45.000.

Fachini, Robert M.: *See—*
Thedford, Guy N.; Fachini, Robert M.; and Sullivan, Dennis K., 4,501,112, Cl. 56-13.300.

Facit Aktiebolag: *See—*
Andersson, Leif H., 4,501,510, Cl. 400-616.300.

Fagerburg, David R., to Eastman Kodak Company. Higher molecular weight polyesters from diacid anhydrides and cyclic alkylene carbonates. 4,501,877, Cl. 528-271.000.

Fages, Bernard: *See—*
Goulard, Claude; Accettella, Serge; Cathaly-Pretou, Gerard; Fages, Bernard; Jeannin, Daniel; Laloux, Philippe; and Le Fur, Jean, 4,501,489, Cl. 355-54.000.

Fairchild Camera and Instrument Corporation: *See—*
Garcia, R. F.; and Hickling, Robert L., 4,502,127, Cl. 364-900.000.

Fajt, John, to Xenell Corporation. Low breakdown voltage, high current glow lamp. 4,501,991, Cl. 313-589.000.

Falcone, Samuel J.; and McCoy, John J., to Atlantic Richfield Company. Preparation of N-alkyl-monosubstituted carbamates. 4,501,915, Cl. 560-157.000.

Falk Corporation, The: *See—*
Stilin, John J., 4,501,169, Cl. 74-812.000.

Faltin, Jurgen: *See—*
Kotulla, Bernhard; Weiser, Martin; Faltin, Jurgen; Preis, Lothar; Schmidt, Rudolf; and Born, Eberhard, 4,501,516, Cl. 405-260.000.

Fanuc Ltd: *See—*
Kohzai, Yoshinori; Fujioka, Yoshiki; and Ota, Naoto, 4,501,999, Cl. 318-632.000.

Farm Fresh Shrimp Corporation: *See—*
Dugan, Charles; and Dugan, Timothy, 4,501,227, Cl. 119-2.000.

Farrell, Michael J.: *See—*
Dobson, Diane P.; Farrell, Michael J.; and Lutz, Raymond S., 4,501,985, Cl. 310-270.000.

Farris, James R.; and Farris, James R., Jr. Moisture alarm system. 4,502,044, Cl. 340-604.000.

Farris, James R., Jr.: *See—*
Farris, James R.; and Farris, James R., Jr., 4,502,044, Cl. 340-604.000.

Faulkner, Albert A.; and Bouton, John C., to SmithKline Beckman Corporation. Slide carrier. 4,501,495, Cl. 356-244.000.

Faupel, Werner: *See—*
Stumpp, Gerhard; Vogtmann, Hans-Jorg; Fussner, Paul; Schwarz, Manfred; Hofer, Gerald; Konrath, Karl; Straubel, Max; and Faupel, Werner, 4,501,252, Cl. 123-502.000.

FBC Limited: *See—*
Hough, Thomas L.; and Jones, Graham P., 4,501,605, Cl. 71-90.000.

Fecht, Hans-Rudolf: *See—*
Hinn, Werner; and Fecht, Hans-Rudolf, 4,502,073, Cl. 358-10.000.

Fecik, Michael T.: *See—*
Frank, Robert G.; Fecik, Michael T.; and Ewing, John J., 4,501,603, Cl. 65-106.000.

Feder, Ernest: *See—*
Craig, Harold M.; and Feder, Ernest, 4,501,053, Cl. 29-156.80R.

Fedosov, Alexei Z.: *See—*
Lipets, Adolf U.; Alexandrov, Boris I.; Kuznetsova, Svetlana M.; Okerblom, Jury I.; Ershov, Jury A.; Frolova, Nadezhda A.; Malkis, Valery A.; Sotnikov, Ivan A.; Fedosov, Alexei Z.; and Petrosyan, Robert A., 4,501,320, Cl. 165-144.000.

Felcht, Utz-Hellmuth: *See—*
Kornrumpf, Wolfgang; Perplies, Eberhard; Hilbig, Josef; and Felcht, Utz-Hellmuth, 4,501,887, Cl. 536-84.000.

Fenemore, Keith E.; Foden, George P.; and Baker, Christopher J., to Ingersoll-Rand Company. Skids for rotating machinery. 4,501,973, Cl. 290-1.00A.

Fenne, Ivor: *See—*
Jarrett, Boaz A.; Fenne, Ivor; Lakin, David F.; and Mowbray, Dorian F., 4,501,244, Cl. 123-446.000.

Fenton, Edward A., Jr.; Lakin, Ira W.; Stein, Joseph H.; Lohr, John R.; and Schreiber, David A., to Dravo Corporation. Apparatus for removing the liquid phase from a slurry of fine granular material. 4,501,539, Cl. 425-84.000.

Ferguson, Walter J.: *See—*
Wetterhorn, Richard H.; and Ferguson, Walter J., 4,501,152, Cl. 73-738.000.

Fernandez, Ramon B.: *See—*
Lay, Khin M.; Palguta, Stephen E.; Fernandez, Ramon B.; and Cabalquinto, Santiago C., 4,501,037, Cl. 8-149.200.

Ferring Arzneimittel GmbH: *See—*
Horig, Joachim; and Schultheiss, Hartmut, 4,501,733, Cl. 514-17.000.

Fett, E. Reinold: *See—*
Sandiford, Burton B.; Fett, E. Reinold; and Bickford, Harold J., 4,501,324, Cl. 166-250.000.

Feyen, Peter: *See—*
Reiser, Wolf; Elbe, Hans-Ludwig; and Feyen, Peter, 4,501,897, Cl. 548-262.000.

Fidi, Werner, to AKG Akustische u.Kino-Gerate Gesellschaft m.b.H. Coupling member for a capacitive microphone. 4,501,462, Cl. 339-93.00R.

Field, William J. Marine speedometer anti-fouling device. 4,501,288, Cl. 137-240.000.

Figueredo, Fernando F.: *See—*
Valdes, Guillermo A.; Figueredo, Fernando F.; Pacheco, Benjamin G.; and Framil, Armando, 4,501,310, Cl. 144-34.00R.

Filliman, Paul, to RCA Corporation. Signal sampling network with reduced offset error. 4,502,079, Cl. 358-243.000.

Findlay, John W. A.; and Coker, Geoffrey G. 3-{6-[3-Pyrrolidino-1-(4-tolyl)prop-1-enyl]-2-pyridyl}acrylic acid and pharmaceutically acceptable salts thereof. 4,501,893, Cl. 546-281.000.

Fink, Hans-Ferdi; Koerner, Gotz; and Freiberger, Rolf, to Th. Goldschmidt AG. Lubricant and mold-release agent for the manufacture of ties. 4,501,616, Cl. 106-38.220.

Finley, Michael J.: *See—*
Mason, Edward M.; Tanner, Murray Q., III; and Finley, Michael J., 4,501,414, Cl. 269-325.000.

Firestone Tire & Rubber Company, The: *See—*
Roggeman, David M.; Malani, Shrikant R.; and Kang, Jung W., 4,501,866, Cl. 526-133.000.

Fischer, Robert: *See—*
Menschner, Rolf; and Fischer, Robert, 4,501,778, Cl. 427-376.200.

Fisher, Allan J., to Newall Engineering Company Limited, The. Profile machining apparatus. 4,501,093, Cl. 51-165.710.

Fitzner, Marcel; and Pinnell, Vesta P., Jr. Removable tray for microphone stands. 4,501,201, Cl. 108-27.000.

Flavell, John; Jeffcoat, Keith; and Betts, Max W., to Courtaulds PLC. Presser foot mechanism in a knitting machine. 4,501,132, Cl. 66-64.000.

Fletcher, Edward A., to University of Minnesota, Regents of the. Method and apparatus for reducing damage associated with detonation and/or destructive knock. 4,501,236, Cl. 123-193.00P.

Fletcher, Thomas D.: *See—*
West, Jeffery A.; and Fletcher, Thomas D., 4,501,976, Cl. 307-456.000.

Floyd, David: *See—*
Thottathil, John K.; Moniot, Jerome L.; Floyd, David; and Brandt, Steven, 4,501,901, Cl. 548-532.000.

Foden, George P.: *See—*
Fenemore, Keith E.; Foden, George P.; and Baker, Christopher J., 4,501,973, Cl. 290-1.00A.

Foerster, Charles E., Jr.; Miller, Robert E.; and Pace, Aldren M., to Scans Associates, Inc. Float detection system. 4,501,972, Cl. 250-577.000.

Foley, John T.: *See—*
Bilstad, Arnold C.; and Foley, John T., 4,501,531, Cl. 417-63.000.

Foley, Paul, to Celanese Corporation. Hydroesterification of 1-alkene. 4,501,822, Cl. 502-162.000.

Folland, Glenn A. System for production of Roman type shades. 4,501,311, Cl. 160-127.000.

Ford Motor Company: *See—*
Ezis, Andre; and Blair, Howard D., 4,501,723, Cl. 423-263.000.
Muller, George H., 4,501,235, Cl. 123-52.00M.

Foringer, John W. B.: *See—*
Manske, Heinz J., 4,501,071, Cl. 33-245.000.

Forman, Steven E.; and Caunt, James W., to Massachusetts Institute of Technology. Infrared microscope inspection apparatus. 4,501,966, Cl. 250-332.000.

Foster, Dean H.; and Silverman, Harold, to Pitney Bowes Inc. Inserter feeder assemblies. 4,501,417, Cl. 271-124.000.

Fountoulakis, Marcos. Clutch for post earrings. 4,501,050, Cl. 24-155.00R.

Fournex, Robert: *See—*
Clemence, Francois; Medici, Italo; Fournex, Robert; and Tournemine, Colette, 4,501,740, Cl. 514-283.000.

Fowler, Glenn D.; Shannon, Patrick A.; Stout, Ronald L.; and Yao, Jean, to AT&T Bell Laboratories. Multiple processor synchronized halt test arrangement. 4,502,116, Cl. 364-200.000.

Fox, Clifford R., to CBM Display Group Limited. Merchandise display means. 4,501,369, Cl. 211-133.000.

Framil, Armando: *See—*
Valdes, Guillermo A.; Figueredo, Fernando F.; Pacheco, Benjamin G.; and Framil, Armando, 4,501,310, Cl. 144-34.00R.

Frank, Bruno: *See—*
Eisele, Hermann; and Frank, Bruno, 4,501,248, Cl. 123-478.000.

Frank, Robert G.; Fecik, Michael T.; and Ewing, John J., to PPG Industries, Inc. Method and apparatus for shaping glass sheets to complicated shapes. 4,501,603, Cl. 65-106.000.

Frazier, Terry L.; Grimm, Henry J.; Rooney, John F.; Allen, Richard S.; Brown, Alfred; and Mims, Donald S., to Texaco Inc. Method for predicting workovers and shut-ins from analyzing the annulus effluent of a well. 4,501,325, Cl. 166-250.000.

Freeport Kaolin Company: *See—*
Young, Raymond H., 4,501,658, Cl. 209-5.000.

Freiberger, Rolf: *See—*
Fink, Hans-Ferdi; Koerner, Gotz; and Freiberger, Rolf, 4,501,616, Cl. 106-38.220.

Freund, Edouard: *See—*
Dufresne, Pierre; Freund, Edouard; Marcilly, Christian; and Raatz, Francis, 4,501,656, Cl. 208-111.000.

Frick, Roger L., to Rosemount Inc. Two wire circuit having an adjustable span. 4,502,003, Cl. 323-275.000.

Friedman, Laura L. Mother's milk harvesting and collection device. 4,501,585, Cl. 604-346.000.

Friedrich Grohe Armaturenfabrik GmbH & Co.: *See—*
Pawelzik, Manfred; and Derr, Max, 4,501,408, Cl. 251-314.000.

Fritz Schafer Gesellschaft Mit Beschrankterhaftung: *See—*
Schafer, Gerhard, 4,501,456, Cl. 312-273.000.

Frolova, Nadezhda A.: *See—*
Lipets, Adolf U.; Alexandrov, Boris I.; Kuznetsova, Svetlana M.; Okerblom, Jury I.; Ershov, Jury A.; Frolova, Nadezhda A.; Malkis, Valery A.; Sotnikov, Ivan A.; Fedosov, Alexei Z.; and Petrosyan, Robert A., 4,501,320, Cl. 165-144.000.

Fromm, Ingrid, to Siemens Aktiengesellschaft. Optical device for monitoring critical speeds of a rotating member. 4,502,045, Cl. 340-671.000.

Fromson, Howard A.; and Gracia, Robert F., to Fromson, Howard A. Lithographic printing plate with resin reinforced image and process. 4,501,810, Cl. 430-302.000.

Frye, Elam C., Jr.: *See—*
Hyltin, Tom M.; Milner, Thomas G.; and Frye, Elam C., Jr., 4,501,939, Cl. 200-6.00A.

Frye, Robert C.; Griffith, Joseph E.; and Wong, Yiu H., to AT&T Bell Laboratories. Dielectrically isolated semiconductor devices. 4,501,060, Cl. 29-576.00W.

Fuji Oil Company, Limited: *See—*
Hirotsuka, Motohiko; and Kito, Makoto, 4,501,694, Cl. 260-123.500.

Fuji Photo Film Co., Ltd.: *See—*
Arakawa, Satoshi; and Miyahara, Junji, 4,501,683, Cl. 252-301.260.
Hirano, Shigeo; and Sakanoue, Kei, 4,501,898, Cl. 548-336.000.
Kitada, Akira, 4,501,796, Cl. 428-337.000.
Kiuchi, Seiji, 4,501,630, Cl. 156-159.000.
Nagao, Makoto; Nahara, Akira; and Akashi, Goro, 4,501,225, Cl. 118-718.000.
Ochiai, Takeji, 4,501,971, Cl. 250-483.100.

Fuji Photo Optical Co., Ltd.: *See—*
Sunaga, Yasumasa, 4,501,477, Cl. 350-560.000.

Fuji Xerox Co., Ltd.: *See—*
Moriguchi, Haruhiko; Kikuchi, Yoshiki; and Ohmori, Takashi, 4,502,065, Cl. 346-204.000.
Tan, Yoichi, 4,502,137, Cl. 370-85.000.

Fujii, Haruo: *See—*
Ando, Yujiro; and Fujii, Haruo, 4,502,061, Cl. 346-153.100.

Fujii, Takayoshi: *See—*
Yamato, Hideyuki; Toyoda, Noriyuki; Fujii, Takayoshi; Maeda, Yuji; Kato, Tadaaki; and Yoshikumi, Chikao, 4,501,737, Cl. 514-167.000.

Fujiki, Kuniharu; and Hashimoto, Shigeru, to Victor Company of Japan, Limited. Magnetic recording media comprising organosilicones in a magnetic layer thereof. 4,501,800, Cl. 428-447.000.

Fujimura, Fumio: *See—*
Satake, Toshimi; Maruyama, Kazuo; and Fujimura, Fumio, 4,502,066, Cl. 346-209.000.

Fujioka, Yoshiki: *See—*
Kohzai, Yoshinori; Fujioka, Yoshiki; and Ota, Naoto, 4,501,999, Cl. 318-632.000.

Fujita, Hisao; and Ishiyama, Shozo, to Konishiroku Photo Industry Co., Ltd. Zoom lens. 4,501,475, Cl. 350-427.000.

Fujitsu Fanuc Limited: *See—*
Nozawa, Ryoichiro; Nagamine, Tsuyoshi; Kawamura, Hideaki; and Miyata, Mitsuto, 4,501,998, Cl. 318-568.000.
Nozawa, Ryoichiro; Nagamine, Tsuyoshi; Kawamura, Hideaki; and Miyata, Mitsuto, 4,502,108, Cl. 364-170.000.

Fujitsu Limited: *See—*
Ohya, Nobumasa; Imai, Ryusaku; and Sato, Hitoshi, 4,501,931, Cl. 178-18.000.

Fujiwara, Kaisaku; Yokooji, Shigenori; and Morishita, Yasuji, to Hitachi, Ltd. Electronic parts-mounting device with easy assembly and maintenance. 4,502,047, Cl. 340-693.000.

Fujiwara, Katsuhiro; and Osako, Kazuyoshi, to Hitachi, Ltd. Sequence control apparatus. 4,502,112, Cl. 364-200.000.

Fukatsu, Hiroshi: *See—*
Yanagisawa, Taminori; Yamaguchi, Takaharu; and Fukatsu, Hiroshi, 4,501,352, Cl. 198-775.000.

Fukuda, Masao, to Kabushiki Kaisha Ishida Koki Seisakusho. Automatic weighing apparatus. 4,501,339, Cl. 177-25.000.

Fukushima, Osamu: *See—*
Hoshino, Mitsuo; Fukushima, Osamu; and Kakuta, Toshio, 4,501,465, Cl. 339-176.0MP.

Fullgraf, Heribert: *See—*
Illmann, Joachim; and Fullgraf, Heribert, 4,501,413, Cl. 269-43.000.

Funabashi, Masahiko: *See—*
Nakamura, Masayuki; Tsuriya, Masaaki; and Funabashi, Masahiko, 4,501,836, Cl. 524-66.000.

Funk, James E., to Alfred University Research Foundation, Inc. Process for burning a carbonaceous slurry. 4,501,205, Cl. 110-347.000.

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Galloway, James H., to Energy Development Associates, Inc. Current balancing for battery strings. 4,502,001, Cl. 320-6.000.

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Godau, Eckhard. Sheet-dyeing method and apparatus. 4,501,039, Cl. 8-151.200.
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Golobay, Gary L. Variable flow reversible vane pump. 4,501,535, Cl. 417-440.000.
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Goodrich, Calvin O. Sheet music tray for a guitar. 4,501,403, Cl. 248-443.000.
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Gordon, Arnold Z.: *See—*
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Gottschall, George T. Lightweight reflective belt. 4,501,028, Cl. 2-338.000.
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Greene, Janice L.; and Loza, Roman, to Standard Oil Company, The. Preparation of polyamide by contacting diamine, dinitrile, water, dicarboxylic acid. 4,501,881, Cl. 528-336.000.
Greenhalgh, Wilbur O., to United States of America, Energy. Detection of free liquid in containers of solidified radioactive waste. 4,501,146, Cl. 73-290.00B.
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Gregoli, Armand A., to Cities Service Company. Method of in-situ hydrogenation of carbonaceous material. 4,501,445, Cl. 299-2.000.
Gregory, James H., to Heritage Homes, Inc. Hybrid home construction technique. 4,501,098, Cl. 52-79.100.
Grenier, Aime J., to Texas Instruments Incorporated. Circuit control device. 4,502,033, Cl. 337-75.000.
Griffin, Christopher J.; and Oxborrow, Bernard H., to Metal Box, P.L.C. Multipacks of containers. 4,501,104, Cl. 53-48.000.
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Groseck, John B., to Honeywell Inc. Locking and extraction mechanism for rack mounted components. 4,501,455, Cl. 312-215.000.
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Gutner, Kenneth H.; and Waxman, Jay S., to Gutner, Kenneth H. Slide assembly for drawer. 4,501,453, Cl. 308-3.600.
Habeeb, Jacob J., to Exxon Research & Engineering Co. Heterocyclic nitrogen compounds—organometallic salt complexes as corrosion inhibitors in lubricating oils. 4,501,677, Cl. 252-37.200.
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Hain, David A., to NCR Corporation. Sheet handling apparatus. 4,501,416, Cl. 271-3.100.
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Hakansson, Sven; and Lundh, Bengt, to Axel Johnson Engineering AB. Method and apparatus for removing liquid from a suspension. 4,501,669, Cl. 210-770.000.
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Hall, Charles P.; and Philipson, Joseph, to Monterey Manufacturing Co. Self-sealing waterbed mattress. 4,501,035, Cl. 5-451.000.
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Hamner, Glen P., to Exxon Research & Engineering Co. Production of jet and diesel fuels. 4,501,653, Cl. 208-89.000.
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Hanafin, Joseph W., to Dow Chemical Company, The. 2,3-Epoxy carbamates. 4,501,874, Cl. 528-103.000.
Hannett, William J., to Carrier Corporation. Air conditioning system trouble reporter. 4,502,084, Cl. 361-23.000.
Hansen, Charles W., to Haydon Switch & Instrument, Inc. Return-to-zero stepper motor. 4,501,981, Cl. 310-49.00R.
Hansen, Gerhard. Tear-open closure for a container. 4,501,372, Cl. 215-247.000.
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Harbuck, Stanley C. Method for reducing hypertension of a liver. 4,501,263, Cl. 128-1.00R.
Hardee, Kenneth L.; Gordon, Arnold Z.; Pyle, Charles B.; and Sen, Rajat K., to Eltech Systems Corporation. Catalyst for making chlorine dioxide. 4,501,824, Cl. 502-339.000.
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Haring, Manfred, to Mannesmann Aktiengesellschaft. Fluidtight pipe joint. 4,501,443, Cl. 285-328.000.
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Yuguchi, Hiroya; Hayashi, Yoshinobu; and Miyazaki, Yusuke, 4,501,763, Cl. 426-573.000.
Haydon Switch & Instrument, Inc.: *See—*
Hansen, Charles W., 4,501,981, Cl. 310-49.00R.
Heath Company: *See—*
Cubbage, William R., 4,501,458, Cl. 339-17.00L.
Heath, Robert B.; and Nagel, Colin M., to Rainsfords Metal Products Pty. Ltd. Child restraint bassinet. 4,501,032, Cl. 5-94.000.
Hebert, Alfred. Oil filter. 4,501,660, Cl. 210-209.000.
Hebrank, William H. Heat recovery and air preheating apparatus. 4,501,318, Cl. 165-1.000.
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Brandl, Rudolf; and Doll, Herbert, 4,501,189, Cl. 89-14.400.
Heil, Richard W.; and Rose, Thomas A. Method and apparatus for treating organic wastewater. 4,501,664, Cl. 210-614.000.
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Gebhard, Georg R. U.; and Hein, Klaus R. G., 4,501,618, Cl. 106-109.000.
Heinlein, Hans. Closure cap, in particular for bottle-like containers, having an element assuring intactness. 4,501,373, Cl. 215-252.000.

Heitzmann, Michel, to Thomson-CSF. Method of fabricating a varactor/oscillator diode module for a tunable oscillator. 4,502,023, Cl. 331-107.00R.
Held, Peter J. Air deflector. 4,501,195, Cl. 98-103.000.
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Hemphill, Paul D.: *See—*
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Morris, Charles A., 4,501,758, Cl. 426-93.000.
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Schoenrock, Karlheinz W. R.; Henscheid, Thomas H.; and Rounds, Hugh G., 4,501,814, Cl. 435-94.000.
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Herbert, William G., to Xerox Corporation. Electroforming process. 4,501,646, Cl. 204-4.000.
Hercules Incorporated: *See—*
Desmarais, Armand J., 4,501,617, Cl. 106-93.000.
Goss, Raymond W., 4,501,846, Cl. 524-476.000.
Herring, Liles G., 4,501,841, Cl. 524-411.000.
Keim, Gerald I., 4,501,862, Cl. 525-430.000.
Heritage Homes, Inc.: *See—*
Gregory, James H., 4,501,098, Cl. 52-79.100.
Herring, Liles G., to Hercules Incorporated. Elastomeric insulating materials for rocket motors. 4,501,841, Cl. 524-411.000.
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Murphy, John B., 4,501,300, Cl. 138-46.000.
Rankin, Glenn H.; and Levie, Harold W., 4,502,060, Cl. 346-140.00R.
Heyer, David E., to Du Pont de Nemours, E. I., and Company. Vacuum pinning of molten thermoplastic film to a roughened casting roll. 4,501,712, Cl. 264-101.000.
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Hickham, John H. Two tray indirect bonding system for labial and lingual brackets. 4,501,554, Cl. 433-24.000.
Hickling, Robert L.: *See—*
Garcia, R. F.; and Hickling, Robert L., 4,502,127, Cl. 364-900.000.
Hieber, Konrad; and Wieczorek, Claudia, to Siemens Aktiengesellschaft. Method for selective deposition of layer structures consisting of silicides of HMP metals on silicon substrates and products soformed. 4,501,769, Cl. 427-95.000.
Higashi, Robert E.; Johnson, Robert G.; and Bohrer, Philip J., to Honeywell Inc. Flow sensor. 4,501,144, Cl. 73-204.000.
Higginbottom, Harold P., to Monsanto Company. Polymerizable compositions comprising polyamines and poly(dihydrobenzoxazines). 4,501,864, Cl. 525-484.000.
Higuchi, Seizun; Ooga, Tomonari; Tsukamoto, Yukio; Kamada, Minoru; and Nomura, Yukio, to Nippon Steel Corporation. Hydrated chromium oxide-coated steel strip useful for welded cans and other containers. 4,501,802, Cl. 428-629.000.
Hilbig, Josef: *See—*
Kornrumpf, Wolfgang; Perplies, Eberhard; Hilbig, Josef; and Felcht, Utz-Hellmuth, 4,501,887, Cl. 536-84.000.
Hilfman, Lee; and O'Hara, Mark J., to UOP Inc. Hydrocracking process. 4,501,655, Cl. 208-110.000.
Hill, James J.; and Marven, Al, to Cook International, Inc. Tilt valve. 4,501,409, Cl. 251-354.000.
Hill, John P.; and Touchton, James J., to Storage Technology Corporation. Constant bandwidth automatic gain control system. 4,502,021, Cl. 330-279.000.
Hillmann, Hans; and Springer, Engelbert, to Vacuumschmelze GmbH. Stabilized super-conductor having a diffusion-inhibiting layer therein and method of producing same. 4,501,062, Cl. 29-599.000.
Hilti Aktiengesellschaft: *See—*
Bergner, Arndt, 4,501,520, Cl. 411-21.000.
Hiltz, Dale V., to Keeler Brass Company. Furniture article with compression hub for joining radial members. 4,501,512, Cl. 403-170.000.
Hinds, Philbirt F. Incubator with pyramidal top portion. 4,501,228, Cl. 119-37.000.
Hini, Eugen: *See—*
Schuller, Edmund; Mayer, Walter; Hini, Eugen; Bock, Erich; and Lovas, Kurt, 4,501,116, Cl. 57-263.000.
Hinkhouse, Lysle R.: *See—*
Bethell, George L.; Burch, Donald F.; and Hinkhouse, Lysle R., 4,501,541, Cl. 425-117.000.
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Hinoto, Yuji: *See—*
Kimura, Shigeo; Somezawa, Masashi; Hinoto, Yuji; and Yoshioka, Hiroshi, 4,501,801, Cl. 428-447.000.
Hiragami, Yoshiaki; Yabu, Mikio; and Kawaguchi, Yozi, to Toyo Linoleum Company, Limited. Non-slip floor material. 4,501,783, Cl. 428-147.000.
Hirai, Masaharu: *See—*
Miyazawa, Kokichi; Nakata, Kazuo; Ishikawa, Tsuneo; Honma, Ichiro; Hirai, Masaharu; Ogasawara, Makoto; and Kawamura, Toshihiko, 4,501,774, Cl. 427-215.000.
Hiraishi, Nobuyuki: *See—*
Ueno, Susumu; Kuroda, Kouiti; Kitamura, Hajime; Tohkai, Masaie; Kato, Ken-ichi; and Hiraishi, Nobuyuki, 4,501,428, Cl. 277-12.000.
Hiraishi, Shigetoshi; Morishita, Sadao; and Matsushita, Toshihiko, to Mitsubishi Paper Mills, Ltd. Photosetting microcapsules and photo- and pressure-sensitive recording sheet. 4,501,809, Cl. 430-138.000.
Hirakawa, Tadashi; and Yoshida, Makoto, to Teijin Limited. Process for producing paper or non-woven fabric. 4,501,641, Cl. 162-164.300.
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Hirasawa, Kazuo: *See—*
Kondo, Mitsushige; Okada, Kazuo; and Hirasawa, Kazuo, 4,502,134, Cl. 369-46.000.
Hirayama, Hiroshi: *See—*
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Hirayama, Takeshi: *See—*
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Hirota, Kazumi: *See—*
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Hirotsuka, Motohiko; and Kito, Makoto, to Fuji Oil Company, Limited. Phosphorylated soybean protein. 4,501,694, Cl. 260-123.500.
Hirsch, Paul: *See—*
Nibbe, Bodo B.; and Hirsch, Paul, 4,501,946, Cl. 219-10.55E.
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Amano, Matsuo; Sakamoto, Shinichi; Hirayama, Takeshi; and Sasayama, Takao, 4,501,249, Cl. 123-478.000.
Fujiwara, Kaisaku; Yokooji, Shigenori; and Morishita, Yasuji, 4,502,047, Cl. 340-693.000.
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Okajima, Atsushi; Nitta, Yoshihiko; and Yamano, Fumiyuki, 4,502,128, Cl. 364-900.000.
Ozawa, Jun; Shindo, Katuji; and Shirakawa, Shingo, 4,502,089, Cl. 361-127.000.
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Hitachi Shipbuilding & Engineering Ltd.: *See—*
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Hitachi Zosen Corporation: *See—*
Matsuno, Sadayuki; Itoh, Hiroshi; Nishikawa, Isamu; Awazu, Tatsuo; Matsunaga, Toshio; Kitaoka, Yoshitaka; Sugimoto, Goro; and Nishinaka, Hiroki, 4,501,223, Cl. 118-668.000.
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Lay, Khin M.; Palguta, Stephen E.; Fernandez, Ramon B.; and Cabalquinto, Santiago C., 4,501,037, Cl. 8-149.200.
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Hobart Corporation: *See—*
Rogers, Robert M.; Treiber, Fritz F.; and Bowers, Russell E., 4,501,105, Cl. 53-64.000.
Treiber, Fritz F.; and Bowers, Russell E., 4,501,106, Cl. 53-66.000.
Hobbs, Richard S.: *See—*
Johnson, Robert W.; and Hobbs, Richard S., 4,501,563, Cl. 441-6.000.
Hobson, James C., to Ex-Cell-O Corporation. Rack and pinion weapon elevation mechanism. 4,501,190, Cl. 89-41.00H.
Hodek, Robert B.; and Seiner, Jerome A., to PPG Industries, Inc. Property enhancement of anionically polymerized nylon with dual initiators. 4,501,821, Cl. 502-155.000.
Hodgson, Phillip K. G., to British Petroleum Company p.l.c., The. Compositions for use in oil recovery and method of use. 4,501,673, Cl. 252-8.55D.
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Damman, Ben; Drijver, Jan; Kinneging, Hans; Scheffer, Hans; Stam, Jaap; and de Witte, Paul, 4,501,639, Cl. 159-48.100.
Kornrumpf, Wolfgang; Perplies, Eberhard; Hilbig, Josef; and Felcht, Utz-Hellmuth, 4,501,887, Cl. 536-84.000.
Schmidt, Hans-Joachim; and Arpe, Hans-Jurgen, 4,501,917, Cl. 560-187.000.
Spietschka, Ernst; and Troster, Helmut, 4,501,906, Cl. 549-232.000.
Hofer, Gerald: *See—*
Stumpp, Gerhard; Vogtmann, Hans-Jorg; Fussner, Paul; Schwarz, Manfred; Hofer, Gerald; Konrath, Karl; Straubel, Max; and Faupel, Werner, 4,501,252, Cl. 123-502.000.
Hoffman, Edward C. Soap saving device. 4,501,354, Cl. 206-77.100.
Hoffman, Edward C. Soap saving device having nesting dishes. 4,501,355, Cl. 206-77.100.
Hoffmann-La Roche Inc.: *See—*
Duke, Colin C.; and Wells, Robert J., 4,501,908, Cl. 549-305.000.

Holland, Noel J., to Helix Technology Corporation. Refrigeration system with clearance seals. 4,501,120, Cl. 62-6.000.
Hollinetz, Walter, to Tann-Papier Gesellschaft m.b.H. Method of and apparatus for controlling apparatus for perforating strips of paper or the like by disruptive spark discharges. 4,501,953, Cl. 219-384.000.
Holmes, Rory A.; and Sun, Eleanor, to Chicopee. Operating room gown and drape fabric. 4,501,792, Cl. 428-299.000.
Holtman, Dennis C., to Personal Products Company. Absorbent structure with reservoir. 4,501,586, Cl. 604-380.000.
Honda Giken Kogyo Kabushiki Kaisha: *See—*
Toki, Susumu; and Nagahiro, Kenichi, 4,501,234, Cl. 123-41.860.
Yoshida, Takao, 4,501,340, Cl. 180-219.000.
Honda, Tetsuzo: *See—*
Nioh, Susumu; Hirayama, Hiroshi; Honda, Tetsuzo; and Ishida, Koji, 4,501,773, Cl. 427-213.000.
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Groseck, John B., 4,501,455, Cl. 312-215.000.
Higashi, Robert E.; Johnson, Robert G.; and Bohrer, Philip J., 4,501,144, Cl. 73-204.000.
Stauffer, Norman L., 4,501,961, Cl. 250-201.000.
Honeywell Information Systems Inc.: *See—*
Morgan, Thomas A., 4,501,054, Cl. 29-235.000.
Honeywell Information Systems Italia: *See—*
Vercesi, Arturo; and Marzocca, Francesco, 4,502,039, Cl. 340-365.00S.
Hongo, Hironobu, to Tokyo Shibaura Denki Kabushiki Kaisha. Selected beam marking system for rapid ultrasound measurements. 4,501,277, Cl. 128-660.000.
Honig, Ernst-August, to Volkswagenwerk Aktiengesellschaft. Fluid delivery control device for an automatic transmission. 4,501,173, Cl. 74-868.000.
Honma, Ichiro: *See—*
Miyazawa, Kokichi; Nakata, Kazuo; Ishikawa, Tsuneo; Honma, Ichiro; Hirai, Masaharu; Ogasawara, Makoto; and Kawamura, Toshihiko, 4,501,774, Cl. 427-215.000.
Hood, Rush W., Jr., to Critikon, Inc. Automatic identification of cuff size in automated blood pressure monitors. 4,501,280, Cl. 128-677.000.
Hook, Wolfgang, to Deere & Company. Protective cover assembly for a grease fitting. 4,501,572, Cl. 464-170.000.
Hori, Hiromi: *See—*
Sudo, Masatoshi; Hori, Hiromi; Iwai, Takafusa; Ohtomo, Akinori; and Takai, Denei, 4,501,626, Cl. 148-36.000.
Horiba, Ltd.: *See—*
Ebi, Hiroyuki; and Miyatake, Kimio, 4,501,968, Cl. 250-343.000.
Horig, Joachim; and Schultheiss, Hartmut, to Ferring Arzneimittel GmbH. Polypeptides, a process for their preparation, their use, and a process for the purification of polypeptides. 4,501,733, Cl. 514-17.000.
Horike, Masanori; and Ishikawa, Chuji, to Ricoh Company, Ltd. Ink jet deaeration apparatus. 4,502,055, Cl. 346-75.000.
Horton, John E.: *See—*
Wechter, William J.; and Horton, John E., 4,501,754, Cl. 514-456.000.
Horvath, Eugene P.: *See—*
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Hosaka, Tomiharu: *See—*
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Hoshino, Mitsuo; Fukushima, Osamu; and Kakuta, Toshio, to Sony Corporation; and Hosiden Electronics Co., Ltd. Three-piece multiconnector. 4,501,465, Cl. 339-176.0MP.
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Hoshino, Mitsuo; Fukushima, Osamu; and Kakuta, Toshio, 4,501,465, Cl. 339-176.0MP.
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Hough, Thomas L.; and Jones, Graham P., to FBC Limited. Herbicidal heterocyclic compounds and compositions. 4,501,605, Cl. 71-90.000.
Hoyer, Francis L. E., to Societe Anonyme des Usines Chausson. Method for brazing heat exchanger cores by blowing hot gases. 4,501,387, Cl. 228-183.000.
Hoyt, John G. Spinnaker pole control. 4,501,217, Cl. 114-102.000.
Hozumi, Kazuo: *See—*
Tamura, Jun; Matsui, Takahiro; and Hozumi, Kazuo, 4,501,557, Cl. 433-79.000.
Hsu, Joseph C.; Vought, Donald W.; and Walbrun, George H., to American Can Company. Heat resistant heat shrinkable film. 4,501,779, Cl. 428-35.000.
Hsu, Joseph C.: *See—*
Super, Scott S.; Hsu, Joseph C.; Haffner, William B.; and Jesse, Jerry F., 4,501,797, Cl. 428-349.000.
Hu, Kuang-Cheng: *See—*
Krikor, Krikor A.; and Hu, Kuang-Cheng, 4,502,114, Cl. 364-200.000.
Huang, Ray C., to Deere & Company. Bulldozer track support roller mounting. 4,501,452, Cl. 305-27.000.
Huang, Tien T. Tire pressure gauge. 4,501,142, Cl. 73-146.800.
Hughes Tool Company: *See—*
Lively, F. Glenn; and Robison, Kenneth O., 4,501,323, Cl. 166-250.000.
Hummel, Kurt: *See—*
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Humphrey Products Company: *See—*
Klimowicz, Michael A.; Toliusis, Vytautas J.; and Loveless, Stanley M., 4,501,299, Cl. 137-625.650.
Hunt, William C.: *See—*
Rickert, David W.; Wilkinson, Richard A., Jr.; and Hunt, William C., 4,502,136, Cl. 369-271.000.
Hunter, Edwin J., to Toro Company, The. Hose end pattern sprinkler. 4,501,391, Cl. 239-97.000.
Huson, Gale W.: *See—*
Urban, Clement A.; and Huson, Gale W., 4,501,356, Cl. 206-83.500.
Hussey, Hugh F.: *See—*
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Hussey, James H.: *See—*
Bauer, Carl F.; Hussey, James H.; Langston, Benny; and Parikh, Niranjan M., 4,501,614, Cl. 75-257.000.
Hutschenreuther Aktiengesellschaft: *See—*
Strobel, Klaus; and Geiger, Klaus, 4,501,714, Cl. 264-245.000.
Huvet, Jean-Marie, to GTE Products Corporation. Surge voltage arrester assembly. 4,502,087, Cl. 361-119.000.
Hyltin, Tom M.; Milner, Thomas G.; and Frye, Elam C., Jr., to Personal Peripherals Inc. Digital joystick controller. 4,501,939, Cl. 200-6.00A.
I & K Trading Company: *See—*
Nagaoka, Muneo, 4,501,568, Cl. 446-450.000.
Iannelli, Frank M. Housing for a pressurized syrup package. 4,501,383, Cl. 222-82.000.
Iato, Michel: *See—*
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Idel, Karsten: *See—*
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Idemitsu Kosan Company Limited: *See—*
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Igarashi, Masaru: *See—*
Takahashi, Yuji; Masaki, Hisaji; Adachi, Muneo; and Igarashi, Masaru, 4,501,419, Cl. 271-288.000.
Ignatuk, Wayne R.; and Plocic, Frank M., to Litton Systems, Inc. Apparatus for preparing an optical workpiece. 4,501,091, Cl. 51-102.000.
Iimure, Tamio, to Nippon Paint Co., Ltd. Multicoat forming method. 4,501,767, Cl. 427-44.000.
Iiyama, Kiyotaka: *See—*
Taniguchi, Keishi; and Iiyama, Kiyotaka, 4,502,068, Cl. 346-216.000.
Ikuma, Masahiro, to Nippon Gakki Seizo Kabushiki Kaisha. Pickup device for stringed musical instrument. 4,501,186, Cl. 84-1.160.
Ikuzawa, Masanori: *See—*
Yamato, Hideyuki; Maeda, Yuji; Yoshino, Fumisato; Takahata, Kyoya; Ikuzawa, Masanori; Kato, Tadaaki; and Yoshikumi, Chikao, 4,501,738, Cl. 514-167.000.
Illinois Tool Works Inc.: *See—*
Lombardi, Edward J., 4,501,276, Cl. 128-642.000.
Illmann, Joachim; and Fullgraf, Heribert, to Varta Batterie Aktiengesellschaft. Clamping element for storage battery plate stacks. 4,501,413, Cl. 269-43.000.
Imai, Ryusaku: *See—*
Ohya, Nobumasa; Imai, Ryusaku; and Sato, Hitoshi, 4,501,931, Cl. 178-18.000.
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Takeuchi, Takashi; Kobayashi, Syoji; Ootani, Tsuyoshi; and Imamura, Tetsuya, 4,501,795, Cl. 428-329.000.
Imazeki, Kazuyoshi; and Wani, Hisashi, to General Research of Electronics, Inc. Signal distributing apparatus. 4,502,026, Cl. 333-101.000.
Imose, Masayuki; Seno, Takao; and Sakaguchi, Yoshihito, to Chugai Ro Co., Ltd. Floating equipment and floating-type heat treating furnace for striplike works. 4,501,553, Cl. 432-59.000.
Ina, Teruo, to Mitsubishi Denki Kabushiki Kaisha. Cooling apparatus for machinery. 4,501,123, Cl. 62-119.000.
Inaba, Ritsuo: *See—*
Mitsuyu, Tsuneo; Ono, Shusuke; Inaba, Ritsuo; and Wasa, Kiyotaka, 4,501,987, Cl. 310-313.00A.
Inada, Masami; and Hashimoto, Kenji, to Aisin Seiki Kabushiki Kaisha. Solenoid actuated valve device. 4,501,298, Cl. 137-625.480.
Incom International, Inc.: *See—*
Tracy, Wayne R., 4,501,351, Cl. 198-648.000.
Industrial Automation Corp.: *See—*
Peyton, John J.; and Watt, Bryan K., 4,501,365, Cl. 209-548.000.
Industrial Electronic Rubber Company: *See—*
Murray, Myles N., 4,501,407, Cl. 251-141.000.
Ing. C. Olivetti & C., S.p.A.: *See—*
Brescia, Riccardo; Buat, Mario; Dagna, Giandomenico; and Scardovi, Alessandro, 4,502,054, Cl. 346-75.000.
Ing. Gunter Knapp Ges. mbH & Co. KG: *See—*
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Ingenieurburo Dipl.-Ing. Hermann Kunst: *See—*
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Ingersoll-Rand Company: *See—*
Fenemore, Keith E.; Foden, George P.; and Baker, Christopher J., 4,501,973, Cl. 290-1.00A.
Inkrott, Janet L.: *See—*
Sherk, Fred T.; and Inkrott, Janet L., 4,501,885, Cl. 528-501.000.
Inoue, Ichiro: *See—*
Endo, Isao; Nagamune, Teruyuki; and Inoue, Ichiro, 4,501,161, Cl. 73-863.240.

Institut Francais du Petrole: *See—*
Dufresne, Pierre; Freund, Edouard; Marcilly, Christian; and Raatz, Francis, 4,501,656, Cl. 208-111.000.

Institutul de Cercetari Pentru Industria Electro-Tehnica-Icpe: *See—*
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International Business Machines Corporation: *See—*
Acciai, Michael; Pigos, Charles R.; and Speicher, Charles G., 4,502,063, Cl. 346-155.000.
Greenspan, Stephen B.; and Gupta, Omkarnath R., 4,502,100, Cl. 361-384.000.
Kumar, Ananda H., 4,501,768, Cl. 427-57.000.
Yamaguchi, Hidefumi, 4,501,996, Cl. 315-371.000.

International Flavors & Fragrances Inc.: *See—*
Klemarczyk, Philip T., 4,501,918, Cl. 500-231.000.
Pittet, Alan O.; Courtney, Thomas F., Jr.; and Muralidhara, Ranya, 4,501,904, Cl. 549-35.000.
Trenkle, Robert W.; Mookherjee, Braja D.; Hall, John B.; Kasper, Robin; Vock, Manfred H.; Schreck, Ronald; Granda, Edward J.; and Vinals, Joaquin F., 4,501,762, Cl. 426-538.000.

International Harvester Co.: *See—*
Boyd, Collis E., 4,501,532, Cl. 417-313.000.
McCandless, James C., 4,501,138, Cl. 73-116.000.
Thedford, Guy N.; Fachini, Robert M.; and Sullivan, Dennis K., 4,501,112, Cl. 56-13.300.

International Paint Public Limited Company: *See—*
Reeder, Frank; Nunn, Michael J.; Mitchell, Michael J.; and Baxter, Kenneth F., 4,501,615, Cl. 106-14.390.

International Paper Company: *See—*
Cassidy, Benjamin J., 4,501,388, Cl. 229-37.00R.

International Remote Imaging Systems: *See—*
De Forest, Sherman E.; Bolz, Gunner; and La Quey, Robert E., 4,502,075, Cl. 358-93.000.

International Research & Development Company: *See—*
Moorhouse, Peter, 4,501,676, Cl. 252-12.000.

International Standard Electric Coporation: *See—*
von der Brake, Dieter, 4,501,989, Cl. 313-93.000.

International Standard Electric Corporation: *See—*
Bergersen, Hans A.; and Risberg, Eilif, 4,501,956, Cl. 219-553.000.
Blomley, Peter F., 4,502,018, Cl. 330-254.000.
Haupt, Herbert, 4,501,601, Cl. 65-2.000.

International Telephone and Telegraph Corporation: *See—*
Anhalt, John W., 4,501,461, Cl. 339-75.00M.
Reed, Robert E., 4,502,029, Cl. 333-203.000.

Iomega Corporation: *See—*
Bauck, Randall C.; Kleczkowski, S. Peter; and Radman, Anton J., 4,502,083, Cl. 360-99.000.

Iquad Company Incorporated: *See—*
Potter, John T., 4,501,508, Cl. 400-141.100.

Irwin, Charles; Devine, Janet; and Kramer, Richard, to Sonobond Ultrasonics, Inc. Ultrasonic cleaning apparatus. 4,501,285, Cl. 134-58.00R.

Isbey, Edward K., Jr. Surgical kit. 4,501,363, Cl. 206-570.000.

Ishida, Kohji; Noguchi, Tadashi; and Numata, Tatsuo, to Pioneer Electronic Corporation. FM Stereo demodulator for demodulating stereo signals directly from an FM intermediate frequency signal. 4,502,148, Cl. 381-7.000.

Ishida, Koji: *See—*
Nioh, Susumu; Hirayama, Hiroshi; Honda, Tetsuzo; and Ishida, Koji, 4,501,773, Cl. 427-213.000.

Ishida, Takashi, to Nissan Motor Company, Limited. Supporting assembly for a suspension. 4,501,436, Cl. 280-666.000.

Ishihara Sangyo Kaisha, Ltd.: *See—*
Miyazawa, Kokichi; Nakata, Kazuo; Ishikawa, Tsuneo; Honma, Ichiro; Hirai, Masaharu; Ogasawara, Makoto; and Kawamura, Toshihiko, 4,501,774, Cl. 427-215.000.

Ishikawa, Chuji: *See—*
Horike, Masanori; and Ishikawa, Chuji, 4,502,055, Cl. 346-75.000.

Ishikawa, Shozo: *See—*
Sakai, Kiyoshi; Ishikawa, Shozo; Arita, Tetsuo; Mabuchi, Minoru; and Umehara, Shoji, 4,501,808, Cl. 430-59.000.

Ishikawa, Tsuneo: *See—*
Miyazawa, Kokichi; Nakata, Kazuo; Ishikawa, Tsuneo; Honma, Ichiro; Hirai, Masaharu; Ogasawara, Makoto; and Kawamura, Toshihiko, 4,501,774, Cl. 427-215.000.

Ishitobi, Masami, to Dainichi-Nippon Cables, Ltd. Shielding tape and electric cables using same. 4,501,928, Cl. 174-107.000.

Ishiyama, Shozo: *See—*
Fujita, Hisao; and Ishiyama, Shozo, 4,501,475, Cl. 350-427.000.

Ishizuka, Yutaka, to Diesel Kiki Co., Ltd. Vane compressor having an endless camming surface minimizing torque fluctuations. 4,501,537, Cl. 418-150.000.

Isomae, Kazuo: *See—*
Yokoi, Koichi; Tachibana, Koichi; Isomae, Kazuo; and Nakashima, Toshiaki, 4,501,752, Cl. 514-414.000.

Itai, Masahiro: *See—*
Furuno, Nobuo; Ota, Yoshio; Itai, Masahiro; Tokuyama, Akio; and Nakano, Eiichi, 4,501,649, Cl. 204-181.00R.

Itec, Inc.: *See—*
Atkinson, Roger F., 4,502,049, Cl. 340-825.730.

Ito, Haruhiko; and Sano, Mineo, to Mitsubishi Denki Kabushiki Kaisha. Electromagnet and method of producing the same. 4,502,031, Cl. 335-277.000.

Ito, Katsunori: *See—*
Omori, Norio; Tabe, Tsutomu; Ito, Katsunori; and Hayashi, Shukichi, 4,501,250, Cl. 123-486.000.

Itoh, Hiroshi: *See—*
Matsuno, Sadayuki; Itoh, Hiroshi; Nishikawa, Isamu; Awazu, Tatsuo; Matsunaga, Toshio; Kitaoka, Yoshitaka; Sugimoto, Goro; and Nishinaka, Hiroki, 4,501,223, Cl. 118-668.000.

Itoh, Masaki, to Kawasaki Jukogyo Kabushiki Kaisha. Device for mounting container box on motorcycle. 4,501,384, Cl. 224-32.00A.

Itou, Takeo: *See—*
Watanabe, Shingo; and Itou, Takeo, 4,501,806, Cl. 430-25.000.

ITT Industries, Inc.: *See—*
Giebel, Burkhard, 4,502,131, Cl. 365-201.000.
Weiler, Rolf; and Muller, Reiner, 4,501,410, Cl. 251-366.000.

Iwai, Takafusa: *See—*
Sudo, Masatoshi; Hori, Hiromi; Iwai, Takafusa; Ohtomo, Akinori; and Takai, Denei, 4,501,626, Cl. 148-36.000.

Iwasaki, Takao: *See—*
Kidoh, Kunizoh; Wakamori, Hideki; Suzuki, Fujio; and Iwasaki, Takao, 4,501,870, Cl. 526-344.100.

Iwasaki Tsushinki Kabushiki Kaisha: *See—*
Doi, Akiho; and Saneyoshi, Norio, 4,502,138, Cl. 370-100.000.
Matsufuji, Teruo, 4,502,139, Cl. 370-110.200.

Iwata, Satoshi, to Iwata, Tetsutaro. Compound die assembly. 4,501,179, Cl. 83-124.000.

Iwata, Tadao: *See—*
Nagano, Riichiro; Kiga, Hiroshi; and Iwata, Tadao, 4,501,827, Cl. 523-214.000.

Iwata, Tetsutaro: *See—*
Iwata, Satoshi, 4,501,179, Cl. 83-124.000.

Iwayama, Akira: *See—*
Matsui, Kanenobu; Uchiumi, Shinichiro; Iwayama, Akira; and Umezu, Takashi, 4,501,705, Cl. 260-465.600.

Izumi, Masahiko. Method of heat exchange and refrigerating devices. 4,501,121, Cl. 62-78.000.

Izumi, Masahiko. Refrigerating device. 4,501,130, Cl. 62-247.000.

Izumi, Michael T. Dry fire unit. 4,501,081, Cl. 42-1.00R.

J. M. Voith, GmbH: *See—*
Jenkner, Karl; Steiner, Karl; and Wolf, Robert, 4,501,075, Cl. 34-125.000.

Jackson, G. C., Jr.: *See—*
Dennis, James G.; Bramlett, Kenneth W.; and Jackson, G. C., Jr., 4,501,454, Cl. 384-619.000.

Jacobi, Cecil T., Jr.; Maupin, Charles G.; Woodsmall, James B.; Brown, William J.; Thomas, Bruce E.; Owens, Walton D.; Cunningham, Robert J.; and Smith, Rocky D., to Amjo, Inc. Dryer and printed material and the like. 4,501,072, Cl. 34-1.000.

Jacoby, Hans-Dieter; and Schmidt, Peter, to Ernst Leitz Wetzlar GmbH. Device for automatically transporting disk shaped objects. 4,501,527, Cl. 414-225.000.

Jagenberg AG: *See—*
Zodrow, Rudolf; and Buchholz, Rainer, 4,501,633, Cl. 156-242.000.

Jahnel, Werner F. F., to Bekum Plastics Machinery Inc. Label transferring device for blow molding machines. 4,501,548, Cl. 425-503.000.

Jaime, Gil: *See—*
Peisker, Glenn; Christiansen, Keith; and Jaime, Gil, 4,501,431, Cl. 277-134.000.

Jannemann, Theo: *See—*
Sommers, Hans; and Jannemann, Theo, 4,501,127, Cl. 62-238.300.

Janome Sewing Machine Co. Ltd.: *See—*
Hanyu, Susumu; and Kato, Kenji, 4,501,210, Cl. 112-158.00E.

Janome Sewing Machine Industry Co., Ltd.: *See—*
Suzuki, Ryoichi; and Yamaguchi, Yoshio, 4,501,588, Cl. 8-444.000.
Suzuki, Ryoichi; and Yamaguchi, Yoshio, 4,501,590, Cl. 8-495.000.

Jansen, Wim: *See—*
Van Der Ploeg, Arie; Jansen, Wim; and Gerson, Philips, 4,501,255, Cl. 123-557.000.

Jansson, Richard M.: *See—*
Gaskin, Virginia R.; Horvath, Eugene P.; and Jansson, Richard M., 4,501,131, Cl. 62-514.00R.

Jardat, Alain; and Andre , Joel, to Societe Nationale Industrielle Aerospatiale. Apparatus for cutting by means of a high pressure fluid jet. 4,501,182, Cl. 83-177.000.

Jarrett, Boaz A.; Fenne, Ivor; Lakin, David F.; and Mowbray, Dorian F., to Lucas Industries Public Limited Company. Fuel injection pumping apparatus. 4,501,244, Cl. 123-446.000.

Jean Walterscheid GmbH: *See—*
Konrad, Mathias, 4,501,570, Cl. 464-48.000.

Jeannin, Daniel: *See—*
Goulard, Claude; Accettella, Serge; Cathaly-Pretou, Gerard; Fages, Bernard; Jeannin, Daniel; Laloux, Philippe; and Le Fur, Jean, 4,501,489, Cl. 355-54.000.

Jeffcoat, Keith: *See—*
Flavell, John; Jeffcoat, Keith; and Betts, Max W., 4,501,132, Cl. 66-64.000.

Jenkner, Karl; Steiner, Karl; and Wolf, Robert, to J. M. Voith, GmbH. Apparatus for removing condensate from a steam heated rotatable drying cylinder and the like. 4,501,075, Cl. 34-125.000.

JEOL Ltd.: *See—*
Ohuchi, Muneki, 4,502,008, Cl. 324-311.000.

Jesse, Jerry F.: *See—*
Koschak, Matthew; Super, Scott S.; and Jesse, Jerry F., 4,501,798, Cl. 428-349.000.
Super, Scott S.; Hsu, Joseph C.; Haffner, William B.; and Jesse, Jerry F., 4,501,797, Cl. 428-349.000.

Jessee, Ralph D., to Westinghouse Electric Corp. Inverter firing control with pulse averaging error compensation. 4,502,105, Cl. 363-41.000.

Jiles, Stephen L. Pipe thread gauging tool. 4,501,070, Cl. 33-199.00R.

Jodoin, Raymond C., to Rogers Corporation. Decoupled integrated circuit package. 4,502,101, Cl. 361-386.000.

Johansson, Arne, to A/S Nunc. Method of sealing a tubular receptacle. 4,501,108, Cl. 53-440.000.

Johansson, Sune H.; and Gustavsson, John K. C., to Magnus Wilhelm AB. Device for compressing in particular aluminum cans. 4,501,198, Cl. 100-98.00R.

Johnson, Charles E.: *See—*
Dean, Weibley J.; Johnson, Charles E.; and Ragard, Phillip A., 4,501,183, Cl. 83-233.000.

Johnson, Daniel D., to Du Pont de Nemours, E. I., and Company. Liquid chemical process for forming conductive through-holes through a dielectric layer. 4,501,638, Cl. 156-644.000.

Johnson, Grannis S.: *See—*
Marcellis, Alphonso W.; Johnson, Grannis S.; and Grinstein, Reuben H., 4,501,594, Cl. 44-51.000.

Johnson Matthey Public Limited Company: *See—*
Thomson, Alasdair I.; and King, Frank, 4,501,685, Cl. 502-167.000.

Johnson, Michael K. Force transducer. 4,501,160, Cl. 73-862.650.

Johnson, Robert G.: *See—*
Higashi, Robert E.; Johnson, Robert G.; and Bohrer, Philip J., 4,501,144, Cl. 73-204.000.

Johnson, Robert W.; and Hobbs, Richard S. Marker buoy. 4,501,563, Cl. 441-6.000.

Jones, Adrian D. Low frequency muffler. 4,501,341, Cl. 181-250.000.

Jones, Graham P.: *See—*
Hough, Thomas L.; and Jones, Graham P., 4,501,605, Cl. 71-90.000.

Jones, James H.: *See—*
Baldwin, John J.; Jones, James H.; and Lundell, George F., 4,501,900, Cl. 548-436.000.

Jones, Larren F.: *See—*
Hahn, Frederick C.; and Jones, Larren F., 4,501,079, Cl. 37-141.00R.

Joos, Eugen: *See—*
Gassler, Hermann; Joos, Eugen; Kubach, Hans; Maisch, Wolfgang; and Singer, Erich, 4,501,247, Cl. 123-453.000.

Josefowitz, Max: *See—*
Kuhl, Wilhelm; Kiefer, Dieter; and Josefowitz, Max, 4,501,430, Cl. 277-59.000.

Josephs, Richard M.; and Wang, Tsing-Chow, to Sperry Corporation. Josephson junction latch circuit. 4,501,975, Cl. 307-277.000.

Jouvet, Adrien; and Duvois, Eric, to Motorola, Inc. Micropackage for identification card. 4,501,960, Cl. 235-492.000.

Jujo Paper Co., Ltd.: *See—*
Satake, Toshimi; Maruyama, Kazuo; and Fujimura, Fumio, 4,502,066, Cl. 346-209.000.

Kabushiki Kaisha Ishida Koki Seisakusho: *See—*
Fukuda, Masao, 4,501,339, Cl. 177-25.000.

Kabushiki Kaisha Kobe Seiko Sho: *See—*
Sudo, Masatoshi; Hori, Hiromi; Iwai, Takafusa; Ohtomo, Akinori; and Takai, Denei, 4,501,626, Cl. 148-36.000.

Kabushiki Kaisha Komatsu Seisakusho: *See—*
Yoan, Toyohiko; and Muto, Norishige, 4,501,524, Cl. 414-22.000.

Kabushiki Kaisha Morita Seisakusho: *See—*
Tamura, Jun; Matsui, Takahiro; and Hozumi, Kazuo, 4,501,557, Cl. 433-79.000.

Kabushiki Kaisha Niida Seisakusho: *See—*
Seyama, Tuneo, 4,501,211, Cl. 112-169.000.

Kabushiki Kaisha Ohara Kogaku Garasu Seizosho: *See—*
Yatsuda, Hisao; and Miyazaki, Mutsumi, 4,501,819, Cl. 501-61.000.

Kabushiki Kaisha Sato: *See—*
Matsuda, Yasuhiko, 4,502,056, Cl. 346-76.0PH.
Shibayama, Tooru; Kajiya, Hiroshi; and Takahashi, Mitsuharu, 4,501,224, Cl. 118-697.000.

Kabushiki Kaisha Tajima Seisakusho: *See—*
Kohno, Seiji, 4,501,069, Cl. 30-293.000.

Kabushiki Kaisha Tokai Rika Denki Seisakusho: *See—*
Suzuki, Masaru, 4,501,940, Cl. 200-16.00A.

Kabushiki Kaisha Toyota Chuo Kenkyusho: *See—*
Takayanagi, Shigewo; Hasegawa, Junzo; Yasutaka, Hayashi; Doi, Shunichi; and Matsushima, Satoru, 4,501,141, Cl. 73-146.000.

Kageyama, Junichi: *See—*
Yoshimura, Isao; Mizukami, Osamu; Hata, Hideo; Kageyama, Junichi; and Kaneko, Takashi, 4,501,634, Cl. 156-244.240.

Kajiya, Hiroshi: *See—*
Shibayama, Tooru; Kajiya, Hiroshi; and Takahashi, Mitsuharu, 4,501,224, Cl. 118-697.000.

Kajiya, Seitaro: *See—*
Sakano, Isao; Yokoyama, Tatsuro; Kajiya, Seitaro; Okazaki, Yutaka; Tokuda, Hiroshi; Kawazura, Hiroshi; Kumakura, Mikio; Nakano, Takuo; and Awaya, Akira, 4,501,750, Cl. 514-369.000.

Kako, Hiroyoshi; Kobayashi, Nobuo; and Kaneyuki, Toshiaki, to Toyota Jidosha Kabushiki Kaisha. Insert molding device. 4,501,540, Cl. 425-116.000.

Kakuta, Toshio: *See—*
Hoshino, Mitsuo; Fukushima, Osamu; and Kakuta, Toshio, 4,501,465, Cl. 339-176.0MP.

Kalkbrenner, Ralph W.: *See—*
Antol, Ronald F.; Kalkbrenner, Ralph W.; and Wolfe, Donald L., 4,501,949, Cl. 219-121.0LC.

Kam, Sheung-Tsam: *See—*
Matier, William L.; and Kam, Sheung-Tsam, 4,501,912, Cl. 560-66.000.

Kamada, Minoru: *See—*
Higuchi, Seizun; Ooga, Tomonari; Tsukamoto, Yukio; Kamada, Minoru; and Nomura, Yukio, 4,501,802, Cl. 428-629.000.

Kamoshita, Katsuzo: *See—*
Kato, Toshiro; Takahashi, Junya; and Kamoshita, Katsuzo, 4,501,756, Cl. 514-120.000.

Kamyr, Inc.: *See—*
Sherman, Michael I.; Elmore, Carl L.; and Brison, Robert J., 4,501,721, Cl. 423-27.000.

Kanada, Eiji: *See—*
Saikawa, Masahiko; Kanada, Eiji; Tanaka, Akira; and Endo, Kazunaka, 4,501,811, Cl. 430-204.000.

Kanbe, Junichiro: *See—*
Shirai, Shigeru; Ogawa, Kyosuke; Kanbe, Junichiro; Saitoh, Keishi; Osato, Yoichi; and Misumi, Teruo, 4,501,807, Cl. 430-57.000.

Kane, James G.; Pedicano, Ernest A.; and Pedicano, James. Foot and leg exercising device. 4,501,421, Cl. 272-96.000.

Kaneko, Takashi: *See—*
Yoshimura, Isao; Mizukami, Osamu; Hata, Hideo; Kageyama, Junichi; and Kaneko, Takashi, 4,501,634, Cl. 156-244.240.

Kanesaki, Nobukazu: *See—*
Nakagawa, Toyoaki; Nakajima, Masao; Kawamura, Yoshihisa; and Kanesaki, Nobukazu, 4,501,140, Cl. 73-119.00A.

Kaneyuki, Toshiaki: *See—*
Kako, Hiroyoshi; Kobayashi, Nobuo; and Kaneyuki, Toshiaki, 4,501,540, Cl. 425-116.000.

Kang, Jung W.: *See—*
Roggeman, David M.; Malani, Shrikant R.; and Kang, Jung W., 4,501,866, Cl. 526-133.000.

Kanno, Tetuo: *See—*
Suzaki, Masayuki; and Kanno, Tetuo, 4,501,509, Cl. 400-157.200.

Kano, Hideo: *See—*
Tatemoto, Masayoshi; Oka, Masahiko; Kano, Hideo; Tomoda, Masayasu; and Ueta, Yutaka, 4,501,869, Cl. 526-249.000.

Kao Corporation: *See—*
Takeuchi, Takashi; Kobayashi, Syoji; Ootani, Tsuyoshi; and Imamura, Tetsuya, 4,501,795, Cl. 428-329.000.

Kaplan, Jean-Pierre; and George, Pascal, to Synthelabo. Anxiolytic imidazo[1,2-a]pyridine derivatives. 4,501,745, Cl. 514-222.000.

Karasawa, Akira: *See—*
Muto, Kenji; Karasawa, Akira; Kuroda, Tokuyuki; and Nakamizo, Nobuhiro, 4,501,748, Cl. 514-318.000.

Karasawa, Masafusa. Method and apparatus for purification and activation of water. 4,501,661, Cl. 210-223.000.

Karol, Thomas J.; and Sung, Rodney L., to Texaco Inc. Detergent fuel composition containing alkenylsuccinimide oxamides. 4,501,597, Cl. 44-63.000.

Karol, Thomas J.: *See—*
Sung, Rodney L.; and Karol, Thomas J., 4,501,595, Cl. 44-57.000.

Karr, Gerald W.; and Muller, Gernot, to Beloit Corporation. Supercalender edge nip relieving. 4,501,197, Cl. 100-35.000.

Kartavtsev, Viktor M.: *See—*
Bukhteev, Pavel I.; Posleider, Grigory Y.; Kartavtsev, Viktor M.; and Bytsak, Vladimir S., 4,501,059, Cl. 29-564.500.

Kasai, Shunichi: *See—*
Ogata, Takashi; Hosaka, Hiroshi; and Kasai, Shunichi, 4,501,666, Cl. 210-688.000.

Kasper, Robin: *See—*
Trenkle, Robert W.; Mookherjee, Braja D.; Hall, John B.; Kasper, Robin; Vock, Manfred H.; Schreck, Ronald; Granda, Edward J.; and Vinals, Joaquin F., 4,501,762, Cl. 426-538.000.

Kataoka, Hiroyuki; Yamada, Masanori; and Suzuki, Nobuyuki, to Canon Kabushiki Kaisha. Flash photographing system. 4,501,481, Cl. 354-413.000.

Katayama, Takao; and Takesue, Masahiko, to Idemitsu Kosan Company Limited. Lubricants for improving fatigue life. 4,501,678, Cl. 252-32.70E.

Kato, Ken-ichi: *See—*
Ueno, Susumu; Kuroda, Kouiti; Kitamura, Hajime; Tohkai, Masaie; Kato, Ken-ichi; and Hiraishi, Nobuyuki, 4,501,428, Cl. 277-12.000.

Kato, Kenji: *See—*
Hanyu, Susumu; and Kato, Kenji, 4,501,210, Cl. 112-158.00E.

Kato, Masahisa: *See—*
Miyazaki, Hiroshi; and Kato, Masahisa, 4,501,207, Cl. 112-66.000.

Kato, Masami; and Yoshikai, Noriaki, to Nippon Telegraph & Telephone Public Corporation. Consecutive identical digit suppression system in a digital communication system. 4,502,143, Cl. 371-57.000.

Kato, Tadaaki: *See—*
Yamato, Hideyuki; Toyoda, Noriyuki; Fujii, Takayoshi; Maeda, Yuji; Kato, Tadaaki; and Yoshikumi, Chikao, 4,501,737, Cl. 514-167.000.
Yamato, Hideyuki; Maeda, Yuji; Yoshino, Fumisato; Takahata, Kyoya; Ikuzawa, Masanori; Kato, Tadaaki; and Yoshikumi, Chikao, 4,501,738, Cl. 514-167.000.

Kato, Toshiro; Takahashi, Junya; and Kamoshita, Katsuzo, to Sumitomo Chemical Company, Limited. Fungicidal carbamates useful against fungi resistant to benzamidazole fungicides. 4,501,756, Cl. 514-120.000.

Katoh, Haruhisa, to Canon Kabushiki Kaisha. System for checking an electrical connection between a computer and a printer. 4,502,113, Cl. 364-200.000.

Katsura, Tadahiko; Hirota, Kazumi; and Ueno, Hiroshi, to Toyo Seikan Kaisha, Ltd. Easily-openable heat-seal lid. 4,501,375, Cl. 220-270.000.

Katz, Philip; Brenman, Henry S.; Lowry, Louis D.; and Schwartz, Harold, to Thomas Jefferson University. Artificial larynx. 4,502,150, Cl. 381-70.000.

Kavesh, Sheldon: *See—*
Harpell, Gary A.; Kavesh, Sheldon; Palley, Igor; and Prevorsek, Dusan C., 4,501,856, Cl. 525-240.000.

Kawaguchi, Yozi: *See—*
Hiragami, Yoshiaki; Yabu, Mikio; and Kawaguchi, Yozi, 4,501,783, Cl. 428-147.000.

Kawakami, Hidehiko: *See—*
Otsuka, Hirotaka; Uchida, Hideo; Uno, Yoshihiro; Nakazato, Katsuo; Sannomiya, Kunio; Kawakami, Hidehiko; and Tsuchiya, Hiroshi, 4,502,081, Cl. 358-280.000.

Kawamura, Hideaki: *See—*
Nozawa, Ryoichiro; Nagamine, Tsuyoshi; Kawamura, Hideaki; and Miyata, Mitsuto, 4,501,998, Cl. 318-568.000.
Nozawa, Ryoichiro; Nagamine, Tsuyoshi; Kawamura, Hideaki; and Miyata, Mitsuto, 4,502,108, Cl. 364-170.000.

Kawamura, Toshihiko: *See—*
Miyazawa, Kokichi; Nakata, Kazuo; Ishikawa, Tsuneo; Honma, Ichiro; Hirai, Masaharu; Ogasawara, Makoto; and Kawamura, Toshihiko, 4,501,774, Cl. 427-215.000.

Kawamura, Yoshihisa: *See—*
Nakagawa, Toyoaki; Nakajima, Masao; Kawamura, Yoshihisa; and Kanesaki, Nobukazu, 4,501,140, Cl. 73-119.00A.

Kawano, Junji; and Takahashi, Fumio, to Shinko Electric Co., Ltd. Method and apparatus for detecting errors in an ink ribbon in a thermal transfer type multicolor printer. 4,502,057, Cl. 346-76.0PH.

Kawasaki Jukogyo Kabushiki Kaisha: *See—*
Itoh, Masaki, 4,501,384, Cl. 224-32.00A.

Kawauchi, Masahiko, to Alps Electric Co., Ltd. Keyboard switch. 4,501,938, Cl. 200-5.00A.

Kawazura, Hiroshi: *See—*
Sakano, Isao; Yokoyama, Tatsuro; Kajiya, Seitaro; Okazaki, Yutaka; Tokuda, Hiroshi; Kawazura, Hiroshi; Kumakura, Mikio; Nakano, Takuo; and Awaya, Akira, 4,501,750, Cl. 514-369.000.

Keck, Donald B.: *See—*
Borrelli, Nicholas F.; Keck, Donald B.; Morse, David L.; and Sachenik, Paul A., 4,501,468, Cl. 350-96.250.

Keeler Brass Company: *See—*
Hiltz, Dale V., 4,501,512, Cl. 403-170.000.

Keeton, J. Herbert. Construction of fly pieces for men's briefs. 4,501,209, Cl. 112-121.120.

Keim, Gerald I., to Hercules Incorporated. Wet strength resin from aminopolyamide-polyureylene. 4,501,862, Cl. 525-430.000.

Kelch, Heinz, to Kienzle Apparate GmbH. Booster pump arrangement for feeding a secondary circulation system in the operative system of a diesel engine. 4,501,251, Cl. 123-495.000.

Kelley Company: *See—*
DiFonzo, Mark A., 4,501,042, Cl. 14-71.300.

Kelley, John A. Medicine bottle closure having an indicator. 4,501,370, Cl. 215-219.000.

Kemp, Billy W.; and Brashear, William S. Method and apparatus of a self-aligning sleeve for the correction of the direction of deviated boreholes. 4,501,336, Cl. 175-61.000.

Kendall Company, The: *See—*
Cianci, James P.; and Dunn, William J., 4,501,584, Cl. 604-322.000.

Kennecott Corporation: *See—*
Logan, Russell J.; and Glass, Arthur J., 4,501,177, Cl. 83-105.000.

Kerlin, Jack H. Electric arc unbalance correction system. 4,501,947, Cl. 219-68.000.

Kersen, Matthew F.: *See—*
Uherek, Vladimir; and Kersen, Matthew F., 4,501,344, Cl. 187-29.00R.

Kessel, Jason H.; and Alperin, Henry, to West End and Hub Spring Company. Bed frame having swivel bracket for headboard mounting. 4,501,033, Cl. 5-200.00R.

Kholin, Boris G., to Sumskoi Filial Kharkovskogo Politekhnicheskogo Instituta. Orienting attachment to ball throwing machine. 4,501,257, Cl. 124-81.000.

Kibler, Charles E. Riding spurs. 4,501,110, Cl. 54-83.00R.

Kidoh, Kunizoh; Wakamori, Hideki; Suzuki, Fujio; and Iwasaki, Takao, to Kureha Kagaku Kogyo Kabushiki Kaisha. Fine particles of polyvinyl chloride and process for producing the same. 4,501,870, Cl. 526-344.100.

Kiefer, Dieter: *See—*
Kuhl, Wilhelm; Kiefer, Dieter; and Josefowitz, Max, 4,501,430, Cl. 277-59.000.

Kienzle Apparate GmbH: *See—*
Kelch, Heinz, 4,501,251, Cl. 123-495.000.

Kiernan, Jane A.: *See—*
Baker, Pamela K.; and Kiernan, Jane A., 4,501,751, Cl. 514-374.000.

Kiga, Hiroshi: *See—*
Nagano, Riichiro; Kiga, Hiroshi; and Iwata, Tadao, 4,501,827, Cl. 523-214.000.

Kihara, Jyun-ichi, to Tokyo Shibaura Denki Kabushiki Kaisha. DMA Bus load varying unit. 4,502,117, Cl. 364-200.000.

Kikuchi, Yoshiki: *See—*
Moriguchi, Haruhiko; Kikuchi, Yoshiki; and Ohmori, Takashi, 4,502,065, Cl. 346-204.000.

Kim, Yung J.: *See—*
Anderson, David M.; and Kim, Yung J., 4,501,440, Cl. 285-47.000.

Kimberly-Clark Corporation: *See—*
Enloe, Kenneth M., 4,501,587, Cl. 604-385.000.
Soerens, Dave A., 4,501,640, Cl. 162-111.000.

Kimura, Minoru; and Takahashi, Hisamitsu, to Mitsubishi Denki Kabushiki Kaisha. Ebullition cooled transformer. 4,502,032, Cl. 336-58.000.

Kimura, Shigeo; Somezawa, Masashi; Hinoto, Yuji; and Yoshioka, Hiroshi, to Sony Corporation; and Shin-Etsu Chemical Co., Ltd. Magnetic recording medium. 4,501,801, Cl. 428-447.000.

Kimura, Tadashi, to Olympus Optical Co., Ltd. Microscope objective. 4,501,474, Cl. 350-414.000.

Kinch, Michael A.: *See—*
Tregilgas, John H.; Beck, Jeffrey D.; Kinch, Michael A.; and Schaake, Herbert F., 4,501,625, Cl. 148-20.300.

King, Frank: *See—*
Thomson, Alasdair I.; and King, Frank, 4,501,685, Cl. 502-167.000.

Kinneging, Hans: *See—*
Damman, Ben; Drijver, Jan; Kinneging, Hans; Scheffer, Hans; Stam, Jaap; and de Witte, Paul, 4,501,639, Cl. 159-48.100.

Kinoshita, Kenzi: *See—*
Niimi, Yukihide; Kinoshita, Kenzi; and Urushidani, Masahiro, 4,501,243, Cl. 123-440.000.

Kish, Lewis L.: *See—*
Ames, S. Leslie; Gray, Thomas H.; and Kish, Lewis L., 4,501,316, Cl. 164-463.000.

Kishimoto, Tsuneo: *See—*
Aizawa, Makoto; Kishimoto, Tsuneo; and Tanimoto, Yoshio, 4,501,790, Cl. 428-283.000.

Kishimoto, Yasushi; and Morita, Hideo, to Asahi Kasei Kogyo Kabushiki Kaisha. Method for hydrogenation of polymer. 4,501,857, Cl. 525-338.000.

Kistner, Werner: *See—*
Wuhrl, Arno; and Kistner, Werner, 4,502,042, Cl. 340-568.000.

Kitada, Akira, to Fuji Photo Film Co., Ltd. Radiographic intensifying screen. 4,501,796, Cl. 428-337.000.

Kitamura, Hajime: *See—*
Ueno, Susumu; Kuroda, Kouiti; Kitamura, Hajime; Tohkai, Masaie; Kato, Ken-ichi; and Hiraishi, Nobuyuki, 4,501,428, Cl. 277-12.000.

Kitaoka, Yoshitaka: *See—*
Matsuno, Sadayuki; Itoh, Hiroshi; Nishikawa, Isamu; Awazu, Tatsuo; Matsunaga, Toshio; Kitaoka, Yoshitaka; Sugimoto, Goro; and Nishinaka, Hiroki, 4,501,223, Cl. 118-668.000.

Kito, Makoto: *See—*
Hirotsuka, Motohiko; and Kito, Makoto, 4,501,694, Cl. 260-123.500.

Kiuchi, Seiji, to Fuji Photo Film Co., Ltd. Method of splicing a magnetic recording tape and a leader tape. 4,501,630, Cl. 156-159.000.

Kiuru, Rainer, to Valmet Oy. Apparatus for cutting and guiding the marginal lead-in strip of paper web. 4,501,643, Cl. 162-286.000.

Kleczkowski, S. Peter: *See—*
Bauck, Randall C.; Kleczkowski, S. Peter; and Radman, Anton J., 4,502,083, Cl. 360-99.000.

Klees, Garry W.; and Wright, Charles P., to Boeing Company, The. Internally ventilated noise suppressor with large plug nozzle. 4,501,393, Cl. 239-265.130.

Klemarczyk, Philip T., to International Flavors & Fragrances Inc. Substituted methyl isopropyl oxocyclohexane derivatives, organoleptic uses thereof and process for preparing same. 4,501,918, Cl. 500-231.000.

Klimowicz, Michael A.; Toliusis, Vytautas J.; and Loveless, Stanley M., to Humphrey Products Company. Plunger-type valve. 4,501,299, Cl. 137-625.650.

Klockner-Humboldt-Deutz AG: *See—*
Nolte, Albert; and Wallenfang, Gerd, 4,501,241, Cl. 123-367.000.

Knapp, Gunter, to Ing. Gunter Knapp Ges. mbH & Co. KG. System for automatic stacking, storage and withdrawal of packaged merchandise in large warehouses. 4,501,528, Cl. 414-273.000.

Knodel, Erich, to Walter Graf u. Co GmbH & Co. Piston for precision dosing instrument. 4,501,192, Cl. 92-248.000.

Knowles, James. Composite wood beam and method of making same. 4,501,102, Cl. 52-690.000.

Knowles, Michael R.: *See—*
Boucher, Richard C.; Gatzy, John T.; and Knowles, Michael R., 4,501,729, Cl. 424-45.000.

Kobayashi, Kazuhiro: *See—*
Hiyama, Tamejiro; and Kobayashi, Kazuhiro, 4,501,909, Cl. 549-342.000.

Kobayashi, Nobuo: *See—*
Kako, Hiroyoshi; Kobayashi, Nobuo; and Kaneyuki, Toshiaki, 4,501,540, Cl. 425-116.000.

Kobayashi, Syoji: *See—*
Takeuchi, Takashi; Kobayashi, Syoji; Ootani, Tsuyoshi; and Imamura, Tetsuya, 4,501,795, Cl. 428-329.000.

Koch, Melvin V.; and Magni, Ambrogio, to Gruppo Lepetit S.p.A. Process for the production of serine derivatives. 4,501,919, Cl. 562-437.000.

Kocks Technik GmbH & Co.: *See—*
Staat, Karl-Hans; and Moltner, Hermann, 4,501,134, Cl. 72-8.000.

Koenig, Lawrence W.: *See—*
Morrison, Heber J.; and Koenig, Lawrence W., 4,502,085, Cl. 361-56.000.

Koepke, Jeffery W.: *See—*
Young, Dean A.; and Koepke, Jeffery W., 4,501,925, Cl. 585-467.000.

Koerner, Gotz; and Weitemeyer, Christian, to Th. Goldschmidt AG. Organosilicon-modified polydienes, process for their synthesis and their use as emulsion breakers for crude oil. 4,501,911, Cl. 556-446.000.

Koerner, Gotz: *See—*
Fink, Hans-Ferdi; Koerner, Gotz; and Freiberger, Rolf, 4,501,616, Cl. 106-38.220.

Koga, Kenji: *See—*
Terashima, Shiro; Tamoto, Katsumi; and Koga, Kenji, 4,501,700, Cl. 260-351.500.

Kohno, Seiji, to Kabushiki Kaisha Tajima Seisakusho. Cutter for wall papers. 4,501,069, Cl. 30-293.000.

Kohzai, Yoshinori; Fujioka, Yoshiki; and Ota, Naoto, to Fanuc Ltd. System for stopping spindle at commanded position. 4,501,999, Cl. 318-632.000.

Koike, Hideharu, to Tokyo Shibaura Denki Kabushiki Kaisha. AND-OR logic circuit including a feedback path. 4,501,977, Cl. 307-469.000.

Kojima, Tadashi: *See—*
Nishikawa, Meisei; Nagumo, Masahide; and Kojima, Tadashi, 4,502,024, Cl. 332-9.00R.

Kolt, Stanley, to Suroff, Leonard W., a part interest. Automatic damper assembly. 4,501,389, Cl. 236-49.000.

Kondo, Mitsushige; Okada, Kazuo; and Hirasawa, Kazuo, to Mitsubishi Denki Kabushiki Kaisha. Optical disc signal reproducing system with tilt immunization. 4,502,134, Cl. 369-46.000.

Konig, Joachim; Suling, Carlhans; and Korte, Siegfried, to Bayer Aktiengesellschaft. Polymerization process. 4,501,865, Cl. 526-71.000.

Konishiroku Photo Industry Co., Ltd.: *See—*
Abe, Naoto; Akimoto, Hidetoshi; and Nomori, Hiroyuki, 4,501,621, Cl. 134-17.000.
Fujita, Hisao; and Ishiyama, Shozo, 4,501,475, Cl. 350-427.000.

Konno, Junichi; Ueda, Yukihiro; Niitsuma, Hiroaki; and Chubachi, Noriyoshi, to Asahi Kasei Kogyo Kabushiki Kaisha. Micro fracture detector. 4,501,149, Cl. 73-587.000.

Konrad, Mathias, to Jean Walterscheid GmbH. Adjustable friction clutch. 4,501,570, Cl. 464-48.000.

Konrath, Karl: *See—*
Stumpp, Gerhard; Vogtmann, Hans-Jorg; Fussner, Paul; Schwarz, Manfred; Hofer, Gerald; Konrath, Karl; Straubel, Max; and Faupel, Werner, 4,501,252, Cl. 123-502.000.

Koontz, Floyd: *See—*
Carl, Robert H., Jr.; Koontz, Floyd; and Pedtke, Daniel F., 4,502,025, Cl. 333-24.00R.

Koopman, Donald E.: *See—*
Buirley, William L.; Koopman, Donald E.; McQuain, David B.; and Reeves, William H., 4,501,503, Cl. 374-162.000.

Kopp, Ernst, to Skischuhfabrik Dynafit Gesellschaft m.b.H. Skiing boot. 4,501,078, Cl. 36-121.000.

Koppel, Gary A.: *See—*
Barton, Russell L.; Briggs, Stephen L.; and Koppel, Gary A., 4,501,703, Cl. 260-455.00R.

Kornfeld, Edmund C.: *See—*
Nichols, Cynthia L.; and Kornfeld, Edmund C., 4,501,890, Cl. 514-267.000.

Kornrumpf, Wolfgang; Perplies, Eberhard; Hilbig, Josef; and Felcht, Utz-Hellmuth, to Hoechst Aktiengesellschaft. Preparing cellulose ethers in a dimethoxyethane/(dispersing auxiliary) medium. 4,501,887, Cl. 536-84.000.

Korpi, Jouko K.; and Korpi, Teuvo T. Method of electroplating. 4,501,647, Cl. 204-23.000.

Korpi, Teuvo T.: *See—*
Korpi, Jouko K.; and Korpi, Teuvo T., 4,501,647, Cl. 204-23.000.

Korte, Siegfried: *See—*
Konig, Joachim; Suling, Carlhans; and Korte, Siegfried, 4,501,865, Cl. 526-71.000.

Koschak, Matthew; Super, Scott S.; and Jesse, Jerry F., to American Can Company. Unbalanced oriented multiple layer film. 4,501,798, Cl. 428-349.000.

Koshio, Shuichi: *See—*
Kushida, Hideo; Takahashi, Sumio; and Koshio, Shuichi, 4,501,781, Cl. 428-35.000.

Koto, Haruhiko, to Shinshu Seiki Kabushiki Kabushiki Kaisha Suwa Seikosha. Low voltage ink-jet printhead. 4,502,058, Cl. 346-140.00R.

Kotulla, Bernhard; Weiser, Martin; Faltin, Jurgen; Preis, Lothar; Schmidt, Rudolf; and Born, Eberhard, to Bayer Aktiengesellschaft. Anchoring of tension members. 4,501,516, Cl. 405-260.000.

Kowalczyk, Thaddeus. Carburetor and system for utilizing same. 4,501,706, Cl. 261-50.00R.

Kowalski, Ronald C.: *See—*
Newman, Neil F.; and Kowalski, Ronald C., 4,501,859, Cl. 525-356.000.

Koyama, Haruo: *See—*
Matsuda, Masanori; Koyama, Haruo; and Miyakawa, Nobuhiro, 4,502,067, Cl. 346-214.000.

Kozakae, Kunitoshi: *See—*
Tanaka, Mitsuo; and Kozakae, Kunitoshi, 4,501,576, Cl. 474-141.000.

Kraft, Winfried: *See—*
Reinheimer, Guenter; and Kraft, Winfried, 4,501,476, Cl. 350-520.000.

Kraftwerk Union Aktiengesellschaft: *See—*
Mathewes, Wolfgang, 4,501,162, Cl. 73-863.830.

Kramer, Richard: *See—*
Irwin, Charles; Devine, Janet; and Kramer, Richard, 4,501,285, Cl. 134-58.00R.

Krass, Dennis K., to PPG Industries, Inc. Herbicidally active substituted diphenyl ether acetals or ketals. 4,501,924, Cl. 568-592.000.

Kraus, Charles E., to Excelermatic Inc. Hydraulic speed control arrangement for an infinitely variable transmission. 4,501,172, Cl. 74-867.000.

Krenzer, Eberhard, to Barmag Barmer Maschinenfabrik AG. Method and apparatus for producing synthetic multifilament yarn. 4,501,046, Cl. 19-0.350.

Kretschmer, Horst; Tietze, Gunter; Beiermann, Norbert; Schingnitz, Manfred; and Goehler, Peter, to Brennstoffinstitut Freiberg. Method of and device for measuring a mass stream of finely divided fine-grained solid fuels. 4,501,156, Cl. 73-861.040.

Kretzschmar, Gisela; and Selter, Jutta, to Selter, Gustav. Dual needle arrangement. 4,501,133, Cl. 66-117.000.

Krikor, Krikor A.; and Hu, Kuang-Cheng, to GTE Automatic Electric Incorporated. Circuit for reliable data transfer between two central processing units. 4,502,114, Cl. 364-200.000.

Krimm, Heinrich; and Buysch, Hans-Josef, to Bayer Aktiengesellschaft. Cyclic carbonic acid derivatives. 4,501,905, Cl. 549-228.000.

Kronenthal, David, to E. R. Squibb & Sons, Inc. 4-[[(Amidomethyl)oxy]methyl]-2-oxo-1-azetidinesulfonic acid salts. 4,501,697, Cl. 260-245.400.

Krukowski, Richard: *See—*
Nicholas, James A.; and Krukowski, Richard, 4,501,148, Cl. 73-379.000.

Krumkalns, Eriks V., to Eli Lilly and Company. N,N-disubstituted carboxamide derivatives, and fungicidal use thereof. 4,501,746, Cl. 514-357.000.

Kubach, Hans: *See—*
Gassler, Hermann; Joos, Eugen; Kubach, Hans; Maisch, Wolfgang; and Singer, Erich, 4,501,247, Cl. 123-453.000.

Kubo, Hiroshi: *See—*
Seki, Nansho; Yamaguchi, Yuki; Nakamura, Yukihiro; Kubo, Hiroshi; and Tsuruya, Tetsuo, 4,501,606, Cl. 71-92.000.

Kubota, Hirotoshi; Takano, Akira; Arai, Isao; and Matsuzaka, Masayoshi, to University of Tokyo. Method of stabilizing flight of a flying body and flight-stabilized flying body. 4,501,397, Cl. 244-75.00R.

Kubota, Shigeo, to Sony Corporation. Apparatus for detecting a position of an optical pickup. 4,501,493, Cl. 356-123.000.

Kuckes, Arthur F., to Gearhart Industries, Inc. Apparatus including a magnetometer having a pair of U-shaped cores for extended lateral range electrical conductivity logging. 4,502,010, Cl. 324-338.000.

Kuckuk, William R., to Square D Company. Removable memory package, associated apparatus and method of use. 4,502,130, Cl. 365-52.000.

Kuhl, Wilhelm; Kiefer, Dieter; and Josefowitz, Max, to Deutsche Babcock Werke Aktiengesellschaft. Means of sealing off the inside of a pulverizer. 4,501,430, Cl. 277-59.000.

Kuhni AG: *See—*
Buhlmann, Ulrich, 4,501,707, Cl. 261-94.000.

Kuki, Takakuni, to Nippon Electric Co., Ltd. Circuit for checking bit errors in a received BCH code succession by the use of primitive and non-primitive polynomials. 4,502,141, Cl. 371-37.000.

Kukolja, Stjepan: *See—*
Graves, Bernard J.; and Kukolja, Stjepan, 4,501,741, Cl. 514-202.000.

Kulcsar, Gabor; Sebestyen, Gyula; David, Agoston; and Zilahi, Tibor, to Chinoin Gyogyszer es Vegyeszeti Termekek Gyara Rt. Synergistic antimicrobial compositions. 4,501,732, Cl. 424-114.000.

Kumakura, Mikio: *See—*
Sakano, Isao; Yokoyama, Tatsuro; Kajiya, Seitaro; Okazaki, Yutaka; Tokuda, Hiroshi; Kawazura, Hiroshi; Kumakura, Mikio; Nakano, Takuo; and Awaya, Akira, 4,501,750, Cl. 514-369.000.

Kumar, Ananda H., to International Business Machines Corporation. Thin film floating zone metal coating technique. 4,501,768, Cl. 427-57.000.

Kuniyoshi, Toru; and Okumoto, Ryoji, to Toyoda Gosei Co., Ltd. Cylinder-head cover gasket. 4,501,432, Cl. 277-168.000.

Kuno, Akira; and Shinoda, Yoshio, to Nippon Soken, Inc. Speed control method and system for automotive vehicles. 4,501,284, Cl. 123-352.000.

Kunst, Hermann, to Technomed Elektromed.Apparatebau GmbH; and Ingenieurburo Dipl.-Ing. Hermann Kunst. Apparatus for recording data on a recording carrier. 4,502,062, Cl. 346-155.000.

Kuntz, Irving: *See—*
Bouboulis, Constantine J.; and Kuntz, Irving, 4,501,868, Cl. 526-208.000.

Kureha Kagaku Kogyo Kabushiki Kaisha: *See—*
Kidoh, Kunizoh; Wakamori, Hideki; Suzuki, Fujio; and Iwasaki, Takao, 4,501,870, Cl. 526-344.100.
Yamato, Hideyuki; Toyoda, Noriyuki; Fujii, Takayoshi; Maeda, Yuji; Kato, Tadaaki; and Yoshikumi, Chikao, 4,501,737, Cl. 514-167.000.
Yamato, Hideyuki; Maeda, Yuji; Yoshino, Fumisato; Takahata, Kyoya; Ikuzawa, Masanori; Kato, Tadaaki; and Yoshikumi, Chikao, 4,501,738, Cl. 514-167.000.

Kuroda, Kouiti: *See—*
Ueno, Susumu; Kuroda, Kouiti; Kitamura, Hajime; Tohkai, Masaie; Kato, Ken-ichi; and Hiraishi, Nobuyuki, 4,501,428, Cl. 277-12.000.

Kuroda, Tokuyuki: *See—*
Muto, Kenji; Karasawa, Akira; Kuroda, Tokuyuki; and Nakamizo, Nobuhiro, 4,501,748, Cl. 514-318.000.

Kurtz, Leonard D.; and LiCausi, Joseph, to BioResearch Inc. Method for autotransfusion of blood. 4,501,581, Cl. 604-52.000.

Kusaka, Iwao, to Babcock-Hitachi Kabushiki Kaisha. Heat recovery steam generator. 4,501,233, Cl. 122-406.00S.

Kushida, Hideo; Takahashi, Sumio; and Koshio, Shuichi, to Yoshino Kogyosho Co., Ltd. Bottle-shaped container. 4,501,781, Cl. 428-35.000.

Kuusikko, Matti J.; and Rantala, Olavi K., to Outokumpu Oy. Apparatus for conveying a solid or liquid material, especially for charging a shaft furnace. 4,501,526, Cl. 414-173.000.

Kuwahara, Hidehiko: *See—*
Tsutsui, Osamu; Murakami, Shusaku; Kuwahara, Hidehiko; and Yasunaga, Shigefumi, 4,501,261, Cl. 126-351.000.

Kuznetsov, Vsevolod V.: *See—*
Abramov, Vsevolod V.; Kuznetsov, Vsevolod V.; Veselov, Alexandr V.; Tkhai, Vitaly S.; Rysin, Nikolai I.; and Gerasimov, Vasily I., 4,501,549, Cl. 425-542.000.

Kuznetsova, Svetlana M.: *See—*
Lipets, Adolf U.; Alexandrov, Boris I.; Kuznetsova, Svetlana M.; Okerblom, Jury I.; Ershov, Jury A.; Frolova, Nadezhda A.; Malkis, Valery A.; Sotnikov, Ivan A.; Fedosov, Alexei Z.; and Petrosyan, Robert A., 4,501,320, Cl. 165-144.000.

Kuznetz, Lawrence. Composite fabric for sportswear. 4,501,025, Cl. 2-243.00A.

Kwentus, Gerald K.; and Suda, Michael, to Monsanto Company. Maleic anhydride production using high butane feed concentration. 4,501,907, Cl. 549-259.000.

Kwok, Kui C., to Graco Inc. Spray gun air cap and method of making. 4,501,394, Cl. 239-296.000.

Kyowa Hakko Kogyo Co., Ltd.: *See—*
Muto, Kenji; Karasawa, Akira; Kuroda, Tokuyuki; and Nakamizo, Nobuhiro, 4,501,748, Cl. 514-318.000.

L. & C. Steinmuller GmbH: *See—*
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L & F Industries: *See—*
Chivens, David E.; and Cloward, Laramie J., 4,501,135, Cl. 72-302.000.

Lakin, David F.: *See—*
Jarrett, Boaz A.; Fenne, Ivor; Lakin, David F.; and Mowbray, Dorian F., 4,501,244, Cl. 123-446.000.

Lakin, Ira W.: *See—*
Fenton, Edward A., Jr.; Lakin, Ira W.; Stein, Joseph H.; Lohr, John R.; and Schreiber, David A., 4,501,539, Cl. 425-84.000.

Laloux, Philippe: *See—*
Goulard, Claude; Accettella, Serge; Cathaly-Pretou, Gerard; Fages, Bernard; Jeannin, Daniel; Laloux, Philippe; and Le Fur, Jean, 4,501,489, Cl. 355-54.000.

Lambach, Heinrich W., to Brdr. Schur International A/S. Folding box. 4,501,364, Cl. 206-626.000.

Lamoine, Pierre R., to U.S. Philips Corporation. Device for safety-locking a cover of a housing of a magazine of a camera and camera in which such a device is utilized. 4,501,479, Cl. 354-275.000.

Landa, Benzion, to Savin Corporation. Wiper blade for electrophotocopier. 4,501,486, Cl. 355-15.000.

Landgraf, Helmut, to Mannesmann Aktiengesellschaft. Wrapping steel pipes in a thermoplastic ribbon. 4,501,632, Cl. 156-187.000.

Landoni, Giannino, to Meca S.a.s. di Cagnoni Landoni S.C. Process for the bidirectional feeding of fabrics in quilting machines, and a machine utilizing this process. 4,501,208, Cl. 112-118.000.

Landwehrkamp, Hans; and Schneider, Gottfried, to Schubert & Salzer Maschinenfabrik Aktiengesellschaft. Thread paraffining device employing a thread element. 4,501,221, Cl. 118-78.000.

Lane, Ernest, to American Hospital Supply Corporation. Method of leaflet attachment for prosthetic heart valves. 4,501,030, Cl. 3-1.500.

Langston, Benny: *See—*
Bauer, Carl F.; Hussey, James H.; Langston, Benny; and Parikh, Niranjan M., 4,501,614, Cl. 75-257.000.

Lapeyre, Fernand S. Multi-speed transmission for BMX bicycles and the like. 4,501,575, Cl. 474-74.000.

LaPierre, Rene B.; Partridge, Randell D.; Chen, Nai Y.; and Wong, Steven S., to Mobil Oil Corporation. Catalytic dewaxing process with zeolite beta. 4,501,926, Cl. 585-739.000.

Lapsker, Irving: *See—*
Cerny, Frank T.; and Lapsker, Irving, 4,501,347, Cl. 188-250.00G.

La Quey, Robert E.: *See—*
De Forest, Sherman E.; Bolz, Gunner; and La Quey, Robert E., 4,502,075, Cl. 358-93.000.

Larson, David A.: *See—*
Morrell, Roger J.; and Larson, David A., 4,501,448, Cl. 299-67.000.

Lathlaen, Richard A.: *See—*
Bell, Robert L.; and Lathlaen, Richard A., 4,501,051, Cl. 29-25.410.

Lau, John R.: *See—*
Geho, W. Blair; and Lau, John R., 4,501,728, Cl. 424-38.000.

Lavi, Jukka: *See—*
Lovgren, Timo; and Lavi, Jukka, 4,501,813, Cl. 435-8.000.

Lavielle, Gilbert: *See—*
Buzas, Andre ; and Lavielle, Gilbert, 4,501,891, Cl. 546-149.000.

Lay, Khin M.; Palguta, Stephen E.; Fernandez, Ramon B.; and Cabalquinto, Santiago C., to Hitco. Method for introducing heat-sensitive material into a hot environment. 4,501,037, Cl. 8-149.200.

Lazzery, Angelo G.: *See—*
Siryj, Bohdan W.; and Lazzery, Angelo G., 4,502,133, Cl. 369-34.000.

Le, Quang N.; and Neuman, Daniel J., to Mobil Oil Corporation. Process for selective removal of CCR, arsenic and conjugated diolefins from shale oil. 4,501,652, Cl. 208-57.000.

Leake, Bernard W., to Raytheon Company. Programmable two-port microwave network. 4,502,028, Cl. 333-109.000.

Lebet, Jean-Pierre: *See—*
Boegli, Serge; and Lebet, Jean-Pierre, 4,501,579, Cl. 493-45.000.

le Bigot, Yves: *See—*
Delmas, Michel; Gaset, Antoine; and le Bigot, Yves, 4,501,910, Cl. 549-506.000.

Leblanc, Jean, to Robert Bosch GmbH. Fuel injection pump. 4,501,246, Cl. 123-449.000.

Lee, Ross A.: *See—*
Donald, Dennis S.; and Lee, Ross A., 4,501,896, Cl. 548-251.000.

Le Fur, Jean: *See—*
Goulard, Claude; Accettella, Serge; Cathaly-Pretou, Gerard; Fages, Bernard; Jeannin, Daniel; Laloux, Philippe; and Le Fur, Jean, 4,501,489, Cl. 355-54.000.

Lehmann, Hartmut, to Womako Maschinenkonstruktionen GmbH. Apparatus for looping the outermost convolutions of spiral binders for note books or the like. 4,501,304, Cl. 140-103.000.

Lehrke, Kenneth E., to Graco Inc. Electric fluid heater temperature control system providing precise control under varying conditions. 4,501,952, Cl. 219-305.000.

Leikert, Klaus, to L. & C. Steinmuller GmbH. Method of igniting a pulverized-coal pilot-burner flame. 4,501,206, Cl. 110-347.000.

Leipold, Ludwig; Stengl, Jens P.; and Tihanyi, Jeno , to Siemens Aktiengesellschaft. FET Controlled thyristor. 4,502,070, Cl. 357-38.000.

Leivo, Charles C.: *See—*
Ashley, Michael J.; Hemphill, Paul D.; and Leivo, Charles C., 4,501,722, Cl. 423-242.000.

Lell, Rainer, to Davy McKee AG. Process for the combustion of H_2S containing gases. 4,501,725, Cl. 423-573.00R.

Leon, Harry I. Threading die couple. 4,501,519, Cl. 408-101.000.

Leonardo, Ignazio, to Diamond Communication Products, Inc. Cable-clamp. 4,501,400, Cl. 248-74.100.

Leonhard, Kurt: *See—*
Bauer, Friedrich; and Leonhard, Kurt, 4,501,239, Cl. 123-261.000.

Le Parquier, Guy; and Puech, Claude, to Thomson-CSF. Analog-digital optical conversion process and apparatus. 4,502,037, Cl. 340-347.0AD.

Lescrenier, Charles: *See—*
Michaels, Terry J., 4,502,147, Cl. 378-206.000.

Leshik, Edward A. Apparatus for playing a game of skill. 4,501,422, Cl. 273-1.0GC.

Letron GmbH: *See—*
Siry, Manfred; and Diesel, Hans-Dieter, 4,501,635, Cl. 156-273.300.

Lever Brothers Company: *See—*
Gercama, Anne; and Schijf, Robert, 4,501,764, Cl. 426-607.000.

Levie, Harold W.: *See—*
Rankin, Glenn H.; and Levie, Harold W., 4,502,060, Cl. 346-140.00R.

Levitt, George, to Du Pont de Nemours, E. I., and Company. Herbicidal triazine sulfonamides. 4,501,607, Cl. 71-93.000.

Levy, Claude; and Duchesne, Jean-Philippe. Packing, in particular for transporting and dispatching products, for example biological products. 4,501,360, Cl. 206-443.000.

Lewin, Ian H.; Plummer, Michael J.; and Ward, Rodney, to U.S. Philips Corporation. Electrostatic chuck. 4,502,094, Cl. 361-234.000.

Lewis, John C., to Park-Ohio Industries, Inc. Method and apparatus for uniform induction heating of an elongated workpiece. 4,501,942, Cl. 219-10.430.

LGT Laboratoire General des Telecommunications: *See—*
Cluniat, Claude; and Delattre, Joseph, 4,502,076, Cl. 358-160.000.

LGZ Landis & Gyr Zug AG: *See—*
Antes, Gregor, 4,501,439, Cl. 283-91.000.

LiCausi, Joseph: *See—*
Kurtz, Leonard D.; and LiCausi, Joseph, 4,501,581, Cl. 604-52.000.

Liebregts, Antonius M. J.: *See—*
Bulten, Eric J.; and Liebregts, Antonius M. J., 4,501,702, Cl. 260-429.00R.

Lipets, Adolf U.; Alexandrov, Boris I.; Kuznetsova, Svetlana M.; Okerblom, Jury I.; Ershov, Jury A.; Frolova, Nadezhda A.; Malkis, Valery A.; Sotnikov, Ivan A.; Fedosov, Alexei Z.; and Petrosyan, Robert A. Multiflow tubular air heater. 4,501,320, Cl. 165-144.000.

Lisner, Herbert; and Michalak, Peter, to Brown, Boveri & Cie AG. Method and apparatus for determining the angle between the air-gap flux vector and the stator current vector of an asynchronous machine fed from an intermediate current-link frequency converter. 4,502,005, Cl. 324-158.0MG.

List, Helmut: *See—*
Marsoner, Hermann; Harnoncourt, Karl; and List, Helmut, 4,501,296, Cl. 137-625.410.

Litton Bionetics, Inc.: *See—*
Pandey, Ramesh C.; Toussaint, Margaret W.; McGuire, Jeffrey C.; and Thomas, Monica C., 4,501,699, Cl. 260-351.100.

Litton Systems, Inc.: *See—*
Ignatuk, Wayne R.; and Plocic, Frank M., 4,501,091, Cl. 51-102.000.

Lively, F. Glenn; and Robison, Kenneth O., to Hughes Tool Company. Method and apparatus for monitoring the corrosive effects of well fluids. 4,501,323, Cl. 166-250.000.

Lockheed Corporation: *See—*
Sanders, Richard L., 4,501,176, Cl. 81-470.000.
Sandorff, Paul E., 4,501,398, Cl. 244-134.00R.

Lockheed Electronics Company, Inc.: *See—*
Csengery, Ladislao C., 4,502,142, Cl. 371-55.000.

Loebach, Michael H., to Motter Printing Press Co. Balanced deflection gripper for sheet handling equipment. 4,501,415, Cl. 270-60.000.

Logan, Russell J.; and Glass, Arthur J., to Kennecott Corporation. Edge trimming and scrap disposal system. 4,501,177, Cl. 83-105.000.

Logsdon, Gary L.: *See—*
Hagenmaier, Carl F., Jr.; Logsdon, Gary L.; Bolton, Brent C.; and Miner, Robert L., Jr., 4,502,118, Cl. 364-200.000.

Lohr, John R.: *See—*
Fenton, Edward A., Jr.; Lakin, Ira W.; Stein, Joseph H.; Lohr, John R.; and Schreiber, David A., 4,501,539, Cl. 425-84.000.

Loichinger, Fred A.; and Thomson, Meredith C. Process vat cutting and stirring mechanism. 4,501,196, Cl. 99-461.000.

Lombardi, Edward J., to Illinois Tool Works Inc. Fetal electrode apparatus. 4,501,276, Cl. 128-642.000.

Long, Delmar D., to Dayco Corporation. Elastomer-coated bias reinforcement fabric and method for producing same. 4,501,771, Cl. 427-176.000.

Long, James, to Hammond, James M., a part interest. Gas borne particle filtering method. 4,501,598, Cl. 55-2.000.

Longton, John: *See—*
Towersey, Peter J.; Longton, John; and Cockram, Geoffrey N., 4,501,765, Cl. 426-656.000.

Loomis, Jester M., III, to United States of America, Army. Hybrid monopulse/sequential lobing beamrider guidance. 4,501,399, Cl. 244-3.130.

Lotz, Horst K., to Aute Gesellschaft fur autogene Technik mbH. Flame-cutter employing a discontinuous oxygen supply for billets produced in a continuous caster. 4,501,624, Cl. 148-9.00R.

Loukos, Isaias, to Pennsylvania Engineering Corporation. Method and apparatus for cleaning waste gases from aluminum production facilities. 4,501,599, Cl. 55-71.000.

Lovas, Kurt: *See—*
Schuller, Edmund; Mayer, Walter; Hini, Eugen; Bock, Erich; and Lovas, Kurt, 4,501,116, Cl. 57-263.000.

Loveless, Stanley M.: *See—*
Klimowicz, Michael A.; Toliusis, Vytautas J.; and Loveless, Stanley M., 4,501,299, Cl. 137-625.650.

Lovgren, Timo; and Lavi, Jukka, to Wallac OY. Bioluminescence method for determining NADH or NADPH. 4,501,813, Cl. 435-8.000.

Loweg, Heribert: *See—*
Schulze, Hans-Horst; Loweg, Heribert; and Schneider, Karl-Heinz, 4,501,044, Cl. 15-312.00R.

Lowenthal, Richard W.; Seike, Stephen C.; and Walsh, Gregory V., to Convergent Technologies, Inc. Keyboard scanning and interface method and circuit. 4,502,038, Cl. 340-365.00S.

Lowes, John M., to British Underwater Pipeline Engineering. Securing of structures to the sea-bed. 4,501,514, Cl. 405-227.000.

Lowry, James, to Westinghouse Electric Corp. Elevator system. 4,501,345, Cl. 187-29.00R.

Lowry, Louis D.: *See—*
Katz, Philip; Brenman, Henry S.; Lowry; Louis D.; and Schwartz, Harold, 4,502,150, Cl. 381-70.000.

Loza, Roman: *See—*
Greene, Janice L.; and Loza, Roman, 4,501,881, Cl. 528-336.000.

Lucas Industries Limited: *See—*
Goodwin, Alan; and Brearley, Malcolm, 4,502,006, Cl. 324-208.000.
Reynolds, Desmond H.; and Taft, Philip A., 4,501,451, Cl. 303-6.00A.
Sinclair, Walter, 4,502,152, Cl. 455-73.000.

Lucas Industries Public Limited Company: *See—*
Jarrett, Boaz A.; Fenne, Ivor; Lakin, David F.; and Mowbray, Dorian F., 4,501,244, Cl. 123-446.000.

Luck, Clarence F., Jr., to Raytheon Company. Method of focusing optical apparatus. 4,501,962, Cl. 250-201.000.

Lukianoff, Sergei G. Hand-held sanding device. 4,501,096, Cl. 51-391.000.

Lund, David L., to GNB Batteries Inc. Apparatus and method for fusing battery terminals with improved induction heating power control. 4,501,943, Cl. 219-10.430.

Lundell, George F.: *See—*
Baldwin, John J.; Jones, James H.; and Lundell, George F., 4,501,900, Cl. 548-436.000.

Lundh, Bengt: *See—*
Hakansson, Sven; and Lundh, Bengt, 4,501,669, Cl. 210-770.000.

Lunn, William H. W.; and Vasileff, Robert T., to Eli Lilly and Company. Thieno and furopyridinium-substituted cephalosporins. 4,501,739, Cl. 514-203.000.

Luoma, Robert P., II: *See—*
Benin, Joshua; and Luoma, Robert P., II, 4,501,951, Cl. 219-243.000.

Lutz, Dieter; and Thieler, Wolfgang, to Sachs-Systemtechnik GmbH. Torsional oscillation damper with laterally displaceable damper member. 4,501,348, Cl. 192-106.100.

Lutz, Raymond S.: *See—*
Dobson, Diane P.; Farrell, Michael J.; and Lutz, Raymond S., 4,501,985, Cl. 310-270.000.

Lutz, Roman, to Siemens Aktiengesellschaft. Teleprinter. 4,501,930, Cl. 178-4.000.

Luwa Corporation: *See—*
McKelvey, James M., 4,501,498, Cl. 366-69.000.

Luxeder, William P. Process for producing ultra removable pressure sensitive labels. 4,501,772, Cl. 427-208.600.

Lymneos, Anthony C., to Millipore Corporation. Photometric apparatus and process. 4,501,969, Cl. 250-373.000.

Lyngstrup, Arne, to A/S Sparevirke. Safety mechanism for preventing the locking up of persons in cabinets. 4,501,203, Cl. 109-635.000.

Lyon, Floyd A., to Halm Instrument Co. Inc. Solar hot water system without heat exchanger. 4,501,262, Cl. 126-437.000.

M.A.N. Maschinenfabrik Augsburg-Nurnberg Aktiengesellschaft: *See—*
Bauer, Friedrich; and Leonhard, Kurt, 4,501,239, Cl. 123-261.000.

M.A.N.-Roland Druckmaschinen Aktiengesellschaft: *See—*
Wuhrl, Arno; and Kistner, Werner, 4,502,042, Cl. 340-568.000.

Maahs, Jerry D. Mammalian subject heating unit using radiant heat. 4,501,275, Cl. 128-402.000.

Mabuchi, Minoru: *See—*
Sakai, Kiyoshi; Ishikawa, Shozo; Arita, Tetsuo; Mabuchi, Minoru; and Umehara, Shoji, 4,501,808, Cl. 430-59.000.

MAC/GIL Ltd.: *See—*
Weatherly, Gilbert; and Slade, A. MacDonald, 4,501,782, Cl. 428-57.000.

MacDermott, Bruce R.; and Shapiro, Justin J. Adjustable micro-dispensing liquid pipet. 4,501,163, Cl. 73-864.130.

Mader, Gotz: *See—*
Moser, Theo; and Mader, Gotz, 4,501,307, Cl. 141-258.000.

Maeda, Yuji: *See—*
Yamato, Hideyuki; Toyoda, Noriyuki; Fujii, Takayoshi; Maeda, Yuji; Kato, Tadaaki; and Yoshikumi, Chikao, 4,501,737, Cl. 514-167.000.
Yamato, Hideyuki; Maeda, Yuji; Yoshino, Fumisato; Takahata, Kyoya; Ikuzawa, Masanori; Kato, Tadaaki; and Yoshikumi, Chikao, 4,501,738, Cl. 514-167.000.

Magni, Ambrogio: *See—*
Koch, Melvin V.; and Magni, Ambrogio, 4,501,919, Cl. 562-437.000.

Magnus Wilhelm AB: *See—*
Johansson, Sune H.; and Gustavsson, John K. C., 4,501,198, Cl. 100-98.00R.

Magyar, Arpad M.; and Smith, Gerald G., to Pennzoil Company. Tire sealer and inflator. 4,501,825, Cl. 521-78.000.

Mahlmann, James P.; Schecter, Steven M.; and Scher, Lawrence, to General Foods Corporation. Controlled coffee roasting. 4,501,761, Cl. 426-467.000.

Maisch, Wolfgang: *See—*
Gassler, Hermann; Joos, Eugen; Kubach, Hans; Maisch, Wolfgang; and Singer, Erich, 4,501,247, Cl. 123-453.000.

Malani, Shrikant R.: *See—*
Roggeman, David M.; Malani, Shrikant R.; and Kang, Jung W., 4,501,866, Cl. 526-133.000.

Malaysian Rubber Producers' Research Association, The: *See—*
Campbell, David S.; Tinker, Andrew J.; and Mente, Peter G., 4,501,860, Cl. 525-359.400.

Maliga, Joachim H. Ultrasonic dental cleaning tip stabilizer. 4,501,558, Cl. 433-86.000.

Malkis, Valery A.: *See—*
Lipets, Adolf U.; Alexandrov, Boris I.; Kuznetsova, Svetlana M.; Okerblom, Jury I.; Ershov, Jury A.; Frolova, Nadezhda A.; Malkis, Valery A.; Sotnikov, Ivan A.; Fedosov, Alexei Z.; and Petrosyan, Robert A., 4,501,320, Cl. 165-144.000.

Mallinckrodt, Inc.: *See—*
Periasamy, Muthunadar P., 4,501,920, Cl. 562-473.000.

Malloy, Thomas P.; and Swedo, Raymond J., to UOP Inc. Enhanced oil recovery. 4,501,675, Cl. 252-8.55D.

Maloblocki, Richard, to Ametc Development Company. Ball-type check valve. 4,501,292, Cl. 137-533.110.

Malone, Edgar W., to Reynolds Industries Inc. Low-inductance capacitor. 4,502,096, Cl. 361-308.000.

Manes, Kenneth L.; and Hart, William D., to Storage Technology Partners II. Printed circuit card air cooling system. 4,502,099, Cl. 361-383.000.

Mannesmann Aktiengesellschaft: *See—*
Haring, Manfred, 4,501,443, Cl. 285-328.000.
Landgraf, Helmut, 4,501,632, Cl. 156-187.000.

Manske, Heinz J., to Foringer, John W. B. Mounting system for optical sighting devices. 4,501,071, Cl. 33-245.000.

Marcellis, Alphonso W.; Johnson, Grannis S.; and Grinstein, Reuben H., to Diamond Shamrock Chemicals Company. Anionic polyhydroxy polyphenyl compounds as dispersants for aqueous slurries of carbonaceous materials. 4,501,594, Cl. 44-51.000.

Marchadour, Jean-Charles. Apparatus and method for cleaning flowable material filling devices. 4,501,622, Cl. 134-18.000.

Marchesano, Carlo, to Minnesota Mining and Manufacturing Company. Photographic color developer composition packaged in two or more concentrated parts, particularly solutions, and concentrated color developer water solution. 4,501,812, Cl. 430-466.000.

Marchetti, Joseph R.; and Thomas, Wilbur R., to Westinghouse Electric Corp. Flame retardant B-staged epoxy resin prepregs and laminates made therefrom. 4,501,787, Cl. 428-236.000.

Marcilly, Christian: *See—*
Dufresne, Pierre; Freund, Edouard; Marcilly, Christian; and Raatz, Francis, 4,501,656, Cl. 208-111.000.

Marco Wood Products, Inc.: *See—*
Markey, Dennis P.; and Rosen, George J., 4,501,103, Cl. 52-745.000.

Mark, Victor, to General Electric Company. Polycarbonate from carbonyl halide, bischloroformate and dihydric phenol. 4,501,875, Cl. 528-196.000.

Markey, Dennis P.; and Rosen, George J., to Marco Wood Products, Inc. Building construction and purlin hanger therefor with method of construction. 4,501,103, Cl. 52-745.000.

Marks, Gerald C.: *See—*
Blackwell, James B.; Marks, Gerald C.; and Vereecke, Paul, 4,501,794, Cl. 428-316.600.

Markusch, Peter H.; Rosthauser, James W.; and Beatty, Michael C., to Mobay Chemical Corporation. Stable, aqueous dispersions of polyurethane-ureas. 4,501,852, Cl. 524-591.000.

Maron, Leonard C., to Napco, Inc. Workpiece clamp assembly for electrolytic plating machine. 4,501,650, Cl. 204-198.000.

Marquest Medical Products, Inc.: *See—*
Williams, Charles D., 4,501,719, Cl. 422-102.000.

Marsoner, Hermann; Harnoncourt, Karl; and List, Helmut, to AVL AG. Device for charging an electrochemical measuring apparatus. 4,501,296, Cl. 137-625.410.

Martel, Jacques; Buendia, Jean; and Nezot, Francois, to Roussel Uclaf. Cyclopentanols. 4,501,687, Cl. 252-522.00R.

Martel, Jacques; Tessier, Jean; and Demoute, Jean-Pierre, to Roussel Uclaf. Aromatic sulfonyl alkanoates and alkylnitriles. 4,501,704, Cl. 260-465.00R.

Martel, Jacques: *See—*
Nezot, Francois; Girault, Pierre; Tessier, Jean; and Martel, Jacques, 4,501,894, Cl. 548-186.000.

Martin, Edwin L. Hyper cleaning casing brush. 4,501,322, Cl. 166-173.000.

Martin, Laura A.: *See—*
Rohlfing, Raymond G.; and Martin, Laura A., 4,501,286, Cl. 137-15.000.

Martinez, Freddy: *See—*
Stefanescu Doru M.; and Martinez, Freddy, 4,501,612, Cl. 75-124.000.

Maruyama, Kazuo: *See—*
Satake, Toshimi; Maruyama, Kazuo; and Fujimura, Fumio, 4,502,066, Cl. 346-209.000.

Marven, Al: *See—*
Hill, James J.; and Marven, Al, 4,501,409, Cl. 251-354.000.

Marzocca, Francesco: *See—*
Vercesi, Arturo; and Marzocca, Francesco, 4,502,039, Cl. 340-365.00S.

Masaki, Hisaji: *See—*
Takahashi, Yuji; Masaki, Hisaji; Adachi, Muneo; and Igarashi, Masaru, 4,501,419, Cl. 271-288.000.

Masco Corporation: *See—*
Rasor, William; and Redman, Leon E., 4,501,386, Cl. 224-326.000.

Mashikian, Matthew S., to Energy Development Associates, Inc. Device for balancing parallel strings. 4,502,000, Cl. 320-6.000.

Mashimo, Tohru; Nishio, Takashi; and Satoh, Osamu, to Mazda Motor Corporation. Automatically controlled rock drilling apparatus. 4,501,199, Cl. 102-313.000.

Mason, Edward M.; Tanner, Murray Q., III; and Finley, Michael J., to Affiliated Hospital Products, Inc. Operating table. 4,501,414, Cl. 269-325.000.

Mason, Ronald C.: *See—*
DiNozzi, Robert D.; Vancelette, Stanley R.; Powell, Lionel E.; McLean, George F., Jr.; Sleger, Leon F.; and Mason, Ronald C., 4,501,064, Cl. 29-832.000.

Massachusetts Institute of Technology: *See—*
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Massey-Ferguson Services N.V.: *See—*
Muller, Jean Claude; and McNaught, James B., 4,501,282, Cl. 130-27.00P.

Masuda, Koji, to Nissan Motor Company, Limited. Catalyst for reforming of methanol and process of preparing same. 4,501,823, Cl. 502-304.000.

Mathewes, Wolfgang, to Kraftwerk Union Aktiengesellschaft. Sample-taking apparatus for a container, containing a bulk material feed. 4,501,162, Cl. 73-863.830.

Matier, William L.; and Kam, Sheung-Tsam, to American Hospital Supply Corporation. Method for treating glaucoma by the topical administration of selectively metabolized beta-blocking agents. 4,501,912, Cl. 560-66.000.

Matson, Gary R.: *See—*
Romansky, John A.; and Matson, Gary R., 4,501,483, Cl. 355-3.0FU.

Matsuda, Masanori; Koyama, Haruo; and Miyakawa, Nobuhiro, to Mita Industrial Company Limited. Heat-sensitive black recording material. 4,502,067, Cl. 346-214.000.

Matsuda, Yasuhiko, to Kabushiki Kaisha Sato. Temperature control system. 4,502,056, Cl. 346-76.0PH.

Matsufuji, Teruo, to Iwasaki Tsushinki Kabushiki Kaisha. Howler tone sending-out system in time-division electronic exchanges. 4,502,139, Cl. 370-110.200.

Matsui, Fumio; and Sashida, Mitsuaki, to Pioneer Electronic Corporation. System for developing a photo-resist material used as a recording medium. 4,501,480, Cl. 354-298.000.

Matsui, Kanenobu; Uchiumi, Shinichiro; Iwayama, Akira; and Umezu, Takashi, to Ube Industries, Ltd. Process for producing an acetal. 4,501,705, Cl. 260-465.600.

Matsui, Takahiro: *See—*
Tamura, Jun; Matsui, Takahiro; and Hozumi, Kazuo, 4,501,557, Cl. 433-79.000.

Matsumoto, Shuji, to Tokyo Shibaura Denki Kabushiki Kaisha. Wear resistant sintered body. 4,501,613, Cl. 75-240.000.

Matsunaga, Toshio: *See—*
Matsuno, Sadayuki; Itoh, Hiroshi; Nishikawa, Isamu; Awazu, Tatsuo; Matsunaga, Toshio; Kitaoka, Yoshitaka; Sugimoto, Goro; and Nishinaka, Hiroki, 4,501,223, Cl. 118-668.000.

Matsuno, Sadayuki; Itoh, Hiroshi; Nishikawa, Isamu; Awazu, Tatsuo; Matsunaga, Toshio; Kitaoka, Yoshitaka; Sugimoto, Goro; and Nishinaka, Hiroki, to Hitachi Zosen Corporation. Coating apparatus. 4,501,223, Cl. 118-668.000.

Matsushima, Haruo, to Matsushita Electric Industrial Co., Ltd. Turntable type high-frequency heating apparatus. 4,501,944, Cl. 219-10.55F.

Matsushima, Satoru: *See—*
Takayanagi, Shigewo; Hasegawa, Junzo; Yasutaka, Hayashi; Doi, Shunichi; and Matsushima, Satoru, 4,501,141, Cl. 73-146.000.

Matsushita Electric Industrial Co., Ltd.: *See—*
Hotta, Shu; Hosaka, Tomiharu; Sonoda, Nobuo; and Shimotsuma, Wataru, 4,501,686, Cl. 252-500.000.
Matsushima, Haruo, 4,501,944, Cl. 219-10.55F.
Mitsuyu, Tsuneo; Ono, Shusuke; Inaba, Ritsuo; and Wasa, Kiyotaka, 4,501,987, Cl. 310-313.00A.
Morotomi, Noriaki; and Sato, Takeshi, 4,502,077, Cl. 358-167.000.
Niwa, Takashi, 4,501,147, Cl. 73-336.500.
Otsuka, Hirotaka; Uchida, Hideo; Uno, Yoshihiro; Nakazato, Katsuo; Sannomiya, Kunio; Kawakami, Hidehiko; and Tsuchiya, Hiroshi, 4,502,081, Cl. 358-280.000.

Matsushita Graphic Communications Systems, Inc.: *See—*
Otsuka, Hirotaka; Uchida, Hideo; Uno, Yoshihiro; Nakazato, Katsuo; Sannomiya, Kunio; Kawakami, Hidehiko; and Tsuchiya, Hiroshi, 4,502,081, Cl. 358-280.000.

Matsushita, Toshihiko: *See—*
Hiraishi, Shigetoshi; Morishita, Sadao; and Matsushita, Toshihiko, 4,501,809, Cl. 430-138.000.

Matsutani, Kanji, to Matsutani Seisakusho. Method for forming a hole of eyeless suture needle. 4,501,312, Cl. 163-5.000.

Matsutani Seisakusho: *See—*
Matsutani, Kanji, 4,501,312, Cl. 163-5.000.

Matsuzaka, Masayoshi: *See—*
Kubota, Hirotoshi; Takano, Akira; Arai, Isao; and Matsuzaka, Masayoshi, 4,501,397, Cl. 244-75.00R.

Mattes, Gerd, to Robert Bosch GmbH. Scene-start and -end reference indicator arrangement for projector storing scene-start and -end frame counts. 4,501,478, Cl. 352-5.000.

Maupin, Charles G.: *See—*
Jacobi, Cecil T., Jr.; Maupin, Charles G.; Woodsmall, James B.; Brown, William J.; Thomas, Bruce E.; Owens, Walton D.; Cunningham, Robert J.; and Smith, Rocky D., 4,501,072, Cl. 34-1.000.

Maurice, Terrence J.; and Grealy, Jennifer M., to General Foods, Inc. Production of fat-containing protein fibers. 4,501,760, Cl. 426-250.000.

Mayer, Walter: *See—*
Schuller, Edmund; Mayer, Walter; Hini, Eugen; Bock, Erich; and Lovas, Kurt, 4,501,116, Cl. 57-263.000.

Mazda Motor Corporation: *See—*
Aizawa, Makoto; Kiahimoto, Tsuneo; and Tanimoto, Yoshio, 4,501,790, Cl. 428-283.000.
Mashimo, Tohru; Nishio, Takashi; and Satoh, Osamu, 4,501,199, Cl. 102-313.000.

McCandless, James C., to International Harvester Co. Dynamic engine power assessment. 4,501,138, Cl. 73-116.000.

McCartney, Michael S.; and Pollock, William H., to Combustion Engineering, Inc. Overfire air admission with varying momentum air streams. 4,501,204, Cl. 110-264.000.

McCollum, Gregory J.: *See—*
Singer, Debra L.; McCollum, Gregory J.; and Dowbenko, Rostyslaw, 4,501,854, Cl. 525-162.000.

McCormick-Goodhart, Mark H., to Energy Conversion Devices, Inc. Microfiche recording apparatus and method with stationary film head. 4,501,487, Cl. 355-27.000.

McCoy, John J.: *See—*
Falcone, Samuel J.; and McCoy, John J., 4,501,915, Cl. 560-157.000.

McDaniel, John, to Biomet, Inc. Knee distraction device. 4,501,266, Cl. 128-69.000.

McDaniel, John M.; and Miller, Clayton R., to Zimmer, Inc. Metal and plastic composite tibial component for knee joint. 4,501,031, Cl. 3-1.911.

McGinnis, Gerald E. Endotracheal tube with pressure controlled inflatable cuff. 4,501,273, Cl. 128-207.150.

McGregor, Anderson D.: *See—*
Dyer, Lawrence D.; and McGregor, Anderson D., 4,501,258, Cl. 125-13.00R.

McGuire, Jeffrey C.: *See—*
Pandey, Ramesh C.; Toussaint, Margaret W.; McGuire, Jeffrey C.; and Thomas, Monica C., 4,501,699, Cl. 260-351.100.

McGuire, Michael L.; Seluga, David M.; and Blum, Michael R., to Weyerhaeuser Company. Method for reduction of formaldehyde emissions in wood composite panels. 4,501,628, Cl. 156-62.800.

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McKelvey, James M., to Luwa Corporation. Method and apparatus for extruding thermoplastic material. 4,501,498, Cl. 366-69.000.

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McMurtrey, David K. Welded stem assembly. 4,501,435, Cl. 280-279.000.

McNab Incorporated: *See—*
Druker, Harvey A., 4,502,011, Cl. 324-446.000.

McNaught, James B.: *See—*
Muller, Jean Claude; and McNaught, James B., 4,501,282, Cl. 130-27.00P.

McNeely, Ronald K., to RCA Corporation. Stylus arm insertion apparatus. 4,501,063, Cl. 29-711.000.

McQuain, David B.: *See—*
Buirley, William L.; Koopman, Donald E.; McQuain, David B.; and Reeves, William H., 4,501,503, Cl. 374-162.000.

MDS Health Group Limited: *See—*
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Meca S.a.s. di Cagnoni Landoni S.C.: *See—*
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Meier, Willi, to Dorina Nahmaschinen GmbH. Feed control for a sewing machine. 4,501,213, Cl. 112-316.000.

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Merck & Co., Inc.: *See—*
Baldwin, John J.; Jones, James H.; and Lundell, George F., 4,501,900, Cl. 548-436.000.
Clineschmidt, Bradley V., 4,501,749, Cl. 514-326.000.

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Merrill, Wayne S., to Millipore Corporation. Filter cartridges and methods and components for making them. 4,501,663, Cl. 210-347.000.

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Griffin, Christopher J.; and Oxborrow, Bernard H., 4,501,104, Cl. 53-48.000.

Meyer, Jeffry R., to Westinghouse Electric Corp. High current contact. 4,501,466, Cl. 339-255.00P.

Meyer, Theodor: *See—*
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Michalak, Peter: *See—*
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Micro Technology Laboratory Co., Ltd.: *See—*
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Middlekauff, Carle A., to W. H. Nichols Company. Compact high torque gerotor-type hydraulic motor. 4,501,536, Cl. 418-61.00B.

Miller, Clayton R.: *See—*
McDaniel, John M.; and Miller, Clayton R., 4,501,031, Cl. 3-1.911.

Miller, Ira; Null, Michael W.; and Dotson, Robert N., to Motorola, Inc. Pulse stretching and level shifting circuit. 4,501,974, Cl. 307-246.000.

Miller, Richard; and Rizer, Janine M., to Research One Limited Partnership. Rapid set lightweight cement product. 4,501,830, Cl. 523-401.000.

Miller, Robert E.: *See—*
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Miller, Robert J.: *See—*
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Miller, Stephen B.; Stewart, Ronald L.; and Thompson, David A., to Corning Glass Works. Process for making sintered glasses and ceramics. 4,501,602, Cl. 65-18.200.

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Millipore Corporation: *See—*
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Milner, Thomas G.: *See—*
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Mima, Donald S.: *See—*
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Minami, Kazuaki; Totani, Shinzo; Miura, Kunio; Akutsu, Kazushi; and Ohyama, Shinji, to Nippondenso Co., Ltd. Navigation system for use with an automobile and reading unit for the system. 4,502,123, Cl. 364-424.000.

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Tomsyck, John P.; and Zohn, Thomas J., 4,501,396, Cl. 242-199.000.

Minnick, Larry A.: *See—*
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Mirviss, Stanley B., to Stauffer Chemical Company. Chloromethylation process. 4,501,903, Cl. 549-29.000.

Mishima, Matsuo, to Micro Technology Laboratory Co., Ltd. Columnar solid body rotor. 4,501,984, Cl. 310-261.000.

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Mita Industrial Company Limited: *See—*
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Tsudaka, Hideaki, 4,501,485, Cl. 355-6.000.

Mitchell, Curtis W.; and Berg, Howard M., to Motorola, Inc. LED having self-aligned lens. 4,501,637, Cl. 156-630.000.

Mitchell, Daniel M., to Rockwell International Corporation. Bootstrapped AC-DC power converter. 4,502,104, Cl. 363-26.000.

Mitchell, Michael J.: *See—*
Reeder, Frank; Nunn, Michael J.; Mitchell, Michael J.; and Baxter, Kenneth F., 4,501,615, Cl. 106-14.390.

Mitrofanov, Nicholas M.; and Berner, Victor G., to Harshaw/Filtrol Partnership. Ethylene quenched multi-cathode Geiger-Mueller tube with sleeve-and-screen cathode. 4,501,988, Cl. 313-93.000.

Mitsubishi Denki Kabushiki Kaisha: *See—*
Ebisaka, Toshinobu, 4,502,086, Cl. 361-87.000.
Furukawa, Teruo, 4,502,036, Cl. 340-347.0DD.
Ina, Teruo, 4,501,123, Cl. 62-119.000.
Ito, Haruhiko; and Sano, Mineo, 4,502,031, Cl. 335-277.000.
Kimura, Minoru; and Takahashi, Hisamitsu, 4,502,032, Cl. 336-58.000.
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Mitsubishi Kinzoku Kabushiki Kaisha: *See—*
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Mitsubishi Paper Mills, Ltd.: *See—*
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Mitsubishi Rayon Co., Ltd.: *See—*
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Mitsuhashi, Susumu; Takase, Muneaki; Yasui, Sosuke; Washizawa, Ichiro; and Yoshioka, Kimitomo, to Zenyaku Kogyo Kabushiki Kaisha. Extract from barrenwort. 4,501,736, Cl. 424-195.000.

Mitsui Petrochemical Industries, Ltd.: *See—*
Nagano, Riichiro; Kiga, Hiroshi; and Iwata, Tadao, 4,501,827, Cl. 523-214.000.

Mitsui Toatsu Chemicals, Inc.: *See—*
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Mitsui Toatsu Kaguku Kabushiki Kaisha: *See—*
Sakano, Isao; Yokoyama, Tatsuro; Kajiya, Seitaro; Okazaki, Yutaka; Tokuda, Hiroshi; Kawazura, Hiroshi; Kumakura, Mikio; Nakano, Takuo; and Awaya, Akira, 4,501,750, Cl. 514-369.000.

Mitsuyu, Tsuneo; Ono, Shusuke; Inaba, Ritsuo; and Wasa, Kiyotaka, to Matsushita Electric Industrial Co., Ltd. Surface acoustic wave transducer using a split-finger electrode on a multi-layered substrate. 4,501,987, Cl. 310-313.00A.

Miura, Kunio: *See—*
Minami, Kazuaki; Totani, Shinzo; Miura, Kunio; Akutsu, Kazushi; and Ohyama, Shinji, 4,502,123, Cl. 364-424.000.

Miyahara, Junji: *See—*
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Miyakawa, Nobuhiro: *See—*
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Miyazaki, Hiroshi; and Kato, Masahisa, to Mitsubishi Denki Kabushiki Kaisha. Hole sewing machine. 4,501,207, Cl. 112-66.000.
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Miyazawa, Kokichi; Nakata, Kazuo; Ishikawa, Tsuneo; Honma, Ichiro; Hirai, Masaharu; Ogasawara, Makoto; and Kawamura, Toshihiko, to Ishihara Sangyo Kaisha, Ltd. Process for the production of cobalt-containing magnetic iron oxide powder. 4,501,774, Cl. 427-215.000.
Mizoguchi, Fumio, to Olympus Optical Co., Ltd. Apparatus for detecting an amount of liquid remained in a vessel. 4,502,126, Cl. 364-509.000.
Mizuhara, Hisayoshi; Omori, Shigenori; and Tanaka, Akira, to Yoshida Kogyo K. K. Apparatus for shaping coiled slide fastener coupling elements. 4,501,547, Cl. 425-391.000.
Mizukami, Osamu: *See*—
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Prior, Maurice; and Quigley, M. Scott, 4,501,143, Cl. 73-153.000.
Modzinski, Charles J.; and Devaney, Michael J., to United States of America, Army. Vehicle interior deicing/defogging system. 4,501,390, Cl. 237-12.30C.
Moggi, Giovanni, to Montedison S.p.A. Accelerators for vulcanizing vinylidene fluoride elastomeric copolymers. 4,501,858, Cl. 525-340.000.
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Mol, Pieter K. Connecting device between two wheel rims. 4,501,450, Cl. 301-13.0SM.
Molla, Aberra. Method of determining immunoglobulin levels in mammals. 4,501,816, Cl. 436-34.000.
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Higginbottom, Harold P., 4,501,864, Cl. 525-484.000.
Kwentus, Gerald K.; and Suda, Michael, 4,501,907, Cl. 549-259.000.
Papanu, Victor D., 4,501,847, Cl. 524-502.000.
Plischke, LeMoyne W., 4,501,882, Cl. 528-336.000.
Ucci, Pompelio A.; and Blyth, Randolph C., 4,501,591, Cl. 8-495.000.
Woodbrey, James C., 4,501,861, Cl. 525-421.000.
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Moorhouse, Peter, to International Research & Development Company. Polytetrafluoroethylene solid lubricant materials. 4,501,676, Cl. 252-12.000.
Moos, Walter: *See*—
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Morgan, Thomas A., to Honeywell Information Systems Inc. Hand tool for installing compression rings on radial positioning devices. 4,501,054, Cl. 29-235.000.
Mori, Kei. Fishing net. 4,501,084, Cl. 43-17.500.
Mori, Sanae, to Daido Metal Company Ltd. Method for measuring an adhesive strength of a multi-layer material. 4,501,154, Cl. 73-827.000.
Moriguchi, Haruhiko; Kikuchi, Yoshiki; and Ohmori, Takashi, to Fuji Xerox Co., Ltd. Transfer type heat-sensitive recording medium. 4,502,065, Cl. 346-204.000.
Morinaga Milk Industry Co., Ltd.: *See*—
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Morotomi, Noriaki; and Sato, Takeshi, to Matsushita Electric Industrial Co., Ltd. Ghost canceling apparatus. 4,502,077, Cl. 358-167.000.
Morrell, Roger J.; and Larson, David A., to United States of America, Interior. Universal ripper miner. 4,501,448, Cl. 299-67.000.
Morris, Charles A., to Henkel Corporation. Honey coated nuts. 4,501,758, Cl. 426-93.000.
Morrison, Heber J.; and Koenig, Lawrence W., to Westinghouse Electric Corp. Power amplifier with controllable lossless snubber circuit. 4,502,085, Cl. 361-56.000.
Morse, David L.: *See*—
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Moshinsky, Igor B. Dispersion of reflected radar. 4,501,784, Cl. 428-156.000.
Mostek Corporation: *See*—
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MTS Systems Corporation: *See*—
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Mueller, Peter; Ury, Michael G.; and Wood, Charles H., to Fusion Systems Corporation. Deep UV lamp bulb. 4,501,993, Cl. 315-248.000.
Mueller, Richard A.; and Partis, Richard A., to G.D. Searle & Co. [Halo-4-(4,5-dihydro-4,4-dimethyl-2-oxazolyl)-phenyl]octadecan-ols and -ones. 4,501,895, Cl. 548-239.000.
Muller, Alfred; Schaller, Dieter; and Schwab, Manfred, to Robert Bosch GmbH. Method of controlling downshift after braking in automatic transmissions of motor vehicles. 4,501,170, Cl. 74-866.000.
Muller, Alfred; and Schwab, Manfred, to Robert Bosch GmbH. Control of the shift points of an automatic transmission for temporary acceleration increase. 4,501,171, Cl. 74-866.000.
Muller, George H., to Ford Motor Company. Tuned engine intake manifold. 4,501,235, Cl. 123-52.00M.
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Muller, Jean Claude; and McNaught, James B., to Massey-Ferguson Services N.V. Combine harvester crop in-feed conveyor. 4,501,282, Cl. 130-27.00P.
Muller, John E.; and Muller, John E., Jr., to Pomona Service & Supply Co., Inc. Fruit-depositing mechanism. 4,501,350, Cl. 198-478.000.
Muller, John E., Jr.: *See*—
Muller, John E.; and Muller, John E., Jr., 4,501,350, Cl. 198-478.000.

Muller, Reiner: *See*—
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Muller, Rolf, to Papst-Motoren GmbH & Co KG. Magnetization for brushless direct current outer rotor motor. 4,501,997, Cl. 318-254.000.
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Murphy, John W., to Ammco Tools, Inc. Slip plates for lift rack. 4,501,342, Cl. 187-8.410.
Murray, Myles N., to Industrial Electronic Rubber Company. Solenoid actuated fluid control valve. 4,501,407, Cl. 251-141.000.
Muto, Kenji; Karasawa, Akira; Kuroda, Tokuyuki; and Nakamizo, Nobuhiro, to Kyowa Hakko Kogyo Co., Ltd. 1,4-Dihydropyridine derivatives. 4,501,748, Cl. 514-318.000.
Muto, Norishige: *See*—
Yoan, Toyohiko; and Muto, Norishige, 4,501,524, Cl. 414-22.000.
Nagahiro, Kenichi: *See*—
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Nagamine, Tsuyoshi: *See*—
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Nagamune, Teruyuki: *See*—
Endo, Isao; Nagamune, Teruyuki; and Inoue, Ichiro, 4,501,161, Cl. 73-863.240.
Nagano, Riichiro; Kiga, Hiroshi; and Iwata, Tadao, to Mitsui Petrochemical Industries, Ltd. Glass-reinforced polymer composition comprising 4-methyl-1-pentene polymer in combination with a graft modified acid polymer of 4-methyl-1-pentene polymer. 4,501,827, Cl. 523-214.000.
Naganuma, Seihachi: *See*—
Suzuki, Katsuhiko; and Naganuma, Seihachi, 4,501,115, Cl. 57-220.000.
Nagao, Makoto; Nahara, Akira; and Akashi, Goro, to Fuji Photo Film Co., Ltd. Apparatus for making a magnetic recording medium. 4,501,225, Cl. 118-718.000.
Nagaoka, Muneo, to I & K Trading Company. Shuttle wheel toy. 4,501,568, Cl. 446-450.000.
Nagel, Colin M.: *See*—
Heath, Robert B.; and Nagel, Colin M., 4,501,032, Cl. 5-94.000.
Nagumo, Masahide: *See*—
Nishikawa, Meisei; Nagumo, Masahide; and Kojima, Tadashi, 4,502,024, Cl. 332-9.00R.
Nahara, Akira: *See*—
Nagao, Makoto; Nahara, Akira; and Akashi, Goro, 4,501,225, Cl. 118-718.000.
Nakagawa, Toyoaki; Nakajima, Masao; Kawamura, Yoshihisa; and Kanesaki, Nobukazu, to Nissan Motor Company, Limited. Fuel injection rate deducing system for a diesel engine. 4,501,140, Cl. 73-119.00A.
Nakajima, Koichi: *See*—
Ueno, Haruo; Ashitaka, Hidetomo; and Nakajima, Koichi, 4,501,867, Cl. 526-136.000.
Nakajima, Masao: *See*—
Nakagawa, Toyoaki; Nakajima, Masao; Kawamura, Yoshihisa; and Kanesaki, Nobukazu, 4,501,140, Cl. 73-119.00A.
Nakamizo, Nobuhiro: *See*—
Muto, Kenji; Karasawa, Akira; Kuroda, Tokuyuki; and Nakamizo, Nobuhiro, 4,501,748, Cl. 514-318.000.
Nakamura, Masayuki; Tsuriya, Masaaki; and Funabashi, Masahiko, to Sumitomo Durez Company, Ltd. Liquid refractory binder. 4,501,836, Cl. 524-66.000.
Nakamura, Yukihiro: *See*—
Seki, Nansho; Yamaguchi, Yuki; Nakamura, Yukihiro; Kubo, Hiroshi; and Tsuruya, Tetsuo, 4,501,606, Cl. 71-92.000.
Nakanishi, Hikaru, to Mitsubishi Rayon Co., Ltd.; and Senko Medical Instrument Mfg., Co., Ltd. Hydrophilized membrane of porous hydrophobic material and process of producing same. 4,501,785, Cl. 428-195.000.
Nakano, Eiichi: *See*—
Furuno, Nobuo; Ota, Yoshio; Itai, Masahiro; Tokuyama, Akio; and Nakano, Eiichi, 4,501,649, Cl. 204-181.00R.
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Umemoto, Hirotoshi; Tanabe, Hisaki; Yamada, Mitsuo; and Nakano, Shinji, 4,501,863, Cl. 525-443.000.
Nakano, Takuo: *See*—
Sakano, Isao; Yokoyama, Tatsuro; Kajiya, Seitaro; Okazaki, Yutaka; Tokuda, Hiroshi; Kawazura, Hiroshi; Kumakura, Mikio; Nakano, Takuo; and Awaya, Akira, 4,501,750, Cl. 514-369.000.
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Nakata, Kazuo: *See*—
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Nakazato, Katsuo: *See*—
Otsuka, Hirotaka; Uchida, Hideo; Uno, Yoshihiro; Nakazato, Katsuo; Sannomiya, Kunio; Kawakami, Hidehiko; and Tsuchiya, Hiroshi, 4,502,081, Cl. 358-280.000.
Nanba, Yuzaburo, to Eisai Co., Ltd. Cell for measurement. 4,501,497, Cl. 356-246.000.
Napco, Inc.: *See*—
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National Distillers and Chemical Corporation: *See*—
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Nauchno-Issledovatelsky I Experimentalny Institut Avtomovilnogo Elektrooborudovania I Avtopriborov: *See*—
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Nausedas, Joseph A., to Union Carbide Corporation. Internal tube support for co-extrusion stuffing tube assembly. 4,501,542, Cl. 425-133.100.
NCR Corporation: *See*—
Hain, David A., 4,501,416, Cl. 271-3.100.
Weeks, David E.; Reece, John W.; and Wirth, Robert L., 4,501,506, Cl. 400-124.000.
Nederlandse Centrale Organisatie voor Toegepast-Natuurwetenschappelijk Onderzoek: *See*—
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Needham, Donald G., to Phillips Petroleum Company. Composition of polymer of olefin with mixed mineral filler. 4,501,843, Cl. 524-445.000.
Nelson, Alfred W., to Textron Inc. Quick disconnect assembly. 4,501,404, Cl. 248-503.100.
Nelson, David A.; and Saller, Kenneth R., to Comlinear Corporation. Settling time reduction in wide-band direct-coupled transistor amplifiers. 4,502,020, Cl. 330-265.000.
Nelson, Keith E., to Dynatech Laboratories Incorporated. Fluorometer. 4,501,970, Cl. 250-458.100.
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Newall Engineering Company Limited, The: *See*—
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Newman, Neil F.; and Kowalski, Ronald C., to Exxon Research & Engineering Co. Process for the manufacture of halogenated polymers. 4,501,859, Cl. 525-356.000.
Nezot, Francois; Girault, Pierre; Tessier, Jean; and Martel, Jacques, to Roussel Uclaf. Heterocyclic alcohols and their derivatives. 4,501,894, Cl. 548-186.000.
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Ng, Kwokei J.: *See*—
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Nibbe, Bodo B.; and Hirsch, Paul. Device for cooking foods with microwaves. 4,501,946, Cl. 219-10.55E.
Nicholas, James A.; and Krukowski, Richard. Manual muscle tester. 4,501,148, Cl. 73-379.000.
Nicholas, John F.; and Salvagni, Edward A., to General Electric Company. Diode detector with linearity compensating circuit. 4,502,015, Cl. 329-166.000.
Nichols, Cynthia L.; and Kornfeld, Edmund C., to Eli Lilly and Company. Trans-(±)-2,4,6-substituted-5,5a,6,7,8,9,9a,10-octahydropyrimido[4,5-g]quinolines. 4,501,890, Cl. 514-267.000.
Nichols, Dean P., to Mobil Oil Corporation. Method of consolidation of oil bearing sands. 4,501,328, Cl. 166-288.000.
Nicholson, Margie M., to Rockwell International Corporation. Tunable electrochromic filter. 4,501,472, Cl. 350-357.000.
Niimi, Yukihide; Yoshida, Seietsu; and Ohnaka, Hidemi, to Nippondenso Co., Ltd.; and Toyota Jidosha Kabushiki Kaisha. Air-fuel ratio control apparatus. 4,501,242, Cl. 123-440.000.
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Konno, Junichi; Ueda, Yukihiro; Niitsuma, Hiroaki; and Chubachi, Noriyoshi, 4,501,149, Cl. 73-587.000.
Nikkuni, Hiroharu, to Tsutsumi, Shigeru. Cap means for preventing resin from remaining in a mold of a runnerless injection molding apparatus. 4,501,550, Cl. 425-549.000.
Nilssen, Ole K. Full-bridge electronic inverter circuit. 4,502,107, Cl. 363-133.000.
Nimerick, Kenneth H.: *See*—
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Nioh, Susumu; Hirayama, Hiroshi; Honda, Tetsuzo; and Ishida, Koji, to Toyo Engineering Corporation; and Mitsui Toatsu Chemicals, Inc. Granulation process. 4,501,773, Cl. 427-213.000.
Nippon Cable System, Inc.: *See*—
Teraura, Makoto; and Baba, Masanao, 4,501,218, Cl. 114-144.00R.
Nippon Electric Co., Ltd.: *See*—
Kuki, Takakuni, 4,502,141, Cl. 371-37.000.
Saito, Masato, 4,502,110, Cl. 364-200.000.
Nippon Gakki Seizo Kabushiki Kaisha: *See*—
Ikuma, Masahiro, 4,501,186, Cl. 84-1.160.

Nippon Mining Co., Ltd.: *See—*
Ogata, Takashi; Hosaka, Hiroshi; and Kasai, Shunichi, 4,501,666, Cl. 210-688.000.

Nippon Paint Co., Ltd.: *See—*
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Oda, Shoji; Ehara, Kunihiko; Umemoto, Hirotoshi; and Nakano, Shinji, 4,501,829, Cl. 523-400.000.
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Nippon Soken, Inc.: *See—*
Kuno, Akira; and Shinoda, Yoshio, 4,501,284, Cl. 123-352.000.

Nippon Steel Corporation: *See—*
Higuchi, Seizun; Ooga, Tomonari; Tsukamoto, Yukio; Kamada, Minoru; and Nomura, Yukio, 4,501,802, Cl. 428-629.000.

Nippon Steel Metal Products Co., Ltd.: *See—*
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Nippon Telegraph & Telephone Public Corporation: *See—*
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Nippondenso Co., Ltd.: *See—*
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Niimi, Yukihide; Yoshida, Seietsu; and Ohnaka, Hidemi, 4,501,242, Cl. 123-440.000.
Niimi, Yukihide; Kinoshita, Kenzi; and Urushidani, Masahiro, 4,501,243, Cl. 123-440.000.
Omori, Norio; Tabe, Tsutomu; Ito, Katsunori; and Hayashi, Shukichi, 4,501,250, Cl. 123-486.000.

Nisato, Dino; Boveri, Sergio; Roncucci, Romeo; and Carminati, Paolo, to Sanofi. Certain amide derivatives of 2-guanidino-thiazoles and compositions containing same. 4,501,747, Cl. 514-342.000.

Nishikawa, Akira; Saito, Toru; and Otsuka, Kenichi, to Mitsubishi Denki Kabushiki Kaisha. Power switch apparatus. 4,502,132, Cl. 361-332.000.

Nishikawa, Isamu: *See—*
Matsuno, Sadayuki; Itoh, Hiroshi; Nishikawa, Isamu; Awazu, Tatsuo; Matsunaga, Toshio; Kitaoka, Yoshitaka; Sugimoto, Goro; and Nishinaka, Hiroki, 4,501,223, Cl. 118-668.000.

Nishikawa, Meisei; Nagumo, Masahide; and Kojima, Tadashi, to Tokyo Shibaura Denki Kabushiki Kaisha. Pulse-width modulation circuit. 4,502,024, Cl. 332-9.00R.

Nishinaka, Hiroki: *See—*
Matsuno, Sadayuki; Itoh, Hiroshi; Nishikawa, Isamu; Awazu, Tatsuo; Matsunaga, Toshio; Kitaoka, Yoshitaka; Sugimoto, Goro; and Nishinaka, Hiroki, 4,501,223, Cl. 118-668.000.

Nishio, Takashi: *See—*
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Nissan Motor Company, Limited: *See—*
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Nakagawa, Toyoaki; Nakajima, Masao; Kawamura, Yoshihisa; and Kanesaki, Nobukazu, 4,501,140, Cl. 73-119.00A.
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Niwa, Takashi, to Matsushita Electric Industrial Co., Ltd. Control circuit for a humidity sensor. 4,501,147, Cl. 73-336.500.

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Nollkamper, Milton H., to Phillips Petroleum Company. Preheating of distillation feed. 4,501,657, Cl. 208-350.000.

Nolte, Albert; and Wallenfang, Gerd, to Klockner-Humboldt-Deutz AG. Governor for a diesel engine. 4,501,241, Cl. 123-367.000.

Nomori, Hiroyuki: *See—*
Abe, Naoto; Akimoto, Hidetoshi; and Nomori, Hiroyuki, 4,501,621, Cl. 134-17.000.

Nomura, Toshiaki: *See—*
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Nomura, Yukio: *See—*
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Noren, Gerry K., to DeSoto, Inc. Comb cationic polymers and aqueous dispersions thereof. 4,501,855, Cl. 525-218.000.

Normalair-Garrett (Holdings) Limited: *See—*
Furlong, Owen D.; Moore, Leonard; and Ward, Jonathan D., 4,501,293, Cl. 137-557.000.

Normier, Gerard: *See—*
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North American Philips Corporation: *See—*
Shaulov, Avner, 4,501,967, Cl. 250-338.000.

North American Philips Lighting Corp.: *See—*
Evans, George S.; Morton, Edward W.; Gilmore, John F., deceased; and Gilmore, Roderick A., Administrator, 4,501,992, Cl. 315-122.000.

Norton Company: *See—*
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Norton, John P., to Engineered Air Systems, Inc. Method and apparatus for liquid freezing. 4,501,126, Cl. 62-185.000.

Nottingham County Council: *See—*
Dury, Peter L. K., 4,501,420, Cl. 272-3.000.

Novotny, Larry G.: *See—*
Chandler, Curtis S.; Novotny, Larry G.; and Watts, Elvert S., 4,501,459, Cl. 339-48.000.

Nozawa, Ryoichiro; Nagamine, Tsuyoshi; Kawamura, Hideaki; and Miyata, Mitsuto, to Fujitsu Fanuc Limited. Numerical controller equipped with optional block skip function. 4,501,998, Cl. 318-568.000.

Nozawa, Ryoichiro; Nagamine, Tsuyoshi; Kawamura, Hideaki; and Miyata, Mitsuto, to Fujitsu Fanuc Limited. Position error correction equipment. 4,502,108, Cl. 364-170.000.

Nuclear Metals, Inc.: *See—*
Walz, Mark J., 4,501,073, Cl. 34-9.000.

NuJack Oil Pump Company: *See—*
Stanton, George E., 4,501,119, Cl. 60-398.000.

Null, Michael W.; Dotson, Robert N.; and Davis, Robert B., to Motorola, Inc. Current amplifier having multiple selectable outputs. 4,501,979, Cl. 307-494.000.

Null, Michael W.: *See—*
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Numata, Tatsuo: *See—*
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Nunn, Michael J.: *See—*
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Oakland Corporation, The: *See—*
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Obenauf, James E.; and Brodish, Charles E. Golfer's head motion sensor. 4,502,035, Cl. 340-323.00B.

O'Brien, John P., to Du Pont de Nemours, E. I., and Company. Cellulosic fibers from anisotropic solutions. 4,501,886, Cl. 536-57.000.

Ochi, Tsuneo: *See—*
Saito, Ken; Ochi, Tsuneo; Furunishi, Kaoru; and Yuki, Takeshi, 4,501,402, Cl. 248-346.000.

Ochiai, Takeji, to Fuji Photo Film Co., Ltd. Radiographic intensifying screen. 4,501,971, Cl. 250-483.100.

Oda, Goro, to Tokyo Shibaura Denki Kabushiki Kaisha. Method of cleaning a photo-sensitive body. 4,501,620, Cl. 134-6.000.

Oda, Shoji; Ehara, Kunihiko; Umemoto, Hirotoshi; and Nakano, Shinji, to Nippon Paint Co., Ltd. Coating composition. 4,501,829, Cl. 523-400.000.

Odaira, Keikichi, to Yojigen Agricultural Corporation. Method of preparing artificial fertile soil. 4,501,604, Cl. 71-15.000.

Odum, Charles E. Engine air intake shut-off valve. 4,501,238, Cl. 123-198.00D.

Ogasawara, Makoto: *See—*
Miyazawa, Kokichi; Nakata, Kazuo; Ishikawa, Tsuneo; Honma, Ichiro; Hirai, Masaharu; Ogasawara, Makoto; and Kawamura, Toshihiko, 4,501,774, Cl. 427-215.000.

Ogata, Takashi; Hosaka, Hiroshi; and Kasai, Shunichi, to Nippon Mining Co., Ltd. Process for the removal of bismuth and antimony from aqueous sulfuric acid solution containing bismuth and/or antimony. 4,501,666, Cl. 210-688.000.

Ogawa, Kyosuke: *See—*
Shirai, Shigeru; Ogawa, Kyosuke; Kanbe, Junichiro; Saitoh, Keishi; Osato, Yoichi; and Misumi, Teruo, 4,501,807, Cl. 430-57.000.

Ogilvie, Kelvin K., to ens BIO LOGICALS Inc. Substituted-aza-cytosine compounds and anti-viral uses thereof. 4,501,744, Cl. 514-245.000.

O'Hara, Mark J.: *See—*
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O'Hare, Louis R. Convection powered solar food dryer. 4,501,074, Cl. 34-93.000.

Ohio State University, The: *See—*
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Ohmori, Takashi: *See—*
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Ohnaka, Hidemi: *See—*
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Ohnishi, Souichi; and Shiono, Fusahiro, to Sharp Kabushiki Kaisha. System for data transmission between electronic cash registers. 4,502,120, Cl. 364-405.000.

Ohtomo, Akinori: *See—*
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Ohuchi, Muneki, to JEOL Ltd. Method and apparatus for nuclear magnetic resonance spectroscopy. 4,502,008, Cl. 324-311.000.

Ohya, Nobumasa; Imai, Ryusaku; and Sato, Hitoshi, to Fujitsu Limited. Color information input system for electronic blackboard. 4,501,931, Cl. 178-18.000.

Ohyama, Shinji: *See—*
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Oka, Masahiko: *See—*
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Olmstead, Harold W.; Andrews, Gary D.; and Walquist, Clayton C., to Tektronix, Inc. Automatic "S" correction circuit. 4,501,995, Cl. 315-371.000.

Olson, Glenn O.: *See—*
Bannink, Engbert T., Jr.; and Olson, Glenn O., 4,502,092, Cl. 361-218.000.

Olsson, Mark S. Quick release weight belt and buckle therefor. 4,501,027, Cl. 2-321.000.

Olympus Optical Co., Ltd.: *See—*
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Omark Industries, Inc.: *See—*
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Omori, Norio; Tabe, Tsutomu; Ito, Katsunori; and Hayashi, Shuukichi, to Nippondenso Co., Ltd. Method and apparatus for controlling an internal combustion engine. 4,501,250, Cl. 123-486.000.

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Ong, Robert. Method for forming and holding cheese fish bait. 4,501,083, Cl. 43-4.500.

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Ono, Shusuke: *See—*
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Higuchi, Seizun; Ooga, Tomonari; Tsukamoto, Yukio; Kamada, Minoru; and Nomura, Yukio, 4,501,802, Cl. 428-629.000.

Oomen, Joris J. C.: *See—*
Driessen, Antonius J. G. C.; Geertsema, Eise B.; Oomen, Joris J. C.; and Rouwendal, Jan W., 4,501,799, Cl. 428-446.000.

Oota, Tadaki: *See—*
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Orain, Michel A., to Glaenzer Spicer. Large operating angle constant-speed joint. 4,501,571, Cl. 464-111.000.

Orr, Donald: *See—*
Causer, Roy; and Orr, Donald, 4,501,522, Cl. 414-4.000.

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Fujiwara, Katsuhiro; and Osako, Kazuyoshi, 4,502,112, Cl. 364-200.000.

Osato, Yoichi: *See—*
Shirai, Shigeru; Ogawa, Kyosuke; Kanbe, Junichiro; Saitoh, Keishi; Osato, Yoichi; and Misumi, Teruo, 4,501,807, Cl. 430-57.000.

Osborne, Robert L.: *See—*
Wonn, James W.; and Osborne, Robert L., 4,502,046, Cl. 340-682.000.

Oschatz, Christian, to Sandoz Ltd. Process for dyeing or printing sized textiles. 4,501,589, Cl. 8-495.000.

Osterberg, Lars B., to Nordiskafilt AB. Forming fabric. 4,501,303, Cl. 139-425.00A.

Ostlinning, Edgar; and Idel, Karsten, to Bayer Aktiengesellschaft. Process for the production of optionally branched polyarylene sulphide with piperazinone solvent. 4,501,884, Cl. 528-388.000.

Ota, Naoto: *See—*
Kohzai, Yoshinori; Fujioka, Yoshiki; and Ota, Naoto, 4,501,999, Cl. 318-632.000.

Ota, Yoshio: *See—*
Furuno, Nobuo; Ota, Yoshio; Itai, Masahiro; Tokuyama, Akio; and Nakano, Eiichi, 4,501,649, Cl. 204-181.00R.

Otaki, Yoshio. Guardrail for roadway. 4,501,411, Cl. 256-13.100.

Otis Elevator Company: *See—*
Salihi, Jalal T., 4,501,343, Cl. 187-29.00R.

Otsuka, Hirotaka; Uchida, Hideo; Uno, Yoshihiro; Nakazato, Katsuo; Sannomiya, Kunio; Kawakami, Hidehiko; and Tsuchiya, Hiroshi, to Matsushita Electric Industrial Co., Ltd.; and Matsushita Graphic Communications Systems, Inc. Variable density scanner. 4,502,081, Cl. 358-280.000.

Otsuka, Kenichi: *See—*
Nishikawa, Akira; Saito, Toru; and Otsuka, Kenichi, 4,502,132, Cl. 361-332.000.

Otting, Billy J., to Otting International, Inc. Method and apparatus for spray treating textile material. 4,501,038, Cl. 8-151.000.

Otting International, Inc.: *See—*
Otting, Billy J., 4,501,038, Cl. 8-151.000.

Outboard Marine Corporation: *See—*
Blanchard, Clarence E., 4,501,562, Cl. 440-61.000.

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Kuusikko, Matti J.; and Rantala, Olavi K., 4,501,526, Cl. 414-173.000.

Owens-Illinois, Inc.: *See—*
Smalley, Ned J., 4,501,371, Cl. 215-232.000.

Owens, Walton D.: *See—*
Jacobi, Cecil T., Jr.; Maupin, Charles G.; Woodsmall, James B.; Brown, William J.; Thomas, Bruce E.; Owens, Walton D.; Cunningham, Robert J.; and Smith, Rocky D., 4,501,072, Cl. 34-1.000.

Oxborrow, Bernard H.: *See—*
Griffin, Christopher J.; and Oxborrow, Bernard H., 4,501,104, Cl. 53-48.000.

Ozawa, Jun; Shindo, Katuji; and Shirakawa, Shingo, to Hitachi, Ltd. Lightning arrester. 4,502,089, Cl. 361-127.000.

Pace, Aldren M.: *See—*
Foerster, Charles E., Jr.; Miller, Robert E.; and Pace, Aldren M., 4,501,972, Cl. 250-577.000.

Pacheco, Benjamin G.: *See—*
Valdes, Guillermo A.; Figueredo, Fernando F.; Pacheco, Benjamin G.; and Framil, Armando, 4,501,310, Cl. 144-34.00R.

Pachonik, Horst, to Siemens Aktiengesellschaft. Regenerable electric layer capacitor. 4,502,095, Cl. 361-273.000.

Paersch, Michael; Mrotzek, Herbert; Haukelt, Helmut; and Schreckenberg, Heinz-Wilhelm, to British Petroleum Company p.l.c., The. Process for the production of agglomerated fuels. 4,501,593, Cl. 44-23.000.

Pahade, Ravindra F., to Union Carbide Corporation. Process to separate nitrogen from natural gas. 4,501,600, Cl. 62-28.000.

Palazzetti, Mario: *See—*
Walther, Helmut; and Palazzetti, Mario, 4,501,406, Cl. 251-30.000.

Palguta, Stephen E.: *See—*
Lay, Khin M.; Palguta, Stephen E.; Fernandez, Ramon B.; and Cabalquinto, Santiago C., 4,501,037, Cl. 8-149.200.

Palley, Igor: *See—*
Harpell, Gary A.; Kavesh, Sheldon; Palley, Igor; and Prevorsek, Dusan C., 4,501,856, Cl. 525-240.000.

Palmer, Donald F., III. Manhole cover and assembly for tank for transporting flammable liquids. 4,501,377, Cl. 220-314.000.

Palmer, John R., to Upjohn Company, The. Preparing 1-(hydroxymethyl)-triazolobenzodiazepines and 1-(aminomethyl)-triazolobenzodiazepines. 4,501,698, Cl. 260-245.500.

Palomera, Louis M. Carpenter's level holding device and method for plumbing a wall partition. 4,501,057, Cl. 29-407.000.

Palson, Richard C. J., to Phillips Manufacturing Company, The. Pocketknife hone. 4,501,068, Cl. 30-138.000.

Pandey, Ramesh C.; Toussaint, Margaret W.; McGuire, Jeffrey C.; and Thomas, Monica C., to Litton Bionetics, Inc. Maggiemycin, anhydromaggiemycin and processes for making. 4,501,699, Cl. 260-351.100.

Papanu, Victor D., to Monsanto Company. Polymeric antitumor agent. 4,501,847, Cl. 524-502.000.

Papst-Motoren GmbH & Co KG: *See—*
Muller, Rolf, 4,501,997, Cl. 318-254.000.

Papst Motoren KG: *See—*
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Parikh, Niranjan M.: *See—*
Bauer, Carl F.; Hussey, James H.; Langston, Benny; and Parikh, Niranjan M., 4,501,614, Cl. 75-257.000.

Park, Jong S. Disk jacket. 4,501,357, Cl. 206-312.000.

Park-Ohio Industries, Inc.: *See—*
Lewis, John C., 4,501,942, Cl. 219-10.430.

Parks, Christ F.; and Nimerick, Kenneth H., to Dow Chemical Company, The. Method for reducing the strength of ice. 4,501,775, Cl. 427-220.000.

Partis, Richard A.: *See—*
Mueller, Richard A.; and Partis, Richard A., 4,501,895, Cl. 548-239.000.

Partridge, Randell D.: *See—*
LaPierre, Rene B.; Partridge, Randell D.; Chen, Nai Y.; and Wong, Steven S., 4,501,926, Cl. 585-739.000.

Partus, Fred P., to AT&T Technologies, Inc. Apparatus for supplying fluid to a rotating tube. 4,501,442, Cl. 285-190.000.

Pauliukonis, Richard S. Fluid proportioning diverter valve. 4,501,289, Cl. 137-315.000.

Pawelzik, Manfred; and Derr, Max, to Friedrich Grohe Armaturenfabrik GmbH & Co. Volume control valve. 4,501,408, Cl. 251-314.000.

Payne, Vay B. Target apparatus. 4,501,427, Cl. 273-406.000.
PDA Engineering: *See—*
Schutzler, Jerome C., 4,501,058, Cl. 29-446.000.
Pecheux, Jean-Claude, to Societe Anonyme: Compagnie Generale de Materiel Orthopedique. Traction-suspension device with transosseous pin. 4,501,267, Cl. 128-84.00R.
Peddinghaus, Rolf. Heavy-duty selective embossing apparatus. 4,501,507, Cl. 400-134.000.
Pedicano, Ernest A.: *See—*
Kane, James G.; Pedicano, Ernest A.; and Pedicano, James, 4,501,421, Cl. 272-96.000.
Pedicano, James: *See—*
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Pedtke, Daniel F.: *See—*
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Peffer, John R.: *See—*
Chang, Wen-Hsuan; McKeough, David T.; and Peffer, John R., 4,501,872, Cl. 528-18.000.
Peisker, Glenn; Christiansen, Keith; and Jaime, Gil, to Chicago Rawhide Manufacturing Company. Composite teflon helix seal. 4,501,431, Cl. 277-134.000.
Pelikan, Robert W. Liquid flow indicator and valve device. 4,501,158, Cl. 73-861.580.
Pennsylvania Engineering Corporation: *See—*
Loukos, Isaias, 4,501,599, Cl. 55-71.000.
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Pennzoil Company: *See—*
Magyar, Arpad M.; and Smith, Gerald G., 4,501,825, Cl. 521-78.000.
Penzien, Joseph, to University of California, The Regents of the. Structure failure detector with signal transmission through the structure itself. 4,502,041, Cl. 340-532.000.
Periasamy, Muthunadar P., to Mallinckrodt, Inc. Preparation of trimethoxybenzoate salts and trimethoxybenzoic acid. 4,501,920, Cl. 562-473.000.
Perisic, Milan, to Automatic Roller Doors, Australia, Pty., Ltd. Reversing device for roller doors. 4,501,963, Cl. 250-231.0SE.
Perkins, Eugene W. Heating system with liquid pre-heating. 4,501,231, Cl. 122-26.000.
Perkinson, Robert H.; Donnelly, Brian G.; and Dudash, Carl S., to United Technologies Corporation. Vortex shedding flow measuring transducer. 4,501,157, Cl. 73-861.240.
Perlman, Marvin; and Goldfine, Milton, to Trans-Cryption, Inc. Verifier for a personal indentification system. 4,501,957, Cl. 235-379.000.
Perplies, Eberhard: *See—*
Kornrumpf, Wolfgang; Perplies, Eberhard; Hilbig, Josef; and Felcht, Utz-Hellmuth, 4,501,887, Cl. 536-84.000.
Personal Peripherals Inc.: *See—*
Hyltin, Tom M.; Milner, Thomas G.; and Frye, Elam C., Jr., 4,501,939, Cl. 200-6.00A.
Personal Products Company: *See—*
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Pescatore, Eugene A., to Electro-Biology, Inc. Applicator head for electromagnetic treatment of an afflicted body region. 4,501,265, Cl. 128-1.500.
Peszeszer, Endre F.: *See—*
Yampolsky, Jack S.; and Peszeszer, Endre F., 4,501,948, Cl. 219-121.0LC.
Petersen, Paul S., to MTS Systems Corporation. Test system for testing front wheel drive components of automobiles. 4,501,139, Cl. 73-118.000.
Petrosyan, Robert A.: *See—*
Lipets, Adolf U.; Alexandrov, Boris I.; Kuznetsova, Svetlana M.; Okerblom, Jury I.; Ershov, Jury A.; Frolova, Nadezhda A.; Malkis, Valery A.; Sotnikov, Ivan A.; Fedosov, Alexei Z.; and Petrosyan, Robert A., 4,501,320, Cl. 165-144.000.
Peyton, John J.; and Watt, Bryan K., to Industrial Automation Corp. Transfer system. 4,501,365, Cl. 209-548.000.
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Phillips, Brian: *See—*
Phillips, F. Joseph; Phillips, Paul E.; Phillips, Peter J.; and Phillips, Brian, 4,501,082, Cl. 42-94.000.
Phillips, F. Joseph; Phillips, Paul E.; Phillips, Peter J.; and Phillips, Brian. Portable bench rest. 4,501,082, Cl. 42-94.000.
Phillips Manufacturing Company, The: *See—*
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Phillips Petroleum Company: *See—*
Burns, Lyle D., 4,501,596, Cl. 44-63.000.
Cheng, Paul J., 4,501,720, Cl. 422-156.000.
Cleary, James W., 4,501,902, Cl. 548-555.000.
Needham, Donald G., 4,501,843, Cl. 524-445.000.
Nollkamper, Milton H., 4,501,657, Cl. 208-350.000.
Rohlfing, Raymond G.; and Martin, Laura A., 4,501,286, Cl. 137-15.000.
Rush, Elton E., 4,502,012, Cl. 324-452.000.
Sherk, Fred T.; and Inkrott, Janet L., 4,501,885, Cl. 528-501.000.
Wright, Roy F., 4,501,713, Cl. 264-176.00R.
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Phipps, Henri L. Combination flashlight and lamp. 4,502,102, Cl. 362-183.000.
Pichl, Heinz: *See—*
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Pioneer Electronic Corporation: *See—*
Ishida, Kohji; Noguchi, Tadashi; and Numata, Tatsuo, 4,502,148, Cl. 381-7.000.
Matsui, Fumio; and Sashida, Mitsuaki, 4,501,480, Cl. 354-298.000.
Piotrowski, Tony S., to CertainTeed Corporation. Batt stacker and loader and method therefor. 4,501,107, Cl. 53-438.000.
Piramoon, Alireza, to Beckman Instruments, Inc. Centrifuge bucket hanger with loading ramp. 4,501,565, Cl. 494-85.000.
Pitney Bowes Inc.: *See—*
Foster, Dean H.; and Silverman, Harold, 4,501,417, Cl. 271-124.000.
Pitozzi, Luigi, to SAME S.p.A. Control unit for the lubricating oil circulation pump and for the fuel injection system regulator of diesel engines. 4,501,237, Cl. 123-196.00W.
Pittet, Alan O.; Courtney, Thomas F., Jr.; and Muralidhara, Ranya, to International Flavors & Fragrances Inc. Methyl substituted 2-(2,6-dimethyl-1,5-heptadienyl)-1,3-dithiolanes. 4,501,904, Cl. 549-35.000.
Plischke, LeMoyne W., to Monsanto Company. Batch process for preparing 6TA/6IA copolymers high in 6TA. 4,501,882, Cl. 528-336.000.
Plisky, John J., to Anderson Company of Indiana, The. Retainer clip for windshield wiper blade assemblies. 4,501,043, Cl. 15-250.420.
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Ignatuk, Wayne R.; and Plocic, Frank M., 4,501,091, Cl. 51-102.000.
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Polaroid Corporation: *See—*
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Pomona Service & Supply Co., Inc.: *See—*
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Pond, Murray C. Kitchen table for camper. 4,501,457, Cl. 312-314.000.
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Potter, John T., to Iquad Company Incorporated. Apparatus for use in automatic typing machine. 4,501,508, Cl. 400-141.100.
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Powell, Lionel E.: *See—*
DiNozzi, Robert D.; Vancelette, Stanley R.; Powell, Lionel E.; McLean, George F., Jr.; Sleger, Leon F.; and Mason, Ronald C., 4,501,064, Cl. 29-832.000.
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Chang, Wen-Hsuan; McKeough, David T.; and Peffer, John R., 4,501,872, Cl. 528-18.000.
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Hodek, Robert B.; and Seiner, Jerome A., 4,501,821, Cl. 502-155.000.
Krass, Dennis K., 4,501,924, Cl. 568-592.000.
Singer, Debra L.; McCollum, Gregory J.; and Dowbenko, Rostyslaw, 4,501,854, Cl. 525-162.000.
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Preformed Marine, Inc.: *See—*
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Prenosil, Stanley W.: *See—*
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Prevorsek, Dusan C.: *See—*
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Prior, Maurice; and Quigley, M. Scott, to Mobil Oil Corporation. Preparation unit for a drilling mud testing system. 4,501,143, Cl. 73-153.000.
Proctor-Silex, Inc.: *See—*
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Ptacek, Michael V., to Deere & Company. Wheeled excavator having a dozer blade and a boom-mounted stabilizer wheel. 4,501,334, Cl. 172-832.000.
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Boan, William J.; and Coomes, Robert D., 4,501,499, Cl. 366-156.000.
Purex Pool Products, Inc.: *See—*
Gordbegli, Manochehr; and An, Sangchol, 4,501,232, Cl. 122-235.00C.
Pyle, Charles B.: *See—*
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Quartz & Electronique Alcatel: *See—*
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Ranks Hovis McDougall Ltd.: *See—*
Towersey, Peter J.; Longton, John; and Cockram, Geoffrey N., 4,501,765, Cl. 426-656.000.
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Rasor, William; and Redman, Leon E., to Masco Corporation. Luggage rack with pre-attached end piece. 4,501,386, Cl. 224-326.000.
Rasshofer, Werner, to Bayer Aktiengeselischaft. Preparation of polyamines by hydrolyzing a polyisocyanate in the presence of an isocyanate-reactive compound with water. 4,501,873, Cl. 528-48.000.
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Raytheon Company: *See—*
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Dholakia, Anil R., 4,502,135, Cl. 369-170.000.
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Siryj, Bohdan W.; and Lazzery, Angelo G., 4,502,133, Cl. 369-34.000.
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Real, John D.; Twichell, David J.; and Weed, Lauren R., to Blackstone Corporation. After cooler, charge air cooler and turbulator assemblies and methods of making the same. 4,501,321, Cl. 165-153.000.
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Reed, Robert E., to International Telephone and Telegraph Corporation. Extended resonator electronically tunable band pass filter. 4,502,029, Cl. 333-203.000.
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Reid, Lola C. M.; and Rojkind, Marcos, to Albert Einstein College of Medicine of Yeshiva University. Article for culturing differentiated cells. 4,501,815, Cl. 435-284.000.
Reierson, Robert L.; Hussey, Hugh F.; and Woo, Edmund P., to Dow Chemical Company, The. Bicyclic amide ketal derivatives. 4,501,679, Cl. 252-77.000.
Reinheimer, Guenter; and Kraft, Winfried, to Ernst Leitz Wetzlar GmbH. Device for checking the light source adjustment in an incident light microscope. 4,501,476, Cl. 350-520.000.
Reiser, Wolf; Elbe, Hans-Ludwig; and Feyen, Peter, to Bayer Aktiengesellschaft. Process for the preparation of E-isomers of 1-cyclohexyl-2-(1,2,4-triazol-1-yl)-1-penten-3-one derivatives. 4,501,897, Cl. 548-262.000.
Reitmeier, Glenn A., to RCA Corporation. Digital television signal processing system. 4,502,074, Cl. 358-23.000.
Reliance Electric Company: *See—*
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Renix Electronique: *See—*
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Research Corporation: *See—*
Boucher, Richard C.; Gatzy, John T.; and Knowles, Michael R., 4,501,729, Cl. 424-45.000.
Research One Limited Partnership: *See—*
Miller, Richard; and Rizer, Janine M., 4,501,830, Cl. 523-401.000.
Retz, Philip. Split casing block-off for gas or water in oil drilling. 4,501,327, Cl. 166-285.000.
Rexham Corporation: *See—*
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Reynolds, Desmond H.; and Taft, Philip A., to Lucas Industries Limited. Vehicle braking system. 4,501,451, Cl. 303-6.00A.
Reynolds Industries Inc.: *See—*
Malone, Edgar W., 4,502,096, Cl. 361-308.000.
Rheinisch-Westfalisches Elektrizitatswerk Aktiengesellschaft: *See—*
Gebhard, Georg R. U.; and Hein, Klaus R. G., 4,501,618, Cl. 106-109.000.
Rheometrics, Inc.: *See—*
Garritano, Ronald F., 4,501,155, Cl. 73-847.000.
Rice, Richard: *See—*
Riffe, Josephus; and Rice, Richard, 4,502,111, Cl. 364-200.000.
Rich, Homer C. Workpiece stand. 4,501,080, Cl. 38-102.700.
Richardson, Richard W., to Caterpillar Tractor Co. Adaptive welding system. 4,501,950, Cl. 219-124.340.
Rickert, David W.; Wilkinson, Richard A., Jr.; and Hunt, William C., to Storage Technology Partners II. Apparatus for centering and clamping an information recording disk in a data storage device. 4,502,136, Cl. 369-271.000.
Ricoh Company, Ltd.: *See—*
Horike, Masanori; and Ishikawa, Chuji, 4,502,055, Cl. 346-75.000.
Shimura, Akira, 4,501,484, Cl. 355-15.000.
Suzaki, Masayuki; and Kanno, Tetuo, 4,501,509, Cl. 400-157.200.
Taniguchi, Keishi; and Iiyama, Kiyotaka, 4,502,068, Cl. 346-216.000.
Riess, Louis P.; and Bonnecaze, Bernard F., to Atlantic Richfield Company. Method for producing a dried particulate coal fuel from a particulate low rank coal. 4,501,551, Cl. 432-15.000.
Riffe, Josephus; and Rice, Richard, to Harris Corporation. Token generator. 4,502,111, Cl. 364-200.000.
Rikagaku Kenkyusho: *See—*
Endo, Isao; Nagamune, Teruyuki; and Inoue, Ichiro, 4,501,161, Cl. 73-863.240.
Rink, Karl-Heinz: *See—*
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Risberg, Eilif: *See—*
Bergersen, Hans A.; and Risberg, Eilif, 4,501,956, Cl. 219-553.000.
Ritter, Robert A., to Alberta Oil Sands Technology and Research Authority. Electrophoretic process for separating aqueous mineral suspensions. 4,501,648, Cl. 204-149.000.
Rizer, Janine M.: *See—*
Miller, Richard; and Rizer, Janine M., 4,501,830, Cl. 523-401.000.
Robert Bosch GmbH: *See—*
Eisele, Hermann; and Frank, Bruno, 4,501,248, Cl. 123-478.000.
Gassler, Hermann; Joos, Eugen; Kubach, Hans; Maisch, Wolfgang; and Singer, Erich, 4,501,247, Cl. 123-453.000.
Leblanc, Jean, 4,501,246, Cl. 123-449.000.
Mattes, Gerd, 4,501,478, Cl. 352-5.000.
Moser, Theo; and Mader, Gotz, 4,501,307, Cl. 141-258.000.
Muller, Alfred; Schaller, Dieter; and Schwab, Manfred, 4,501,170, Cl. 74-866.000.
Muller, Alfred; and Schwab, Manfred, 4,501,171, Cl. 74-866.000.
Stumpp, Gerhard; Vogtmann, Hans-Jorg; Fussner, Paul; Schwarz, Manfred; Hofer, Gerald; Konrath, Karl; Straubel, Max; and Faupel, Werner, 4,501,252, Cl. 123-502.000.
Robertson, S. Harry. Hazardous fluid tank with check valve. 4,501,374, Cl. 220-86.00R.
Robison, Kenneth O.: *See—*
Lively, F. Glenn; and Robison, Kenneth O., 4,501,323, Cl. 166-250.000.
Rockey, Arthur G. Medical sleeve. 4,501,264, Cl. 128-1.00R.
Rockwell International Corporation: *See—*
Mitchell, Daniel M., 4,502,104, Cl. 363-26.000.
Nicholson, Margie M., 4,501,472, Cl. 350-357.000.
Yeh, Pochi A., 4,501,470, Cl. 350-313.000.
Rockwood, Robert E.; and Antkowiak, Richard P., to A. W. Chesterton Company. Centrifugal pump. 4,501,530, Cl. 415-170.00A.

Rode, Melvin A.: *See—*
Delmege, Arthur H.; El-Ibiary, Yehia M.; Rode, Melvin A.; and Taplin, Lael B., 4,502,109, Cl. 364-174.000.

Rodiere, Charles; and Crochet, Michel, to Societe Nationale Industrielle Aerospatiale. Apparatus adapted for single pulse electromagnetic measurements of soil conductivity and dielectric constant. 4,502,009, Cl. 324-337.000.

Rogers Corporation: *See—*
Jodoin, Raymond C., 4,502,101, Cl. 361-386.000.

Rogers, Robert M.; Treiber, Fritz F.; and Bowers, Russell E., to Hobart Corporation. Film supply monitor for film wrapping machine. 4,501,105, Cl. 53-64.000.

Roggeman, David M.; Malani, Shrikant R.; and Kang, Jung W., to Firestone Tire & Rubber Company, The. Continuous method for preparing high cis-1,4 polybutadiene. 4,501,866, Cl. 526-133.000.

Rohlfing, Raymond G.; and Martin, Laura A., to Phillips Petroleum Company. Rotary valve. 4,501,286, Cl. 137-15.000.

Rohm and Haas Company: *See—*
Baus, Richard E.; and Swift, Graham, 4,501,845, Cl. 524-460.000.
Meitzner, Erich F.; and Oline, James A., 4,501,826, Cl. 521-29.000.

Rojkind, Marcos: *See—*
Reid, Lola C. M.; and Rojkind, Marcos, 4,501,815, Cl. 435-284.000.

Roling, Franz; and Schoop, Gunther D., to Gewerkschaft Eisenhutte Westfalia. Sprocket wheel. 4,501,577, Cl. 474-155.000.

Romansky, John A.; and Matson, Gary R., to Eastman Kodak Company. Fuser apparatus. 4,501,483, Cl. 355-3.0FU.

Roncucci, Romeo: *See—*
Nisato, Dino; Boveri, Sergio; Roncucci, Romeo; and Carminati, Paolo, 4,501,747, Cl. 514-342.000.

Rooney, John F.: *See—*
Frazier, Terry L.; Grimm, Henry J.; Rooney, John F.; Allen, Richard S.; Brown, Alfred; and Mims, Donald S., 4,501,325, Cl. 166-250.000.

Rose, Douglas N., to United States of America, Army. Method of sealing of ceramic wall structures. 4,501,777, Cl. 427-255.000.

Rose, Robert D., Jr., to Communications Packaging Corporation. Printer thimble element holder. 4,501,361, Cl. 206-493.000.

Rose, Thomas A.: *See—*
Heil, Richard W.; and Rose, Thomas A., 4,501,664, Cl. 210-614.000.

Rosemount Inc.: *See—*
Frick, Roger L., 4,502,003, Cl. 323-275.000.

Rosen, George J.: *See—*
Markey, Dennis P.; and Rosen, George J., 4,501,103, Cl. 52-745.000.

Rosenkilde, Johannes. Ridge element for corrugated roofs. 4,501,097, Cl. 52-57.000.

Ross, Donald R. Process for treating radioactive salt cake. 4,501,690, Cl. 252-628.000.

Ross, Stuart E.: *See—*
, Stone, George C.; and Ross, Stuart E., 4,501,424, Cl. 273-148.00B.

Rossetti, Nazareno: *See—*
Siligoni, Marco; and Rossetti, Nazareno, 4,501,933, Cl. 179-81.00R.

Rossi, Giulio A., to Norton Company. Process for the preparation of ceramic powders. 4,501,818, Cl. 501-1.000.

Rosthauser, James W.: *See—*
Markusch, Peter H.; Rosthauser, James W.; and Beatty, Michael C., 4,501,852, Cl. 524-591.000.

Rouge, Jean, to Thomson-CSF. Acoustic polarimeter. 4,501,150, Cl. 73-628.000.

Rounds, Hugh G.: *See—*
Schoenrock, Karlheinz W. R.; Henscheid, Thomas H.; and Rounds, Hugh G., 4,501,814, Cl. 435-94.000.

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Barton, Derek H. R.; Motherwell, William B.; and Zard, Sammir Z., 4,501,701, Cl. 260-397.400.
Clemence, Francois; Medici, Italo; Fournex, Robert; and Tournemine, Colette, 4,501,740, Cl. 514-283.000.
Martel, Jacques; Buendia, Jean; and Nezot, Francois, 4,501,687, Cl. 252-522.00R.
Martel, Jacques; Tessier, Jean; and Demoute, Jean-Pierre, 4,501,704, Cl. 260-465.00R.
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Rouwendal, Jan W.: *See—*
Driessen, Antonius J. G. C.; Geertsema, Eise B.; Oomen, Joris J. C.; and Rouwendal, Jan W., 4,501,799, Cl. 428-446.000.

Rowley, Gerald L.: *See—*
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Ruhrgas Aktiengesellschaft: *See—*
Sommers, Hans; and Jannemann, Theo, 4,501,127, Cl. 62-238.300.

Rush, Elton E., to Phillips Petroleum Company. Method of discharging an aerosol container to measure charge buildup on the container. 4,502,012, Cl. 324-452.000.

Russo, Peter J. Bathing trunks. 4,501,024, Cl. 2-67.000.

Rutledge, Raleigh N.; and Hahn, Granville J., to Cosden Technology, Inc. Rotary extruder. 4,501,543, Cl. 425-191.000.

Ryan, Charles W.; and Slomski, Bruce A., to Eli Lilly and Company. Synthesis of alkylidene intermediates. 4,501,921, Cl. 564-99.000.

Rysin, Nikolai I.: *See—*
Abramov, Vsevolod V.; Kuznetsov, Vsevolod V.; Veselov, Alexandr V.; Tkhai, Vitaly S.; Rysin, Nikolai I.; and Gerasimov, Vasily I., 4,501,549, Cl. 425-542.000.

Sachenik, Paul A.: *See—*
Borrelli, Nicholas F.; Keck, Donald B.; Morse, David L.; and Sachenik, Paul A., 4,501,468, Cl. 350-96.250.

Sachs-Systemtechnik GmbH: *See—*
Lutz, Dieter; and Thieler, Wolfgang, 4,501,348, Cl. 192-106.100.

Sagami Chemical Research Center: *See—*
Hiyama, Tamejiro; and Kobayashi, Kazuhiro, 4,501,909, Cl. 549-342.000.

Saikawa, Masahiko; Kanada, Eiji; Tanaka, Akira; and Endo, Kazunaka, to Mitsubishi Paper Mills, Ltd. Process for making lithographic printing plates. 4,501,811, Cl. 430-204.000.

Saito, Ken; Ochi, Tsuneo; Furunishi, Kaoru; and Yuki, Takeshi, to Nippon Steel Metal Products Co., Ltd. Metal skid for bundling. 4,501,402, Cl. 248-346.000.

Saito, Masato, to Nippon Electric Co., Ltd. Split-cache having equal size operand and instruction memories. 4,502,110, Cl. 364-200.000.

Saito, Massaru: *See—*
Endo, Satsuo; and Saito, Massaru, 4,502,034, Cl. 338-128.000.

Saito, Tadashi, to Toyota Jidosha Kabushiki Kaisha. Transmission power output shaft assembly with bearing lubricant collecting and directing member. 4,501,167, Cl. 74-467.000.

Saito, Toru: *See—*
Nishikawa, Akira; Saito, Toru; and Otsuka, Kenichi, 4,502,132, Cl. 361-332.000.

Saitoh, Keishi: *See—*
Shirai, Shigeru; Ogawa, Kyosuke; Kanbe, Junichiro; Saitoh, Keishi; Osato, Yoichi; and Misumi, Teruo, 4,501,807, Cl. 430-57.000.

Sakaguchi, Yoshihito: *See—*
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Sakai, Kiyoshi; Ishikawa, Shozo; Arita, Tetsuo; Mabuchi, Minoru; and Umehara, Shoji, to Canon Kabushiki Kaisha. Recording medium and process employing a photosensitive organic film. 4,501,808, Cl. 430-59.000.

Sakakibara, Toshimori: *See—*
Sugimori, Masaru; Sanji, Koichiro; Tomoyasu, Hirohide; and Sakakibara, Toshimori, 4,501,853, Cl. 525-122.000.

Sakakibara, Yasuji: *See—*
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Sakamoto, Shinichi: *See—*
Amano, Matsuo; Sakamoto, Shinichi; Hirayama, Takeshi; and Sasayama, Takao, 4,501,249, Cl. 123-478.000.

Sakano, Isao; Yokoyama, Tatsuro; Kajiya, Seitaro; Okazaki, Yutaka; Tokuda, Hiroshi; Kawazura, Hiroshi; Kumakura, Mikio; Nakano, Takuo; and Awaya, Akira, to Mitsui Toatsu Kaguku Kabushiki Kaisha. Thiazole compounds, a process for preparing same and a pharmaceutical composition containing the thiazole compounds. 4,501,750, Cl. 514-369.000.

Sakanoue, Kei: *See—*
Hirano, Shigeo; and Sakanoue, Kei, 4,501,898, Cl. 548-336.000.

Salihi, Jalal T., to Otis Elevator Company. Elevator car load and position dynamic gain compensation. 4,501,343, Cl. 187-29.00R.

Saller, Kenneth R.: *See—*
Nelson, David A.; and Saller, Kenneth R., 4,502,020, Cl. 330-265.000.

SALUS Ricerca e Sviluppo di CROCE' Dr. Francesco & C. Snc: *See—*
Breda, Enzo; and Ciotti, Alfredo, 4,501,491, Cl. 356-39.000.

Salvagni, Edward A.: *See—*
Nicholas, John F.; and Salvagni, Edward A., 4,502,015, Cl. 329-166.000.

Salvat, Francois: *See—*
Dupressoir, Albert; and Salvat, Francois, 4,502,053, Cl. 343-727.000.

SAME S.p.A.: *See—*
Pitozzi, Luigi, 4,501,237, Cl. 123-196.00W.

Samec, Jean: *See—*
Groult, Alain; and Samec, Jean, 4,501,681, Cl. 252-174.120.

Sanders, Richard L., to Lockheed Corporation. Automatic threaded nut installation and torquing system. 4,501,176, Cl. 81-470.000.

Sandiford, Burton B.; Fett, E. Reinold; and Bickford, Harold J., to Union Oil Company of California. Method for identifying the source of an oil. 4,501,324, Cl. 166-250.000.

Sandorff, Paul E., to Lockheed Corporation. Beam balancer electro-impulse deicing systems. 4,501,398, Cl. 244-134.00R.

Sandoz Ltd.: *See—*
Connell, David L.; and Coates, Jacqueline A., 4,501,672, Cl. 252-8.50M.
Oschatz, Christian, 4,501,589, Cl. 8-495.000.

Saneyoshi, Norio: *See—*
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Sanji, Koichiro: *See—*
Sugimori, Masaru; Sanji, Koichiro; Tomoyasu, Hirohide; and Sakakibara, Toshimori, 4,501,853, Cl. 525-122.000.

Sannomiya, Kunio: *See—*
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Sano, Mineo: *See—*
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Sano, Shinichi: *See—*
Yamaguchi, Keiki; and Sano, Shinichi, 4,501,278, Cl. 128-660.000.

Sanofi: *See—*
Nisato, Dino; Boveri, Sergio; Roncucci, Romeo; and Carminati, Paolo, 4,501,747, Cl. 514-342.000.

Santo, Philip J. Floatation sleep system. 4,501,036, Cl. 5-452.000.

Sarada, Thyagaraja, to Celanese Corporation. Surfactant treated polyolefinic microporous materials capable of multiple re-wetting with aqueous solutions. 4,501,793, Cl. 428-315.500.

Sasayama, Takao: *See—*
Amano, Matsuo; Sakamoto, Shinichi; Hirayama, Takeshi; and Sasayama, Takao, 4,501,249, Cl. 123-478.000.

Sashida, Mitsuaki: *See—*
Matsui, Fumio; and Sashida, Mitsuaki, 4,501,480, Cl. 354-298.000.

Satake, Toshimi; Maruyama, Kazuo; and Fujimura, Fumio, to Jujo Paper Co., Ltd. Heat-sensitive recording sheet. 4,502,066, Cl. 346-209.000.

Sato, Hisao: *See—*
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Sato, Hitoshi: *See—*
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Sato, Takeshi: *See—*
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Satoh, Osamu: *See—*
Mashimo, Tohru; Nishio, Takashi; and Satoh, Osamu, 4,501,199, Cl. 102-313.000.

Satzler, Ronald L., to Caterpillar Tractor Co. Method and apparatus for extruding reinforced hose. 4,501,629, Cl. 156-149.000.

Saurenman, Donald G. Positive and negative ion distributor bar. 4,502,091, Cl. 361-213.000.

Saurenman, Donald G., to Consan Pacific Incorporated. Control of static neutralization employing cables and wires. 4,502,093, Cl. 361-231.000.

Savin Corporation: *See—*
Landa, Benzion, 4,501,486, Cl. 355-15.000.

Scans Associates, Inc.: *See—*
Foerster, Charles E., Jr.; Miller, Robert E.; and Pace, Aldren M., 4,501,972, Cl. 250-577.000.

Scardovi, Alessandro: *See—*
Brescia, Riccardo; Buat, Mario; Dagna, Giandomenico; and Scardovi, Alessandro, 4,502,054, Cl. 346-75.000.

Sceberras, Conrad T. Dual headed razor system. 4,501,066, Cl. 30-50.000.

Schaake, Herbert F.: *See—*
Tregilgas, John H.; Beck, Jeffrey D.; Kinch, Michael A.; and Schaake, Herbert F., 4,501,625, Cl. 148-20.300.

Schafer, Gerhard, to Fritz Schafer Gesellschaft Mit Beschrankterhaftung. Storage rack with multiple drawer compartments and mold for making same. 4,501,456, Cl. 312-273.000.

Schaller, Dieter: *See—*
Muller, Alfred; Schaller, Dieter; and Schwab, Manfred, 4,501,170, Cl. 74-866.000.

Schecter, Steven M.: *See—*
Mahlmann, James P.; Schecter, Steven M.; and Scher, Lawrence, 4,501,761, Cl. 426-467.000.

Scheffer, Hans: *See—*
Damman, Ben; Drijver, Jan; Kinneging, Hans; Scheffer, Hans; Stam, Jaap; and de Witte, Paul, 4,501,639, Cl. 159-48.100.

Schenectady Chemicals, Inc.: *See—*
Walrath, George A.; and Smith, Scott D., 4,501,883, Cl. 528-340.000.

Scher, Lawrence: *See—*
Mahlmann, James P.; Schecter, Steven M.; and Scher, Lawrence, 4,501,761, Cl. 426-467.000.

Schijf, Robert: *See—*
Gercama, Anne; and Schijf, Robert, 4,501,764, Cl. 426-607.000.

Schindler, John A. Current pulse monitor. 4,502,004, Cl. 324-103.00P.

Schingnitz, Manfred: *See—*
Kretschmer, Horst; Tietze, Gunter; Beiermann, Norbert; Schingnitz, Manfred; and Goehler, Peter, 4,501,156, Cl. 73-861.040.

Schlumberger Technology Corporation: *See—*
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Schmider, Fritz, to Papst Motoren KG. Electric machine. 4,501,983, Cl. 310-113.000.

Schmidt, Hans-Joachim; and Arpe, Hans-Jurgen, to Hoechst Aktiengesellschaft. Process for carbonylating formaldehyde acetals. 4,501,917, Cl. 560-187.000.

Schmidt, James C., to A. E. Staley Manufacturing Company. Process for producing esters of carbohydrate materials. 4,501,888, Cl. 536-110.000.

Schmidt, Peter: *See—*
Jacoby, Hans-Dieter; and Schmidt, Peter, 4,501,527, Cl. 414-225.000.

Schmidt, Rudolf: *See—*
Kotulla, Bernhard; Weiser, Martin; Faltin, Jurgen; Preis, Lothar; Schmidt, Rudolf; and Born, Eberhard, 4,501,516, Cl. 405-260.000.

Schneider, Andre, to Compagnie Generale des Etablissements Michelin. Riders for trapezoidal drive belt. 4,501,578, Cl. 474-201.000.

Schneider, Gottfried: *See—*
Landwehrkamp, Hans; and Schneider, Gottfried, 4,501,221, Cl. 118-78.000.

Schneider, Karl-Heinz: *See—*
Schulze, Hans-Horst; Loweg, Heribert; and Schneider, Karl-Heinz, 4,501,044, Cl. 15-312.00R.

Schoenrock, Karlheinz W. R.; Henscheid, Thomas H.; and Rounds, Hugh G., to Amalgamated Sugar Company, The. Process for producing a high fructose sweetener, high protein meal, and cereal germ oils. 4,501,814, Cl. 435-94.000.

Scholz, Adolf: *See—*
Weis, Martin; and Scholz, Adolf, 4,501,313, Cl. 164-404.000.

Schonung, Bernhard: *See—*
von Ronai-Horvath, Michael; and Schonung, Bernhard, 4,501,114, Cl. 57-81.000.

Schoop, Gunther D.: *See—*
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Schreck, Ronald: *See—*
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Schreckenberg, Heinz-Wilhelm: *See—*
Paersch, Michael; Mrotzek, Herbert; Haukelt, Helmut; and Schreckenberg, Heinz-Wilhelm, 4,501,593, Cl. 44-23.000.

Schreiber, David A.: *See—*
Fenton, Edward A., Jr.; Lakin, Ira W.; Stein, Joseph H.; Lohr, John R.; and Schreiber, David A., 4,501,539, Cl. 425-84.000.

Schroder, Ulf; and Mosbach, Klaus. Intravascularly administrable, magnetically responsive nanosphere or nanoparticle, a process for the production thereof, and the use thereof. 4,501,726, Cl. 424-1.100.

Schubert & Salzer: *See—*
Schuller, Edmund; Mayer, Walter; Hini, Eugen; Bock, Erich; and Lovas, Kurt, 4,501,116, Cl. 57-263.000.

Schubert & Salzer Maschinenfabrik Aktiengesellschaft: *See—*
Landwehrkamp, Hans; and Schneider, Gottfried, 4,501,221, Cl. 118-78.000.

Schuh, Gottfried, to Siemens Aktiengesellschaft. Contact for an MIS-semiconductor component and method for manufacturing the same. 4,502,069, Cl. 357-23.400.

Schuller, Edmund; Mayer, Walter; Hini, Eugen; Bock, Erich; and Lovas, Kurt, to Schubert & Salzer. Process for winding a newly joined thread onto a tube newly inserted in a spooling device. 4,501,116, Cl. 57-263.000.

Schultheiss, Hartmut: *See—*
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Schultz, Samuel: *See—*
Boisvert, J. Roger; Schultz, Samuel; and Blaugrund, Robert, 4,501,088, Cl. 43-118.000.

Schulz, Volker. Perfusion kit. 4,501,582, Cl. 604-52.000.

Schulze, Hans-Horst; Loweg, Heribert; and Schneider, Karl-Heinz, to Gewerkschaft Eisenhutte Westfalia. Apparatus for cleaning components used in electrolytic smelting. 4,501,044, Cl. 15-312.00R.

Schuster, Klaus: *See—*
Bartl, Herbert; Alberts, Heinrich; and Schuster, Klaus, 4,501,871, Cl. 527-313.000.

Schutzler, Jerome C., to PDA Engineering. Method of pre-stressing a structural member. 4,501,058, Cl. 29-446.000.

Schwab, Manfred: *See—*
Muller, Alfred; Schaller, Dieter; and Schwab, Manfred, 4,501,170, Cl. 74-866.000.
Muller, Alfred; and Schwab, Manfred, 4,501,171, Cl. 74-866.000.

Schwartz, Harold: *See—*
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Schwarz, Manfred: *See—*
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Scott Investment Partners: *See—*
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Scott, James J., to Scott Investment Partners. Dynamic rock stabilizing fixture. 4,501,515, Cl. 405-259.000.

Scott, Lewis A.; and Gibson, Duane M., to Omark Industries, Inc. Cutting tool with improved depth control. 4,501,184, Cl. 83-834.000.

Sears Manufacturing Co.: *See—*
Bethell, George L.; Burch, Donald F.; and Hinkhouse, Lysle R., 4,501,541, Cl. 425-117.000.

Sebestyen, Gyula: *See—*
Kulcsar, Gabor; Sebestyen, Gyula; David, Agoston; and Zilahi, Tibor, 4,501,732, Cl. 424-114.000.

Seike, Stephen C.: *See—*
Lowenthal, Richard W.; Seike, Stephen C.; and Walsh, Gregory V., 4,502,038, Cl. 340-365.00S.

Seiner, Jerome A.: *See—*
Hodek, Robert B.; and Seiner, Jerome A., 4,501,821, Cl. 502-155.000.

Seitz, John R. Bowling game. 4,501,426, Cl. 273-277.000.

Seki, Nansho; Yamaguchi, Yuki; Nakamura, Yukihiro; Kubo, Hiroshi; and Tsuruya, Tetsuo, to Showa Denko Kabushiki Kaisha. Herbicidal 5-t-butyl-3-pyrazalylcarbamates and ureas. 4,501,606, Cl. 71-92.000.

Seko, Yasutoshi: *See—*
Yanagishima, Takayuki; and Seko, Yasutoshi, 4,502,122, Cl. 364-424.000.

Selleck, Franklin G.: *See—*
Drinkuth, William H.; Bires, Robert J.; Miller, Robert J.; and Selleck, Franklin G., 4,501,095, Cl. 51-165.720.

Selter, Gustav: *See—*
Kretzschmar, Gisela; and Selter, Jutta, 4,501,133, Cl. 66-117.000.

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Kretzschmar, Gisela; and Selter, Jutta, 4,501,133, Cl. 66-117.000.

Seluga, David M.: *See—*
McGuire, Michael L.; Seluga, David M.; and Blum, Michael R., 4,501,628, Cl. 156-62.800.

Semco Instruments, Inc.: *See—*
Moore, M. Samuel, 4,502,043, Cl. 340-588.000.

Sen, Rajat K.: *See—*
Hardee, Kenneth L.; Gordon, Arnold Z.; Pyle, Charles B.; and Sen, Rajat K., 4,501,824, Cl. 502-339.000.
Seneca, Joseph T. Belt-like ornamental member. 4,501,026, Cl. 2-308.000.
Senko Medical Instrument Mfg., Co., Ltd.: *See—*
Nakanishi, Hikaru, 4,501,785, Cl. 428-195.000.
Seno, Takao: *See—*
Imose, Masayuki; Seno, Takao; and Sakaguchi, Yoshihito, 4,501,553, Cl. 432-59.000.
Senuma, Akitaka; Shimizu, Yoshihiko; and Tsukada, Kiroku, to Union Carbide Corporation. Process and composition for producing open-cell cross linked polyolefin film. 4,501,711, Cl. 264-54.000.
Seo, Yasutsugu, to Tokyo Shibaura Denki Kabushiki Kaisha. Ultrasonic blood flow sensing apparatus. 4,501,279, Cl. 128-663.000.
Seyama, Tuneo, to Kabushiki Kaisha Niida Seisakusho. Lock stitch type hand sewing machine. 4,501,211, Cl. 112-169.000.
Seyle, Robert A. Self propelled trench shield. 4,501,517, Cl. 405-283.000.
SGS-ATES Componenti Elettronici S.p.A.: *See—*
Siligoni, Marco; and Rossetti, Nazareno, 4,501,933, Cl. 179-81.00R.
Siligoni, Marco; and Consiglio, Pietro, 4,502,016, Cl. 330-146.000.
Shah, Pravinchandra K.; and Antlfinger, George J., to B. F. Goodrich Company, The. Latex containing odor inhibitor. 4,501,789, Cl. 428-274.000.
Shaheen, Joseph M.: *See—*
Escallier, Edward A.; Dawson, Stanley R.; and Shaheen, Joseph M., 4,501,929, Cl. 174-117.00F.
Shankar, Srinivasan, to Turbine Components Corporation. Methods of forming a protective diffusion layer on nickel, cobalt and iron base alloys. 4,501,776, Cl. 427-253.000.
Shannon, Patrick A.: *See—*
Fowler, Glenn D.; Shannon, Patrick A.; Stout, Ronald L.; and Yao, Jean, 4,502,116, Cl. 364-200.000.
Shapir, Ben A., to Avmat Computers Ltd. Page printer. 4,502,064, Cl. 346-160.000.
Shapiro, Justin J.: *See—*
MacDermott, Bruce R.; and Shapiro, Justin J., 4,501,163, Cl. 73-864.130.
Sharp Kabushiki Kaisha: *See—*
Furukawa, Toshio, 4,501,281, Cl. 128-680.000.
Ohnishi, Souichi; and Shiono, Fusahiro, 4,502,120, Cl. 364-405.000.
Shaulov, Avner, to North American Philips Corporation. Broad band pyroelectric infrared detector. 4,501,967, Cl. 250-338.000.
Shaw, Frank W.: *See—*
Thayer, Timothy Z.; and Shaw, Frank W., 4,501,118, Cl. 60-301.000.
Shell Oil Company: *See—*
Grundy, Andrew K.; and Versluis, Jan, 4,501,525, Cl. 414-139.000.
Harris, Martin, 4,501,742, Cl. 514-226.000.
Shone, Edward B.; Wilson, Robert W.; and Cunningham, Gordon L., 4,501,124, Cl. 62-129.000.
Shepherd, Charles E. Repair pad and nozzle for cooling tower. 4,501,708, Cl. 261-111.000.
Sherk, Fred T.; and Inkrott, Janet L., to Phillips Petroleum Company. Diluent and inert gas recovery from a polymerization process. 4,501,885, Cl. 528-501.000.
Sherman, Frank E. Hinge template guide with holding pins. 4,501,308, Cl. 144-144.500.
Sherman, Michael I.; Elmore, Carl L.; and Brison, Robert J., to Kamyr, Inc. Leaching and washing a flocculated slurry having a fiber content. 4,501,721, Cl. 423-27.000.
Shibayama, Tooru; Kajiya, Hiroshi; and Takahashi, Mitsuharu, to Kabushiki Kaisha Sato. Continuous tag printing apparatus. 4,501,224, Cl. 118-697.000.
Shigematsu, Kaisaburo; Shigematsu, Nobuo; and Okubo, Yukio, to Shigematsu Works Co., Ltd. Mask. 4,501,272, Cl. 128-206.150.
Shigematsu, Nobuo: *See—*
Shigematsu, Kaisaburo; Shigematsu, Nobuo; and Okubo, Yukio, 4,501,272, Cl. 128-206.150.
Shigematsu Works Co., Ltd.: *See—*
Shigematsu, Kaisaburo; Shigematsu, Nobuo; and Okubo, Yukio, 4,501,272, Cl. 128-206.150.
Shimizu, Yoshihiko: *See—*
Senuma, Akitaka; Shimizu, Yoshihiko; and Tsukada, Kiroku, 4,501,711, Cl. 264-54.000.
Shimotsuma, Wataru: *See—*
Hotta, Shu; Hosaka, Tomiharu; Sonoda, Nobuo; and Shimotsuma, Wataru, 4,501,686, Cl. 252-500.000.
Shimura, Akira, to Ricoh Company, Ltd. Photoconductive element cleaning apparatus and residual toner collecting apparatus. 4,501,484, Cl. 355-15.000.
Shin-Etsu Chemical Co., Ltd.: *See—*
Kimura, Shigeo; Somezawa, Masashi; Hinoto, Yuji; and Yoshioka, Hiroshi, 4,501,801, Cl. 428-447.000.
Ueno, Susumu; Kuroda, Kouiti; Kitamura, Hajime; Tohkai, Masaie; Kato, Ken-ichi; and Hiraishi, Nobuyuki, 4,501,428, Cl. 277-12.000.
Shindo, Katuji: *See—*
Ozawa, Jun; Shindo, Katuji; and Shirakawa, Shingo, 4,502,089, Cl. 361-127.000.
Shinko Electric Co., Ltd.: *See—*
Kawano, Junji; and Takahashi, Fumio, 4,502,057, Cl. 346-76.0PH.
Shinoda, Yoshio: *See—*
Kuno, Akira; and Shinoda, Yoshio, 4,501,284, Cl. 123-352.000.
Shinshu Seiki Kabushiki Kabushiki Kaisha Suwa Seikosha: *See—*
Koto, Haruhiko, 4,502,058, Cl. 346-140.00R.
Shiono, Fusahiro: *See—*
Ohnishi, Souichi; and Shiono, Fusahiro, 4,502,120, Cl. 364-405.000.
Shirai, Shigeru; Ogawa, Kyosuke; Kanbe, Junichiro; Saitoh, Keishi; Osato, Yoichi; and Misumi, Teruo, to Canon Kabushiki Kaisha. Photoconductive member having an amorphous silicon layer. 4,501,807, Cl. 430-57.000.
Shiraimatsu Shinyaku Company Ltd.: *See—*
Torii, Kuniyoshi; and Egma, Chikashi, 4,501,730, Cl. 424-76.000.
Shirakawa, Shingo: *See—*
Ozawa, Jun; Shindo, Katuji; and Shirakawa, Shingo, 4,502,089, Cl. 361-127.000.
Shone, Edward B.; Wilson, Robert W.; and Cunningham, Gordon L., to Shell Oil Company. Apparatus for leakage detection of cryogenic materials. 4,501,124, Cl. 62-129.000.
Shop-Vac Corporation: *See—*
Berfield, Robert C., 4,501,378, Cl. 220-324.000.
Showa Denko Kabushiki Kaisha: *See—*
Seki, Nansho; Yamaguchi, Yuki; Nakamura, Yukihiro; Kubo, Hiroshi; and Tsuruya, Tetsuo, 4,501,606, Cl. 71-92.000.
Siegrist, Ronald, to Vickers, Incorporated. Relief valve arrangement. 4,501,291, Cl. 137-529.000.
Siemens Aktiengesellschaft: *See—*
Dondl, Peter, 4,502,051, Cl. 343-356.000.
Douklias, Nikolaos, 4,501,492, Cl. 356-73.100.
Fromm, Ingrid, 4,502,045, Cl. 340-671.000.
Herberg, Helmut, 4,502,071, Cl. 357-38.000.
Herberg, Helmut, 4,502,072, Cl. 357-38.000.
Hieber, Konrad; and Wieczorek, Claudia, 4,501,769, Cl. 427-95.000.
Leipold, Ludwig; Stengl, Jens P.; and Tihanyi, Jeno , 4,502,070, Cl. 357-38.000.
Lutz, Roman, 4,501,930, Cl. 178-4.000.
Pachonik, Horst, 4,502,095, Cl. 361-273.000.
Schuh, Gottfried, 4,502,069, Cl. 357-23.400.
Stahl, Jochen, 4,501,990, Cl. 313-299.000.
Stebegg, Josef; and Becke, Gerhart, 4,501,463, Cl. 339-99.00R.
Siemens Aktiengesellschaft Berlin & Munchen: *See—*
Bajka, Imre; and Furrer, Robert, 4,501,770, Cl. 427-97.000.
Sievert, James A., to Minnesota Mining and Manufacturing Company. Apparatus and method for sealing splices in insulated electrical cables. 4,501,927, Cl. 174-93.000.
Signetics Corporation: *See—*
West, Jeffery A.; and Fletcher, Thomas D., 4,501,976, Cl. 307-456.000.
Signode Corporation: *See—*
Urban, Clement A.; and Huson, Gale W., 4,501,356, Cl. 206-83.500.
Sika AG, vorm. Kaspar Winkler & Co.: *See—*
Burge, Theodor A.; Widmer, Jurg; Meyer, Theodor; and Sulser, Ulrich, 4,501,839, Cl. 524-247.000.
Siligoni, Marco; and Rossetti, Nazareno, to SGS-ATES Componenti Elettronici S.p.A. Transistor bridge voltage rectifier circuit. 4,501,933, Cl. 179-81.00R.
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Silverman, Harold: *See—*
Foster, Dean H.; and Silverman, Harold, 4,501,417, Cl. 271-124.000.
Sinclair, Walter, to Lucas Industries Limited. Low current linear/high current chopper voltage regulator. 4,502,152, Cl. 455-73.000.
Sinden, Leon. Portable wood splitter. 4,501,309, Cl. 144-193.00A.
Singer, Debra L.; McCollum, Gregory J.; and Dowbenko, Rostyslaw, to PPG Industries, Inc. Aminoplast curable compositions containing disulfonic acid esters as latent acid catalysts. 4,501,854, Cl. 525-162.000.
Singer, Erich: *See—*
Gassler, Hermann; Joos, Eugen; Kubach, Hans; Maisch, Wolfgang; and Singer, Erich, 4,501,247, Cl. 123-453.000.
Siry, Manfred; and Diesel, Hans-Dieter, to Letron GmbH. Multi-layer board possessing a varnish surface, process for its production and its use. 4,501,635, Cl. 156-273.300.
Siryj, Bohdan W.; and Lazzery, Angelo G., to RCA Corporation. Automatic handling mechanism for an optical disc enclosed in a protective cartridge. 4,502,133, Cl. 369-34.000.
Sisler, John R., to Convergent Technologies, Inc. Modular housing for computer system. 4,501,460, Cl. 339-49.00R.
SKF Kugellagerfabriken GmbH: *See—*
von Ronai-Horvath, Michael; and Schonung, Bernhard, 4,501,114, Cl. 57-81.000.
Skischuhfabrik Dynafit Gesellschaft m.b.H.: *See—*
Kopp, Ernst, 4,501,078, Cl. 36-121.000.
Skjaerpe, Finn. Microsurgical instrument. 4,501,274, Cl. 128-305.000.
Slade, A. MacDonald: *See—*
Weatherly, Gilbert; and Slade, A. MacDonald, 4,501,782, Cl. 428-57.000.
Slattery, Ian, to Spencer Wright Industries, Inc. Tufting machines. 4,501,212, Cl. 112-266.200.
Sleger, Leon F.: *See—*
DiNozzi, Robert D.; Vancelette, Stanley R.; Powell, Lionel E.; McLean, George F., Jr.; Sleger, Leon F.; and Mason, Ronald C., 4,501,064, Cl. 29-832.000.
Sloan, Albert H. Protective control system for engine. 4,502,090, Cl. 361-153.000.

Slomski, Bruce A.: *See—*
Ryan, Charles W.; and Slomski, Bruce A., 4,501,921, Cl. 564-99.000.
Smalley, Ned J., to Owens-Illinois, Inc. Tamper indicating, non-resealable closure. 4,501,371, Cl. 215-232.000.
Smith, Don L.; and Smith, Shirley J., to Smith, Don L.; and Smith, Shirley J. Yeast and dough condition compositions. 4,501,757, Cl. 426-62.000.
Smith, Gerald G.: *See—*
Magyar, Arpad M.; and Smith, Gerald G., 4,501,825, Cl. 521-78.000.
Smith International, Inc.: *See—*
Geczy, Bela A., 4,501,521, Cl. 411-217.000.
Underwood, Lance D., 4,501,338, Cl. 175-229.000.
Smith, Rocky D.: *See—*
Jacobi, Cecil T., Jr.; Maupin, Charles G.; Woodsmall, James B.; Brown, William J.; Thomas, Bruce E.; Owens, Walton D.; Cunningham, Robert J.; and Smith, Rocky D., 4,501,072, Cl. 34-1.000.
Smith, Scott D.: *See—*
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Smith, Shirley J.: *See—*
Smith, Don L.; and Smith, Shirley J., 4,501,757, Cl. 426-62.000.
Smith, Thomas G., to Pneuveyor Systems Limited. Automatic pneumatic feeder. 4,501,518, Cl. 406-25.000.
SmithKline Beckman Corporation: *See—*
Faulkner, Albert A.; and Bouton, John C., 4,501,495, Cl. 356-244.000.
Snow, Roger L., Sr.; and Atkinson, Thomas J. Pipe thread protector. 4,501,301, Cl. 138-96.00T.
Snyder General Corporation: *See—*
Trigourea, Spiridon, 4,501,193, Cl. 98-33.100.
Societe Anonyme: Compagnie Generale de Materiel Orthopedique: *See—*
Pecheux, Jean-Claude, 4,501,267, Cl. 128-84.00R.
Societe Anonyme des Usines Chausson: *See—*
Hoyer, Francis L. E., 4,501,387, Cl. 228-183.000.
Societe Lorraine de Laminage Continu SOLLAC: *See—*
Druet, Jean-Pierre, 4,501,609, Cl. 75-5.000.
Societe Nationale d'Etude de Construction de Moteurs d'Aviation: *See—*
Canivet, Guy M. C., 4,501,117, Cl. 60-235.000.
Societe Nationale Elf Aquitaine (Production): *See—*
Castel, Yvon; and Iato, Michel, 4,501,056, Cl. 29-252.000.
Societe Nationale Industrielle Aerospatiale: *See—*
Jardat, Alain; and Andre , Joel, 4,501,182, Cl. 83-177.000.
Rodiere, Charles; and Crochet, Michel, 4,502,009, Cl. 324-337.000.
Soerens, Dave A., to Kimberly-Clark Corporation. Creping adhesives containing polyvinyl alcohol and cationic polyamide resins. 4,501,640, Cl. 162-111.000.
Sokolowski, Robert S., to Olin Corporation. Casting system having lubricated casting nozzles. 4,501,317, Cl. 164-472.000.
Somezawa, Masashi: *See—*
Kimura, Shigeo; Somezawa, Masashi; Hinoto, Yuji; and Yoshioka, Hiroshi, 4,501,801, Cl. 428-447.000.
Sommers, Hans; and Jannemann, Theo, to Ruhrgas Aktiengesellschaft. Heating system incorporating an absorption-type heat pump and methods for the operation thereof. 4,501,127, Cl. 62-238.300.
Sonobond Ultrasonics, Inc.: *See—*
Irwin, Charles; Devine, Janet; and Kramer, Richard, 4,501,285, Cl. 134-58.00R.
Sonoda, Nobuo: *See—*
Hotta, Shu; Hosaka, Tomiharu; Sonoda, Nobuo; and Shimotsuma, Wataru, 4,501,686, Cl. 252-500.000.
Sony Corporation: *See—*
Hoshino, Mitsuo; Fukushima, Osamu; and Kakuta, Toshio, 4,501,465, Cl. 339-176.0MP.
Kimura, Shigeo; Somezawa, Masashi; Hinoto, Yuji; and Yoshioka, Hiroshi, 4,501,801, Cl. 428-447.000.
Kubota, Shigeo, 4,501,493, Cl. 356-123.000.
Sotnikov, Ivan A.: *See—*
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Spear, John W.: *See—*
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Spear, John William: *See—*
Clifton, John T.; and Spear, John W., 4,501,271, Cl. 128-205.130.
Speelman, Paul G. Brace device for motor boat drive unit. 4,501,561, Cl. 440-61.000.
Speicher, Charles G.: *See—*
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Spencer, Arthur T.: *See—*
Chu, Shaw C.; and Spencer, Arthur T., 4,501,831, Cl. 523-412.000.
Spencer Wright Industries, Inc.: *See—*
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Sperry Corporation: *See—*
Josephs, Richard M.; and Wang, Tsing-Chow, 4,501,975, Cl. 307-277.000.
Spietschka, Ernst; and Troster, Helmut, to Hoechst Aktiengesellschaft. Monoalkali metal salts of perylene-3,4,9,10-tetracarboxylic acid monoanhydride and process for their manufacturing. 4,501,906, Cl. 549-232.000.
Spreadbury, Robert J., to Cooper Industries, Inc. Ballast modifying device and lead-type ballast for programming and controlling the operating performance of an hid sodium lamp. 4,501,994, Cl. 315-307.000.
Springer, Engelbert: *See—*
Hillmann, Hans; and Springer, Engelbert, 4,501,062, Cl. 29-599.000.
Square D Company: *See—*
Kuckuk, William R., 4,502,130, Cl. 365-52.000.
SS Pharmaceutical Co., Ltd.: *See—*
Yokoi, Koichi; Tachibana, Koichi; Isomae, Kazuo; and Nakashima, Toshiaki, 4,501,752, Cl. 514-414.000.
Staat, Karl-Hans; and Moltner, Hermann, to Kocks Technik GmbH & Co. Rolling mill plants. 4,501,134, Cl. 72-8.000.
Stahl, Andre ; Munier, Daniel; and Bertrand, Andre , to Quartz & Electronique Alcatel. Support for an oscillator. 4,502,022, Cl. 331-68.000.
Stahl, Jochen, to Siemens Aktiengesellschaft. Electron tube, especially transmitting tube, with a device for eliminating interfering retarding-field effects. 4,501,990, Cl. 313-299.000.
Stam, Jaap: *See—*
Damman, Ben; Drijver, Jan; Kinneging, Hans; Scheffer, Hans; Stam, Jaap; and de Witte, Paul, 4,501,639, Cl. 159-48.100.
Standard Oil Company, The: *See—*
Greene, Janice L.; and Loza, Roman, 4,501,881, Cl. 528-336.000.
Standard Oil Company (Indiana): *See—*
Stephens, James R., 4,501,880, Cl. 528-322.000.
Stanton, George E., to NuJack Oil Pump Company. Pump jack. 4,501,119, Cl. 60-398.000.
Statewide Pools, Inc.: *See—*
Corna, John F.; and Blais, Marcel H., 4,501,100, Cl. 52-169.700.
Stauffer Chemical Company: *See—*
Mirviss, Stanley B., 4,501,903, Cl. 549-29.000.
Stauffer, Norman L., to Honeywell Inc. Vision illumination system for range finder. 4,501,961, Cl. 250-201.000.
Staveley Machine Tools Limited: *See—*
Archibald, Ronald L., 4,501,092, Cl. 51-165.00R.
Stebegg, Josef; and Becke, Gerhart, to Siemens Aktiengesellschaft. Cable terminal element. 4,501,463, Cl. 339-99.00R.
Steckler, Steven A.; and Balaban, Alvin R., to RCA Corporation. Digital television receivers. 4,502,078, Cl. 358-188.000.
Stefanescu Doru M.; and Martinez, Freddy, to University of Alabama, The. Compacted graphite cast irons in the iron-carbon-aluminum system. 4,501,612, Cl. 75-124.000.
Stein, Joseph H.: *See—*
Fenton, Edward A., Jr.; Lakin, Ira W.; Stein, Joseph H.; Lohr, John R.; and Schreiber, David A., 4,501,539, Cl. 425-84.000.
Steiner, Karl: *See—*
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Stencel Aero Engineering Corporation: *See—*
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Stengl, Jens P.: *See—*
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Stephens, James R., to Standard Oil Company (Indiana). Copolyoxadiazole-imide containing 5-tertiary butyl phenylene moiety. 4,501,880, Cl. 528-322.000.
Stewart, Louie J. Pool game apparatus. 4,501,423, Cl. 273-122.00R.
Stewart, Ronald L.: *See—*
Miller, Stephen B.; Stewart, Ronald L.; and Thompson, David A., 4,501,602, Cl. 65-18.200.
Stilin, John J., to Falk Corporation, The. Two speed gear drive with reversible input and unidirectional output. 4,501,169, Cl. 74-812.000.
Stockburger, Hermann; and Winderlich, Hans-Georg. Method and apparatus for aligning flat data supports. 4,501,959, Cl. 235-485.000.
Stockdale, Trevor J.; and Churchill, John E., to U.S. Philips Corporation. Automatic sampling arrangement. 4,501,164, Cl. 73-864.250.
Stone, David A., to Stone Fly Products. Applicator for fishing line dressing composition. 4,501,222, Cl. 118-234.000.
Stone Fly Products: *See—*
Stone, David A., 4,501,222, Cl. 118-234.000.
Stone, George C.; and Ross, Stuart E., to CBS Inc. Manual controller for video system. 4,501,424, Cl. 273-148.00B.
Stone, William J., to United States of America, Energy. Front lighted shadowgraphic method and apparatus. 4,501,473, Cl. 350-407.000.
Storage Technology Corporation: *See—*
Hill, John P.; and Touchton, James J., 4,502,021, Cl. 330-279.000.
Storage Technology Partners II: *See—*
Manes, Kenneth L.; and Hart, William D., 4,502,099, Cl. 361-383.000.
Rickert, David W.; Wilkinson, Richard A., Jr.; and Hunt, William C., 4,502,136, Cl. 369-271.000.
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Straayer, Robert O., to Evolution Enterprises, Inc. Hand carried portable weeder convertible to a cultivator apparatus. 4,501,332, Cl. 172-41.000.
Straubel, Max: *See—*
Stumpp, Gerhard; Vogtmann, Hans-Jorg; Fussner, Paul; Schwarz, Manfred; Hofer, Gerald; Konrath, Karl; Straubel, Max; and Faupel, Werner, 4,501,252, Cl. 123-502.000.
Strobel, Klaus; and Geiger, Klaus, to Hutschenreuther Aktiengesellschaft. Method for molding a ceramic article. 4,501,714, Cl. 264-245.000.

Stryjewski, Walter A., to Eastman Kodak Company. Member of compliant material. 4,501,482, Cl. 355-3.0FU.

Stuart, Frank A.: *See—*
Tyson, William H.; and Stuart, Frank A., 4,501,670, Cl. 210-770.000.

Stumpp, Gerhard; Vogtmann, Hans-Jorg; Fussner, Paul; Schwarz, Manfred; Hofer, Gerald; Konrath, Karl; Straubel, Max; and Faupel, Werner, to Robert Bosch GmbH. Fuel injection pump. 4,501,252, Cl. 123-502.000.

Sturdevant, Eugene J., to Proctor-Silex, Inc. Mechanical electrode. 4,501,954, Cl. 219-399.000.

Sturman, Oded E.; Grill, Benjamin; and Harrison, Lynn. Pressure regulating mechanically and electrically operable shut off valves. 4,501,290, Cl. 137-495.000.

Su, Dean T., to Colgate-Palmolive Company. Gels formed from anionic and cationic polymers. 4,501,834, Cl. 524-28.000.

Suda, Michael: *See—*
Kwentus, Gerald K.; and Suda, Michael, 4,501,907, Cl. 549-259.000.

Sudo, Masatoshi; Hori, Hiromi; Iwai, Takafusa; Ohtomo, Akinori; and Takai, Denei, to Kabushiki Kaisha Kobe Seiko Sho. High strength steel plate and method for manufacturing same. 4,501,626, Cl. 148-36.000.

Sugano, Kazuhiko, to Nissan Motor Company, Limited. Hydraulic control system for automatic transmission. 4,501,174, Cl. 74-869.000.

Sugimori, Masaru; Sanji, Koichiro; Tomoyasu, Hirohide; and Sakakibara, Toshimori, to Sunstar Giken Kabushiki Kaisha. Epoxy resin composition and method for the preparation of the same. 4,501,853, Cl. 525-122.000.

Sugimoto, Goro: *See—*
Matsuno, Sadayuki; Itoh, Hiroshi; Nishikawa, Isamu; Awazu, Tatsuo; Matsunaga, Toshio; Kitaoka, Yoshitaka; Sugimoto, Goro; and Nishinaka, Hiroki, 4,501,223, Cl. 118-668.000.

Sugita, Yutaka: *See—*
Suzuki, Ryo; Hiroshima, Minoru; Takeshita, Masatoshi; and Sugita, Yutaka, 4,502,129, Cl. 365-8.000.

Suhre, Dennis R., to Westinghouse Electric Corp. Gain tuned laser resonator. 4,502,144, Cl. 372-23.000.

Suling, Carlhans: *See—*
Konig, Joachim; Suling, Carlhans; and Korte, Siegfried, 4,501,865, Cl. 526-71.000.

Sullivan, Dennis K.: *See—*
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Sulser, Ulrich: *See—*
Burge, Theodor A.; Widmer, Jurg; Meyer, Theodor; and Sulser, Ulrich, 4,501,839, Cl. 524-247.000.

Sumitomo Chemical Company, Limited: *See—*
Kato, Toshiro; Takahashi, Junya; and Kamoshita, Katsuzo, 4,501,756, Cl. 514-120.000.
Terashima, Shiro; Tamoto, Katsumi; and Koga, Kenji, 4,501,700, Cl. 260-351.500.

Sumitomo Durez Company, Ltd.: *See—*
Nakamura, Masayuki; Tsuriya, Masaaki; and Funabashi, Masahiko, 4,501,836, Cl. 524-66.000.

Sumitomo Electric Industries, Ltd.: *See—*
Tsukamoto, Shinya; Takahashi, Kunihiro; and Doi, Akira, 4,501,717, Cl. 419-58.000.

Sumskoi Filial Kharkovskogo Politekhnicheskogo Instituta: *See—*
Kholin, Boris G., 4,501,257, Cl. 124-81.000.

Sun, Eleanor: *See—*
Holmes, Rory A.; and Sun, Eleanor, 4,501,792, Cl. 428-299.000.

Sunaga, Yasumasa, to Fuji Photo Optical Co., Ltd. Lens adapter for endoscopes. 4,501,477, Cl. 350-560.000.

Sundstrand Corporation: *See—*
Glennon, Timothy F., 4,502,106, Cl. 363-56.000.

Sung, Rodney L.; and Karol, Thomas J., to Texaco Inc. Middle distillate fuel oil of improved storage stability containing condensate of Mannich base and alkenyl succinic acid anhydride. 4,501,595, Cl. 44-57.000.

Sung, Rodney L.: *See—*
Karol, Thomas J.; and Sung, Rodney L., 4,501,597, Cl. 44-63.000.

Sunstar Giken Kabushiki Kaisha: *See—*
Sugimori, Masaru; Sanji, Koichiro; Tomoyasu, Hirohide; and Sakakibara, Toshimori, 4,501,853, Cl. 525-122.000.

Super, Scott S.; Hsu, Joseph C.; Haffner, William B.; and Jesse, Jerry F., to American Can Company. Unbalanced oriented multiple layer film. 4,501,797, Cl. 428-349.000.

Super, Scott S.: *See—*
Koschak, Matthew; Super, Scott S.; and Jesse, Jerry F., 4,501,798, Cl. 428-349.000.

Suroff, Leonard W.: *See—*
Kolt, Stanley, 4,501,389, Cl. 236-49.000.

Surtani, Kishin: *See—*
Culley, Bobby G.; and Surtani, Kishin, 4,501,471, Cl. 350-334.000.

Suzaki, Masayuki; and Kanno, Tetuo, to Ricoh Company, Ltd. Printer carriage and hammer assembly. 4,501,509, Cl. 400-157.200.

Suzuki, Fujio: *See—*
Kidoh, Kunizoh; Wakamori, Hideki; Suzuki, Fujio; and Iwasaki, Takao, 4,501,870, Cl. 526-344.100.

Suzuki, Katsuhiko; and Naganuma, Seihachi, to Mitsubishi Denki Kabushiki Kaisha; Tokyo Rope Mfg., Co., Ltd.; and Hakko Kouyu Co., Ltd. Traction type elevator system. 4,501,115, Cl. 57-220.000.

Suzuki, Katsumi; and Yoshizawa, Shuji, to Tokyo Shibaura Denki Kabushiki Kaisha. Film depositing apparatus and a film depositing method. 4,501,766, Cl. 427-38.000.

Suzuki, Masaru, to Kabushiki Kaisha Tokai Rika Denki Seisakusho. Opposed contact switch. 4,501,940, Cl. 200-16.00A.

Suzuki, Nobuyuki: *See—*
Kataoka, Hiroyuki; Yamada, Masanori; and Suzuki, Nobuyuki, 4,501,481, Cl. 354-413.000.

Suzuki, Ryo; Hiroshima, Minoru; Takeshita, Masatoshi; and Sugita, Yutaka, to Hitachi, Ltd. Magnetic bubble detector. 4,502,129, Cl. 365-8.000.

Suzuki, Ryoichi; and Yamaguchi, Yoshio, to Janome Sewing Machine Industry Co., Ltd. Instant thread dyeing method for sewing machine. 4,501,588, Cl. 8-444.000.

Suzuki, Ryoichi; and Yamaguchi, Yoshio, to Janome Sewing Machine Industry Co., Ltd. Instant thread dyeing method for sewing machines. 4,501,590, Cl. 8-495.000.

Sweat, William T., to ASARCO Incorporated. Non-polluting heat recuperative sintering method and apparatus. 4,501,412, Cl. 266-178.000.

Swedo, Raymond J.: *See—*
Malloy, Thomas P.; and Swedo, Raymond J., 4,501,675, Cl. 252-8.55D.

Swenson, Paul F., Jr.: *See—*
Gerstmann, Joseph; Hauck, William M.; Raymond, Robert; and Swenson, Paul F., Jr., 4,501,253, Cl. 123-527.000.

Swift, Graham: *See—*
Baus, Richard E.; and Swift, Graham, 4,501,845, Cl. 524-460.000.

Synthelabo: *See—*
Kaplan, Jean-Pierre; and George, Pascal, 4,501,745, Cl. 514-222.000.

Syva Company: *See—*
Gibbons, Ian; Rowley, Gerald L.; and Ullman, Edwin F., 4,501,692, Cl. 260-112.00B.

Szklarczyk, Marek: *See—*
Bockris, John O.; Szklarczyk, Marek; and Contractor, Aliasgar Q., 4,501,804, Cl. 429-111.000.

Tabe, Tsutomu: *See—*
Omori, Norio; Tabe, Tsutomu; Ito, Katsunori; and Hayashi, Shukichi, 4,501,250, Cl. 123-486.000.

Tachibana, Koichi: *See—*
Yokoi, Koichi; Tachibana, Koichi; Isomae, Kazuo; and Nakashima, Toshiaki, 4,501,752, Cl. 514-414.000.

Taft, Philip A.: *See—*
Reynolds, Desmond H.; and Taft, Philip A., 4,501,451, Cl. 303-6.00A.

Taiho Seiki Kabushiki Kaisha: *See—*
Yanagisawa, Taminori; Yamaguchi, Takaharu; and Fukatsu, Hiroshi, 4,501,352, Cl. 198-775.000.

Taira, Shigeo, to Diesel Kiki Co., Ltd. Fuel injection valve with variable lifting amount of the nozzle needle. 4,501,245, Cl. 123-446.000.

Takahashi, Fumio: *See—*
Kawano, Junji; and Takahashi, Fumio, 4,502,057, Cl. 346-76.0PH.

Takahashi, Hisamitsu: *See—*
Kimura, Minoru; and Takahashi, Hisamitsu, 4,502,032, Cl. 336-58.000.

Takahashi, Junya: *See—*
Kato, Toshiro; Takahashi, Junya; and Kamoshita, Katsuzo, 4,501,756, Cl. 514-120.000.

Takahashi, Kunihiro: *See—*
Tsukamoto, Shinya; Takahashi, Kunihiro; and Doi, Akira, 4,501,717, Cl. 419-58.000.

Takahashi, Masaru, to Mitsubishi Denki Kabushiki Kaisha. Control center having cabinet with improved lateral strength and safety. 4,502,097, Cl. 361-342.000.

Takahashi, Mitsuharu: *See—*
Shibayama, Tooru; Kajiya, Hiroshi; and Takahashi, Mitsuharu, 4,501,224, Cl. 118-697.000.

Takahashi, Sumio: *See—*
Kushida, Hideo; Takahashi, Sumio; and Koshio, Shuichi, 4,501,781, Cl. 428-35.000.

Takahashi, Yuji; Masaki, Hisaji; Adachi, Muneo; and Igarashi, Masaru, to Canon Kabushiki Kaisha. Collator having a transfer capability. 4,501,419, Cl. 271-288.000.

Takahata, Kyoya: *See—*
Yamato, Hideyuki; Maeda, Yuji; Yoshino, Fumisato; Takahata, Kyoya; Ikuzawa, Masanori; Kato, Tadaaki; and Yoshikumi, Chikao, 4,501,738, Cl. 514-167.000.

Takai, Denei: *See—*
Sudo, Masatoshi; Hori, Hiromi; Iwai, Takafusa; Ohtomo, Akinori; and Takai, Denei, 4,501,626, Cl. 148-36.000.

Takano, Akira: *See—*
Kubota, Hirotoshi; Takano, Akira; Arai, Isao; and Matsuzaka, Masayoshi, 4,501,397, Cl. 244-75.00R.

Takano, Eiji: *See—*
Tanaka, Shoichi; Tanaka, Yoshiharu; and Takano, Eiji, 4,501,691, Cl. 252-631.000.

Takase, Muneaki: *See—*
Mitsuhashi, Susumu; Takase, Muneaki; Yasui, Sosuke; Washizawa, Ichiro; and Yoshioka, Kimitomo, 4,501,736, Cl. 424-195.000.

Takayanagi, Shigewo; Hasegawa, Junzo; Yasutaka, Hayashi; Doi, Shunichi; and Matsushima, Satoru, to Kabushiki Kaisha Toyota Chuo Kenkyusho; and Toyota Jidosha Kabushiki Kaisha. Apparatus for measuring tire uniformity. 4,501,141, Cl. 73-146.000.

Takeshita, Masatoshi: *See—*
Suzuki, Ryo; Hiroshima, Minoru; Takeshita, Masatoshi; and Sugita, Yutaka, 4,502,129, Cl. 365-8.000.

Takesue, Masahiko: *See—*
Katayama, Takao; and Takesue, Masahiko, 4,501,678, Cl. 252-32.70E.

Takeuchi, Takashi; Kobayashi, Syoji; Ootani, Tsuyoshi; and Imamura, Tetsuya, to Kao Corporation. Magnetic recording medium. 4,501,795, Cl. 428-329.000.

Talo, Arnold T. Retracting and locking animal leash. 4,501,230, Cl. 119-109.000.

Tamoto, Katsumi: *See—*
Terashima, Shiro; Tamoto, Katsumi; and Koga, Kenji, 4,501,700, Cl. 260-351.500.

Tamura, Jun; Matsui, Takahiro; and Hozumi, Kazuo, to Kabushiki Kaisha Morita Seisakusho. Balancing device for dental arm. 4,501,557, Cl. 433-79.000.

Tan, Yoichi, to Fuji Xerox Co., Ltd. Digital signal transmitting method. 4,502,137, Cl. 370-85.000.

Tanabe, Hisaki: *See—*
Umemoto, Hirotoshi; Tanabe, Hisaki; Yamada, Mitsuo; and Nakano, Shinji, 4,501,863, Cl. 525-443.000.

Tanaka, Akira: *See—*
Mizuhara, Hisayoshi; Omori, Shigenori; and Tanaka, Akira, 4,501,547, Cl. 425-391.000.
Saikawa, Masahiko; Kanada, Eiji; Tanaka, Akira; and Endo, Kazunaka, 4,501,811, Cl. 430-204.000.

Tanaka, Mitsuo; and Kozakae, Kunitoshi, to Bridgestone Cycle Co., Ltd. Power transmission mechanism. 4,501,576, Cl. 474-141.000.

Tanaka, Osamu; and Yata, Noboru, to Wakunaga Yakuhin Kabushiki Kaisha. Promotion of absorption of drugs administered through the alimentary system. 4,501,734, Cl. 514-198.000.

Tanaka, Shinichiro: *See—*
Aoki, Keiji; and Tanaka, Shinichiro, 4,501,137, Cl. 73-35.000.

Tanaka, Shoichi; Tanaka, Yoshiharu; and Takano, Eiji, to Mitsubishi Kinzoku Kabushiki Kaisha. Process for treating a radioactive liquid waste. 4,501,691, Cl. 252-631.000.

Tanaka, Yoshiharu: *See—*
Tanaka, Shoichi; Tanaka, Yoshiharu; and Takano, Eiji, 4,501,691, Cl. 252-631.000.

Taniguchi, Keishi; and Iiyama, Kiyotaka, to Ricoh Company, Ltd. Thermosensitive recording material. 4,502,068, Cl. 346-216.000.

Tanimoto, Yoshio: *See—*
Aizawa, Makoto; Kishimoto, Tsuneo; and Tanimoto, Yoshio, 4,501,790, Cl. 428-283.000.

Tann-Papier Gesellschaft m.b.H.: *See—*
Hollinetz, Walter, 4,501,953, Cl. 219-384.000.

Tanner, Murray Q., III: *See—*
Mason, Edward M.; Tanner, Murray Q., III; and Finley, Michael J., 4,501,414, Cl. 269-325.000.

Taplin, Lael B.: *See—*
Delmege, Arthur H.; El-Ibiary, Yehia M.; Rode, Melvin A.; and Taplin, Lael B., 4,502,109, Cl. 364-174.000.

Tarahelm Limited: *See—*
Apellaniz, Ramon, 4,501,259, Cl. 126-263.000.

Tatemoto, Masayoshi; Oka, Masahiko; Kano, Hideo; Tomoda, Masayasu; and Ueta, Yutaka, to Daikin Kogyo Co., Ltd. Cross linkable fluorine-containing polymer. 4,501,869, Cl. 526-249.000.

Tatsumi, Takumi, to Mitsubishi Denki Kabushiki Kaisha. Speed change control unit of automatic transmission for automobiles. 4,501,175, Cl. 74-869.000.

Tatton, James P.; and Brownlie, James, to Anderson Strathclyde PLC. Haulage drive. 4,501,447, Cl. 299-43.000.

TDK Corporation: *See—*
Yoshizawa, Keiichi, 4,501,359, Cl. 206-387.000.

Technicare Corporation: *See—*
Carlson, Roland W.; and Blaskis, Edward A., 4,501,566, Cl. 445-28.000.

Technology Unlimited, Inc.: *See—*
Geho, W. Blair; and Lau, John R., 4,501,728, Cl. 424-38.000.

Technomed Elektromed.Apparatebau GmbH: *See—*
Kunst, Hermann, 4,502,062, Cl. 346-155.000.

Teijin Limited: *See—*
Hirakawa, Tadashi; and Yoshida, Makoto, 4,501,641, Cl. 162-164.300.

Tekniska Rontgencentralen AB: *See—*
Engding, Alf, 4,501,716, Cl. 376-249.000.

Tektronix, Inc.: *See—*
Olmstead, Harold W.; Andrews, Gary D.; and Walquist, Clayton C., 4,501,995, Cl. 315-371.000.

Telco Systems, Inc.: *See—*
Mostyn, William T., Jr., 4,501,932, Cl. 179-16.0AA.

Terashima, Shiro; Tamoto, Katsumi; and Koga, Kenji, to Sumitomo Chemical Company, Limited. Preparation of optically active 4-demethoxydaunomycinone. 4,501,700, Cl. 260-351.500.

Teraura, Makoto; and Baba, Masanao, to Nippon Cable System, Inc. Steering system for a boat. 4,501,218, Cl. 114-144.00R.

Terrels, Joseph L. Paint cup for sprayer. 4,501,500, Cl. 366-250.000.

Tessier, Jean: *See—*
Martel, Jacques; Tessier, Jean; and Demoute, Jean-Pierre, 4,501,704, Cl. 260-465.00R.
Nezot, Francois; Girault, Pierre; Tessier, Jean; and Martel, Jacques, 4,501,894, Cl. 548-186.000.

Texaco Inc.: *See—*
Arnold, Dan M., 4,501,964, Cl. 250-270.000.
Frazier, Terry L.; Grimm, Henry J.; Rooney, John F.; Allen, Richard S.; Brown, Alfred; and Mims, Donald S., 4,501,325, Cl. 166-250.000.
Karol, Thomas J.; and Sung, Rodney L., 4,501,597, Cl. 44-63.000.
Sung, Rodney L.; and Karol, Thomas J., 4,501,595, Cl. 44-57.000.

Texas A&M University: *See—*
Bockris, John O.; Szklarczyk, Marek; and Contractor, Aliasgar Q., 4,501,804, Cl. 429-111.000.

Texas Instruments Incorporated: *See—*
Culley, Bobby G.; and Surtani, Kishin, 4,501,471, Cl. 350-334.000.
Dyer, Lawrence D.; and McGregor, Anderson D., 4,501,258, Cl. 125-13.00R.
Grenier, Aime J., 4,502,033, Cl. 337-75.000.
Tregilgas, John H.; Beck, Jeffrey D.; Kinch, Michael A.; and Schaake, Herbert F., 4,501,625, Cl. 148-20.300.
Van Der Ploeg, Arie; Jansen, Wim; and Gerson, Philips, 4,501,255, Cl. 123-557.000.

Textron Inc.: *See—*
Nelson, Alfred W., 4,501,404, Cl. 248-503.100.

Th. Goldschmidt AG: *See—*
Fink, Hans-Ferdi; Koerner, Gotz; and Freiberger, Rolf, 4,501,616, Cl. 106-38.220.
Koerner, Gotz; and Weitemeyer, Christian, 4,501,911, Cl. 556-446.000.

Thayer, Timothy Z.; and Shaw, Frank W., to Arvin Industries, Inc. Catalytic converter housing. 4,501,118, Cl. 60-301.000.

Thedford, Guy N.; Fachini, Robert M.; and Sullivan, Dennis K., to International Harvester Co. Cotton harvesting machine pneumatic duct system. 4,501,112, Cl. 56-13.300.

Thieler, Wolfgang: *See—*
Lutz, Dieter; and Thieler, Wolfgang, 4,501,348, Cl. 192-106.100.

Thomas, Bruce E.: *See—*
Jacobi, Cecil T., Jr.; Maupin, Charles G.; Woodsmall, James B.; Brown, William J.; Thomas, Bruce E.; Owens, Walton D.; Cunningham, Robert J.; and Smith, Rocky D., 4,501,072, Cl. 34-1.000.

Thomas, Delbert D. Apparatus for the selective retorting of carbonaceous materials. 4,501,644, Cl. 202-99.000.

Thomas Jefferson University: *See—*
Katz, Philip; Brenman, Henry S.; Lowry, Louis D.; and Schwartz, Harold, 4,502,150, Cl. 381-70.000.

Thomas, Monica C.: *See—*
Pandey, Ramesh C.; Toussaint, Margaret W.; McGuire, Jeffrey C.; and Thomas, Monica C., 4,501,699, Cl. 260-351.100.

Thomas, Wilbur R.: *See—*
Marchetti, Joseph R.; and Thomas, Wilbur R., 4,501,787, Cl. 428-236.000.

Thompson, David A.: *See—*
Miller, Stephen B.; Stewart, Ronald L.; and Thompson, David A., 4,501,602, Cl. 65-18.200.

Thompson, Roger A., to Adolph Coors Company. Photomultiplier tube assembly. 4,501,366, Cl. 209-556.000.

Thomson, Alasdair I.; and King, Frank, to Johnson Matthey Public Limited Company. Catalytic selective hydrogenation of aliphatic unsaturation in copolymers. 4,501,685, Cl. 502-167.000.

Thomson-CSF: *See—*
Dupressoir, Albert; and Salvat, Francois, 4,502,053, Cl. 343-727.000.
Heitzmann, Michel, 4,502,023, Cl. 331-107.00R.
Le Parquier, Guy; and Puech, Claude, 4,502,037, Cl. 340-347.0AD.
Rouge, Jean, 4,501,150, Cl. 73-628.000.

Thomson, John G., to Gall Thomson Maritime Limited. Breakaway coupling. 4,501,287, Cl. 137-68.00R.

Thomson, Meredith C.: *See—*
Loichinger, Fred A.; and Thomson, Meredith C., 4,501,196, Cl. 99-461.000.

Thottathil, John K.; Moniot, Jerome L.; Floyd, David; and Brandt, Steven, to E. R. Squibb & Sons, Inc. Method for making substituted prolines. 4,501,901, Cl. 548-532.000.

Tietze, Gunter: *See—*
Kretschmer, Horst; Tietze, Gunter; Beiermann, Norbert; Schingnitz, Manfred; and Goehler, Peter, 4,501,156, Cl. 73-861.040.

Tihanyi, Jeno : *See—*
Leipold, Ludwig; Stengl, Jens P.; and Tihanyi, Jeno , 4,502,070, Cl. 357-38.000.

Till, Heinz; and Till, Volker. Process for cleaning a barrel. 4,501,623, Cl. 134-22.180.

Till, Volker: *See—*
Till, Heinz; and Till, Volker, 4,501,623, Cl. 134-22.180.

Tinker, Andrew J.: *See—*
Campbell, David S.; Tinker, Andrew J.; and Mente, Peter G., 4,501,860, Cl. 525-359.400.

Tishkoff, Garson H.; and Estry, Douglas W. Treatment of disparate bleeding disorders with factor X zymogen. 4,501,731, Cl. 424-101.000.

Tkhai, Vitaly S.: *See—*
Abramov, Vsevolod V.; Kuznetsov, Vsevolod V.; Veselov, Alexandr V.; Tkhai, Vitaly S.; Rysin, Nikolai I.; and Gerasimov, Vasily I., 4,501,549, Cl. 425-542.000.

Toch, Theodore H.: *See—*
Castle, Craig A.; Benson, Jon M.; and Toch, Theodore H., 4,502,151, Cl. 381-70.000.

Tohkai, Masaie: *See—*
Ueno, Susumu; Kuroda, Kouiti; Kitamura, Hajime; Tohkai, Masaie; Kato, Ken-ichi; and Hiraishi, Nobuyuki, 4,501,428, Cl. 277-12.000.

Toki, Susumu; and Nagahiro, Kenichi, to Honda Giken Kogyo Kabushiki Kaisha. Blow-by gas passage system for internal combustion engines. 4,501,234, Cl. 123-41.860.

Tokuda, Hiroshi: *See—*
Sakano, Isao; Yokoyama, Tatsuro; Kajiya, Seitaro; Okazaki, Yutaka; Tokuda, Hiroshi; Kawazura, Hiroshi; Kumakura, Mikio; Nakano, Takuo; and Awaya, Akira, 4,501,750, Cl. 514-369.000.

Tokuyama, Akio: *See—*
Furuno, Nobuo; Ota, Yoshio; Itai, Masahiro; Tokuyama, Akio; and Nakano, Eiichi, 4,501,649, Cl. 204-181.00R.

Tokyo Rope Mfg., Co., Ltd.: *See—*
Suzuki, Katsuhiko; and Naganuma, Seihachi, 4,501,115, Cl. 57-220.000.

Tokyo Shibaura Denki Kabushiki Kaisha: *See—*
Arabori, Yoshinari; and Sato, Hisao, 4,501,945, Cl. 219-10.55F.
Ariga, Yoshio; Miyano, Toshiyuki; and Wakisaka, Yukinori, 4,501,418, Cl. 271-187.000.
Eguchi, Kazutoshi, 4,502,115, Cl. 364-200.000.
Hibi, Toshio, 4,502,050, Cl. 340-870.010.
Hongo, Hironobu, 4,501,277, Cl. 128-660.000.
Kihara, Jyun-ichi, 4,502,117, Cl. 364-200.000.
Koike, Hideharu, 4,501,977, Cl. 307-469.000.
Matsumoto, Shuji, 4,501,613, Cl. 75-240.000.
Nishikawa, Meisei; Nagumo, Masahide; and Kojima, Tadashi, 4,502,024, Cl. 332-9.00R.
Oda, Goro, 4,501,620, Cl. 134-6.000.
Seo, Yasutsugu, 4,501,279, Cl. 128-663.000.
Suzuki, Katsumi; and Yoshizawa, Shuji, 4,501,766, Cl. 427-38.000.
Watanabe, Shingo; and Itou, Takeo, 4,501,806, Cl. 430-25.000.

Toliusis, Vytautas J.: *See—*
Klimowicz, Michael A.; Toliusis, Vytautas J.; and Loveless, Stanley M., 4,501,299, Cl. 137-625.650.

Tomoda, Masayasu: *See—*
Tatemoto, Masayoshi; Oka, Masahiko; Kano, Hideo; Tomoda, Masayasu; and Ueta, Yutaka, 4,501,869, Cl. 526-249.000.

Tomoyasu, Hirohide: *See—*
Sugimori, Masaru; Sanji, Koichiro; Tomoyasu, Hirohide; and Sakakibara, Toshimori, 4,501,853, Cl. 525-122.000.

Tomsyck, John P.; and Zohn, Thomas J., to Minnesota Mining and Manufacturing Company. Video cassette time left gauge. 4,501,396, Cl. 242-199.000.

Tonomura, Yoshinobu: *See—*
Miyamoto, Koichi; and Tonomura, Yoshinobu, 4,501,490, Cl. 355-55.000.

Torii, Kuniyoshi; and Egma, Chikashi, to Shiraimatsu Shinyaku Company Ltd. Deodorant compositions. 4,501,730, Cl. 424-76.000.

Toro Company, The: *See—*
Hunter, Edwin J., 4,501,391, Cl. 239-97.000.

Totani, Shinzo: *See—*
Minami, Kazuaki; Totani, Shinzo; Miura, Kunio; Akutsu, Kazushi; and Ohyama, Shinji, 4,502,123, Cl. 364-424.000.

Toto Limited: *See—*
Tsutsui, Osamu; Murakami, Shusaku; Kuwahara, Hidehiko; and Yasunaga, Shigefumi, 4,501,261, Cl. 126-351.000.

Touchton, James J.: *See—*
Hill, John P.; and Touchton, James J., 4,502,021, Cl. 330-279.000.

Tournemine, Colette: *See—*
Clemence, Francois; Medici, Italo; Fournex, Robert; and Tournemine, Colette, 4,501,740, Cl. 514-283.000.

Toussaint, Margaret W.: *See—*
Pandey, Ramesh C.; Toussaint, Margaret W.; McGuire, Jeffrey C.; and Thomas, Monica C., 4,501,699, Cl. 260-351.100.

Towersey, Peter J.; Longton, John; and Cockram, Geoffrey N., to Ranks Hovis McDougall Ltd. Production of edible protein-containing substances. 4,501,765, Cl. 426-656.000.

Toyo Engineering Corporation: *See—*
Nioh, Susumu; Hirayama, Hiroshi; Honda, Tetsuzo; and Ishida, Koji, 4,501,773, Cl. 427-213.000.

Toyo Linoleum Company, Limited: *See—*
Hiragami, Yoshiaki; Yabu, Mikio; and Kawaguchi, Yozi, 4,501,783, Cl. 428-147.000.

Toyo Seikan Kaisha, Ltd.: *See—*
Katsura, Tadahiko; Hirota, Kazumi; and Ueno, Hiroshi, 4,501,375, Cl. 220-270.000.

Toyoda Gosei Co., Ltd.: *See—*
Kuniyoshi, Toru; and Okumoto, Ryoji, 4,501,432, Cl. 277-168.000.

Toyoda Koki Kabushiki Kaisha: *See—*
Yoneda, Takao; and Sakakibara, Yasuji, 4,502,125, Cl. 364-474.000.

Toyoda, Noriyuki: *See—*
Yamato, Hideyuki; Toyoda, Noriyuki; Fujii, Takayoshi; Maeda, Yuji; Kato, Tadaaki; and Yoshikumi, Chikao, 4,501,737, Cl. 514-167.000.

Toyota Jidosha Kabushiki Kaisha: *See—*
Aoki, Keiji; and Tanaka, Shinichiro, 4,501,137, Cl. 73-35.000.
Kako, Hiroyoshi; Kobayashi, Nobuo; and Kaneyuki, Toshiaki, 4,501,540, Cl. 425-116.000.
Niimi, Yukihide; Yoshida, Seietsu; and Ohnaka, Hidemi, 4,501,242, Cl. 123-440.000.
Niimi, Yukihide; Kinoshita, Kenzi; and Urushidani, Masahiro, 4,501,243, Cl. 123-440.000.
Saito, Tadashi, 4,501,167, Cl. 74-467.000.
Takayanagi, Shigewo; Hasegawa, Junzo; Yasutaka, Hayashi; Doi, Shunichi; and Matsushima, Satoru, 4,501,141, Cl. 73-146.000.
Yanagisawa, Taminori; Yamaguchi, Takaharu; and Fukatsu, Hiroshi, 4,501,352, Cl. 198-775.000.

Tracy, Wayne R., to Incom International, Inc. Chain assembly with plug-in module. 4,501,351, Cl. 198-648.000.

Trane Company, The: *See—*
Han, Doyoung, 4,501,125, Cl. 62-175.000.

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Zemek, Albert W.; and Carlsen, Arthur T., 4,501,065, Cl. 29-845.000.

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Weeks, David E.; Reece, John W.; and Wirth, Robert L., to NCR Corporation. Dot matrix print head. 4,501,506, Cl. 400-124.000.

Weiler, Rolf; and Muller, Reiner, to ITT Industries, Inc. Valve body. 4,501,410, Cl. 251-366.000.

Weis, Martin; and Scholz, Adolf, to BMD Badische Maschinenfabrik Durlach GmbH. Transport unit for castings. 4,501,313, Cl. 164-404.000.

Weiser, Martin: *See—*
Kotulla, Bernhard; Weiser, Martin; Faltin, Jurgen; Preis, Lothar; Schmidt, Rudolf; and Born, Eberhard, 4,501,516, Cl. 405-260.000.

Weishaupt, Walter: *See—*
Grohmann, Kurt; and Weishaupt, Walter, 4,502,124, Cl. 364-442.000.

Weitemeyer, Christian: *See—*
Koerner, Gotz; and Weitemeyer, Christian, 4,501,911, Cl. 556-446.000.

Welburn, Ross D., to Motornetics Corporation. High torque robot motor. 4,501,980, Cl. 310-12.000.

Welch, Alfred F., to Boeing Company, The. Spiral feeder for headed fasteners. 4,501,380, Cl. 221-298.000.

Wells, Henry A., to Champion International Corporation. Method of paper tension control to maintain flutter within a predetermined range. 4,501,642, Cl. 162-198.000.

Wells, James E.; and Eskinazi, Victoria, to Air Products and Chemicals, Inc. Morpholine compounds prepared via phosphate catalysts. 4,501,889, Cl. 544-106.000.

Wells, Robert J.: *See—*
Duke, Colin C.; and Wells, Robert J., 4,501,908, Cl. 549-305.000.

Werle, Peter; and Merk, Wolfgang, to Degussa Aktiengesellschaft. Alkaline modified pentaerythritol stabilizer for vinyl chloride resin. 4,501,840, Cl. 524-387.000.

West End and Hub Spring Company: *See—*
Kessel, Jason H.; and Alperin, Henry, 4,501,033, Cl. 5-200.00R.

West, Jeffery A.; and Fletcher, Thomas D., to Signetics Corporation. Transistor-transistor logic circuit with hysteresis. 4,501,976, Cl. 307-456.000.

Western Gear Machinery Co.: *See—*
Veale, John P., 4,501,094, Cl. 51-165.710.

Westinghouse Electric Corp.: *See—*
Antol, Ronald F.; Kalkbrenner, Ralph W.; and Wolfe, Donald L., 4,501,949, Cl. 219-121.0LC.
Cherry, Sidney J., 4,501,941, Cl. 200-144.00B.
Dobson, Diane P.; Farrell, Michael J.; and Lutz, Raymond S., 4,501,985, Cl. 310-270.000.
Jessee, Ralph D., 4,502,105, Cl. 363-41.000.
Lowry, James, 4,501,345, Cl. 187-29.00R.
Marchetti, Joseph R.; and Thomas, Wilbur R., 4,501,787, Cl. 428-236.000.
Meyer, Jeffry R., 4,501,466, Cl. 339-255.00P.
Morrison, Heber J.; and Koenig, Lawrence W., 4,502,085, Cl. 361-56.000.
Suhre, Dennis R., 4,502,144, Cl. 372-23.000.
Uherek, Vladimir; and Kersen, Matthew F., 4,501,344, Cl. 187-29.00R.
Wonn, James W.; and Osborne, Robert L., 4,502,046, Cl. 340-682.000.

Wetterhorn, Richard H.; and Ferguson, Walter J., to Dresser Industries, Inc. Temperature compensator for liquid filled pressure gauge. 4,501,152, Cl. 73-738.000.

Weyerhaeuser Company: *See—*
McGuire, Michael L.; Seluga, David M.; and Blum, Michael R., 4,501,628, Cl. 156-62.800.

White, Harold V., to United States of America, Army. Vertical launch alignment transfer apparatus. 4,501,187, Cl. 89-1.800.

White, Richard E., to Garlock Inc. Mechanical seal flush agitator and wear monitor for mechanical seals. 4,501,429, Cl. 277-24.000.

Whittaker Corporation: *See—*
Ulinskas, Gary J., 4,501,270, Cl. 128-202.130.

Widmer, Jurg: *See—*
Burge, Theodor A.; Widmer, Jurg; Meyer, Theodor; and Sulser, Ulrich, 4,501,839, Cl. 524-247.000.

Wiebesiek, Wilhelm, to Herbert Kannegiesser GmbH & Co. Apparatus for feeding laundry articles to an ironing machine. 4,501,529, Cl. 414-751.000.

Wieczorek, Claudia: *See—*
Hieber, Konrad; and Wieczorek, Claudia, 4,501,769, Cl. 427-95.000.

Wiener, David M., to W^2 Vehicle Design and Development. Loudspeaker system. 4,501,934, Cl. 179-146.00E.

Wilhelmson, Thomas J. Self-contained sewage treatment system and method. 4,501,665, Cl. 210-630.000.

Wilkinson, Richard A., Jr.: *See—*
Rickert, David W.; Wilkinson, Richard A., Jr.; and Hunt, William C., 4,502,136, Cl. 369-271.000.

Wilkinson Sword Limited: *See—*
Duncan, David S., 4,501,067, Cl. 30-63.000.

Willcott, M. Robert: *See—*
Mee, Gary L.; and Willcott, M. Robert, 4,502,007, Cl. 324-307.000.

Williams, Charles D., to Marquest Medical Products, Inc. Tray apparatus for freeze-drying biologicals having a predetermined unit dosage. 4,501,719, Cl. 422-102.000.

Williams, H. Jay; and Yauneridge, Raymond. Transfer valve. 4,501,295, Cl. 137-625.190.

Williams, James H., to Borden, Inc. Urea-formaldehyde precursor. 4,501,851, Cl. 524-542.000.

Williamson, Robert L. Automatic animal-feeding device. 4,501,229, Cl. 119-51.120.

Wilson, Alan G.: *See—*
Webber, Gordon E. G.; and Wilson, Alan G., 4,501,191, Cl. 91-375.00A.

Wilson, Robert W.: *See—*
Shone, Edward B.; Wilson, Robert W.; and Cunningham, Gordon L., 4,501,124, Cl. 62-129.000.

Winderlich, Hans-Georg: *See—*
Stockburger, Hermann; and Winderlich, Hans-Georg, 4,501,959, Cl. 235-485.000.

Wirth, Robert L.: *See—*
Weeks, David E.; Reece, John W.; and Wirth, Robert L., 4,501,506, Cl. 400-124.000.

Wolf, Robert: *See—*
Jenkner, Karl; Steiner, Karl; and Wolf, Robert, 4,501,075, Cl. 34-125.000.

Wolfe, Donald L.: *See—*
Antol, Ronald F.; Kalkbrenner, Ralph W.; and Wolfe, Donald L., 4,501,949, Cl. 219-121.0LC.

Womako Maschinenkonstruktionen GmbH: *See—*
Lehmann, Hartmut, 4,501,304, Cl. 140-103.000.

Wong, Steven S.: *See—*
LaPierre, Rene B.; Partridge, Randell D.; Chen, Nai Y.; and Wong, Steven S., 4,501,926, Cl. 585-739.000.

Wong, Yiu H.: *See—*
Frye, Robert C.; Griffith, Joseph E.; and Wong, Yiu H., 4,501,060, Cl. 29-576.00W.

Wonn, James W.; and Osborne, Robert L., to Westinghouse Electric Corp. System for monitoring metal-to-metal contact in rotating machinery. 4,502,046, Cl. 340-682.000.

Wonnacott, Gerald, to Advanced Micro Devices, Inc. Fluorine plasma oxidation of residual sulfur species. 4,501,061, Cl. 29-591.000.

Woo, Edmund P.: *See—*
Reierson, Robert L.; Hussey, Hugh F.; and Woo, Edmund P., 4,501,679, Cl. 252-77.000.

Wood, Charles H.: *See—*
Mueller, Peter; Ury, Michael G.; and Wood, Charles H., 4,501,993, Cl. 315-248.000.

Wood, Thomas G., to E. R. Squibb & Sons, Inc. Apparatus for detecting defects in capsule shells. 4,501,494, Cl. 356-240.000.

Woodbrey, James C., to Monsanto Company. Thermoplastic polyamide compositions. 4,501,861, Cl. 525-421.000.

Woodsmall, James B.: *See—*
Jacobi, Cecil T., Jr.; Maupin, Charles G.; Woodsmall, James B.; Brown, William J.; Thomas, Bruce E.; Owens, Walton D.; Cunningham, Robert J.; and Smith, Rocky D., 4,501,072, Cl. 34-1.000.

Wrassman, William H. Method and apparatus for separating fibers. 4,501,047, Cl. 19-85.000.

Wright, Charles P.: *See—*
Klees, Garry W.; and Wright, Charles P., 4,501,393, Cl. 239-265.130.

Wright, Roy F., to Phillips Petroleum Company. Stabilizing melt crystallization temperature in arylene sulfide polymer heat treatment. 4,501,713, Cl. 264-176.00R.

Wroble, Arthur J., to Ex-Cell-O Corporation. Remote control system. 4,501,188, Cl. 89-41.00M.

W^2 Vehicle Design and Development: *See—*
Wiener, David M., 4,501,934, Cl. 179-146.00E.

Wu, Edwin S., to Pennwalt Corporation. Isoflavones useful as anti-inflammatory agents. 4,501,755, Cl. 514-456.000.

Wu, Yulin, to Phillips Petroleum Company. Method for reducing corrosiveness of aqueous fluids. 4,501,674, Cl. 252-8.55D.

Wuhrl, Arno; and Kistner, Werner, to M.A.N.-Roland Druckmaschinen Aktiengesellschaft. Proximity switch, which indicates the presence or absence of field changing objects at a defined distance from the proximity switch by a binary signal with the aid of excitation and detection of a field. 4,502,042, Cl. 340-568.000.

Xenell Corporation: *See—*
Fajt, John, 4,501,991, Cl. 313-589.000.

Xerox Corporation: *See—*
Blessington, Daniel R., 4,502,059, Cl. 346-140.00R.
Herbert, William G., 4,501,646, Cl. 204-4.000.

Xomed, Inc.: *See—*
Castle, Craig A.; Benson, Jon M.; and Toch, Theodore H., 4,502,151, Cl. 381-70.000.

Yabu, Mikio: *See—*
Hiragami, Yoshiaki; Yabu, Mikio; and Kawaguchi, Yozi, 4,501,783, Cl. 428-147.000.

Yakich, John L., to Armstrong-Blum Manufacturing Co. Method for delivering coolant to a band saw, and structure therefor. 4,501,181, Cl. 83-169.000.

Yamada, Masanori: *See—*
Kataoka, Hiroyuki; Yamada, Masanori; and Suzuki, Nobuyuki, 4,501,481, Cl. 354-413.000.

Yamada, Mitsuo: *See—*
Umemoto, Hirotoshi; Tanabe, Hisaki; Yamada, Mitsuo; and Nakano, Shinji, 4,501,863, Cl. 525-443.000.

Yamaguchi, Hidefumi, to International Business Machines Corporation. Deflection distortion correcting circuit. 4,501,996, Cl. 315-371.000.

Yamaguchi, Keiki; and Sano, Shinichi, to Yokogawa Hokushin Electric Corporation. Ultrasonic probe for puncture treatment. 4,501,278, Cl. 128-660.000.

Yamaguchi, Takaharu: *See—*
Yanagisawa, Taminori; Yamaguchi, Takaharu; and Fukatsu, Hiroshi, 4,501,352, Cl. 198-775.000.

Yamaguchi, Yoshio: *See—*
Suzuki, Ryoichi; and Yamaguchi, Yoshio, 4,501,588, Cl. 8-444.000.
Suzuki, Ryoichi; and Yamaguchi, Yoshio, 4,501,590, Cl. 8-495.000.

Yamaguchi, Yuki: *See—*
Seki, Nansho; Yamaguchi, Yuki; Nakamura, Yukihiro; Kubo, Hiroshi; and Tsuruya, Tetsuo, 4,501,606, Cl. 71-92.000.

Yamamoto, Tadahiro; and Oota, Tadaki, to Nissan Motor Company, Limited. Variable venturi carburetor. 4,501,709, Cl. 261-44.00D.

Yamano, Fumiyuki: *See—*
Okajima, Atsushi; Nitta, Yoshihiko; and Yamano, Fumiyuki, 4,502,128, Cl. 364-900.000.

Yamato, Hideyuki; Toyoda, Noriyuki; Fujii, Takayoshi; Maeda, Yuji; Kato, Tadaaki; and Yoshikumi, Chikao, to Kureha Kagaku Kogyo Kabushiki Kaisha. Pharmaceutical composition containing 24,25-dihydroxycholecalciferol as an active ingredient to treat myodystrophia. 4,501,737, Cl. 514-167.000.

Yamato, Hideyuki; Maeda, Yuji; Yoshino, Fumisato; Takahata, Kyoya; Ikuzawa, Masanori; Kato, Tadaaki; and Yoshikumi, Chikao, to Kureha Kagaku Kogyo Kabushiki Kaisha. Pharmaceutical composition containing 24,25-dihydroxycholecalciferol as an active ingredient to treat pain, pyrexia or inflammatory diseases. 4,501,738, Cl. 514-167.000.

Yampolsky, Jack S.; and Peszeszer, Endre F., to GA Technologies Inc. Method and apparatus for forming spiral tubing. 4,501,948, Cl. 219-121.0LC.

Yanagawa, Makoto. Photopolymerizable composition. 4,501,689, Cl. 252-600.000.

Yanagisawa, Taminori; Yamaguchi, Takaharu; and Fukatsu, Hiroshi, to Toyota Jidosha Kabushiki Kaisha; and Taiho Seiki Kabushiki Kaisha. Work-conveying apparatus. 4,501,352, Cl. 198-775.000.

Yanagishima, Takayuki; and Seko, Yasutoshi, to Nissan Motor Company, Limited. Method and apparatus for measuring vehicle driver's fatigue to give an alarm. 4,502,122, Cl. 364-424.000.

Yao, Jean: *See—*
Fowler, Glenn D.; Shannon, Patrick A.; Stout, Ronald L.; and Yao, Jean, 4,502,116, Cl. 364-200.000.

Yasuda, Hirotsugu; and van Lier, Johannes A., to Union Carbide Corporation. Galvanic cell having a saturated fluorocarbon plasma-treated sealing gasket. 4,501,805, Cl. 429-174.000.
Yasui, Sosuke: *See*—
Mitsuhashi, Susumu; Takase, Muneaki; Yasui, Sosuke; Washizawa, Ichiro; and Yoshioka, Kimitomo, 4,501,736, Cl. 424-195.000.
Yasunaga, Shigefumi: *See*—
Tsutsui, Osamu; Murakami, Shusaku; Kuwahara, Hidehiko; and Yasunaga, Shigefumi, 4,501,261, Cl. 126-351.000.
Yasutaka, Hayashi: *See*—
Takayanagi, Shigewo; Hasegawa, Junzo; Yasutaka, Hayashi; Doi, Shunichi; and Matsushima, Satoru, 4,501,141, Cl. 73-146.000.
Yata, Noboru: *See*—
Tanaka, Osamu; and Yata, Noboru, 4,501,734, Cl. 514-198.000.
Yatsuda, Hisao; and Miyazaki, Mutsumi, to Kabushiki Kaisha Ohara Kogaku Garasu Seizosho. Glass for a photomask. 4,501,819, Cl. 501-61.000.
Yauneridge, Raymond: *See*—
Williams, H. Jay; and Yauneridge, Raymond, 4,501,295, Cl. 137-625.190.
Yazu, Kazumasa; Adachi, Yasuto; and Yoshizaki, Takayoshi, to Chisso Corporation. Fine particles of ferromagnetic metal and process for producing the same. 4,501,610, Cl. 75-0.5AA.
Ybern Miro, Pedro. Transmission ratio variators. 4,501,574, Cl. 474-49.000.
Yeh, An-I: *See*—
Berg, Lloyd; and Yeh, An-I, 4,501,645, Cl. 203-51.000.
Yeh, Pochi A., to Rockwell International Corporation. Christiansen-Bragg optical filter. 4,501,470, Cl. 350-313.000.
Yoan, Toyohiko; and Muto, Norishige, to Kabushiki Kaisha Komatsu Seisakusho. Drill string element handling apparatus. 4,501,524, Cl. 414-22.000.
Yojigen Agricultural Corporation: *See*—
Odaira, Keikichi, 4,501,604, Cl. 71-15.000.
Yokogawa Hokushin Electric Corporation: *See*—
Yamaguchi, Keiki; and Sano, Shinichi, 4,501,278, Cl. 128-660.000.
Yokoi, Koichi; Tachibana, Koichi; Isomae, Kazuo; and Nakashima, Toshiaki, to SS Pharmaceutical Co., Ltd. Antiulcer drug. 4,501,752, Cl. 514-414.000.
Yokooji, Shigenori: *See*—
Fujiwara, Kaisaku; Yokooji, Shigenori; and Morishita, Yasuji, 4,502,047, Cl. 340-693.000.
Yokoyama, Tatsuro: *See*—
Sakano, Isao; Yokoyama, Tatsuro; Kajiya, Seitaro; Okazaki, Yutaka; Tokuda, Hiroshi; Kawazura, Hiroshi; Kumakura, Mikio; Nakano, Takuo; and Awaya, Akira, 4,501,750, Cl. 514-369.000.
Yoneda, Takao; and Sakakibara, Yasuji, to Toyoda Koki Kabushiki Kaisha. Numerical controller for an angular slide grinding machine. 4,502,125, Cl. 364-474.000.
Yoshida, Kei; Murokawa, Masayuki; and Nomura, Toshiaki, to Chikura Kogyo Kabushiki Kaisha. Automatic door operator for swing doors. 4,501,090, Cl. 49-264.000.
Yoshida Kogyo K. K.: *See*—
Mizuhara, Hisayoshi; Omori, Shigenori; and Tanaka, Akira, 4,501,547, Cl. 425-391.000.
Yoshida, Makoto: *See*—
Hirakawa, Tadashi; and Yoshida, Makoto, 4,501,641, Cl. 162-164.300.
Yoshida, Seietsu: *See*—
Niimi, Yukihide; Yoshida, Seietsu; and Ohnaka, Hidemi, 4,501,242, Cl. 123-440.000.
Yoshida, Takao, to Honda Giken Kogyo Kabushiki Kaisha. Hydraulic master cylinder for a motorcycle, or the like. 4,501,340, Cl. 180-219.000.
Yoshikai, Noriaki: *See*—
Kato, Masami; and Yoshikai, Noriaki, 4,502,143, Cl. 371-57.000.
Yoshikumi, Chikao: *See*—
Yamato, Hideyuki; Toyoda, Noriyuki; Fujii, Takayoshi; Maeda, Yuji; Kato, Tadaaki; and Yoshikumi, Chikao, 4,501,737, Cl. 514-167.000.
Yamato, Hideyuki; Maeda, Yuji; Yoshino, Fumisato; Takahata, Kyoya; Ikuzawa, Masanori; Kato, Tadaaki; and Yoshikumi, Chikao, 4,501,738, Cl. 514-167.000.
Yoshimura, Isao; Mizukami, Osamu; Hata, Hideo; Kageyama, Junichi; and Kaneko, Takashi, to Asahi-Dow Limited. Cold drawn high-orientation multilayered film and process for manufacture of said film. 4,501,634, Cl. 156-244.240.
Yoshino, Fumisato: *See*—
Yamato, Hideyuki; Maeda, Yuji; Yoshino, Fumisato; Takahata, Kyoya; Ikuzawa, Masanori; Kato, Tadaaki; and Yoshikumi, Chikao, 4,501,738, Cl. 514-167.000.
Yoshino Kogyosho Co., Ltd.: *See*—
Kushida, Hideo; Takahashi, Sumio; and Koshio, Shuichi, 4,501,781, Cl. 428-35.000.
Yoshioka, Hiroshi: *See*—
Kimura, Shigeo; Somezawa, Masashi; Hinoto, Yuji; and Yoshioka, Hiroshi, 4,501,801, Cl. 428-447.000.
Yoshioka, Kimitomo: *See*—
Mitsuhashi, Susumu; Takase, Muneaki; Yasui, Sosuke; Washizawa, Ichiro; and Yoshioka, Kimitomo, 4,501,736, Cl. 424-195.000.
Yoshizaki, Takayoshi: *See*—
Yazu, Kazumasa; Adachi, Yasuto; and Yoshizaki, Takayoshi, 4,501,610, Cl. 75-0.5AA.
Yoshizawa, Keiichi, to TDK Corporation. Casing for a video tape cassette. 4,501,359, Cl. 206-387.000.
Yoshizawa, Shuji: *See*—
Suzuki, Katsumi; and Yoshizawa, Shuji, 4,501,766, Cl. 427-38.000.
Young, Dean A.; and Koepke, Jeffery W., to Union Oil Company of California. Chemical reaction promoted by catalytically active amorphous silica. 4,501,925, Cl. 585-467.000.
Young, Delton W., to Goodyear Tire & Rubber Company, The. Sole for boots and shoes. 4,501,077, Cl. 36-32.00R.
Young, Raymond H., to Freeport Kaolin Company. Method of conditioning clay for flotation using in situ ferrous activator. 4,501,658, Cl. 209-5.000.
Yuguchi, Hiroya; Hayashi, Yoshinobu; and Miyazaki, Yusuke, to Morinaga Milk Industry Co., Ltd. Process for preparing a sarcocarp-containing jelly. 4,501,763, Cl. 426-573.000.
Yuki, Takeshi: *See*—
Saito, Ken; Ochi, Tsuneo; Furunishi, Kaoru; and Yuki, Takeshi, 4,501,402, Cl. 248-346.000.
Zahr, George E., to Du Pont de Nemours, E. I., and Company. Film-forming poly(conjugated polymethine-type)dye. 4,501,876, Cl. 528-232.000.
Zalewski, Jack J.: *See*—
Anderson, Harry B.; and Zalewski, Jack J., 4,501,937, Cl. 200-5.00A.
Zambon S.p.A.: *See*—
Giordano, Claudio; and Castaldi, Graziano, 4,501,913, Cl. 560-100.000.
Zard, Sammir Z.: *See*—
Barton, Derek H. R.; Motherwell, William B.; and Zard, Sammir Z., 4,501,701, Cl. 260-397.400.
Zellmer, Michael, to AB Volvo. Device for controlling the temperature of the intake air to an internal combustion engine. 4,501,254, Cl. 123-556.000.
Zelnigher, Joseph. Apparatus and method for fabrication of dental prostheses. 4,501,556, Cl. 433-56.000.
Zemek, Albert W.; and Carlsen, Arthur T., to Universal Instruments Corporation. Wire pin insertion method and apparatus. 4,501,065, Cl. 29-845.000.
Zenyaku Kogyo Kabushiki Kaisha: *See*—
Mitsuhashi, Susumu; Takase, Muneaki; Yasui, Sosuke; Washizawa, Ichiro; and Yoshioka, Kimitomo, 4,501,736, Cl. 424-195.000.
Zilahi, Tibor: *See*—
Kulcsar, Gabor; Sebestyen, Gyula; David, Agoston; and Zilahi, Tibor, 4,501,732, Cl. 424-114.000.
Zimmer, Inc.: *See*—
McDaniel, John M.; and Miller, Clayton R., 4,501,031, Cl. 3-1.911.
Zinbarg, Benson. Desk set with integrally formed swivel clamping means. 4,501,358, Cl. 206-371.000.
Zodrow, Rudolf; and Buchholz, Rainer, to Jagenberg AG. Process for forming a damping connection between two structural elements. 4,501,633, Cl. 156-242.000.
Zohn, Thomas J.: *See*—
Tomsyck, John P.; and Zohn, Thomas J., 4,501,396, Cl. 242-199.000.
Zola, J. Richard; and Prenosil, Stanley W. Receptacle for collection of fuel spills. 4,501,305, Cl. 141-86.000.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 26TH DAY OF FEBRUARY, 1985

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Barmag Barmer Maschinenfabrik AG: *See*—
Schippers, Heinz; Muennekehoff, Gerd; and Teich, Udo, Re. 31,839, Cl. 242-35.50A.
Burson, Bob O., to R. E. Phelon Company, Inc. Single core condenser discharge ignition system. Re. 31,837, Cl. 123-601.000.
General Electric Co.: *See*—
Harris, James E.; McFadyen, Robert; Peil, William; and Schmidtz, Nicholas A., Re. 31,840, Cl. 363-97.000.
Harris, James E.; McFadyen, Robert; Peil, William; and Schmidtz, Nicholas A., to General Electric Co. Transformer for use in a static inverter. Re. 31,840, Cl. 363-97.000.
McFadyen, Robert: *See*—
Harris, James E.; McFadyen, Robert; Peil, William; and Schmidtz, Nicholas A., Re. 31,840, Cl. 363-97.000.
Muennekehoff, Gerd: *See*—
Schippers, Heinz; Muennekehoff, Gerd; and Teich, Udo, Re. 31,839, Cl. 242-35.50A.
Peil, William: *See*—
Harris, James E.; McFadyen, Robert; Peil, William; and Schmidtz, Nicholas A., Re. 31,840, Cl. 363-97.000.
Porat, David: *See*—
Seckler, David; and Porat, David, Re. 31,838, Cl. 239-177.00R.
R. E. Phelon Company, Inc.: *See*—
Burson, Bob O., Re. 31,837, Cl. 123-601.000.
Schippers, Heinz; Muennekehoff, Gerd; and Teich, Udo, to Barmag Barmer Maschinenfabrik AG. Bobbin transport apparatus and method. Re. 31,839, Cl. 242-35.50A.
Schmidtz, Nicholas A.: *See*—
Harris, James E.; McFadyen, Robert; Peil, William; and Schmidtz, Nicholas A., Re. 31,840, Cl. 363-97.000.
Seckler, David; and Porat, David, to Valmont Industries, Inc. Irrigation apparatus. Re. 31,838, Cl. 239-177.00R.
Teich, Udo: *See*—
Schippers, Heinz; Muennekehoff, Gerd; and Teich, Udo, Re. 31,839, Cl. 242-35.50A.
Valmont Industries, Inc.: *See*—
Seckler, David; and Porat, David, Re. 31,838, Cl. 239-177.00R.

LIST OF REEXAMINATION PATENTEES

TO WHOM

CERTIFICATES WERE ISSUED

Anderson, Carl C.; Maska, Rudolf; and Das, Suryya K., to National Starch and Chemical Corporation. High strength pressure-sensitive adhesives. B1 3,769,254, 2-26-85, Cl. 524-398.000.
Das, Suryya K.: *See*—
Anderson, Carl C.; Maska, Rudolf; and Das, Suryya K., B1 3,769,254, Cl. 524-398.000.
Gagliani, John; Lee, Raymond; and Wilcoxson, Anthony L., to IML Corporation. Methods of preparing polyimides and artifacts composed thereof. B1 4,305,796, 2-26-85, Cl. 204-159.190.
IML Corporation: *See*—
Gagliani, John; Lee, Raymond; and Wilcoxson, Anthony L., B1 4,305,796, Cl. 204-159.190.
Lee, Raymond: *See*—
Gagliani, John; Lee, Raymond; and Wilcoxson, Anthony L., B1 4,305,796, Cl. 204-159.190.
Maska, Rudolf: *See*—
Anderson, Carl C.; Maska, Rudolf; and Das, Suryya K., B1 3,769,254, Cl. 524-398.000.
National Starch and Chemical Corporation: *See*—
Anderson, Carl C.; Maska, Rudolf; and Das, Suryya K., B1 3,769,254, Cl. 524-398.000.
Nirschl, Joseph P.: *See*—
Storm, Thomas D.; and Nirschl, Joseph P., B1 4,062,647, Cl. 8-137.000.
Pippert, Frederick B., to Utex Industries, Inc. Anti-extrusion seals and packings. B1 4,219,204, 2-26-85, Cl. 277-188.00A.
Procter & Gamble Company, The: *See*—
Storm, Thomas D.; and Nirschl, Joseph P., B1 4,062,647, Cl. 8-137.000.
Shivvers, Charles C. Apparatus for circulating grain stored in a circular bin. B1 3,765,547, 2-26-85, Cl. 366-131.000.
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Beck, George P. Airway airflow indicator for facilitating blind nasal or blind oral intubation of the trachea and the like. 277,783, 2-26-85, Cl. D24-17.000.

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United States Surgical Corporation: *See*—
Green, David T., 277,785, Cl. D24-27.000.
Veb Kombinat Polygraph "Werner Lamberz": *See*—
Schott, Alfred; and Reichenberger, Kurt, 277,766, Cl. D18-13.000.
Velazquez, Joseph E.: *See*—
Horst, Paul V., Sr.; Hoyt, Charles D.; and Velazquez, Joseph E., 277,780, Cl. D23-122.000.
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Hoesch, Christoph, 277,792, Cl. D32-15.000.
Vrilakas, Mark: *See*—
Wilson, Louis D.; Wilson, Wesley G.; and Vrilakas, Mark, 277,760, Cl. D15-138.000.
Waite, Jerry A.: *See*—
Lanphere, Ralph C.; Nelson, Paul G.; and Waite, Jerry A., 277,794, Cl. D34-34.000.
Weatherell, Rennie: *See*—
Mabberley, Ben; and Weatherell, Rennie, 277,769, Cl. D21-25.000.
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Daenen, Robert H. C. M.; and Wolff, Martin J., 277,724, Cl. D7-392.000.
Yabunaka, Satsuki: *See*—
Ohno, Akio; Ohto, Kikuo; Okada, Takao; Yabunaka, Satsuki; and Mishiro, Benito, 277,751, Cl. D14-5.000.
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Ito, Yoshio; and Yoshida, Noriyuki, 277,750, Cl. D13-24.000.
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CLASSIFICATION OF PATENTS

ISSUED FEBRUARY 26, 1985

NOTE.—First number, class; second number, subclass; third number, patent number

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67 4,501,024
243 A 4,501,025
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321 4,501,027
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56 4,502,085
87 4,502,086
119 4,502,087
124 4,502,088
127 4,502,089
153 4,502,090
213 4,502,091
218 4,502,092
231 4,502,093
234 4,502,094
273 4,502,095
308 4,502,096
332 4,502,132
342 4,502,097
383 4,502,098
4,502,099
384 4,502,100
386 4,502,101

CLASS 362

183 4,502,102
249 4,502,103

CLASS 363

26 4,502,104
41 4,502,105
56 4,502,106
97 Re.31,840
133 4,502,107

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170 4,502,108
174 4,502,109
200 4,502,110
4,502,111
4,502,112
4,502,113
4,502,114
4,502,115
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405 4,502,119
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422 4,502,121
424 4,502,122
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442 4,502,124
474 4,502,125
509 4,502,126
900 4,502,127
4,502,128

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8 4,502,129
52 4,502,130
201 4,502,131

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69 4,501,498
131 B1 3,765,547
156 4,501,499
250 4,501,500
336 4,501,501

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CLASS 369

34 4,502,133
46 4,502,134
170 4,502,135
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85 4,502,137
100 4,502,138
110.2 4,502,139

CLASS 371

28 4,502,140
37 4,502,141
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CLASS 372

23 4,502,144
38 4,502,145

CLASS 374

162 4,501,503
164 4,501,504

CLASS 376

249 4,501,716

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2 4,502,146

CLASS 378

206 4,502,147

CLASS 381

7 4,502,148
24 4,502,149
70 4,502,150
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152 4,501,505
619 4,501,454

CLASS 400

124 4,501,506
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157.2 4,501,509
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24 4,501,511
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CLASS 405

184 4,501,513
227 4,501,514
259 4,501,515
260 4,501,516
283 4,501,517

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22 4,501,524
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225 4,501,527
273 4,501,528
751 4,501,529

CLASS 415

170 A 4,501,530

CLASS 417

63 4,501,531
313 4,501,532
388 4,501,533
440 4,501,535
572 4,501,534

CLASS 418

61 B 4,501,536
150 4,501,537

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49 4,501,718
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102 4,501,719
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CLASS 423

27 4,501,721
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218 4,501,544
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391 4,501,547
503 4,501,548
542 4,501,549
549 4,501,550

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93 4,501,758
96 4,501,759
250 4,501,760
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538 4,501,762
573 4,501,763
607 4,501,764
656 4,501,765

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38 4,501,766
44 4,501,767
57 4,501,768
95 4,501,769
97 4,501,770
176 4,501,771
208.6 4,501,772
213 4,501,773
215 4,501,774
220 4,501,775
253 4,501,776
255 4,501,777
376.2 4,501,778

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35 4,501,779
4,501,780
4,501,781
57 4,501,782
147 4,501,783
156 4,501,784
195 4,501,785
215 4,501,786
236 4,501,787
240 4,501,788
274 4,501,789
283 4,501,790
286 4,501,791
299 4,501,792
315.5 4,501,793
316.6 4,501,794
329 4,501,795
337 4,501,796
349 4,501,797
4,501,798
446 4,501,799
447 4,501,800
4,501,801
629 4,501,802

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101 4,501,803
111 4,501,804
174 4,501,805

CLASS 430

25 4,501,806
57 4,501,807
59 4,501,808
138 4,501,809
204 4,501,811
302 4,501,810
466 4,501,812

CLASS 432

15 4,501,551
49 4,501,552
59 4,501,553

CLASS 433

24 4,501,554
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56 4,501,556
79 4,501,557
86 4,501,558

CLASS 434

154 4,501,559

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8 4,501,813
94 4,501,814
284 4,501,815

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34 4,501,816
161 4,501,817

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53 4,501,560
61 4,501,561
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6 4,501,563
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28 4,501,566

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430 4,501,567
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CLASS 474

49 4,501,574
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155 4,501,577
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267 4,501,890
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318 4,501,748
326 4,501,749
342 4,501,747
357 4,501,746
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374 4,501,751
414 4,501,752
447 4,501,753
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CLASS 521

29 4,501,826
78 4,501,825

CLASS 523

214 4,501,827
309 4,501,828
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401 4,501,830
412 4,501,831
414 4,501,832
416 4,501,833

CLASS 524

28 4,501,834
32 4,501,835
66 4,501,836
100 4,501,837
108 4,501,838
247 4,501,839
387 4,501,840
398 B1 3,769,254
411 4,501,841
432 4,501,842
445 4,501,843
451 4,501,844
460 4,501,845
476 4,501,846
502 4,501,847
527 4,501,848
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542 4,501,851
591 4,501,852

CLASS 525

122 4,501,853
162 4,501,854
218 4,501,855
240 4,501,856
338 4,501,857
340 4,501,858
356 4,501,859
359.4 4,501,860
421 4,501,861
430 4,501,862
443 4,501,863
484 4,501,864

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71 4,501,865
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136 4,501,867
208 4,501,868
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344.1 4,501,870

CLASS 527

313 4,501,871

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18 4,501,872
48 4,501,873
103 4,501,874
196 4,501,875
232 4,501,876
271 4,501,877
286 4,501,878
288 4,501,879
322 4,501,880
336 4,501,881
4,501,882
340 4,501,883
388 4,501,884
501 4,501,885

CLASS 536

57 4,501,886
84 4,501,887
110 4,501,888

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106 4,501,889

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149 4,501,891
270 4,501,892
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186 4,501,894
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251 4,501,896
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322 4,501,584
346 4,501,585
380 4,501,586
385 4,501,587

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340 277,722
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502 277,718
552 277,716
571 277,715
596 277,719
610 277,714
D7— 392 277,724
D8— 14 277,729
40 277,725
356 277,726
382 277,727
400 277,728
D9— 300 277,730
337 277,731
367 277,732
376 277,733
385 277,734
403 277,735
443 277,736
456 277,737
D10— 109 277,738
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D12— 110 277,743
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184 277,746
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24 277,749
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84 277,754
100 277,755
D15— 1 277,756
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130 277,758
138 277,759
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144 277,761
149 277,762
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D17— 9 277,764
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D18— 13 277,766
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D21— 12 277,768
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79 277,770
81 277,771
134 277,772
D22— 7 277,773
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27 277,785
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34 277,787
99 277,788
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D32— 15 277,792
D34— 17 277,793
29 277,796
34 277,794
35 277,795
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	4,501,111		4,501,205		4,501,893	42 :	4,501,273	47 :	4,501,212		4,501,146
	4,501,155		4,501,262	39 :	4,501,047		4,501,295		4,501,370		4,501,228
	4,501,265		4,501,321		4,501,100		4,501,316		4,501,877		4,501,269
	4,501,297		4,501,345		4,501,105		4,501,377		4,501,878		4,501,350
	4,501,305		4,501,346		4,501,106		4,501,378		4,501,879		4,501,380
	4,501,344		4,501,389		4,501,119		4,501,426	48 :	4,501,085		4,501,393
	4,501,347		4,501,415		4,501,177		4,501,455		4,501,101		4,502,092
	4,501,388		4,501,429		4,501,289		4,501,466		4,501,143	55 :	4,501,042
	4,501,400		4,501,468		4,501,302		4,501,495		4,501,172		4,501,125
	4,501,494		4,501,482		4,501,371		4,501,500		4,501,219		4,501,138
	4,501,586		4,501,483		4,501,407		4,501,501		4,501,238		4,501,168
	4,501,594		4,501,506		4,501,503		4,501,505		4,501,258		4,501,169
	4,501,651		4,501,508		4,501,511		4,501,539		4,501,301		4,501,196
	4,501,652		4,501,534		4,501,545		4,501,546		4,501,323		4,501,256
	4,501,659		4,501,556		4,501,561		4,501,569		4,501,328		4,501,275
	4,501,680		4,501,558		4,501,566		4,501,603		4,501,330		4,501,334
	4,501,751		4,501,581		4,501,636		4,501,697		4,501,332		4,501,562
	4,501,761		4,501,595		4,501,642		4,501,718		4,501,349		4,501,587
	4,501,762		4,501,597		4,501,684		4,501,749		4,501,404		4,501,640
	4,501,792		4,501,600		4,501,688		4,501,787		4,501,441		4,501,779
	4,501,822		4,501,602		4,501,712		4,501,821		4,501,454		4,501,797
	4,501,831		4,501,646		4,501,728		4,501,826		4,501,471		4,501,798
	4,501,834		4,501,660		4,501,772		4,501,833		4,501,513		4,502,130
	4,501,856		4,501,671		4,501,789		4,501,845		4,501,517		4,502,147
	4,501,859		4,501,682		4,501,817		4,501,848		4,501,543	56 :	4,501,202

DESIGN PATENTS

01 :	277,749		277,788	17 :	277,717	27 :	277,738		277,734		277,757
06 :	277,709		277,793		277,754		277,739		277,753	48 :	277,713
	277,712		277,795	18 :	277,740	33 :	277,748		277,790		277,765
	277,725	08 :	277,780		277,772	34 :	277,715		277,791		277,773
	277,726		277,796		277,775		277,755	39 :	277,770		277,782
	277,736	09 :	277,785	24 :	277,714		277,781		277,776		277,783
	277,744		277,802	25 :	277,719		277,789		277,777	51 :	277,774
	277,746	12 :	277,742		277,798		277,801		277,778	53 :	277,729
	277,760		277,747		277,799	36 :	277,716		277,803	55 :	277,756
	277,784	13 :	277,764		277,800		277,731	40 :	277,721		277,759
	277,787	15 :	277,737	26 :	277,710		277,733	44 :	277,723		277,794

PLANT PATENTS

06 :	5,407	5,408	5,409			

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